MAGNITUDE LIGHTING

Customer Service
Phone: (714) 312-5080
Fax: (714) 312-5070
E-mail: CustomerCare@magnitudeinc.com

AFLEX™ Linear | Specification Sheet

Constant Current Electronic
0-10V Dimmable Programmable LED Driver

The **AFLEX™ LINEAR** platform offers the unparalleled ability to program the driver's power in addition to the output current, dimming curve, dim-to-off functionality, NTC settings and more; all while maintaining high efficiency over the programmable range. This unique technological advancement enables both ultimate design flexibility and significant SKU elimination. Programming the driver does not require any power and can be done in less than one second. The available auxiliary output provides a power source for sensors and/or cooling devices, eliminating the need for an additional power supply. The **AFLEX™ LINEAR** driver is dimmable down to 0.1% with a 0-10V dimmer. Unequaled flexibility and performance, along with Class P approval and Title 24 compliance, makes the **AFLEX™ LINEAR** driver the perfect choice for commercial lighting fixture application. Title 24 compliance is dependent on dimmer luminaire combination.

RoHS Compliant

120 - 277VAC
100 - 2000mA
CLASS P
CLASS 2
IP40

Installation:	Terminal blocks with side feed
Driver Type:	Class 2 Single Channel
Dimming:	0-10V dimmable down to 0.1% with dim-to-off capability
Input Voltage:	Universal 120VAC to 277VAC, 50/60Hz
Output Voltage:	10 - 57VDC
Output Current:	100 - 2000mA (1mA Step Programmable)
Environmental:	Dry
IP Rating:	IP40
Listing:	UL Listed, Class P, Class 2
Certifications:	UL8750 | CSA C22.2 No. 250.13-17
Warranty:	5-Year

MEETS TITLE 24/JA8 REQUIREMENTS

SATISFACTION GUARANTEED 5 YEAR WARRANTY

c UL us LISTED

PROGRAMMABLE

DIM DOWN TO 0.1%
– + DIMMABLE

The AFLEX™ Linear driver is also available in:

- AFLEX™ Compact
- JB Series

Please refer to Magnitudeinc.com for more information.

Ordering Guide

TYPE	MAX POWER: 30 to 100W	MAX POWER: 30 to 100W *Programmable*	OUTPUT CURRENT: 100 to 2000mA	CASE STYLE: Enclosure Type	DIMMING CURVE	AUX POWER OPTION: 12V PS and 57V Output (Standard)
AFLEX LINEAR PROGRAMMABLE	30W	30W	**100 to 1650** 100 to 1650mA (10 to 57VDC)	L[1] Linear	G Logarithmic	E[1] 12V PS and 57V Output
	40W	40W			L[1] Linear	F 24V PS and 57V Output
	50W	50W	**100 to 2000** 100 to 2000mA (10 to 50VDC)			G No PS and 57V Output
	60W	60W				B 12V PS and 50V Output
Pre-programmed per Chosen Specification	75W	75W				C 24V PS and 50V Output
	100W	100W				D No PS and 50V Output

[1] = Default Setting

Driver Dimensions

Length	12.00"	304.80mm
Width	1.20"	30.48mm
Height	1.00"	25.40mm

Wireless Progammable Features

- Programmable Power – 30 to 100W
- Output Current (1mA Step Programmable)
- Dimming Curve (Linear / Logarithmic)
- Dim-to-Off (On / Off)
- NTC Settings

Programming requires Flextool wireless programmer.

Customer Service
Phone: (714) 312-5080
Fax: (714) 312-5070
E-mail: CustomerCare@magnitudeinc.com

SPECIFICATIONS
— 1650mA Max Version —

INPUT	
Input Voltage Range	120 to 277VAC ± 10%
Input Frequency	50/60Hz
Input Current	0.8A @ 120VAC 0.4A @ 277VAC*
Inrush Current	38A Max
Efficiency	> 88%*
Power Factor	0.99 @ 120VAC 0.97 @ 277VAC (Refer to graph on page 6)
	***Depending on model**

OUTPUT	
Output Voltage Range	10 to 57VDC*
Output Current Range	100 to 1650mA* (1mA Step Programmable)
Output Current Tolerance	< 5%
Output Current Ripple	< 5% @ Max load
Line Regulation	+/- 5%
Load Regulation	+/- 5%
Turn-On Delay Time	0.4 sec @ Max load
Sensor Power Supply (Aux)	12 or 24V up to 160mA (Programmable)*
Stand-By Power	> 1W
	***Depending on model**

ENVIRONMENTAL	
Env. Protection Rating	IP**40**
Surge Protection	2.5kV
Operating Ambient Temp.	-40°C to +60°C
Operating Temperature	-40°C to +50°C
Storage Temperature	-40°C to +85°C
Expected Lifetime	50k hours at 75°C (Refer to graph on page 7)
Audible Noise	< 24dB Class A
Withstanding Voltage	2.5kV

DIMMING	
Dimming Control	0 to 10V
Dimming Input Range	-2 to +15V
Dimming Curves	Linear/Logarithmic (Programmable)
Min. Dimming Level	Dim down to 0.1%
Dim-to-Off	Yes (Programmable)
Current Consumption	0.35mA / Source
Compliance	0-10V Dimming Compliance with ANSI C137.1

LED THERMAL PROTECTION (NTC)	
NTC Value	15 kΩ ± 5% @ 25°C
Manufacture: Vishay	P/N: NTCS0805E3153JMT
Output Level Range	1mA Step Programmable (0 to 100%)

PROTECTION	
Over Current Protection	Yes; Current Limiting
Short Circuit Protection	Yes; Hiccup Mode
Over Voltage Protection	Yes; Hiccup Mode
Over Temp. Protection	Yes; Power Derating (Refer to graph on page 7)
Mis-Wiring Protection	Yes; Auto Shutdown

MECHANICAL HOUSING	
Length	12.00" (304.8mm)
Mounting Length	11.70" (296.8mm)
Width	1.20" (30.48mm)
Height	1.00" (25.4mm)
Housing Material	Aluminum
Housing Color	Blue Anodized
Junction Box	No
Input Connector Types	Black & White Wago 253, Dual Side 16 to 20AWG strip 3/8"
Output Connector Types	Red & Blue Wago 253, Dual Side 16 to 20AWG strip 3/8"
Dimming Connector Types	Purple & Gray Wago 253, Dual Side 16 to 20AWG strip 3/8"
Auxiliary Connector Types	Yellow & Gray Wago 253, Dual Side 16 to 20AWG strip 3/8"
NTC Connector Types	Orange & Orange Wago 253, Dual Side 16 to 20AWG strip 3/8"
Mounting	2 half-hole flange mounts

APPROVAL MARKINGS	
Certificates / Approval Signs	UL 8750, Class 2, Class P

Customer Service
Phone: (714) 312-5080
Fax: (714) 312-5070
E-mail: CustomerCare@magnitudeinc.com

SPECIFICATIONS
— 2000mA Max Version —

INPUT	
Input Voltage Range	120 to 277VAC ± 10%
Input Frequency	50/60Hz
Input Current	0.8A @ 120VAC 0.4A @ 277VAC*
Inrush Current	38A Max
Efficiency	> 88%*
Power Factor	0.99 @ 120VAC 0.97 @ 277VAC (Refer to graph on page 6)
	***Depending on model**

OUTPUT	
Output Voltage Range	10 to 50VDC*
Output Current Range	100 to 2000mA* (1mA Step Programmable)
Output Current Tolerance	< 5%
Output Current Ripple	< 5% @ Max load
Line Regulation	+/- 5%
Load Regulation	+/- 5%
Turn-On Delay Time	0.4 sec @ Max load
Sensor Power Supply (Aux)	12 or 24V up to 160mA (Programmable)*
Stand-By Power	> 1W
	***Depending on model**

ENVIRONMENTAL	
Env. Protection Rating	IP**40**
Surge Protection	2.5kV
Operating Ambient Temp.	-40°C to +60°C
Operating Temperature	-40°C to +75°C
Storage Temperature	-40°C to +85°C
Expected Lifetime	50k hours at 75°C (Refer to graph on page 7)
Audible Noise	< 24dB Class A
Withstanding Voltage	2.5kV

DIMMING	
Dimming Control	0 to 10V
Dimming Input Range	-2 to +15V
Dimming Curves	Linear/Logarithmic (Programmable)
Min. Dimming Level	Dim down to 0.1%
Dim-to-Off	Yes (Programmable)
Current Consumption	0.35mA / Source
Compliance	0-10V Dimming Compliance with ANSI C137.1

LED THERMAL PROTECTION (NTC)	
NTC Value	15 kΩ ± 5% @ 25°C
Manufacture: Vishay	P/N: NTCS0805E3153JMT
Output Level Range	1mA Step Programmable (0 to 100%)

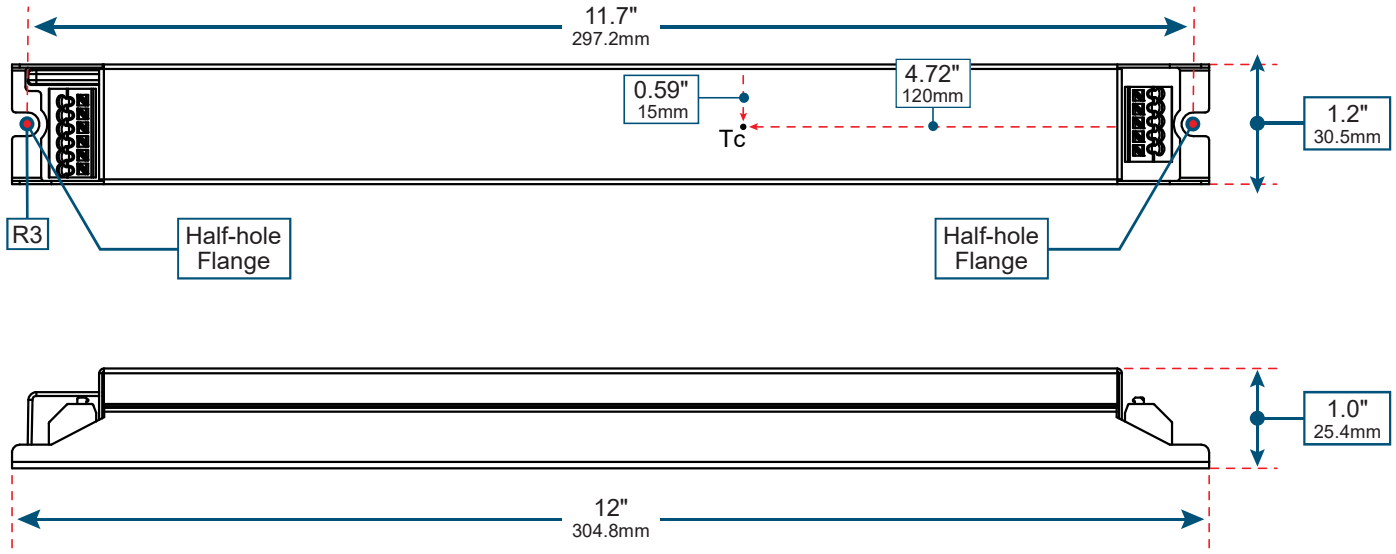
PROTECTION	
Over Current Protection	Yes; Current Limiting
Short Circuit Protection	Yes; Hiccup Mode
Over Voltage Protection	Yes; Hiccup Mode
Over Temp. Protection	Yes; Power Derating (Refer to graph on page 7)
Mis-Wiring Protection	Yes; Auto Shutdown

MECHANICAL HOUSING	
Length	12.00" (304.8mm)
Mounting Length	11.70" (296.8mm)
Width	1.20" (30.48mm)
Height	1.00" (25.4mm)
Housing Material	Aluminum
Housing Color	Blue Anodized
Junction Box	No
Input Connector Types	Black & White Wago 253, Dual Side 16 to 20AWG strip 3/8"
Output Connector Types	Red & Blue Wago 253, Dual Side 16 to 20AWG strip 3/8"
Dimming Connector Types	Purple & Gray Wago 253, Dual Side 16 to 20AWG strip 3/8"
Auxiliary Connector Types	Yellow & Gray Wago 253, Dual Side 16 to 20AWG strip 3/8"
NTC Connector Types	Orange & Orange Wago 253, Dual Side 16 to 20AWG strip 3/8"
Mounting	2 half-hole flange mounts

APPROVAL MARKINGS	
Certificates / Approval Signs	UL 8750, Class 2, Class P

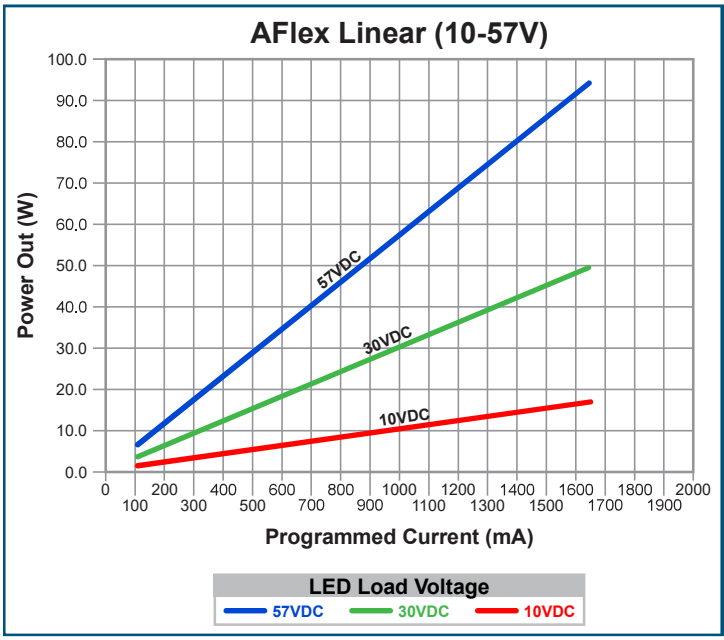
Customer Service
Phone: (714) 312-5080
Fax: (714) 312-5070
E-mail: CustomerCare@magnitudeinc.com

MECHANICAL DIAGRAMS

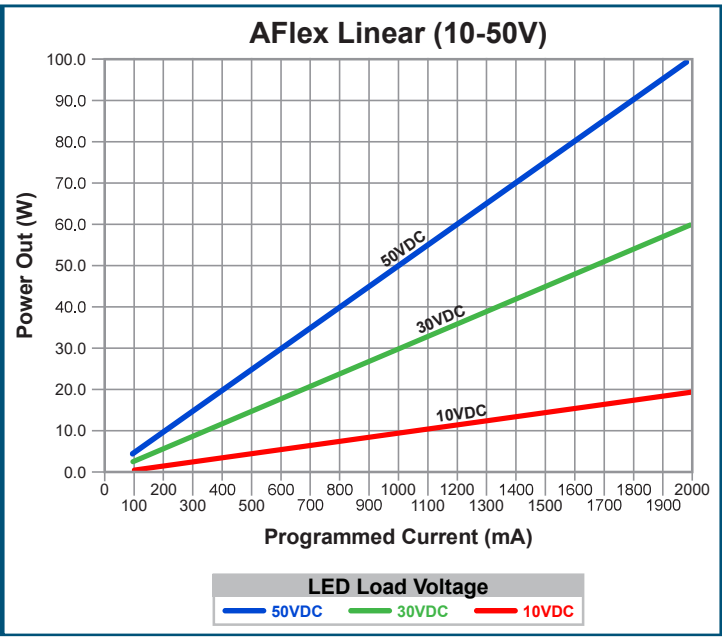


OPERATING POWER OUTPUT

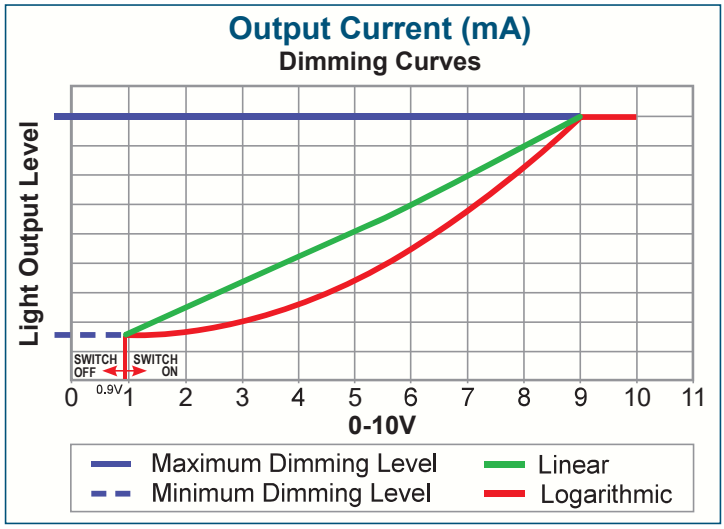
— 1650mA Maximum Current —

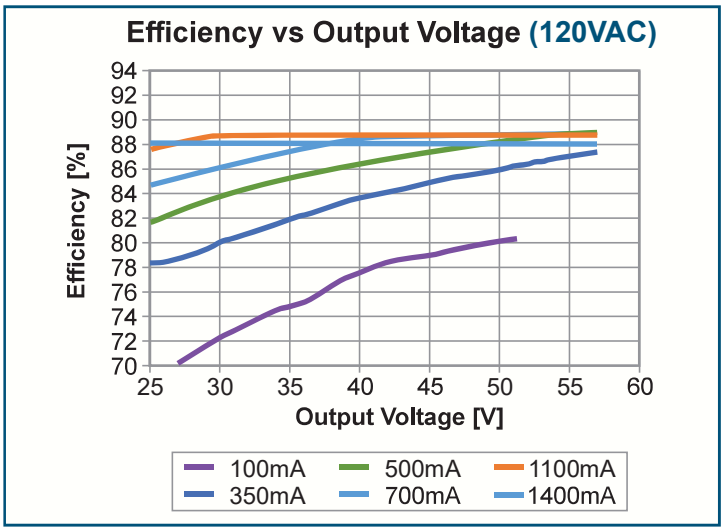


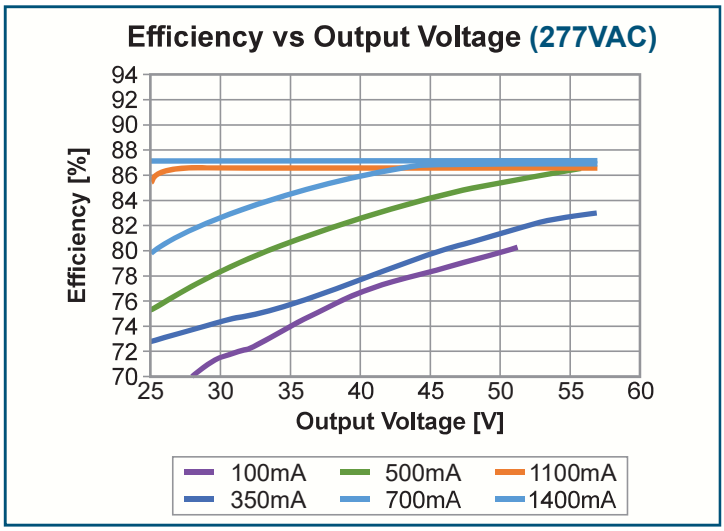
— 2000mA Maximum Current —

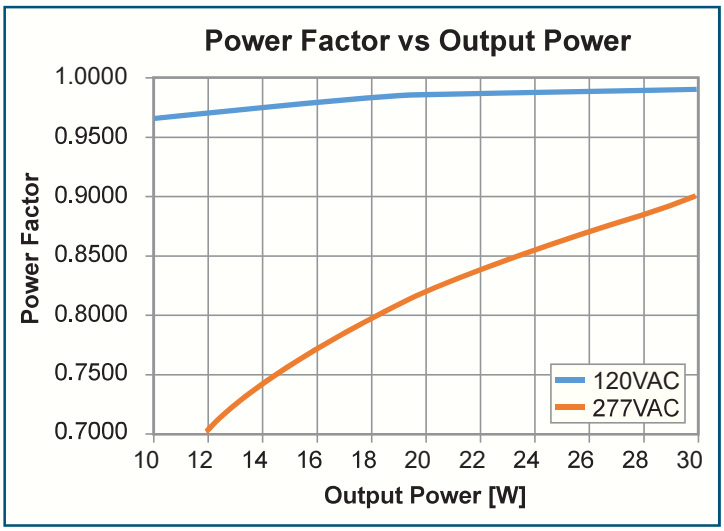


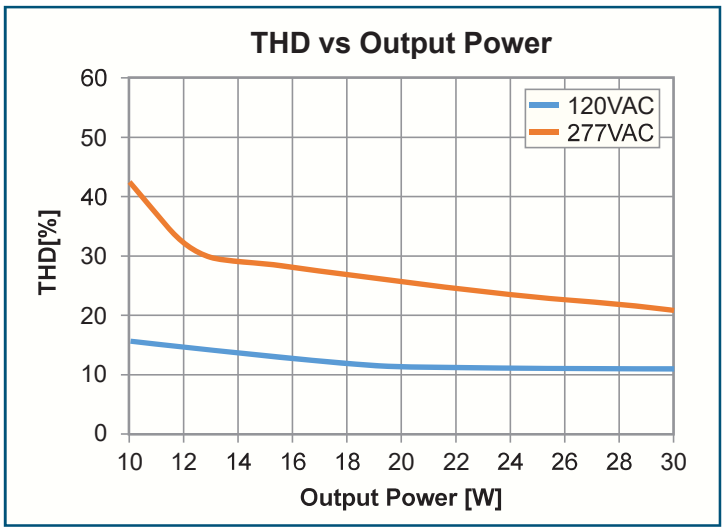
Customer Service
Phone: (714) 312-5080
Fax: (714) 312-5070
E-mail: CustomerCare@magnitudeinc.com





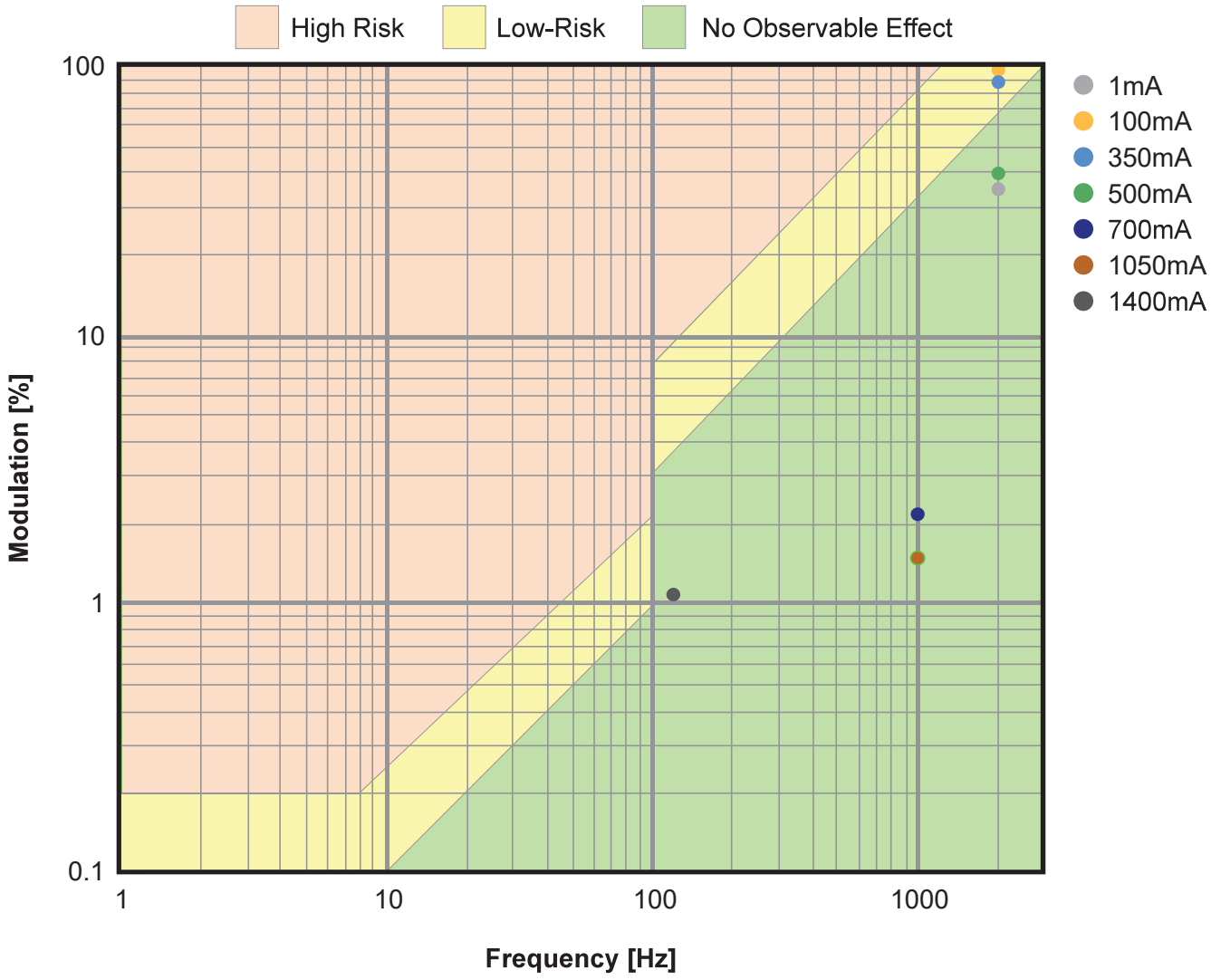






Customer Service
Phone: (714) 312-5080
Fax: (714) 312-5070
E-mail: CustomerCare@magnitudeinc.com

The IEEE P1789 Flicker Test Performance Results

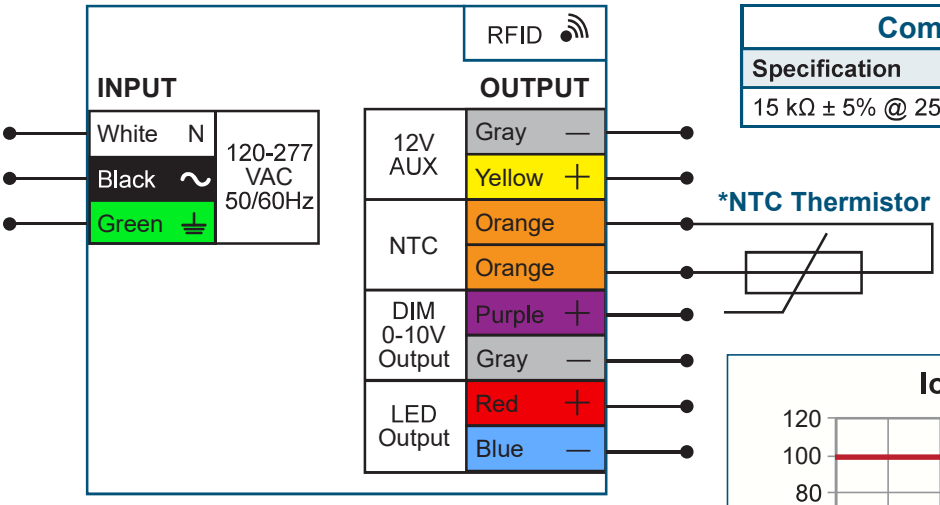


Customer Service
Phone: (714) 312-5080
Fax: (714) 312-5070
E-mail: CustomerCare@magnitudeinc.com

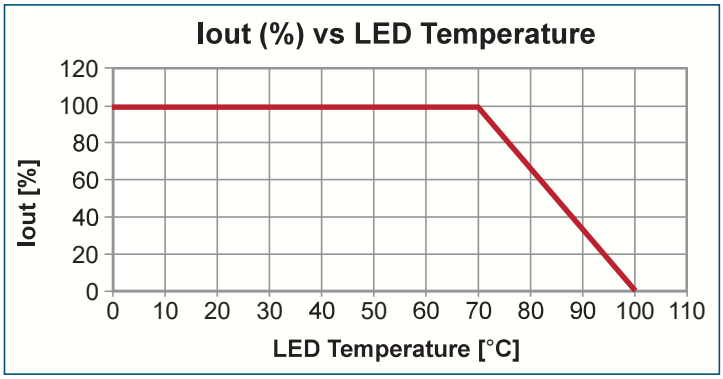
LED Thermal Protection (NTC)

AFLEX™ series drivers help protect the LED's lifetime and will reduce LED temperature by derating the output current in case of high temperatures. The negative temperature coefficient (NTC) thermistor must be connected to the LED driver, as shown in the wiring diagram.

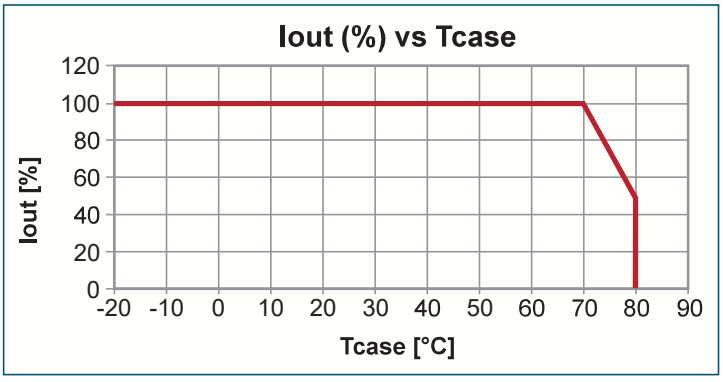
For maximum performance, the NTC thermistor must be placed close to the Tc point of the LED module. The power derating prameters can be programmed using the FlexTool programmer. The NTC outputs can be left disconnected if thermal protection is not required.

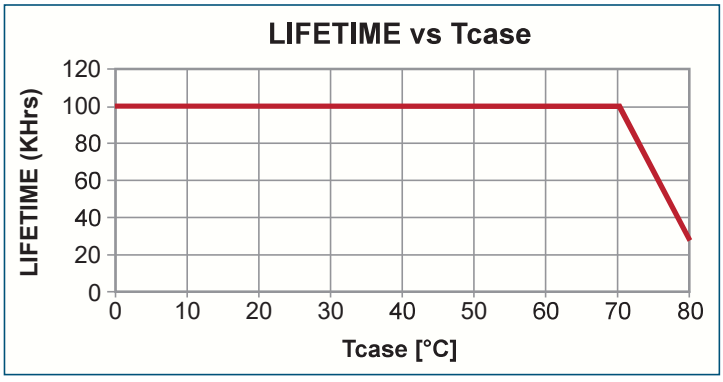


Compatible NTC Thermistor*		
Specification	**Manufacturer**	**Manufacturer P/N**
15 kΩ ± 5% @ 25°C	Vishay	NTCS0805E3153JMT



Driver Thermal Protection





Customer Service
Phone: (714) 312-5080
Fax: (714) 312-5070
E-mail: CustomerCare@magnitudeinc.com

5% LED Drop Allowed			
AWG	**100-700mA**	*700-1650mA*	**1500-2000mA**
18	17 ft	7 ft	6 ft
16	27 ft	12 ft	9 ft
14	42 ft	19 ft	15 ft
12	67 ft	36 ft	24 ft

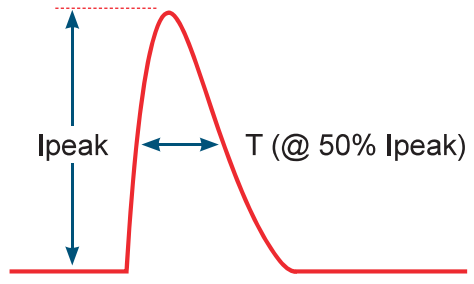
10% LED Drop Allowed			
AWG	**100-700mA**	*700-1650mA*	**1500-2000mA**
18	34 ft	15 ft	12 ft
16	53 ft	23 ft	19 ft
14	85 ft	37 ft	30 ft
12	135 ft	59 ft	47 ft

Temperature Rating

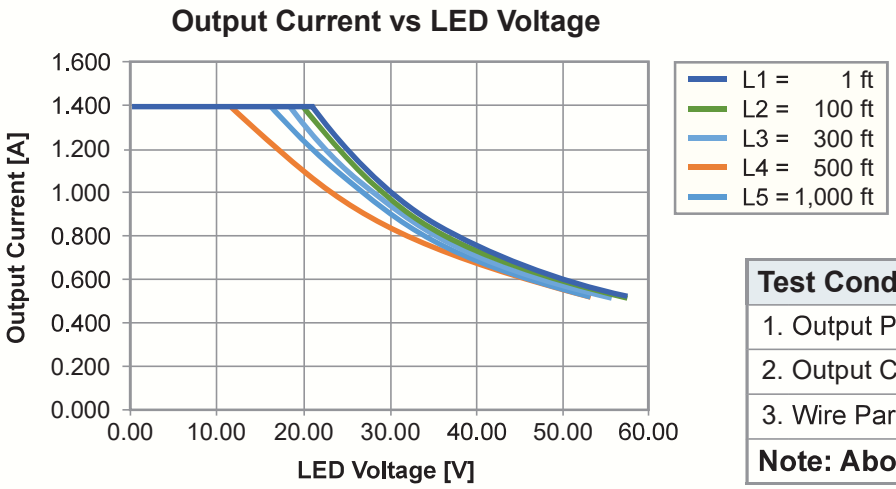
Description	Minimum	Maximum
Normal Operation	-40°C	+70°C
Derating Area	+70°C	+80°C
Protection Area	+80°C	
Resume Operation After Protection Activated	+70°C	

Inrush Current

VIN (V)	IPEAK (A)	T (@ 50% IPEAK)
120VAC	14.2	1.5 usec
277VAC	38.0	1.2 usec



Remote Installation



Test Condition	
1. Output Power	= 40W
2. Output Current	= 1.4A
3. Wire Parameters	= 18AWG, 16/30, 6.75Ω / 1,000′
Note: Above L = 100 ft min / LED voltage = 10V	

Compatible 0-10V Dimmers: Please refer to Magnitudeinc.com for compatibility information.

About the FlexTool Wireless Programmer

The FLEXTOOL Wireless Programmer is used to program Magnitude's Flex Series of LED drivers. By using the FLEXTOOL, OEM's can quickly and smoothly configure the driver's parameters without applying power or wires to the driver.

With the FLEXTOOL software, you can easily save driver configuration profiles externally and use as needed. The software provides graphic and audio indication that the driver was successfully configured. Please see page 8 for programming information.

Customer Service
Phone: (714) 312-5080
Fax: (714) 312-5070
E-mail: CustomerCare@magnitudeinc.com

Programming the AFLEX™ Linear Driver

Programmable Output Current and Power

Current is programmable in 1mA steps. Power is programmable in 1W steps.

Dimming Control

- Dim-to-Off: Check box (yes/no); Factory Default: Checked (yes)
- Dimming Curve: Logarithmic or Linear; Factory Default: Linear
- Dimmer Type: 0-10(V) or None; Factory Default: 0-10(V)
- Minimum Current (dimming level) before Shut-Off (Dim-to-Off); Factory Default: 1mA

LED Thermal Protection

- Temperature Derating Start; Factory Default: 70°C
- Temperature Derating End; Factory Default: 100°C
- Min. Current before Shut-Off; Factory Default: 1mA