

MT1800H210CQI7820

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Datasheet

■ Description

MT1800H210CQI7820 is an intelligent outdoor led driver. With a flexible dimming method, combine DALI-2(D4i Compatible) or DMX-RDM interface to control the output current from 30-2100mA. The driver can provide excellent lighting quality. The driver is also designed with thermal management and long lifetime. The driver can provide the stobe working mode to provide customized lighting shows cooperated with the flood light.

■ Main Characteristics

- Non-isolated , Class I
- Input voltage range:198-528VAC ; Built-in active PFC function; High efficiency: 95% Typ; Low Inrush Current
- Three channel outputs common anode independent control
- Max output power 600W per channel
- Rated output voltage, 170-500Vdc; Rated output current, 30-2100mA
- Dimming control method: DALI-2,DMX-RDM, D4i compatible
- Standby power<0.5W @230VAC-480VAC(DALI Mode), when dim off via control and DALI BUS power is disabled
- Standby power<0.5W @230VAC-305VAC(DMX Mode), when dim off via control
- Integrated 24VDC/3W auxiliary power supply
- Integrated highly accurate power metering
- Integrated 15Vdc-60mA (Max) DALI power supply
- Strobe function, frequency 40Hz(Max)
- Output voltage, output current, output power sensing
- Output short circuit protection, overvoltage protection, overtemperature protection
- Surge level 10kV common mode and differential mode
- IP66 design for indoor or outdoor installation
- Max remote distance 300 meters(BELDEN CAT6 24AWG)
- All-around protection:IOVP,IUVP,OPP,OVP,SCP,OTP

■ Main Application



Stadium Lighting



Arena Lighting

■ Electrical Input Characteristics

Efficiency(Typ.) ^{Note.1}	95% @ 220Vac; 96% @ 480Vac
Voltage Range ^{Note.2}	198 ~ 528Vac
Rated Voltage and Freq.	220 ~ 480Vac ; 47~63 Hz
Power Factor	>0.9 at 220~480Vac input with 50% ~ 100% load conditions
THD	<15% at 220Vac input with full load; <15% at 347Vac input with full load;<20% at 480Vac input with full load
AC Current	9.5A MAX at 220Vac, 4.5A MAX at 480Vac
Inrush Current	Cold start 20A at 220Vac, 35A at 480Vac(twidth=680μs measured at 50% Ipeak)

■ Electrical Output Characteristics

Output Channel	Three Channel Output Common LED+
Output Voltage	Rated: 170Vdc ~ 500Vdc per channel ; Range: 160Vdc ~ 500Vdc (Three channels are all the same.)
Output Current	Rated:1200mA ~ 2100mA ; Range: 30mA - 2100mA (Three channels are all the same.)
Rated Power	600W per channel, 1800W total
Current Tolerance ^{Note.3}	±5%
Regulation	Line Regulation ±1% ; Load Regulation ±2%
Turn-on Delay Time	450-1500ms @ 220Vac programmable
Output RippleCurrent	2% of Io_max. ((PK-AV)/AV) with LED default mode at full load, <3kHz 15% of Io_max. ((PK-AV)/AV) with LED default mode at full load, >3kHz
DALI power supply	12-18Vdc,60mA(Max)
Standby Power	<0.5W @230VAC~480VAC(DALI Mode) , when dim off via control and DALI BUS power is disabled <0.5W @230VAC~305VAC(DMX Mode) , when dim off via control
24V Power supply	21.6V - 24V typ. - 26.4V; 3W-Max
Flicker	IEEE 1789 flicker recommended practice compliant
Output Peak Current	No Overshoot
Dimming Range	2.5% - 100%

■ Protection

Over Voltage (Typ.)	>520V, Protection type: Hiccup mode,recovers automatically after fault condition is removed
Short Circuit	Hiccup mode, recovers automatically after fault condition is removed
Over Temperature	Decreases output current,returning to normal after over temperature is removed

■ Environment

Operating Temperature	-40~+50℃, refer to the derating curve for detail
Operating Humidity	5~95%RH, non-condensing
Storage Temperature & Humidity	-40~+85℃, 5%-95%RH
Temperature Coefficient	0.03%/℃ (0~55℃)
Vibration	3G force or above at response Hz(5~30Hz), X,Y,Z axes, 100k cycles/axis / 30G 11ms 2 times, 50G 11ms 1 time, at X,Y,Z axis
Tc max	90℃

■ Safety & EMC

Safety Standard	IEC/EN 60598.1,IEC/EN 61347.1,IEC/EN 61347-2-13,IEC/EN 62384,AS/NZS 61347.1,AS/NZS IEC 61347.2.13, GB7000.1,GB 19510.1,GB 19510.14
Withstand Voltage	Mains VS Output/NTC:Non isolated; Mains VS DMX: Double isolated; Mains vs Housing:Basic isolated Output/NTC VS DMX: Double isolated; Output/NTC VS Housing: Basic isolated; Mains VS DALI: Basic isolated; Output/NTC VS DALI: Basic isolated
Isolation Resistance	I/P-FG, O/P-FG:100M Ohms/500VDC/25℃/70%RH
EMC Emission	CISPR 15,EN55015,IEC/EN 61000-3-2,IEC/EN 61000-3-3, AS/NZS CISPR 15,GB 17743,GB 17625.1
EMC Immunity	Compliance to EN61000-4-2,3,4,5,6,8,11, EN61547, light industry level (surge:L--N:±10KV,L,N--FG:±10KV)

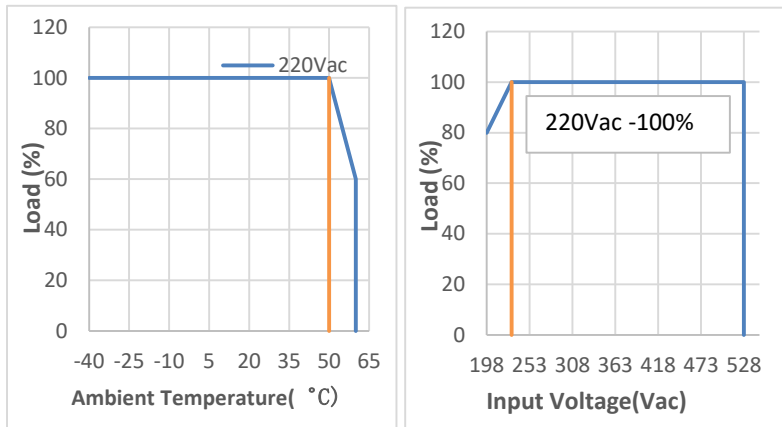
■ Others

MTBF	250,000 hours, measured at full load, 25℃ ambient temperature MIL-HDBK-217F(25℃)
Dimension(L*W*H)	500mm*141mm*120mm
Weight	6.1Kg

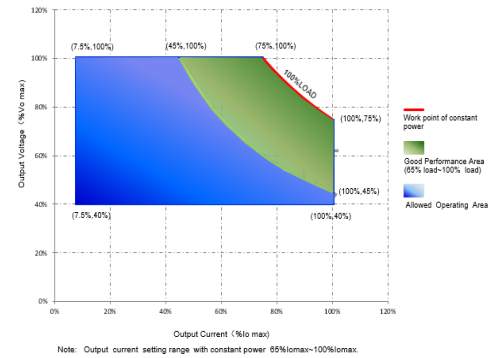
■ Notes

Note.1	Measured at full load and steady state, in 25℃ ambient temperature. Efficiency will be about 2% lower if measured immediately after startup.
Note.2	Derating may be needed under low input voltages. Please check the static characteristics for more details.
Note.3	Includes set up tolerance, line regulation and load regulation.

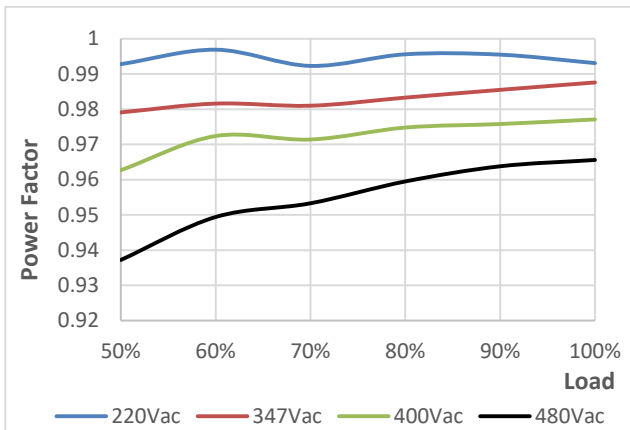
Derating Curve



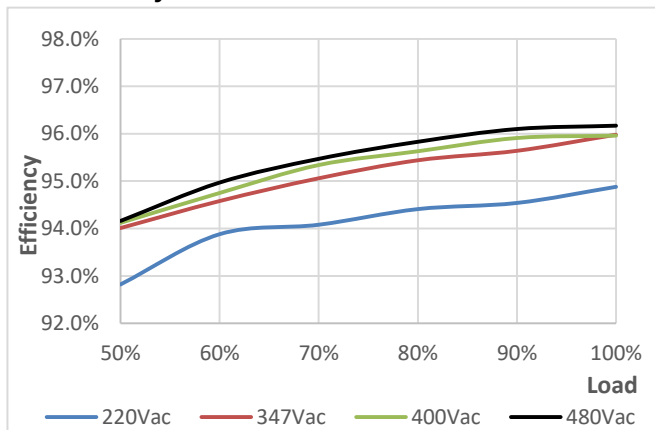
V/I Curve



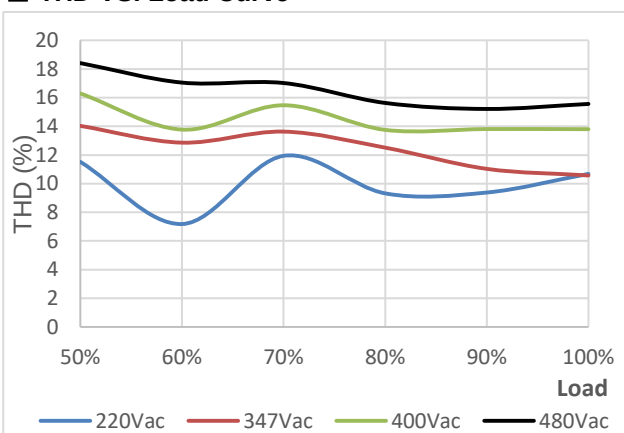
Power Factor VS. Load Curve



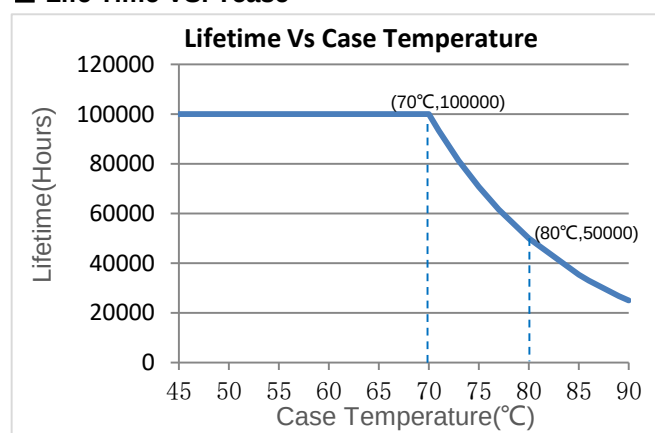
Efficiency VS. Load Curve



THD VS. Load Curve

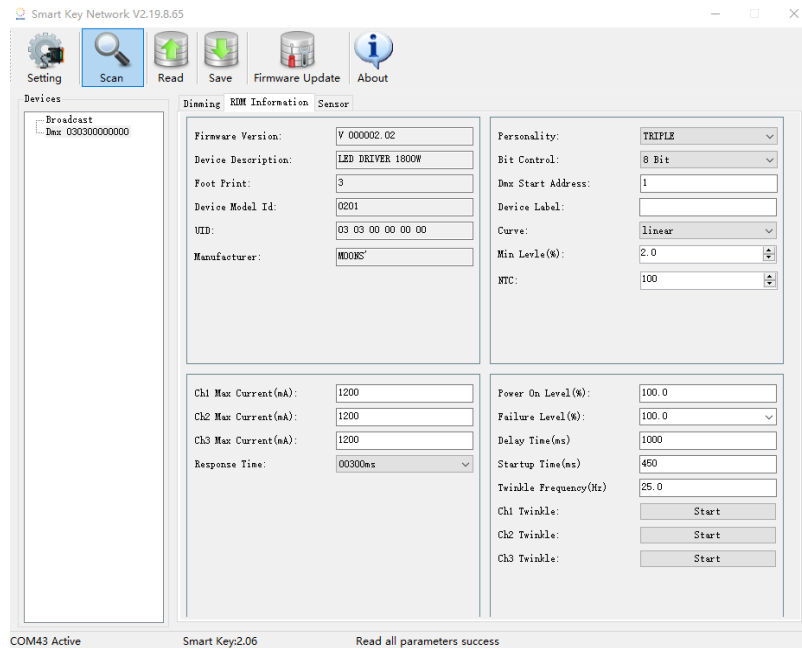


Life Time VS. Tcase

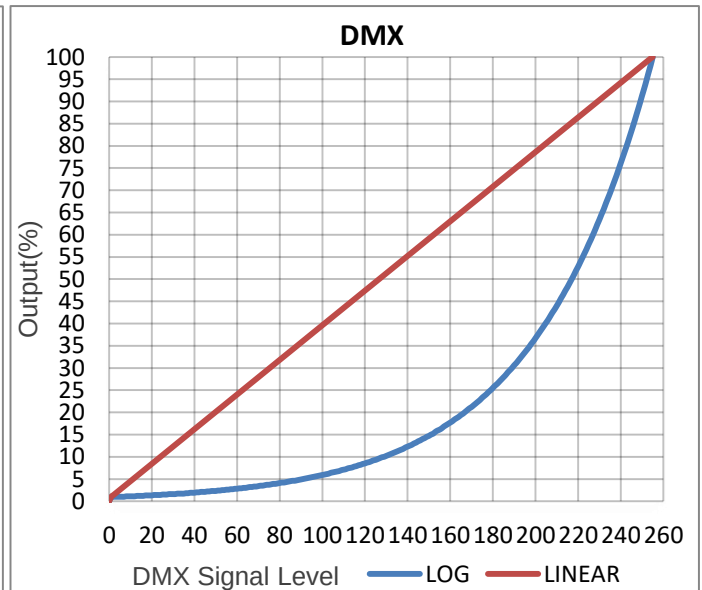
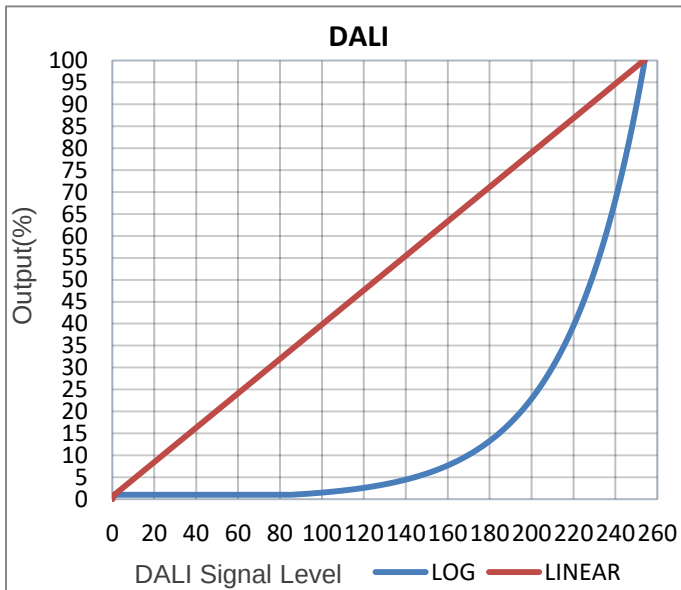


■ Programmable Performance

- Default Dimming Mode: DMX(RDM)
- Default Factory Setting:



■ Dimming Curve



■ NTC Dimming

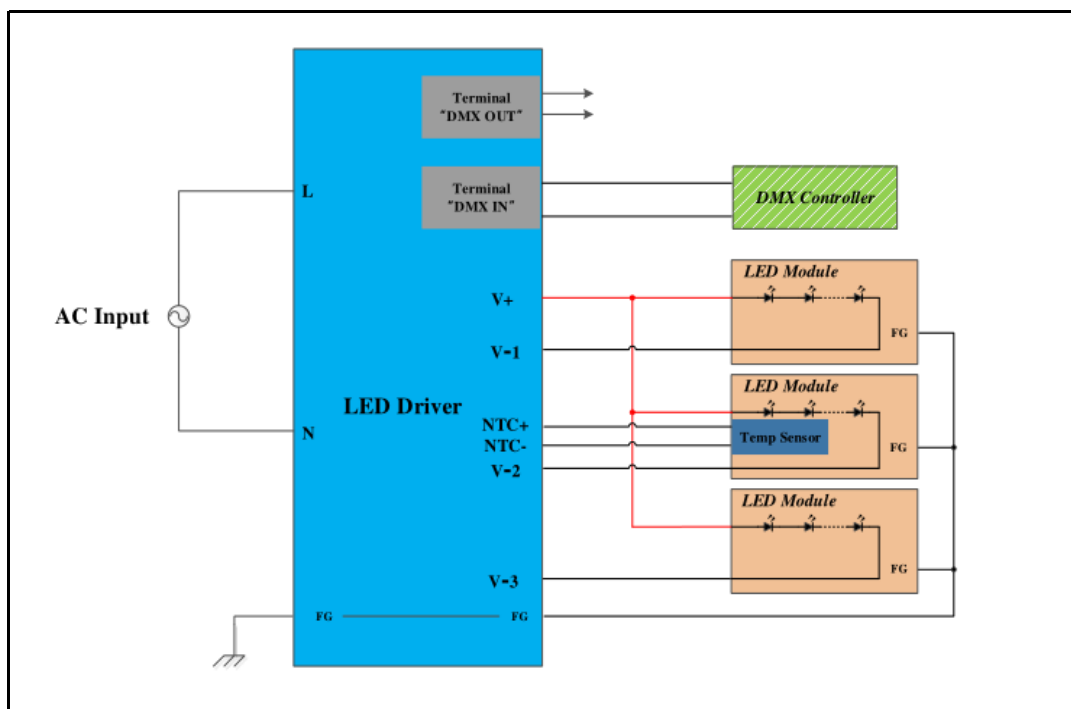
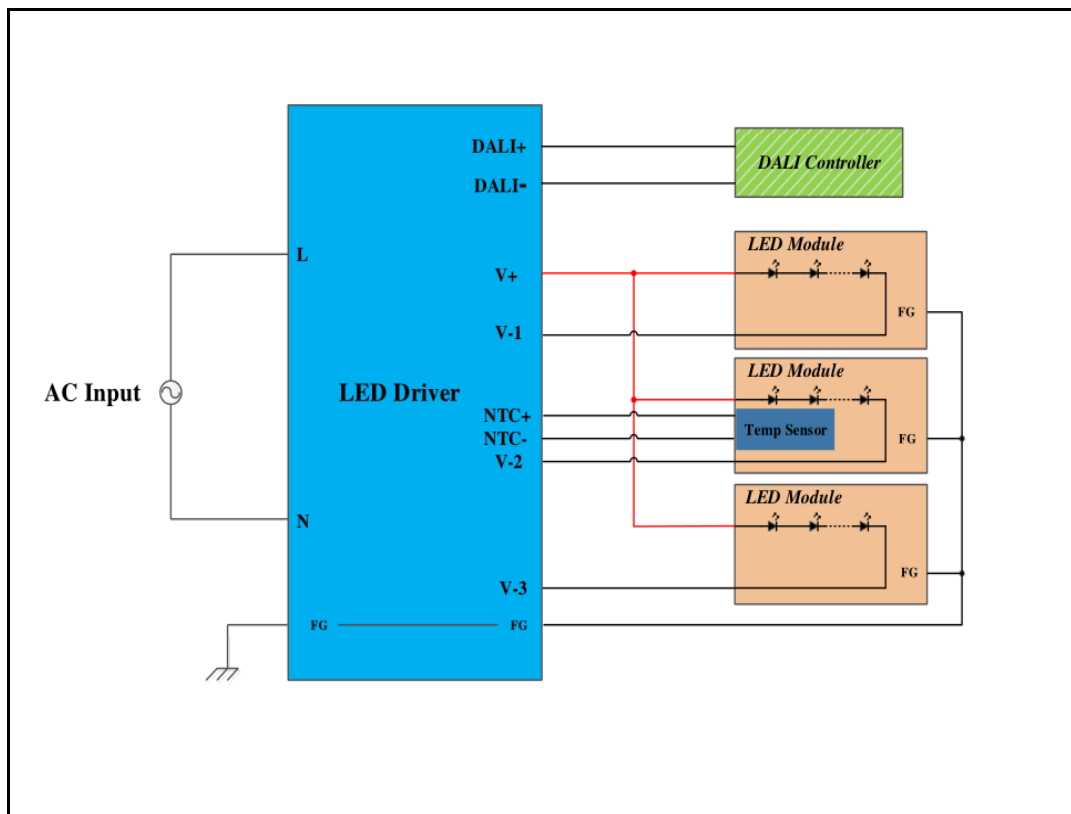
TLED(°C)	90	100	105	110	115	120	125
NTC: NCP15XH103F03RC	1.28K	0.994K	0.881K	0.782K	0.697K	0.623K	0.559K
IOUT(%)	100%	100%	50%	25%	12.50%	0%	0%

Note: This protection is an optional feature and user can connect nothing to NTC to ignore it.

The external LED module temperature can be detected using an NTC thermistor and the default threshold is 100°C that can be configurable. And the LED driver will check the external temperature every 5 minutes.

If the over-temperature condition is detected, the output current will decrease to 50% of the previous current. And if the output current is less than 12.5% of the set output current, power off the LED driver that will be recovery when the temperature of the LED assembly bring back to safe value.

■ Connection Schematic

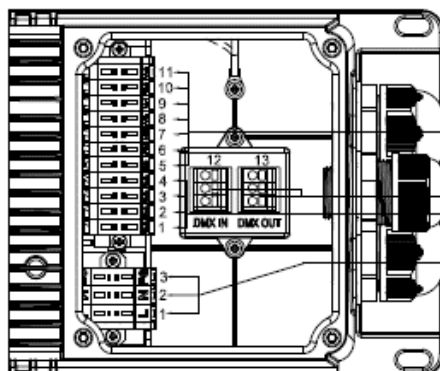
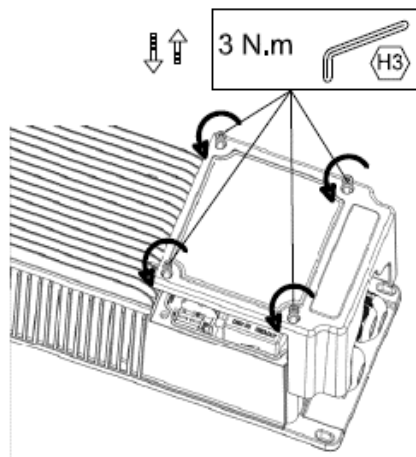


Note: FG is indicated as Protective Earth

Electrical Connection

	Mains Section(AC Side) Three input terminal blocks, for AC input L1/L, L2/N and FG. connections (M25 Cable Gland). Total number of mains connection is composed of 3 positions.
	DALI Control Section DA+, 24V+, 24V-, DA- Output connection V+, V-1, V-2, V-3
	DMX IN Control Section DMX+, DMX-, DMX Shield DMX OUT Control Section DMX+, DMX-, DMX Shield

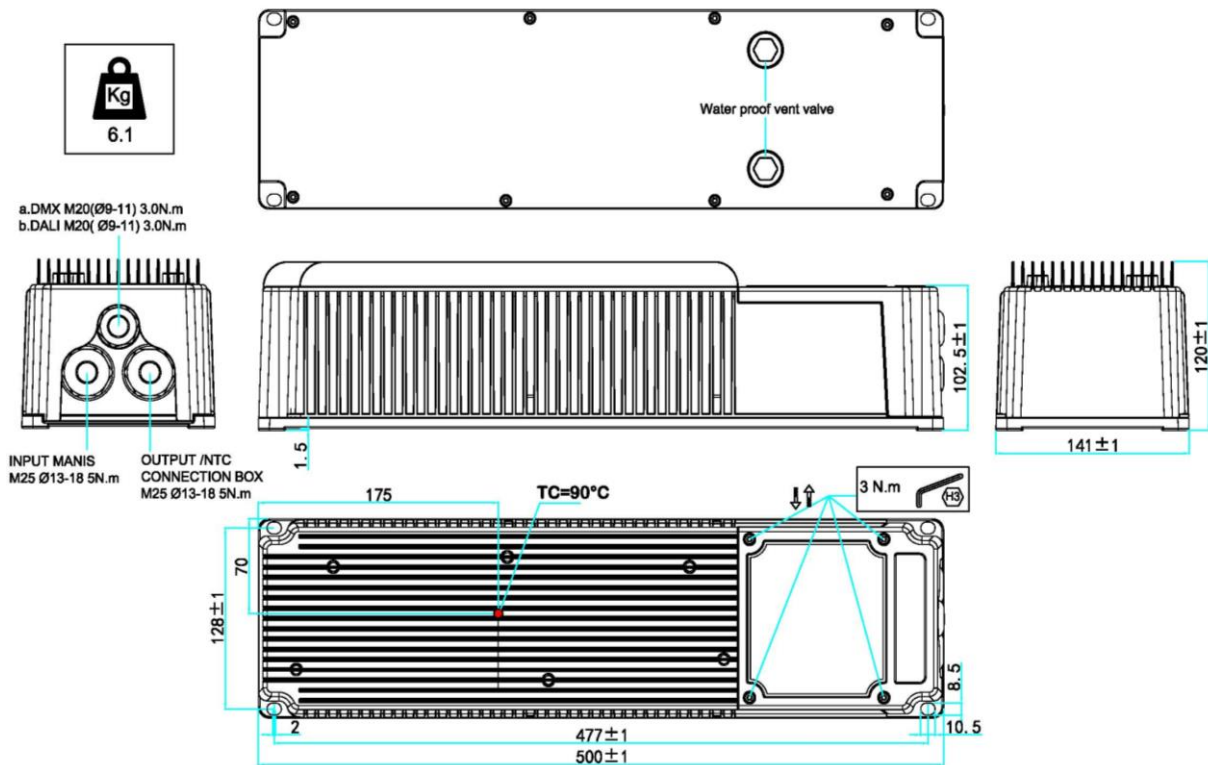
Wiring Connection



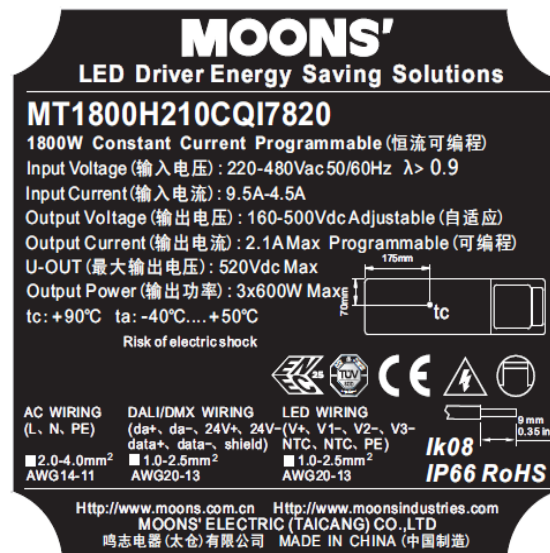
PIN #	RECOMMENDED CABLE TYPE	DMX INTERFACE	TERMINAL COLOR	FUNCTION
12	a. DMX (Ø9-11mm) Wire Range:20-13AWG, 1.0-2.5mm ² Stripping length:10mm H05RN-F 300V/500V	DMX IN	ORANGE	DMX data+
			BLACK	DMX data-
			GREEN	DMX shield
13		DMX OUT	ORANGE	DMX data+
			BLACK	DMX data-
			GREEN	DMX shield

PIN#	RECOMMENDED CABLE TYPE	WIRE COLOR	TERMINAL COLOR	FUNCTION
11	CONNECTION BOX (Ø13-18) OUTPUT /NTC Wire Range:20-13AWG, 1.0-2.5mm ² Stripping length:9mm H07RN-F 450V/750V	BLACK	GRAY	V-3
10		BLACK	GRAY	V-2
9		BLACK	GRAY	V-1
8		RED	RED	V+
7		GRAY	GRAY	NTC
6		PURPLE	GRAY	NTC
5	b. DALI (Ø9-Ø11) Wire Range:20-13AWG, 1.0-2.5mm ² Stripping length:9mm H07RN-F 300V/500V	YE-GN	YELLOW	FG
4		GRAY	GRAY	DALI-
3		ORANGE	GRAY	24V-
2		BROWN	BROWN	24V+
1		PURPLE	PURPLE	DALI+
3	MAINS (Ø13-18) INPUT Wire Range:14-11AWG, 2.0-4.0mm ² Stripping length:10-11mm H07RN-F 450V/750 or A11VV U-600/1000V	YE-GN	YELLOW	FG
2		BLUE	GRAY	AC Input L2/N
1		BROWN	GRAY	AC Input L1/L

■ Mechanical Specification (Unit: mm)



■ Label



INPUT(输入)		DALI(调光)				NTC/OUTPUT(输出)			
GR/灰	GR/灰	DMX IN(输入)	DALI+ PU/灰	24V+ GR/灰	24V- GR/灰	DALI- GR/灰	DMX OUT(输出)	YE-GN 黄绿	GR/灰
L	N	Shield GR/灰	data+ GR/灰	data- GR/灰	data+ GR/灰	data- GR/灰	NT C	NT C	GR/灰
									RE/红
									GR/灰
									V- 1
									V- 2
									V- 3

RoHS Compliance:

Our products comply with the European Directive 2011/65/EU, calling for the elimination of lead and other hazardous substances from electronic products.