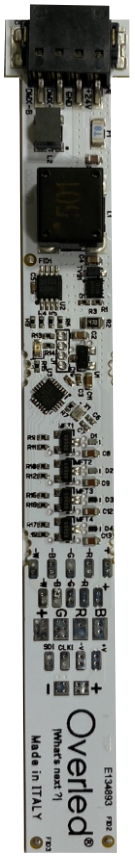
Constant voltage 4 channel DMX/RDM controller

DDS 1171

DDS1171 è un controller DMX/RDM per strip led in tensione costante , questo si utilizza direttamente con bobine led RGB, RGBW, NW-W , W e SPI, praticamente si salda il circuito della bobina led direttamente sul circuito stampato dell DDS1171, si installa dentro l'estruso di alluminio e il connettore rimane all'esterno per la connessione con cavo elettrico 4x0,5mm2.La massima corrente di lavoro è di 4.8 A totale con DDS1171 dissipata su alluminio.
Le apposite PAD su circuito stampato permettono di collegarsi direttamente alle bobine led con saldatura diretta, la DDS1171 prevede una zona dove attaccare la bobina led per irrobustire la saldatura.Le Pad previste permettono di collegare bobine di 10-12mm, e di varie tipologie RGBW opppure RGB , bianco dinamico,monocanale e SPI per controllo pixel fino a 512 canali, questa scheda è fornibile direttamente installata su bobine led di vario tipo oppure singolarmente in quantita minime di confezione.Il DMX / RDM non è optoisolato è protetto fino a 40vdc in caso di errore di connessione elettrica,è protetta contro inversione di polarità, e dotata di fusibile in caso di guasto irreversibile.



DDS1171 is a DMX / RDM controller for constant voltage led strips, this is used directly with RGB, RGBW, NW-W, W and SPI led REEL, practically the led coil circuit is soldered directly on the printed circuit of the DDS1171, it is installed inside the extruded aluminum and the connector remains outside for connection with a 4x0.5mm2 electric cable. The maximum working current is 4.8 A total with DDS1171 dissipated on aluminum.The special PADs on the printed circuit allow to connect directly to the led coils with direct soldering, the DDS1171 provides an area where to attach the led coil to strengthen the soldering The provided pads allow to connect coils of 10-12mm widht, and of various types RGBW or RGB, dynamic white, single-channel and SPI for pixel control up to 512 channels, this card can be supplied directly installed on various types of LED coils or individually in small quantities. The DMX / RDM is not optically isolated and is protected up to 40vdc in case electrical connection error, it is protected against polarity inversion, and equipped with a fuse in case of irreversible failure.

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What's next?

CONTROLLER

Constant voltage DMX/RDM controller

DDS 1171

	Min.	Typ.	Max.
Power supply:	19Vdc	24Vdc	28Vdc
Current max per open drain channel:	0	1,5A	total 4 channel 4.7A dissipated
Power Max dissipated	0	100W	130W
RDM 2.0:		Compatible	
DMX standard:		USITT512	
Control Frequency		2900Hz	
Short Circuit Protection output	not on board		
Common output led power		positive out from connectors	
Drop out Voltage	0,1		0,5
Output voltage Vsupply- drop voltage			
DMX and Power Supply Connector PTSM Phoenix Contact :			
Wire gauge 0.14 mm2 ... 0.5 mm2	AWG 26-20 max current 6A		

environmental			
operating temperature:	-10°	+30°	+54°C
Storage temperature:	Tst -20°	+30°	+85°
Case temperature:	+65°	+65°	+65°
Relative humidity:	RH 80%	RH 80%	RH 80%
Size and weight unboxed	110 x 16 x 5mm	20grams	

Ordering Code:
Constant Voltage DDS1171 4 channels min 10pz.

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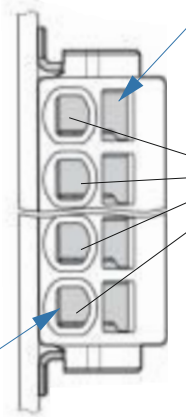
What's next?

CONTROLLER

Constant voltage DMX/RDM controller

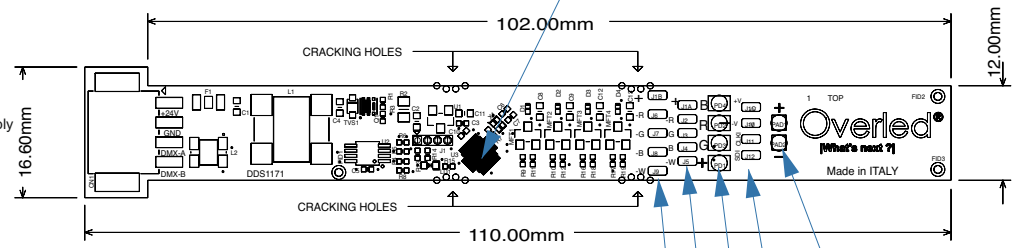
DDS 1171

Connector Front View
Connettore vista frontale



Wire release spring
Molla di rilascio cavo

wire input
ingresso cavo
0.5 mm AWG26-20



tc max 60 degree C

Monocrome led strip
SPI data clock strip led
BRG led strip or dinamic white
RGB led strip
RGBW led Strip

DDS1171installed in aluminium esxtrusion with RGBW strip led
installata con strip led RGBW in estruso

RDM/DMX Power Supply connector

Plastic finished cover
Chiusura plastica protezione

Strip soldering detail
dettaglio saldatura led

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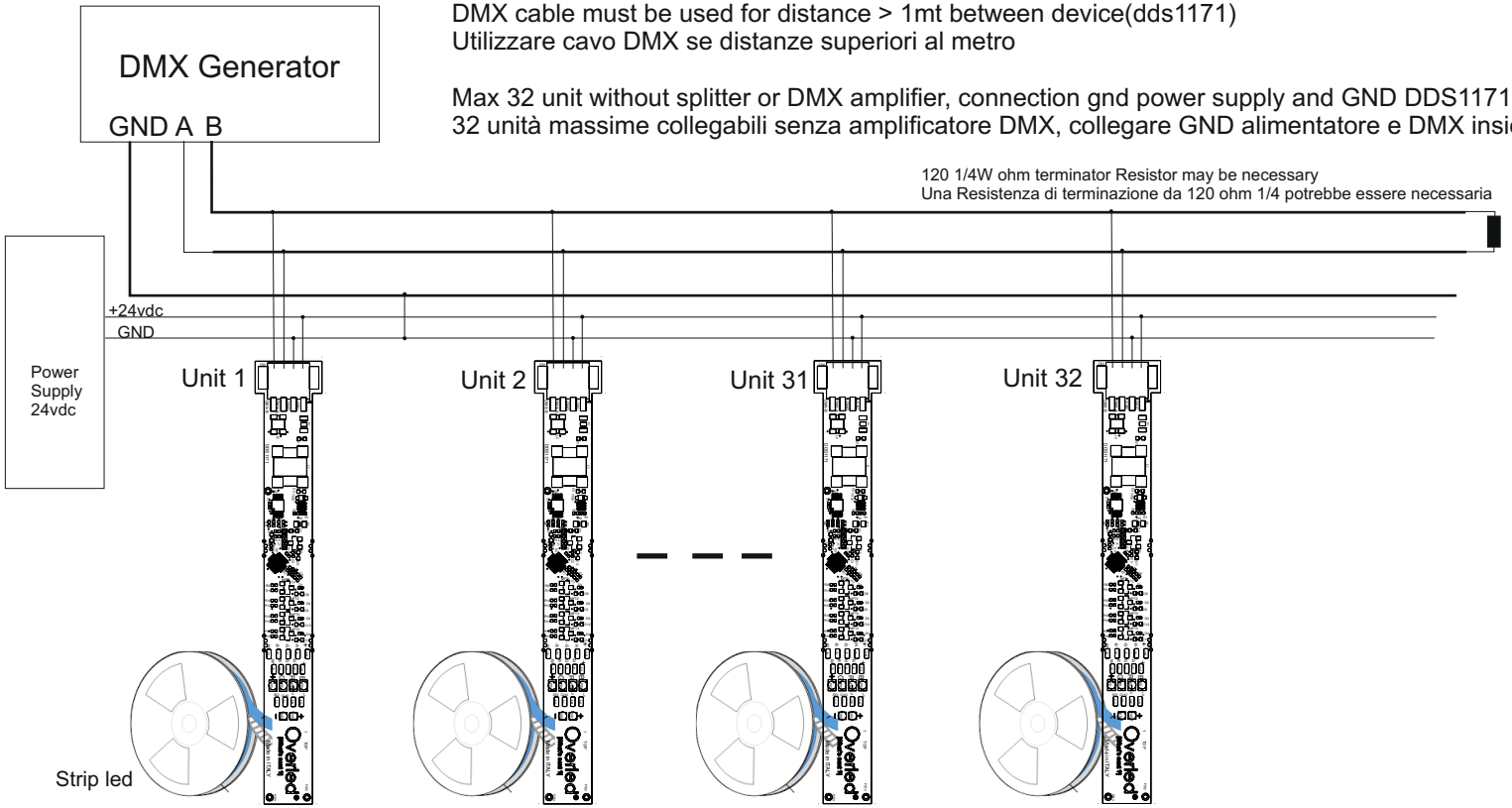
What's next?

Power supply and DMX looping
Alimentazione e DMX collegamenti multipli

DMX cable must be used for distance > 1mt between device(dds1171)
Utilizzare cavo DMX se distanze superiori al metro

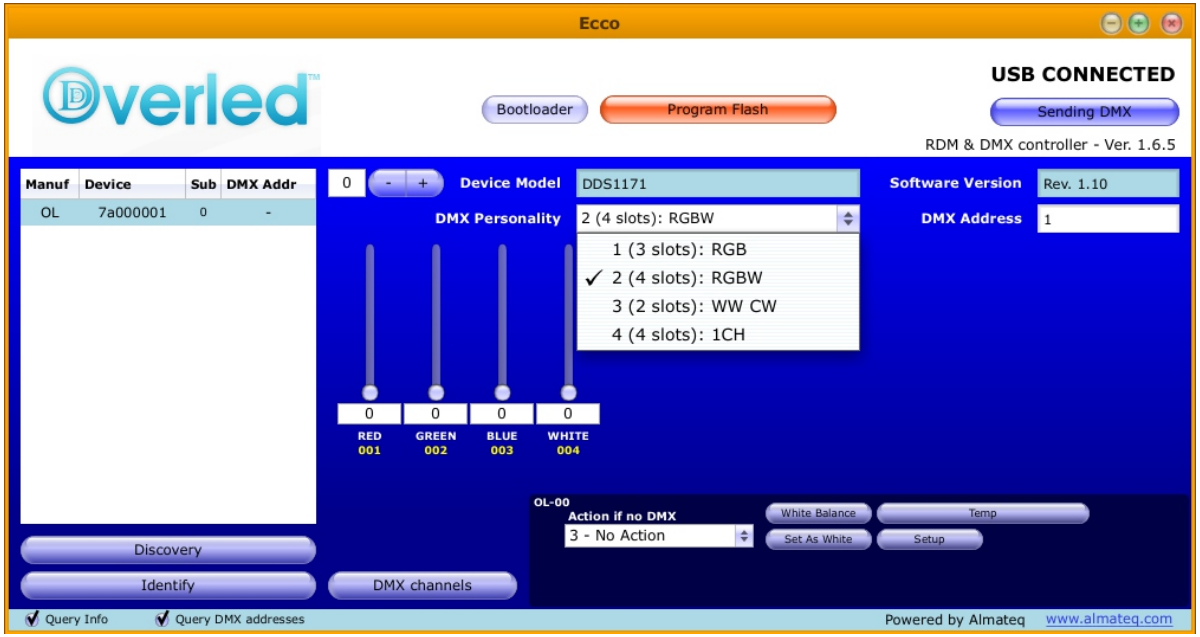
Max 32 unit without splitter or DMX amplifier, connection gnd power supply and GND DDS1171 required
32 unità massime collegabili senza amplificatore DMX, collegare GND alimentatore e DMX insieme



RDM interface operating mode
Interfaccia RDM modo operativo

- Alimentazione al dispositivo
- Allacciare segnale DMX ai poli (A+) e (B-)
- Predisporre il collegamento a PC attraverso l'interfaccia ECCO e lanciare l'omonimo programma di gestione
- Alimentare la scheda, quindi lanciare la ricerca rapida dei componenti dall'Ecco col comando Discovery tenendo contemporaneamente premuto il tasto Shift (rilasciarlo appena lanciato il comando)
- Nella finestra a sinistra del pannello di visualizzazione Ecco appare la riga relativa al componente identificato
- Selezionare il componente col mouse e quindi appare la videata relativa al componente selezionato
- Aprire la finestra relativa alle DMX Personality cliccando col mouse sulle freccette a destra
- Selezionare la personalità desiderata cliccando col mouse sulla riga relativa che viene evidenziata (anche con il simbolo di “spunta” a sinistra)
- La scheda memorizza immediatamente la nuova personalità ed è pronta per essere utilizzata
- Spegnere l'alimentatore prima di staccare i cavi dalla scheda

N.B. Utilzzando Ecco è poi possibile andare a programmare anche il suo indirizzo DMX (DMXAddress) o la sua azione in assenza di DMX (Action if no DMX) ecc. In caso di selezione dello show se non c’e’ DMX viene eseguito Red,Green and Blue in accensione sequenziale.



- Connect Ecco RDM signal to the device DMX input , A and B or + and - (A+) (B-)
- Run Ecco or Esuite in PC /MAC
- Power device On (DDS1171)
- USE Discovery button on the screen of your pc, to get all devices connected on the DMX line
- In to the left window a complete list of device appear
- Select with the mouse one of device on the list
- Click on right button on you mouse to get info from device
- Choice the personality you wanted
- Now the device have stored in memory the personality
- Same for addressing , select device you want to change Address and edit the new one in the ADDRESS window.
-Select also what the device must do if no DMX available, just click in the window “ACTION IF NO DMX”and select all available for this device.

In case of show, the device make run 3 basic color first Red,Green and Blue and start againg until DMX signal return.

More detail on ECCO http://www.overled.com/overledDDSdatasheet/Eccox3.pdf

RDM Physical layer

The RDM protocol and the RDM physical layer were designed to be compatible with legacy equipment. All compliant legacy DMX512 receivers should be usable in mixed systems with an RDM controller (console) and RDM responders (receivers). DMX receivers and RDM responders can be used with a legacy DMX console to form a DMX512 only system. From a user's point of view the system layout is very similar to a DMX system. Thecontroller is placed at one end of the main cable segment. The cable is run receiver to receiver in a daisy-chain fashion. RDM enabled splitters are usedthe same way DMX splitters would be. The far end (the non console or splitter end) of a cable segment should be terminated.RDM requires two significant topology changes compared to DMX. However, these changes are generally internal to equipment and therefore not seen by the user.First, a controller's (console's) output is terminated. Second, this termination must provide a bias to keep the line in the 'marking state'when no driver is enabled.The reason for the additional termination is that a network segment will be driven at many points along its length. Hence, either end of the segment, if unterminated, will cause reflections.ADMX console's output drivers are always enabled. The RDM protocol is designed so that except during discovery, there should never be data collisions. To assure this lack of collisions, while making possible implementation on different platforms, there are times when all line drivers are required to be disabled. If nothing more than the termination was done, the line would float to some unknown level. In that case one or more random changes might be read on the line. These random changes greatly decrease system accuracy. So the biasing of the line is requiredTo assure this, section 2.4.1 (Line Bias Networks) of the standard says; "The command port shall provide a means to bias the termination of the data link to a value of at least 245 mV and verified by using the test circuit described in Appendix F."The standard further states that, the biasing mean "shall be polarized such that Data+ of the data link is positive with respect to Data- the data link. The Line Biasing network shall maintain this bias when the data link is loaded with the equivalent of 32 unit loads and common mode voltage is varied over the range of +7 volts to -7 voltThe standard does not require any particular circuit for providing the basis and termination; however, the simplest method is often a passive pull apart network.Whatever method is used must be tested with the chosen driver chip to see that the design combination still meets the requirement of E1.20. Tests are given in Appendix F of the standard. These tests are for design verification and are not required as production testing. Experience has shown many EIA485 drivers designed for 5 volt operation will pass the required tests. It is not so clear that all 3.3 volt parts will pass. In either case this performance must be verified. Details of the pull apart network and the tests can be found in ANSI E1.20 - 2006.

Protocol

RDM packets are inserted in-between the existing DMX data packets being used to control the lighting data. The DMX 512 specification always requires that DMX packets begin with the start code. The default Start Code is 0x00(also known as the Null Start Code). By using the start code 0xCC, RDM packets can be safely inserted between DMX data packets without older non-RDM aware devices attempting to read them.The DMX 512 specification required DMX connectors to be a 5-pin XLR type, with only the first 3 pins being used (pins 4 and 5 were reserved for "future use"). Unfortunately, various manufacturers started using the final two pins for various, proprietary purposes, such as low-voltage power or proprietary talkback protocols. As a result, the decision was made to have all RDM communication on pins 2 and 3. This raises data collision concerns.The RDM standard addresses this problem by ensuring that in all cases (except discovery) only one device is authorized to be transmitting at any given time (somewhat similar to the token passing approach). Only the controller (of which there can be only one) can start an RDM exchange. Responders can speak only if spoken to. The controller will always initiate all RDM communication. All RDM devices have a unique identifier (UID) that consists of a manufacturer ID and serial number.Protocol

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DMX specification standard
Specifiche standard DMX

DMX512

Developed by the Engineering Commission of United States Institute for Theatre Technology (USITT), the standard was created in 1986, with subsequent revisions in 1990 leading to USITT DMX512/1990.DMX512-A In 1998 the Entertainment Services and Technology Association(ESTA) began a revision process to develop the standard as an ANSI standard. The resulting revised standard, known officially as "Entertainment Technology — USITT DMX512-A — Asynchronous Serial Digital Data Transmission Standard for Controlling Lighting Equipment and Accessories", was approved by the American National Standards Institute (ANSI) in November 2004. This current standard is also known as"E1.11, USITT DMX512-A", or just "DMX512-A", and is maintained by ESTA.

Network topology

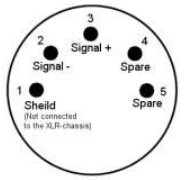
ADMX512 network employs a multi-drop bus topology with nodes strung together in what is commonly called a daisy chain. Anetwork consists of asingle DMX512 controller — which is the sole master of the network — and one or more slave devices. For example, a lighting console is frequently employed as the controller for a network of slave devices such as dimmers, fog machines and intelligent moving lights.Each slave device has a DMX512 "IN" connector and, in many case, a DMX512 "OUT" connector (sometimes marked "THRU") as well. The controller, which has only an OUT connector, is connected via a DMX512 cable to the IN connector of the first slave. Asecond cable then links the OUTor THRU connector of the first slave to the IN connector of the next slave in the chain, and so on. The final, empty, OUTor THRU connector ofthe last slave on the daisy chain should have a terminator plugged into it. Aterminator is a stand-alone male connector with a built-in resistor. Theresistor — typically 120 Oto match the cable characteristic impedance, is connected across the primary data signal pair. If a secondary data pair isused, then another termination resistor is connected across it as well. Although simple systems, i.e., systems having few devices and short cableruns, may work reliably without a terminator, it is considered good practice always to use a terminator at the end of the daisy chain. Some DMXdevices have built-in terminators that can be manually activated with a mechanical switch or by software, or by automatically sensing the absence of a connected cable.Each DMX network is called a "DMX universe". Large control desks (operator consoles) may have the capacity to control multiple universes, with an OUTconnector provided for each universe.

Connectors

DMX512 1990 specifies that where connectors are used, the data link shall use five-pin XLR style electrical connectors (XLR-5), with female connectors used on transmitting (OUT) ports and male connectors on receiving ports. DMX512-A (E1.11) requires the use of an XLR-5 connector,unless there is insufficient physical space on the device, in which case an XLR-5 adapter shall be supplied. DMX512-A(E1.11-2008) allows the use ofeight-pin modular (RJ-45) connectors for fixed installations where regular plugging and unplugging of equipment is not required.Some DMX512 equipment manufacturers employ non-compliant connectors and pinouts; the most common of these is the three-pin XLR connector, since theelectrical specification currently only defines a purpose for a single wire pair.There is risk of equipment damage if a novice unfamiliar with lighting technology accidentally plugs XLR 3-pin DMX into an audio device, since the DMX signal voltages are much higher than what audio equipment normally uses.Also, devices are sometimes fitted with four-pin connectors when both communications and power are sent through a common cable.

The RJ-45 connector pinout matches the conductor pairing scheme used by Category 5(Cat5) twisted pair patch cables. The avoidance of pins 4 and 5 helps to prevent equipment damage, if the cabling is accidentally plugged into a single-line public switched telephone network phone jack.Cabling for DMX512 was removed from the standard and a separate cabling standards project was started in 2004. Two cabling standards have been developed, one for portable DMX512 cables (ANSI E1.27-1 - 2006) and one for permanent installations (draft standard BSR E1.27-2). This resolved issues arising from

XLR-5 pinout
1. Signal Common
2. Data 1- (Primary Data Link)
3. Data 1+ (Primary Data Link)
4. Data 2- (Optional Secondary Data Link)
5. Data 2+ (Optional Secondary Data Link)



RJ-45 pinout
1. Data 1+
2. Data 1-
3. Data 2+
4. Not Assigned
5. Not Assigned