

# 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>400</b>						
	Continous Overload [kVA]	440	Max. Linear Load; 1 THD < 0.05 p.u. < 30°C Amb.					
	<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 (UL Listed, E221932)   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>99.19</b> ; tested per DOE 10CFR431*, Subpart K, & CSA C802.2						
<b>Load Performance</b>	Reference levels:	(400kVA): DOE 2016: 99.08%; CSA C802.2-12: 98.65%						
	*Powersmiths exceeds DOE test requirements by guaranteeing performance of every unit							
	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> [%]		99.16	99.26	99.24	99.11	98.77	98.16
<b>General Operation</b>	Linear Load Loss <sup>+</sup> [W]	<b>420</b>	565	749	1071	1786	3715	6939
	[BTU/hr]	1433	1928	2556	3654	6094	12676	23676
	K7 Load (IEEE C57.110) <sup>+</sup> [%]		99.1	99.2	99.1	98.9	98.5	97.8
	<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> (Full Linear Load)			40 (Per ANSI C57.96.2013)			
	Regulation (full load) [%]	1.6 (Cos Φ=1.0)			4 (Cos Φ =0.8)			
	Excitation [A]	2.0 (~ Effective Current)						
<b>Abnormal</b>	Audible Noise [dBA]	57 (3 dBA less than NEMA ST-20 requirement 301-500kVA)						
	Z: +/- Sequence [%]	Z: 4.5	X: 4.3	R: 1.5	(per ANSI C57.12.91/UL1561)			
	N/A	Zo:	Xo:	Ro:	(per ANSI C57.12.91)			
<b>Enclosure Type &amp; Installation</b>	Shortcircuit Current** [A]	Symmetrical Bolted faults		Primary: 10,702		Secondary: 24,697		
	**Zero Upstream Impedance	Asymmetrical Bolted faults		L - N: 24,697		L - L: 21,389		
	Inrush x FLA /@ % Source	3 /@ 3%	6 /@ 1½%	9 /@ 0%	(per IEEE 389)			
<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	TE0: (W: 52" D: 32" H: 61"); Drawing: 300-003763-800						
	Net Weight	2515 lbs / 1143 kg						
<b>Additional Specified Attributes &amp; Options:</b> (As listed)	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>			<b>UL1561 Listed for Non-linear loads</b>			



**POWERSMITHS INTERNATIONAL CORP.**

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**OPAL Series Model: E-Saver-33L-400-480-208**

Prepared: D. Faria

Date: 25-Jan-16

Part No: 222-004410 100

Revised:

Date:

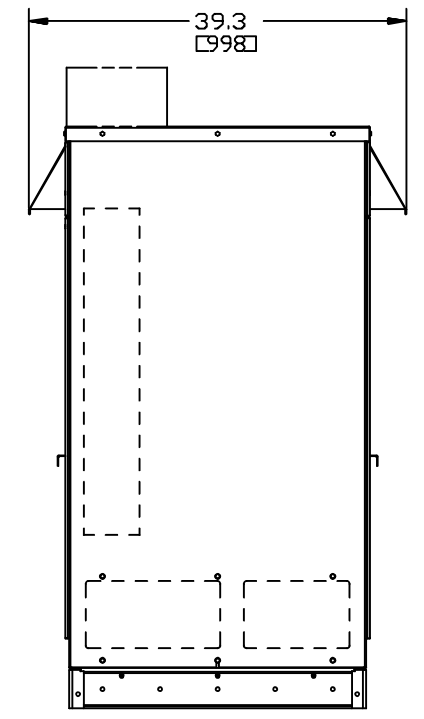
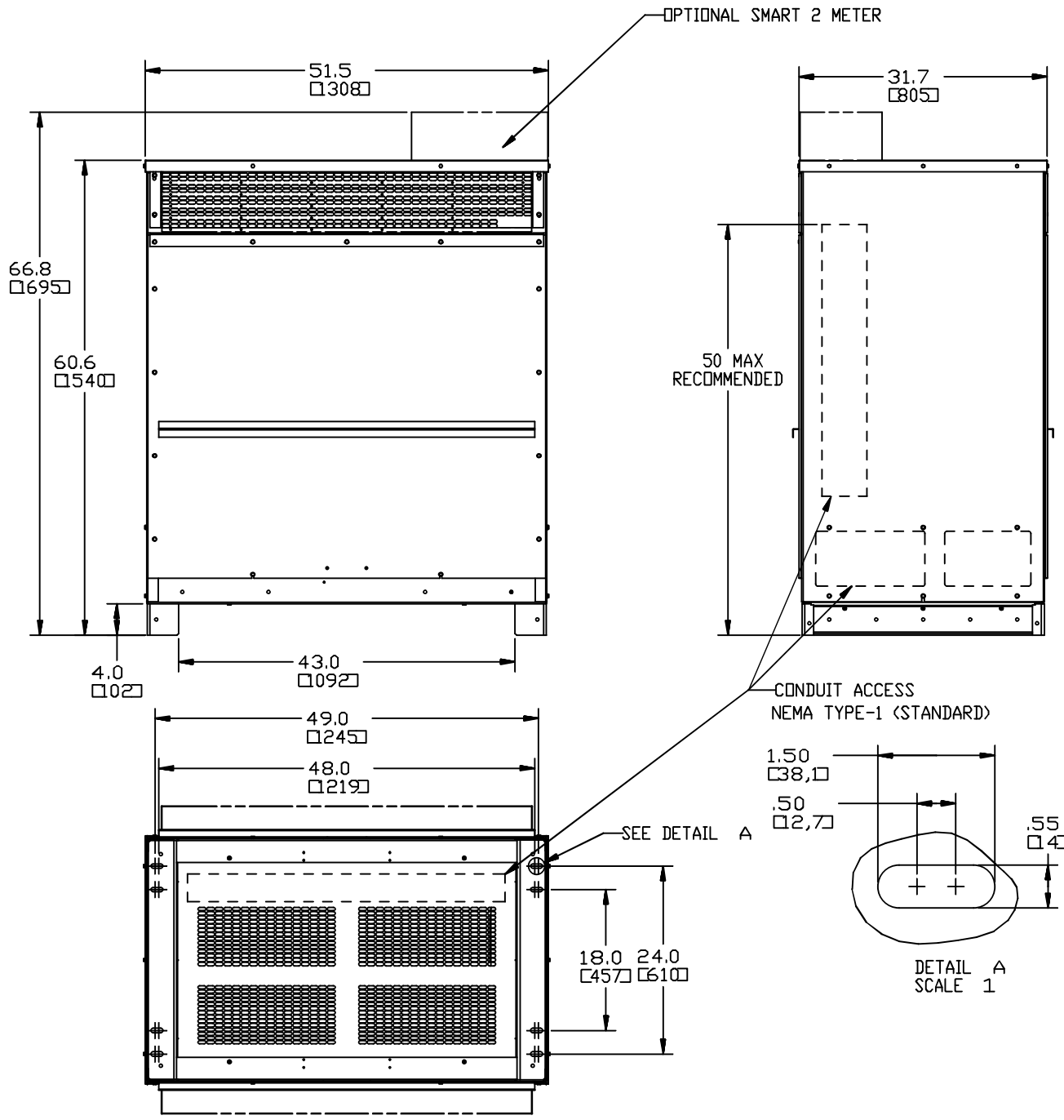
Doc No: 222-004410 -800

Rev: A00

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
A00		RELEASED
A01		UPDATED RAIN SHIELD
A02		ADDED WIDTH DIMENSION
A03		
A04		



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

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. TOLERANCES ARE: 1-PLACE DECIMAL ±.03 2-PLACE DECIMAL ±.010 3-PLACE DECIMAL ±.005 ANGULAR ±1/2° SURFACE FINISH: $\nabla$ 125 MATERIAL: FINISH: REMOVE ALL BURRS AND SHARP EDGES	BY	DATE	<b>POWERSMITHS INTERNATIONAL CORP</b> 10 Devon Rd. Brampton, Ontario, Canada, L6T 5B5 TITLE <b>OUTLINE, TE0 CASE</b> DRAWING NO. <b>300-003763-800</b> REF: SHEET 1 of 1
	APPROVED DT	08-Sep-01	
	APPROVED		
	APPROVED		
	UNLESS OTHERWISE NOTED REMOVE ALL BURRS AND SHARP EDGES	DRAWING NO.	REV.
SCALE 0.100		300-003763-800	A02

PRO/ENGINEER