ATX LED Consultants Inc

Merged IoT and Power Solutions
LED Drivers   Room quality sensors

ATX-LED

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AL-DALI-DMX

DALI to DMX
Converter

Product Description - AL-DALI-DMX

This device converts the data on a DALI bus to a DMX512 universe   The device operates as a DMX console - addresses in a DALI system are converted to DMX for use with DMX devices. We monitor the state of the DALI bus and reflect that in the DMX universe.

Other version available: DMX to DALI: See the AL-DMX-DALI version to operate 64 DALI drivers as if they were a set of DMX fixtures – the DMX defined light levels are converted to DALI for use with DALI drivers.
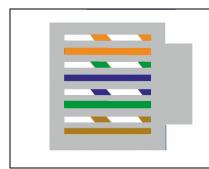
Wiring Connections

Power for the AL-DALI-DMX module

Apply power to the Module either using the 2.1mm DC connector (center positive) or the RJ45 connector in passive PoE mode. The device uses 24 to 56 volts and 1 watt max. See pinout below.   The pinout below matches the AL-PWS-8D PoE injector with DALI. This device is not 802.3af compatible. If using PoE – only use a passive injector.

RJ45 connector pinout

Pin	Function
1	DALI +
2	NC *
3	NC
4	+ Voltage
5	+ Voltage
6	DALI - (gnd)
7	Ground
8	Ground

* Default is an internal jumper J2 connects DALI- to pin6 for use with AL-PWS-8D and ATX LED Hub products. Another jumper J1 allows Pin2 to be the DALI- signal for isolated DALI systems.

DALI bus interface

Connect the DALI bus to your DALI bus. You will need a DALI power supply for the bus, for example the AL-PWS-8D. The DALI bus must have a current limited (typically 200 mA 16 volt) supply for normal operation. This device is polarity sensitive – note DALI + and DALI -.

DMX bus interface

Connect the 3 pin XLR to your DMX universe. Note – if the DMX bus is longer than 30 ft – you will need to terminate the connection.   Use a XLR splitter and XLR terminator for this. Contact us for internal termination options.

DIP Switch Settings (CCT Modes)

The Converter can be set for two modes:

a) CCT Tunable White emulation – default. No switches on. The Converter will identify itself as a DALI CCT device and will advertise to DALI its color modes.   Then DALI type 8 commands will adjust the colors on the two sequential addresses in the DMX universe.

b) CCT Tunable white listening – Dip switch 1 ON.   In this mode there will be no CCT emulation – CCT will only be supported if a DT8 device is present on the DALI bus and DT8 commands are received.

See the AL-WS-010v data sheet for more information on creating DALI CCT packets.   Also – consider using the AL-DALI-Pi to control your DMX universe with Hue emulation.

Specifications

Name	Function	Description
DC/Gnd	Power source	2.1 x 5.5 mm DC connector or RJ45 : 20 to 57 volts

	Internal Power consumption	500 mWatt
		        25 mA at 20 volts
		        10 mA at 48 volts

DA	DALI Bus	DALI in and out Multi Master collision detect 24 volt max, 300 mA max Opto Isolated
XLR	DMX Bus	Standard DMX pin out (3 pins) no termination
	Protection	Reverse protection and static protection
	Operating Temperature	0°C ~ 50°C
	Size	75 mm x 55 mm x 27 mm

DALI to DMX translation

The DALI bus has 64 short addresses.   The DMX512 bus has 512 addresses.   This device translates DALI addresses 1-63 to DMX addresses 1-191.   DMX512 addresses start with 1, so address 0 is not used

Connect the AL-DALI-DMX to a DALI power supply (like the AL-PWS-8D) and connect one or more AL-WS-010v switches or other DALI devices masters, or an AL-DMX-DALI converter

The AL-DALI-DMX device is listening to the DALI bus.   DALI packets captured from the bus will be sent to the DMX512 universe to build complete DMX packets.   All conversions are one-one. Each DALI individual address maps to one DMX address for fixed color drivers, plus additional DMX addresses for tunable white colors.

DALI group addresses are automatically determined by scanning the DALI bus for group assignments.   If any Group assignments are found, then one DALI group command can activate up to 64 DMX addresses.

DALI broadcast will set DMX addresses 1-63 and 66 thru 191 to the level requested

The mapping of DALI addresses to DMX addresses is as follows:

DMX address range 1-63 receive the DALI level as a single address – intended for single color fixtures

DMX address range 66-191 receive the DALI DT8 commands for Warm and Cool and send them as levels on 2 sequential addresses -   Warm White is even and Cool White is odd.

For debugging – the last DALI address is also shown on DMX address 200-202

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AL-WS-010v in 3_way operation

Virtual 3-Way control is supported. Multiple AL-WS-010v can be used at the same address. This will cause all switches at the same address to operate as 3-Way switches controlling one DMX address.

Power up scanning

At power on – the device will scan the DALI bus for AL-WS-010v devices and will set the DMX levels to match these levels. It will also output the Hardware version, Software version and switch status on the DALI bus.   Finally, the Fail level will be scanned for sequential address control.

Method for multiple sequential DMX addresses from one DALI Address

AL-DALI-DMX device will query the DALI bus the first time each Short Address is received, once.   It will query the DALI bus to identify an AL-WS-010v or any other DALI device at that address to determine if the multiple address mode is used. We repurpose the "system fail level" feature of the DALI bus – which defaults to 254.

DALI packets are either A) individual short addresses, then one short address will be queried, or B) group commands, then the lowest individual member of the group will be individually queried.   If the DALI packet is a broadcast command – then all DMX addresses from 1-63 will receive the same address – there will be no query.

Thus one DALI short address can be used to control a number of sequential DMX addresses using this mode. The primary goal of this mode – is to allow each AL-WS-010v DALI switch, to control many DMX addresses.   These addresses are sequential starting at the short address received on the DALI bus.

If one AL-WS-010v switch is to control more than one DMX address with the same DIM information – the AL-DALI-DMX will query the AL-WS-010v setting "DALI SYSTEM FAIL' to read back the number of sequential addresses.   By default – this value is 254 in all default DALI devices.   If the value is less than 64 – then the reported value will be used as the number of sequential addresses, if the value is greater than 64 (or no response) then only 1 DMX address will be populated.

DALI to DMX sequential translation

Example If a AL-WS-010v DALI switch at address 4 has a system fail byte set for 5 addresses, then DMX addresses 4-8 will be controlled, and the next available DALI address for a AL-WS-010v is DALI address 9 = DMX address 9.

Any DALI master can be used to set DALI addresses 0-63 for conversion to DMX by the the AL-DALI-DMX. Use the AL-DALI-Pi or DALI-100 for example – then use the Parameters TAB to set the System Fail level.   We suggest you un-assign all Group settings. If you put DALI LED drivers on the DALI bus at the same addresses as AL-WS-010v – please put the AL-WS-010v into transmit mode, and set the System Fail Level needed into the LED driver – not the AL-WS-010v.

Group method for
DALI to DMX translation

After power up the AL-DALI-DMX device will query the DALI bus the first time a group message is received.

It will query the DALI bus to identify an AL-WS-010v or any other DALI device at that address to determine the group assignments.   A group level setting command to that group will then control the levels output to up to 64 DMX addresses at once.   The AL-DALI-PI can emulate DALI physical devices – allowing the group assignments to be configured from the Pi Hue interface