

**DDS453** it is constant current or constant voltage controller, 4 channel. In constant current can supply up to 12 led in series @48 vdc 1-3W. This module can work in several mode DMX / RDM / stand alone / potentiometer / switches / enocan wireless switches / infrared remote control. In current mode hysteretic control guarantees the best light dimming performance. In voltage mode the controls options are same DMX/RDM... but the led used they must be constant voltage kind, this unit can supply up to 250w of strip led or led with embedded electronic for current mode @24vdc, it can also supplied at 12vdc. All output are positive common, and ground control. The power supply is applied to connector that have in and out to make it easy the chain connection between modules, the maximum number of module must be 5 per power supply.

**DDS453** è un controller per led sia in corrente che in tensione costante a quattro canali. Questo modulo è indicato per applicazioni in quadri elettrici su montaggio barra din, funziona in modalità DMX/RDM/0-10Vdc/pulsante/Infrarosso con telecomando e stand alone con show preprogrammati.

**DDS453** nella versione a corrente costante permette di selezionare la corrente del led tramite due morsettiere e quindi di essere applicato per alimentare tutti i tipi di led da 1W fino a 3W, la tensione di alimentazione di questo modulo va da 24vdc fino a 48vdc permettendo di collegare per ogni canale 12 led in serie per un totale quindi di 48 led la tipologia di controllo del led è isteretica che garantisce la massima performance di regolazione luminosa nella modalità a 16bit. La versione in tensione costante funziona a 24vdc o 12vdc e permette di gestire strip led o led in tensione fino ad un massimo di 570w totali per i 4 canali, sia per la versione in corrente che in tensione i led si alimentano riferiti ad un unico comune, per le quattro uscite, questo è positivo mentre le uscite sono verso massa.

Il dispositivo è protetto da sovraccarico o guasto con fusibile non ripristinabile, l'alimentazione è fornibile su appositi morsetti che la rilanciano su altri adiacenti per collegamento di più unità in cascata, da considerare un massimo di 5 unità collegabili tramite questi morsetti.

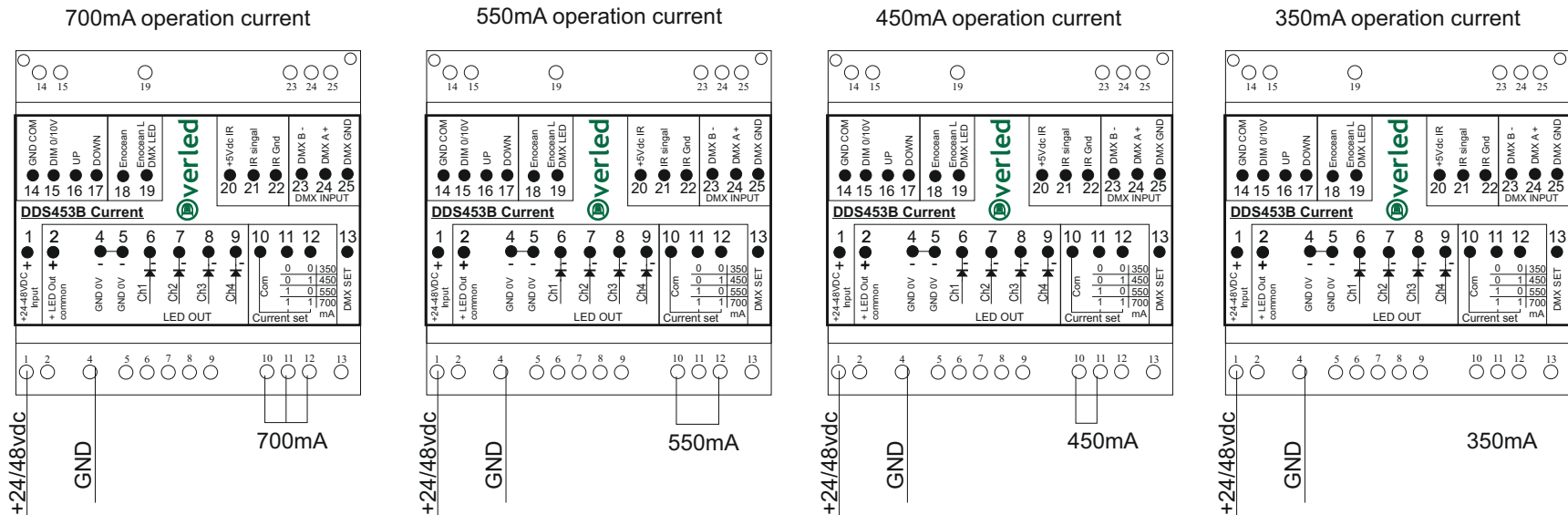
Technical Specifications Constant current:

Power supply: 24-48vdc  
 Current max per channel 700mA  
 DMX standard USITT512  
 DMX self learning, addressing mode  
 DMX optoinsulated  
 RDM 2.0 Compatible  
 Short Circuit Protection all 4 output protection  
 Common positive for led connection  
 Hysteretic Frequency out 500Khz  
 Hysteretic Constant Current  
 4 channel output  
 up to 12 led per channel @48vdc  
 MAX led 48 3W each  
 INFRARED Receiver  
environmental  
 operating temperature: -10° to +54°C  
 Storage temperature: Tst -20° to +85°  
 Case temperature: Tc +65°  
 Relative humidity: RH 80%

Technical Specifications Constant Voltage:

Power supply: 12-48vdc  
 Total power max 570W @24vdc  
 DMX standard USITT512  
 DMX self learning, addressing mode  
 DMX optoinsulated  
 RDM 2.0 Compatible  
 Common positive for led connection  
environmental  
 operating temperature: -10° to +54°C  
 Storage temperature: Tst -20° to +85°  
 Case temperature: Tc +65°  
 Relative humidity: RH 80%

# DDS453B-I Current setting

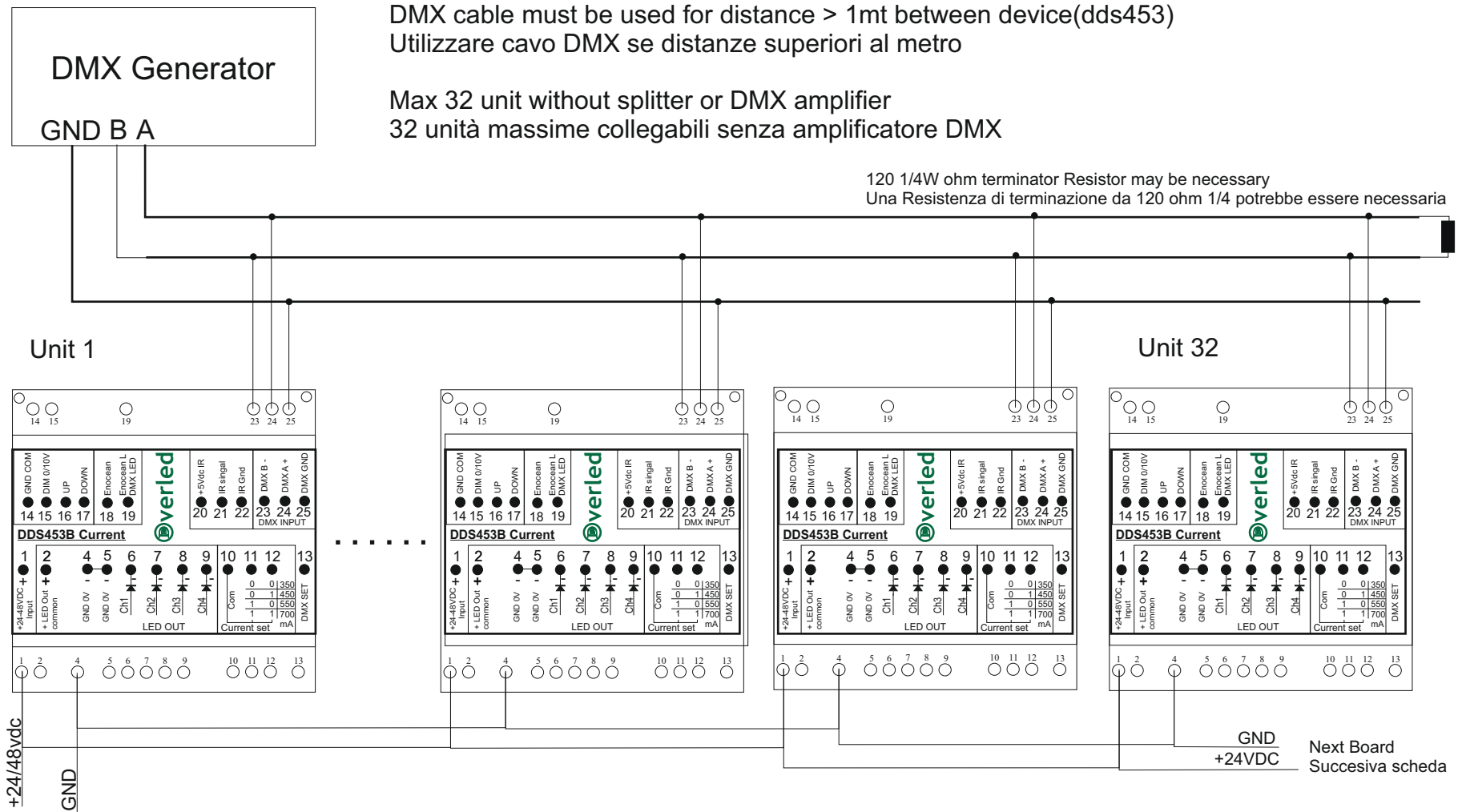


**DDS453B** For current setting please follow the wiring as in schematics above, for each current make the jumper the power supply doesn't affect the current output.

**DDS453B** Selezionare la corrente secondo lo schema di sopra seguendo il cablaggio fare i ponticelli per la corrente voluta, la tensione di alimentazione può essere indifferentemente 24 o 48vdc e non è influente.

# Power supply and DMX looping Alimentazione e DMX collegamenti multipli

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Max 16 Amp, MAX wire section 2.5mm  
Massimo 16 A, sezione cavo massima 2.5mm

# 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.

### Electrical

DMX512 data are sent using EIA-485 voltage levels. However, quoting from E1.11, "The electrical specifications of this Standard are those of EIA-485-A, except where specifically stated in this document. Where a conflict between EIA-485-A and this document exists, this document is controlling as far as this Standard is concerned." DMX512 is a bus network no more than 1200 meters long, with not more than 32 devices on a single bus. If more than 32 devices need to communicate, the network can be expanded across parallel buses using DMX splitters. Network wiring consists of a shielded twisted pair, with a characteristic impedance of 120 Ohms, with a termination resistor at the end of the cable furthest from the controller to absorb signal reflections.

### 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.

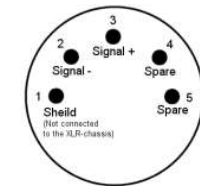
The RJ-45 connector pinout matches the conductor pairing scheme used by Category 5 (Cat5) twisted pair patch cables. The avoidance of pins 4 and 5 helps to prevent equipment damage, if the cabling is accidentally plugged into a single-line public switched telephone network phone jack. Cabling for DMX512 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 the differences in requirements for cables used in touring shows versus those used for permanent infrastructure. The electrical characteristics of DMX512 cable are specified in terms of impedance and capacitance, although there are often mechanical and other considerations that must be considered as well. Cable types that are appropriate for DMX512 usage will have a nominal characteristic impedance of 120 ohms. Cat5 cable, commonly used for networking and telecommunications, has been tested by ESTA for use with DMX512A. Also, cables designed for EIA485 typically meet the DMX512 electrical specifications. Conversely, microphone and line level audio cables lack the requisite electrical characteristics and thus are not suitable for DMX512 cabling. The significantly lower impedance and higher capacitance of these cables distort the DMX512 digital waveforms, which in turn can cause irregular operation or intermittent errors that are difficult to identify and correct.

### 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)

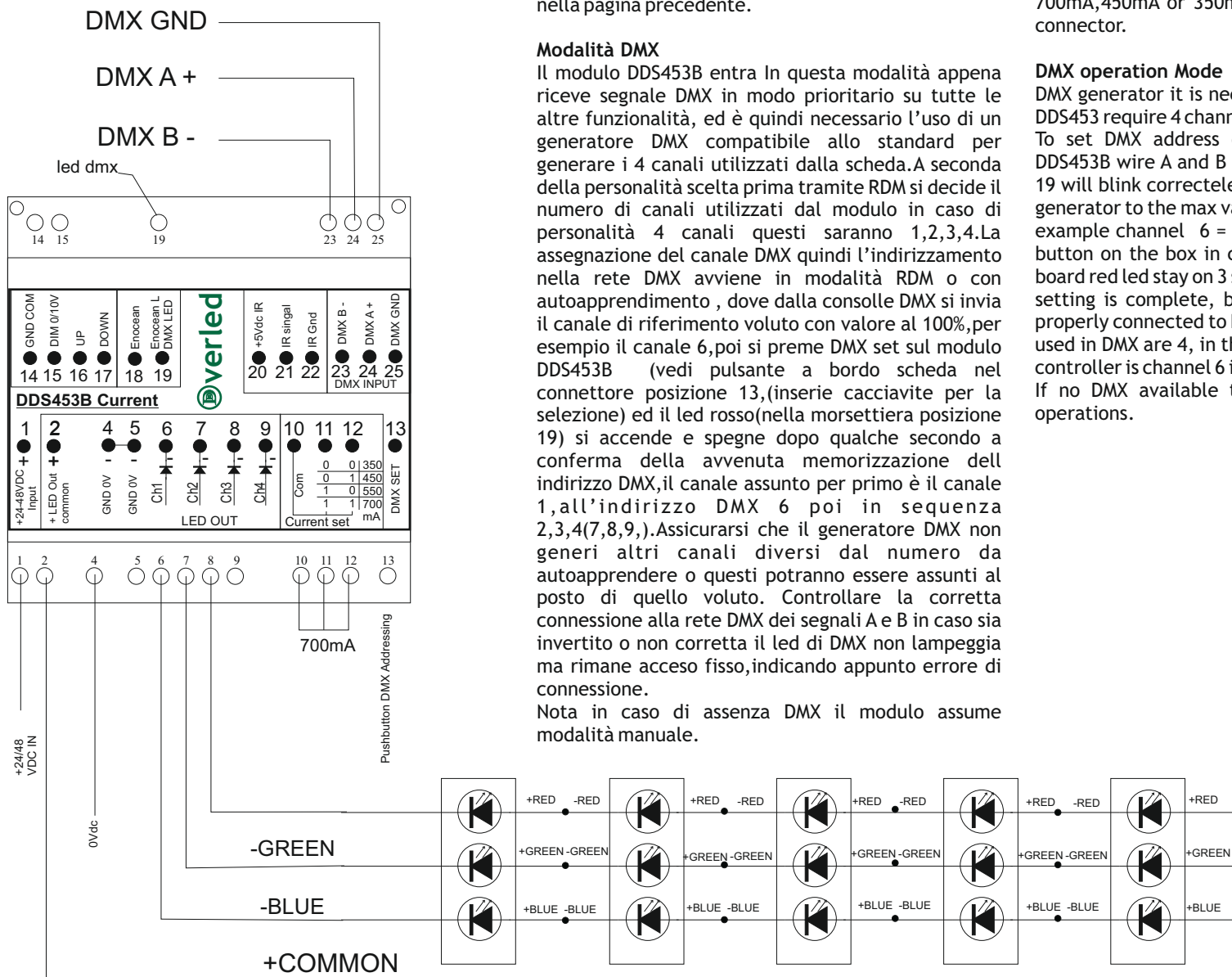
### RJ-45 pinout

1. Data 1+
2. Data 1-
3. Data 2+
4. Not Assigned
5. Not Assigned
6. Data 2-
7. Signal Common (0 V) for Data 1
8. Signal Common (0 V) for Data 2





# DDS453B-I-DMX MODE



## UTILIZZO DEL CONTROLLER IN DMX

Si raccomanda prima di collegare le uscite ai led di selezionare la corrente se 350mA,450mA,550mA o 700mA con il ponticello sui morsetti come mostrato nella pagina precedente.

### Modalità DMX

Il modulo DDS453B entra in questa modalità appena riceve segnale DMX in modo prioritario su tutte le altre funzionalità, ed è quindi necessario l'uso di un generatore DMX compatibile allo standard per generare i 4 canali utilizzati dalla scheda. A seconda della personalità scelta prima tramite RDM si decide il numero di canali utilizzati dal modulo in caso di personalità 4 canali questi saranno 1,2,3,4. La assegnazione del canale DMX quindi l'indirizzamento nella rete DMX avviene in modalità RDM o con autoapprendimento, dove dalla consolle DMX si invia il canale di riferimento voluto con valore al 100%, per esempio il canale 6, poi si preme DMX set sul modulo DDS453B (vedi pulsante a bordo scheda nel connettore posizione 13, (inserire cacciavite per la selezione) ed il led rosso (nella morsettiera posizione 19) si accende e spegne dopo qualche secondo a conferma della avvenuta memorizzazione dell'indirizzo DMX, il canale assunto per primo è il canale 1, all'indirizzo DMX 6 poi in sequenza 2,3,4(7,8,9). Assicurarsi che il generatore DMX non generi altri canali diversi dal numero da autoapprendere o questi potranno essere assunti al posto di quello voluto. Controllare la corretta connessione alla rete DMX dei segnali A e B in caso sia invertito o non corretta il led di DMX non lampeggia ma rimane acceso fisso, indicando appunto errore di connessione.

Nota in caso di assenza DMX il modulo assume modalità manuale.

## DMX MODE

DDS453 In DMX mode a DMX generator is required to control the board, before connect the LED, please verify the LED current, default value is 350mA, for 700mA,450mA or 350mA jumper it is required in the connector.

### DMX operation Mode

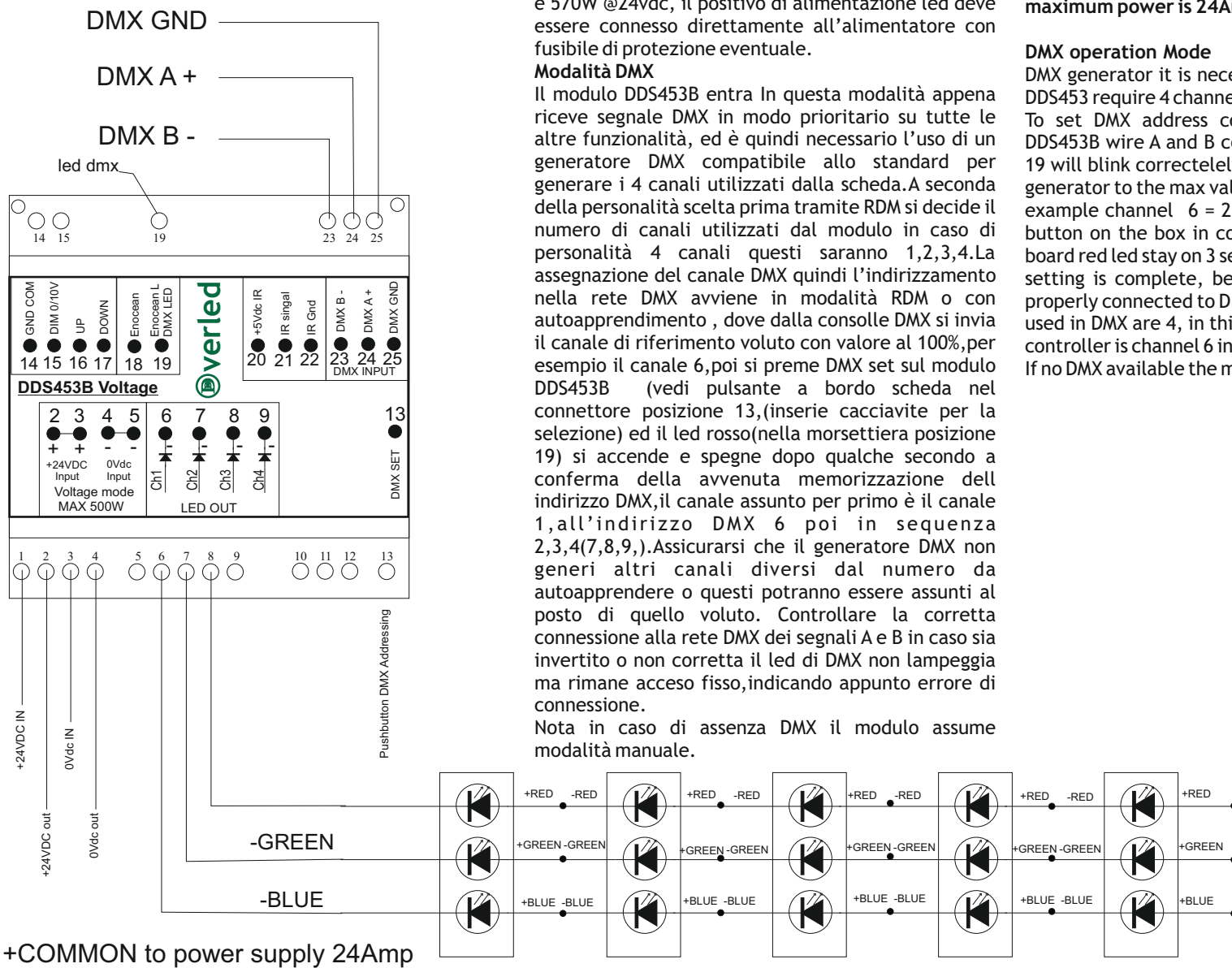
DMX generator it is necessary in this operating mode, DDS453 require 4 channels from DMX streaming. To set DMX address connect the DMX generator, to DDS453B wire A and B correctly, red led in position 19 will blink correctly if DMX is connected, set DMX generator to the max value on the desired channel, (for example channel 6 = 255) then push an hold DMX set button on the box in connector position 13, the on board red led stay on 3 second then blink to indicate the setting is complete, be careful the signal A and B is properly connected to DDS453B. The number of channel used in DMX are 4, in this example the channel 1 in the controller is channel 6 in DMX streaming.

If no DMX available the module go in stand alone operations.

Esempio di connessione led RGB il canale 4 non è usato.

Example of RGB application, the channel 4 isn't used.

# DDS453B-V-DMX MODE



## UTILIZZO DEL CONTROLLER IN DMX uscita in tensione

Si raccomanda prima di collegare le uscite ai moduli led che questi siano in grado di funzionare in tensione costante, la massima potenza utilizzabile per i 4 canali è 570W @24vdc, il positivo di alimentazione led deve essere connesso direttamente all'alimentatore con fusibile di protezione eventuale.

### Modalità DMX

Il modulo DDS453B entra in questa modalità appena riceve segnale DMX in modo prioritario su tutte le altre funzionalità, ed è quindi necessario l'uso di un generatore DMX compatibile allo standard per generare i 4 canali utilizzati dalla scheda. A seconda della personalità scelta prima tramite RDM si decide il numero di canali utilizzati dal modulo in caso di personalità 4 canali questi saranno 1,2,3,4. La assegnazione del canale DMX quindi l'indirizzamento nella rete DMX avviene in modalità RDM o con autoapprendimento, dove dalla consolle DMX si invia il canale di riferimento voluto con valore al 100%, per esempio il canale 6, poi si preme DMX set sul modulo DDS453B (vedi pulsante a bordo scheda nel connettore posizione 13, inserite cacciavite per la selezione) ed il led rosso (nella morsettiera posizione 19) si accende e spegne dopo qualche secondo a conferma della avvenuta memorizzazione dell'indirizzo DMX, il canale assunto per primo è il canale 1, all'indirizzo DMX 6 poi in sequenza 2,3,4(7,8,9). Assicurarsi che il generatore DMX non generi altri canali diversi dal numero da autoapprendere o questi potranno essere assunti al posto di quello voluto. Controllare la corretta connessione alla rete DMX dei segnali A e B in caso sia invertito o non corretta il led di DMX non lampeggia ma rimane acceso fisso, indicando appunto errore di connessione.

Nota in caso di assenza DMX il modulo assume modalità manuale.

## DMX MODE

Verify the connected LED they can work with constant voltage! The positive led string power supply must be connected directly to main power supply using fuse for protection in series, the maximum power is 24Amp @ 24vdc.

### DMX operation Mode

DMX generator it is necessary in this operating mode, DDS453 require 4 channels from DMX streaming. To set DMX address connect the DMX generator, to DDS453B wire A and B correctly, red led in position 19 will blink correctly if DMX is connected, set DMX generator to the max value on the desired channel, (for example channel 6 = 255) then push and hold DMX set button on the box in connector position 13, the on board red led stay on 3 second then blink to indicate the setting is complete, be careful the signal A and B is properly connected to DDS453B. The number of channel used in DMX are 4, in this example the channel 1 in the controller is channel 6 in DMX streaming. If no DMX available the module goes into stand alone mode.

Esempio di connessione led RGB il canale 4 non è usato.

Example of RGB application, the channel 4 isn't used.

# DDS543A-Potentiometer application or pushbutton

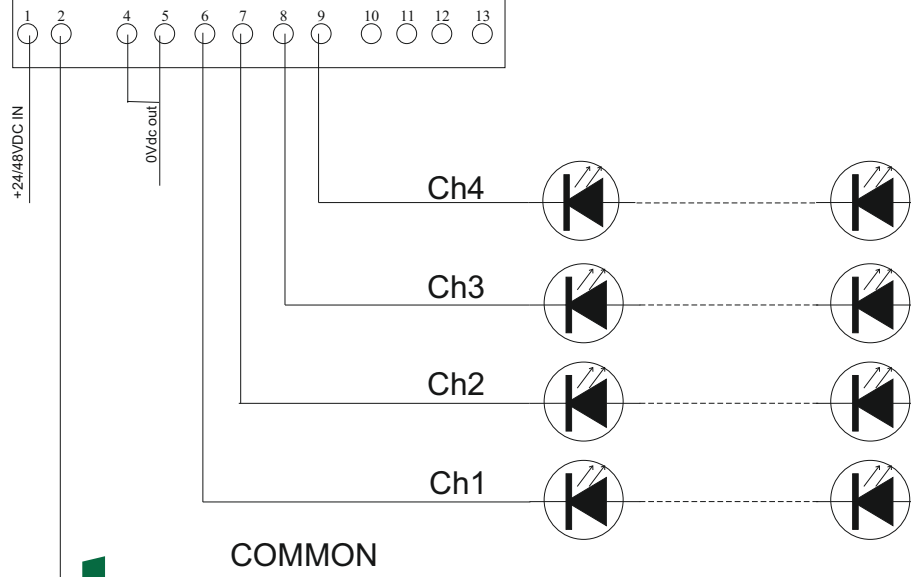
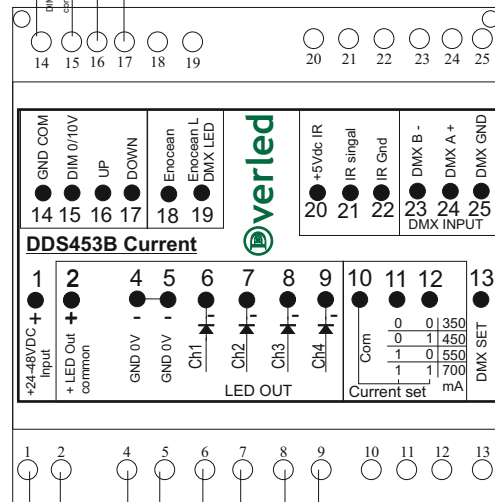
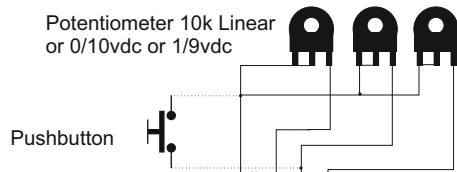
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## Modalità Potenziometro

Questa modalità permette di settare un valore di luminosità proporzionale alla posizione del potenziometro da 10Kohm cambiando il segnale PWM generato sulle uscite 1,2,3,4 mentre se il potenziometro è assente viene considerato il valore settato tramite pulsante. Sostituendo il pulsante al potenziometro, la luminosità incrementa e decrementa a seconda della pressione dello stesso. Le morsettiere del DMX non sono utilizzate in questa modalità.

Attenzione IMPOSTARE la corrente dei led prima di collegarli, se 350,450,550mA o 700mA. Questa modalità funziona se non presente DMX.

**ATTENZIONE** non utilizzare alimentatori da laboratorio per simulare 0/10 o 1/9, questi non sono in grado di funzionare, occorre un generatore in tensione in grado di generare la tensione necessaria. Verificare con RDM la personalità in caso di utilizzo 1/9 o 0/10, anche nel caso di utilizzo 3 potenziometri.



## Application note

### Mode Potentiometer

DDS453B is used as PWM dimmer, with value in output by potentiometer position that vary PWM output from 0-100%, the light intensity vary with potentiometer control only. In the output 7 and 8 2A to ground are available, output number 9 PWM to ground available for lamp with embedded control on board.

If Pushbutton is used, the light dimmer cycle up and down if pressed.

Warning select the current 350,450,550 or 700mA before connect the led to the output.

This operating mode is valid only if no DMX.

**WARNING:** Don't use laboratory power supply as 0/10Vdc or 1/9 vdc generator, will not WORK, please use 0/10 or 1/9 proper voltage generator. Read and verify RDM personality topology for this operation, also for 3 potentiometer input.

max 4 led per channel in series @24vdc  
 max 12 led per channel in series @48vdc

# DDS543A-IR receiver operation

## Modalità IR receiver

Questa modalità il modulo diventa un controller regolato da telecomando, collegando il ricevitore DDS497 negli appositi morsetti, una volta che riceve comandi dal telecomando il modulo DDS453B a cui è collegato diventa una unità master DMX che trasmette sui 4 canali i colori ricevuti dal telecomando IR utilizzando gli indirizzi 1,2,3 e 4, questa modalità permette di collegare più unità slave controllabili sulla linea DMX, con canale DMX 1,2,3 o 1,2,3,4 a seconda del dispositivo.

Premere il tasto ON solo così la scheda entra in modo Telecomando con Master DMX OUTPUT il colore di default tacceso di fabbrica è ROSSO (canale DMX = 1), a questo punto, premendo uno dei tasti colorati si ottiene la tonalità corrispondente regolata sui canali R,G,B,W (indirizzi DMX 1,2,3,4) Il tasto W accende il canale White (canale 4) I tasti sotto al W selezionano diverse temperature colore, utilizzando il canale R per correggere il bianco. Ovviamente deve esserci un led rosso collegato al canale R.

Premendo il tasto 'Flash' più volte è possibile selezionare uno fra 3 show disponibili. Il primo mostra una serie di colori assortiti; il secondo ha colori freddi, il terzo ha colori caldi.

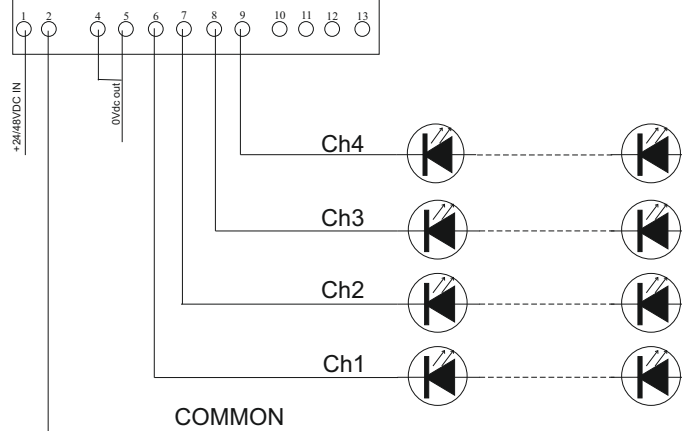
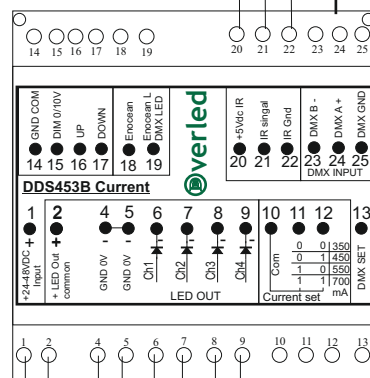
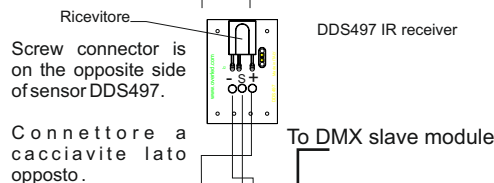
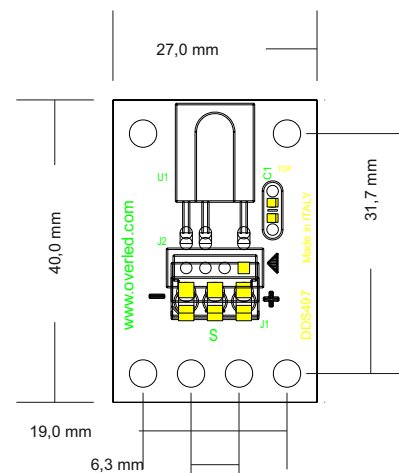
Tasto "Flash": attiva lo Show  
 Tasto "Strobe": disattiva lo Show  
 Tasto "Setup": memorizzazione di un colore personalizzato:

Premere Setup: verrà mostrato il precedente colore personalizzato  
 Usando i tasti R, G, B, W creare il colore desiderato:  
 Tenendo premuto un pulsante si ottiene una rampa (salita o discesa) del colore corrispondente; ad ogni pressione si inverte la direzione della rampa.  
 Quando il colore è quello desiderato, premere il tasto "Cancel" per memorizzarlo. Durante la regolazione, è possibile caricare un colore di partenza premendo uno dei tasti di tonalità'.

Tasto "Cancel": richiama il colore personalizzato (oltre a terminare eventuale regolazione in corso).

Tasto "Fade": decremento master dimmer del colore selezionato  
 Tasto "Smooth": incremento master dimmer del colore selezionato

Per Uscire dalla modalità Telecomando occorre inserire un generatore DMX con la DDS453 spenta, collegare i cavi A e B sul generatore DMX poi accendere la DDS453 in questo modo esce dalla modalità Telecomando, per rientrarvi basta attivare il telecomando con il tasto ON.



## Mode IR receiver

DDS453B can be used with IR receiver, this allow to receive from remote IR contro command, the unit connected to the receiver DDS497, become a DMX master and it may be possible to conect several slave Module DDS453 or other device assuming DMX channel 1,2,3,4, (R,G,B,W) The unit connected to the receiver can be used as master DMX until is power off, DMX generator Connected then power on DDS453 and exit from IR mode, the unit go in slave DMX mode, and can be configured by RDM, do not use the remote control during RDM operation to avoid conflict between DMX out from generator and DMX out from DDS453B with IR receiver.

To start IR operation, please push ON button, a red color or channel DMX 1 is activated (factory default), push colour button for selection, white button activate channel 4, the other white button below, changing WHITE Kelvin colour adding RED color, a red led must be connected to the controller in channel 1.

Show selecting it may be possibile by pressing same button "Flash" maximum 3 different show can be selected, to switch SHOW off press button "Strobe"

Custom color setting pressing "Setup" and pressing colour button R,G,B,W it can be possible, "Fade" button decrease the light value "Smooth" increase the light value.

To store the custom colour press "Setup" button. To recall a colour press "Cancel" and exit from color customizing.



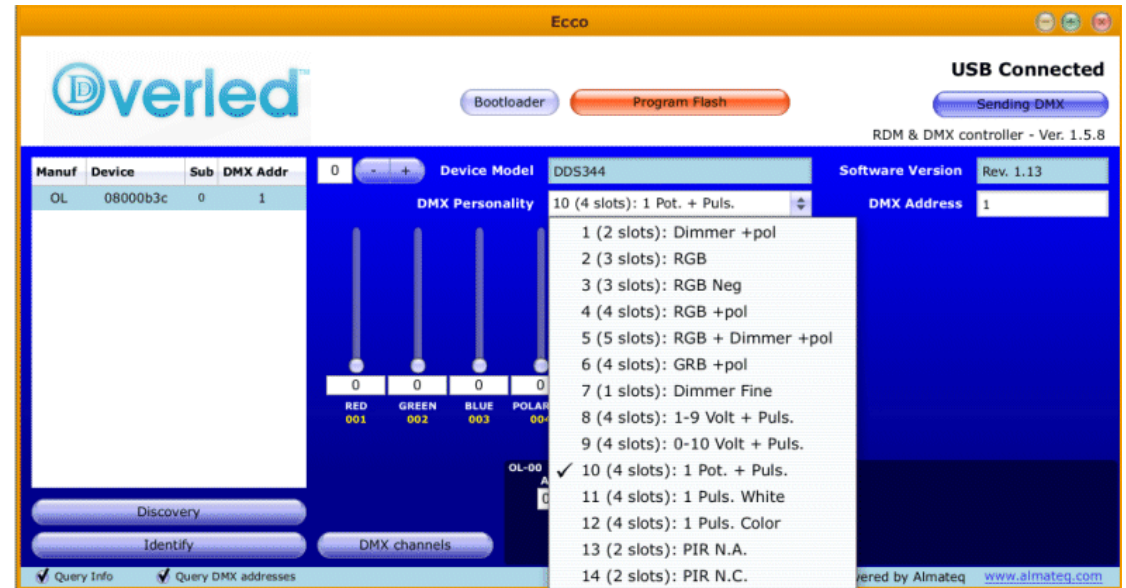
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# RDM interface operating mode Interfaccia RDM modo operativo

- 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
  - Spegnerne 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.

- 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.



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	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	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	Green	Red	Blue	White	
4	3 slot, 'RGB'	Red	Green	Blue	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	Red	Green	Blue	nu	
6	4 slot, 'RGBW'	Red	Green	Blue	White	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	Red	Green	Blue	White	
8	4 slot, 'GRBW'	Green	Red	Blue	White	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	Red	Green	Blue	White	
10	7 slot, 'RGBW Sync Strobo Delay' GAMMA Curve	Red	Green	Blue	White	Syncro	Strobe	Delay	nu	nu	nu	nu	nu	nu	Red	Green	Blue	White	
11	8 slot, 'RGBW Sync Strobo Delay Dimmer'	Red	Green	Blue	White	Strobe	Syncro	Delay	Dimmer	nu	nu	nu	nu	nu	Red	Green	Blue	White	
12	14 slot, 'RGBW16 Strobo 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	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	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	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	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	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

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DDS .453B

# RDM Standard Specification

## 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

## 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.

# Personality setting Manual mode without RDM

## Selezione personalità in manuale senza RDM

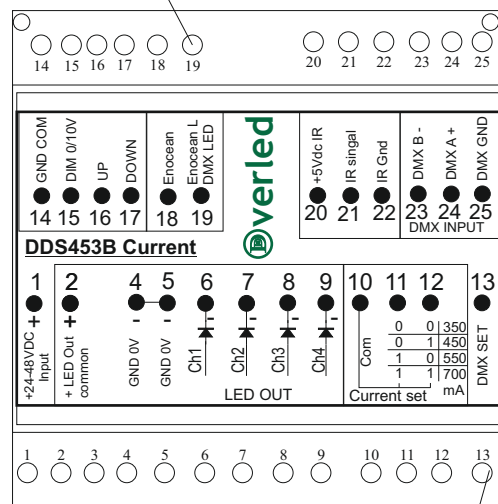
### MODALITA' DI PROGRAMMAZIONE MANUALE DELLA PERSONALITA' CORRENTE:

E' possibile cambiare la personalita del prodotto anche senza ECCO/RDM, operando come di seguito descritto:

- Togliere alimentazione alla scheda
- Tenendo premuto il pulsante DMX sulla scheda posizione 13 nella morsettiera, fornire alimentazione.
- Mantenere il pulsante premuto. Il led a bordo scheda rimane spento (LED che indica DMX)
- Dopo 10 secondi, il led inizia ad emettere dei lenti lampeggi: siamo in modalita' impostazione. NON RILASCIARE IL PULSANTE.
- Ogni lampeggio corrisponde ad un avanzamento del numero di personalita' rilasciare il pulsante dopo aver contato un numero di lampeggi pari a quello della personalita' desiderata (vedere tabella in pagina 10).
- Una volta rilasciato il pulsante, il led a bordo scheda ripete il ciclo di visualizzazione emettendo un numero di lampeggi pari alla personalita' appena impostata, per conferma. In questa fase, il lampeggio e' visibilmente più veloce.

Se viene superato il numero di personalita' disponibili, la scheda si programma con la personalita' di Default 16.

Setting LED



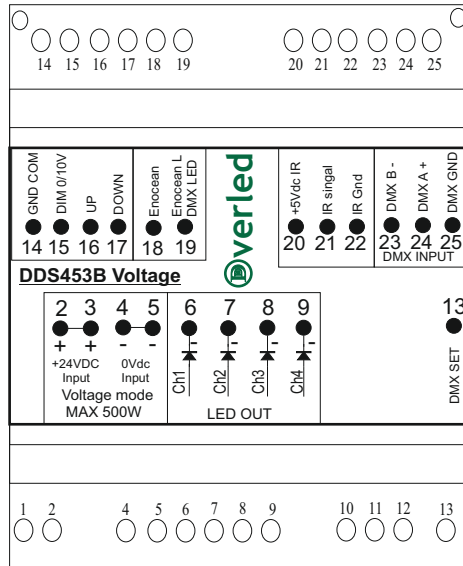
### Personality programming mode, using manual control:

It is possible change personality without RDM interface, just using on board Pushbutton (DMX setting) and red led DMX indicator, follow as described below for setting:

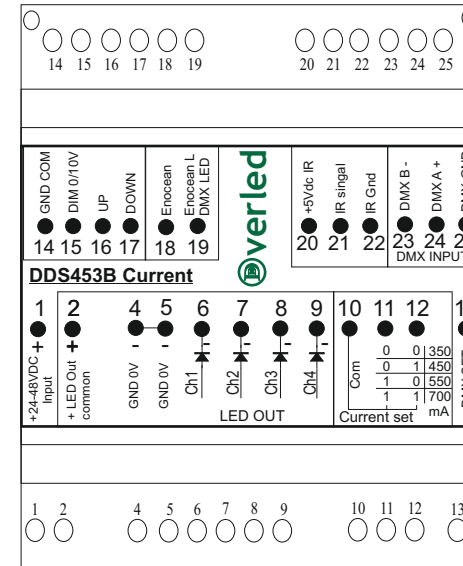
- Power OFF the device
- hold DMX pushbutton ON,
- POWER on the device hold pushbutton
- wait 10 second
- see the DMX red led Blink, count number of blinking, they are corresponding to the number of personality see table on page 10.
- each personality blink it's number, release the pusbutton at the personality wanted.
- As per confirm personality, the led blink the number of personality.
- if the number of personality is incorrect, default value will be assumed, number 16.



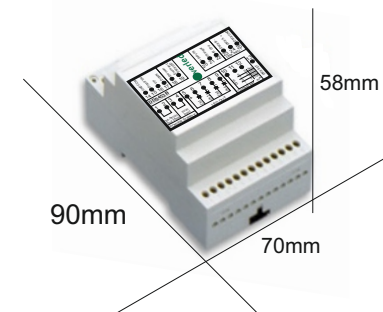
### Voltage mode



### Current mode



Ordering Code:  
 Constant Voltage DDS453-B-V  
 Constant Current DDS453-B-I  
 IR receiver DDS497  
 IR transmitter TE.SAKAY



DIN bar mounting