Features

- Non-Isolated Design with Low Residual Output Voltage<3kV
- Independent Four Output Channels
- Output Power Transfer
- Limit The Maximum Input Power or The Maximum Output Power are Selectable
- Ultra High Efficiency (Up to 96%)
- Full Power at Wide Output Current Range (Constant Power)
- Adjustable Output Current (AOC)with Programmability
- INV Digital Dimming, UART Based Communication Protocol
- Integrated Power Metering with High Accuracy up to ±1%
- Dim-to-Off
- Hold Time Adjustable
- Fade Time Adjustable
- Always-on Auxiliary Power: 12Vdc, 500mA
- Low Inrush Current
- Output Lumen Compensation
- End-of-Life Indicator
- Input Surge Protection: DM 6kV, CM 10kV
- All-Around Protection: IUVP, IOVP, OVP, SCP, OTP, OPP
- 5 Years Warranty



Description

The *NFM-760QxxxMG* series is a 760W, 4-channel, constant-current, programmable LED driver that operates from 180-528Vac input with excellent power factor. It provides an auxiliary voltage and dim-to-off functionality for powering low voltage, wireless controls. The dimming control supports two-way communication via Digital Dimming, a UART based communication protocol. The high efficiency of these drivers enables them to run cooler, significantly improving reliability and extending product life. To ensure trouble free operation, protection is provided against input surge, input under voltage, input over voltage, output over voltage, short circuit, over temperature and over power.

Models

Output Power Transfer	Channel	Adjustable Output Current Range(A)	Full-Power Current Range(A)(1)	Default Output Current (A)	Output Voltage Range (Vdc)	Max. Output Power (W) (2)	Typical Efficiency (3)	Typical Power Factor		Model Number(4)
								220Vac	480Vac	
Disable	1	0.1-2.5	1.04-2.5	2.5	130-400	415	96.0%	0.99	0.95	NFM-760Q250MG
	2/3/4	0.14-2.2	1.4-2.2	2.2	20-82	115				
Enable	1	0.19-4.58	1.9-4.58	4.58	130-400	760				
	2/3/4	0.14-2.2	2.2	2.2	20-82	180				

Notes: (1) Output current range with constant power at 760W.
(2) Max total power load for channel CH1+CH2+CH3+CH4 not more than 760W.
(3) Measured at 100% load and 480Vac input (see below “General Specifications” for details).
(4) Certified input voltage range: 200-480Vac.

- **Output Power Transfer**

This function is optional. the real-time power of main channel (CH1) can be dynamically varied follows the power change of other three sub-channels, and ensure the total power of all channel is constant, the total output power can be set based on the application demand through Inventronics Programing Software.

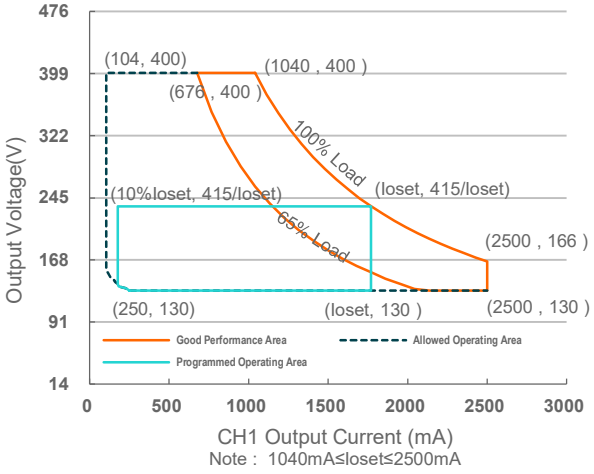
- **Limit the Maximum Input /Output Power**

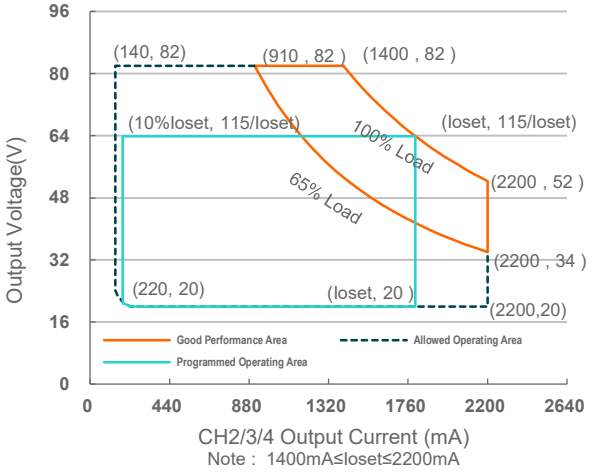
This function is optional. By setting a maximum input/output power limit, the real-time power of the main channel (CH1) is dynamically adjusted to ensure the total power does not exceed the configured value. The total input/output power can be set based on the application demand through Inventronics Programing Software.

- **Disable Output Power Transfer**

Channel	Adjustable Output Current Range (A)	Full-Power Current Range (A)	Default Output Current (A)	Output Voltage Range (Vdc)	Max. Output Power (W)
1	0.1-2.5	1.04-2.5	2.5	130-400	415
2	0.14-2.2	1.4-2.2	2.2	20-82	115
3	0.14-2.2	1.4-2.2	2.2	20-82	115
4	0.14-2.2	1.4-2.2	2.2	20-82	115

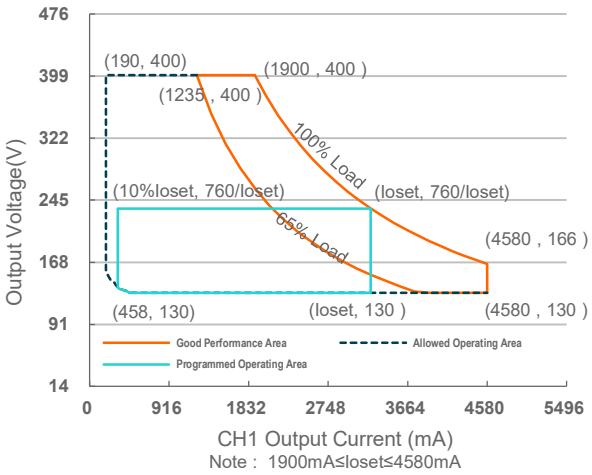
I-V Operation Area



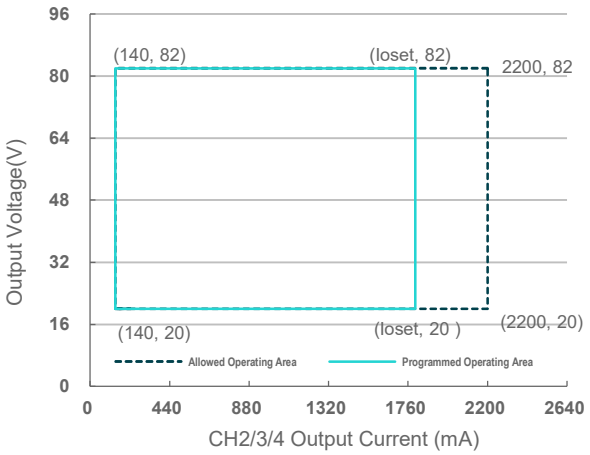


- **Enable Output Power Transfer**

Channel	Adjustable Output Current Range (A)	Full-Power Current Range(A)	Default Output Current (A)	Output Voltage Range (Vdc)	Max. Output Power (W)
1	0.19-4.58	1.9-4.58	4.58	130-400	760
2	0.14-2.2	2.2	2.2	20-82	180
3	0.14-2.2	2.2	2.2	20-82	180
4	0.14-2.2	2.2	2.2	20-82	180



Note : 1900mA≤Ioset≤4580mA



Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input AC Voltage	180 Vac	-	528 Vac	
Input DC Voltage	255 Vdc	-	500 Vdc	
Input Frequency	47 Hz	-	63 Hz	
Leakage Current	-	-	0.75 MIU	UL 8750; 480Vac/60Hz
	-	-	0.70 mA	IEC 60598-1; 480Vac/60Hz, grounding effectively
Input AC Current	-	-	4.48 A	Measured at 100% load and 200 Vac input.
	-	-	1.91 A	Measured at 100% load and 480 Vac input.
Inrush Current(I^2t)	-	-	1.00 A^2s	At 480Vac input, 25°C cold start, duration=44.8 ms, 10%Ipeak-10%Ipeak.
PF	0.90	-	-	At 220-480Vac, 50-60Hz, 65%-100% Load (494-760W)
THD	-	-	20%	
THD	-	-	12%	At 220-480Vac, 50-60Hz,100% Load

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Tolerance	-5%Ioset	-	5%Ioset	At 100% load condition
Total Output Current Ripple (pk-pk)	-	5%Iomax	10%Iomax	100% load. 20 MHz BW
Output Current Ripple at < 200 Hz (pk-pk)	-	2%Iomax	-	70%-100% load
Startup Overshoot Current	-	-	10%Iomax	100% load

Output Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
No Load Output Voltage CH1 CH2 CH3 CH4	 - - - -	 - - - -	 500 V 150 V 150 V 150 V	
U_{out}	-	-	650 V	
Line Regulation	-	-	±2.5%	100% load
Load Regulation	-	-	±5.0%	
Turn-on Delay Time	-	-	3 s	Measured at 220-480Vac input, 65%-100% load
Temperature Coefficient of Ioset	-	0.06%/°C	-	Case temperature = 0°C ~Tc max
12V Auxiliary Output Voltage	10.8 V	12 V	13.2 V	
12V Auxiliary Output Source Current	0 mA	-	500 mA	Return terminal is "Dim−"
12V Auxiliary Output Transient Peak Current@10W	-	-	850 mA	850mA peak for a maximum duration of 1.3ms in a 5.2ms period during which time the average should not exceed 500mA.

General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 220 Vac input: CH1+CH2+CH3+CH4 Io= (1040+1400+1400+1400) mA Io= (2500+2200+2200+2200) mA	 93.0% 92.0%	 95.0% 94.0%	 - -	Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
Efficiency at 277 Vac input: CH1+CH2+CH3+CH4 Io= (1040+1400+1400+1400) mA Io= (2500+2200+2200+2200) mA	 93.5% 92.5%	 95.5% 94.5%	 - -	Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
Efficiency at 400 Vac input: CH1+CH2+CH3+CH4 Io= (1040+1400+1400+1400) mA Io= (2500+2200+2200+2200) mA	 94.0% 92.5%	 96.0% 94.5%	 - -	Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
Efficiency at 480 Vac input: CH1+CH2+CH3+CH4 Io= (1040+1400+1400+1400) mA Io= (2500+2200+2200+2200) mA	 93.5% 92.5%	 95.5% 94.5%	 - -	Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
Standby Power	-	-	0.5 W	Measured at 220Vac/50Hz; Dimming off
	-	-	1.5 W	Measured at 480Vac/50Hz; Dimming off
MTBF	-	229,000 Hours	-	Measured at 480Vac input, 80%load and 25°C ambient temperature (MIL-HDBK-217F)
Lifetime	-	51,000 Hours	-	Measured at 480Vac input, 80%load and 80°C case temperature; See lifetime vs. Tc curve for the details
	-	64,000 Hours	-	Measured at 220Vac input, 100%Load and 40°C ambient temperature

General Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Operating Case Temperature for Safety Tc_s	-20°C	-	+90°C	
Operating Case Temperature for Warranty Tc_w	-20°C	-	+80°C	Case temperature for 5 years warranty Humidity: 10% RH to 95% RH;
Storage Temperature	-40°C	-	+85°C	Humidity: 5%RH to 95%RH
Dimensions Inches (L × W × H) Millimeters (L × W × H)	14.13 × 3.54 × 1.91 359 × 90 × 48.5			With mounting ear 15.12 × 3.54 × 1.91 384 × 90 × 48.5
Net Weight	-	3550 g	-	

Dimming Specifications

Parameter		Min.	Typ.	Max.	Notes
Absolute Maximum Voltage on the Vdim (+) Pin		-20 V	-	20 V	
Source Current on Vdim (+) Pin		90 μA	100 μA	110 μA	Vdim(+) = 0 V
Dimming Output Range	CH1 CH2/CH3/CH4	10%Ioset	-	Ioset	1040 mA ⩽ Ioset ⩽ 2500 mA 1400 mA ⩽ Ioset ⩽ 2200 mA
	CH1 CH2/CH3/CH4	104 mA 140 mA	-	Ioset	104 mA ⩽ Ioset ⩽ 1040 mA 140 mA ⩽ Ioset ⩽ 1400 mA

Safety & EMC Compliance

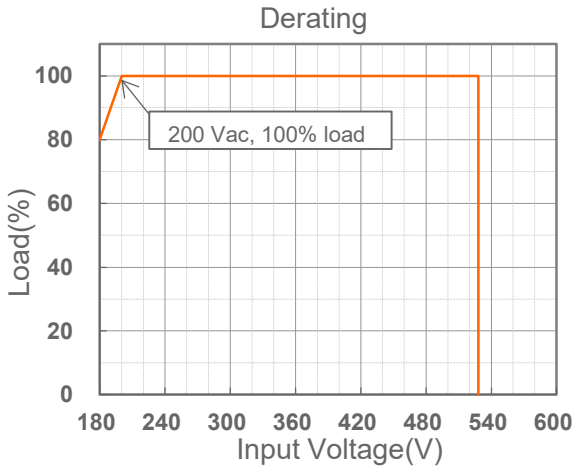
Safety Category	Standard
UL/CUL	UL 8750, CAN/CSA-C22.2 No. 250.13
CE	EN 61347-1, EN 61347-2-13
CB	IEC 61347-1, IEC 61347-2-13
EMI Standards	**Notes**
EN IEC 55015(1)	Conducted emission Test &Radiated emission Test
EN IEC 61000-3-2	Harmonic current emissions
EN 61000-3-3	Voltage fluctuations & flicker
FCC Part 15(1)	ANSI C63.4 Class B
	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: [1] this device may not cause harmful interference, and [2] this device must accept any interference received, including interference that may cause undesired Operation.
EMS Standards	**Notes**
EN 61000-4-2	Electrostatic Discharge (ESD): 8 kV air discharge, 4 kV contact discharge
EN 61000-4-3	Radio-Frequency Electromagnetic Field Susceptibility Test-RS

Safety & EMC Compliance (Continued)

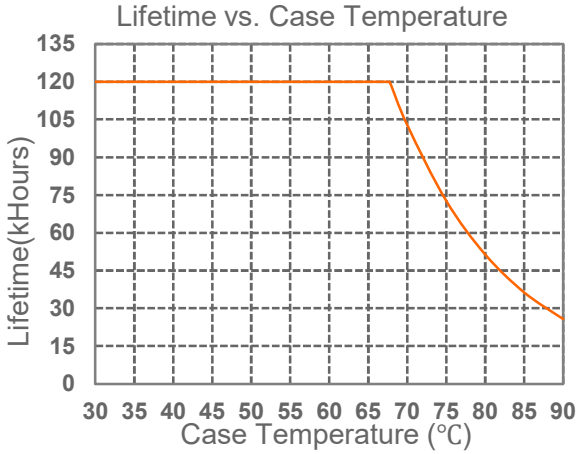
EMS Standards	Notes
EN 61000-4-4	Electrical Fast Transient / Burst-EFT
EN 61000-4-5	Surge Immunity Test: AC Power Line: Differential Mode 6 kV, Common Mode 10 kV
EN 61000-4-6	Conducted Radio Frequency Disturbances Test-CS
EN 61000-4-11	Voltage Dips
EN IEC 61547	Electromagnetic Immunity Requirements Applies To Lighting Equipment

Note: (1) This LED driver meets the EMI specifications above, but EMI performance of a luminaire that contains it depends also on the other devices connected to the driver and on the fixture itself.

Derating



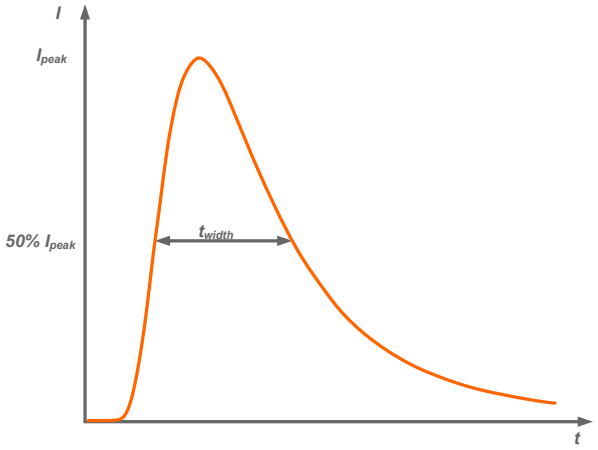
Lifetime vs. Case Temperature



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Inrush Current Waveform

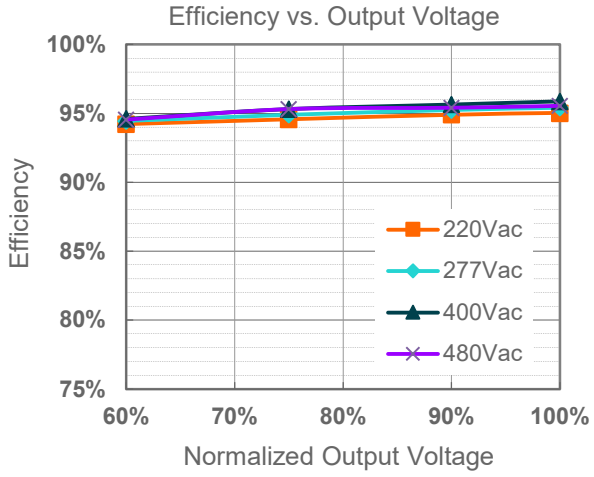


Input AC Voltage	I_{peak}	t_{width} (@ 50% Ipeak)
220Vac	2.34 A	11.6 ms
277Vac	3.06 A	11.4 ms
400Vac	4.47 A	10.2 ms
480Vac	5.46 A	9.80 ms

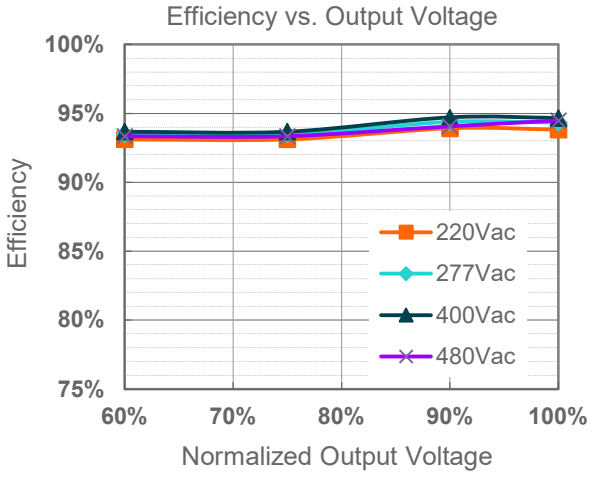
MCB	Tripping Curves	B	B	B	B	C	C	C	C
	Rated Current	10A	16A	20A	25A	10A	16A	20A	25A
The Number of LED Driver can be Configured	220Vac	1	2	3	4	1	3	3	4
	277Vac	2	3	4	5	2	3	4	5
	400Vac	1+1+1	2+2+2	3+3+3	4+4+4	1+1+1	3+3+3	3+3+3	4+4+4
	480Vac	2+2+2	3+3+3	4+4+4	5+5+5	2+2+2	3+3+3	4+4+4	5+5+5

Efficiency vs. Load

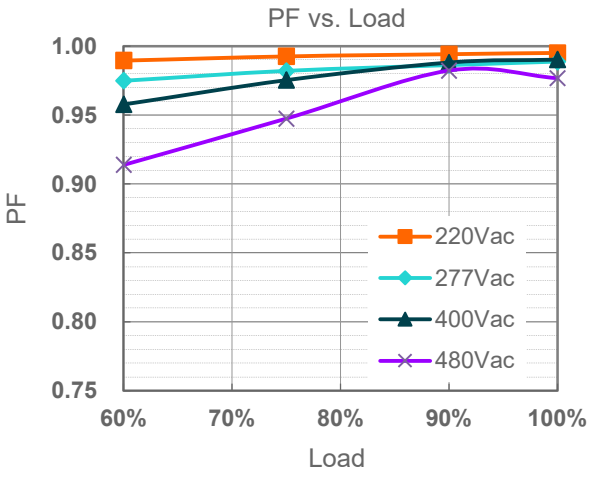
Io=1040+1400+1400+1400 mA



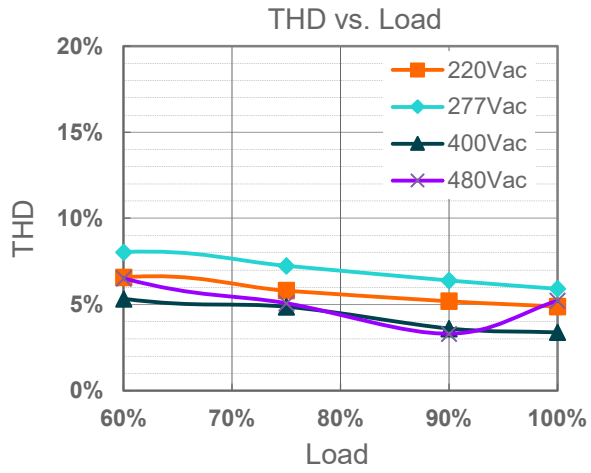
Io=2500+2200+2200+2200 mA



Power Factor



Total Harmonic Distortion



Protection Functions

Parameter		Min.	Typ.	Max.	Notes
Over Voltage Protection		Limits output voltage at no load and in case the normal voltage limit fails.			
Short Circuit Protection		Auto Recovery. No damage will occur when any output is short circuited. The output shall return to normal when the fault condition is removed.			
Over Temperature Protection		Decreases output current gradually, returning to normal after over temperature is removed			
Over Power Protection (1)		102%	107%	112%	
Input Under Voltage Protection (IUVP)	Input Under Voltage Protection	150 Vac	160 Vac	170 Vac	Turn off the output when the input voltage falls below protection voltage.
	Input Under Voltage Recovery	160 Vac	170 Vac	180 Vac	Auto Recovery. The driver will restart when the input voltage exceeds recovery voltage.

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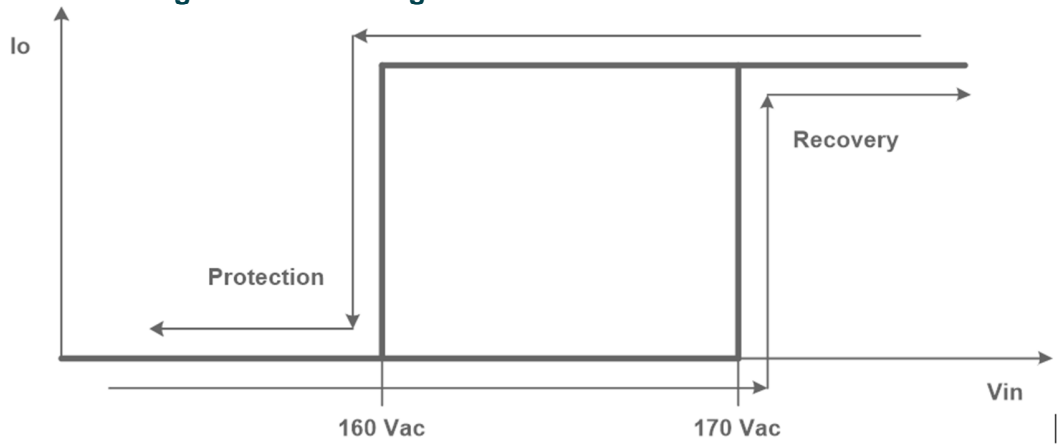
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Protection Functions (Continued)

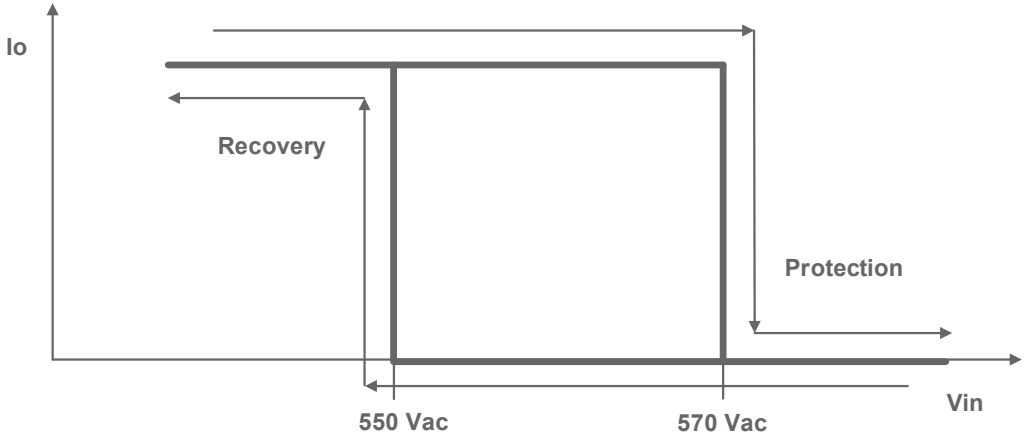
Parameter		Min.	Typ.	Max.	Notes
Input Over Voltage Protection (IOVP)	Input Over Voltage Protection	550 Vac	570 Vac	590 Vac	Turn off the output when the input voltage exceeds protection voltage.
	Input Over Voltage Recovery	530 Vac	550 Vac	570 Vac	Auto Recovery. The driver will restart when the input voltage falls below recovery voltage.
	Max. of Input Over Voltage	-	-	590 Vac	The driver can survive for 8 hours with a stable input voltage stress of 590Vac.

Notes: (1) When the driver operates in output power transfer enabled mode, if channel 1 exceeds 107% (typical) of its rated power (760 W), or if any one of channels 2, 3, and 4 exceeds 107% (typical) of its rated power (180 W), the driver will automatically reduce the output current of that channel.
* The power of main channel (CH1) = Setting total output power - real-time output power of channel 2.3.4.

Input Under Voltage Protection Diagram



Input Over Voltage Protection Diagram



Output Lumen Compensation

Output Lumen Compensation (OLC) may be used to maintain constant light output over the life of the LEDs by driving them at a reduced current when new, then gradually increasing the drive current over time to counteract LED lumen degradation.

- **Hold Time Adjustable**

  When AC power is first applied to the LED driver, enabling a “Hold” period can allow devices powered by the Auxiliary voltage to stabilize before the driver fades up to the maximum dimming level. During this period, the driver will not respond to external dimming commands but will respond again after the hold time ends. Both the initial dimming percentage and the duration of this hold period can be adjusted by the Inventronics Multi Programmer. This function is disabled by default

- **Fade Time Adjustable**

  There is a “Fade” period after the “Hold” period. The soft-start time and dimming slope applied to all dimming transitions can be adjusted individually. It is adjusted by the Inventronics Multi Programmer. This function is disabled by default.

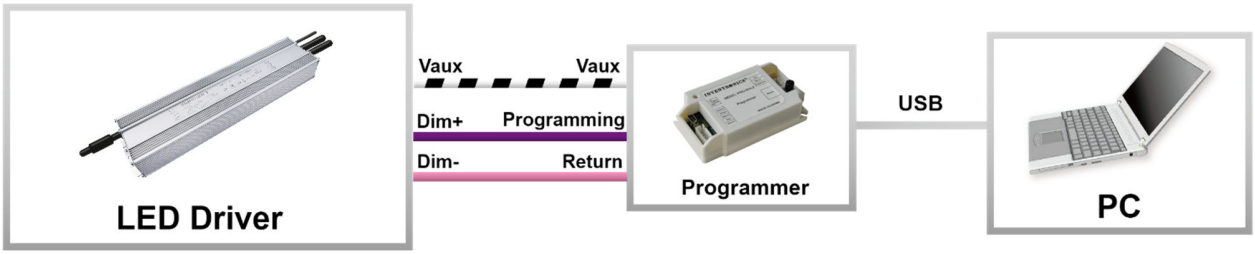
- **End Of Life**

  End-of-Life (EOL) is providing a visual notification to a user that the LED module has reached the end of manufacturer-specified life and that the replacement is recommended. Once active, an indication is given at each power-up of the driver, which the driver indicates this through a lower light output during the first 1 minute before normal operation is continued.

- **Digital Dimming**

  Inventronics Digital Dimming is a UART (Universal Asynchronous Receive Transmitter) based communication protocol. Please refer to **Inventronics Digital Dimming** file for details.

Programming Connection Diagram



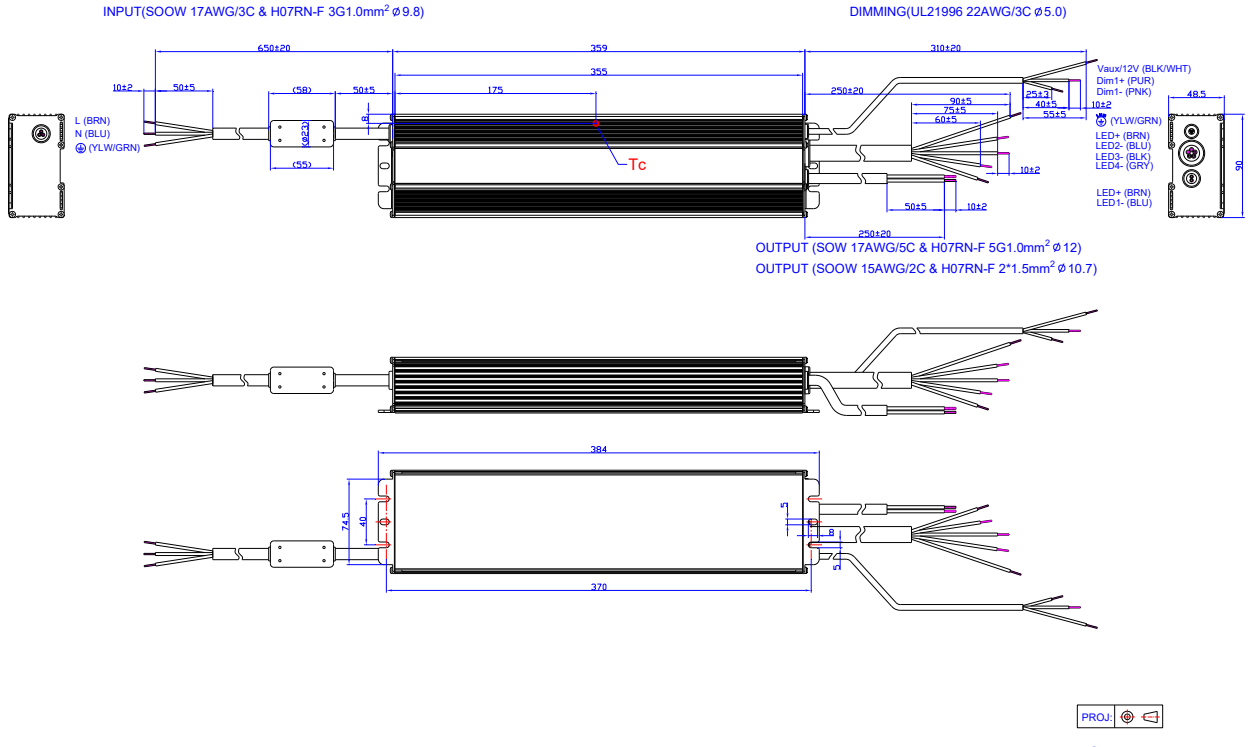
Note: The driver does not need to be powered on during the programming process.

- **Please refer to PRG-MUL2 (Programmer) datasheet for details.**

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Mechanical Outline



Unspecified tolerance:±1

RoHS Compliance

Our products comply with reference to RoHS Directive (EU) 2015/863 amending 2011/65/EU, calling for the elimination of lead and other hazardous substances from electronic products.

Product Order Overview

Order Code & Packaging

Order Code (EAN)	Product Version Name	Certification Markings on Product	Packaging unit (Pieces/Box)	Packing Dimensions (L × W × H)(mm)	Gross Weight (Kg)
6942736290963	NFM-760Q250MG	UL, CE	4	540 × 355 × 173	16.068

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Revision History

Change Date	Rev.	Description of Change		
		Item	Item	Item
2026-11-11	A	Datasheet Release	/	/