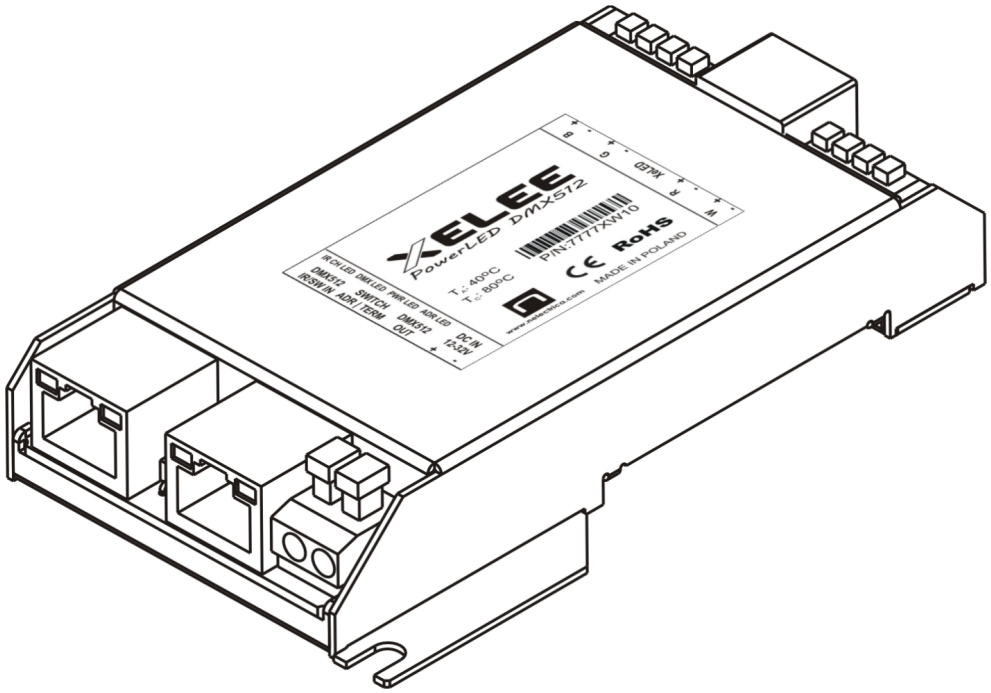


Xelee PowerLED Driver

User Manual

Contents

1. Overwiev

Xelee PowerLED is a multichannel driver designed to drive most of the market available high power LED modules. Integrated logics allow light scenes and shows generation, with no need for additional controllers. Each LED output can be dimmed independently, resulting in millions of high saturated or pastel colors in RGB/RGBW lighting systems. High output resolution, makes color changes incredibly smooth and light shows extremely dynamic.

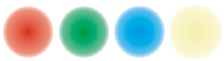
Features:

- standard light switch or IR remote control,
- 350mA to 700mA constant current LED outputs,
- high output refresh rate,
- DMX512 controller or repeater operation,
- max. 14-bit per channel resolution,
- dedicated software for monocolor and multicolor lighting,
- built in thermal safety for harsh operating environment,
- software modifications available for special orders,
- compact dimensions,
- thermal protection for harsh environment operation.

Dane techniczne

Parameter	Symbol	Min	Typ	Max	Unit	Additional info
Supply voltage	U_{SUP}	12	24	32	V (DC)	* value for single channel ** Single channel resolution, 14-bit only in Xelee show mode
Maximum supply current	$I_{SUP\ MAX}$	-	-	4	A	
Output current*	I_{OUT}	350	-	700	mA	
Maximum supply power	$P_{SUP\ MAX}$	-	-	90	W	
Efficiency	N	-	90	-	%	
Output resolution**	RES	8	-	14	bit	
Output refresh rate	F_{out}	-	366	-	Hz	
Ambient temperature	T_A	-20	-	40	°C	
Maximum case temperature	T_C	-	-	80	°C	

Available software options

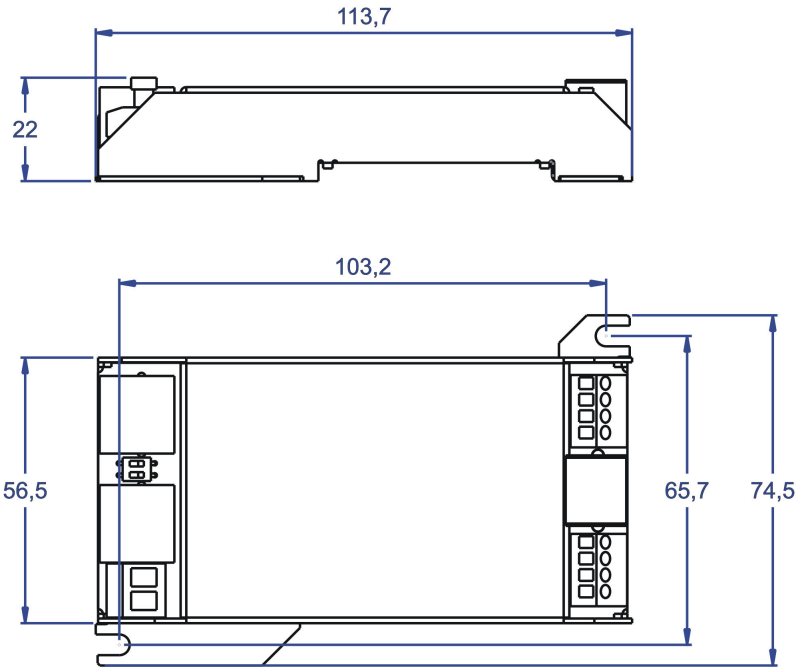


RGBW

RGB

MONO

Dimensions



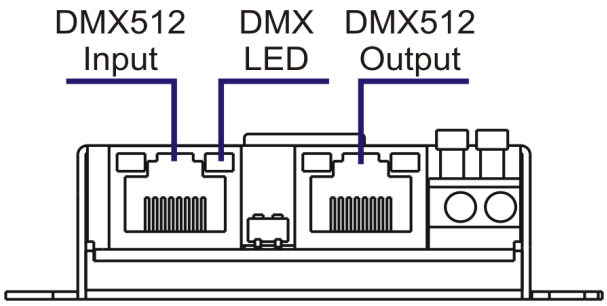
Order codes (P/N)

- - - -	**X**	**-**	**10**
Current value for consecutive channels (WRGB): 0 - disabled 3 - 350 mA 5 - 500mA 7 - 700 mA		Software: W - RGBW R - RGB M - MONO	Software version: Current - 1.0

Example: P/N: 3377XW10

2. DMX receiver operation

Xelee devices can operate with DMX512 input signal. The brightness of LEDs connected to each output is set to the level corresponding with received DMX512 channel value. The signal is regenerated and sent to DMX512 output, allowing connection of additional devices.

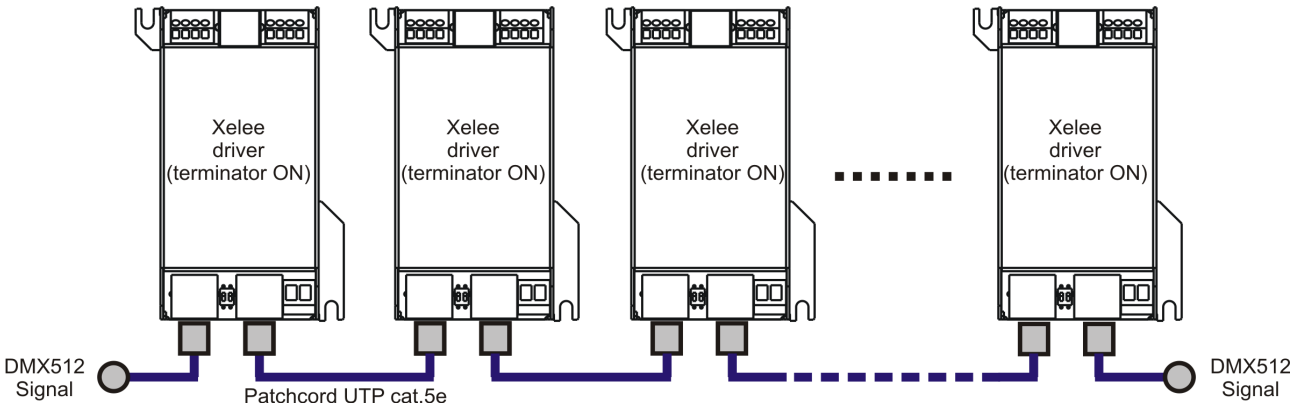


For quick lighting system diagnostic, DMX512 signal reception is indicated by green DMX LED.

2.1 Creating devices network

2.1.1 Daisy-chain topology

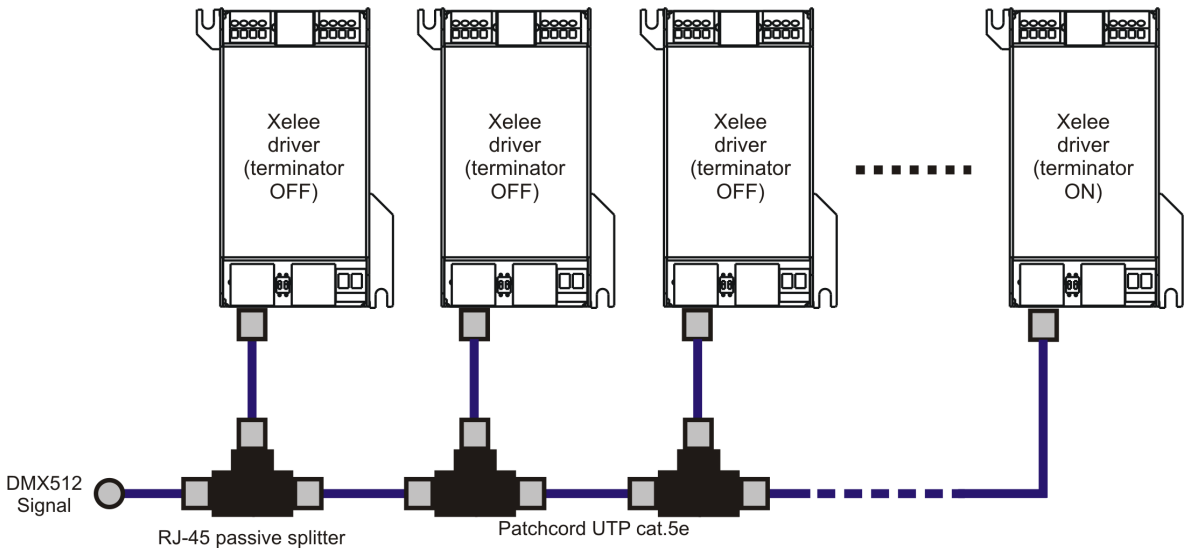
A larger lighting system can be built using Xelee drivers connected in daisy-chain. In this type of topology each device's DMX512 input is connected to previous device's output. The biggest advantage of this type connection is signal regeneration by each device in chain.



The connections between devices can be done with UTP cable of at least 5e category, with both ends fixed with RJ-45 plugs. Both plugs should be fixed using the same T-568A or T-568B standard. Maximum cable length is 300m. Xelee device built-in terminator should be turned ON with the TERM SW switch.

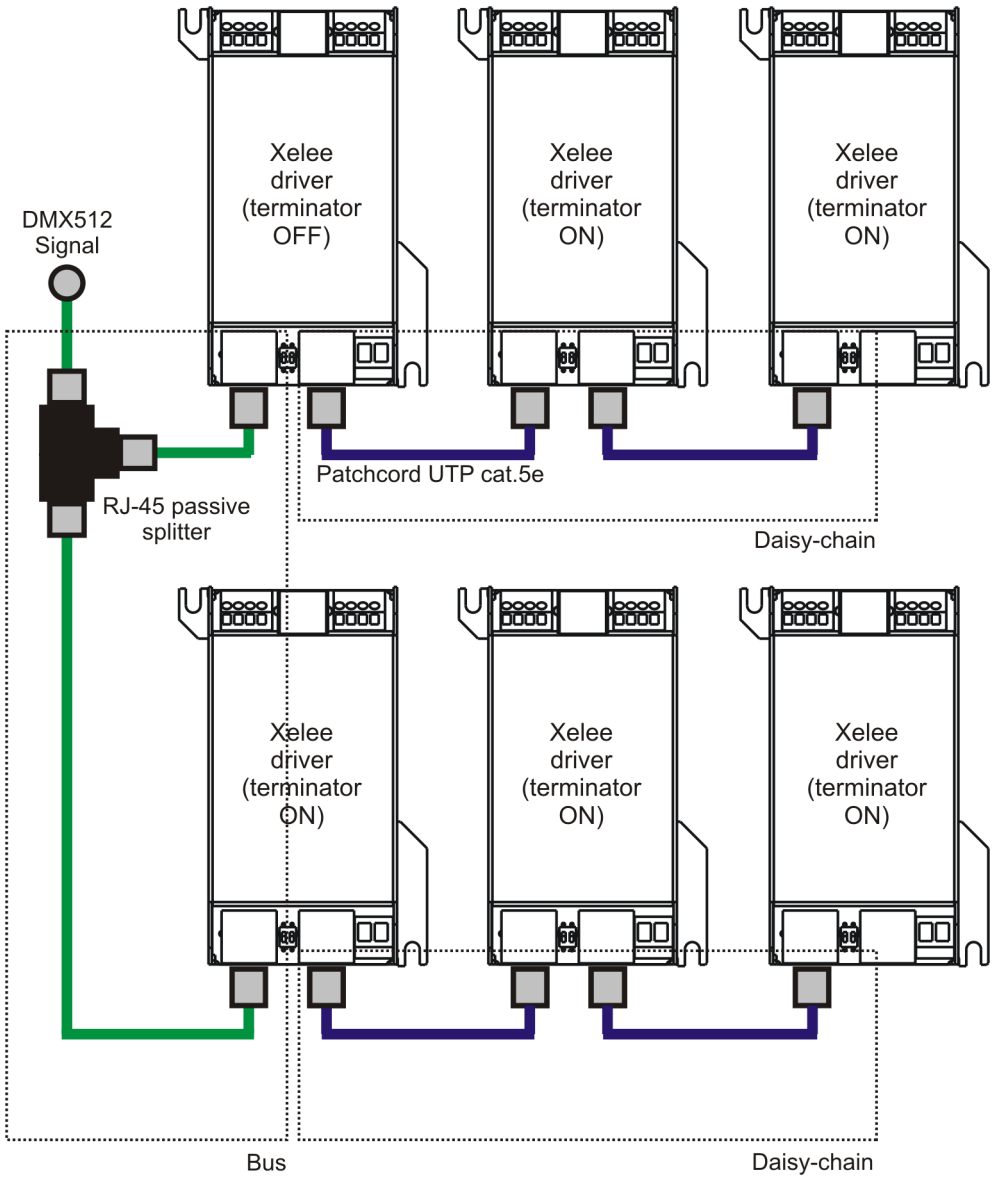
2.1.2 Bus topology

Connecting devices in bus topology means that all devices inputs are connected to common control bus. The connections are made with the same cable as for the daisy-chain and RJ-45 passive splitters. Maximum bus length for cat.5e cable is 300m. Single bus can hold up to 32 devices. Connecting more devices can be done after regenerating the signal with dedicated DMX512 repeater or single Xelee device. The last driver connected to the bus has to have it's built-in terminator switched ON with the TERM SW switch. Maximum length of the stub (connection between the driver and the bus) is 3m.



2.1.3 Mixed topology

Xelee devices network can be also built in mixed topology, keeping all rules for both previous topologies. Devices which operate as the only receiver for transmitting device (daisy chain) should have the built-in terminator switched ON. Devices connected to shared bus should have the built-in terminator switched off, except for the last device, at the end of the bus.



2.2 Configuration

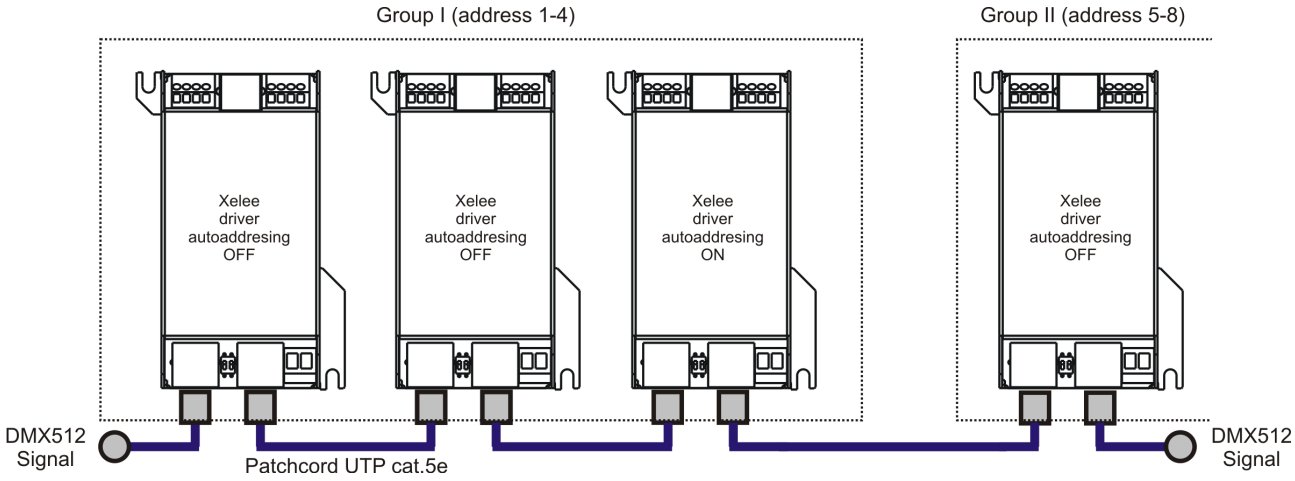
2.2.1 Address settings

Default settings of Xelee device assign LED outputs to 1-4 DMX512 addresses. Changing this settings is possible with Xelee Programmer PC software and Xel_USB interface, described in latter part of this manual.

DMX512 address	Xelee output
1	R
2	G
3	B
4	W

2.2.2 Autoaddressing

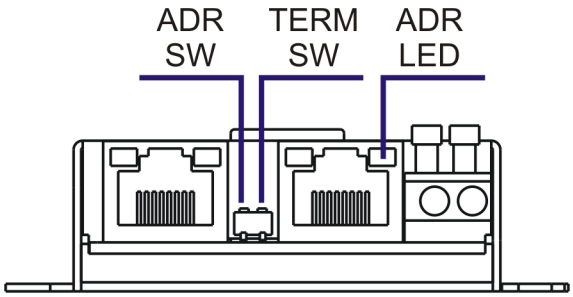
By default all Xelee devices are set to work on the same DMX512 addresses. Autoaddressing mode enables quick configuration, allowing the devices to operate at higher DMX512 addresses. In this mode of operation, there is no need to configure each device separately. Configuration of autoaddressing mode will cause devices to choose other addresses automatically. If this feature is turned on for a driver, the devices connected to it's output will switch to higher addresses.



CAUTION! Using autoaddressing feature is reccomended only for daisy-chain topolgy of Xelee drivers network.

2.2.3 Micro-switch configuration

Xelee driver has two micro-switches allowing the change of autoaddressing mode and bus terminator operation. Micro-switch settings are loaded after switching on the driver's power supply. Autoaddressing mode is indicated by diagnostic LED.



Autoaddressing	ADR SW	ADR LED
OFF	OFF position	not lit
ON	ON position	lit

Terminator	TERM SW
OFF	OFF position
ON	ON position

2.2.4 Configuration using PC

Advanced configuration of Xelee driver settings is possible using PC computer, Xel_USB interface and Xelee Programmer application. PC software allows the change of outputs DMX addresses, selection of autoaddressing mode, and other diagnostic operations. With proper selection of configuration options, software configuration of autoaddressing mode can override the hardware switch setting, removing the need to physically access the device during the system reconfiguration. Detailed configuration description can be found in Xelee Programmer application's doccumentation.

3. Independent driver operation

3.1 Light shows

Xelee devices can change the output LED brightness according to preloaded light show sequences. Show presentation starts automatically after turning on the power supply, if there is no DMX512 signal present on the input. If the input signal is present, the device switches from light show presentation to receiver operation. Stopping the DMX512 transmission causes the outputs to freeze on the last received values.

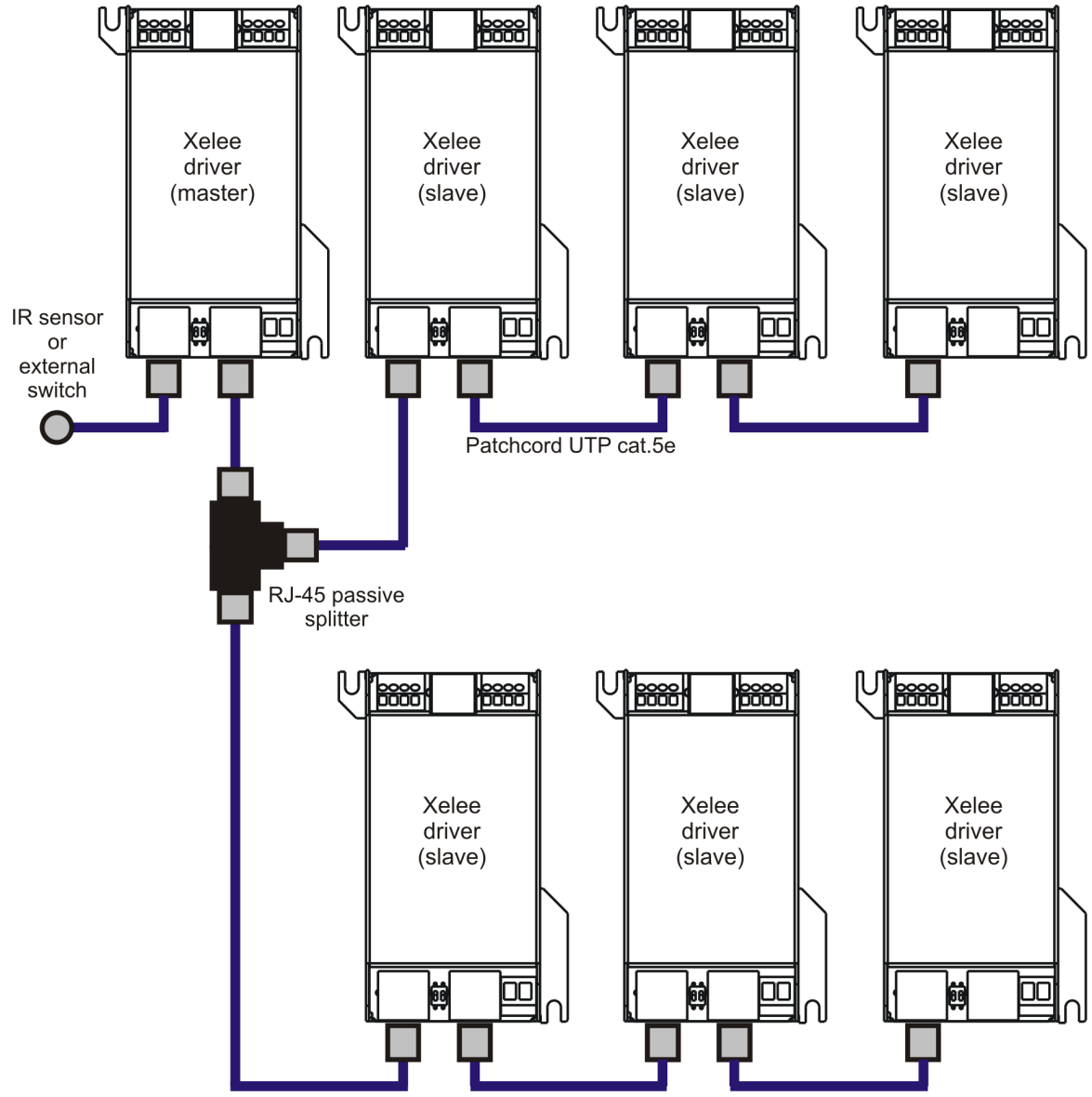
Operation	DMX512 input signal	Response
Switching power ON	not present	Light show presentatnion
Switching power ON	present	DMX512 receiver operation
Light show presentatnion	not present	Light show presentatnion
Light show presentatnion	present	DMX512 receiver operation
DMX512 receiver operation	not present	Freeze on the last values
DMX512 receiver operation	present	DMX512 receiver operation

CAUTION! Returnig from receiver operation to light show presentation requires turning off and on the power supply or sending the „reset" command from Xelee Programmer PC application.

The control over light shows is possible with external switch or additional IR remote. At any time during the show, Xelee device outputs can be switched off without switching off the power supply. In this mode supply current is lower than 30 mA. Light show settings are saved during external switch or IR remote shutdown and reloaded even after the power supply restart. Detailed information on external switch and IR remote control can be found in "Xelee devices control" document.

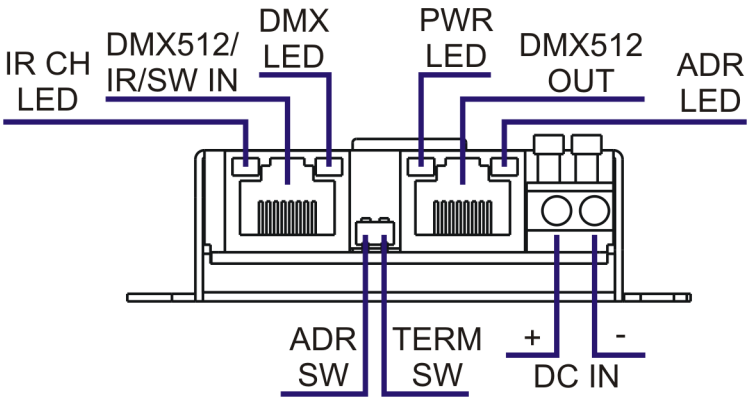
3.2 Controlling other Xelee devices

In light shows mode, Xelee device sends the output brightness levels for other devices through DMX512 output. Data is sent using modified DMX512 protocol, and will not be received by devices other than Xelee drivers. All receiving Xelee devices will respond the same way, even if their address settings are different. The only important configuration step is enabling bus termination, depending on the network topology used.



4. Installation

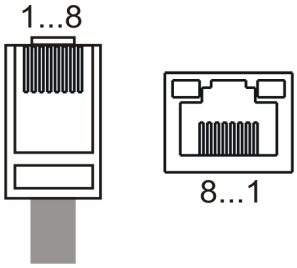
4.1 Front panel



DC IN (+/-) - power supply connection

DMX512/IR/SW IN - DMX512 signal input, external switch or IR remote receiver

DMX512 OUT - DMX512 output



DMX512/IR/SW IN:	**DMX512 OUT:**
1. DMX512 DATA IN (+)	1. DMX512 DATA OUT (+)
2. DMX512 DATA IN (-)	2. DMX512 DATA OUT (-)
3. External switch (+)	3. not used
4. External switch/IR receiver (GND)	4. not used
5. IR receiver (1)	5. not used
6. IR receiver (2)	6. not used
7. DMX512 COMMON	7. DMX512 COMMON
8. DMX512 COMMON	8. DMX512 COMMON

PWR LED - power supply indicator

ADR LED - autoaddressing mode indicator

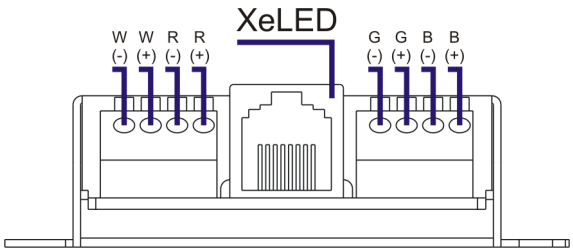
IR CH LED - IR channel indicator

DMX LED - DMX512 input indicator

ADR SW - autoaddressing configuration

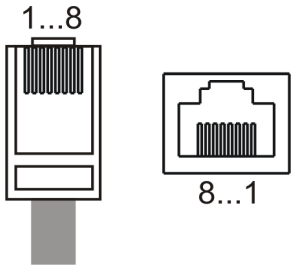
TERM SW - bus termination configration

4.2 LED outputs



LED outputs (W, R, G, B) – depending on the hardware configuration, 1-4 channels assigned to LED colors. LED current of 350, 500, 700 or 1000 mA available.

XeLED output – for easy LED modules connection with single RJ-45 plug.



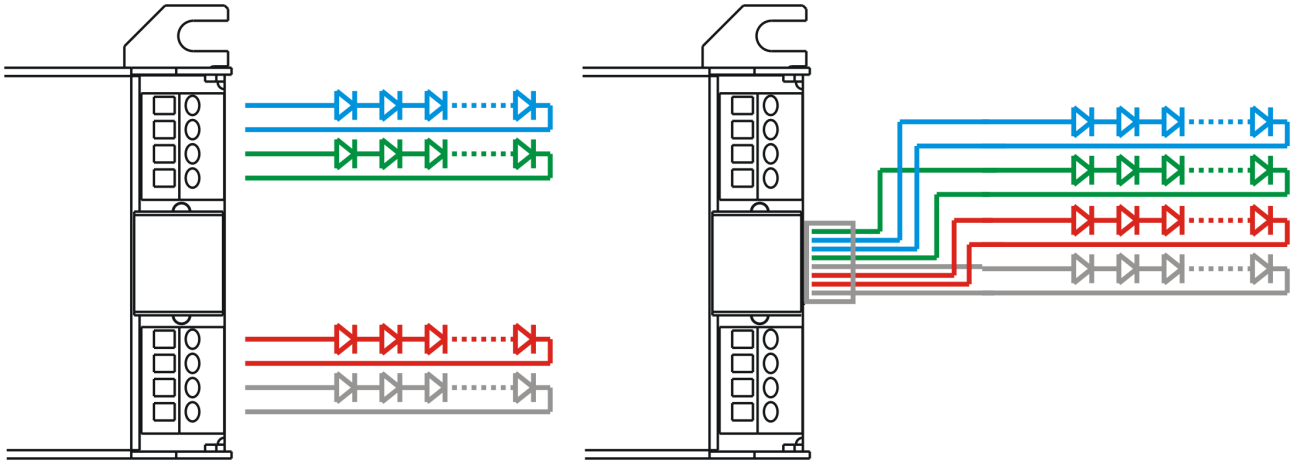
XeLED:

1. Green (+)
2. Blue (-)
3. Blue (+)
4. Green (-)
5. White (+)
6. Red (-)
7. Red (+)
8. White (-)

4.3 Connecting LED modules

Xelee driver LED outputs allow serial connection of high power LED modules. For correct light scene generation in RGB/RGBW version, diodes with certain color should be connected to proper output: R - red, G - green, B - Blue, W – white.

CAUTION! Standard outputs and XeLED output are in parallel connection, allowing the use of only one output type at time.



Driver's supply voltage should be at least 3V higher than the highest total forward voltage of single LED series. Maximum supply voltage is 32V. The current output of power supply needed for correct operation can be calculated by adding the output channels currents with addition of 20% spare.

Example:

Xelee outputs configuration XEL-RPLD-0379:

channel 1 – 350 [mA], channel 2 – 350 [mA],

channel 3 – 700 [mA], channel 4 – 1000 [mA].

Required power supply current output:

(350 + 350 + 700 + 700) * 120% = 2520 [mA] = 2,52A

4.4 Thermal safety

Xelee devices feature a built-in thermal safety. Internal sensor detects temperature rise in harsh operating conditions, preventing the device overheating and malfunction. If the temperature rises above certain threshold, output power is limited and connected LEDs are dimmed. Improvement of thermal conditions causes the device to return to normal operation.

5. Connecting accessories

5.1 External switch

Xelee devices can be controlled by standard one-position (bell-push type) lighting switch. The switch should be connected to pins 3 and 4 of DMX512/IR/SW IN connector. Detailed control description can be found in "Xelee devices control" document.

5.2 IR remote

Xelee devices can be controlled with IR remote, available as additional accessory. To enable remote operation, IR receiver should be connected to driver's DMX512/IR/SW IN connector. Detailed control description can be found in "Xelee devices control" document.

Driver and remote IR channel change feature allows usage of two different remotes and drivers in close distance. Each Xelee driver and IR remote can be set to one of two IR channels.

To change remote IR channel hold MENU and ON/OFF buttons for 10 seconds. To change Xelee driver IR channel use the IR remote, operating on the same IR channel, and hold MENU button for 15 seconds. Two resets will occur during the operation, and the IR CH LED indicator will change it's status.

Xelee PowerLED User Manual, version 1.2 EN, publication date 25-06-2011.