

FEATURES

- BUS+FADER+DIMMER+DRIVER
- DC input 12-24-48 Vdc or 12-24 Vdc
- BUS Command:
 - DALI
 - DMX512+RDM
- MULTI INPUT – Analogic Automatic Detection of the Local Command:
 - Normally Open Push button
 - 0-10V
 - 1-10V
 - Potentiometer 10KOhm
- PUSH MENU' – Possibility to set:
 - Minimum value of dimming
 - Fade In
 - Fade Out
- Constant voltage variant to Common Anode applications
- Voltage outputs for R-L-C loads, DLM1248-1CV-DALI or DMX
- Voltage outputs for R loads DLM1224-1CV DALI or DMX
- Memory function
- Adjusting the brightness of White light or monochromatic color
- Adjusting the brightness up to completed off
- Soft start and soft stop
- Optimized output curve
- Typical efficiency > 95%
- 100% Functional test –5 Years warranty

➡ For the whole and update **Device Manual** refer to producer's website: <http://www.dalcnet.com>

➤ **CONSTANT VOLTAGE VARIANTS**

Application: Dimmer

CODE	Input Voltage	Output	Channels	BUS Command	Analogic Auto Detection
DLM1248-1CV-DALI	12-48V DC	1 x 6,5A	1	DALI	N° 1 N.O. Push Button N° 1 analog signal 0-10V
DLM1224-1CV-DALI	12-24V DC	1 x 10A	1	DALI	N° 1 analog signal 1-10V N° 1 Potentiometer 10KOhm
DLM1248-1CV-DMX	12-48V DC	1 x 6,5A	1	DMX	N° 1 N.O. Push Button N° 1 analog signal 0-10V
DLM1224-1CV-DMX	12-24V DC	1 x 10A	1	DMX	N° 1 analog signal 1-10V N° 1 Potentiometer 10KOhm

The LED Dimmer is produced by default with:

- Analog Automatic Detection of local command set as N.O. Push Button
- Dimming minimum level at 1% (DALI variant), 0,1% (DMX variant)

➤ **PROTECTIONS**

		DLM1248-1CV-DALI/DMX	DLM1224-1CV-DALI/DMX
OTP	Over temperature protection ¹	✓	✗
OVP	Over voltage protection ²	✓	✓
UVP	Under voltage protection ²	✓	✓
RVP	Reverse polarity protection ²	✓	✓
IFP	Input fuse protection ²	✓	✓
SCP	Short circuit protection	✓	✗
OCP	Open circuit protection	✓	✓
CLP	Current limit protection	✓	✗

¹ Thermal Protection on the output channel in case of high temperature. The thermal intervention is detected by transistor (>150°C)

² Only control logic protection

➤ REFERENCE STANDARDS

EN 61347-1	Lamp controlgear - Part 1: General and safety requirements
EN 55015	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
EN 61547	Equipment for general lighting purposes - EMC immunity requirements
IEC/EN 62386-101	Digital addressable lighting interface - Part 101: General requirements - System
IEC/EN 62386-102	Digital addressable lighting interface - Part 102: General requirements - Control gear
IEC/EN 62386-207	Digital addressable lighting interface - Part 207: Particular requirements for control gear – LED modules (device type 6)
IEC 60929-E.2.1	Control interface for controllable ballasts - control by d.c. voltage - functional specification
ANSI E 1.3	Entertainment Technology - Lighting Control Systems - 0 to 10V Analog Control Specification
ANSI E1.11	Entertainment Technology - USITT DMX512-A - Asynchronous Serial Digital Data Transmission Standard for Controlling Lighting Equipment and Accessories
ANSI E1.20	Entertainment Technology-RDM-Remote Device Management over USITT DMX512 Networks

➤ TECHNICAL SPECIFICATIONS

		DLM1248-1CV DALI or DMX Variant	DLM1224-1CV DALI or DMX Variant
		Constant voltage	Constant voltage
Supply voltage		min: 10,8 Vdc .. max 52,8 Vdc	min: 10,8 Vdc .. max 26,4 Vdc
Output voltage		= Vin	= Vin
Input current		max 6,5A	max 10A
Output current ³		6,5A @40°C	10A @40°C
Absorbed nominal power ³	@12V	78 W	120 W
	@24V	156 W	240 W
	@48V	312 W	-
Power loss in standby mode		<500mW	<500mW
Type of Load		R – L – C	R
Thermal shutdown ⁴		150°C	-
Command supply current		0,5mA (per 1-10V)	0,5mA (per 1-10V)
Command required current (max)		0,1mA (per 0-10V)	0,1mA (per 0-10V)
D-PWM dimming frequency		300Hz	300Hz
D-PWM resolution		16 bit	16 bit
D-PWM range		0,1 – 100 %	0,1 – 100 %
Storage temperature		min: -40 max: +60°	min: -40 max: +60°
Ambient temperature		min: -10 max: +40°	min: -10 max: +40°
Wiring		2.5mm ² solid–2.5mm ² stranded–30/12 AWG	1.5mm ² solid–1mm ² stranded–30/16 AWG
Wire preparation length		5.5 – 6.5 mm	5 – 6 mm
Protection grade		IP20	IP20
Casing material		Plastic	Plastic
Packaging unit (pieces/unit)		Single Carton Box 1pz Carton box 21pz	Single Carton Box 1pz Carton box 21pz
Mechanical dimensions		44 x 57 x 25 mm	44 x 57 x 19 mm
Package dimensions		56 x 68 x 35 mm 263x178x82	56 x 68 x 35 mm 263x178x82
Weight		43g 1000g	37g 1000g

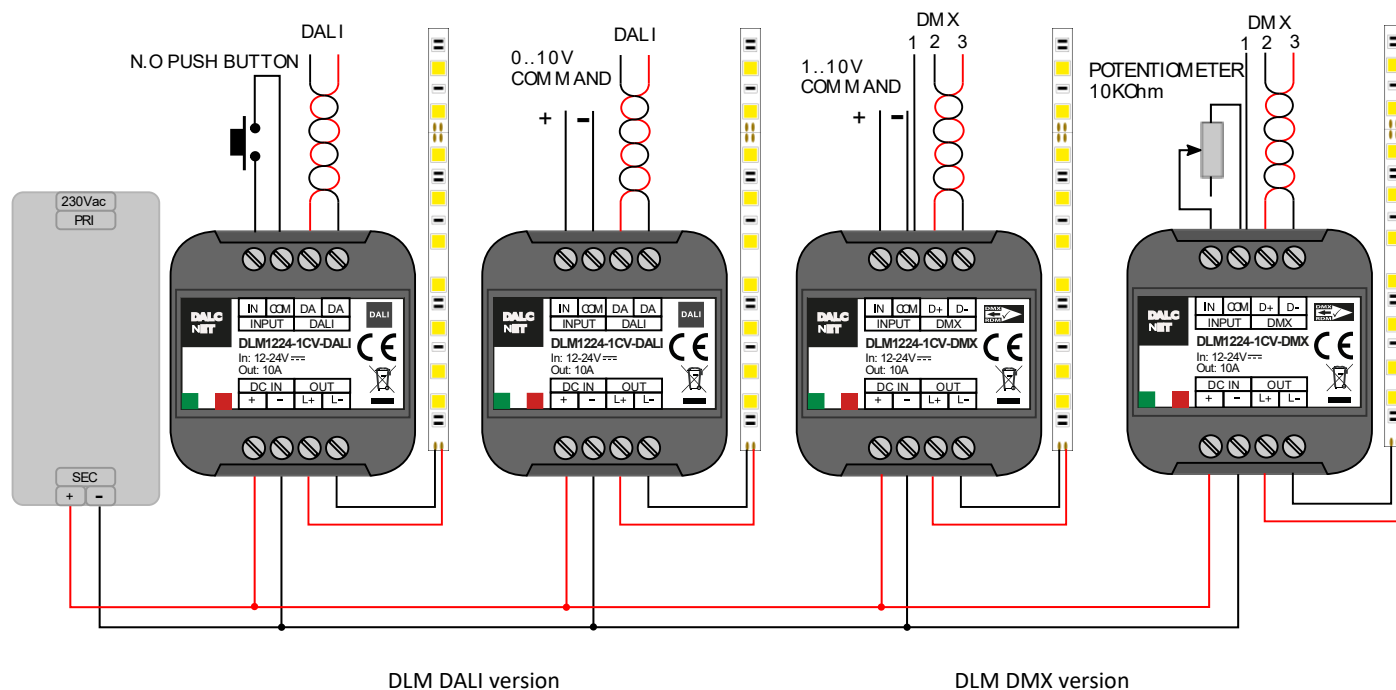
³ Maximum value, dependent on the ventilation conditions. This value is measured at 40°C, it is maximum ambient temperature.

⁴ The Temperature Protection, in case of high temperature, is detected by transistor (>150°) and is only on the output channel.

➤ INSTALLATION

To set the product, follow the instruction on the picture below:

- 1) connect the LED in the output terminal blocks "OUT" of the device.
- 2) connect the LOCAL COMMAND to the terminal blocks "INPUT" and / or connect the BUS COMMAND to the terminal block "DALI or DMX" of the device.
- 3) connect the power supply (12-24 Vdc or 12-48Vdc depending on the dimmer model) to terminal blocks "DC IN" of the device.

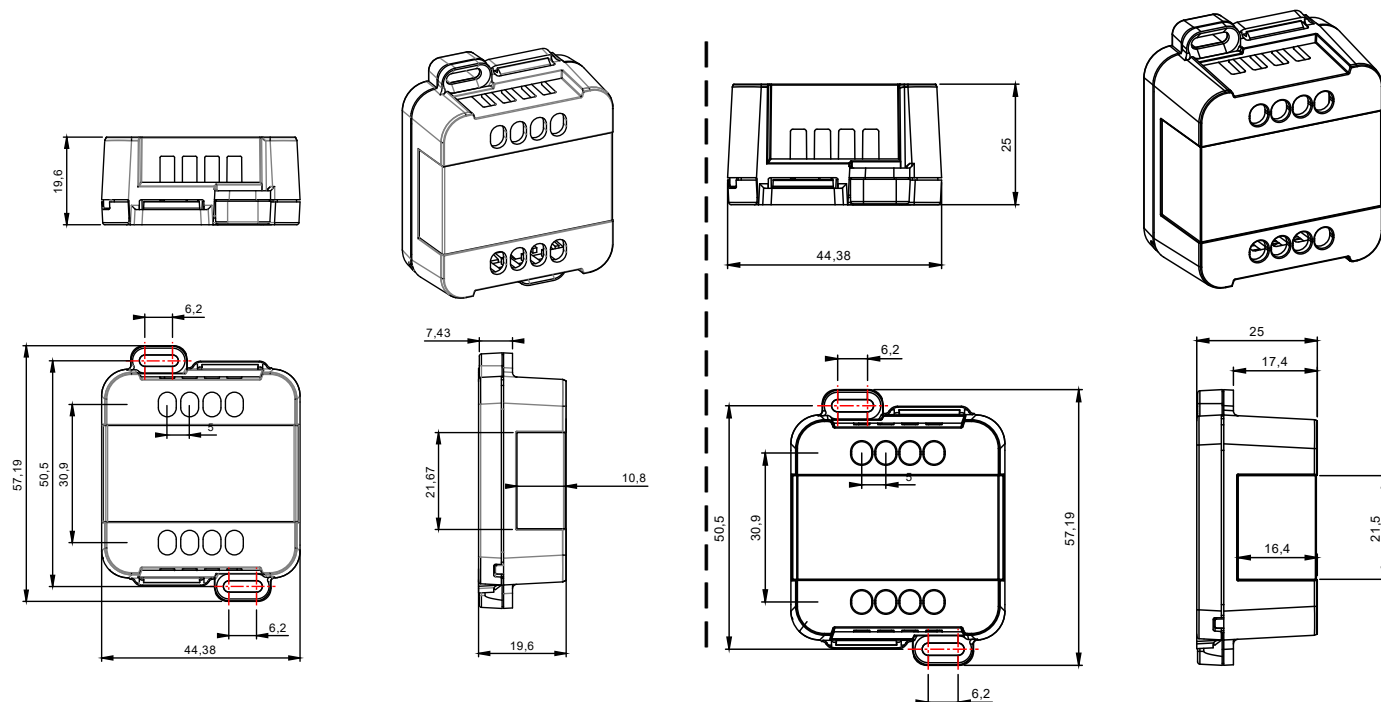


Examples of local commands and BUS command (DALI or DMX) connection.

➤ MECHANICAL DIMENSION

DLM1224-1CV-BUS Variant

DLM1248-1CV-BUS Variant



➤ TECHNICAL NOTE

Installation:

- Installation and maintenance must be performed only by qualified personnel in compliance with current regulations.
- The product must be installed inside an electrical panel protected against overvoltages.
- The product must be installed in a vertical or horizontal position with the cover / label upwards or vertically; Other positions are not permitted. It is not permitted to bottom-up position (with the cover / label down).
- Keep separated the circuits at 230V (LV) and the circuits not SELV from circuits to low voltage (SELV) and from any connection with this product. It is absolutely forbidden to connect, for any reason whatsoever, directly or indirectly, the 230V mains voltage to the bus or to other parts of the circuit.

Power supply:

- For the power supply use only a SELV power supplies with limited current, short circuit protection and the power must be dimensioned correctly. In case of using power supply with ground terminals, all points of the protective earth (PE = Protection Earth) must be connected to a valid and certified protection earth.
- The connection cables between the power source "low voltage" and the product must be dimensioned correctly and they should be isolated from every wiring or parts at voltage not SELV. Use double insulated cables.
- Dimension the power supply for the load connected to the device. If the power supply is oversized compared with the maximum absorbed current, insert a protection against over-current between the power supply and the device.

Command:

- The length of the connection cables between the local commands (N.O. Push button, 0-10V, 1-10V, Potentiometer or other) and the product must be less than 10m; the cables must be dimensioned correctly and they should be isolated from every wiring or parts at voltage not SELV. Use double insulated shielded and twisted cables.
- The length and type of the connection cables at the BUS (DMX512, DALI or other) use cables as per specification of the respective protocols and regulations and they should be isolated from every wiring or parts at voltage not SELV. It is suggested to use double insulated shielded and twisted cables.
- All the product and the control signal connect at the bus (DMX512, DALI, Ethernet, or other) and at the local command (N.O. Push button, 0-10V, 1-10V, Potentiometer or other) must be SELV (the devices connected must be SELV or supply a SELV signal)

Outputs:

- The length of the connection cables between the product and the LED module must be less than 10m; the cables must be dimensioned correctly and they should be isolated from every wiring or parts at voltage not SELV. Is preferable to use shielded and twisted cables.

➤ **LOCAL COMMAND**✓ **PUSH DIMMER FEATURE**

The intensity and the status change (ON/OFF) are controlled by the N.O. push button.

Button	Intensity
Click	On/Off
Double Click	Maximum intensity
Long pressure (>1s) from OFF	Turn ON at 1% (Nightly Time), then dimmer up/down
Long pressure (>1s) from ON	Dimmer up/down
15 Click in 5 second-time	Enter in to PUSH MENU'

✓ **0-10V & 1-10V & POTENTIOMETER FEATURE**

The intensity is controlled by input voltage variation

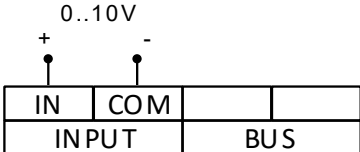
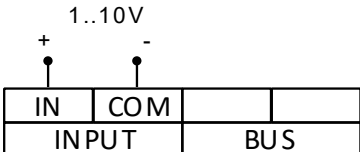
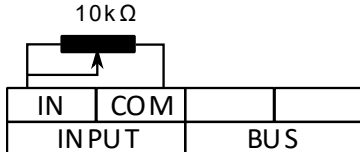
Input	Function	Intensity
0-10V 1-10V Potentiometer 10K		Dimmer: 0-1V=0% 10V=100%

✓ **ANALOGIC AUTOMATIC DETECTION****AUTOMATIC DETECTION OF THE TYPE OF LOCAL COMMAND**

At the first switch the device is set by default to automatic recognition of push button N.O. command.

- **AUTOMATIC DETECTION OF THE 0/1-10V & POTENTIOMETER COMMAND**

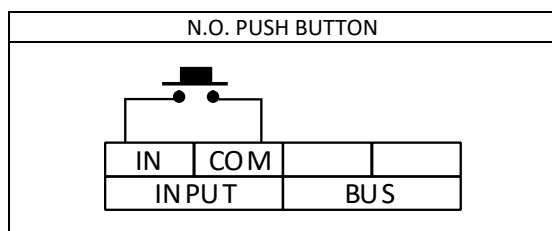
The automatic recognition of analog signal 0/1-10V or potentiometer starts as soon as a 0/1-10V value between 3V and 7V is sent out or setting the potentiometer with value included from 30% and 70%.

0-10V COMMAND	1-10V COMMAND	POTENTIOMETER
<p>0..10V</p> 	<p>1..10V</p> 	<p>10kΩ</p> 

- **AUTOMATIC DETECTION OF THE N.O. PUSH BUTTON COMMAND**

The N.O. push button is identified automatically after 5 clicks in rapid sequence.

In mode N.O. push button, function memory is always active.



➤ PUSH MENU'FUNCTIONS AVAILABLE

- MINIMUM VALUE OF DIMMING
- POWER-ON RAMP (FADE IN)
- POWER-OFF RAMP (FADE OUT)

ACCESS TO MENU'

When you turn-on the LED dimmer, the output is set at 100% and the minimum of dimming is at 1% (DALI variant), 0,1% (DMX variant).

To access the device menu, click the push button 15 times in 5 seconds-time.

When the Load flashes, you are in "MENU' 1"

✓ MENU' 1 – MINIMUM VALUE OF DIMMING

Every single click make it changing the minimum value of dimming

There are six levels of minimum: 0,1%, 1%, 5%, 10%, 20%, 30% e 100%

After setting the minimum value of dimming press long to confirm.

A double flashing confirms the storage and you can go to "MENU' 2"

Note: if you set the minimum level to 100%, once the setting is confirmed, the device automatically exits the MENU'.

✓ MENU' 2 – POWER-ON RAMP (FADE IN)

Every single click make it changing the power-on ramp

There are five levels of power-on ramp (FADE IN): instantaneous, 1 second, 2 seconds, 3 seconds, 6 seconds.

After setting the FADE IN press a long to confirm.

Three flashes confirm the storage and you can go to "MENU' 3"

✓ MENU' 3 – POWER-OFF RAMP (FADE OUT)

Every single click make it changing the power-off ramp

There are five levels of power-off ramp (FADE OUT): Instantaneous, 1 second, 2 seconds, 3 seconds, 6 seconds.

After setting the FADE OUT press long to confirm.

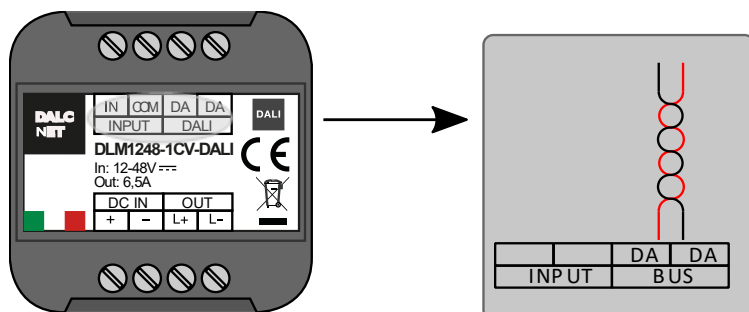
Three quick flashes confirm the storage and you go out from the "DEVICE MENU"

When you are out of the Menu', the Lamp which is connected to the LED Dimmer turns on at the minimum level of dimming previously set.

➤ DALI BUS SETUP

In **DALI BUS SETUP** all the leds are controlled by an external DALI controller.

✓ BUS CONNECTION



✓ FEATURES

BUS DALI

✓ REFERENCE STANDARDS

IEC/EN 62386-101	Digital addressable lighting interface – Part 101: General requirements – System
IEC/EN 62386-102	Digital addressable lighting interface – Part 102: General requirements – Control gear

✓ FUNCTIONS

RELATION WITH LOCAL COMMANDS

At first power-up, in case of absence of connection to the BUS, local control is active.

When the BUS is detected, the control passes to the BUS.

In the absence of signal the control passes to local commands in the event of the button pressure.

ADDRESSING

Simplified method (One ballast connected at time)	✓
Random Address Allocation	✓

ADDRESSES MAP

The intensity and the status (ON/OFF) is controlled by a DALI controller.

Address	Function	Value
0	Dimmer	Intensity [0..254]

COMMAND

STANDARD COMMAND	
DIRECT ARC POWER	✓
OFF	✓
UP	✓
DOWN	✓
STEP UP	✓
STEP DOWN	✓
RECALL MAX LEVEL	✓
RECALL MIN LEVEL	✓
STEP DOWN AND OFF	✓
ON AND STEP UP	✓
GOTO SCENE (0 to 15)	✓
RESET	✓
STORE ACTUAL LEVEL IN THE DTR	✓
STORE THE DTR AS MAX LEVEL	✓
STORE THE DTR AS MIN LEVEL	✓
STORE THE DTR AS SYSTEM FAILURE LEVEL	✓
STORE THE DTR AS POWER ON LEVEL	✓
STORE THE DTR AS FADE TIME	✓
STORE THE DTR AS FADE RATE	✓
STORE THE DTR AS SCENE (0 to 15)	✓
REMOVE FROM SCENE (0 to 15)	✓
ADD TO GROUP (0 to 15)	✓
REMOVE FROM GROUP (0 to 15)	✓
STORE DTR AS SHORT ADDRESS	✓
ENABLE WRITE MEMORY	✗
QUERY STATUS	5
QUERY BALLAST	✓
QUERY LAMP FAILURE	5
QUERY LAMP POWER ON	✓
QUERY LIMIT ERROR	✓
QUERY RESET STATE	✓
QUERY MISSING SHORT ADDRESS	✓
QUERY VERSION NUMBER	✓
QUERY CONTENT DTR	✓
QUERY DEVICE TYPE	6
QUERY PHYSICAL MINIMUM LEVEL	✓
QUERY POWER FAILURE	✓
QUERY CONTENT DTR1	✓
QUERY CONTENT DTR2	✓
QUERY ACTUAL LEVEL	✓
QUERY MAX LEVEL	✓
QUERY MIN LEVEL	✓
QUERY SYSTEM FAILURE LEVEL	✓
QUERY FADE TIME / FADE RATE	✓
QUERY SCENE LEVEL (0 to 15)	✓
QUERY GROUPS 0-7	✓
QUERY GROUPS 8-15	✓
QUERY ADDRESS H	✓
QUERY ADDRESS M	✓
QUERY ADDRESS L	✗
READ MEMORY LOCATION	✗

[illegible]

⁵ Lamp failure returns always No.

⁶ “Query device type” returns DT6 but “Enable device type” is not enable.

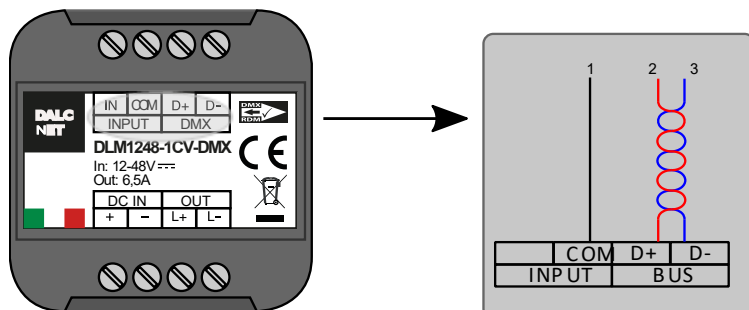
DEFAULT VALUE

	FACTORY	RESET
ACTUAL LEVEL	254	254
POWER ON LEVEL	254	254
SYSTEM FAILURE LEVEL	254	254
MIN LEVEL	1	1
MAX LEVEL	254	254
FADE RATE	7	7
FADE TIME	0	0
SHORT ADDRESS	FF	(no change)
SEARCH ADDRESS	FF FF FF	FF FF FF
RANDOM ADDRESS	FF FF FF	FF FF FF
GROUP 0-7	0	0
GROUP 8-15	0	0
SCENE 0-15	MASK	MASK
STATUS INFORMATION	1??0????	0?100???
VERSION NUMBER	1	(no change)
PHYSICAL MIN. LEVEL	1	(no change)

➤ DMX512+RDM BUS SETUP

With the **DMX+RDM BUS SETUP** in the "slave" condition the outputs are managed by an external DMX controller.

✓ BUS CONNECTION



✓ FEATURES

BUS DMX512 (NSC+RDM)

✓ REFERENCE STANDARDS

ANSI E1.11	Entertainment Technology – USITT DMX512-A – Asynchronous Serial Digital Data Transmission Standard for Controlling Lighting Equipment and Accessories
ANSI E1.20	Entertainment Technology-RDM-Remote Device Management over USITT DMX512 Networks

✓ FUNCTION

RELATION WITH LOCAL COMMANDS

At first power-up, in case of absence of connection to the BUS, local control is active.

When the BUS is detected, the control passes to the BUS.

In the absence of signal the control passes to local commands in the event of the button pressure.

ADDRESSING

RDM	✓
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Notice: device addressing have to be carried out by a DMX-RDM programmer.

CHANNEL MAPS

The intensity and the status (ON/OFF) is controlled by a DMX controller.

Channel	Function	Value
1	Dimmer	Intensity [0..255]

RDM COMMAND

REQUESTED PARAMETERS	
DISC_UNIQUE_BRANCH	✓
DISC_UN_MUTE	✓
SUPPORTED_PARAMETERS	✓
PARAMETERS_DESCRIPTION	✓
DEVICE_INFO	✓
SOFTWARE_VERSION_LABEL	✓
DMX_START_ADDRESS	✓
IDENTIFY_DEVICE	✓

SUPPORTED PARAMETERS	
PRODUCT_DETAIL_ID_LIST	✓
DEVICE_MODEL_DESCRIPTION	✓
MANUFACTURER_LABEL	✓
DEVIDE_LABEL	✓
BOOT_SOFTWARE_VERSION_ID	✓
BOOT_SOFTWARE_VERSION_LABEL	✓
DMX_PERSONALITY	✓
DMX_PERSONALITY_DESCRIPTION	✓
SLOT_INFO	✓
SLOT_DESCRIPTION	✓
DEFAULT_SLOT_VALUE	✓