DMX constant current Decoder、constant voltage Decoder、protocol Decoder and DMX constant current driver series manual

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Catalog

DMX Patent invention (Patent No: ZL 200910105593.7) :

ONUMEN DMX unique patent technology: The lamps connected in parallel, a lamp damage does not affect other lamps work, and no need to set the address, the address can be set automatically.

Product Overview

Constant voltage Decoder: Decode DMX signal, output 3 channels PWM signal to driving lamps. Applicable to a variety of directly power supply monochrome, twin-color, three-color, strips light or the others based on constant voltage lights

Constant current decoder: Decode DMX signal, Output 3 channels constant current, to driving lamps. Applicable to various high power lamps, for example: spot light, wall wash light and projection light etc.

Protocol decoder: decode DMX signal, Output SPI、IC5、IC8 and other multi-protocol. Applicable to the various kinds of chip-controlled light bar, lamps, etc., many decoder working concurrent in order to complete the picture, animation, video and other effects.

Support 3 way to setting DMX address:

1. MC-900 controller send the command of setting DMX address, decoder automatically saved in the FLASH memory
2. Set by DIP switch.
3. DMX address of decoder is automatically set to 1, this way is mainly used for address auto-increment, without manually setting address.

Support for 0-10V analogue dimming function: Can be received normally 0-10V analogue dimming signal. Simulated according to the given value to dimming.

Build-in 20 patterns :can using coding switch or remote control to choose if there are no external DMX signal, waiting for 2 seconds to running the build-in pattern. it can be achieve multiple synchronize effection.

Not connect an external DMX controller, the first decoder will become a DMX controller, through a serial port output standard DMX signal, to control other DMX lamps.

Support wireless control function: Wireless remote control can adjust the brightness / speed and built-in lighting mode, and can automatically save to flash memory.

Product Pictures & Basic Parameters

Product pictures	
Product name	MC-900: DMX Controller (Writing address controller)
Output signal	Standard difference DMX signal
Main function	Build-in 20 patterns,to adjust whole brightness,to adjust the speed of play、pause/play、to set DMX increase by degrees、decrease by degrees value,writing DMX address commond
Protection grade	IP54
Working voltage	Build in battery or circumscribed DC5V
Working current	50mA(Maximum)
DMX output signal	Standard DMX512 protocol
DMX connector	Standard 3 pin XLR
Working temperature	-25～50℃

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Product pictures	 	
Product name	DD-1000: Constant voltage Decoder	DD-1000: Protocol decoder
Product model	OM-DDV-PS-3	OM-DDP-PS-128
Output signal	3 channels PWM signal	SPI、IC5、IC8 etc multi protocol control signal
Output current	6A per channel maximum	5V TTL electrical level
LED connection	Anode be connected together, 4 lines: +V(R+/G+/B+), R-, G-, B-	
Option function		Option decoding 128、512、1024 addresses
	Remote control function、Automatic setting addresses function with parallel connection、0-10V analogue dimming function	
Protection class	IP54	
Working voltage	DC8V-DC24V, wide voltage range	
Working current	100mA(Maximum)	
DMX input signal	Standard DMX512 protocol	
DMX output signal	Standard DMX512 protocol	
DMX connector	Standard 3 pin connector (when the product is DMX parallel connection or series connection)	
	RJ45—8 port (when the product is DMX parallel connection & automatic setting address)	
Working	-25～50℃	

产品图片	 
Product name	DD-1324: 24 channels (3A) PWM constant voltage decoder
Product model	OM-DDV-PS-24
Output signal	24 channels PWM signal
Output current	Maximum 3A per channel
LED connection	Anode be connected together, 4 lines: +V(R+/G+/B+),R-, G-, B-
Optional function	Remote function, parallel connection and to set address automaticlly
Protection grade	IP54
Working voltage	DC8V-DC24V, wide voltage working range
Working current	150mA(maximum)
DMX signal	Standard DMX512 protocol
DMX connector	Standard 3 pin XLR (When product with DMX parallel connection or series connection)
	RJ45—8 port (When product with DMX parallel and automatically setting address)
Working temperature	-25～50℃

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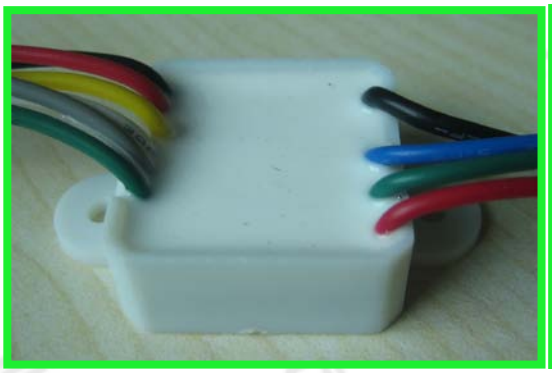
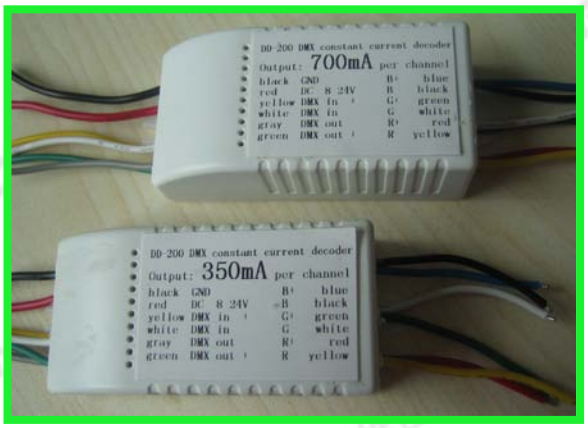
Product picture	 							
Product name	DD-100: Mini constant voltage Decoder				DD-100: Mini protocol Decoder			
Product model	OM-DDV-S-3-IP65				OM-DDP-S-128-IP65			
Output signal	3 channels PWM signal				SPI、IC5、IC8 SPI、IC5、IC8 etc multi protocol control signal			
Output current	1.5A per channel maximum, lamp voltage is maximum 24V				5V TTL electrical level			
LED connection	Anode be connected together, 4 lines: +V(R+/G+/B+),R-, G-, B-							
Option function					Decoding 128、512、1024 addresses			
Color of wire	Power supply signal side		Lamp side		Power supply signal side		Lamp side	
	Signal	Color	Signal	Color	Signal	Color	Signal	Color
	DMX IN+	Yellow	GND	Black	DMX IN+	Yellow	GND	Black
	DMX IN-	White	R-	Red	DMX IN-	White	CLK	Red
	DMX OUT+	Green	G-	Green	DMX OUT+	Green	DATA	Green
	DMX OUT-	Gray	B-	Blue	DMX OUT+	Gray	LT	Blue
	DC 8-24V	Red			DC 8-24V	Red		
	GND				GND			
Protection class	IP65							
Working voltage	DC8V-DC24V, wide voltage range							

<table>
<tr><td>Product picture</td><td colspan="4">   </td></tr>
<tr><td>Product name</td><td colspan="4">DD-200: DC 8-24V DMX constant current driver</td></tr>
<tr><td>Product model</td><td colspan="4">OM-DDC-S-3-350-IP65</td></tr>
<tr><td>Output current</td><td colspan="4">3 channels 350/700 mA constant current output</td></tr>
<tr><td>LED connection</td><td colspan="4">6 lines: R+, G+, B+, R-, G-, B-</td></tr>
<tr><td rowspan="8">Color of wire</td><td colspan="2">Power supply signal side</td><td colspan="2">Lamp side</td></tr>
<tr><td>Signal</td><td>Color</td><td>Signal</td><td>Color</td></tr>
<tr><td>DMX IN+</td><td>Yellow</td><td>R+</td><td>Red</td></tr>
<tr><td>DMX IN-</td><td>White</td><td>R-</td><td>Yellow</td></tr>
<tr><td>DMX OUT+</td><td>Green</td><td>G+</td><td>Green</td></tr>
<tr><td>DMX OUT-</td><td>Gray</td><td>G-</td><td>White</td></tr>
<tr><td>DC 8-24V</td><td>Red</td><td>B+</td><td>Blue</td></tr>
<tr><td>GND</td><td>Black</td><td>B-</td><td>Black</td></tr>
<tr><td>Protection class</td><td colspan="4">IP65</td></tr>
<tr><td>Working voltage</td><td colspan="4">DC8V-DC24V, wide voltage range, lamp strip voltage must be lower than 90% of working voltage</td></tr>
</table>

<table>
<tr><td>Product picture</td><td colspan="4"> 
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<tr><td>Product name</td><td colspan="4">DD-300: DC24-48V DMX constant current driver</td></tr>
<tr><td>Product model</td><td colspan="4">OM-DDC-S-3-350-IP65- DC48</td></tr>
<tr><td>Output current</td><td colspan="4">3 channels 350/700/1200 mA constant current output</td></tr>
<tr><td>Option function</td><td colspan="4">Remote control function、0-10V analogue dimming function</td></tr>
<tr><td>LED connection</td><td colspan="4">Cathode be connected together, 4 lines: R+,G+,B+, GND(R-/G-/B-)</td></tr>
<tr><td rowspan="8">Color of wire</td><td colspan="2">Power supply signal side</td><td colspan="2">Lamp side</td></tr>
<tr><td>Signal</td><td>Color</td><td>Signal</td><td>Color</td></tr>
<tr><td>DMX IN+</td><td>Brown</td><td>R+</td><td>Brown</td></tr>
<tr><td>DMX IN-</td><td>Blue</td><td>G+</td><td>Green</td></tr>
<tr><td>DMX OUT+</td><td>Green</td><td>B+</td><td>Blue</td></tr>
<tr><td>DMX OUT-</td><td>Black</td><td>R-/G-/B-</td><td>Black</td></tr>
<tr><td>AC L</td><td>Brown</td><td></td><td></td></tr>
<tr><td>AC N</td><td>Blue</td><td></td><td></td></tr>
<tr><td>Protection class</td><td colspan="4">IP65</td></tr>
<tr><td>Working voltage</td><td colspan="4">DC24V-DC48V, wide voltage range, lamp strip voltage must be lower than 90% of working voltage</td></tr>
</table>

<table>
<tr><td>Product picture</td><td colspan="4"> 
</td></tr>
<tr><td>Product name</td><td colspan="4">DD-2000: AC 90-230V DMX constant current power supply</td></tr>
<tr><td>Product model</td><td colspan="4">OM-DDC-S-3-350-IP65- AC</td></tr>
<tr><td>Output current</td><td colspan="4">3 channels 350/700/1200 mA constant current output</td></tr>
<tr><td>LED connection</td><td colspan="4">Cathode be connected together, 4 lines: R+,G+,B+, GND(R-/G-/B-)</td></tr>
<tr><td>Option function</td><td colspan="4">Remote control function、0-10V analogue dimming function</td></tr>
<tr><td rowspan="8">Color of wire</td><td colspan="2">Power supply signal side</td><td colspan="2">Lamp side</td></tr>
<tr><td>Signal</td><td>Color</td><td>Signal</td><td>Color</td></tr>
<tr><td>DMX IN+</td><td>Brown</td><td>R+</td><td>Brown</td></tr>
<tr><td>DMX IN-</td><td>Blue</td><td>G+</td><td>Green</td></tr>
<tr><td>DMX OUT+</td><td>Green</td><td>B+</td><td>Blue</td></tr>
<tr><td>DMX OUT-</td><td>Black</td><td>R-/G-/B-</td><td>Black</td></tr>
<tr><td>AC L</td><td>Brown</td><td></td><td></td></tr>
<tr><td>AC N</td><td>Blue</td><td></td><td></td></tr>
<tr><td>Protection class</td><td colspan="4">IP65</td></tr>
<tr><td>Working voltage</td><td colspan="4">AC 90-230V wide voltage range</td></tr>
</table>

Order information

OM-DDV-P-6- IP54

1 2 3 4 5 6 7 8 9 10

Field	Meaning	Optional	Discription	Optional Scope
1	Logo	OM	Onumen Technology Co.,Ltd	
2	Product category	DDV	Constant voltage Decoder, PWM output.	
		DDC	Constant current Decoder.	
		DDP	Protocol Decoder (Support LPD6803/D705/WS2801).	
3	DMX	P	DMX signal standard parallel connection, address by dial-up switch setting manually	Apply to DDV、DDC、DDP
		S	DMX signal serial connection, address auto increment,no need to manually set the address.	
		PA	DMX signal standard parallel connection,setting address automatically.(by Onumen dedicated controller to setting the address)	
4	The number of DMX decoding address	3	DMX decode 3 address	DDV、DDC
		128	DMX decode 128 address	DDP
		512	DMX decode 512 address	
		1024	DMX decode 1024 address	
5	Constant current value	350	Constant current value is 350mA. Can also customaized accroding to customer requirements.	DDC
		700	Constant current value is 700mA.Can also customized according to customer requirements.	
		1000	Constant current value is 1000mA. Can also be customaized according to customer requiements.	

		blank	Constant voltage Decoder、Protocol Decoder is no such ooption, a blank.	
6	Decoding conversion agreement	SPI	Support HC595、MBI5026 and other types of chips.	DDP
		IC5	Support D705、LPD6803 and other types of chips	
		IC8	Support WS2801 and other types of chips	
		blank	Constant voltage Decoder 、 Constant current Decoder is no such option, a blank.	
7	Analogue dimming	blank	Do not support analogue dimming	Apply to DDV、DDC、DDP
		A	Support 0-10V analogue dimming	
8	Wireless remote control	blank	Do not support the wireless remote control	Apply to DDV、DDC、DDP
		W	Support wireless remote control,Lighting by wireless remote control to adjust brightness and build-in light mode and play speed.	
9	Protection class	blank	The default protection level is IP54	Apply to DDV、DDC、DDP
		IP65	Protection level is IP65	
		IP67	Protection level is IP67	
10	Working voltage	24V	Working voltage is DC 8-24V	Apply to DDV、DDC、DDP
		48V	Working voltage is DC 48V	
		AC	Working voltage is AC 110-220V	

Example：OM-DDV-P-3-IP54

Signification: Constant voltage Decoder, DMX signal parallel connection, PWM output with 3 channels,protection grade is IP54, working voltage is 8-24V

Example：OM-DDC-S-3-350-IP67

Signification: Constant current Decoder, DMX signal serial connection, address setting automatically, Output with 3 channels , constant current value of each channel 350mA, protection grade

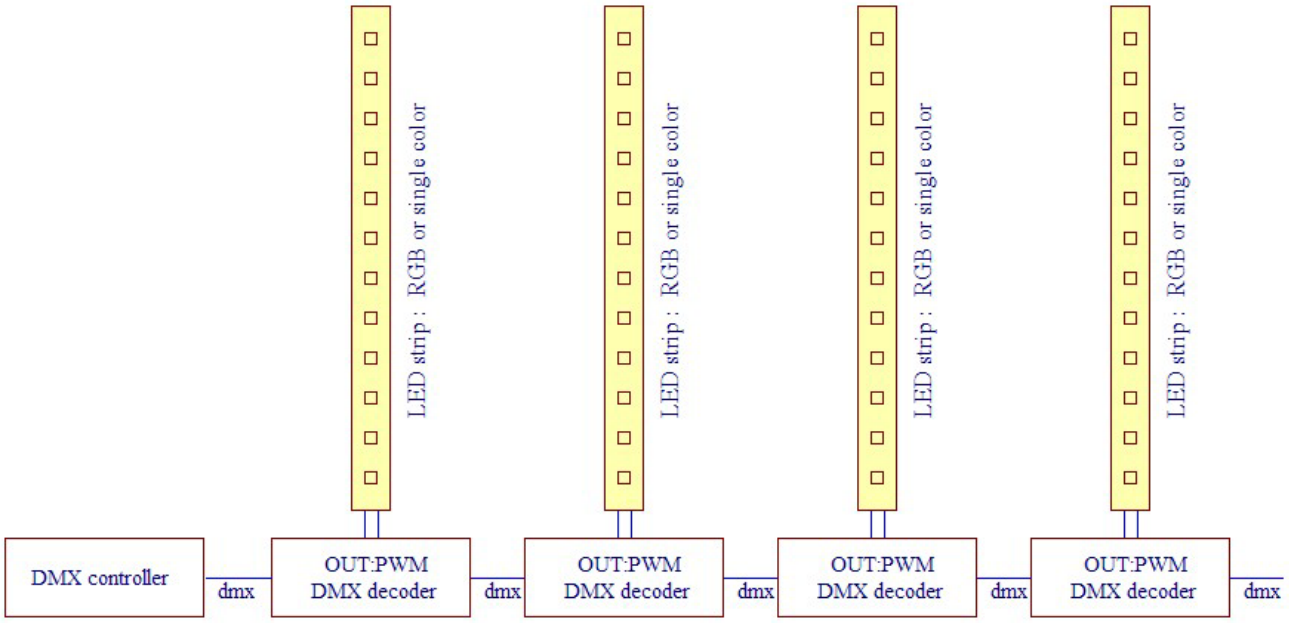
is IP67, working voltage is 8-24V.

Example：OM-DDP-PA-512-IC5-IP54

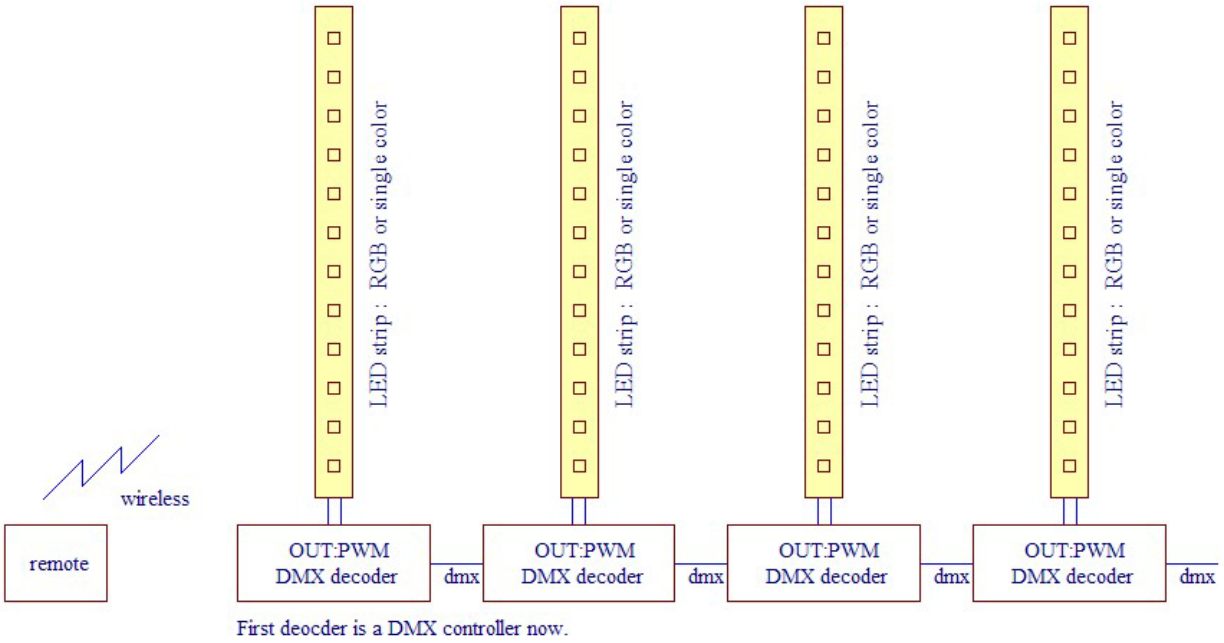
Signification: Protocol Decoder, DMX signal parallel connection, address setting automatically(by Onumen dedicated controller to setting), decode 512 DMX channels, converted to IC5 protocol, protection grade is IP54, working voltage is 8-24V.

Applications

Way 1：Decoder（PWM Output） drive monochrome or RGB light bar or other lamps, external use DMX controller to achieve a variety effects.

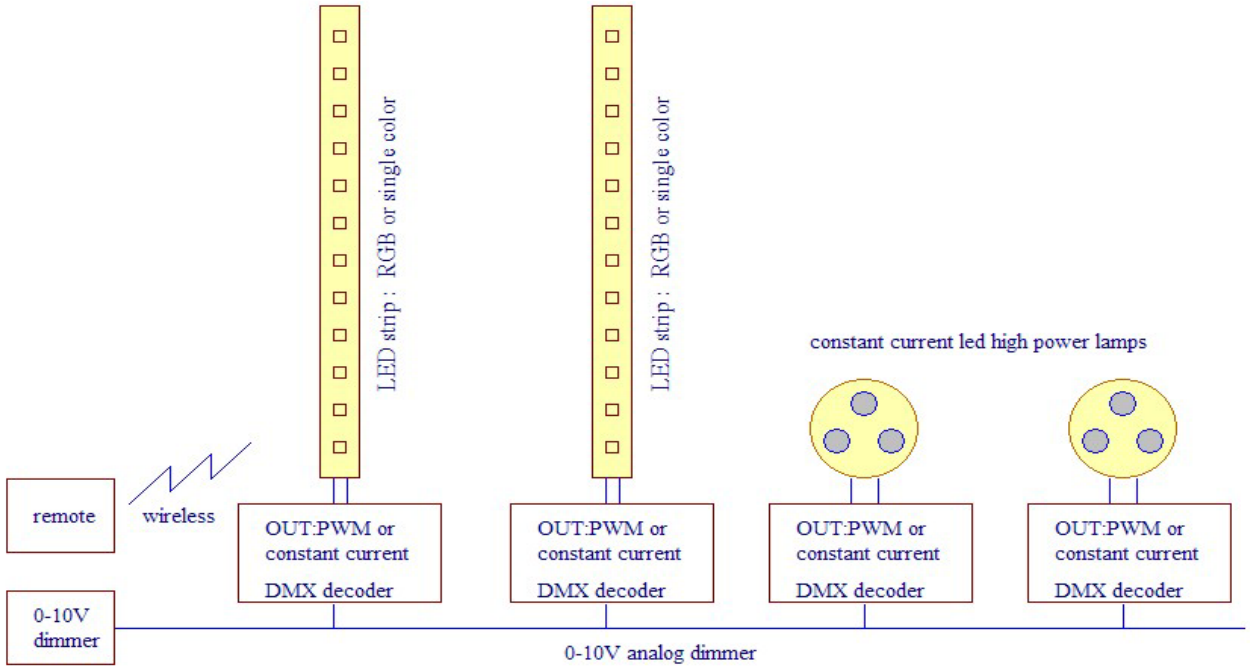


Way 2：Decoder（PWM Output）drive monochrome or RGB light bar or other lamps, no external controller, this moment the first Decoder be using as DMX controller, playing a variety build-in Decoder of patterns, can be achieve synchronize change color、flowing water and other effects. and can be switched pa ttern by remote control, adjust playback speed.

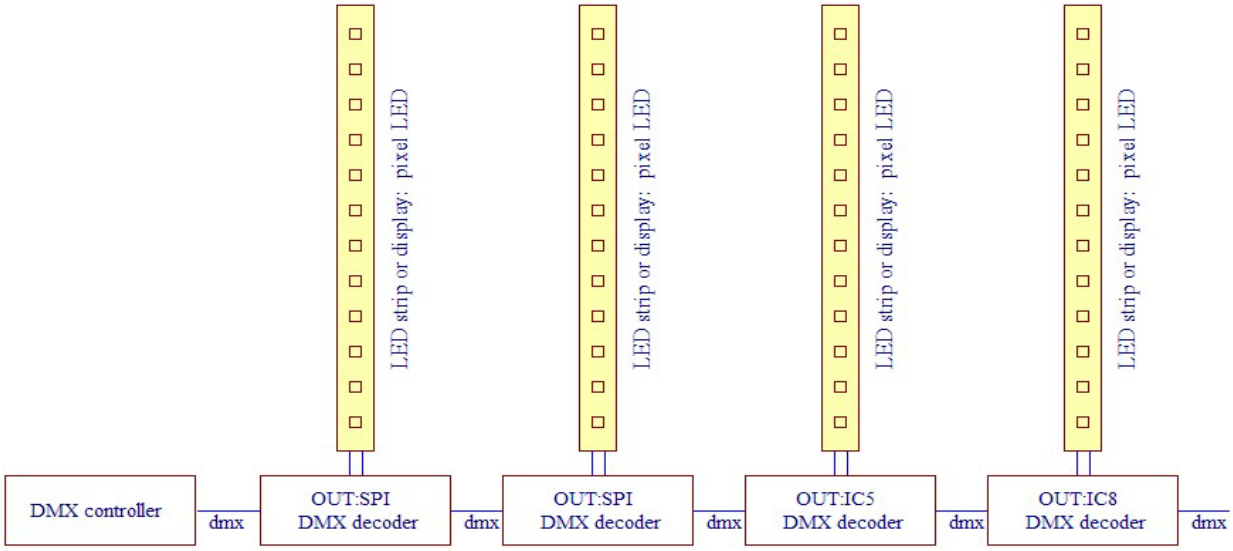


Way 3：Decoder (PWM Output or constant current drive) drive monochrome color or RGB light bar or high power LED lamps(wall washer light、spot light、projection light etc.), no external controller, and between decoder there are no DMX signal connector, this moment all the decoders can be using as stand-alone DMX controller, playing a variety build-in decoder of patterns, it can achieve synchronize change color、flowing water and other effects. And can be switched pattern by remote controller, adjust playback speed.

If you set all the brightness value of decoder as full bright, can be used as lighting driver, and by remote controller or 0-10V dimming function to implement lighting lamps dimming.



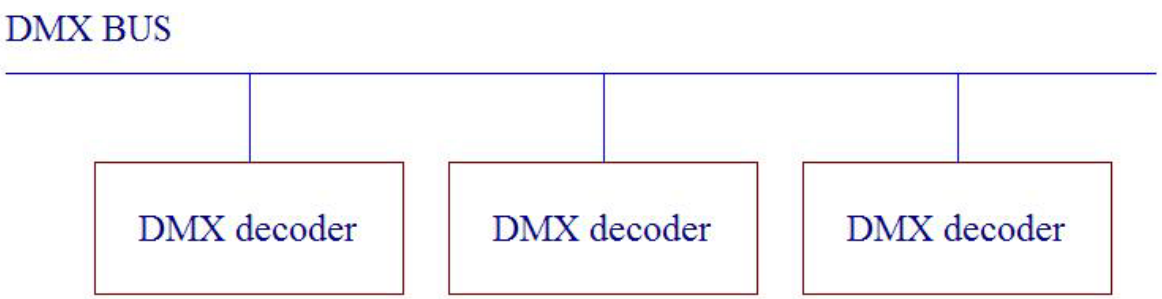
Way 4: Decoder (protocol output) to drive a variety protocol screen or LED light bar, to achieve Flowing water、gradient and other effects. Many decoders work in parallel, can be achieve a big screen.



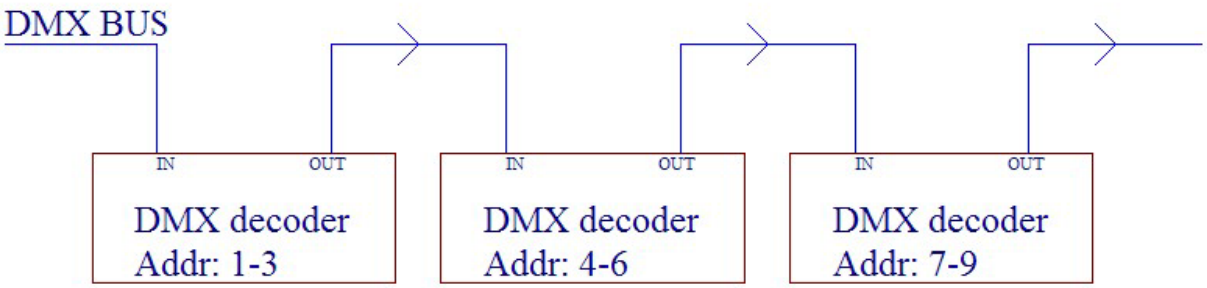
DMX connection

DMX Decoder supports 3 kinds of connections:

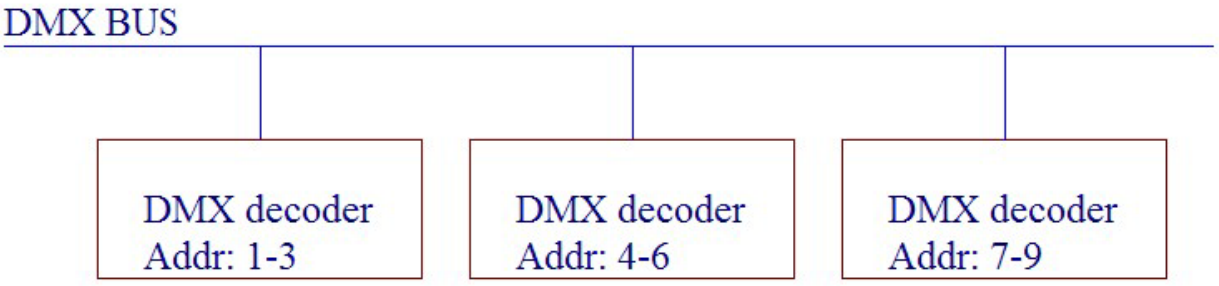
1 (marked with: P): standard parallel connection, DMM address be set by dial-up switch, connection as shown below:



2 (marked with: S): in series way, DMX address auto-increment, no need manually set, connection as shown below (in each decoder decode 3 address as an example:



3 (marked with: PA): standard parallel connection, DMX address auto-increment (by onumen dedicated controller to achieve the address is set automatically) or uesr can setup address freewill via software, no need manually set, connection as shown below (in each decoder decode 3 address as an example):



DMX protocol support 2 kinds plug-in：3PIN XLR interface and J45 interface。

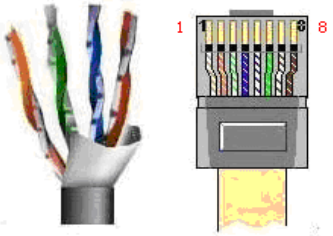
DMX connection if using the onumen parallel connection to set the address (marked with：PA), must be selected RJ45 interface.

XLR interface pin definitions		
1	2	3
GND	DMX-	DMX+

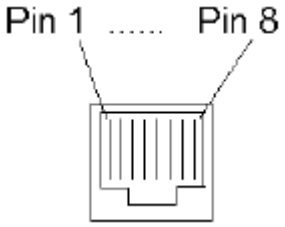
RJ45 interface pin definitions			
RJ45 pin number	Signal definition	Cards lead、RJ45 pin number	Signal definition
1	DMX+	5	NC
2	DMX-	6	NC
3	NC	7	A+
4	NC	8	A-

Picture of connector as below:

XLR head（socket）



RJ45 Head



RJ45 Socket

DMX serial output port

Serial output port has the function of signal amplification. The serial output port can serve as a signal amplifier.

If there is no DIP switch setting address, DMX address of the serial output port = input DMX address + 3. Serial port output signal address auto-increment 3.

For example: the serial decoder, the output signal and the input sequence to connect (see "DMX connection" in the second serial connection way), the address of decoder will automatically increment 3, the first decoder address is 1, the second dec oder address is 4, the third decoder address is 7 ... ... and so on.

If DIP switch settings address, DMX address of the serial output port = input DMX Address + DIP-switch address - 1.

★ For example 1: If the DIP-switch to set the DMX address is 1 (all DIP-switch upward, factory default value), DMX of serial port output signal and input of the DMX signal exactly the same. The serial output port can be used as signal amplification to use.

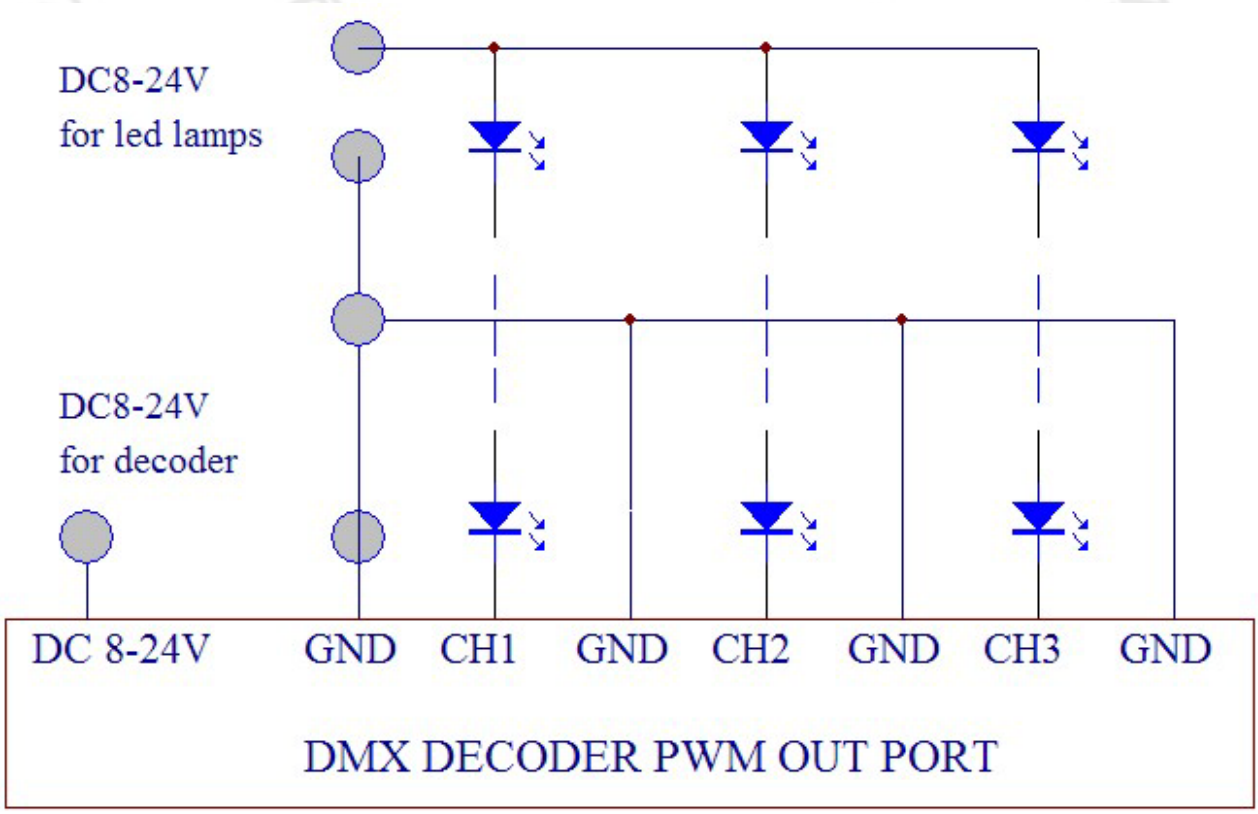
★ For example 2: if all DIP switch settings of the DMX address is 4, and in accordance with the serial connection, then the decoder address will automatically increment 3, the first decoder address is 4, the second decoder address is 7, the third decoder address is 10 ... ... and so on.

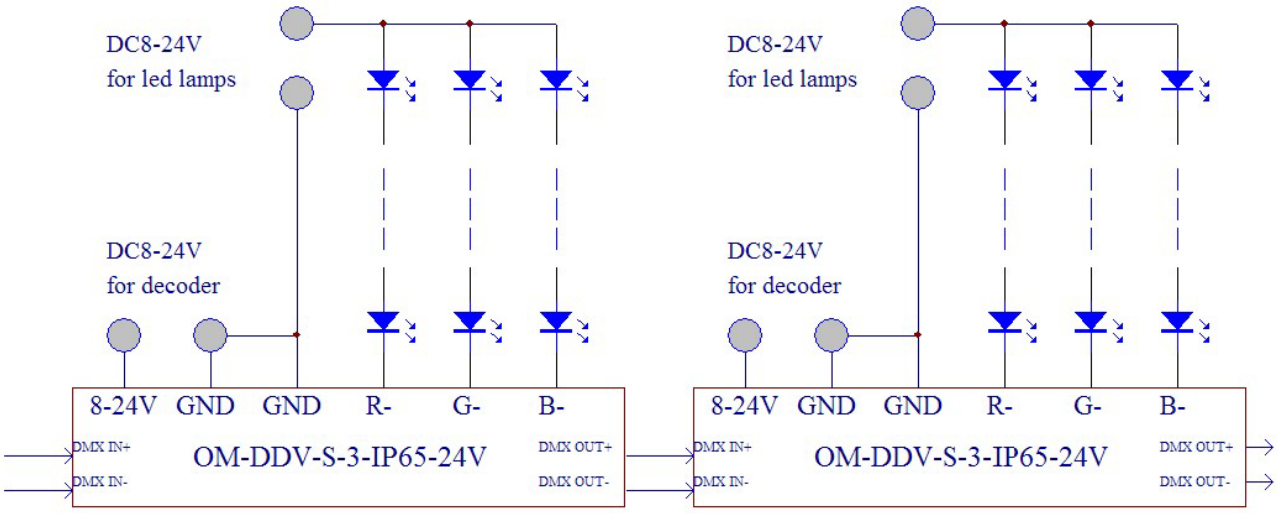
★ For example 3: if the first decoder DIP switch to set the DMX address is 1, the remaining set DMX address decoder is 4,and connected with serial way, the first decoder address is 1, the second decoder address is 4, the third decoder address is 7 ... ... and so on.

PWM output

One DMX decoder supports 3 channels PWM output. Each can support the maximum output current 6A. Lamp power supply and decoder power supply can be separated. Lamps up to 24V power supply.

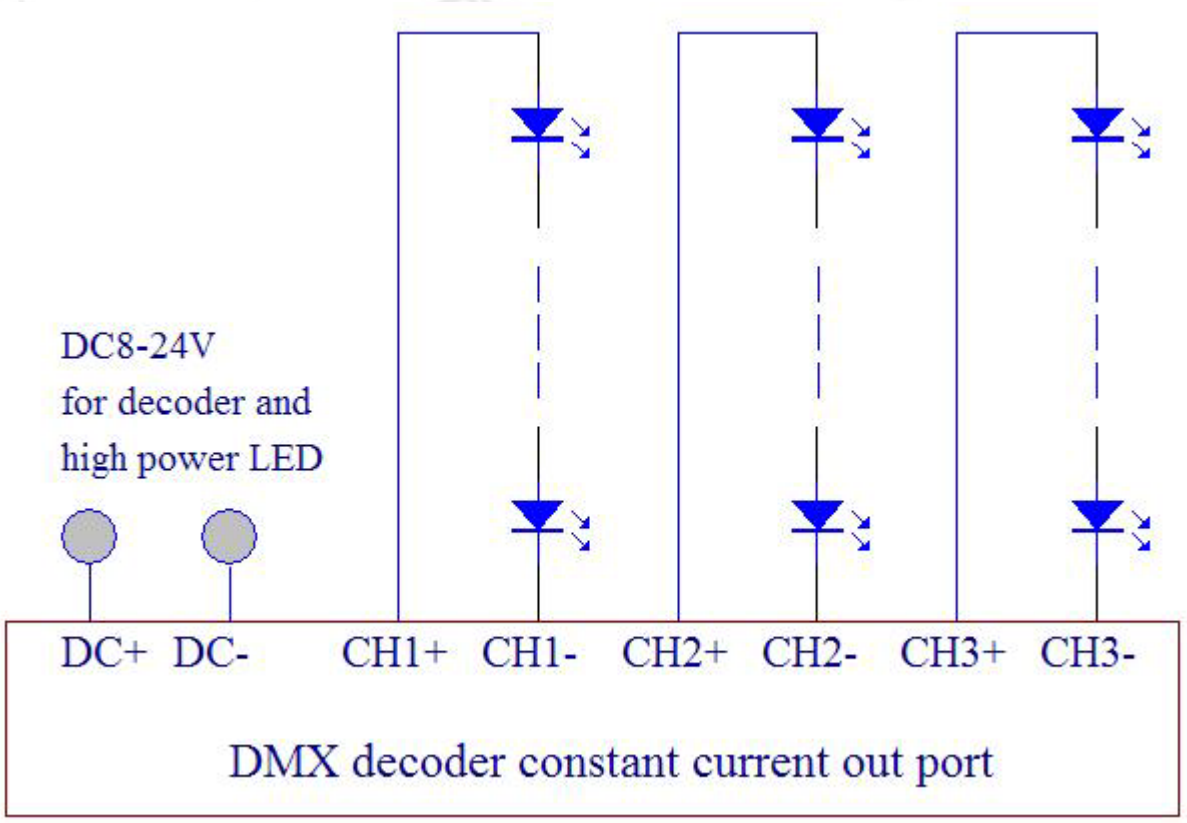
PWM connection diagram as shown below:





Constant current output

- DMX constant current decoder to adopt step-down constant current technology, used by standard DMX512 communication interface, combined with PWM constant current to achieve LED dimming (0-100% adjustable), in total 256 grade.
- To adopt switch control mode, constant current drive than traditional method more efficient. Efficiency is as high as 95%. Thereby achieving energy saving.
- Constant current point on-line be monitored, the precision constant current up to 5%.
- Build-in 20 gradual change patterns, within 2 seconds and do not receive the external DMX signal, And then it runs this pattern automatically.
- High-efficiency, mV grade ripple protect lamps, soft light effect, brightness be changed from low-end to high-end jitter free
- There are have 3 sizes constant current :350mA, 700mA, 1000mA optional, and can also be customized according to customer requirements.
- When the output power supply is 24V, it support up to 6 lamps in series. When the output power supply is 48V, it support up to 12 lamps in series.



Protocol Output

- DMX decoder can decode DMX signal, output SPI/IC5/IC8 etc protocol control signal, can drive LPD6803/D705/WS2801 and other chips. Drive signal is 5V TTL/CMOS electrical level, can be drive 40-100 meters cable directly.
- It can decode 128 /512 /1024 addresses.

0-10V Analog dimming

- DMX Decoder support 0-10V analogue dimming.
- If user requires this feature, please tell us when ordering.

Keyboard and wireless remote control

DMX supports keyboard and wireless remote control, users can using wireless control to switch the build-in pattern, adjust build-in pattern and adjust the brightness.

4 buttons on the remote control and 4 buttons on the controller one correspondence, and function exactly the same, the following table:

Press button	Press button (remote control)	Name of press button	Function
K4	A	MODE	Cycle switch through the three functions.
K2	B	OK	Save、Play、Pause
K3	C	LEFT	Reduce the value
K1	D	RIGHT	Increase the value

Keyboard supports short press and long press, they has different function.

- Short press (SP): key press time greater than 0.5 second and less than 1 second.
- Long press (LP): key press time more than 1 second. if you still to press the key when the press time more than 1 second later. the value will be increase or decrease faster. can be reach the limit value soon. (it couldn't cross the border to another limit value).

Press button function sheet				
MODE (K4/A)	Short press	to cyclic switch 3 functions: switch build-in pattern(red light 1 second); adjust build-in pattern playback speed(green light 1 second); adjust holistic brightness (blue light 1 second)		
Function	Press button	LEFT (K3/C) Reduce	OK (K2/B) Save	RIGHT (K1/D) Increase
Switching pattern	Short press	Patterns in order to reduce 1 (20 -> 1).		Patterns in order to increase 1 (1 —> 20).
	Long press		Current pattern saved	
Adjust speed	Short press	Running speed of patterns slow down.	pause/play, press again play/pause	Running speed of patterns speed up
	Long press	Running speed of patterns become slower and slower	Current brightness saved	Running speed of patterns become faster and faster。
Adjust brightness	Short press	Brightness reduce one (255 —> 0).	Current brightness saved	Brightness increase one (0 —> 255).
	Long press	Brightness decrease faster and faster		Brightness increase faster and faster

The fastest speed is 333 values per second (period is 3 milliseconds), the slowest value of 0.5 per second (period is 2 seconds). Users can freely to switch between the fastest and the slowest

Special features: restore default value:

Holding down K2 (B) key when power on, about 2-3 second later it will return to the default value:

- Function mode: Be switched build-in pattern
- Pattern sequence number: 4 (Fast Blinking)
- Running speed: 30 frames per second
- Brightness: 255(max)

Build-in patterns

We can offer the customized pattern for our customer.

There two ways to choose the build in pattern: Remote control or DIP switch

First way: By DIP switch to switch the 10 patterns, when the rightmost DIP switch "FUN" function key is pressed, the role of DIP switches to select the built-in patterns, can not be set DMX address, DMX address will be the default setting 1. At this point the pattern will not work remote control options.

Note: after using the DIP switch to choose pattern must be re-power to take effect.

DIP switches 1-9 spaces have not been pressed, select the pattern 1. When the 1-9 position is pressed, select a corresponding pattern. If many numbers are pressed, high effective, low will be ignored.

★ For example :Bit 5,6,8 bits are pressed, only Bit 8 significant places, other bits are ignored, run "RB bright" pattern

No bit	All gradual change 2	Bit 5	B Lighten
Bit 1	RGB all lighten	Bit 6	RG Lighten
Bit 2	Fast Blinking	Bit 7	GB Lighten
Bit 3	R Lighten	Bit 8	RB Lighten
Bit 4	G Lighten	Bit 9	all not lighten

Second way: When DIP switch rightmost "FUN" function key is not pressed, you can remote control to switch the 20 patterns and save. At this point the role of DIP switches to set the DMX address. 20 patterns in the following sequence:

Pattern 1	Full color gradual change 1	Pattern 11	B lighten
Pattern 2	Full color gradual change 2	Pattern 12	R Gradual change
Pattern 3	Full color gradual change 3	Pattern 13	G Gradual change
Pattern 4	Full color slow blinking	Pattern 14	B Gradual change
Pattern 5	Full color fast blinking	Pattern 15	RG Lighten

Pattern 6	RGB All not light	Pattern 16	RB Lighten
Pattern 7	RGB All lighten	Pattern 17	GB lighten
Pattern 8	RGB Gradual change	Pattern 18	RG Gradual change
Pattern 9	R Lighten	Pattern 19	RB Gradual change
Pattern 10	G Lighten	Pattern 20	GB Gradual change

If without external DMX signal input, 2 second later the decoder will auto-running the build-in patterns, and be output at DMX output port.

When the decoder as a controller, built-in patterns through the DMX output ports. Can be output maximum 1024 channels pattern data. The number of output channels depend on the run speed. The speed faster, the less output channel. the speed slowly, the many output channels, the maximum not more than 1024 channels. The number of output channels calculated by the following formula:

The number of output channels = speed of cycle number (milliseconds) * 64

★ For example: When the running speed of the frame rate is 30 Hz, the number of cycles is 1 / 30 = 33 milliseconds, then the number of output channels is 33 * 16 = 528 channels.

DIP Switch be set DMX address

Only when the rightmost "FUN" switch in the off position (up), DIP switches to set addresses. When the rightmost "FUN" switch in the on position (down), the role of DIP switches is the selection of built-in pattern.

Decoder adopt DIP switch to set address. Switch be dialed upward is OFF. Switch be dialed downward is ON. When the DIP switch be dialed downward ON, get the bit value for this bit; When the DIP switch be dialed upward OFF, the bit value for this bit is 0. DIP switch 1 to 9 is set to DMX512 origination address code of binary switch.

The first bit is the lowest, the ninth bit is the highest. There are total 512 address code can be set.

DMX origination address code = DIP switch 1 to 9 bit value sum + 1

For example 1:

All the DIP switches are dialed upward. The DMX origination address code is 1.

For example 2:

Figure 1, to be set the 3 addresses: 57, 58, 59,, DMX512 start address code shall be set to 57, the code switch and the 4,5,6 positions will be pulled as "ON", the rest position be pulled as "OFF".

Position 4=008; position 5=016; position 6=032

This moment coding switch sum of 1-9 bit value is 8+16+32=56, that is DMX512 start address code56+1=57.

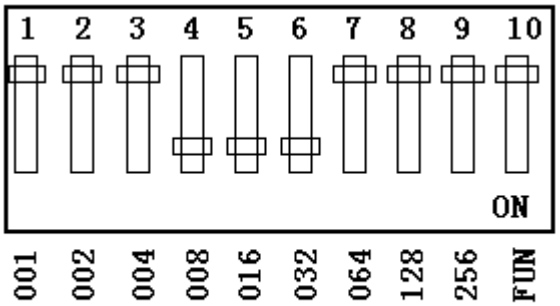


图1

The address corresponds to dial-up switch list see “DMX address setting sheet”

DMX command setting address

Decoder can be write DMX address through DMX command, and automatically saved in the FLASH memory. MC-900 Controller with Mode 4 to set the DMX address, the specific operation, please refer to "MC-900 operation" section.

Decoder support 3 ways to setting DMX address:

Way 1: MC-900 controller to set DMX address and automatically saved in the FLASH memory. Set in the range 1-999, if you set DMX address is "0", which means that the command set with the DMX address is invalid, a decoder will choose the way of two or way of three to determine their own address.

Way 2: DIP switches set the address. When the write address through the DMX command, DIP set up the address are ignored. When the written address is invalid through DMX command. (the setting address is "0" through DMX command), DIP switch settings address be enable automatically.

Way 3: When the way 1 and way 2 are invalid. DMX address of decoder is automatically set to 1, this approach is mainly used for address auto-increment, without manually setting address.

Therefore, the three ways to set DMX address, the highest priority is the way 1, followed is the way 2, the last one is the way 3. Users can choose free to set the DMX address.

MC-900 operation

MC-900 is a DMX controller, main functions: build-in 20 patterns, to adjust whole brightness, to adjust speed of play, pause/play, setting DMX increase/decrease value, setting DMX address.

Picture for MC-900 as below:

Power supply: MC-900 controller have two ways for power supply: build-in batterys or circumscribed DC+5V power supply.

Circumscribed DC+5V power supply, the maximum working current is 50mA. Please notice the power positive and negative poles :

Switch: MC-900 can be switched on/off the power supply through the switch. When the switch at the left it means power off. when the switch at the right it means power on. If you not to using this controller for a long time please to switch off the power supply.

DMX output: MC-900 output signal is standard DMX difference signal. It accord with the DMX-1990 standard. Output plug is the standard XLR 3 plug. 2 pin for the DMX-, 3 pin DMX +. When using MC-900 control to set the decoder address, please to connected the MC-900's DMX output port to the decoder's DMX

input port.

Display: MC-900 have four “8 led” displayer, at the left “8 led” display the current working mode, with key “MODE” can be switched 5 working modes in circulate:

0: to be switched 20 build-in patterns.

1: to adjust the speed of pattern.

2: to adjust whole brightness.

3: to setting DMX changing value.

4: to setting DMX address.

When press key “MODE” to switch this 5 working modes, the right three “8” display the current Value of working mode.

Working MODE	values for current mode	Specification
0: to switch 20 build-in patterns	0-20	There are 20 built-in patters can be select.
1: to adjust speed	2-999	The interval time per frame, the unit is milliseconds. That the interval between each frame, in milliseconds. For example, when set to 33 milliseconds, that the time interval between each frame is 33 ms, frame rate is 1/33m = 30Hz. The greater the interval, speed slower. The smaller the interval, speed faster.
2: to adjust whole brightness	0-255	Means brightness value, maximum 255, minimum 0, 256 levels of brightness to choose from.
3: to set DMX changing value	0-999	Setting the DMX changing value. For example, set to 3, under the "Set DMX address" mode, if you press the "increase key" the DMX's address will increase by 3; if you press the "decrease key" the DMX's address will be reduced by 3
4: to set DMX address	0-999	Setting DMX decoder's address. when it be set to "0",

		means that the decoder's address will be decided through other way.

The sequences for built-in 20 patterns as below:

Pattern 1	Full color gradual change 1	Pattern 11	B lighting
Pattern 2	Full color gradual change 2	Pattern 12	R gradual change
Pattern 3	Full color gradual change 3	Pattern 13	G gradual change
Pattern 4	Full color slow flash	Pattern 14	B gradual change
Pattern 5	Full color fast flash	Pattern 15	RG lighting
Pattern 6	RGB all put out	Pattern 16	RB lighting
Pattern 7	RGB all lighting	Pattern 17	GB lighting
Pattern 8	RGB gradual change	Pattern 18	RG gradual change
Pattern 9	R lighting	Pattern 19	RB gradual change
Pattern 10	G lighting	Pattern 20	GB gradual change

Key press operation: MC-900 have four keys:"MODE" "<-" "->" "OK" 。

Key support short press and long press, short press and long press have different functions.

Key for short press (SP): The time of press is greater than 0.5 second, less than 1 second.

Key for long press (LP): The time of press is greater than 1 second. After the time of press key is greater than 1 second if you still press the key, the value will be increase or decrease. It can be reach the limit value in a short time. When it be reached the limit value than it can keep this value, it couldn't cross-border to another limit value.

Special functions:

Open the switch of power supply and press the key "OK" for 2 seconds, It would be recovered Default value:

- Function mode is: to switch build-in pattern

- Pattern 5: fast flash
- Speed of running is: Each frame time is 68 ms, frame rate for the 1/68m = 15, running at 15 frames per second
- Brightness value is: 255
- DMX changing value is: 3
- DMX address is: 1

Built-in pattern by DMX output ports, up to 1024 channels of pattern output data. The number of output channels be decided by the runing speed. the faster, the less channels output. the slower, the more channels be output , the maximum not more than 1024 channels. The number of output channels by the following formula:

The number of output channels = speed of cycle number (milliseconds) * 64

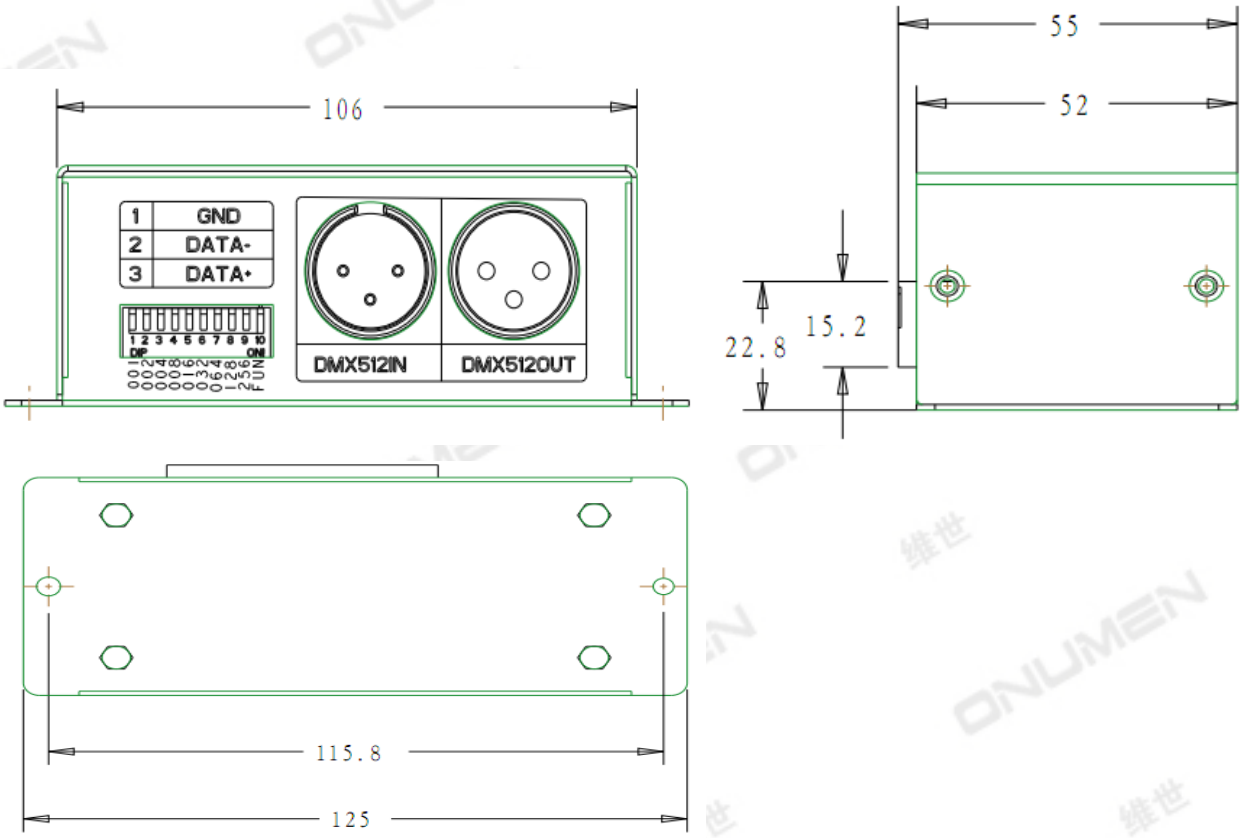
★ **For example:** When the running speed of the frame rate is 15 Hz and the number of cycles is 1 / 15 = 67 milliseconds, then the theoretical number of output channels are 67 * 64 = 4288 channels, more than the maximum value of 1024, the actual number of output channels are 1024 channels.

Key function sheet				
MODE function	key	<-	->	OK
0: to switch 20 build-in pattern	Short press	Patterns in order to reduce 1 (20 -> 1).	Patterns in order to increase 1 (1 —> 20)。	
	Long press			Keep current pattern
1: to adjust speed	Short press	Time was increased, the pattern's speed slow down.	Time was decreased, the pattern speed up	Stop/play, press again is play/stop。
	Long press	Patterns change more slowly.	Pattern running faster and faster.	Keep current speed
2: to adjust whole brightness	Short press	Brightness reduced by one (255 -> 0).	Brightness increased by one (0 -> 255	
	Long press	Brightness decrease faster.	Brightness increase faster.	Keep the current brightness
3: to set DMX changing value	Short press	DMX changing value decrease 1 (255 -> 0).	DMX changing value increase 1 (0 —> 255)。	
	Long press	DMX changing value decrease faster	DMX changing value increase faster	Keep the current DMX changing value
4: to set DMX address	Short press	DMX address reduce 1 unit (the value set by the mode 3).	DMX address increase 1 unit (the value set by the mode 3).	To send the DMX address to the decoder by DMX command.
	Long press	DMX address to reduce faster.	DMX address to increase faster。	Keep DMX address to MC-900 flash memory.

Dimensions

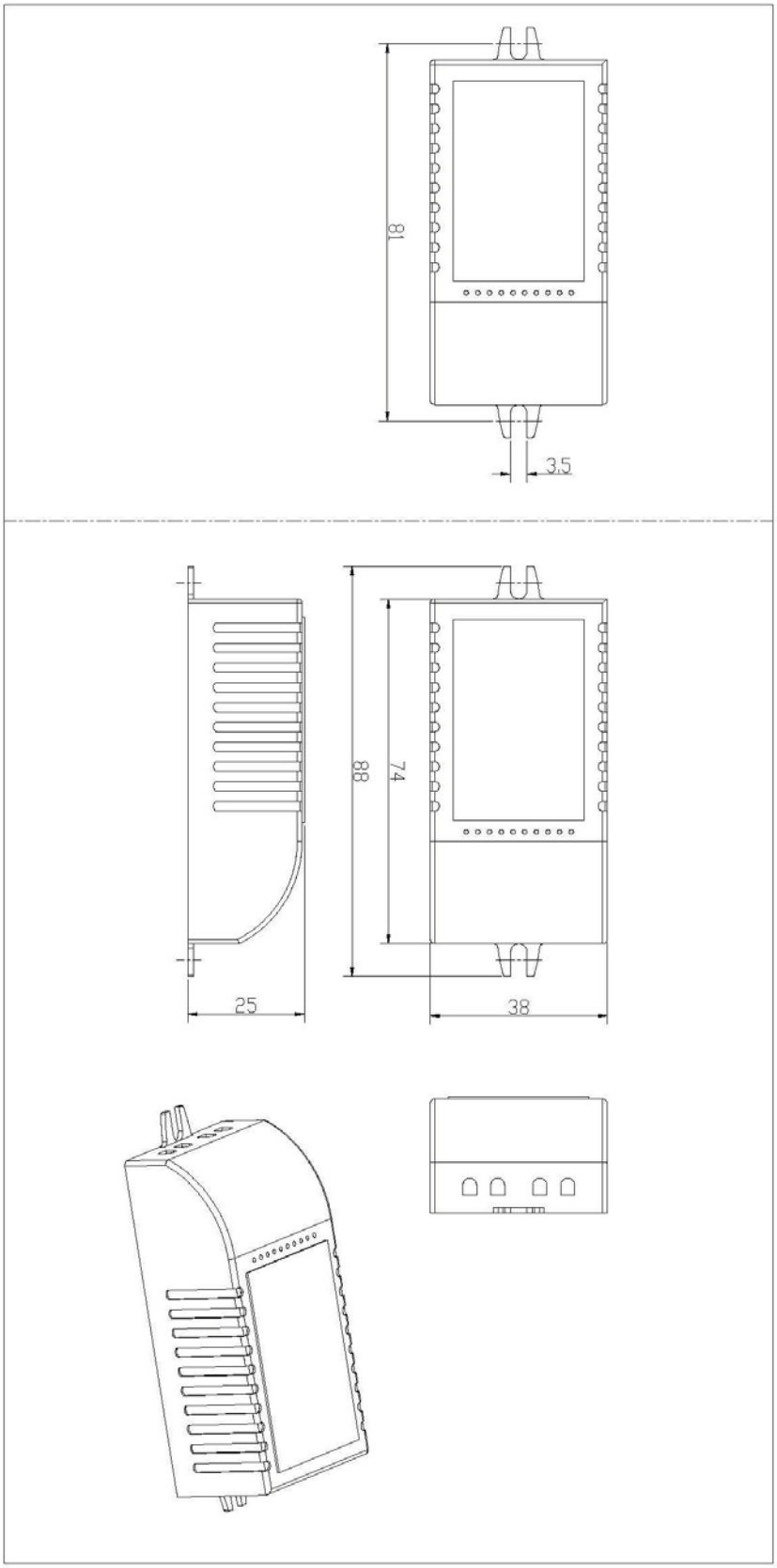
Protection grade is IP54 boundary dimensions

Unit：mm



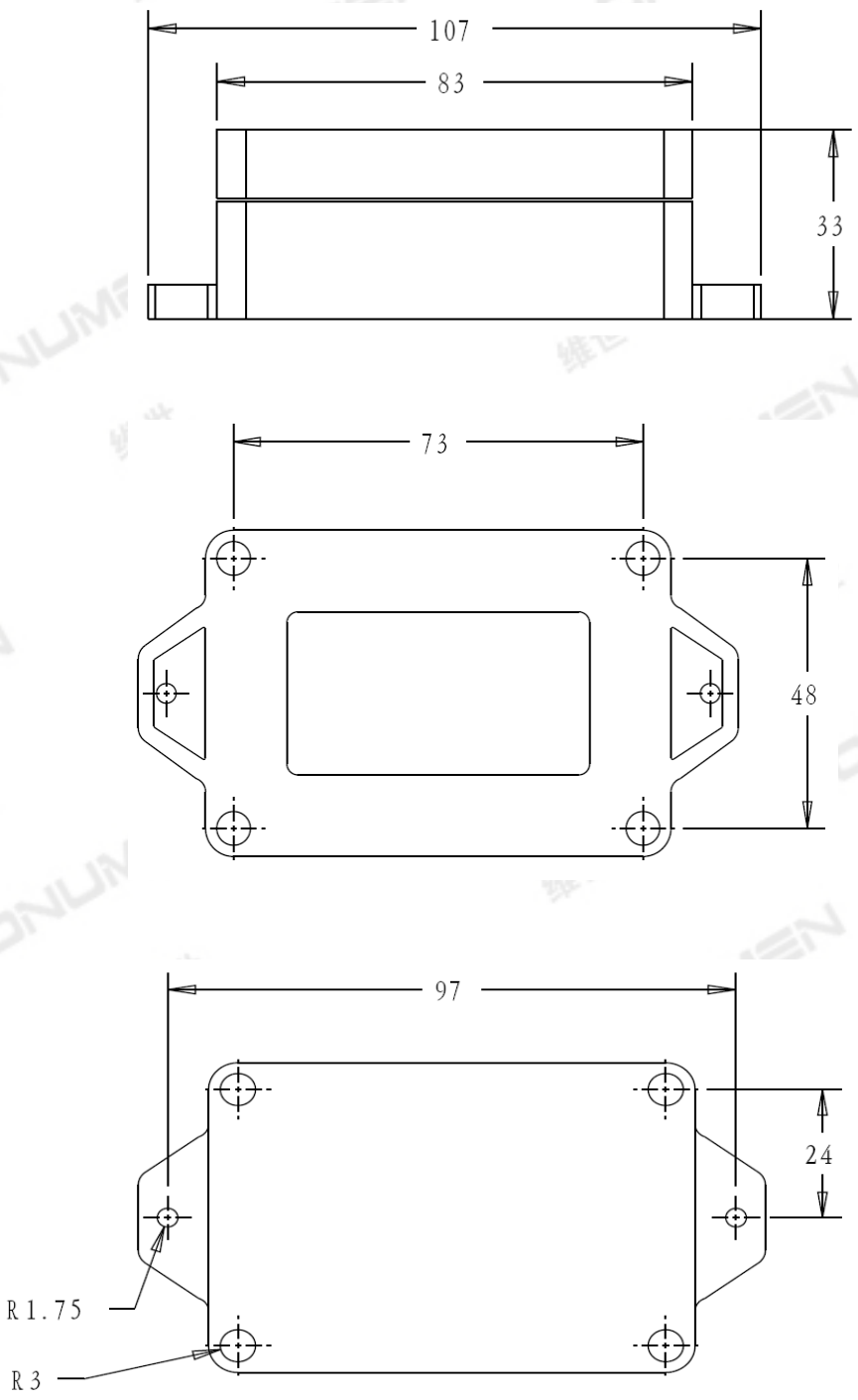
Protection grade is IP65 boundary dimensions (DC 24V power input)

Unit: mm



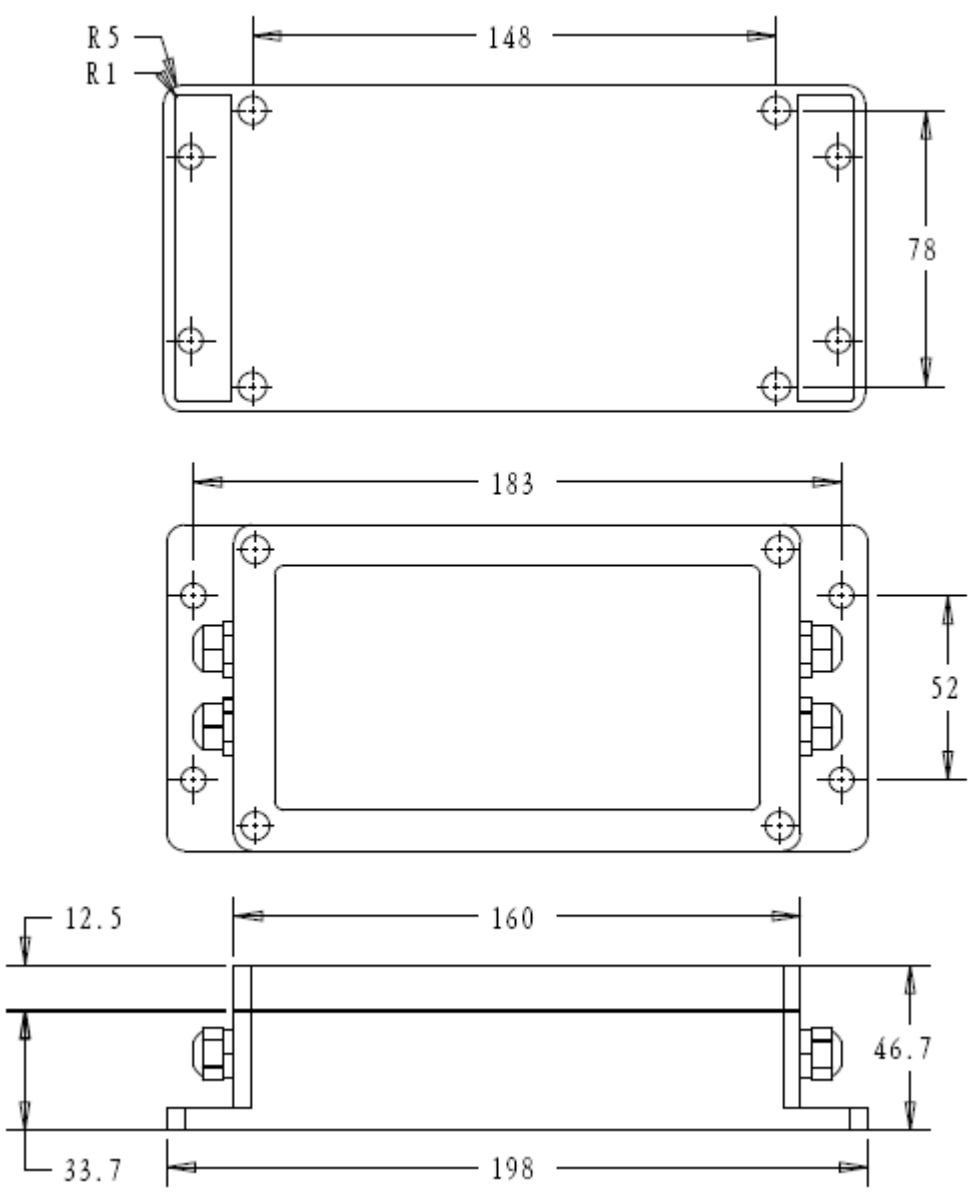
Protection grade is IP65 boundary dimensions (DC 48V power input)

Unit: mm



Protection grade is IP65 boundary dimensions（AC power input）

Unit：mm



DMX address setting sheet

DMX Address Setting Table ON(down) =1 OFF(up)=0

DIP SWITCH	DMX ADDR	DIP SWITCH	DMX ADDR	DIP SWITCH	DMX ADDR	DIP SWITCH	DMX ADDR
123456789	NUMBER	123456789	NUMBER	123456790	NUMBER	123456791	NUMBER
000000000	1	110101000	44	011010100	87	100000010	130
100000000	2	001101000	45	111010100	88	010000010	131
010000000	3	101101000	46	000110100	89	110000010	132
110000000	4	011101000	47	100110100	90	001000010	133
001000000	5	111101000	48	010110100	91	101000010	134
101000000	6	000011000	49	110110100	92	011000010	135
011000000	7	100011000	50	001110100	93	111000010	136
111000000	8	010011000	51	101110100	94	000100010	137
000100000	9	110011000	52	011110100	95	100100010	138
100100000	10	001011000	53	111110100	96	010100010	139
010100000	11	101011000	54	000001100	97	110100010	140
110100000	12	011011000	55	100001100	98	001100010	141
001100000	13	111011000	56	010001100	99	101100010	142
101100000	14	000111000	57	110001100	100	011100010	143
011100000	15	100111000	58	001001100	101	111100010	144
111100000	16	010111000	59	101001100	102	000010010	145
000010000	17	110111000	60	011001100	103	100010010	146
100010000	18	001111000	61	111001100	104	010010010	147
010010000	19	101111000	62	000101100	105	110010010	148
110010000	20	011111000	63	100101100	106	001010010	149
001010000	21	111111000	64	010101100	107	101010010	150
101010000	22	000000100	65	110101100	108	011010010	151
011010000	23	100000100	66	001101100	109	111010010	152
111010000	24	010000100	67	101101100	110	000110010	153
000110000	25	110000100	68	011101100	111	100110010	154
100110000	26	001000100	69	111101100	112	010110010	155
010110000	27	101000100	70	000011100	113	110110010	156
110110000	28	011000100	71	100011100	114	001110010	157
001110000	29	111000100	72	010011100	115	101110010	158
101110000	30	000100100	73	110011100	116	011110010	159
011110000	31	100100100	74	001011100	117	111110010	160
111110000	32	010100100	75	101011100	118	000001010	161
000001000	33	110100100	76	011011100	119	100001010	162
100001000	34	001100100	77	111011100	120	010001010	163
010001000	35	101100100	78	000111100	121	110001010	164

110001000	36	011100100	79	100111100	122	001001010	165
001001000	37	111100100	80	010111100	123	101001010	166
101001000	38	000010100	81	110111100	124	011001010	167
011001000	39	100010100	82	001111100	125	111001010	168
111001000	40	010010100	83	101111100	126	000101010	169
000101000	41	110010100	84	011111100	127	100101010	170
100101000	42	001010100	85	111111100	128	010101010	171
010101000	43	101010100	86	000000010	129	110101010	172

DMX Address Setting Table

DIP SWITCH	DMX ADDR	DIP SWITCH	DMX ADDR	DIP SWITCH	DMX ADDR	DIP SWITCH	DMX ADDR
123456789	NUMBER	123456789	NUMBER	123456790	NUMBER	123456791	NUMBER
001101010	173	001010110	213	001111110	253	001001001	293
101101010	174	101010110	214	101111110	254	101001001	294
011101010	175	011010110	215	011111110	255	011001001	295
111101010	176	111010110	216	111111110	256	111001001	296
000011010	177	000110110	217	000000001	257	000101001	297
100011010	178	100110110	218	100000001	258	100101001	298
010011010	179	010110110	219	010000001	259	010101001	299
110011010	180	110110110	220	110000001	260	110101001	300
001011010	181	001110110	221	001000001	261	001101001	301
101011010	182	101110110	222	101000001	262	101101001	302
011011010	183	011110110	223	011000001	263	011101001	303
111011010	184	111110110	224	111000001	264	111101001	304
000111010	185	000001110	225	000100001	265	000011001	305
100111010	186	100001110	226	100100001	266	100011001	306
010111010	187	010001110	227	010100001	267	010011001	307
110111010	188	110001110	228	110100001	268	110011001	308
001111010	189	001001110	229	001100001	269	001011001	309
101111010	190	101001110	230	101100001	270	101011001	310
011111010	191	011001110	231	011100001	271	011011001	311
111111010	192	111001110	232	111100001	272	111011001	312
000000110	193	000101110	233	000010001	273	000111001	313
100000110	194	100101110	234	100010001	274	100111001	314
010000110	195	010101110	235	010010001	275	010111001	315
110000110	196	110101110	236	110010001	276	110111001	316
001000110	197	001101110	237	001010001	277	001111001	317
101000110	198	101101110	238	101010001	278	101111001	318
011000110	199	011101110	239	011010001	279	011111001	319
111000110	200	111101110	240	111010001	280	111111001	320
000100110	201	000011110	241	000110001	281	000000101	321

100100110	202	100011110	242	100110001	282	100000101	322
010100110	203	010011110	243	010110001	283	010000101	323
110100110	204	110011110	244	110110001	284	110000101	324
001100110	205	001011110	245	001110001	285	001000101	325
101100110	206	101011110	246	101110001	286	101000101	326
011100110	207	011011110	247	011110001	287	011000101	327
111100110	208	111011110	248	111110001	288	111000101	328
000010110	209	000111110	249	000001001	289	000100101	329
100010110	210	100111110	250	100001001	290	100100101	330
010010110	211	010111110	251	010001001	291	010100101	331
110010110	212	110111110	252	110001001	292	110100101	332

DMX Address Setting Table

DIP SWITCH	DMX ADDR	DIP SWITCH	DMX ADDR	DIP SWITCH	DMX ADDR	DIP SWITCH	DMX ADDR
123456789	NUMBER	123456789	NUMBER	123456790	NUMBER	123456791	NUMBER
001100101	333	001011101	373	110110011	412	010000111	451
101100101	334	101011101	374	001110011	413	110000111	452
011100101	335	011011101	375	101110011	414	001000111	453
111100101	336	111011101	376	011110011	415	101000111	454
000010101	337	000111101	377	111110011	416	011000111	455
100010101	338	100111101	378	000001011	417	111000111	456
010010101	339	010111101	379	100001011	418	000100111	457
110010101	340	110111101	380	010001011	419	100100111	458
001010101	341	001111101	381	110001011	420	010100111	459
101010101	342	101111101	382	001001011	421	110100111	460
011010101	343	011111101	383	101001011	422	001100111	461
111010101	344	111111101	384	011001011	423	101100111	462
000110101	345	000000011	385	111001011	424	011100111	463
100110101	346	100000011	386	000101011	425	111100111	464
010110101	347	010000011	387	100101011	426	000010111	465
110110101	348	110000011	388	010101011	427	100010111	466
001110101	349	001000011	389	110101011	428	010010111	467
101110101	350	101000011	390	001101011	429	110010111	468
011110101	351	011000011	391	101101011	430	001010111	469
111110101	352	111000011	392	011101011	431	101010111	470
000001101	353	000100011	393	111101011	432	011010111	471
100001101	354	100100011	394	000011011	433	111010111	472
010001101	355	010100011	395	100011011	434	000110111	473
110001101	356	110100011	396	010011011	435	100110111	474
001001101	357	001100011	397	110011011	436	010110111	475
101001101	358	101100011	398	001011011	437	110110111	476

011001101	359	011100011	399	101011011	438	001110111	477
111001101	360	111100011	400	011011011	439	101110111	478
000101101	361	000010011	401	111011011	440	011110111	479
100101101	362	100010011	402	000111011	441	111110111	480
010101101	363	010010011	403	100111011	442	000001111	481
110101101	364	110010011	404	010111011	443	100001111	482
001101101	365	001010011	405	110111011	444	010001111	483
101101101	366	101010011	406	001111011	445	110001111	484
011101101	367	011010011	407	101111011	446	001001111	485
111101101	368	111010011	408	011111011	447	101001111	486
000011101	369	000110011	409	111111011	448	011001111	487
100011101	370	100110011	410	000000111	449	111001111	488
010011101	371	010110011	411	100000111	450	000101111	489
110011101	372	110110011	412	010000111	451	100101111	490

DMX Address Setting Table

DIP SWITCH	DMX ADDR	DIP SWITCH	DMX ADDR	DIP SWITCH	DMX ADDR	DIP SWITCH	DMX ADDR
123456789	NUMBER	123456789	NUMBER	123456790	NUMBER	123456791	NUMBER
010101111	491	000011111	497	011011111	503	001111111	509
110101111	492	100011111	498	111011111	504	101111111	510
001101111	493	010011111	499	000111111	505	011111111	511
101101111	494	110011111	500	100111111	506	111111111	512
011101111	495	001011111	501	010111111	507		
111101111	496	101011111	502	110111111	508		