

XTBA AUDIT

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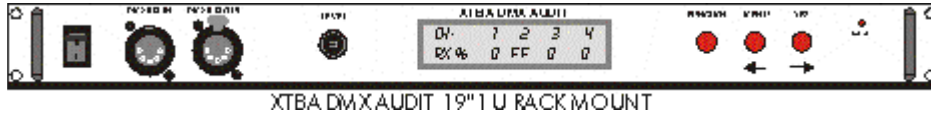
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XTBA Audit



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Software V1.51

The XTBA DMX Audit is designed to provide detailed DMX information from any DMX source. It can be used at the end of a DMX line but is primarily designed to be in line with the DMX stream to provide information and allow channels to be checked and modified 'on line'.

Unmodified information is simply passed through the Audit unaltered. Using the merge or replace facility moving lights, scrollers and dimmers can be checked at any time without the need to access the control desk or interrupt focusing or fit ups.

The Audit uses a control pot and a simple three button interface to access all the features via the 20 character, 2 line back lit LCD screen.

Software and hardware revisions – see the last page of the manual.

Installation

The incoming DMX line is terminated and the output is a retransmitted copy of the input except where channels have been modified in receive – merge/replace or in transmit menu. In the event of power failure the unit will pass data through unaltered via the relay input override.

Operation

On power up the Audit will display the DMX parameters. (see parameter menu) and DMX data will pass through the Audit unaltered. In all menus and sub menus data will pass through the Audit.

Through data is only turned off when using the transmit functions or cable test for obvious reasons.

Pushing the Function key will set the audit to the top of the menu tree into the receive menu.

To the right of the screen the three input buttons control what the screen will do.

Function Main functions

Left / Menu Scroll left / sub menus from functions

Right / Yes Scroll right / yes to activate functions or sub menus

Pushing the Left button in RX mode sends the display counting to the left. Holding it down will cause the screen to scroll until the button is released.

Unsurprisingly the Right does the same but in the other direction. The channel numbers will wrap around in either direction from 1 to 512 going left and 512 to 1 going right. Pushing both Left and Right keys simultaneously will set the display back to channel one.

Data LED

The data LED is solidly lit when DMX data is found on the input. In all transmit modes the data LED will slowly flash. In parameters mode the LED will flash quickly if an error is detected.

Menu

From the RX screen pressing the function key will enter the functions menu loop, by repeat pressing the function key the screen will go to the next function.

Within most of the main function menus there are sub menus. If a function has sub menus the lower line of the display will show ' or press menu'.

To go to the next sub menu (if available) press the menu key to get to the next sub menu function. If this is the required function press the Right Yes key.

In any of the sub menus pressing the function key will return to the top of that function menu. Pressing the function key once any of the functions are running will take you back to the top of the menu structure, the receive screen.

Main Function Key Loop

Receive / Transmit / Parameters/ User Options / Smart Fix / Cable Test / Back to Receive

Receive Functions sub menus

Receive / Receive and Merge / Receive and Replace / Find Channels / Flicker Finder / Back to Receive

Receive (RX)

In this mode data can be monitored but not altered and viewed by using the left and right keys. The LCD screen displays channel numbers on the top line and channel levels on the lower line.

On the lower left side of the display the Audit mode is displayed in this case RX (for receive only) followed by % or D to show percent or decimal display.

Receive and Merge (RXM)

In this mode the display will show RXM in the lower left of the screen.

Multiple channels can be stored in the Audit and merged with the input DMX by the use of the control pot and the left and right keys.

The first incoming channel on the left of the display is the current merged channel in HTP (Highest Takes Precedence) mode. Once a merge channel is set the left and right keys can be used to select the next channel to be sent to the Audit's merge memory and then merged.

If the left or right keys are used to select the next merge channel '*P' will be displayed in the upper left of the LCD display. To take control of the channel on the LCD move the control pot + or - 2%. (the '*P' will then disappear) and the pot can then be used to set the next merge channel level.

This '*P' lock out is to prevent the pot being set and the screen scrolled as this would cause all channels scrolled through to be set at the pot level. On exit of the receive and merge function all stored replace channels will be set to zero.

Receive and Replace (RXR)

In this mode the display will show RXR in the lower left of the screen.

This function works as in the merge above but the channel is replaced rather than merged. This allows channels to be blocked if the control pot is set between 1 – 100% or 3 – 255 decimal.

Channels not set higher than 1% by the control pot will pass through unaffected. On exit of the receive and replace function all stored replace channels will be set to zero.

Find First

The find first facility allows all the channels at a pre-set level to be found. The level to be found is set using the control pot between 0 and Full (FF).

The first channel found at the set level is displayed in the lower right of the screen. If no channels at the set level are found the display will show ***.

By pressing the right key the next channel at the set level will be found. If there is only one channel at the set level the screen will remain unaltered.

Note that in the % setting the Audit searches for a defined value for each percentage setting. This value is found from an internal table using the standard DMX look up values.

However if the received value is set from a encoder wheel or fader on the control desk this value (showing on the desk as for example 50%) may be one of three possible decimal values. Values entered on the control desk keypad should however be true. (Like the chalice from the palace!)

Flicker Finder

With the Flicker Finder sub menu displayed on the top line of the screen, when the Right Yes button is pressed the Audit will take a snapshot of the data on the line and enter compare mode. The incoming data is compared with the Audit's memory word by word. If the incoming DMX is changed the upper line of the display will change to ERROR DIMMER and the lower line will display the first dimmer with an error.

The left side figure REF is the level recorded in the Audit. The right side figure REC is the received level which caused the error. Pressing the Yes key will move to the next error (if any) and holding down the Yes key will auto repeat.

Once at the end of the received errors the display will loop back to the first error. The Audit Flicker Finder always displays levels as a decimal values irrespective of the percent or decimal setting. Pressing the function key from this screen will take the unit back to the received screen.

Transmit Functions sub menus

Transmit / Autofade / Transmit Wave / Adjust All / Back to Transmit

Transmit (TX)

In this mode TX will show in the lower left of the screen. The incoming DMX is not passed through the Audit to the output. The first channel level displayed on the left of the LCD can be controlled from the control pot. Multiple channels can be transmitted by the use of the control pot and the left and right keys.

The first channel on the left of the display is the current controlled channel. Once a transmitted channel is set the left and right keys can be used to select the next channel to be copied to the Audits transmit memory.

If the left or right keys are used to select the next transmitted channel '*P' will be displayed in the upper left of the LCD display. To take control of the channel on the LCD move the control pot + or - 2%. (the '*P' will then disappear) and the pot can then be used to set the next transmit channel level.

On exit of the receive and merge function all stored replace channels will be set to zero.

Autofade (TXA)

In this mode one channel will loop between zero and full and back to zero. The looping channel can be selected by using the left and right keys to any channel. TXA will be displayed in the lower left of the LCD. The speed of the loop can be controlled by using the control pot.

Transmit Wave

This facility allows four consecutive channels to transmit a 'Mexican wave'. The four channels can be moved anywhere in the 512 stream by using the left and right buttons. The speed of the wave can be controlled by using the control pot.

Adjust All

Entering Adjust All gives control to all 512 channels to one variable level. Following pressing the Yes key the Audit will prompt 'ARE YOU SURE'. Pressing the Yes key will then enter the Adjust All mode. Pressing the Function key will return to the top of Functions menu. On entry the level is set to zero.

In this mode the control pot is not used, as sending all 512 dimmers to full in a hurry is a good way to become friends with the local electrical supplier.

To control the level of all the channels in the 'Adjust All' mode the Right key controls level up and the Left key controls level down. There is a time delay in the up/down so to get to full from zero should take about ten seconds. Hopefully this should give enough time to figure out if the main fuse is about to blow.

Parameters sub menus

Parameters / Audit ? back to parameters

Parameters Functions

In Parameters Mode the display is changed to display DMX timings and values. The top line of the display shows what is being measured the figure below is the value, as follows:

BRK DMX Break Time in micro seconds (μ s)

MAB Mark after break time in micro seconds (μ s)

SCD Start code in decimal

DIM Number of channels

SYS This will display OK all of the above are within the limits of DMX. If the Audit receives data that is outside the DMX512 specification the display will change to ERR and the green led will flash quickly.

When the SYS parameter shows ERR by pressing the right YES key, ERR will be displayed below the parameter with the error.

Note DMX512 that is outside the specification will still be passed through the Audit in when in any menu screen mode and in the RX and Parameter mode.

Audit Mode

The Audit Mode is designed to monitor the incoming DMX and look for and record up to 255 errors per parameter checked. This can be useful for long term testing of systems as in the Audit Mode the unit can be left on all day and errors checked.

On pressing the YES key when Audit Mode is displayed 'PRESS YES TO START' will be displayed. On pressing the YES key the Audit will start the test. To end the test press the MENU key the display will change to display the following. To escape from the Audit Mode in any screen pressing function will take you back to the Receive screen.

BRK Number of break errors – breaks that are less than 88µs
MAB Number of mark after break errors – mab less than 8µs
BIT Number of bit errors – second stop bit missing
SCD Number of start code errors – start code not zero
DIM Number of dimmer errors – where the packet length exceeded 512

During the test if any errors occur the data led will wink quickly. You can then chose to view the number of errors (by pressing MENU) or let the test continue.

If any off the checked errors reaches 255 the Audit will automatically switch to view the recorder number of errors and the test will end. In practice any major errors will spotted using the main Parameter screen. The Audit Mode will detect any intermittent errors.

User Options

Pressing the Yes key when User Options is displayed enters the User Options screen. This screen allows the level display in Receive and Transmit to be either displayed in percent or in decimal. Hold the last frame on data loss or stop output. Automatically switch back. Store settings on power down.

On entering the screen will display the following:

```
D?% HLF AUT STR  
>%< NO NO NO
```

This screen shows the state of the user options on entry. Options not set are shown as 'NO'. Set options shown as 'YES'. To alter any of the user options pressing the menu key will drop down to the first menu. Pressing the Yes key in each option will toggle the function.

Options as follows:

D?% Display in decimal (D) or (%) in receive or transmit functions.

HLF If set 'ON' - In the event of incoming data loss, hold the last correctly received DMX pass and continue to output. If this function is set then 'h' will appear following the CH: in the receive screen.

If set 'OFF' – Do not output data on data loss and turn off output.

AUT If set 'ON' - When hold last frame is active if DMX data returns, automatically switch back to allow the incoming data to pass through the unit. If data is lost and the unit is set to receive functions the screen will display SENDING LAST DMX / AUTO RECOVER SET and the data led will flash as the Audit is now transmitting.

If set 'OFF' - When hold last frame is active if DMX data returns, do not switch back until prompted by pressing the Function Key. In this mode the screen will display SENDING LAST DMX / FUNCTION TO ESCAPE and the data led will flash as the Audit is now transmitting.

STR If set 'ON' Store settings in memory on power down and restore on power up. If set 'OFF' Do not store settings on power down, default settings on power up.

Note Hold last frame is only active if the Audit is in any of the receive modes. Once data has returned the Audit will revert to the receive screen and any merge or replace data will be lost. The User Option settings only take effect when the option menu is exited by pressing the function key back to the receive menu screen.

Smart Fix

Pressing the Yes key in the Smart Fix menu will enter the Smart Fix sub menu. Pressing the menu key will cycle through the Smart Fix options. Pressing the Yes key will enter the function. The Smart Fix facility is to allow some incompatible DMX systems to hopefully talk to one another. The incoming DMX (however rough or odd it may be) is stored into the Audits memory and a new DMX frame transmitted with different timings.

Transmitted parameters as follows:

Send Fast DMX - Break = 100 μ s, Mab = 10 μ s, IBT = 9 μ s, updates = 42 p/s
Send Lazy DMX - Break = 122 μ s, Mab = 34 μ s, IBT = 30 μ s, updates = 30 p/s
Send Slow DMX - Break = 122 μ s, Mab = 44 μ s, IBT = 48 μ s, updates = 24 p/s

Hopefully one of the three types of DMX will allow the systems to communicate.
Note Hold last frame is not available in Smart Fix mode.

Cable Test

By plugging a DMX cable between DMX IN and DMX OUT cable integrity can be checked. On entering the cable test by pressing the Menu Key the screen will prompt 'Test Pins 4+5' Pressing the Yes key will test all five pins of the cable. Pressing the right sub menu key will test only pins 1,2 and 3.

On entering cable test the Audit checks for live data on the input (e.g. you picked up the wrong cable end) and will let you know on the display if data is still on the input.

The cable test checks continuity and pulses data in order to check for excessive cable capacitance. Missing pins, swapped pins or shorted pins will be reported back on the display. The Audit can't tell the difference between swapped, shorted or missing pins but will report back errors.

So a missing pin 1 will report back Error Pin 1. A shorted pin 1 to pin 2 will report back as ERROR PINS 1,2. A reversed wired cable from the many myopic cable makers there are out there will report back ERROR PINS 12345

Following the cable test the Audit will prompt to 'test again'. Pressing Yes will test again in the 3 pin or 5 pin mode selected. Pressing Function will return to the top of the menu loop.

Other Functions

In addition to the features above the Audit has a couple of other features that are not part of the main system but might be useful.

Self Test – By holding down the function key during the start up message the Audit will enter self test. The self test consists of running through some ASCII characters on the LCD to ensure that it and its ram are working ok. The Audit will then test its own ram and report any errors.

Ram errors are unlikely but if the PSU is running low the controller is feeling ill they might occur.

The Audit will then test the transmit and receive systems by firing DMX from the output to the input. To this end it will ask for a cable to be plugged between the input and output. Pressing the Yes key will then activate the test and report back.

Dirty DMX – The Audit can transmit slightly non standard DMX or invalid DMX in transmit only mode. When in the main transmit menu press and hold in the function key and press menu key. On button release the Audit will enter the Dirty DMX screen. Pressing the menu key will toggle between Dirty DMX and Missing Stop Bit.

Pressing Yes will then enter transmit in either mode.

Dirty DMX

The DMX is valid data under the rules of DMX but can give problems to receivers, so it is included as a test for receivers. The normal transmit screen will show the addition of a 'D' next to 'TX' in Dirty DMX.

The DMX transmitted is standard in terms of break, mab and packet length but roughly every 2.4 seconds the Audit creates a 500ms interbyte delay between random data words. This emulates certain consoles that randomly refresh their displays or do 'house keeping' part way through a DMX frame.

Missing Stop Bit

The DMX transmitted is standard in terms of break, mab and packet length but roughly every 2.4 seconds the Audit creates a missing second stop bit at the end of a random data word. Many receiving devices will ignore this error as they only check for a single stop bit but some transmitter devices can sometimes be 'frugal' with the second stop bit so it is good to know what might happen.

The second stop bit is a requirement of DMX512. The normal transmit screen will show the addition of a 'S' next to 'TX' in Missing Stop Bit.

POWER SUPPLY

The mains input to the transformer is via a 2A a/s fuse. A spare fuse is provided in the input connector block. The DMX Audit is fitted with an internal PCB voltage select switch and is switch selectable 100 - 135VAC or 210 -250VAC

19" RACK MOUNTING

The XTBA DMX Audit is provided with a pair of 'ears' for fitting into a 19" rack frame. The ears are fitted to the unit by removing the two screws on either side at the front of the unit. The stick on rubber feet (used when the unit is free standing) will need to be removed from the underside of the unit.

Technical Specifications 19" Rack.

Dimensions 265/290mm inc. front handles x 40mm

Weight 4.5 Kg

Power 110 to 250V Internal select switch. Nominal 2A 240V AC

Data DMX512 1986/1990

Pin Configuration Pin 1 Common, Pin 2 minus data, Pin 3 plus data.

Pins 4 and 5 are looped through.

Software revisions V1.5/V1.51 from 1.4

Version 1.5 is a complete rewrite of the original versions of the Audit software. The Audit now supports full 512 channel operation in merge, replace and transmit channel functions.

The flicker finder section has been improved to detect flicker on any channel in the 512 range and will now allow multiple errors to be detected and viewed.

Auto fade and wave functions in transmit now have speed control via the control pot and the wave function will now work across the break. Find First is now

Find Channels as it will now allow multiple channels at any level to be found.

New features include a Smart Fix menu that allows the Audit to be used as a clean up unit as DMX can be received and retransmitted in three flavours. In addition the Audit mode has been added for long term testing of DMX systems. There is one resistor change required in the hardware to upgrade from 1.4 to V1.5.

1.51 – Addition of Missing Stop Bit in Dirty DMX

General Information

This product may only be used for controlling dimmers and moving lights. It must not be used in DMX512 applications for stage machinery or pyrotechnics. Using the product out of these specifications will remove all responsibility from the supplier.

CE Declaration of conformity

XTBA declares that this equipment meets the requirements of the EMC Directive 89/366/EEC.



WEE/FC2753ZS