e:cue

LIGHTING CONTROL

RDM Isolator
Setup Manual

Galvanically isolated DMX / e:pix/ RDM repeater & line isolator

RDM Isolator – Setup Manual

Table of Contents

1. Device overview

The RDM isolator repeats DMX and e:pix (one way) as well as RDM (bi-directional) signals over a galvanic isolation barrier. The power supply has a separate isolation barrier ("external" selected) or is aligned with the output potential ("DMX power" selected).

Key Features

- Flexible data ports
  (RJ45 or srew terminals)
- USITT DMX512A and
  e:pix compatibility
- Full ANSI E1.20-2006 RDM support
- Device can be powered by power back via TXconnectdata (RJ45 output)
- Separate, fully isolated power supply port

2. Delivery content

- RDM Isolator
- 2x3-pole screw terminal plugs
- 2-pole screw terminal plugs
- This setup manual

3. RDM Isolator Connectors
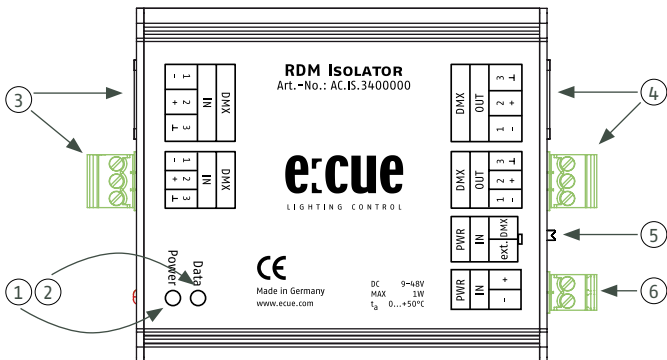
1. Power LED:
   Indicates operational device

2. Data LED:

   Indicates valid data input:

   On = valid DMX/epix signal or RDM request detected

   Blinking = valid RDM response detected

3. Data input port:
   Use either RJ45 (Traxon-e:cue pin assignment) OR screw terminals.

4. Data output port:

   Use either RJ45 (Traxon-e:cue pin assignment) OR screw terminals

   Biased RDM command port

   Power back function on pins 5 (24VDC) and 3 (GND)

5. Power supply selector:
   Select „DMX" for Traxon-e:cue power back function or „ext." for separate power supply unit.

6. Power supply port:
   If selected supply 9-48VDC with at least 1W.

4. Technical Specifications

4.1 General specifications

Item Number	
RDM Isolator	AC.IN.3400000
General Specifications	
Dimensions mm / inch	71 x 24 x 80 mm / 2.8 x 0.94 x 3.15 inch
Weight kg / lbs	0.12 kg / 0.26 lbs
Power	9–48V DC, 1W (ext.)
Operating / storage temperature	0–50ºC / 32–122ºF
Operating / storage humidity	0–90%, non–condensing
Environment	IP20
Housing	anodized aluminium
Certifications	CE
Accessories Specifications	
User Interface	Switch
Output	DMX512 / e:pix / RDM (RJ 45, Screw Terminals)
Input	DC Input (Screw Terminal) DMX512 / e:pix / RDM (RJ 45, Screw Terminals)
Display	LED Indicators
Operating System	e:cue

4.2 Dimensions

All dimensions in mm and inch
(mm/inch).
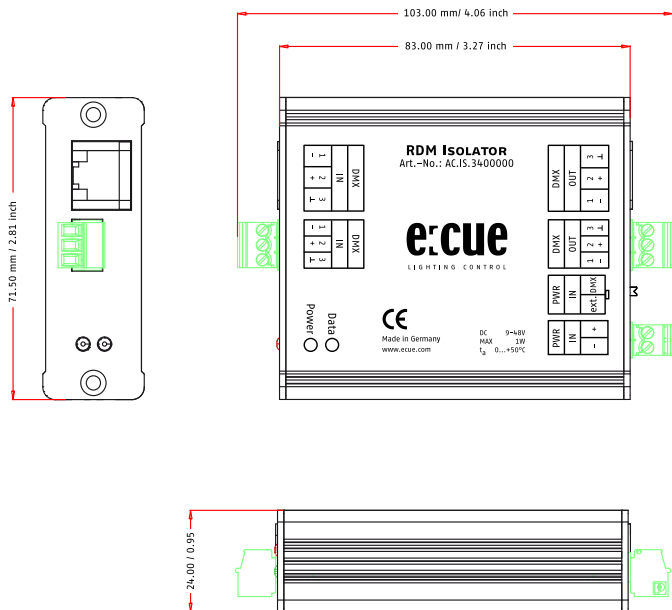
5. Warning Notice

The maximum power supply voltage is limited to 48V DC.

Any usage other than described in this manual is not permitted, can damage the device and lead to associated risks such as short-circuit, fire or electric shock. If not otherwise noted, no part of the product may be modified or rebuilt.

7.   Imprint, Copyright

RDM Isolator

Product Information

Hans Juergen Buhr
Cologne, June 2010

Agenda

- **Introduction**

- **Features & Benefits**

- **Sales Guide**

Learn about DALI, DMX and RDM

DALI is a lighting control protocol used for static lighting in buildings. Advantages of DALI controls are simplicity in terms of installation and talkback-functionality of DALI fixtures to DALI controls. DMX is used for professional entertainment lighting. 512 channels and high-speed data transmission ensure live control of complex multimedia fixtures (including LED fixtures). However, DMX operates unidirectional and lacks a feedback possibility and remote setup of fixtures. RDM introduces status monitoring and error detection of fixtures, allowing to query the status of RDM-capable fixtures over a DMX line by means of DMX and RDM capable control gear and fixtures.

DALI	DMX	DMX-RDM
Bidirectional (send and query commands)	Unidirectional (send commands only) talkback possible using DMX-RDM	Bidirectional, extension to the DMX protocol, allows bidirectional communication over existing DMX wire
64 addresses	512 addresses	
Maximum 64 units (1 unit / address)	Unlimited number of units (several units/address)	
Maximum 16 groups	Unlimited number of groups	
low speed transmission 1200 bytes per second	high speed transmission 250.000 bytes per second	
free cable topology	daisy chain topology	
any cable type allowed	shielded DMX or Ethernet cable	

Learn about RDM

What is RDM?

- **Remote Device Management**
- RDM allow bidirectional communication over the DMX cable
- RDM is an extension of the DMX512 protocol
- RDM uses the the existing DMX signal cores
- DMX is is sent constantly for control
- RDM is sent back the other way
- RDM allows bidirectional communication among controllers and units ("talkback")
- RDM interactions require some DMX signal capacity (RDM normally 10-15%)
- e:cue software ensures that DMX is sent with video refresh rate (~30fps) in any case !

Why use RDM?

- RDM allows to make changes to settings of RDM capable fixtures
- RDM allows to send equipment-specific instructions to the fixtures
- RDM can request the equipment status or to collect fault reports from the equipment
- RDM can be used to set DMX address remotely
- Lamp hours monitoring
- Temperature sensor reporting
- Fixture identification
- Mode / attribute setting of fixtures

Why use RDM Isolator ?

Installation + Control 1
Building 1

Installation 2
Building 2

unwanted effect

DMX/ RDM / e:pix

long cable run

Power source 1

ground loop
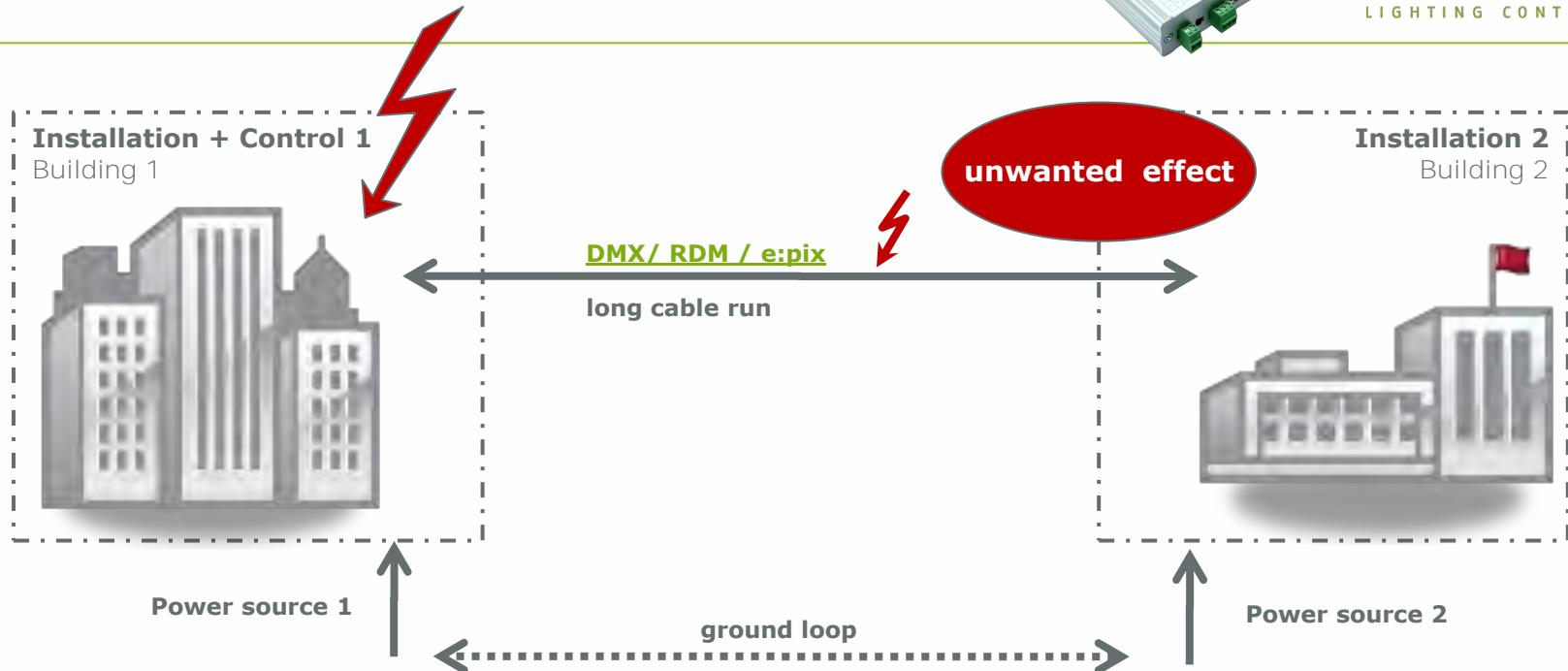
Power source 2

- **Short circuits and electrical faults** in one installations may immediately propagate to the other installation via DMX cable link
- In some cases DMX cable electrically connect installations with different power sources (with slightly different electrical potential)
  this may result in unwanted links causing **ground loops or earth loops**
- long cable runs cause signal attenuation. A signal amplification is required every 32 DMX fixtures and/or a cable length >300m (DMX), >200m(e:pix)

RDM Isolator Application

Optical Isolation and boosting

Installation 1
Building 1

DMX/ e:pix

RDM

RDM ISOLATOR
Art.-No.: AC.IS.3400000

e:cue
LIGHTING CONTROL

Installation 2
Building 2

DMX/ e:pix

RDM

**Optical isolation barrier
=
no electrical link**

Fully optically isolated outputs and inputs with Galvanic Isolation barrier to 1000 Volts – be safe in the knowledge that any faulty equipment, short circuits or ground loops on either side of the RDM Isolator will not affect the other side.

When do I need to refresh / boost DMX

1 A DMX booster / refresher is typically required when using cable runs longer than 300m.

Butler XT
DMX controller

300m
DMX /Ethernet cable

RDM Isolator
Insulation + Boosting

next 300m
DMX /Ethernet cable
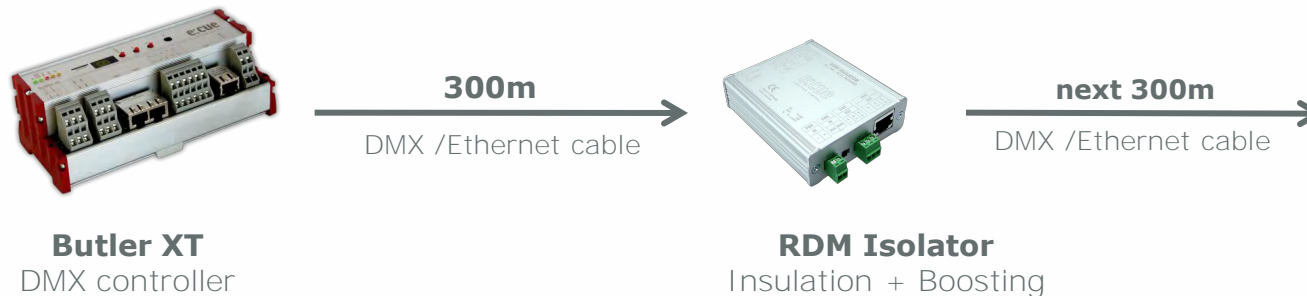
2 A DMX booster is also required after 32 passive (non-RDM non-boosting) DMX fixtures.

Butler XT
DMX controller

Fixture 1
DMX only

Fixture 2
DMX only

· · ·

Fixture 32
DMX only

Fixture 33
DMX-RDM

Fixture 34
DMX-RDM

· · ·

RDM Isolator
Insulation + Boosting
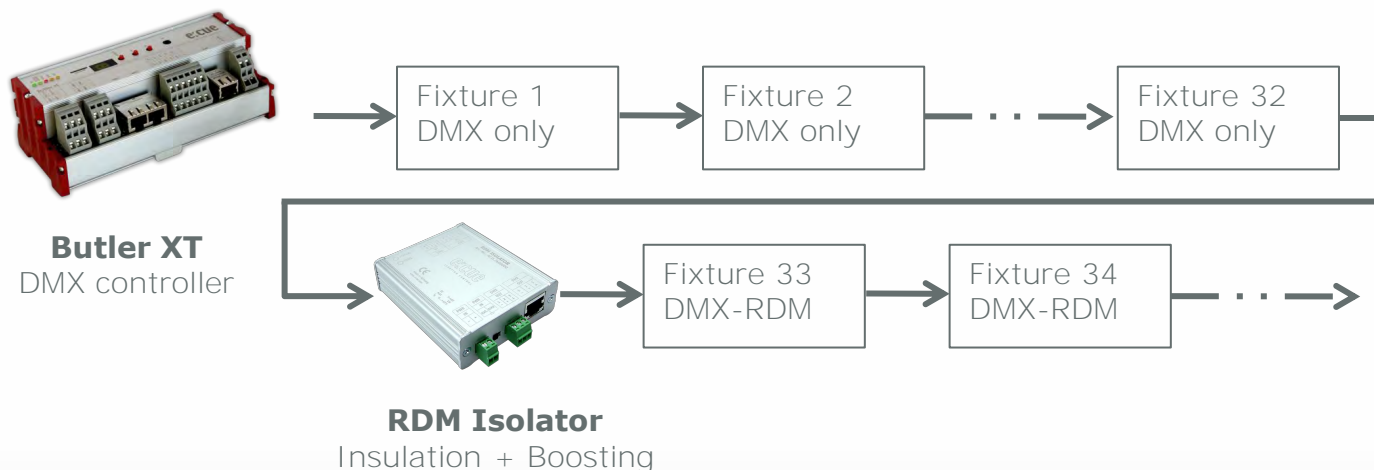
Do's & Don'ts with RDM

1 Any RDM fixture must be placed after the last RDM Isolator!

wrong

```
Fixture 1      →   Fixture 2      → · · · →   Fixture 32
DMX only           DMX only                  DMX-RDM
```

Butler XT
DMX controller
with RDM

```
Fixture 33     →   Fixture 34     → · · · →
DMX-RDM            DMX-RDM
OK                 OK
```

RDM Isolator
Insulation + Boosting
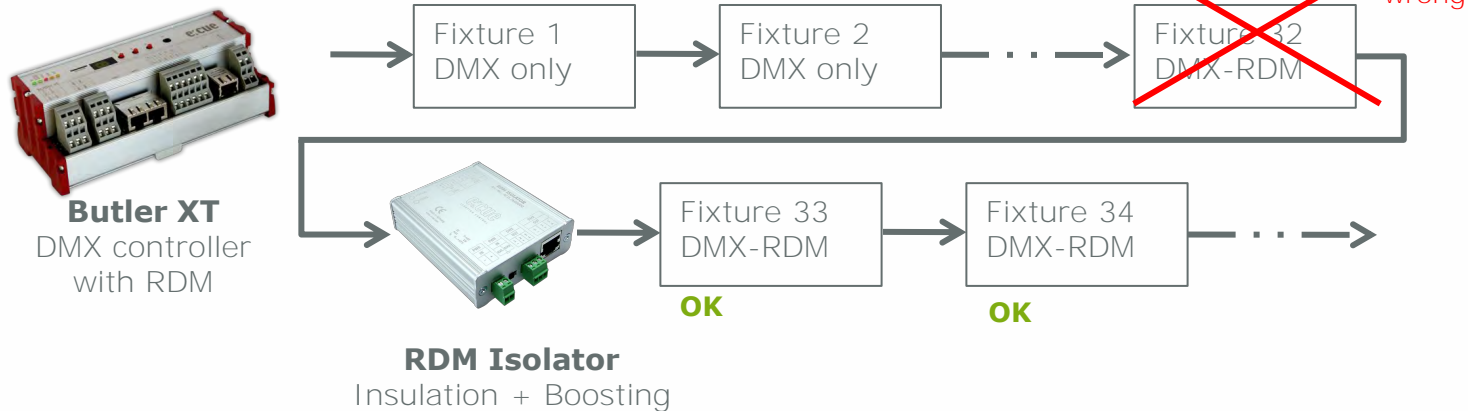
2 DMX Auto addressing (DMX AA) fixtures have compatibility issues with RDM.
Place DMX Auto Addressing fixtures and DMX-RDM fixtures in separate DMX lines!

Butler XT
DMX controller
with RDM

DMX out 1
```
Fixture 1      →   Fixture 2      → · · · →   Fixture 32
DMX AA             DMX AA                     DMX RDM
```
wrong, no RDM
fixture in AA chain

DMX out 2
```
Fixture 1      →   Fixture 2      → · · · →   Fixture 32
DMX               DMX-RDM                     DMX-RDM
```
**OK, without AA
DMX-RDM only chain**

RDM Isolator
Insulation + Boosting
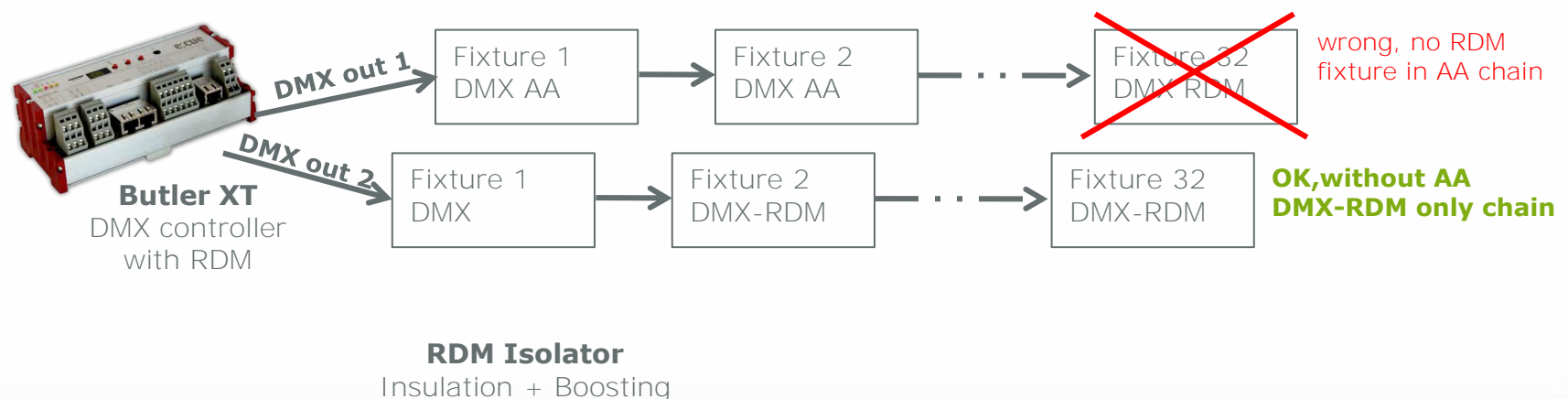
Agenda

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RDM Isolator Key Benefits

The fully isolated DMX outputs ensure that no matter which DMX products you have, you will not have any earth loop problems.

Key Benefits:

- **Cost efficient** device for galvanic isolation of RDM, DMX and e:pix data connections
- **Bidirectional** data transmission
- RDM, DMX and e:pix signal **booster** for long distance connections (booster every 300m)
- **DMX 512A** compliance
- **RDM** support (RDM allow bidirectional communication over the DMX cable)
- **1kV isolation performance**
- **Power via TX Connect** or external power supply

RDM Isolator

Features and Benefits

Features
- 1kV isolation
- USITT DMX512A compatibility
- Full ANSI E1.20-2006 RDM support
- e:pix compatibility
- Status LEDs
- silver, anodized aluminium housing(like Butler)
- IP 20 certification (indoor use)
- Laser printing for description
- Operation voltage: 9-48V DC, 1W
  (via ext. PSU input, fully isolated)

Benefits
- Flexible data ports (RJ45 or screw terminals)
- Power back via TX Connect
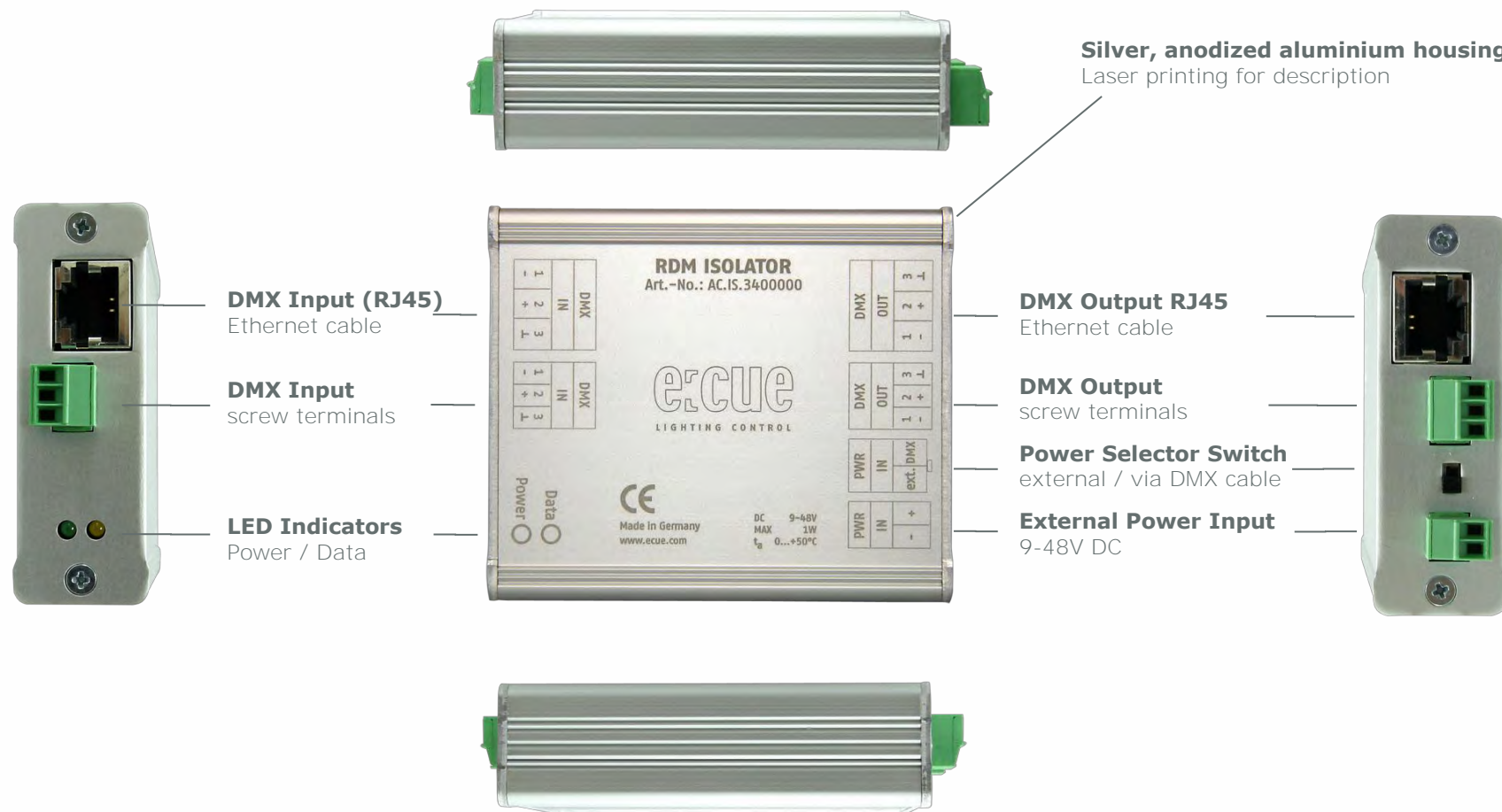- RDM; DMX and e:pix compatibility

- Links & Download: RDM Isolator

Description

RDM Isolator repeats DMX and e:pix (unidirectional) as well as RDM (bi-directional) signals using galvanic isolation to prevent unwanted coupling between different installations. The device is used to boost and amplify a RDM, DMX or e:pix signal in installations where the signal might be attenuated due to long cable distances. (signal amplification every 300m)

The device **repeats and boosts** DMX and e:pix (unidirectional) as well as RDM (bi-directional) signals over a galvanic isolation barrier. The external power supply input has a separate isolation barrier ("ext." selected) or is aligned with the output potential ("DMX power back" selected). Signal inputs and outputs via RJ45 sockets or screw terminals offer a great installation flexibility. Power can be sourced from TX Connect systems via RJ45 input or via external power supply.

RDM Isolator
Design & Connectivity

Silver, anodized aluminium housing
Laser printing for description

DMX Input (RJ45)
Ethernet cable

DMX Input
screw terminals

LED Indicators
Power / Data

DMX Output RJ45
Ethernet cable

DMX Output
screw terminals

Power Selector Switch
external / via DMX cable

External Power Input
9-48V DC

RDM ISOLATOR
Art.-No.: AC.IS.3400000

e:cue
LIGHTING CONTROL

Made in Germany
www.ecue.com

DC   9-48V
MAX   1W
t$_a$ 0...+50°C

Agenda

- **Introduction**

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Logistics and Pricing Info
AC.IS.3400000

Package Content

- RDM Isolator
- Setup Manual
- 2 x 3-pole screw terminal plugs
- 2-pole screw terminal plug

Product

Model	Order code
RDM Isolator	AC.IS.3400000

Accessories

Model	Order code
plug-in PSU 12V 2A EU OW	AC.PS.0120000
plug-in World Plug Set	AC.PS.0122000

Product Category: Accessories
Product Name: RDM Isolator

Key Facts Product RDM Isolator

MIP-Date: 29 June 2010

Features & Benefits

Features:

- RDM Isolator links different installations with a optical, galvanic isolation and ensures potential-free data transmission
- Embedded status LEDs deliver direct visual feedback

Benefits:

- Simple method to buildup new and upgrade existing lighting control scenarios with RDM
- Easy wire installation via RJ45 Ethernet cable or screw terminals

Versions:

- RDM Isolator silver

Unique Selling Proposition

Simplicity:
- Plug & Play, no software required
- Power-back function via TX Connect
- Simple and intuitive usage and installation (due to RJ45 or screw terminal connection)

Flexibility:
- supports DMX, RDM, and e:pix
- powered from a 9-48V DC power source

Innovation:
- full RDM, DMX and e:pix support

Main Sales Arguments

- **Flexible and reliable signal isolator and booster for RDM, DMX or e:pix signals**

Complementary products

RDM Isolator can work seamlessly with Butler XT.

Butler XT

1024 channel DMX output, RDM support, astronomical clock, 8 dry contact inputs, RS232, infrared receiver, e:net, e:bus

DMX output

DMX / RDM

Lighting Installation with RDM

Optical Insulation

DMX / RDM

RDM ready
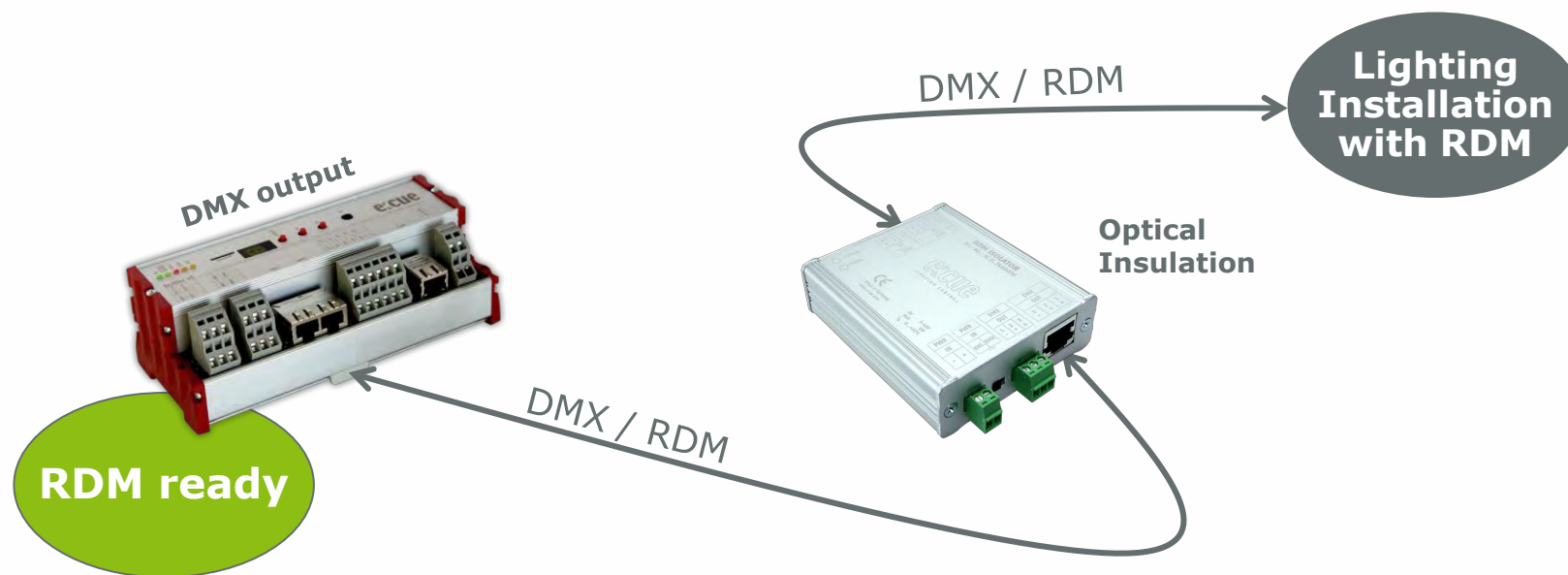
Glossary

DALI: is a international, non-proprietary digital communications standard for dimmable electronic controllable lighting gear.

DMX512: (abbr.DMX) Digital multiplex protocol, the industry standard for digital communication in professional lighting. One DMX Universe holds 512 individual channels.

e:net: An Ethernet-based e:cue protocol used as the backbone communication standard between most e:cue Engines and Interfaces.

e:pix: An e:cue protocol similar to DMX, for faster communication between the VMC and Traxon Technologies e:pix-capable LED media products.

EIB: (European Installation Bus) is a standard communication protocol for building automation systems.

KiNET™: A proprietary lighting control protocol, similar to Art-Net, used by Phillips Color Kinetics.

KNX: abbr. for KONNEX Association, a communications protocol for building automation system, based on EIB.

RDM: (Remote Device Management) A protocol based on DMX512 with bi-directional communication capability between a lighting controller and RDM-capable lighting fxtures or devices.

RS232: An industry standard for communication between devices in a control system, which allows interfacing with various external lighting control devices, as well as 3rd party residential and building automation systems.

Serial: The term serial communication or serial device typically refers to a RS232 communication system.

Resources and further info

For more technical information about the RDM Isolator please contact:

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