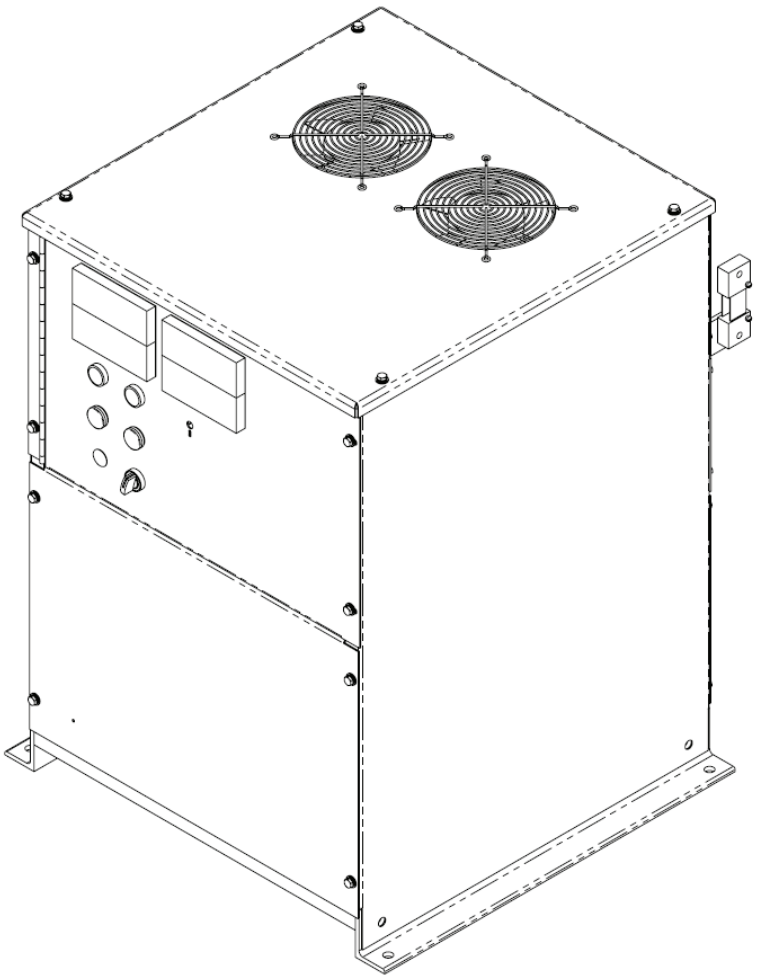
TRYSTAR

DC POWER SUPPLY

DATA SHEET

DC Power Supply

Series 30 Air / Water Cooled



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INTRODUCTION

DC Power Supply

Series 30 Air /Water Cooled

The Series 30 is a primary SCR, single transformer, DC power supply for low voltage plating/anodizing applications. It is available in air or water cooled configurations; plus NEMA 1 enclosure ratings. (Optional: NEMA 2, NEMA 3R, or NEMA 4X) The Series 30 RXPO DC Power Supply converts three-phase AC input power into tightly regulated DC output using a transformer-isolated SCR rectifier topology. Its all-copper transformer construction, robust semiconductor design, and configurable control architecture make it well-suited for continuous operation in harsh industrial environments.

Key Features

Controls: A remote operator's control panel is provided as a standard item and includes a voltmeter, ammeter, control potentiometer, volt/amp selector switch, and start/stop/power-off push buttons. Optional components may also be integrated based on configuration requirements.

Input Breaker Protection: Main input AC circuit breaker, complete with a door-interlocked safety mechanism.

Transformer: Designed for high efficiency, low inrush current, durability, and dynamic loading, the Series 30 Rectifier transformers are constructed from high-grade steel and copper to ensure high efficiency. These transformers have a low temperature rise and are mechanically and electrically designed to withstand the stress that occurs under fault conditions.

Thyristors (SCRs): Provided on the transformer primary, rated for continuous full load operation, fully synchronized, phase lock loop gating circuitry is used to control the thyristors, eliminate gate misfiring, and ensure that all phases are present before gating commences. For maximum efficiency and reliability, thyristors are conservatively rated to operate at a current level much lower than their device rating.

Diodes: Provided on the Transformer secondary for output rectification. Diodes have a minimum Peak Reverse Voltage rating of 2½ times the Peak AC voltage.

Microprocessor Based Controls: This system provides accurate repeatability and programmable features.

Constant Voltage Control - Maintains the preset output voltage within ±0.5% accuracy. The control automatically limits the DC power supply output to a safe level under excessive load conditions, ensuring protection and reliability.

Constant Current Control - This control maintains the selected output current constant to within +0.5% over a 10-100% voltage range with varying input voltages and loads. If the load is removed, the voltage will rise to a preset limited value.

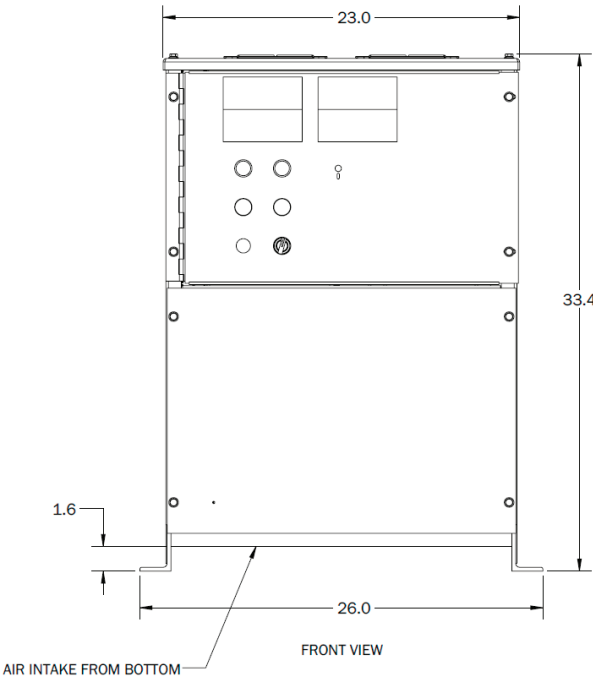
AC Current Unbalance - Continuously monitors AC phase currents for imbalance. When an abnormal condition is detected, the circuitry responds immediately by disabling the DC power supply, preventing potential equipment damage and ensuring system reliability. The circuit can attempt up to 3 automatic restarts, and then restoring it to the set level within 5 seconds if the overload clears. If the fault persists after the selected attempts, the unit shuts down. Overload threshold is fixed at 5% above rated output.

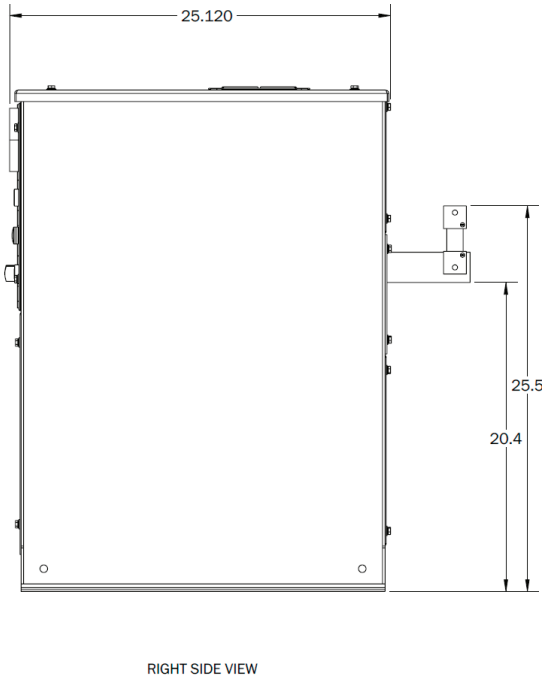
SPECIFICATIONS

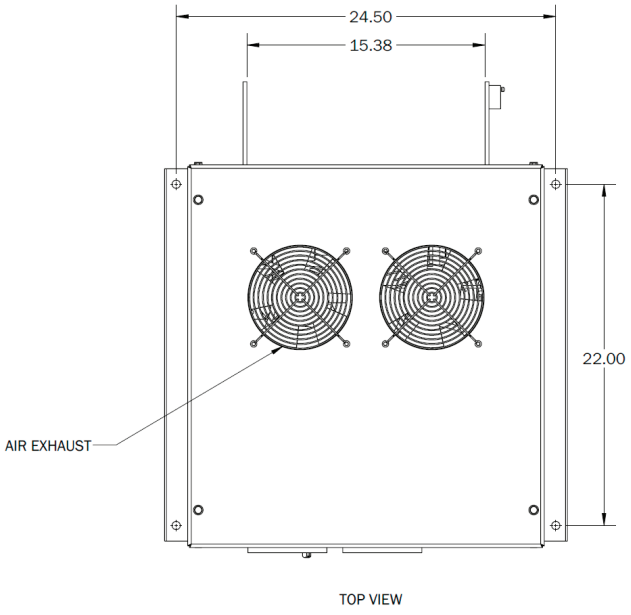
Electrical		
	Input Voltage	480V, 3-phase standard (Voltages ranging from 208 - 600VAC available)
	DC Output Voltage Range	6V - 100V
	DC Output Current Rating	500A - 10,000A
	Voltage Regulation	±0.5%
	Current Regulation	±0.5%
	Ripple (Standard)	5% RMS
	Ripple (Optional)	1% or 5% RMS (25–100% output range)
	Efficiency	85–90%
	Input Line Variation	±5% (±10% optional)
Voltage Options		
	60 Hz	Standard
	50 Hz	Optional
Environmental		
	Operating Temperature	32° to 104° F (0° to 40° C)
	Humidity Rating	95% relative humidity (non-condensing)
	Elevation3	Maximum: 5,000 ft. (1524 meters) without de-rating
	Codes/Standards	Compliant to applicable portions of the National Electric Code NFPA 70 (NEC), ANSI, NEMA
Mechanical		
	Enclosure Types	NEMA-1 (Optional: NEMA 2, NEMA 3R, or NEMA 4X)
	Air-Cooled	Forced-air cooling using high-pressure axial fans, designed for full-load operation up to 40°C ambient
	Water-Cooled	Direct water-cooled SCR and diode heat sinks
		Air-over-water heat exchanger for transformer cooling
		Solenoid-controlled water flow with leak detection

DIMENSIONAL DRAWINGS

Series 30 Power Supply (Dimensions in Inches)







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