MEAN-WELL PWM-120-12 Series Constant Voltage PWM Output LED Driver Owner’s Manual

June 30, 2025

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PWM-120-12 Series Constant Voltage PWM Output LED Driver

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Specifications:

- Model: PWM-120-12, PWM-120-24, PWM-120-36, PWM-120-48

- DC Voltage: 12V, 24V, 36V, 48V
- Rated Current: 10A, 5A, 3.4A, 2.5A
- Rated Power: 120W (for all models)
- Dimming Range: 0 – 100%
- PWM Frequency: 1.47kHz for Blank/DA-Type, 2.5kHz for DA2-Type
- Setup, Rise Time: 500ms, 80ms
- Voltage Range: 90 – 305VAC, 127 – 431VDC
- Frequency Range: 47 – 63Hz
- Power Factor: PF>0.97/115VAC, PF>0.96/230VAC, PF>0.93/277VAC @ full load
- Total Harmonic Distortion: THD<20%
- Efficiency: 88.5% – 90%
- Max. No. of PSUs on 16A Circuit Breaker: 4 units (circuit breaker of type B) / 6 units (circuit breaker of type C) at 230VAC

Product Usage Instructions:

1. Installation:

– Ensure the input power matches the AC input range specified for your model.

– Connect the LED driver to the appropriate voltage source and ensure proper grounding.

2. Dimming:

– Adjust the dimming range from 0 to 100% as per your lighting requirements.

– Use the specified PWM frequency setting for optimal performance.

3. Electrical Safety:

– Follow all relevant electrical safety guidelines and regulations when installing and using the LED driver.

– Do not exceed the maximum number of PSUs on a circuit breaker to avoid overloading.

FAQ:

Q: What should I do if the LED driver does not power on?

A: Check the input power connection and verify that the voltage source is within the specified range.

Q: Can I connect multiple LEDs to one driver?

A: It is recommended to follow the manufacturer's guidelines on the maximum number of LEDs that can be connected to a single driver to ensure proper functionality and longevity of the LEDs.

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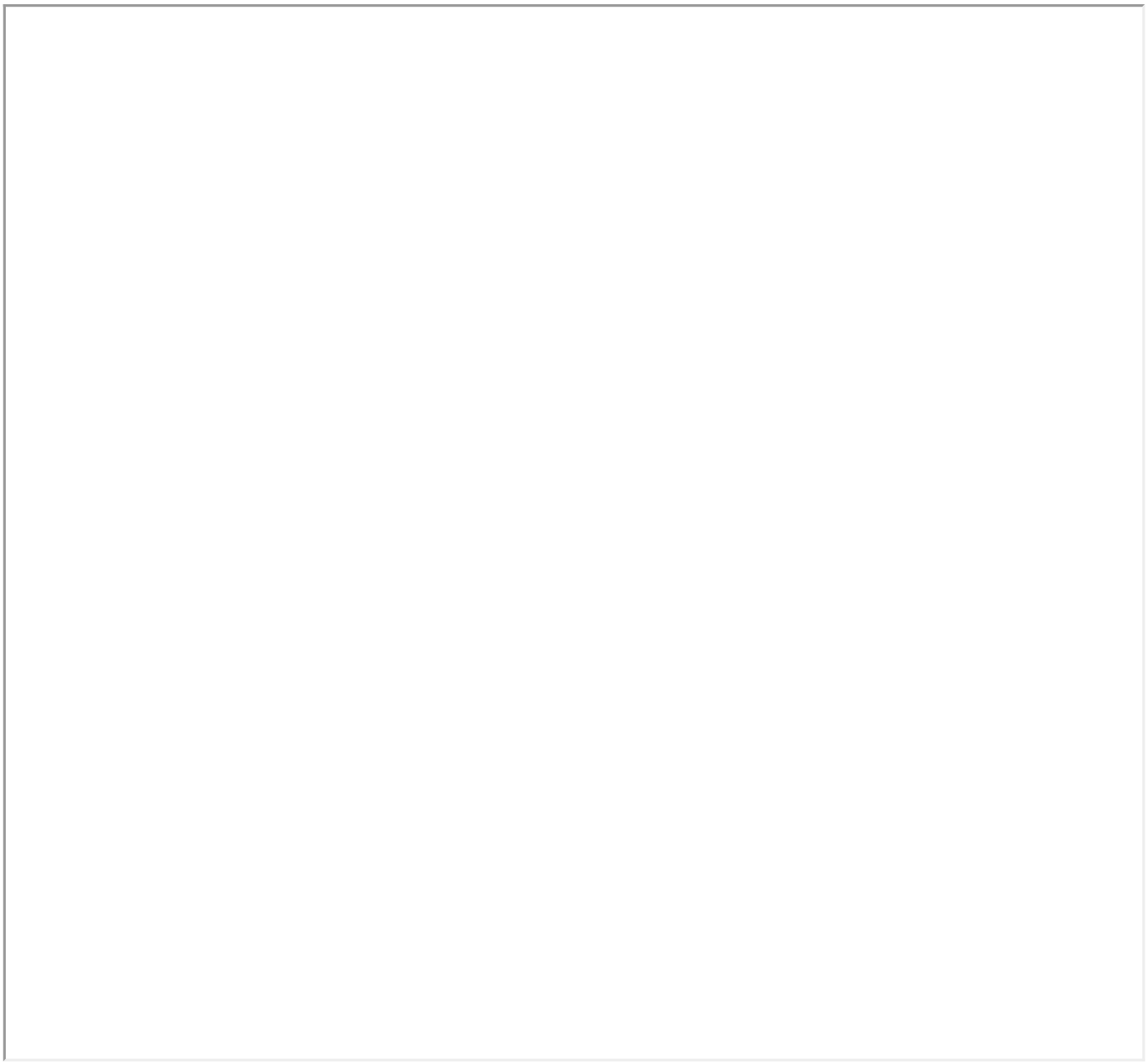
View Fullscreen



120W Constant Voltage PWM Output LED Driver

PWM-120 series
User’s Manual

2

(for DA2-Type only)

AC Input: 100-240Vac (for DA2-Type only)

IP67

IS 15885

THOMAS SAMUEL

THOMAS SAMUEL

05

except for 12DA type

File Name:PWM-120-SPEC 2024-09-25

120W PWM Output LED Driver

PWM-120 series

SPECIFICATION

MODEL

PWM-120-12

PWM-120-24

PWM-120-36

PWM-120-48

DC VOLTAGE

12V

24V

36V

RATED CURRENT

10A

5A

3.4A

RATED POWER

120W

120W

122.4W

OUTPUT

DIMMING RANGE

0 ~ 100%

PWM FREQUENCY (Typ.) 1.47kHz for Blank/DA-Type, 2.5kHz for DA2-Type

SETUP, RISE TIME

Note.2 Note.9

500ms, 80ms/ 230VAC or 115VAC

HOLD UP TIME (Typ.) 16ms/230VAC or 115VAC

VOLTAGE RANGE Note.3

90 ~ 305VAC 127 ~ 431VDC (Please refer to “STATIC CHARACTERISTIC” section)

FREQUENCY RANGE 47 ~ 63Hz

POWER FACTOR (Typ.)

PF>0.97/115VAC, PF>0.96/230VAC, PF>0.93/277VAC @ full load (Please refer to “POWER FACTOR (PF) CHARACTERISTIC” section)

48V 2.5A 120W

TOTAL HARMONIC DISTORTION

THD< 20%(@load60%/115VAC, 230VAC; @load75%/277VAC) (Please refer to “TOTAL HARMONIC DISTORTION” section)

INPUT

EFFICIENCY (Typ.)

88.5%

90%

90%

AC CURRENT (Typ.)

1.3A / 115VAC 0.65A / 230VAC 0.55A / 277VAC

INRUSH CURRENT (Typ.) COLD START 60A(twidth=520s measured at 50% Ipeak) at 230VAC; Per NEMA 410

90.5%

MAX. NO. of PSUs on 16A CIRCUIT BREAKER

4 units (circuit breaker of type B) / 6 units (circuit breaker of type C) at 230VAC

LEAKAGE CURRENT

<0.25mA / 277VAC

NO LOAD/STANDBY POWER CONSUMPTION

No load power consumption<0.5w for blank-type;standby power consumption<0.5W for DA-type/DA2-type

OVERLOAD

108 ~ 130% rated output power Hiccup mode, recovers automatically after fault condition is removed

SHORT CIRCUIT PROTECTION
OVER VOLTAGE

12V/24V hiccup mode and 36V/48V shut down mode(including DA-type/except for DA2-type) Hiccup mode,recovers automatically after fault condition is removed (only for DA2-type)

15 ~ 17V

28 ~ 34V

41 ~ 46V

54 ~ 60V

Shut down o/p voltage, re-power on to recover

OVER TEMPERATURE Shut down o/p voltage, re-power on to recover

WORKING TEMP.

Tcase=-40 ~ +90 (Please refer to ” OUTPUT LOAD vs TEMPERATURE” section)

MAX. CASE TEMP.

Tcase=+90

ENVIRONMENT WORKING HUMIDITY

20 ~ 95% RH non-condensing

STORAGE TEMP., HUMIDITY -40 ~ +80, 10 ~ 95% RH

TEMP. COEFFICIENT

±0.03%/ (0 ~ 45,except 0 ~ 40 for 12V)

VIBRATION

10 ~ 500Hz, 5G 12min./1cycle, period for 72min. each along X, Y, Z axes

UL8750(type “HL”)(except for 12DA type), CSA C22.2 No. 250.13-12; ENEC BS EN/EN61347-1, BS EN/EN61347-2-13,

SAFETY STANDARDS

Note.5

BS EN/EN62384 independent, IP67,BIS IS 15885(Part2/Sec13)(for 12,24 Blank and DA2 Type), EAC TP TC 004, GB19510.1,GB19510.14 approved; Design refer to BS EN/EN60335-1; According to BS EN/EN61347-2-13

appendix J suitable for emergency installations(EL)(AC Input: 100-240Vac)(for DA2-Type only)

DALI STANDARDS

IEC62386-101, 102, 207,251 for DA/DA2-Type only, Device type 6(DT6)

SAFETY & WITHSTAND VOLTAGE I/P-O/P:3.75KVAC; I/P-DA:1.5KVAC; O/P-DA:1.5KVAC

EMC

ISOLATION RESISTANCE I/P-O/P:100M Ohms / 500VDC / 25/ 70% RH

EMC EMISSION Note.6 EMC IMMUNITY

Compliance to BS EN/EN55015, BS EN/EN61000-3-2 Class C (@load60%) ; BS EN/EN61000-3-3,GB/T 17743, GB17625.1;EAC TP TC 020
Compliance to BS EN/EN61000-4-2,3,4,5,6,8,11; BS EN/EN61547, light industry level (surge immunity Line-Line 2KV), EAC TP TC 020

OTHERS MTBF DIMENSION

2243.7K hrs min. Telcordia SR-332 (Bellcore) ; 191*63*37.5mm (L*W*H)

228.7K hrs min. MIL-HDBK-217F (25)

PACKING

0.97Kg; 15pcs/15.6Kg/0.87CUFT

1. All parameters NOT specially mentioned are measured at 230VAC input, rated current and 25 of ambient temperature.

NOTE 2. De-rating may be needed under low input voltages. Please refer to “STATIC CHARACTERISTIC” sections for details. 3. Length of set up time is measured at first cold start. Turning ON/OFF the driver may lead to increase of the set up time.

4. The driver is considered as a component that will be operated in combination with final equipment. Since EMC performance will be affected

by the complete installation, the final equipment manufacturers must re-qualify EMC Directive on the complete installation again.

(as available on https://www.meanwell.com//Upload/PDF/EMI_statement_en.pdf) 5. This series meets the typical life expectancy of >50,000 hours of operation when Tcase,

particularly tc point (or TMP, per DLC), is about 75or less.

6. Please refer to the warranty statement on MEAN WELL's website at http://www.meanwell.com 7. The ambient temperature derating of 3.5/1000m with fanless models and of 5/1000m with fan models for operating altitude higher than 2000m(6500ft).

8. For any application note and IP water proof function installation caution, please refer our user manual before using.

https://www.meanwell.com/Upload/PDF/LED_EN.pdf

9. Based on IEC 62386-101/102 DALI power on timing and interruption regulations, the set up time needs to test with a DALI controller which can support for DALI power on function, otherwise the set up time will be higher than 0.5 second for DA type.

Product Liability DisclaimerFor detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx

File Name:PWM-120-SPEC 2024-09-25

120W PWM Output LED Driver
DIMMING OPERATION

PWM-120 series

AC/L(Brown) AC/N(Blue)

PWM-120

Dimming principle for PWM style output Dimming is achieved by varying the duty cycle of the output current.
Output DC current ON

Io=0A

OFF TON
T

DIM+(Purple)* DIM-(Pink)** +V(Red)(Brown for DA-type) -V(Black)(Blue for DA-type)
* DIM+ for Blank-Type DA+ for DA/DA2-type
* *DIM- for Blank-Type DA- for DA/DA2-type

TON

Duty cycle(%) =

×100%

T

Output PWM frequency : 1.47kHz for Blank/DA-Type 2.5kHz for DA2-Type

3 in 1 dimming function (for Blank-Type)
Apply one of the three methodologies between DIM+ and DIM-: 0 ~ 10VDC, or 10V PWM signal or resistance. Dimming source current from power supply: 100A (typ.)

Applying additive 0 ~ 10VDC

+V +

LED Strips

-V DIM+
DIM-

–
+ Additive Voltage
–

“DO NOT connect “DIM- to -V”

+ −

10%

0.15%

0.6V 1V

Duty cycle of output current (%)

100% 90% 80% 70% 60% 50% 40% 30% 20% 10% 0%
0V 1V 2V 3V 4V 5V 6V 7V 8V 9V 10V Dimming input: Additive voltage

Applying additive 10V PWM signal (frequency range 100Hz ~ 3KHz):

+V +

LED Strips

-V DIM+
DIM-

Additive PWM signal

“DO NOT connect “DIM- to -V”

+ −
10% 0.15%
6% 10%

Duty cycle of output current (%)

100% 90% 80% 70% 60% 50% 40% 30% 20% 10%
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100% Duty cycle of additive 10V PWM

signal dimming input

File Name:PWM-120-SPEC 2024-09-25

120W PWM Output LED Driver

PWM-120 series

Applying additive resistance:

+V +

LED Strips

-V DIM+
DIM-

Additive Resistance

“DO NOT connect “DIM- to -V”

+ –
10% 0.15%
6K/N 10K/N

Duty cycle of output current (%)

100% 90% 80% 70% 60% 50% 40% 30% 20% 10%

0% Short

10K/N 20K/N 30K/N 40K/N 50K/N 60K/N 70K/N 80K/N 90K/N 100K/N (N=driver quantity forsynchronizeddimmingoperation)
Dimming input: Additive resistance

Note : 1. Min. duty cycle of output current is about 0.15%, and the dimming input is about 6K or 0.6VDC, or 10V PWM signal with 6% duty cycle. 2. The duty cycle of output current could drop down to 0% when dimming input is less than 6K or less than 0.6VDC, or 10V PWM signal with duty cycle less than 6%.

DALI Interface (primary side; for DA/DA2-Type) Apply DALI signal between DA+ and DA-. DALI protocol comprises 16 groups and 64 addresses. First step is fixed at 0.2% of output

File Name:PWM-120-SPEC 2024-09-25

LOAD (%)

120W PWM Output LED Driver
OUTPUT LOAD vs TEMPERATURE

PWM-120 series

100
80 230VAC Input only
60 50 40
20

12V only

-40 -25

0

15

30

40 45 50

60

AMBIENT TEMPERATURE,Ta ()

70 (HORIZONTAL)

LOAD (%)

100
80 230VAC Input only
60
40
20

-40 -25 0

20

45

65

75

85

90 (HORIZONTAL)

Tcase ()

STATIC CHARACTERISTIC

100 90 80 70 60 50 40
90 100 125 135 145 155 165 175 180 200 230 305
INPUT VOLTAGE (V) 60Hz De-rating is needed under low input voltage.

TOTAL HARMONIC DISTORTION (THD)

48V Model, Tcase at 80

30%

25%

20%

277VAC

15%

230VAC

115VAC

10%

5%

0%

50%

60%

70%

80%

90%

100%

LOAD

EFFICIENCY(%)

PF

POWER FACTOR (PF) CHARACTERISTIC

Tcase at 80

1 .0 0 0 .9 5 0 .9 0 0 .8 5 0 .8 0 0 .7 5 0 .7 0 0 .6 5 0 .6 0 0 .5 5 0 .5 0 0 .4 5 0 .4 0 0 .3 5 0 .3 0
10%

20%

30%

40%

50%

60%

70%

80%

90% 100% (75W)

LOAD

277V 230V 115V

EFFICIENCY vs LOAD
PWM-120 series possess superior working efficiency that up to 90.5% can be reached in field applications. 48V Model, Tcase at 80

92 91 90 89 88 87 86 85 84 83 82 81 80

10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

277V 230V 115V

LOAD

THD LOAD (%)

120W PWM Output LED Driver

PWM-120 series

LIFETIME

LIFETIME(Kh)

120

100

80

60

40

20

0

20

30

40

50

60

70

80

90

Tcase( )

File Name:PWM-120-SPEC 2024-09-25

120W PWM Output LED Driver

PWM-120 series

Block Diagram

EMI FILTER

I/P

&

RECTIFIERS

PFC CIRCUIT

POWER SWITCHING

O.T.P.

O.L.P.

PWM & PFC CONTROL

RECTIFIERS &
FILTER

PFC fosc : 50~120KHz PWM fosc : 60~130KHz

O.L.P.

DIMMING CIRCUIT

DETECTION CIRCUIT

+V -V DIM+ DIM-

O.V.P.

Mechanical Specification
Blank-Type

Case No. PWM-120

Unit:mm Tolerance:±1

300±20

AC/L(Brown) AC/N(Blue)

50±3 SJTW 18AWG×2C

5

191 5

63 31.5

2-4.5

T case tc

95.5

5
tc : Max. Case Temperature

5

300±20

UL2464 18AWG×2C SJTW 14AWG×2C 50±3

DIM+(Purple) DIM-(Pink) +V(Red) -V(Black)

37.5

3

DA/DA2-Type

300±20

AC/L(Brown) AC/N(Blue)

50±3
SJOW 17AWG×2C &H05RN-F 1.0mm2

5

191 5

63 31.5

2-4.5

T case tc

95.5

5
tc : Max. Case Temperature

5

300±20 UL2464 18AWG×2C SJOW 17AWG×2C 50±3 &H05RN-F 1.0mm2

DA+(Purple) DA-(Pink) +V(Brown) -V(Blue)

37.5

3

File Name:PWM-120-SPEC 2024-09-25

120W PWM Output LED Driver
Recommend Mounting Direction
Installation Manual Connection for Blank-type

PWM-120 series

AC/L(BROWN) AC/N(BLUE)

DIM-(P-INK) +
DIM+(PURPLE)
-V(BLACK) +
+V(RED)

0~10Vdc or 10V PWM or resistance Dimmer or DALI Dimmer
LED Strip

Cautions Before commencing any installation or maintenance work, please disconnect the power supply from the utility. Ensure
that it cannot be re-connected inadvertently! Keep proper ventilation around the unit and do not stack any object on it. Also a 10-15 cm clearance must be kept when
the adjacent device is a heat source. Mounting orientations other than standard orientation or operate under high ambient temperature may increase the
internal component temperature and will require a de-rating in output current. Current rating of an approved primary /secondary cable should be greater than or equal to that of the unit. Please refer
to its specification. For LED drivers with waterproof connectors, verify that the linkage between the unit and the lighting fixture is
tight so that water cannot intrude into the system. For dimmable LED drivers, make sure that your dimming controller is capable of driving these units.PWM series
require 0.15mA each unit. Tc max. is identified on the product label. Please make sure that temperature of Tc point will not exceed limit. DO NOT connect “DIM- to -V”. Suitable for indoor use or outdoor use without direct sunlight exposure. Please avoid immerse in the water over 30
minutes. The power supply is considered as a component that will be operated in combination with final equipment. Since EMC
performance will be affected by the complete installation, the final equipment manufacturers must re-qualify EMC Directive on the complete installation again.

File Name:PWM-120-SPEC 2024-09-25

Documents / Resources

	MEAN-WELL PWM-120-12 Series Constant Voltage PWM Output LED Driver [pdf] Owner's Manual PWM-120-12, PWM-120-24, PWM-120-36, PWM-120-48, PWM-120-12 Series Constant Voltage PWM Output LED Driver, PWM-120-12 Series, Constant Voltage PWM Output LED Driver, Voltage PWM Output LED Driver, PWM Output LED Driver, Output LED Driver, LED Driver

References

- User Manual

MEAN WELL

Constant Voltage PWM Output LED Driver, LED Driver, MEAN WELL, Output LED Driver, PWM Output LED Driver, PWM-120-12, PWM-120-12 Series, PWM-120-12 Series Constant Voltage PWM Output LED Driver, PWM-120-24, PWM-120-36, PWM-120-48, Voltage PWM Output LED Driver

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