XTBA DALI 4 - AMR
ANALOGUE MERGE/REPLACE

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XTBA

Unit 2 The Old Curatage
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Introduction:

The **DALI 4 AMR ANALOGUE MERGE/REPLACE** will convert four channels of analogue (0 to +10 volts or 0 to +5 volts) to DALI and merge the four analogue channels into an incoming DALI data stream in either 'highest takes' or 'latest takes' merge using the DALI short (level) address. The position of the merged channels in the DALI data can be controlled from the two bcd switches.

The unit also be configured to replace up to four DALI input channel levels with the converted analogue input levels or act as a simple stand alone four channel DALI transmitter (see Transmit on no input mode below). Multiple units can be added to a DALI line to allow for multiple analogue inputs.

DALI Throughput
In order to maintain the highest DALI update rate (such as it is) the DALI AMR does not buffer, merge and then retransmit the DALI frame. The DALI output is timed from the DALI input to ensure fixtures before the unit will be in step with fixtures after the unit. For this reason (except in transmit on no input and hold last frame) the AMR does not create DALI it simply acts on DALI passing through – no DALI input no DALI output.

Command Data
DALI is a bi-directional protocol with command or set up data. The unit is transparent to DALI commands which will pass through unaltered and any response passed back unaltered.
So discovery, address setting and fixtures configuration can be set with the unit in line. The unit only acts on DALI short address level commands so it is also transparent to group and broadcast/global commands which will pass through unaltered.

Power Supply DALI Buss Power
The AMR unit is powered directly from the DALI line as it creates its own internal power supply. The AMR will take 45ma @ 15V and the unit will drop 0.6V across input to output. If multiple units are used the DALI buss should be a minimum 15VDC to 22VDC.

Power Supply 230V AC
If DALI buss power is likely to be a problem (e.g. 100+ fixtures on a line) the unit can be powered from 230VAC. If the unit is powered from 230VAC it will not draw any power from the DALI Buss. The internal 230V PSU is there for the internal electronics only and will not power the DALI buss directly so a DALI buss PSU is always required.

Analogue Inputs

The AMR is designed to take a maximum of +10V DC on each of the inputs. These can be switched or analogue levels. To simplify connections for any local controls the AMR provides a +5V supply and common. So a 10KΩ 'pot' between +5V and common will make a simple level control for a channel. But this will only set the channel to 50% maximum. So the AMR can be set for 5 volt mode (see settings below) to give 0 to 100% with a 0 to +5 volt input. The analogue inputs can also be filtered, see settings below.

Analogue to DALI + Merge HTP

In this mode the four analogue channels are converted to DALI and can be put anywhere in the transmitted DALI stream via the two address switches. If DALI is present on the input the four analogue channels will be merged with the received DALI, highest takes precedent HTP and higher transmitted. Other DALI channels will pass through unaltered.

Analogue to DALI + Merge LTP

As above but the level that changed last will be transmitted, either higher or lower. This mode allows multiple inputs to have control of a single fixture.

Analogue to DALI + Replace

In this mode up to four analogue channels can replace the incoming DALI level anywhere in the in the DALI stream via the address switches. The number of replaced channels can be set between 1 to 4. Channels not being replaced will pass through unaltered.

Transmit on no input

This function allows the DALI 4 AMR to be used as a stand alone DALI controller if no DALI data is received or can be used for critical lights that can still be controlled in the event of a data failure. The DALI buss PSU must still be connected for this function to work. The green data led will flash slowly if running in this mode.

The transmit on no input also allows a simple DALI system to be created. If the first unit in the line is set to transmit on no input then it will act as the master sender. Additional units can then act on the DALI line, merge or replace.

Hold Last Frame

If set this function will hold the last valid short address level DALI data it received and keep transmitting it until it receives valid DALI. The analogue inputs will merge with the held data as HTP merge. The green data led will flash slowly if running in this mode.

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Command and Level/Short Address Data – Command Override

When command data e.g. device discovery etc. is received the AMR will switch out of merge mode and pass the incoming data through the unit unaltered and allow responses back to the controller. Once level data is received it will switch back to level mode. The AMR is not telepathic so it can only switch over once it knows what is being received.

When switching between command and level modes the first data word will not be passed through the AMR but following data will. This is normally not a problem – however,

During set up and programing if mixed level with command data is being sent commands can get lost. So the unit can be locked into command mode by setting the bcd switched to 88 at any time. With this setting all incoming data is passed directly through the unit (the merge functions are turned off) so any command data can be responded to directly.

Setting the card

These settings are only available on power up. Setting the address switches beyond 63 when the unit is powered will have no effect, but the green led will flash to indicate an invalid start address.

The factory default is set for merge HTP.

The address switches are used to set up the functions in the following way on power up. Each function (if required) needs to be set up separately so if more than one function is required (e.g. adding 5 volt mode) once the function is set turn off the power and set for the next function. Once set the options are held into non volatile memory. Once set the green and red leds will alternate to show the state has been stored. The green data led will now flash as the switches are now out of range (0-63).

Set for Replace – 7*

With the AMR turned off set the tens switch to 7. The number of channels to be replaced is then set using the units switch – range 1 through 4. Turn on power to the unit. If the length is out of range e.g. 0 or 5+ both the red and green leds will flash together. If so set the length again and power up.

Hold Last Frame - 81

With the AMR turned off set the tens address switch to 8 and the units address to 1. Turn on power to the unit.

Set for Merge HTP - 83

With the AMR turned off set the tens address switch to 8 and the units address switch to 3. Turn on power to the unit.

Set for Merge LTP - 85
With the AMR turned off set the tens address switch to 8 and the units address switch to 5. Turn on power to the unit.

Set Analogue Filters On - 86
With the AMR turned off set the tens address switch to 8 and the units address switch to 5. Turn on power to the unit. With the filter set the analogue input resolution is halved.

Set 5 volt mode - 87

With the AMR turned off set the tens address switch to 8 and the units address switch to 7. Turn on power to the unit.

Command Mode - 88

At any time setting the tens and units to 8 will enter command mode.

Transmit on no input - 89

With the AMR turned off set the tens address switch to 8 and the units address switch to 5. Turn on power to the unit.

Set back to default 99

By setting the switches to 99 and powering up, the card will default back to the factory default e.g. merge HTP, 0 to 10V DC input to full.

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

CE ♲

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