

# E-Saver-33L

# Ultra Efficient Application Optimized Dry Type Transformer

*Optimized for Application Load (OPAL) yields substantially lower losses than typical DOE compliant units*

<b>Electrical Ratings</b>	<b>Power [kVA]</b>	<b>150</b>						
	Continous Overload [kVA]	165 <span style="float: right;"><i>Max. Linear Load; 1 THD &lt; 0.05 p.u. &lt; 30°C Amb.</i></span>						
	<b>Primary [V]</b>	<b>480</b>						
	<b>Secondaries [V]</b>	<b>120/208</b>						
<b>Topology &amp; Materials</b>	Electrical Topology	Primary: Delta 3 -Wire		Secondary: Wye 4 -Wire				
	Terminals: Material / Rating	Neutral: Copper/200%		Line: Copper/100%		Ground: Mechanical Lug		
	Coils / Construction	Copper; Welded/Brazed Internal Connections						
	Core / Configuration	3 Leg, Low loss super grain-oriented electrical steel						
<b>Regulatory Efficiency</b>	Insulation Class / Type	220 ( <i>UL Listed, E221932</i> )		Nomex based				
	Impregnant / Properties	Epoxy/Polyester co-polymer; Dielectric 3.2kV/mil. x 3 mil. build; Low VOCs						
	B.I.L.	10kV (Primary & Secondary)						
	<b>35% Load @ 75 °C [%]</b>	≥ <b>98.99</b> ; <i>tested per DOE 10CFR431*, Subpart K, &amp; CSA C802.2</i>						
<b>Load Performance</b>	Reference levels:	(150kVA): DOE 2016: 98.83%; CSA C802.2-12: 98.30%						
		<i>*Powersmiths exceeds DOE test requirements by guaranteeing performance of every unit</i>						
	Percent Loading:	<b>No Load</b>	<b>16.7%</b>	<b>25.0%</b>	<b>35.0%</b>	<b>50.0%</b>	<b>75.0%</b>	<b>100.0%</b>
	Linear Load Efficiency <sup>+</sup> [%]		98.93	99.05	99.02	98.85	98.39	97.73
<b>General Operation</b>	Linear Load Loss <sup>+</sup> [W]	<b>198</b>	270	360	518	871	1830	3458
	[BTU/hr]	676	921	1228	1767	2972	6244	11799
	K7 Load (IEEE C57.110) <sup>+</sup> [%]		98.9	99.0	98.9	98.7	98.1	97.3
		<sup>+</sup> Calculated @ 20°C Amb. Accuracy: Linear Loss ± 3% measurement tolerance per DOE 10CFR431; Efficiencies ± 0.05%						
<b>Impedance</b>	Temperature Rise/Ambient [°C]	< <b>130</b> ( <i>Full Linear Load</i> )			40 ( <i>Per ANSI C57.96.2013</i> )			
	Regulation ( <i>full load</i> ) [%]	2.2 ( <i>Cos Φ=1.0</i> )			4.4 ( <i>Cos Φ =0.8</i> )			
	Excitation [A]	1.0 ( <i>~ Effective Current</i> )						
<b>Abnormal</b>	Audible Noise [dBA]	47 (3 dBA less than NEMA ST-20 requirement 51-150kVA)						
	Z: +/- Sequence [%]	Z: 4.7	X: 4.2	R: 2.0	<i>(per ANSI C57.12.91/UL1561)</i>			
	N/A	Zo:	Xo:	Ro:	<i>(per ANSI C57.12.91)</i>			
<b>Enclosure Type &amp; Installation</b>	Shortcircuit Current** [A]	Symmetrical Bolted faults		Primary: 3,930		Secondary: 9,069		
	**Zero Upstream Impedance	Asymmetrical Bolted faults		L - N: 9,069		L - L: 7,854		
	Inrush x FLA /@ % Source	3 /@ 3%	6 /@ 1½%	10 /@ 0%	<i>(per IEEE 389)</i>			
<b>Physical</b>	Type / Environment	2: Indoor Ventilated; 3R: Sprinkler/Weather Shields (Field Installed Option)						
	Installation / Location	Non-combustible floor; Restricted Access Area, non-public accessible						
	Ventilation Clearances	2" to rear wall; zero clearance for sides (Grill opening < 1/2", Vermin Resistant)						
<b>Quality, Standards &amp; Certification</b>	Paint / Finish	Polyester Powder Coat, Semi-Gloss, Textured; Color: Green (RAL 6018)						
	Size & Drawing	TD0: (W: 38" D: 27" H: 48"); Drawing: 300-003762-800						
	Net Weight	1270 lbs / 577 kg						
<b>Additional Specified Attributes &amp; Options:</b> <i>(As listed)</i>	Quality	ISO 9001-2000: Quality Management System ISO 14001-2004: Environmental Management System ISO 17025: Efficiency Measurement Certification (CSA)						
	Design / Build / Test	UL 1561; CSA C22.2-47; NEMA ST-20; ANSI C57.91						
	Certifications	<b>UL/CUL Listed; CSA Certified</b> <span style="float: right;"><i>UL1561 Listed for Non-linear loads</i></span>						



**POWERSMITHS INTERNATIONAL CORP.**

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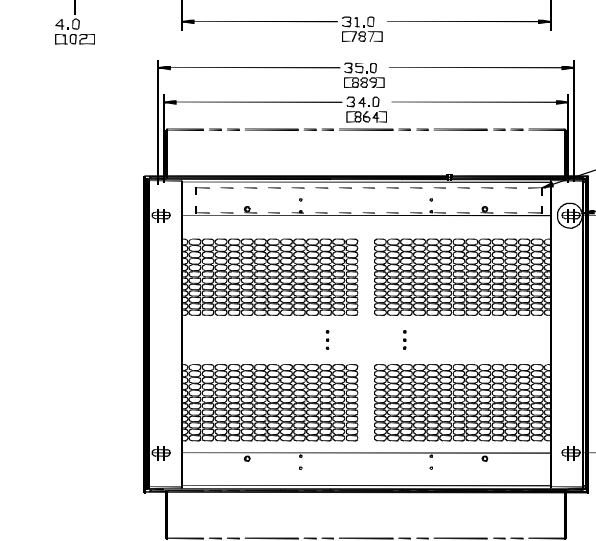
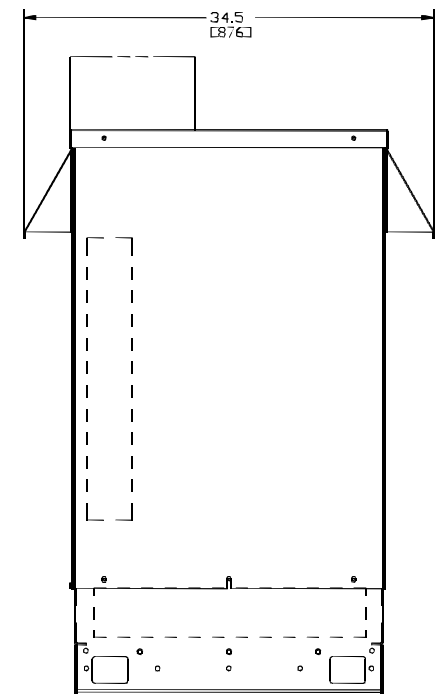
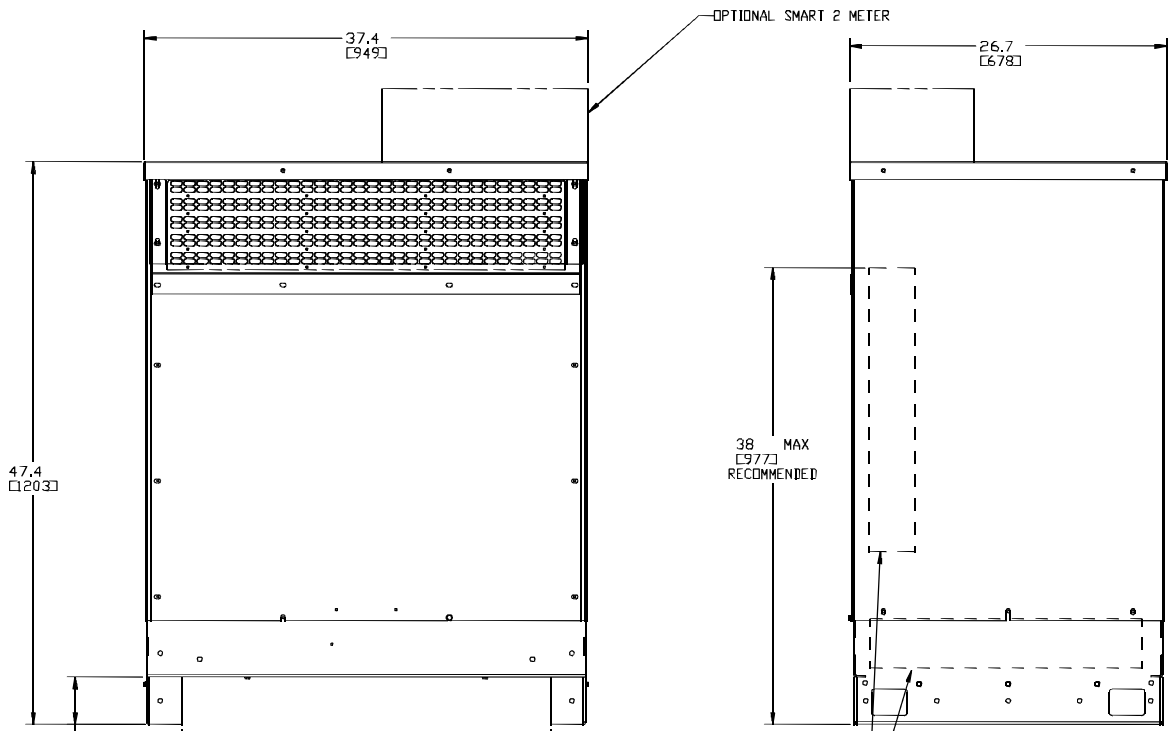
**OPAL Series Model: E-Saver-33L-150-480-208**

Prepared:	D. Faria	Date:	23-Nov-15	Part No:	<b>222-004401 -100</b>
Revised:		Date:	21-Jan-16	Doc No:	<b>222-004401 -800</b>
				Rev:	<b>A01</b>

*Note: Powersmiths International Corp. reserves the right to revise these specifications without notice; refer to most recent document revision*

**Ref. Project/Unit ID:**

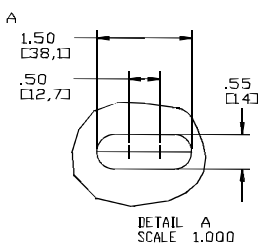
REV	ECO No.	DESCRIPTION



NWMA TYPE-1 (STANDARD)

UL/NEMA TYPE-2/3R (OPTION WHEN SPECIFIED)  
NOTE: DRIP SHIELDS INSTALLED AT SITE

CONDUIT ACCESS



UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES	BY DATE	POWERSMITHS INTERNATIONAL CORP 10 Brown Rd. Shelburne, Ontario, Canada, L4B 3B8
TOLERANCES ARE:	APPROVED BY 05-JUN-14	
1-PLACE DECIMAL	APPROVED	TITLE
2-PLACE DECIMAL	APPROVED	OUTLINE, TDO CASE
3-PLACE DECIMAL	APPROVED	
4-PLACE DECIMAL	APPROVED	
SURFACE FINISH:	APPROVED	
MATERIAL	APPROVED	
FINISH	UNLESS OTHERWISE NOTED BRUSH ALL SURFACES AND SHARP EDGES	DRAWING NO. 300-003762-800
	SCALE 0,188	REV. A00
		REF: SHEET 1 of 1

PRO/ENGINEER