

Operator's Manual

DN2360



KLARK **TEKNIK**

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Technical questions should be directed to:

Customer Service Department
Telex
12000 Portland Avenue South
Burnsville, MN 55337 U.S.A
Telephone: (952) 884-4051
Fax: (952) 884-0043

RETURN SHIPPING INSTRUCTIONS

Procedure for Returns

If a return is necessary, contact the dealer where this unit was purchased.

If a return through the dealer is not possible, obtain a RETURN AUTHORIZATION from:

Customer Service Department
Telex Communications, Inc.
Telephone: 1-800-828-6107 or (952) 884-4051
Fax: 1-800-323-0498 or (952) 884-0043

DO NOT RETURN ANY EQUIPMENT DIRECTLY TO THE FACTORY WITHOUT FIRST OBTAINING A RETURN AUTHORIZATION.

Be prepared to provide the company name, address, phone number, a person to contact regarding the return, purchase order number, the type and quantity of equipment, a description of the problem and the serial number(s).

Shipping to Manufacturer for Repair or Adjustment

All shipments of products should be made via United Parcel Service or the best available shipper prepaid. The equipment should be shipped in the original packing carton; if that is not available, use any suitable container that is rigid and of adequate size. If a substitute container is used, the equipment should be wrapped in paper and surrounded with at least four inches of excelsior or similar shock-absorbing material. All returns must include the return authorization number. Units sent for repair or adjustment **DO NOT** need a return authorization number

Factory Service department
Telex Communications, Inc.
West 1st Street
Blue Earth, MN 56013 U.S.A.

Upon completion of any repair the equipment will be returned via United Parcel Service or specified shipper collect.

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INSTALLATION REQUIREMENTS

Power

100-240VAC, 47-63HZ, 0.4A

Operating Environment

Internal Temperature: 50°F to 95°F (10°C to 35°C)

Humidity: 20% to 80% non-condensing

Rack Mounting

This unit may be installed in a standard 19-inch (483-mm) equipment rack with one rack unit (1.75 inches or 44.5 mm) of vertical rack space with the use of a single unit rack mount kit. Two units may be mounted side-by-side with the use of a double unit rack mount kit. A unit may be cosmetically enhanced for use outside of a rack with a table top kit. See Figure 1 for assembly instructions.

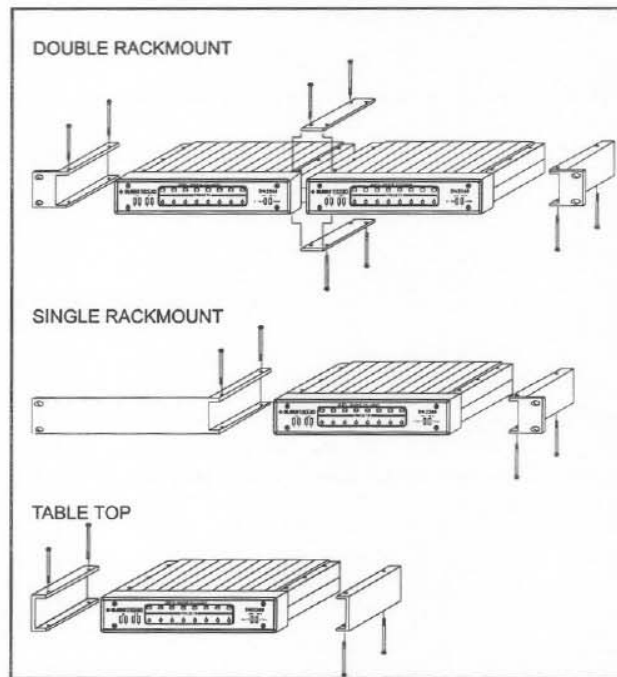


Figure 1 - Optional mounting kit assembly.

SOFTWARE SETUP

Included with your hardware is a CD-ROM. On this are the software and full manuals for the unit. The software is compatible with Windows® 9x/NT (version 4.0). The minimum computer hardware required is a Pentium® PC, 16MB of RAM, 10 MB of hard disk space, CD-ROM drive, 16550 UART serial port, and 16-bit color video.

To install the software and online manual:

1. Close all programs before beginning installation.
2. Insert the CD labeled "DN2360 Software and Manuals" into your CD-ROM drive.
3. Click on the Start button and select Run

4. Type "D:\setup.exe" (Substitute the appropriate drive letter for your system)
5. Click on the OK button and follow the instructions as they appear on the screen.
6. Your software and online manual are now available for use. You can access them by clicking on the Start button and selecting Programs, Klark-Teknik, DN2360.

FRONT PANEL FEATURES

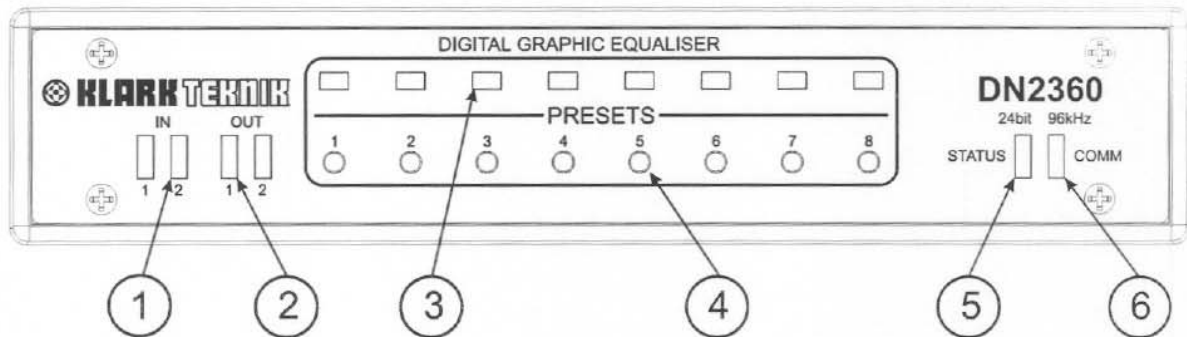


Figure 2 - DN2360 front panel features.

1. Input signal LEDs. Level is monitored after A/D conversion.

Color	Signal Level
Green	From -16 dBu to +4 dBu.
Yellow	Greater than +4 dBu to less than or equal to +18 dBu.
Red	Greater than +18 dBu.

2. Output signal LEDs. Level is monitored before D/A conversion.

Color	Signal Level
Green	From -16 dBu to +4 dBu.
Yellow	Greater than +4 dBu to less than or equal to +18 dBu.
Red	Greater than +18 dBu.

3. Preset LEDs. Indicates which preset is active.

Color	Meaning
Off	None.
Green	Preset active.
Red	Error.

4. Preset buttons. Activates an assigned preset. These are by default assigned to presets one through eight, but the assignments can be changed via software. The buttons are recessed behind the panel and therefore require a pointed object such as a paper clip to depress them.

5. System Status LED. Illuminates when the unit is ON.

Color	Meaning
Green	Unit is operating properly.
Yellow	Unit has registered an internal error.
Red	A DSP audio processing clip has occurred in either channel one and/or channel two.

6. Communications LED. Illuminates only when the unit is sending or receiving data.

Color	Meaning
Green	Normal communications activity.
Red	A communications error has occurred.

REAR PANEL FEATURES

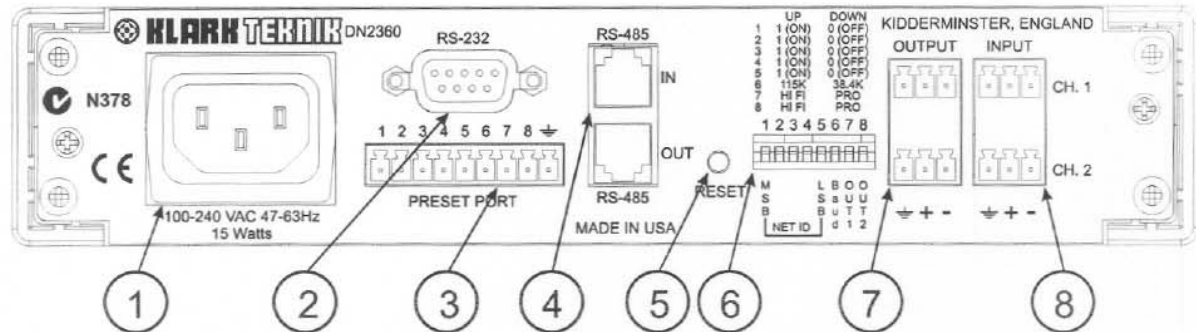
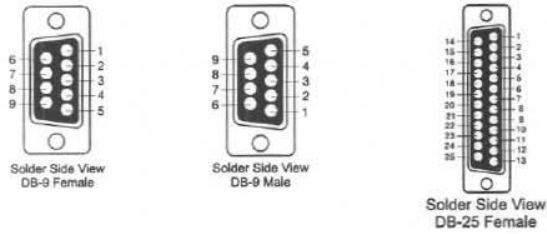


Figure 3 - DN2360 rear panel features.

1. AC Mains connector. Accepts standard IEC type line cord.
2. RS-232 Port. Links the PC to the unit via a female DB-9 connector.
3. Preset Port. Allows external dry or electronic contact closures of 10ms or greater to activate an assigned preset. The first eight pins (from left to right) on the Phoenix connector corresponding to the eight preset buttons and LEDs on the front panel. The ninth pin is the common or ground return for all eight contact closures.
4. RS-485 Port. Allows multiple DN2360s to be connected in a network for control and configuration purposes. A PC capable of RS-485 communications can be connected directly to the network via an RS-232 to RS-485 converter such as the Telebyte 365M. Connectivity is provided by RJ-45 connectors.
5. Reset Button. Depressing the button will cause the unit to reload its software.
6. DIP Switch. Configures the unit's hardware for address, baud rate, and output levels. See the section titled "Hardware Setup" for detailed configuration information.
7. Audio Output Connector. A double stacked three pin Phoenix connector carrying one channel of line level balanced audio per plug.. The top plug is for channel one audio output. The bottom plug is for channel two audio output.
8. Audio Input Connector. A double stacked three pin Phoenix connector carrying one channel of line level balanced audio per plug.. The top plug is for channel one audio input. The bottom plug is for channel two audio input.

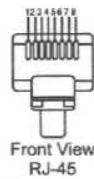
CONNECTOR PINOUTS
RS-232 (DB-9)



DN2360 DB-9 Male PIN #	PC DB-9 Female PIN #	PC DB-25 Female PIN #
2	2	3
3	3	2
5	5	7

Figure 4 - RS-232 cable pinouts.

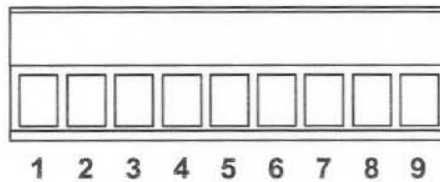
RS-485 (RJ-45)



DN2360 RS-485 In PIN #	DN2360 RS-485 Out PIN #	Function
1	1	RS-485 -
2	2	RS-485 +
3	3	Ground

Figure 5 - RS-485 network connections.

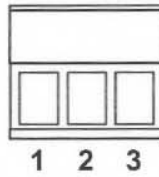
Preset Port (9-pin Phoenix)



- Pin 1 - Preset 1
- Pin 2 - Preset 2
- Pin 3 - Preset 3
- Pin 4 - Preset 4
- Pin 5 - Preset 5
- Pin 6 - Preset 6
- Pin 7 - Preset 7
- Pin 8 - Preset 8
- Pin 9 - Ground

Figure 6 - Preset port connections.

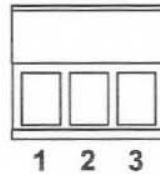
Output (3-pin Phoenix)



Pin 1 - Ground
Pin 2 - High (+)
Pin 3 - Low (-)

Figure 7 - Output port connections.

Input (3-pin Phoenix)



Pin 1 - Ground
Pin 2 - High (+)
Pin 3 - Low (-)

Figure 8 - Input port connections.

GAIN STRUCTURE

The DN2360 has a gain structure that is easily understood. Please keep in mind that the maximum input and output levels are +21 dBu (balanced). See Figure 9.

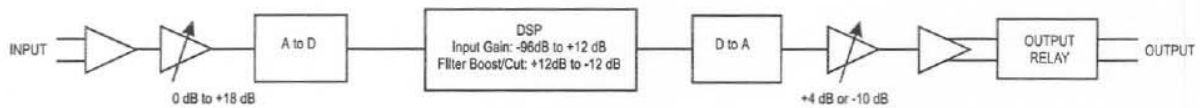


Figure 9 - DN2360 gain structure.

HARDWARE SETUP

Setup of the DN2360 hardware is configured via the rear panel DIP switch.

Configuring the Network Address

The network address is made up of the first 5 switches on the DIP switch. This is decimal address - 1 converted to binary MSB to LSB from left to right (switches 1-5). The master of the network is the PC. Addresses 1 through 32 are slaves to the master. No two units on a given network may have the same address. Refer to Figure 10 for the correct settings. For more information on the networking of multiple DN2360s, please consult the Networking section of the full operator's manual. For information on connector wiring, please refer to the section on connector pinouts.

Network Address	DIP Switch Settings	Network Address	DIP Switch Settings	Network Address	DIP Switch Settings	Network Address	DIP Switch Settings
1		9		17		25	
2		10		18		26	
3		11		19		27	
4		12		20		28	
5		13		21		29	
6		14		22		30	
7		15		23		31	
8		16		24		32	

■ = Switch UP (ON) ☐ = Switch DOWN (OFF)

Figure 10 - Network address DIP switch settings.

Configuring the RS-232 and RS-485 Port

The RS-232 port's baud rate can be configured via DIP switch 6. Placing DIP switch 6 in the down position sets the port for a baud rate of 38.4K baud. Placing DIP switch 6 in the up position sets the port for a baud rate of 115K baud. For information on connector wiring, please refer to the section on connector pinouts. Refer to Figure 11 for the correct settings.

Baud Rate	DIP Switch Settings
38.4K	
115K	



■ = Switch UP (ON)

☐ = Switch DOWN (OFF)

Figure 11 - Baud rate DIP switch settings.



Output Level

The overall level of the channel 1 and channel 2 outputs may be increased or decreased by setting DIP switches 7 and 8. Placing switch 7 in the up position will set channel 1's output for -10 dBu nominal level. This corresponds to normal consumer levels. Placing the switch in the down position will set channel 1's output gain for +4 dBu nominal level. This corresponds to normal professional levels. Refer to Figure 12 for the correct settings.

CH. 1 Out Level	DIP Switch Settings
Pro (+4 dBu)	7 
Hi-Fi (-10 dBu)	7 

■ = Switch UP (ON)

☐ = Switch DOWN (OFF)

CH. 2 Out Level	DIP Switch Settings
Pro (+4 dBu)	8 
Hi-Fi (-10 dBu)	8 

■ = Switch UP (ON)

☐ = Switch DOWN (OFF)

Figure 12 - Audio output level DIP switch settings

PROJECT SETUP WINDOW

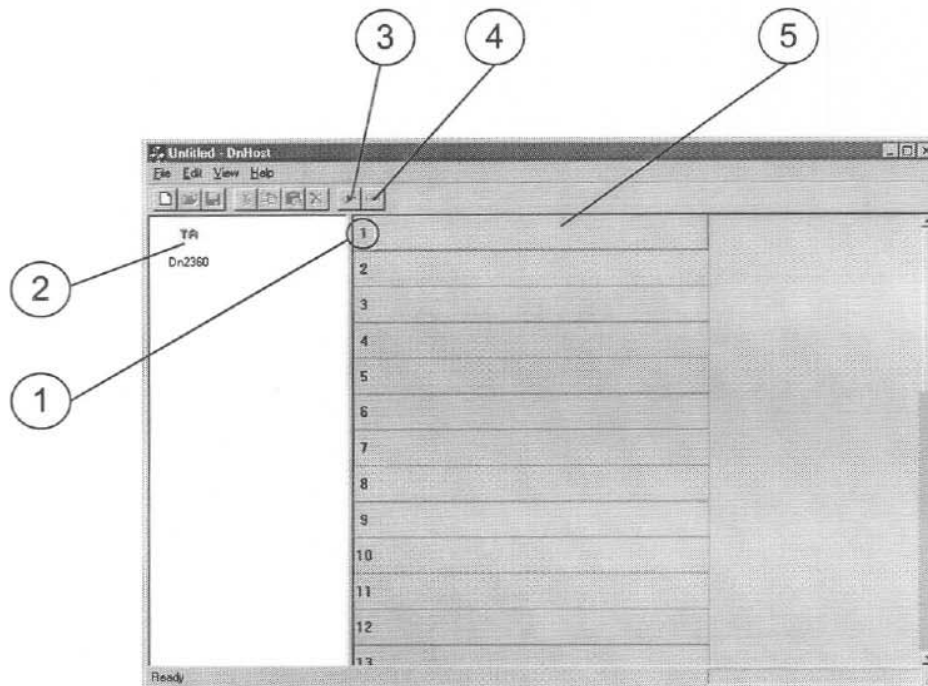


Figure 13 - Project Setup Window

1. Device Address Number

This is the address number of the device to be controlled. The address is set via the dip switch located on the back of the unit. See the section entitled, "Hardware Setup" for more information.

2. Device Icon

There are one or more devices (e.g. EQ's, compressor/limiter, etc...) that can be controlled. Each device type is identifiable by the model number and/or icon graphic. To select the device place the mouse pointer over the desired device icon, hold down the left mouse button, drag the icon to the desired address area and release the mouse button.

3. Communications Port Control

This function opens and closes the communications port on the PC. A left mouse click will activate/deactivate the function.

4. Display Dip Switch Settings

This function when activated sends a message to all devices on the network to display their dip switch settings on their front panels. The switch corresponds to the LED number (e.g. dip switch position 1 = LED 1). An LED that is illuminated represents that the switch is in the up position while an LED that is off represents that the switch is in the down position. After a set amount of time has elapsed the front panel LEDs will begin displaying their normal status information. A left mouse click will activate the function.

5. Device Location

This is where a device icon is dragged and dropped. Double clicking the left mouse button will open the control windows for this particular device.

Software Options

To change software options click on |Edit|, Options. The general tab will allow you to turn off confirmation of replacement or deletion of settings. The Comm tab will allow you to set which communications (serial) port is used on the PC, select the baud rate, and enable or disable the automatic opening of the communications (serial) port on startup of the DnHost software.

Creating A New Project

To create a completely new project do the following:

1. Start the DnHost application, or click on |File| New Project.
2. Drag and drop the various devices to their desired address locations on the network.
3. Adjust the devices as needed. This can be done in real time or offline.
4. Click on |File|, Save, provide a project name, and then click on the OK button.

Creating A Project From An Existing Network

To create a project from an existing network do the following:

1. Connect the PC to the device or network.
2. Run the DnHost application.
3. Click on |File|, Auto Project.
4. Click on |File|, Save, provide a project name, and then click on the OK button.

Modifying An Existing Project

To modify an existing project do the following:

1. Click on |File|, Open Project, and click on the desired project.
2. Make any necessary additions or modifications to the device settings being sure to update presets.
4. Click on |File|, Save. OR Click on |File|, Save As, provide a project name, and then click on the OK button.

Loading An Existing Project

To load an existing project do the following:

1. Connect the PC to the device or network.
2. Click on |File|, Open Project, and click on the desired project.
3. The device(s) should be identified, and the settings should be sent to them.

BASIC FUNCTIONS

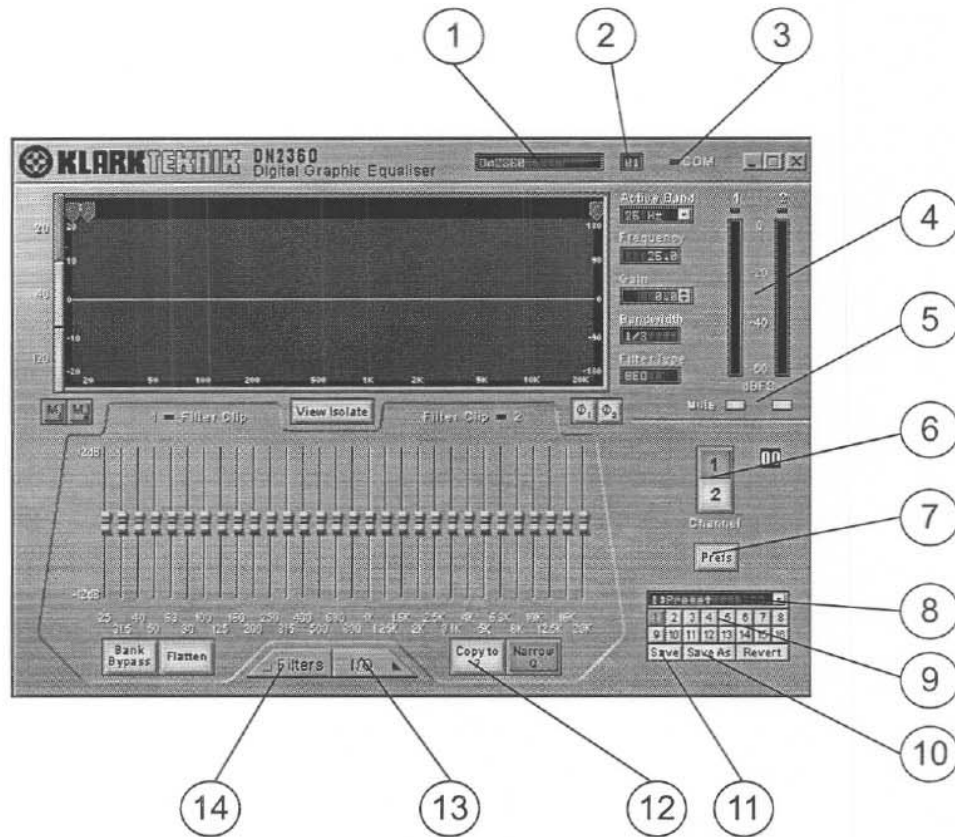


Figure 14 - Basic Window Functions

1. Device Name

This is a modifiable device name box. To modify the name click into the box and then type the desired name followed by the <ENTER> key.

2. Device Address

This reports the address that is set on the dip switch located on the back of the unit.

3. COM Light

This indicates if there is an active communication channel between the window (application) and an actual device.

4. Output Peak Meters

Scaled in either dBu (-40 to +20) or dBFS (-60 to 0). When the dBFS scale is selected, the meter will not factor in data from the output mute, or the analog output level dip switch selection. When the dBu scale is selected, the meter will factor in data from the output mute and the analog level dip switch selection. The scale option is selectable via the preferences window.

5. Output Mutes

This provides a means of muting the digital audio at the output. A left mouse click will activate/deactivate the function.

6. Channel Selector

This function allows you to change which channel is the active channel with respect to changes in filters. A left mouse click on a channel button will select that channel.

7. Preferences

A left click on this button will open the preferences window. The preferences window will allow you to change things such as meter scales.

8. Preset Box

This box indicates which preset is the active preset. The name can be changed by clicking in the box and then typing a name for the preset followed by the <ENTER> key. A list of presets with their names can be obtained by clicking on the arrow located to the right of the box.

9. Preset Push Buttons

The buttons numbered 1 through 16 will allow you to select the presets. To select a preset, click on the button whose number corresponds to the desired preset.

10. Preset Save As

This button allows you to take a snap-shot of all the settings in both the Filter and I/O windows. To perform a Save As, click on the Save As button and then click on the preset button corresponding to the preset you wish to assign.

11. Preset Save

This button allows you to take a snap-shot of all the settings in both the Filter and I/O windows. Clicking on the Save button will save the settings to the currently selected preset.

12. Copy to....

This button allows you to copy the current settings from the current active channel to the other channel. For instance: While in channel 1, clicking on the Copy to 2 button will copy channel 1's settings to channel 2.

13. I/O Window Selection

Clicking on this button will activate the I/O controls window.

14. Filters Window Selection

Clicking on this button will activate the Filters controls window.

FILTER WINDOW

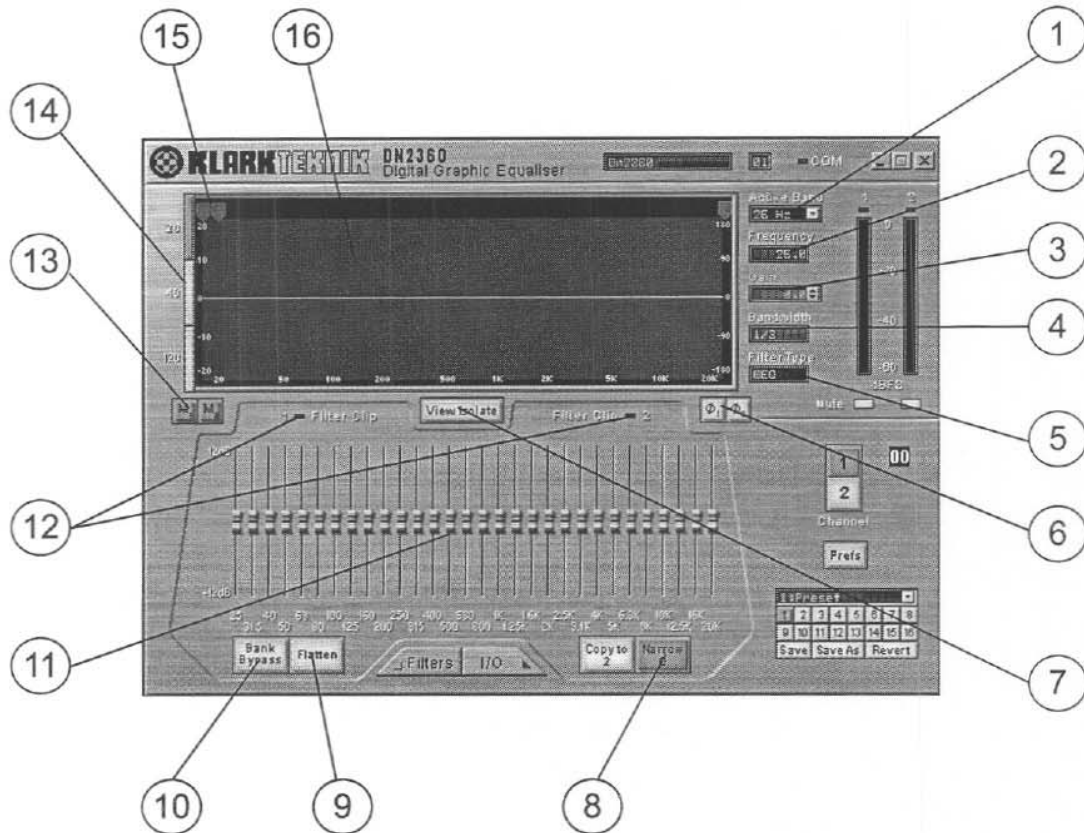


Figure 15 - Filter Window Functions

1. Active Band Box

This allows you to select the active filter band. To select the band click on the arrow to the right of the box and then click on the desired filter band in the list.

2. Frequency

This box displays the center frequency of the EQ/filter. When using the variable filters A, B, or C you can click into the box and type the desired frequency followed by the <ENTER> key to set the filter's exact frequency. When using just the graphic EQ bands, the box will display the selected band's center frequency and cannot be modified.

3. Gain

This box allows you to adjust the boost or cut of a filter or EQ band. To adjust the gain, click on the up/down arrows located next to the box to increase or decrease the gain. The gain can also be adjusted by clicking into the box and typing the desired amount of boost or cut followed by the <ENTER> key. The amount of boost or cut can be changed in either 0.5 or 0.1 dB steps.

4. Bandwidth

This box allows you to see and/or adjust the bandwidth of the filters and EQ bands. When working with the graphic EQ bands, the bandwidth is displayed as either 1/3rd or 2/3rd octave. When using the variable filters A, B, or C as parametric or notch type filters you can click on the arrow located to the right of the box and select the desired bandwidth from the list.

5. Filter Type

This box displays the selected filter type. When working with the graphic EQ, the filter type will be listed as GEQ. When using the variable filters A, B, or C you will be able to click on the arrow located to the right of the box and select the desired filter type from the list.

6. Filter Phase Response Buttons

These buttons will allow you to display the phase response of channel 1 and/or channel 2. Clicking on a button will activate/deactivate the phase response display for the channel number that corresponds to the one on the button.

7. View Isolate

This function allows you to view the response (amplitude and/or phase) of a single filter. A left mouse click activates/deactivates the function.

8. Narrow Q

This button allows the selection of Narrow Q (1/3rd octave) or Wide Q (2/3rd octave) bandwidth response for the graphic EQ bands. The selected bandwidth can be viewed in the bandwidth box while a graphic EQ band is selected.

Note: A true 2/3rd octave graphic EQ would have fewer bands available for use. It is important to note that due to summing a 30 band 2/3rd octave graphic EQ provides an overall smoother response than a 30 band 1/3rd octave constant Q graphic EQ.

9. Flatten

This function will set all graphic EQ bands to 0 dB. It does not affect the variable filters A, B, or C. A left mouse click will activate this function.

10. Bank Bypass

This function will remove all variable filter and graphic EQ processing from the audio in the channel without destroying the settings. A left mouse click will activate/deactivate this function.

11. Graphic EQ Bands

There are 30 EQ bands providing +/-12 dB of boost/cut. To adjust an EQ band place the mouse pointer over the fader for the band of interest, hold down the left mouse button, and move the mouse up or down. You can see how much boost or cut you are adjusting by looking in the gain box located to the right of the response graph. When you are finished adjusting the band release the mouse button. For finer control you can simply click on the fader, click into the gain box, and type the amount of boost or cut followed by the <ENTER> key.

12. Filter Clip LED

This provides a means of determining if you have run out of audio headroom due to filter processing.

13. Filter Magnitude

This function provides a means of activating/deactivating the amplitude response graphs for the two audio channels. The active channel's response will be the thicker of the two green lines. A left mouse click on the button whose number matches the channel of interest will activate/deactivate the channel.

14. Response Graph Amplitude Scale

The amplitude scale of the filter response graph is adjustable. A left mouse click on one of the three buttons will set the scale to either +/- 20 dB, +/- 40 dB, or +/- 120 dB.

15. Adjustable Filter Bands A, B, and C

Each channel has three separate filter bands. Each band can be independently configured as one of four filter types:

Filter Type	Frequency Range	Range of Adjustment
Peaked Highpass	16 Hz to 630 Hz in 0.5 Hz steps	0 dB to +12 dB in 0.1/0.5 dB steps
Peaked Lowpass	2.5 kHz to 25 kHz in 0.5 Hz steps	0 dB to +12 dB in 0.1/0.5 dB steps
Parametric EQ	20 Hz to 25 kHz in 0.5 Hz steps	-12 dB to +12 dB in 0.1/0.5 dB steps
Notch	20 Hz to 25 kHz in 0.5 Hz steps	-48 dB to 0 dB in 0.1/0.5 dB steps

To move a filter place the mouse pointer over the letter of the band of interest, hold down the left mouse button, drag the filter to the frequency of interest, and then release the mouse button. You can also adjust the frequency of a filter band by clicking on the band, clicking into the frequency box, and then type the desired frequency followed by the <ENTER> key.

To activate/deactivate a filter band double click the left mouse button on the letter of the band of interest. An active filter band will appear green while an inactive filter band will appear gray.

To adjust the amplitude of a selected filter band place the mouse pointer over the round dot attached to the vertical band line, hold down the left mouse button, and drag the dot up or down. When the desired amount of boost/cut is reached, release the mouse button. The amplitude can also be adjusted by clicking into the gain box and then typing in the desired amount of boost/cut followed by the <ENTER> key.

To adjust the bandwidth of a selected parametric EQ or notch filter band place the mouse pointer over the round dot attached to the vertical band line, hold down the right mouse button, and drag the dot left or right. When the desired amount of bandwidth is reached, release the mouse button. The bandwidth can also be adjusted by clicking on the arrow located to the right of the bandwidth box and then selecting the desired bandwidth from the list that appears.

16. Filter Response Graph

This graph shows the composite response of the amplitude and/or phase of channel 1 and/or channel two filters. This includes all of the selectable filters and the graphic EQ filters. The response of a single filter band can be viewed by selecting the filter and then clicking on the View Isolate button.

I/O WINDOW

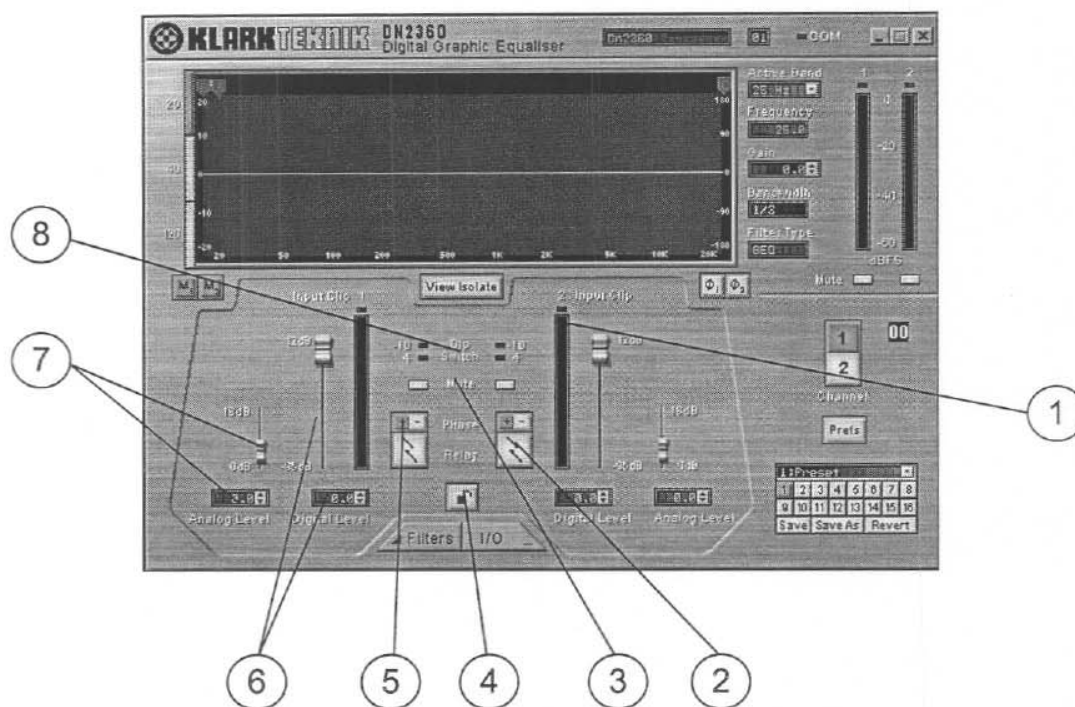


Figure 16 - I/O Window Functions

1. Input Peak Meters

Scaled in either dBu (-40 to +20) or dBFS (-60 to 0). The meters are capable of monitoring either pre or post fader. The scale and pre/post fader monitoring options are selectable via the preferences window.

2. Output Relays

These provide a hardware mute. When the relays are closed the audio is routed to ground. This provides the mute state. When the relays are opened the audio is allowed to leave the unit. A left mouse click will activate/deactivate the function.

3. Input Mute

This provides a means of muting the digital audio at its input. A left mouse click will activate/deactivate the function.

4. Dual Control Select

This provides a means of controlling both channels at the same time. When activated the following controls are linked: analog and digital input levels (including faders), input mute, output mute, and output relays. All controls will assume the status of the channel 1 controls on initial activation. A left mouse click will activate/deactivate the function.

5. Input Polarity

This provides a means of identifying and/or correcting cable miswiring. A left mouse click will change the channel's polarity to the opposite state.

6. Digital Input Level

This provides a means of adjusting the input level in the DSP from -96 dB to +12 dB in 0.1/0.5 dB steps. To adjust the level, place the mouse pointer over the level fader, hold down the left mouse button, move the mouse up and down, and release the mouse button when the desired level is reached. The level can also be changed by clicking on the up/down arrows on the box next to the digital input level box, or by clicking in the digital input level box and typing in the desired level.

7. Analog Input Level

This provides a means of adjusting the analog input level from 0 dB to +18 dB in 0.5 dB steps. To adjust the level, place the mouse pointer over the level fader, hold down the left mouse button, move the mouse up and down, and release the mouse button when the desired level is reached. The level can also be changed by clicking on the up/down arrows on the box next to the analog input level box, or by clicking in the analog input level box and typing in the desired level.

8. Output Level Dip Switch Settings

This provides a means for identifying the dip switch settings of switches 7 and 8 on the back of the DN2360 without having to physically look at the back of the unit.

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