XTBA DMX TO DALI 64 CHANNEL CONVERTER - DIN RAIL

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XTBA DIN RAIL DMX/DALI CONVERTER
64 channel

RDM compatible – see RDM Section

If you are unfamiliar with DALI systems please read the DALI address programming and DALI speed note at the end of this document.

The XTBA DMX/DALI unit will convert up to 64 channels of DMX to DALI, the DALI protocol limit. The 4 module DIN rail enclosure provides a simple and low cost solution for DMX to DALI interfacing. The DALI output is short circuit protected to prevent accidental damage.

In normal operation the red power LED will be lit. If valid DMX is being received and the address is set between 1 and 512 the green data LED will be lit. If the DMX address switches are out of range the data LED will flash (except in special functions see below). The starting address of the DMX channels to be converted is selected via the address switches 1 – 512.

Manual mode – 6**
Manual mode will allow for installation testing and fault finding without the need for a DMX input.

If the hundreds address switch is set to six the card will enter manual mode, provided that the tens and units are set within range (1 to 64). If the tens and units are out of range the green LED will flash quickly to indicate an error. If DMX is present it will be ignored. The channel to be controlled is selected via the tens and units address switches between 1 to 64. In this mode the green LED will flash slowly and the selected channel will be set to full.

Power up options
The following options are only available when the address switches are set before the unit is powered up. This prevents the options being accidentally entered during normal operation. Setting the address switches beyond 512 when the unit is powered will have no effect, but the green LED will flash to indicate an invalid address.

DALI CURVE OFF – 7**
Output Curve
Due to the non linear nature of a DALI ballast the first 40% of the input level has little or no effect on the light output. To give a more linear output with DMX the DMX/DALI card has a software look up curve table to give greater control during any fades or level setting.

By setting the hundreds address switch to 7 (the tens and units are ignored) and powering up the unit the internal lookup table is turned off. This will then convert DMX directly to DALI without the curve profile.

DALI Data Length – 8**
Due to the relatively slow data update rate of DALI against DMX the length of the DALI packet can be shortened – increasing the DALI data refresh speed if less than 64 channels are being used. The number of channels transmitted can be altered by setting the hundreds address switch to eight and the number of channels to be transmitted set using the tens and units address switches. The card is then powered up. The number of DALI ballasts transmitted is then stored in non volatile memory.

GLOBAL SEND on length 1
When the data length is set to 1 the converter will send a single DALI channel. In this mode the ballast address is automatically set to Global Mode e.g. any ballast no matter its address will respond to channel DMX channel 1.
By using the length1/Global Mode the DALI output allows multiple ballasts to be control LED at maximum speed.

DEFAULT MODE - 000
Setting the address switches to 000 on power up will reset the unit to full 64 channel operation, curve set on and store this setting.

Programming mode - 999
On power up if the all three address switches are set to nine (999) the card will enter program mode and the power and data LEDs will alternate. This mode can only be entered on power up.

In this mode the red and green LEDs will alternate to warn you are in programming mode.

Once powered up the tens and units address switches can then be set to the ballast address required – between 1 through 64. If the address is in range the green data LED will turn off and the red LED will flash.

By turning the hundreds address switch from 9 to 8 any ballasts attached to the DALI output will be programmed and the green and red LEDs will alternate three times. By switching the hundreds address switch back to 9 the next ballast can connected and then programmed – by setting the hundreds address switch back to 8. This mode allows multiple ballasts can be programmed before installation simply by connecting DALI data to them with the card in programming mode.

This might seem a little cumbersome but hopefully it ensures that a finished installation can not be accidentally reprogrammed.

<u>NOTE</u>
This operation needs to be carried out on individual ballasts prior to installation. Entering this mode when all the ballasts are connected will set all the connected ballasts to a single address – which was probably not the idea! For this reason this function is also only available following power up of the card. Setting the address switches to 999 during normal operation will have no effect.

Any ballast connected will be reset back to default values and then programmed as follows:

Ballast address = set from the tens and units address switches
No max or min levels
System failure level = 0
Power on level = 3%

Treatment of channel zero
The DALI standard offers a ballast address range between ballast 0 and 63 (64 ballasts in all). DMX has no address zero so it would be unable to talk to any ballast with address zero. So in order to keep the numbering simple (honest!) any ballast programmed as 64 will in fact be programmed as ballast address zero. So when DMX channel 64 is received by the card its level is converted and transmitted to DALI address zero.
This all sounds a little potty but once the system is programmed and installed it will be invisible to the user and does give the full 64 channel range.

Output Monitor
The DALI output is monitored by the micro and if a short is detected will turn off the output. The red power LED will flash to indicate a problem. The system will try to restart the output until the short is removed.

DIN ENCLOSURE PIN OUT - as marked on the unit

TERMINAL	FUNCTION
23	DALI OUT + note DALI is not polarity sensitive
22	DALI OUT COM note DALI is not polarity sensitive
19	MAINS EARTH not required but available for loop through
18	MAINS NEUTRAL
17	MAINS LIVE
15	DMX COMMON – XLR PIN 1
14	DMX MINUS – XLR PIN 2
13	DMX PLUS – XLR PIN 3

TERMINALS 24, 21, 20 and 16 not fitted

Specifications
Size = 4 DIN MODULE, WIDTH = 70mm
DMX Input = DMX 1986, 1990.
DALI Output = 200ma @ 15 volts
DALI Input (data return) = not used as DMX can not issue commands.
Mains Input = 120 or 230VAC (see product label) - Internally fused @ 2A

DMX/RDM
DMX/RDM (Remote Data Management) allows a suitably equipped DMX
controller to find, set and monitor functions of the DMX to DALI converter.
By using RDM the address can be remotely changed, product information,
software version and system status found.

RDM Commands supported:
GET/SET Device ID, Reset Device, Power State, Self Test, Self Test
Description, Device Label, Factory Defaults, DMX Personality, Personality
Description, DMX Start Address.

GET Support Parameters, Parameter Description, Device Info, Product Detail
ID, Device Model Description, Manufacturer Label, Software Version.

DMX/RDM is fully compatible with standard DMX512.
If the control desk is not RDM it will not send a RDM request so the DMX to
DALI converter can't respond.

DALI address programming
Before installing DALI ballasts they need to have their address programmed. Unlike DMX512 there are no address switches so the ballast needs to be powered up and connected to a suitable programmer. Fortunately you are in possession of such a programmer (lucky you) as it comes as part of the software with this converter. See programming mode 999.

Ballasts that have not been programmed are normally supplied in Global mode e.g. they will only respond to a Global command. If you install the ballasts without programming you will end up with a giant single channel installation and you will have to take them out one at a time, program them and then put them back.

DALI Speed
DALI is a fine protocol for what it was originally designed for. What it was not designed for was fast fades and chasing. Once you have programmed the ballasts connected the converter you are ready to start dimming. Do not be surprised if fast fade times e.g. less the 10 seconds result in a fade that is little 'steppy'. This is not a problem with the XTBA converter but a function of data rate.

DALI is 200 times slower than DMX as a result the 2 second fade DMX can do will be translated into a two or three step fade. A way around this problem is to reduce the number of channels transmitted using the 8** mode on the converter. Send 32 channels rather than 64 will double the data update rate.

If the converter is being used to control multiple ballasts set to a single address e.g. house light control, then by setting the converter to length 1 Global mode will be sent allowing for maximum data speed.