PD Series Digital Dimmers

Operations Manual

Ver 3.15

CODE ELECTRONIC CO., LTD. http://www.codelight.com

Welcome to use CODE PD Series Digital Dimmers. CODE PD Series products meet DMX-512/1990 standard digital control signal. It is suited for using with a console that generates DMX-512/1990 control signal; thereby they are easily constituted a digital light dimming control system. Its EMI is very low. So greatly, they are used for light dimming in conncil houses, TV studios, theatres, troupes, danceries, etc.

WARNING: Must be earthed so as to ensure security of the equipment and operator. There is hazardous voltage in PD dimmer. Do not open its cover without authorization!

1. Specifications

- DMX512 digital optoisolator input.
- 4-row X 20 characters LCD display.
- Dimming channels and output power:

Model	Channels	Rated Current	220Vac Supply	110Vac Supply	
PD 1202	12	10A per ch.	2KW per ch.	1KW per ch.	
PD 604	6	20A per ch.	4KW per ch.	2KW per ch.	
PD 606	6	30A per ch.	6KW per ch.	3KW per ch.	

- Dimming precision up to 2000 level.
- 10 dimming curves: Every channel can be chosen independently or all together.
- 0-20% warm-up adjustable to every channel or whole channels.
- Soft-starting can prolong life of tungsten lamps.
- When DMX signal is broken off, every channel's output can be hold. "Blackground" will not be caused.
- 12 scenes can be stored or recalled,
- The dimming level of every channel can be adjusted independently or all together without any console.
- High precision zero-crossing sampling, the output consistency of channels is better.
- High-performance anti-interference chokes, less electric harmonic and lower electromagnetic noises.
- Double protected: Electronic circuits and fast breakers.
- Independent overload protect, short circuit protect, and power components overheating protect.
- Outputs be resumed automatically after the trouble be obviated.
- Fans speed change according to the working temperature automatically.
- Voltage limit function: When voltages of mains supply are higher than the local standard, its outputs can be limited automatically, and the lamps will be safe.
- DMX incepting address can be displayed and modified.
- Frequency of mains supply can be autotracked and displayed
- Every phase voltage of mains supply can be measured and displayed in real time.
- The dimming levels of channels can be displayed in real time.
- Working temperature can be measured and displayed in real time.
- Abnormal state warning and displayed.
- DMX input connector: XLR-D5M (type "C"), or XLR-D3M (type "S").
- DMX through connector: XLR-D5F (type "C"), or XLR-D3F (type "S").
- Mains supply: Phase voltage AC100-240V, Cycle frequency 47-63Hz, 3-phase or single phase.
- Dimension and Weight:

Model	Dimension	Weight
PD 1202	19",3U; 482mm×133mm×510mm	19.3kg
PD 604	19",3U; 482mm×133mm×510mm	18.5kg
PD 606	19",3U; 482mm×133mm×510mm	20.9kg

2. Front Panel and Rear Panel



Order Information about PD dimmer's different outlet

Type "C" (PD xxxx-C)







load connectors

Type "S" (PD xxxx-S)





3-pin signal sockets

load sockets

5-pin signal sockets

2

3. Mains Supply Connection

This device can use 3-phase supply (do not mind the phase sequence), also can use single phase supply.



3-phase mains supply connection

Inner working power source is connected to L1(A) phase!

4. Loads Connection

Connect loads to PD Dimmer's outlet

PD 1202-C Power Output (10A per Channel)



PD 604-C Power Output (20A per Channel)



PD 606-C Power Output (30A per Channel)





Single phase mains supply connection



PD 604-S Power Output (total 20A per Channel)



PORWER OUTPUT: 20A per channel

PD 606-S Power Output (total 30A per Channel)



PORWER OUTPUT: 30A per channel

PD 1202-S Power Output (10A per Channel)

5. DMX Digital Signal Communication



6. Dimmers Connecting with a Console



7. Working Power Switch (with a pilot lamp)

The power switch connected at L1(A) phase only controls the control circuits inside the dimmer.

WARNING: When the Power switch is turn off, inner power parts and electric terminals still have high voltage. Do not touch the electric terminals! Do not open the cover!

POWER

8. Protect of Working Power

One T1A/250V fuse (Φ 5 x 20mm) in series with the power switch is mounted on the rear panel. T1A/250Vac If the working power connecting was mistake, the fuse breaks immediately to make the inside circuits be safe. **Must use the same specification fuse for replacing!**

9. Protect of Dimmer Channels



Each dimming channel has a fast breaker for protection backup while the load over current or short circuit. With the cooperative effect of the inside electronic protector, it further enhances the dimmer's safety and dependability when the load over current or short circuit.

4

10. Device Startup

After connecting as above 3-6 section, turn on the power switch of the console to send out DMX512 digital signal. Then turn on the power switch of PD dimmer to make it enters operating state. When the dimmer is operating, you can modify DMX512 incepting address again by the LCD menu at any time if necessary. PD series dimmers have simple and direct manual operation modes. Under "manual dimming" or "recall scenes" mode, it can provide normal output to every channel without any console connected.

11. Display (LCD)



There is a 4 (row) X 20 = 80 characters LCD on the front panel, you can enter each layer menu to set up operation parameters or inquire status information by pressing keys on the front panel.

12. Operation Keys



Four touch keys, combination with them, you can realize to use that set up operation parameter and information inquiry for all adjustable items.



13. Menu Operation

After power on, and into the normal operating state, four rows of LCD display as follows:



Press ENTER into the next step.

Operation Note:

Pressing QUIT will return to the previous layer of menu, and pressing this key more once may quit from bottom menu to main menu.

When a certain parameter appears in the square bracket, pressing \blacktriangle or \checkmark can increase or decrease its value, press ENTER to confirm it.

When appear "Yes or No?" flickering inquiry message, press ▲ or ▼ to change choosing.

Then Press ENTER to confirm it which is flickering parameter.

In menu operation state, it will return to the main menu automatically at 30th second after last once pressing-key except "Manual Dimming" mode and "Recall Scenes" mode.

13-01. Set DMX Address



13-02. Set Warm-up



6) Set again by ENTER, or return by QUIT, or return to the main menu automatically after 30 seconds.

13-03. Set Dimming Curves



6) Set again by ENTER, or return by QUIT, or return to the main menu automatically after 30 seconds.

Curve No	Attribute	Description		
1	S	"S" shape		
2	SINE	Sine of voltage		
3	y.35	Linear luminance		
4	y=.5	γ =.5		
5	y=.7	Linear power		
6	y=1	Linear voltage		
7	y1.4	γ =1.4		
8	y2.0	γ =2.0		
9	y2.7	γ =2.7		
10	SW	Switch(1280N/1270FF)		

Curve N_{Ω} . vs its attribute and description



13-04. Manual Dimming





You can view the real dimming effect during adjusting output level.

If no any action in this state, the current output status is holded all along.

In this state, if the set be powered off, and started up again, the menu will be into output status is holded all the same.

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If returning to the sub-menu for other operation (such as "Record Scenes"), the output status is holded all the same.

PDxxxx In Man

ENTER QUIT -

If returning to the sub-menu but no new action, it will be into output status is holded all along.

Address=xxx ual Dimming t -continue exit	after 30 seconds. The current
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PDxxxx Address=xxx In Manual Dimming .

ENTER -conti OUIT -exit

If want to quit current "Manual Dimming" mode, must return to the main menu by QUIT, then the dimmer will be controlled by DMX signal from the console.

13-05. Scenes Recording



8) Finish this operation, return by QUIT, or return to the main menu automatically after 30 seconds.

Recording every channel's DMX dimming level value (from a console or by manual) into the scene serial number, it is available for "off-line performing scene" in the future.

13-06. Scenes Recalling



If necessary, again and again, one by one, at most 12 scenes.

(The scene number which has no been recorded any matter, it is a "Blackground" scene.)

You can view the real dimming effect when a scene recalled out.

If no any action in this state, the current output status is holded all along.

In this state, if the set be powered off, and started up again, the menu will be into output status is holded all the same.

PDxxxx Address=xxx In Scene Recalling ... ENTER -continue OUIT -exit

If returning to the sub-menu for other operation (such as "View Dimming Levels"), the output status is holded all the same.

If returning to the sub-menu but no new action, it will be into output status is holded all along.

PDxxxx Address=xxx In Scene Recalling ... ENTER -continue OUIT -exit

after 30 seconds. The current

If want to quit current "Scene Recalling" mode, must return to the main menu by QUIT, then the dimmer will be controlled by DMX signal from the console.

13-07. View Dimming Levels



3) Return by <u>QUIT</u>, or return to the main menu automatically after 30 seconds.

13-08. View Working Status



and working temperature of the inner power parts;

3) Return by QUIT, or return to the main menu automatically after 30 seconds.

13-09. Set Local PS Voltage



Have already set up this default value when the device leaving the manufactory. Usually, to be not essential to change this parameter, so as not to make the mistake working, excepting appearing alarm message!

13-10. Set Default to All



3) Return by QUIT , or return to the main menu automatically after 30 seconds.

Under setting up unusually confused situation, may try to reset all data to the default in the manufactory.

14. Operating Status Treatment

- While starting up, or while illumining after "blackground" long time,or while the operating state resumes after the trouble be obviated, if the external state is normal, the system will enter the "soft-start" procedure first. The output level of every channel rises to DMX real level gradually (or it rises to current manual out level or current recalled scene output level without console connected).
- 2) According to every channel own preheating value, modifier value of selected curve, and DMX value received from the console or by manual dimming or by recalled scene, the output level is accumulative result.
- 3) While a certain channel load has happened the trouble of over current or short circuit, the system will shut off this channel output immediately, and the buzzer phonates. It reveals the trouble information of the corresponding fault channel number at the same time; Try triggerring once in every 20 seconds circularly, until the trouble is obviated and this channel returns to normal output. The operation of the normal channels is not influenced.
- 4) The speed of the cooling fans are increased or decreased with working temperature. When inner temperature exceeds over the standard range, the system will be into "sleep" state and gives an alarm message. Output is resumed until temperature is normal. (Can inquire about the temperature value at any time.)
- 5) PD series dimmers according to the standard voltage of local mains supply to work. when the voltage value of mains supply is higher than rated value up to 10% and more, PD dimmer will limit its outputs automatically, thus to lengthen the life of lamps.
- 6) If the voltage of local mains supply is not equal to the preset volatge value of PD dimmer in the extreme, the system gives notice to operator for matching voltage value. It will be into normal operating state after correcting.
- 7) If mians supply happens severe over voltage or under voltage during dimmer operating, the system shuts off the output and gives an alarm. It will be into normal operating state until the voltage of mians supply returns to normal.
- 8) If the certain phase voltage (such as L2 or L3) of mians supply is lost, the system gives an alarm. It will be into normal operating state until this phase voltage returns to normal. No trouble phases are not influenced.
- 9) If DMX signal from a console loses abruptly during dimmer operating, the system holds the last DMX data scene, and gives an alarm until DMX signal returns to normal. Or be changed to "Manual Dimming" mode or "Scenes Recalling" mode by the operator.
- 10) In case of the inner subassembly happens a trouble, the system gives an alarm and the solution.

15. Fault Information & Trouble Shooting

When a severe abnormal status happens, the buzzer phonates, LCD displays the fault message, and gives the solution. This case will go on if several troubles happened at the same time. The severer one exhibits ahead.

When a low-grade abnormal status happenning, the buzzer is silent, LCD displays the fault message, and gives the solution.

The detail vide: [Annex B] < Fault Alarm & System Response >

Menu Operation Flow Chart

(V20120301A)





Continue to above



- The End -

[Annex B]

Fault Alarm & System Response

(V20120301B)

Fault	Causation	Description	LCD	Buzzer	Response & Solution
01	AC voltage is severe over standard range (such as the phase wire was mistaked.)	Certain "phase voltage" ≥300Vrms	Mains PS Over Volt! L1: xxx Vrms L2: xxx Vrms L3: xxx Vrms	Phonating (long)	All channels are shut off. (Must power off the set for connecting AC input power supply wires correctly.)
02	AC voltage is severe under standard range (such as three phases are severe imbalance.)	50Vrms≪Un≪80Vrms	Mains PS Under Volt! L1: xxx Vrms L2: xxx Vrms L3: xxx Vrms	Phonating (long)	All channels are shut off. (Must power off the set for checking AC input powersupply.)
03	L1(A) phase is severe under-voltage	Ua<50Vrms	Phase-L1 Lost! L1: xxx Vrms L2: xxx Vrms L3: xxx Vrms	Phonating (long)	All channels are shut off. (Must power off the set for checking AC input power supply .)
04	The voltage of local mains supply is not matching to the preset volatge value of the dimmer in the extreme.	1. Preset value is IEEE: (220~240Vrms) Local phase voltage: Un<150Vrms	Item 09: Set Local PS Voltage Mains ps status: from 100V to 127V	Phonating (long)	All channels are shut off. (Until reset corrective value.) <u>Remark:</u> When the preset voltage value and local voltage value are in identical range such as IEEE or EIA: LCD gives out the prompt message. Buzzer is silent. All outputs are not shutted off. And quash alarm after10 seconds.
		2. Preset value is EIA: (100~127Vrms) Local phase voltage: Un≥150Vrms	Item 09: Set Local PS Voltage Mains ps status: from 220V to 240V		
05	Inner parts over heat.	Inner temperature hoiks to exceed the tolerable limit. (Tc≥90°C)	OverTemperature Temperature = zzz °C Check operation environment please!	Phonating (long)	All channels are shut off. (Check the fans running, and/or Improve the environmental ventilation condition.)
06	Load's fault.	Load is over current (lo>1.5x rated current) or Output is short circuit	CHxx Over Current! Check load condition or local operation environment please!	Phonating (mora)	The fault channel is shut off. But normal channels have output. (Check the load power, make it not higher than specified value; Check the safety status of parts such as lamps, cables, connectors, etc.)
07	L2(B) phase and/or L3(C) phase lost.	Ub<50Vrms and/or Uc<50Vrms	Phase-L2 Lost! L1: xxx Vrms L2: xxx Vrms L3: xxx Vrms Phase-L3 Lost! L1: xxx Vrms L3: xxx Vrms Phase-L2 & L3 Lost! L1: xxx Vrms L3: xxx Vrms	Silent	The channels relational fault phase are shut off. But the channels relational normal phase have output. (Must power off the set for checking AC input power supply .)
08	Inner Drive Board fault.	The connection fault.	Drive board error! Check the connectors & the cable please! Or contact CODE Inc.	Phonating (mora)	All channels no output. (Contact manufactory)
09	Inner Detectors fault	The connection fault.	CODE Electronic Inc. Thyristor Dimmer PDxxxx Ver. x.xx U DMX Address: xxx	Silent	It is into "ordinary working mode" automatically. (Normal running and operation are not influenced.)
10	No DMX Signal.	 Signal polarity is mistaked. DMX address code is over range of the console's capability. The console is bad. Cable or plug is bad. 	CODE Electronic Inc. Thyristor Dimmer PDxxxx Ver. x.xx No DMX Signal!	Silent	The last scene from the console can be holded automatically. Manual dimming or scene recalling are not influenced. (Check signal wire polarity, DMX address code and console's capability, signal cable, plugs, etc.)

Note: 1) While happenning fault in running, the system response, buzz alarm and message report are timely.

2) This case will go on if several troubles happened at the same time. The severer one exhibits ahead.

MEMO

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