Wall Industries, Inc.

TECHNICAL DATASHEET
Rev. D

XAIS3657

280W AC/DC High Efficiency Power Supply
100-140 VAC Input
28VDC Output at 10A
Small 3.5” x 5” x 2” Aluminum Case

FEATURES

- **91% Efficient at Full Load**
- **Active Power Factor Correction**
- **Low THD**
- **Output Short Circuit and Over Current Protection**
- **Conformal Coated**
- **ISO9001 Compliant**
- **UL 1029 R/C**
- **FCC Part 15-B Class A Emissions**
- **EN 61000-4-5 Surge Immunity**
- **EN 61000-3-2 Harmonic Currents**
- **100% Burn-in**

DESCRIPTION

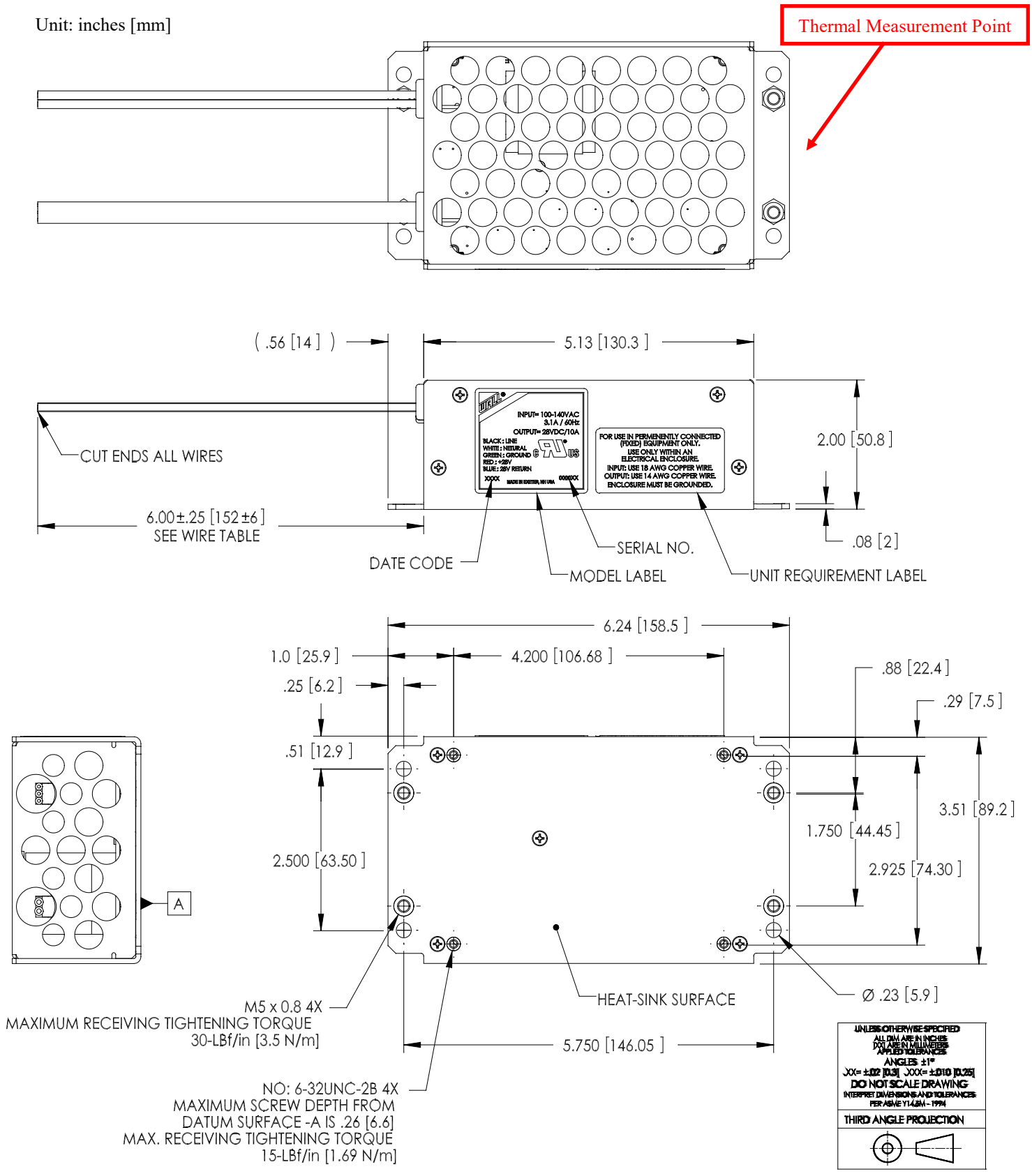
The XAIS3657 AC/DC power supply provides 280 watts of output power and has an input voltage range of 100-140VAC with a 28VDC single output. This supply is housed in a small 3.5” x 5” x 2” aluminum case and features 1600VAC I/O isolation, high efficiency up to 91% at full load, and active power factor correction. This model also has over current and short circuit protection and is 100% burned-in. The XAIS3657 series was designed to be used in the industrial or commercial, indoor and outdoor lighting market. Some applications include lighting for parking lots, roadways, tunnels, warehouses, walkways, billboards, and garages. It can also be used for entertainment lighting applications such as moving heads, scanners, spot and wash lights, and digital projection.

TECHNICAL SPECIFICATIONS		MODEL NO. XAIS3657			
All specifications are based on 25°C, Nominal Input Voltage and Maximum Output Current unless otherwise noted. We reserve the right to change specifications based on technological advances.					
Specification	**Related Condition**	**Min**	**Nom**	**Max**	**Unit**
Switching Frequency		-	100	-	kHz
INPUT (V_{in})					
Operating Voltage Range		100	120	140	Vac
Frequency		-	60	-	Hz
No Load Input Power *(Graph 3)*		-	6.5	8	W
Power Factor *(Graph 4)*	V_{in} = 120 Vac; I_o = 10 A	0.96	0.99	-	
Total Harmonic Distortion *(Graph 4)*	$= \frac{I_{rms} - I_{1rms}}{I_{rms}} \mid V_{in}$ = Nominal Line, Full Load		5.5	10	%
Inrush Current	V_{in} = 120 Vac; cold start	-	42	-	A
EFFICIENCY *(Graph 1)*	V_{in} = 120 – 140 V_{ac}; I_o = 10 A V_{in} = 100 – 120 V_{ac}; I_o = 10A	90.0 88.0	91.0 89.5	-	%
OUTPUT (V_o)					
Voltage Set Point	at No Load and 25 °C	28.041 -1.4	28.447	28.856 +1.4	Vdc %
Load Regulation *(Graph 5)*	$= \frac{V_o(\text{Full Load}) - V_o(\text{Min. Load})}{V_o(\text{Min. Load})} \mid V_{in}$ = Nominal Line	-	0.6	1.2	%
Line Regulation *(Graph 6)*	$= \frac{V_o(\text{Low Line}) - V_o(\text{High Line})}{V_o(\text{Low Line})} \mid I_o$ = 100% Load	-	0.05	0.10	%
Temperature Drift *(Graph 7)*	$= \frac{V_o(25°C) - V_o(-40°C \text{ or } +85°C)}{V_o(25°C)} \mid I_o$ = 50% Load	-	0.01	0.02	% / °C
Ripple – Switching Frequency *(Photos 3 & 4)*	20 MHz BW	-	100	200	mV_{pk-pk}
Ripple – 60 Hz *(Photos 1 & 2)*	20 MHz BW	-	720	900	mV_{pk-pk}
Current	Average	0	-	10.0	A
Current Limit *(Graph 8)*	Total Power Limited	14	18	22	A
Over Voltage Limit		33.6	34.9	36.3	Vdc
DYNAMIC RESPONSE					
Load step Δ V *(Photo 6)*	25% to 75% Io, di/dt=0.25A/µS	-	1.2	2.0	V
Recovery Time *(Photo 6)*	Recovery to within 1% V_O	-	1	2	ms
Turn On Delay *(Photo 5)*		-	500	1000	ms
Turn On Overshoot *(Photo 5)*	Full Load Resistive	-	-	2	V
Hold Up Time			-	0	mS
ISOLATION					
Input - Output		1600	-	-	Vac
Input - Chassis		1600	-	-	Vac
Output - Chassis		1000	-	-	Vdc
Leakage Current	V_{in} = 140 Vac	-	350	-	µA
THERMAL					
Ambient Operating Temperature	Limited by Case Temperature	-40	25	75	°C
Maximum Case Temperature	See Figure 1 for Thermal Measurement Point	-40	25	75	°C
Storage Temperature		-40	-	85	°C
MTBF	MIL-HDBK-217F Notice 2; T_{amb}=25°C; I_o = 11A		**162,059**		hours
MECHANICAL			**See Figure 1**		
Weight			1.19		lbs

**Due to advances in technology, specifications subject to change without notice.*

Figure 1: Mechanical Dimensions

Unit: inches [mm]



DESIGN CONSIDERATIONS

Over Current Protection
The converter is protected from short circuit and over current conditions. Upon sensing a short circuit or an over current condition the converter will immediately shut off, and after a short delay try to restart. This is called a 'hiccup' mode and this mode will persist until the short circuit or over current condition is removed.

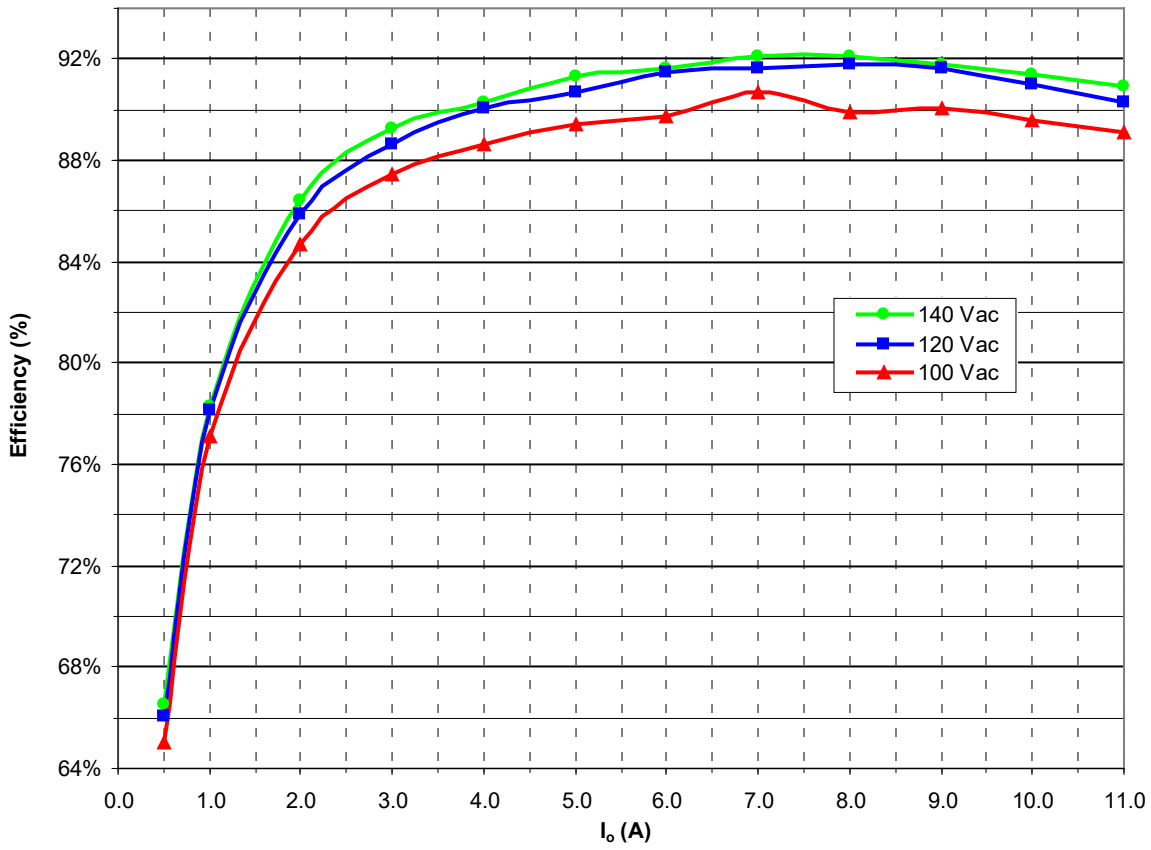
Over Temperature Protection
The converter is NOT protected from over temperature conditions. Exceeding the maximum rated case temperature may cause permanent damage to the unit.

Fusing
The input to the converter is protected with a UL R/C fuse. This fuse is NOT user replaceable.

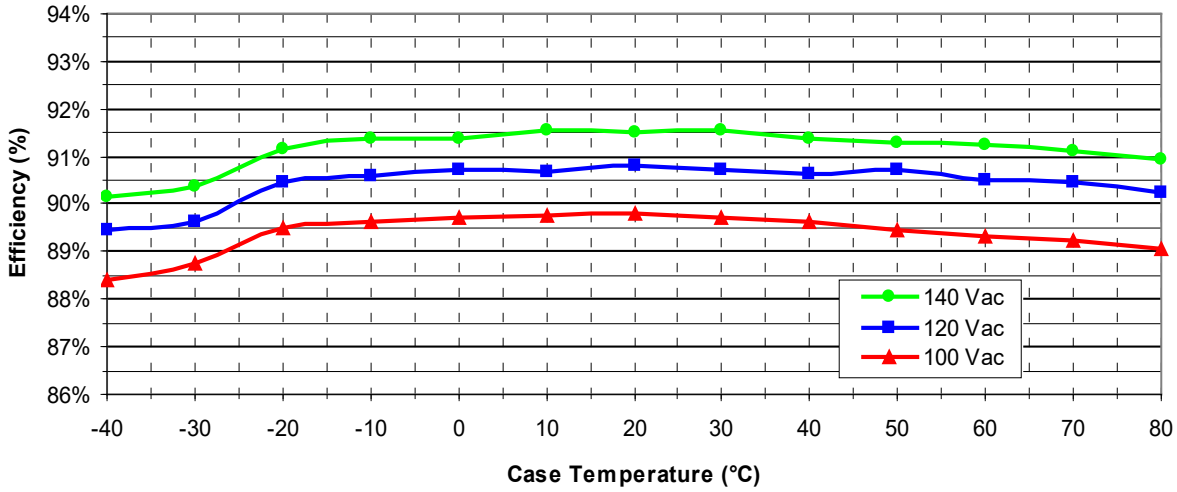
UL Recognition
UL R/C FNFT2.E330012 (Electric Discharge Lamp Control Equipment, Specialty – Component)
- UL Standard for Electric Discharge Lamp Control Equipment, Miscellaneous, UL 1029 and Electronic Ballasts UL 935.
UL R/C FNFT8.E330012 (Electric Discharge Lamp Control Equipment, Specialty Certified for Canada – Component)
- CSA Standard for Equipment for Use With Electric Discharge Lamps, C22.2, No. 74.
For use in permanently connected (fixed) equipment within a Grounded Electrical Enclosure.

Emissions Accordance
- CFR Title 47 FCC Part 15 Subpart B, Class A
- ICES-003, Issue 4, Class A
- EN 61000-3-2 Limits for Harmonic Current Emissions (Class C)
- EN61000-4-5 (1995-02) A1 (2001) 2 KV Line-Line, 4 KV Line-Neutral

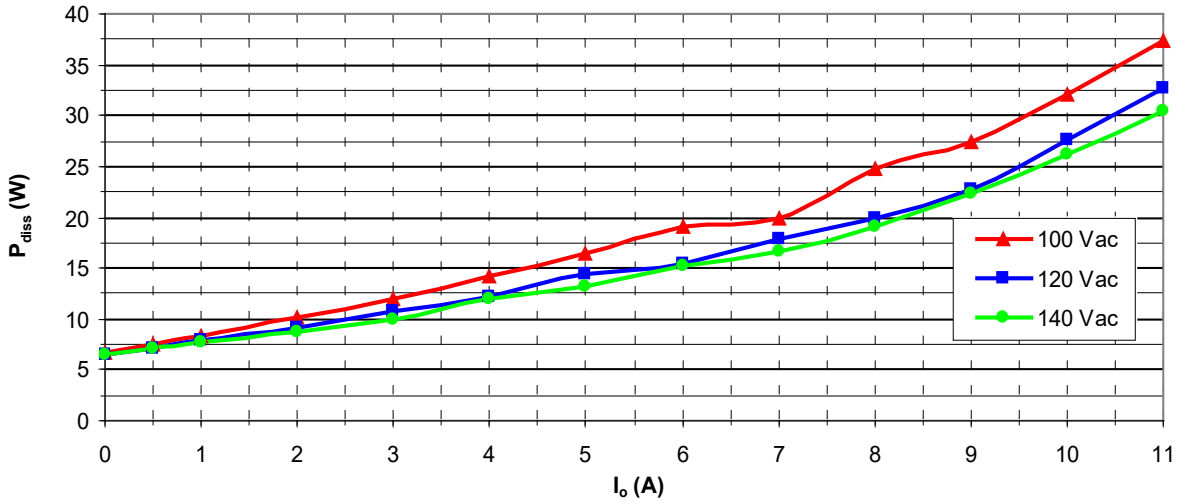
Graph 1: Efficiency vs. Output Current



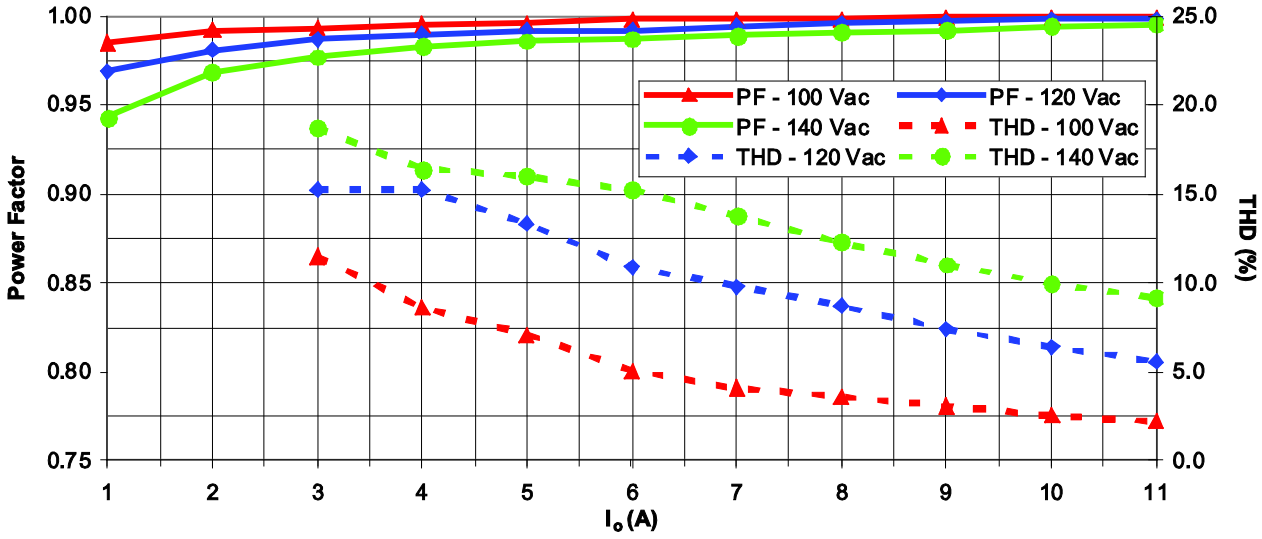
Graph 2: Efficiency vs. Temperature (Io=11A)



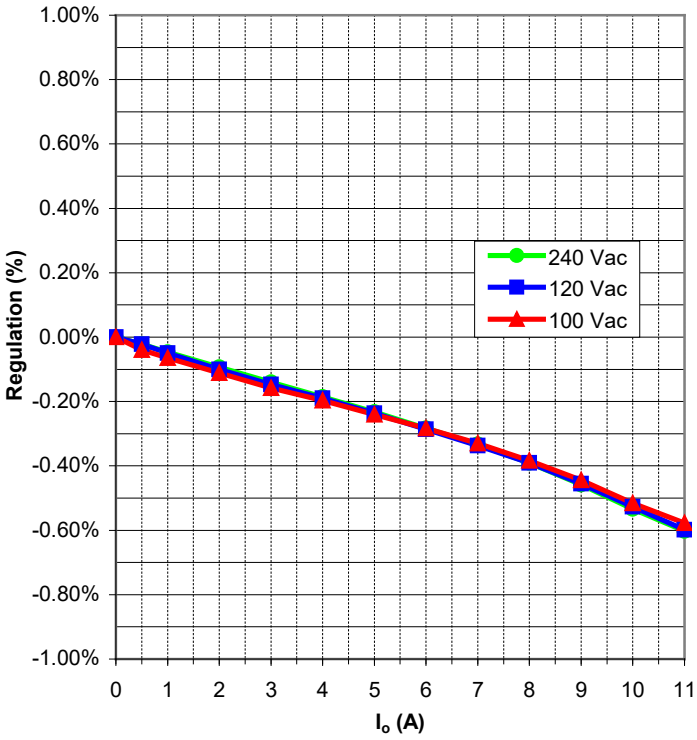
Graph 3: Power Dissipation vs. Output Current



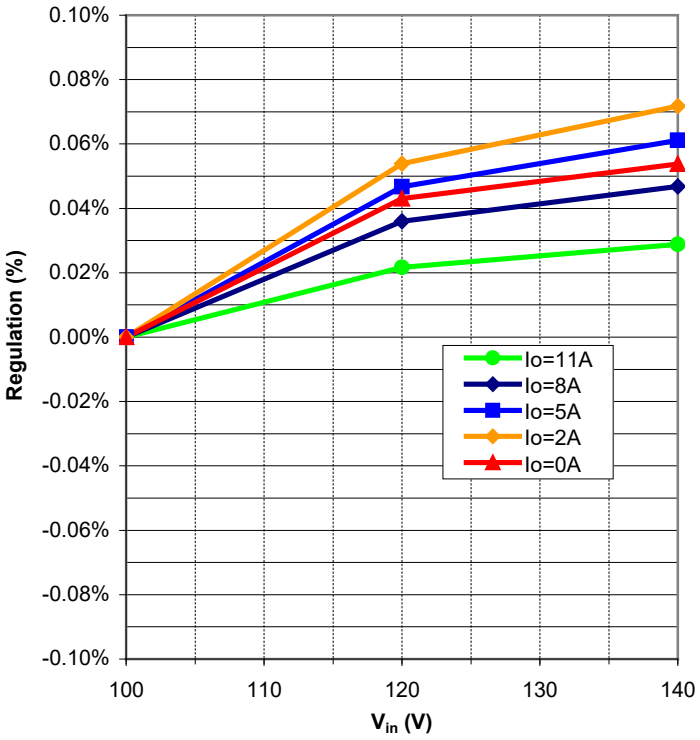
Graph 4: Input Power Factor and THD



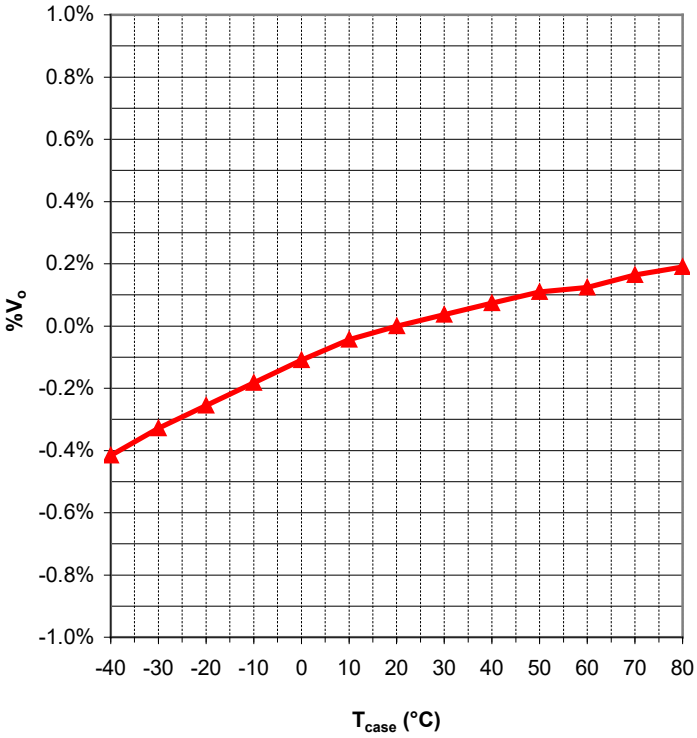
Graph 5: Load Regulation



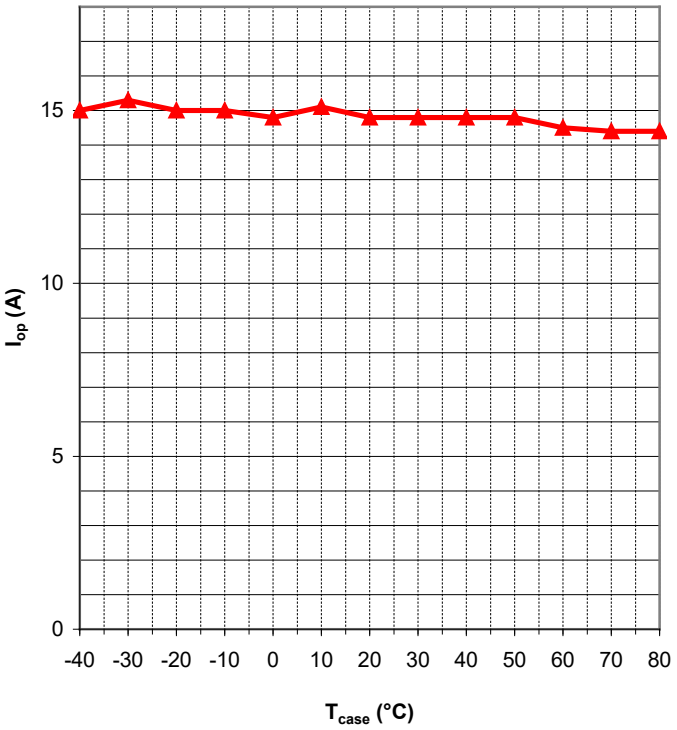
Graph 6: Line Regulation



Graph 7: Output Temperature Drift (V_{in} = 120 V_{ac}; I_o=11 A)



Graph 8: Overcurrent vs. Temperature



COMPANY INFORMATION

Wall Industries, Inc. has created custom and modified units for over 50 years. Our in-house research and development engineers will provide a solution that exceeds your performance requirements on-time and on budget. Our ISO9001: 2015 certification is just one example of our commitment to producing a high quality, well-documented product for our customers.

Our past projects demonstrate our commitment to you, our customer. Wall Industries, Inc. has a reputation for working closely with its customers to ensure each solution meets or exceeds form, fit and function requirements. We will continue to provide ongoing support for your project above and beyond the design and production phases. Give us a call today to discuss your future projects.

Contact **Wall Industries** for further information:

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