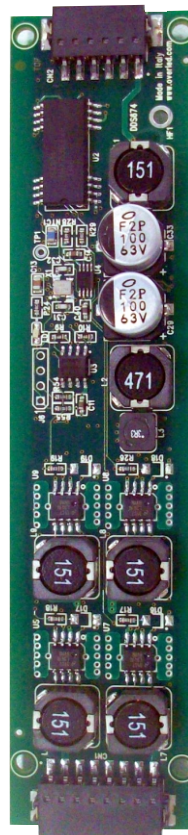


DDS674 è un controller per led in corrente costante a quattro canali. Questo modulo funziona in modalità DMX/RDM stand alone con show preprogrammati, la polarità dei segnali DMX/RDM sono automaticamente riconosciuti anche in caso di connessione errata sui morsetti.

La tensione di alimentazione di questo modulo è di 48vdc permette di collegare per ogni canale 14 led ($v_f \text{ led} < 3,1Vdc$) in serie per un totale di 56 led, la tensione di Drop out della DDS674 quindi la minima necessaria per la regolazione corretta della corrente è di 3V tipico, pertanto $V_{UOT} \text{ max} = V_{IN} - 3V$. La tipologia di controllo in corrente del led è isteretica e garantisce la massima performance di regolazione luminosa nella modalità a 16bit.

La corrente dei led in uscita è programmabile tramite RDM da un minimo di 200mA fino alla massima di 600mA.

Il dispositivo è protetto sulla alimentazione da sovraccarico o guasto con fusibile non ripristinabile, l'alimentazione è fornibile su appositi morsetti, le uscite led hanno sia il positivo che il negativo per ogni uscita led, per un totale di 8.



DDS674 4 channel constant current can supply up to 14 led in series @48vdc 600mA.

This module can work in several mode DMX/RDM and stand alone.

The DMX/RDM polarity is self corrected by the board also if wrong connection.

The current output can be programmed by RDM from 200mA up to 600mA.

The current mode is hysteretic to guarantee the best light dimming performance also at 16Bit control.

Control Frequency PWM can be varied from default 240Hz up to 1,2Khz. this is for flicker free feature.

All output are positive common.

The power supply is applied to connectors a fuse is provided for overvoltage protection.

Voltage dropout is 3v, the maximum voltage regulation is $V_{supply} - 3V$, this must be considered for maximum led per channel calculation.

A thermal protection on board is provided, in case of temperature rising at 80 degree ambient start to decrease current to LED. The max temperature peak is recorded and can be read by RDM, same for number of worked hour of the product.

	Min.	Typ.	Max.
Power supply:	22vdc	24vdc	28vdc
Current max per open drain channel:	200mA		650mA
Power supply Voltage	20		48Vdc
RDM 2.0:	Compatible		
DMX standard:	optoinsulated	USITT512	
Control Frequency	240 Hz		1250Hz
Short Circuit Protection			
Common	positive out from connectors		
Drop out Voltage	2,9		3,1
Output voltage Vsupply-3v			
Max Led per channel @48vdc 14	Current ripple max 90mA RMS		
Wire gauge for Boxed version AWG 24-16	0,2-1,2mm		

environmental

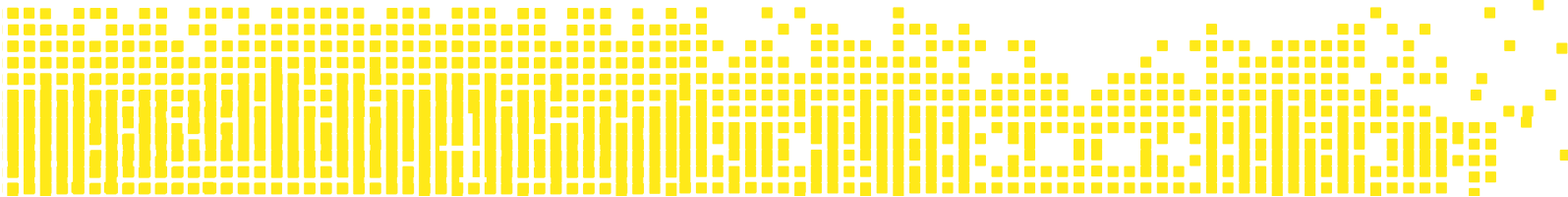
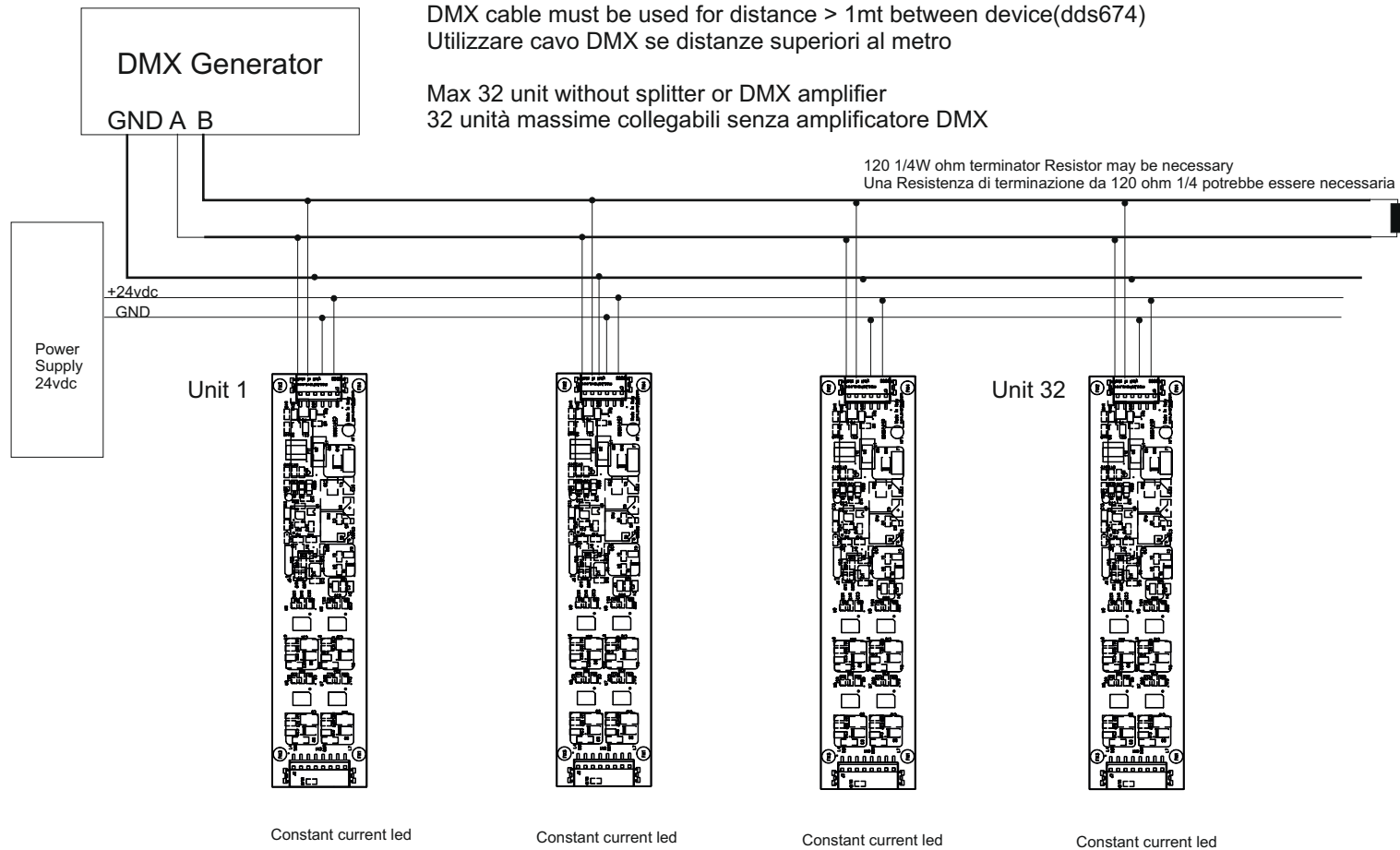
operating temperature:	-10°	+30°	+54°C
Storage temperature:	Tst -20°	+30°	+85°
Case temperature:	+65°	+65°	+65°
Relative humidity:	RH 80%	RH 80%	RH 80%
Size and weight unboxed	140 x 32 x 18mm	40grams	
Size and weight boxed	200 x 39 x 24 mm	120 grams	

DDS674 Boxed aluminium black anodized version



Ordering code : DDS674Boxed

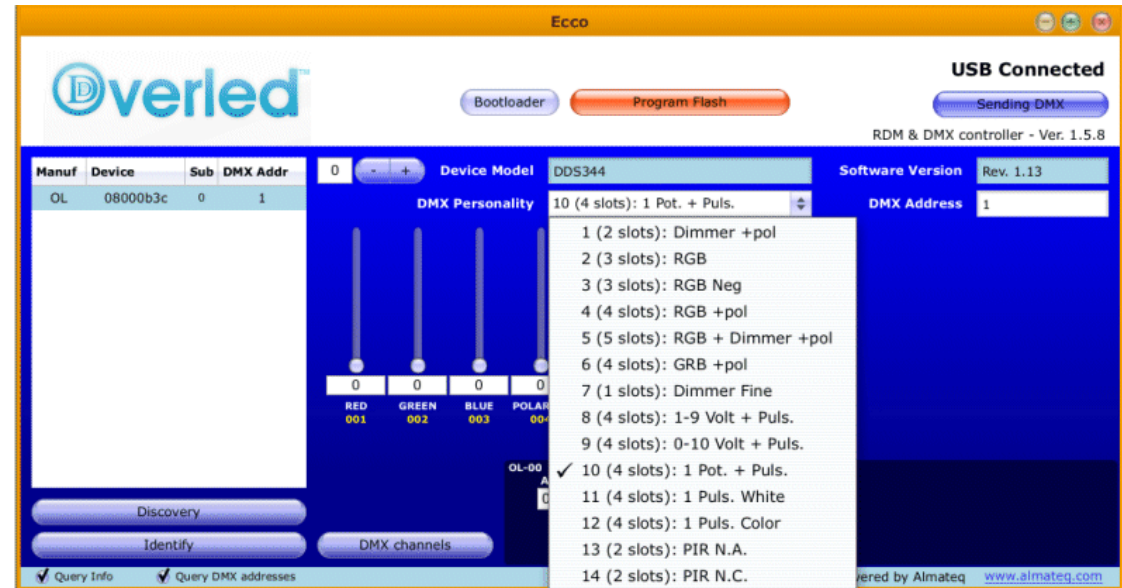
Power supply and DMX looping Alimentazione e DMX collegamenti multipli



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 frecce 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
- Spegner l'alimentatore prima di staccare i cavi dalla scheda
- N.B. Utilizzando 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'è 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 (DDS453)
- 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 again until DMX signal return.



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

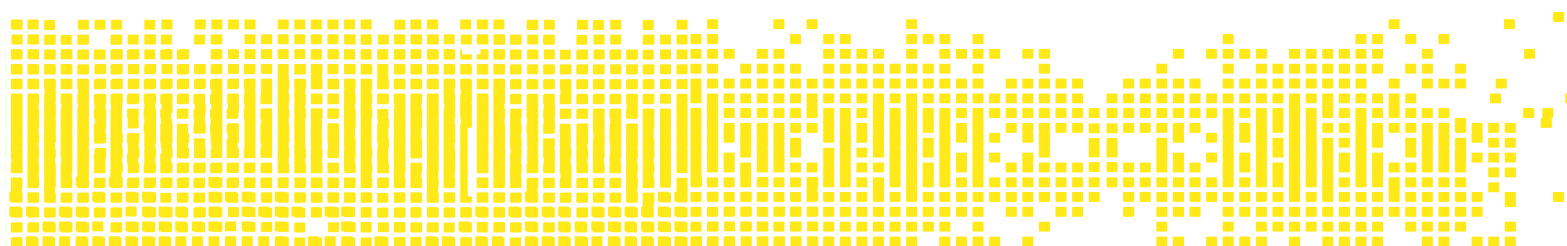
RDM personality list Elenco personalità RDM

Personality	DMX Channel Offset	DMX slot (DMX used Channel per personality)														DDS 453 output			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	Out 1	Out 2	Out 3	Out 4
1	1 slot, '1CH (Dimmer)	Dimmer	nu	nu	nu	nu	nu	nu	nu	nu	nu	nu	nu	nu	nu	0-255	0-255	0-255	0-255
2	1 slot, '1CH (Shutter)	Shutter	nu	nu	nu	nu	nu	nu	nu	nu	nu	nu	nu	nu	nu	255-0	255-0	255-0	255-0
3	7 slot, 'ST7 GRBW - Speedy ST7	Green	Red	Blue	White	Syncro	Strobe	Delay	nu	nu	nu	nu	nu	nu	nu	Green	Red	Blue	White
4	3 slot, 'RGB'	Red	Green	Blue	nu	nu	nu	nu	nu	nu	nu	nu	nu	nu	nu	Red	Green	Blue	nu
5	4 slot, 'RGB + Dimmer'	Red	Green	Blue	Dimmer	nu	nu	nu	nu	nu	nu	nu	nu	nu	nu	Red	Green	Blue	nu
6	4 slot, 'RGBW'	Red	Green	Blue	White	nu	nu	nu	nu	nu	nu	nu	nu	nu	nu	Red	Green	Blue	White
7	5 slot, 'RGBW + Dimmer'	Red	Green	Blue	White	Dimmer	nu	nu	nu	nu	nu	nu	nu	nu	nu	Red	Green	Blue	White
8	4 slot, 'GRBW'	Green	Red	Blue	White	nu	nu	nu	nu	nu	nu	nu	nu	nu	nu	Green	Red	Blue	White
9	7 slot, 'ST7 RGBW - Speedy'	Red	Green	Blue	White	Syncro	Strobe	Delay	nu	nu	nu	nu	nu	nu	nu	Red	Green	Blue	White
10	7 slot, 'RGBW Sync Strobe Delay' GAMMA Curve	Red	Green	Blue	White	Syncro	Strobe	Delay	nu	nu	nu	nu	nu	nu	nu	Red	Green	Blue	White
11	8 slot, 'RGBW Sync Strobe Delay Dimmer'	Red	Green	Blue	White	Strobe	Syncro	Delay	Dimmer	nu	nu	nu	nu	nu	nu	Red	Green	Blue	White
12	14 slot, 'RGBW16 Strobe Dimm. CTC Fade Frq'	Red-H	Red-L	Green-H	Green-L	Blue-H	Blue-L	White-H	White-L	Strobe	Dimmer	CTC	Fade	Freq-H	Freq-L	Red	Green	Blue	White
13	8 slot, 'RGB16 + Frq'	Red-H	Red-L	Green-H	Green-L	Blue-H	Blue-L	Freq-H	Freq-L	nu	nu	nu	nu	nu	nu	Red	Green	Blue	nu
14	4 slot, '1-9 Volt + Puls.' Input 1-9V e/o pulsanti UP/DW	Red	Green	Blue	White	nu	nu	nu	nu	nu	nu	nu	nu	nu	nu	Red	Green	Blue	White
15	4 slot, '0-10 Volt + Puls.' Input 0-10V e/o switches UP/DW	Red	Green	Blue	White	nu	nu	nu	nu	nu	nu	nu	nu	nu	nu	Red	Green	Blue	White
16	4 slot, '1 Pot. + Puls.' Input Potentiometer e/o switch UP/DW	Red	Green	Blue	White	nu	nu	nu	nu	nu	nu	nu	nu	nu	nu	Red	Green	Blue	White
17	4 slot, '3 Pot.' 3 input potentiometer → R, G, B.	Red	Green	Blue	White	nu	nu	nu	nu	nu	nu	nu	nu	nu	nu	Red	Green	Blue	White

Default personality = 16

nu not used

- Dimmer Adjust all out value 0 = off , 255 = maximum light out
- Shutter Adjust all out value 255 = off , 0 = maximum light out
- Syncro send syncro to all DMX devices
- Strobe Flash all the output 0 = all off 1-255 flash different speed
- Delay Delay output respect syncro signal
- CTC Colour Table Wheel start from > 28
- Fade smooth colour change time, 0 = none 255= maximum 2,5 sec.
- Freq H/L Flicker Free Frequency 244-1000hz for TV camera shutter



RDM Current setting RDM impostazione della corrente

- 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
- Premere il TASTO setup, appare la schermata numero 2, lo slider 002 identifica la quantità di corrente sulle uscite:

Slider 2	Valore in corrente
Valore = 255	corrente = 600mA
Valore = 136	corrente = 500mA
Valore = 100	corrente = 400mA
Valore = 86	corrente = 350mA

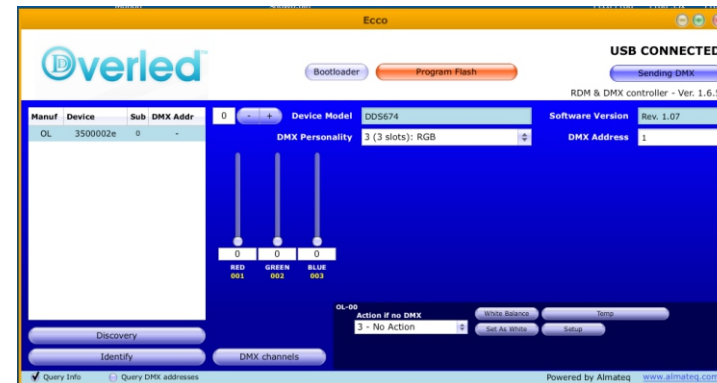
Lo slider 001 deve rimanere a 255.

- 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 (DDS674)
- 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 setup button to set current
- Select the current by slider 002 as in this table:

Slider 2	current output
Val. = 255	I = 600mA
Val. = 136	I = 500mA
Val. = 100	I = 400mA
Val. = 86	I = 350mA

Slider 001 must stay at 255.

Screenshot 1



Screenshot 2



Current slider

Setup

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. The controller 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 used the 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. A DMX 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 required. To 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 volt. The standard does not require any particular circuit for providing the bias 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

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.

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

DMX512 network employs a multi-drop bus topology with nodes strung together in what is commonly called a daisy chain. A network consists of a single 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 cases, 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. A second cable then links the OUT or THRU connector of the first slave to the IN connector of the next slave in the chain, and so on. The final, empty, OUT or THRU connector of the last slave on the daisy chain should have a terminator plugged into it. A terminator is a stand-alone male connector with a built-in resistor. The resistor – typically 120 Ohms to match the cable characteristic impedance, is connected across the primary data signal pair. If a secondary data pair is used, then another termination resistor is connected across it as well. Although simple systems, i.e., systems having few devices and short cable runs, may work reliably without a terminator, it is considered good practice always to use a terminator at the end of the daisy chain. Some DMX devices 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 OUT connector provided for each universe.

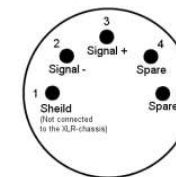
Connectors

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 of eight-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 the electrical 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

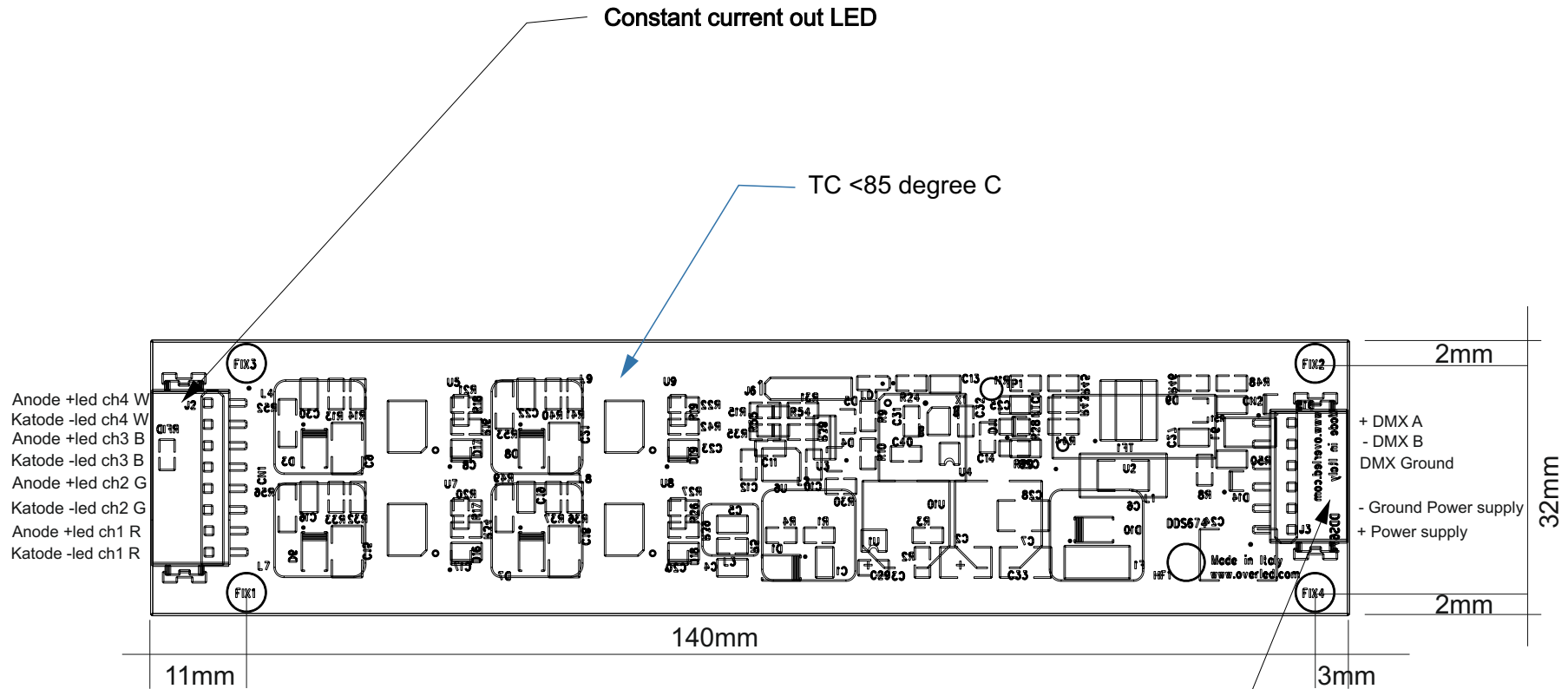
XLR-5 pinout

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



Ordering Code:
 Constant Current DDS674-4 4 channels

Power supply and DMX connector

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