NVS-70020002FS
Audio Feedback Suppressor
User Manual

Thank you for using our public address system. Please read this User Manual carefully to make better use of this equipment

Attention

This equipment is not waterproof. To prevent fire or electric shock, please do not place any liquid filled containers (such as vases or flowerpots) near the equipment or expose the equipment to dripping, splashes, rain, or moisture.

Please hold the plug when moving the power cord. Do not pull the power cord when pulling out the power plug. Do not touch the power cord when your hands the device, please be sure to place it on a horizontal and stable surface.

Please keep this User Manual in good custody for future use.

Contents

Product Overview

NVS-70020002FS is an Automatic Audio Feedback Suppressor with high performance price ratio. The device allows storage of 10 groups of data for needs of tone quality control in 10 different scenarios. During the suppression process the attenuation range may be as low as -48dB. When feedback is detected, the local device will instantly and automatically analyse and lock the feedback frequency by using its advanced DSP algorithm and determine the frequency point, frequency bandwidth and attenuation of the notching filter, and will save the processing results. Since the device can control the frequency bandwidth of notching filter, only feedback signal is filtered, without damages to the music signal and with very high acoustic fidelity. The major features of the device as follows.

Refined frequency search

The frequency suppressed and varied dynamically during suppression of acoustic feedback therefore, there is very high frequency accuracy in feedback suppression, and the minimum error is 1Hz. For such reasons, the device can provide effective feedback suppression.

Adjustable suppression width

The suppression width of this device is adjustable, and the user can set up a bandwidth on either a single-point notching filter or an automatic notching filter. The user may choose 1/10 or 1/5 for bandwidth. In terms of automatic notching filter, after the bandwidth is modified, the modification takes effect after the user finds the next notch point.

Display of parameters

2×16-character backlight LCD allows users to monitor all parameters of the filter simultaneously. In Automatic mode (AUTO), the LCD may be used to display parameters including frequency and bandwidth; in Single-point mode (SING), the LCD may be used to display frequency and bandwidth which are adjustable.

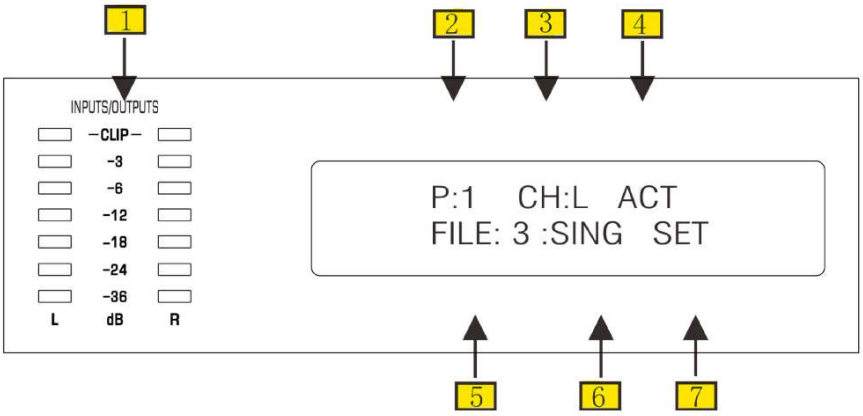
Features

- 24-bit Analogue to Digital and Digital to Analogue conversion, high resolution.
- Each track allows automatic search for 12 frequency feedback, quick processing.
- Prompt and easy default processing and complete feedback suppression performance.
- In single-point mode, the device will automatically search for and lock notch frequency until the device is manually reset or reconfigured.
- In manual mode, the user can set all parameters of 2×12 filters, including their frequency and Q value, etc.
- Servo balanced input and output, gold plated XLR and TRS terminals.
- Two modes (SING and AUTO) available on each filter.
- Two parallel processing modules, the left and right channel may be adjusted independently or in parallel.
- 24-bit high-performance DSP, ensuring signal resolution and dynamic range.
- Soft start of switches, free of knocking sound, noise gating function.
- Backlight 2×16-character LCD.
- 2×7 LED level display, capable of displaying input or output level.
- High-quality SMD components and automatic SMD welding and online testing technologies ensure high quality and reliability of the product.
- Specialized internal power supply system.

Control Panel

This product has 6 functional keys to change the selected parameters or call programs, and one encoder and one LCD display. The following basic requirements must be strictly observed, to avoid potential personal injury and equipment or property damages to you or any person nearby. The basic requirements include without limitation to the following.

Menu Functions



[1] 2×7 LEDs respectively used for input/output level indication of left and right channels.

[2] "P:" Program selection menu, when selected, ":" changes to "->" the user can select any program set from0to9 by turning the encoder.

[3] "CH:" Left/right channel parameter adjustment activation menu, when "CH: L" is selected, adjustment to left channel parameters is activated; when "CH: R" is selected, adjustment to right channel parameters is activated; when "CH:LR" is selected, adjustment to parameters of both left and right channels is activated.

[4] When "BYP" is shown, all feedback suppression filters of the current channel are bypassed. When "ACT" is shown, the settings on the filter is valid and input signals are processed by the feedback suppression filter.

[5] "FILT:", when prompt ":" changes to "->", the user can select any filter marked 1 to 12 by turning the encoder.

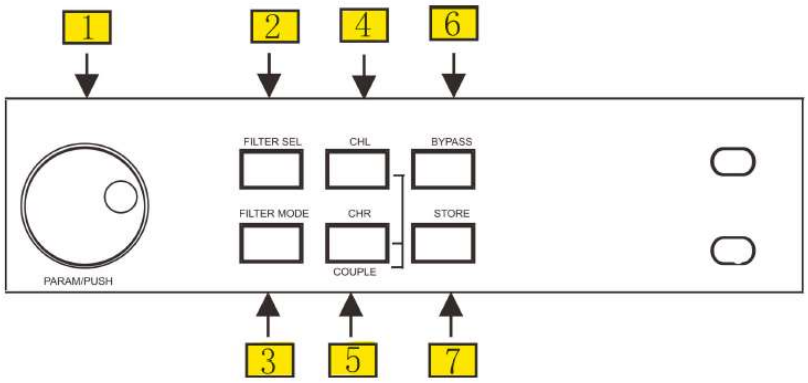
[6] " : SING", when prompt ":" changes to "->", the user can press PUSH button to enter the display menu of current filter and Q value. In SING mode, the user can adjust the frequency and Q value, while in AUTO mode, the frequency and Q value will be simply displayed but cannot be edited.

[7] If "SV" (indicator of parameter memory change) is shown, it means that the parameter has been modified. After the user pressed the "STORE" button, "SV" changes to "SC", reminding the user whether to remember the parameter, when the user presses the "STORE" button again, "SC"

disappears, which means that the new parameter has been recorded in the current channel.

[8] ": SET", when prompt ":" changes to "->", the user can press PUSH button to enter SING mode filter setting menu: in the first step, the user should set up the quantity of SING filters and then press PUSH button to choose if the SING filter parameters are to be reset. The user can press PUSH button again to complete SING filter configuration.

Functional keys and encoder



[1] PARAM/PUSH encoder with switches, allows adjustment to a large variety of parameters and the user can enter the menu by press the PUSH button.

[2] FILTER SEL (Program/filter selecting button), the user may select up to 12 filters or 10 programs. When “P->"is displayed, the user may select desired programs; when pressing this button once, "FILTER->" will be displayed on the LCD, and at such time, the user may select desired filters. When pressing the button once again, "P->" will be displayed and the user may select desired programs.

[3] FILTER MODE (Filter mode selecting button). When this button is pressed, the user can select the operating mode of filter with the encoder. Two modes available: "SING" (single-point mode) and "AUTO" (automatic mode). In addition, when the user presses down buttons FILTER MODE and FILTER SEL at the same time, he/she can enter the auxiliary parameter configuration menu (NOISE GATE, HPF, LPF, Q, LEDDISPLAY, SENSITIVE).

[4] CHL, (5) CHR Left/right channel parameter adjustment activation button, which may be used to modify parameters of the left and right channels. If

the user wishes to modify parameters of both the left and right channels, he/she should press buttons CHL and CHR at the same time. In addition, when the user modifies any of the two channels and then switches to parallel mode, the parameters of one channel will be copied to the other, that is, if the user presses CHL button before he/she presses CHR button, parameters of the left channel will be copied to the right channel.

[6] BYPASS may be used to bypass all feedback suppression filters.

[7] STORE button. The user may use the STORE button to save any modification to the preset value. Please note that the user needs to press the button twice continuously to save the parameters before the saving prompt disappears.

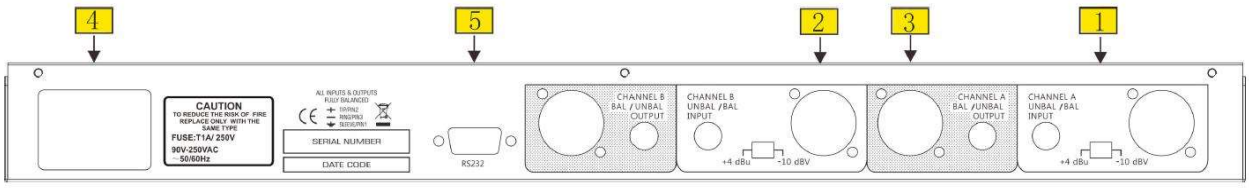
Combination Keys

[1] If the user presses any button of CHL and CHR (do not release) and then presses the other, he/she will enable or disable the synchronous adjustment of left and right channels.

[2] The user may press the buttons FILTER MODE and FILTER SEL at the same time to enter the auxiliary menu (NOISE GATE, HPF, LPF, Q, DISPLAY (LED display source: Input/output level), SENSITIVE).

[3] When the device is powered on, and if the user presses FILTER SEL button and STORE button and hold them for 5 seconds, "RESET" is displayed on the LCD, which may be used to reset the system. By doing so, all parameters will be restored to the factory settings.

Rear Panel



[1] INPUT LEVEL, input level adjusting knob. The device can be adapted to different working levels through the toggle switch, and you can choose +4dBu or -10dBV.

[2] ANALOG INPUT. This product has XLR or TRS input jacks, and each group of XLR and TRS jacks is connected in parallel and can be used for balanced or unbalanced connections.

[3] ANALOG OUTPUT. This product has XLR or TRS output jack, and each group of XLR and TRS jacks is connected in parallel and can be used for balanced or unbalanced connections.

[4] Power socket. Before connecting the device to the power source, please make sure that the displayed voltage corresponds to your local mains power supply. Please note that a fuse of proper type and rated value should be installed in this device based on the power supply voltage required by this device. Please connect the device to the mains power supply with the enclosed power cable.

[5] RS232 interface for firmware upgrade.

Instructions for use

Notching Filter

The notching filter works in two modes, single-point mode or automatic mode. To detect feedback, the device will scan the level changes in the frequency range and compare such changes to the level of the signal, and the difference between them will determine if a notching filter will be configured. In most applications, this algorithm provides the best identification of feedback. In single-point mode, the filter will automatically analyse the incoming music signal to identify the feedback frequency. When the feedback frequency is detected, the filter will automatically configure its parameters to suppress the feedback to its best effect. Because the filter is locked to the detected frequency, this mode is especially applicable to suppression of feedback with constant frequency. A potential application is the "microphone in fixed position" (such as microphones installed in a fixed position in a conference room). In performance, movable microphones (such as voice microphones) often result in changing feedback frequency. Such feedback should be suppressed in automatic mode. That is because in single-point mode, the filter automatically selects an ideal setting in feedback suppression. But in automatic mode, the filter tracks and suppresses the feedback frequencies, even they keep changing all the time. The best frequency is selected automatically and the filter settings in narrowband mode minimize the impacts to music signals.

Program Selection

To save the applicable settings of the user, this device provides 10 user preset programs. All operating parameters can be saved and due to the semiconductor memory chip, data can be stored in the chip for 20 years or longer, and the data stored will not be lost.

Display	Operating Mode
AUTO	Automatic mode
SING	Single-point mode

Program Call

After the device is connected to power source, the last set value is displayed on the monitor. By turning the encoder, the user may easily select the desired program.

Filter Mode Settings

The operating modes of filters are as follows.

To modify the filter, the user must firstly press FILTER SEL (filter selection) button to specify a filter (No. 1-12) by using the encoder. By using CH (Channel selection) button, the user can not only select the left or the right channel, but also select them both at a same time. In the SET menu, by pressing FILTER MODE button and turning the encoder knob, the user can select the quantity of SING filters. If the user selects 8 SING filters, then filters numbered 1 to 8 will be assigned as SING filters, while filters numbered 8 to 12 will be assigned as AUTO filters. A message of "LK" (Lock) is displayed, indicating that a filter form the SING mode has been working to suppress feedback frequency.

Adjustment to SING filter parameters

Only the frequency and Q value of SING filters can be adjusted. In AUTO mode, the frequency can only be viewed but not be adjusted, while adjustment to Q value is allowed. In frequency and Q value of filters in SING mode, the user can press the FILTER MODE button to modify their parameters.

Auxiliary Menu

The user may enter the auxiliary menu by pressing the FILTER SEL button and FILTER MODE button at the same time. In the auxiliary menu, parameters are available for adjustment include NOISE GATE, HPF, LPF, Q, DISPLAY and SENSITIVE: In NOISE GATE, there are three submenus, namely ATTACK(0.1ms~100ms), RELEASE(10ms~5000ms) and THRESHOLD(off, -90dB~-40dB); in HPF, there are two submenus, including HPF ON/OFF and FREQ(19.7Hz~1000Hz); in LPF, there are two submenus, including LPF ON/OFF and FREQ(5990Hz~20200Hz); available options for Q value include 1/10 or 1/5, which takes effect only after a new suppression point is detected; by using LED DISPLAY, the user may set the LED of the current channel to indicate the input level or the output level; there are 5 stages for SENSITIVE, with the Stage 1 representing the highest sensitivity and Stage 5 representing the lowest sensitivity. In the auxiliary menu, the user may press FILTER MODE button to switch between the submenus (NOISE GATE, HPF, LPF, Q, LED DISPLAY, SENSITINE, etc.). By pressing FILT MODE button, the user may switch between the parameters available and by pressing the PUSH button, the user can enter the parameter modification interface, whereby turning the encoder, the user can set up desired parameter value.

Specifications

Number of Input Channel	2 channels, (2 XLR, 2 1/4" TRS)
Number of Output Channel	2 channels, (2 XLR, 2 1/4" TRS)
Input Impedance	Unbalanced 10kΩ/balanced 20kΩ
Output Impedance	150Ω
Maximum Input Level	10.5dBu
Maximum Output Level	10.5dBu
Sampling Frequency	48kHz
Gain	0dB (+4dB gear), 12dB (-10dBV gear)
Suppression Time	0.3s@1kHz
Audio Gain	9dB
Dynamic Range	106dB, A weighting
Frequency Response	20Hz-20kHz, ±0.5dB
CMRR	≥55dB (+4dBu gear), ≥75dB(-10dBV gear)
Crosstalk	≤97dB
Distortion	≤0.0025(@1kHz, +4dBu)
SNR	100dB, A weighting, refer to +4dBu
Power Supply	100V-240Vac 50/60Hz
Power Consumption	≤10W
Fuse	T1AL/250VAC
Machine Dimensions (L×W×H)	482×152×45(mm)
Package Dimensions (L×W×H)	515×245×75(mm)
Gross Weight	2.2kg
Net Weight	1.7kg

Note: Specifications will be subject to changes without notices.

CAUTION

- **When the power switch is "OFF", the machine is not completely disconnected from the power grid. For the sake of safety, please pull the power cord plug out of the socket when not using the equipment.**
- **The equipment shall not be subject to water drops or splashes, and objects such as vases filled with water shall not be placed on the equipment.**
- **To reduce the risk of electric shock, do not remove the cover. If necessary, please ask professional personnel to repair.**
- **The symbol on the rear panel indicates hazardous live. The connection of these terminals must be operated by the instructed person.**
- **The equipment is connected to the power grid through the power cord plug. In case of equipment failure or danger, the connection between the unit and the power grid can be disconnected by pulling out the power cord plug. Therefore, it is required to place the power socket to a position where the power cord can be plugged and unplugged conveniently.**

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