XTBA DIN RAIL DMX to DALI CHANNEL or GROUP CONVERTER 64 channel / 16 groups – 80 units

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Software V72 - RDM compatible

XTBA

Unit 2 The Old Curatage
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XTBA DIN RAIL DMX to DALI CHANNEL or GROUP CONVERTER 64 channel / 16 groups – 80 units

V72 or later - RDM compatible – see RDM Section

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

The XTBA DMX to DALI unit will convert up to 64 channels of DMX to DALI levels, the DALI protocol limit or can be set to control 16 DALI Groups. The unit can also be configured for 'emergency mode' so that in the event of DMX loss all channels will be set in broadcast mode to a user set level. 'Failure mode' can also be set on DMX loss. Other user settings are also available.

Power Output

The converter provides power to the DALI buss so no external power supply is required. A maximum of 80 DALI receivers can be interfaced to the converter. If additional DALI receivers are required a second converter can simply be added with its own DALI data line and DMX looped through. If more receivers are required using a single converter, the converter can be supplied to use an external DC power supply.

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.

Group Mode Display – If the unit is set for Group Mode (see options below) both the data and power LEDs will flash twice on power up.

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 converter will enter manual mode, provided that the tens and units are set within range (1 to 64 if in channel mode or 1 to 16 if in group mode). 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 or group to be controlled is selected via the tens and units

address switches. In manual mode the green LED will flash slowly and the selected channel or group 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

(Except in 6** mode above) when the unit is powered will have no effect, but the green led will flash to indicate an invalid address. Power up options once set are retained by the converter. Multiple options can be set one at a time powering down between each option.

DALI CURVE OFF – 701

Due to the nonlinear 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 address switches to 701 and powering up the unit the internal lookup table is turned off. This will then convert DMX directly to DALI without the curve profile.

GROUP MODE - 702

The DMX to DALI converter can be switched into converting DMX to DALI groups rather than DALI channels. By setting the address switches to 702 and powering up the unit it will switch into group mode.

The first 16 DMX channels (as set from the address switches) will convert the received DMX level into DALI group levels (0 to 15). As DMX has no channel 0 the last channel of the sixteen is used to control group 0. So if the address switches are set for 100, DMX 100 will control DALI group 1, DMX 101 DALI group 2 etc. and DMX 116 will control DALI group 0.

HOLD LAST FRAME - 703

The units default setting is to clear all DALI levels (Channel or Group) if DMX data is lost. By setting the address switches to 703 and powering up the unit, in the event of DMX data loss the last DMX levels will be held and outputted by the unit. If the unit is turned off this level data is lost.

FAILURE MODE - 704

By setting the address switches to 704 and powering up the unit DALI failure mode is selected. In the event of DMX data loss the converter will stop sending out DALI data and force the fixtures to switch into ‘failure mode’ and go to their programmed ‘failure’ levels. Failure mode will switch off Emergency Mode if set. See below if failure levels are not set in the fixtures.

75(0 to 9)

Emergency Mode

This mode setting allows the converter to send out a predetermined level to all fixtures irrespective of their address settings in the event of DMX loss. So in circumstances where a DMX control failure might be a problem (e.g. people are

going to start bumping into things and falling over) setting the unit to Emergency Mode will help.

With the power to the unit set off, setting the hundreds BCD switch to seven and the tens BCD switch to five the level to be transmitted on DMX loss is then set by the units BCD switch. 1 being 10%,2 = 20% etc. to 9 being 90%.

0 in the units BCD switch sets the emergency level to 100%. Once set power the unit up and the power and data LEDs will alternate to show the level setting is stored and emergency mode is set.

DALI Data Length – 8 - Channel Mode**

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 channels transmitted is then stored in non-volatile memory.

DALI Data Length – 8 - Group Mode**

If the unit is set to group mode the number of groups transmitted can be reduced to less than the standard 16 as in channel mode above.

Note – If the DALI data length was set in channel mode to greater than 16 and the unit then switched into group mode the unit will default to 16.

In either channel or group mode the unit will warn you if you try to set the length to zero or exceed the channel maximum limit (64) or group maximum limit (16) by flashing the green data led and will not store this setting.

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 controlled at maximum speed. This setting will override Group Mode if set.

DEFAULT MODE - 000

Setting the address switches to 000 on power up will reset the unit to full 64 channel operation, curve set on, hold last frame off, Failure Mode off, Emergency Mode on DMX data loss off - 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. 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 cannot be accidentally reprogrammed.

Note - 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 converter. Setting the address switches to 999 during normal operation will have no effect.

The programmer can only be used on single DALI units e.g. a single ballast as they only have one address. Do not use the inbuilt programmer on any receivers with multiple DALI addresses e .g. multi-colour LED fixtures as you will confuse their simple brains. If in doubt consult the device manufacturer with regards address programing or buy a XTBA DALI Watch.

When programmed the 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 = 160ma @ 15 volts. Maximum 80 DALI receivers

DALI Input (data return) = not used as DMX can not issue commands.

Mains Input = 120 or 230VAC (see product label) - Internally fused @ 2A

External PSU Unit (see product label) Input 15 to 24V DC. Output = Input less 2V.

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, 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.

CE Declaration of conformity

XTBA declares that the following equipment meets the requirements of the EMC Directive 89/366/EEC. WEE/FC2753ZS

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DALI Programming and DALI speed

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 50 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.