Power Conditioning for UV Disinfection — SRT2

Product Focus

Overview

The "SRT2" is the latest version of Eaton's Sag Ride Through (SRT) products.

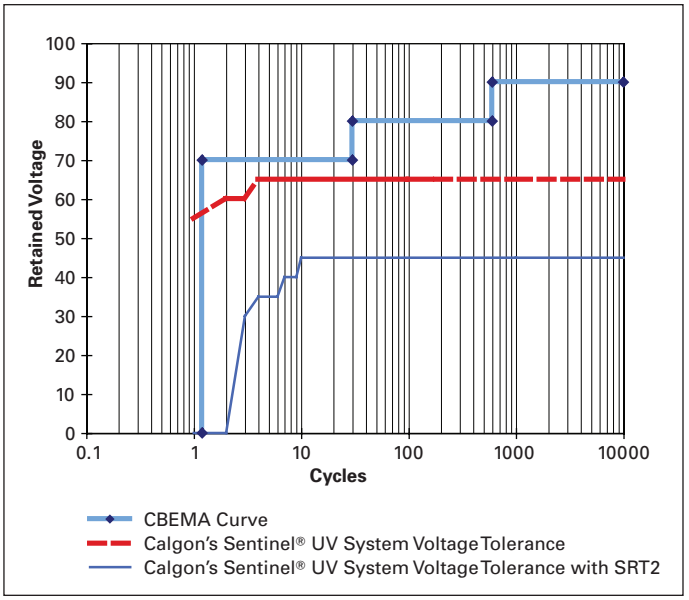
The operation of the system is specifically designed to meet the demanding requirements of municipal load protection for UV disinfection systems. Line power variability can have an impact on UV disinfection system uptime. Disinfection reliability is a function of UV equipment characteristics and line power quality.

The Sag Ride Through is an active voltage conditioner. This means it will constantly respond to voltage sags in the -10% range with a regulated output in ±1% range. The SRT2 can be applied to the main service entrance at branch locations or in front of the disinfection system.

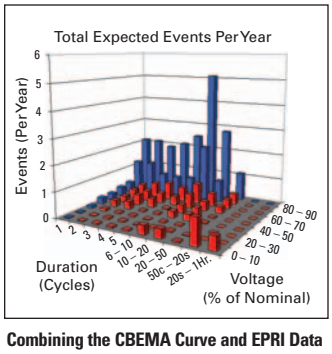
The SRT2 consists of a voltage source inverter, bypass circuit and an injection transformer connected in series between the incoming utility supply and the load.

With the Calgon's Sentinel® UV System, the SRT2 provides instantaneous compensation of a three-phase sag (up to 60%) or total loss of a single-phase, allowing the UV system to continue to effectively treat drinking water. The result is to minimize downtime due to lamp re-strike times associated with undervoltage incidents.

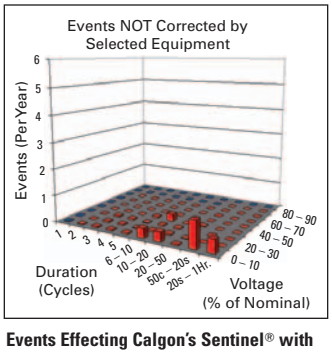
Eaton's SRT2 is the most cost-effective solution to sag and phase drop concerns. Advantages include a small footprint and zero maintenance.



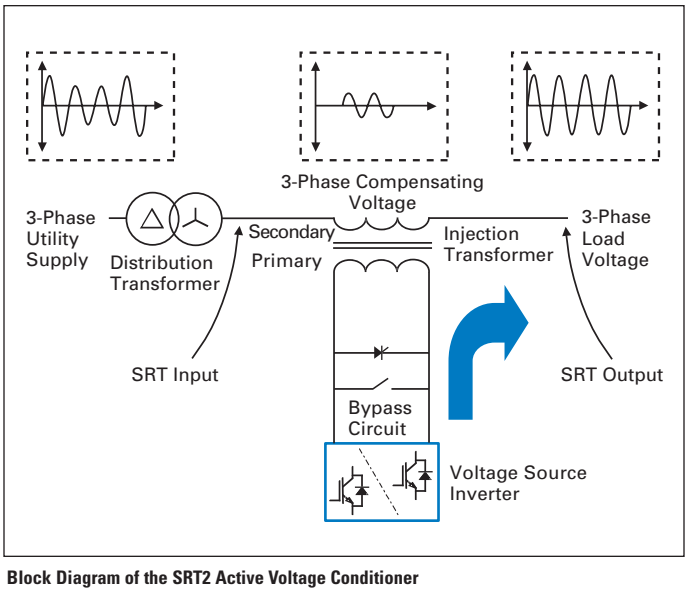
Voltage Tolerance of Calgon's Sentinel® UV System



Combining the CBEMA Curve and EPRI Data



Events Effecting Calgon's Sentinel® with SRT Protection



Block Diagram of the SRT2 Active Voltage Conditioner

Sag Correction Using the Sag Ride Through

Eaton's SRT2 Power Conditioner prevents expensive, electrical downtime. It is a state-of-the-art solution to today's power conditioning challenges.

SRT2 Features and Specifications

FEATURES	SPECIFICATIONS
Load Capacity	
Capacity	200 – 2400 kVA; to 50 MVA as custom design
Displacement Power Factor of Connected Load	0 lagging to 0.9 leading
Crest Factor for Rated kVA	2 at 100% of rated load
Overload Capacity (>90% Supply Voltage)	150%, 30 seconds, once per 500s
Input Supply	
Nominal Supply Voltage (According to Model)	480 V, 600 V, 50/60 Hz 400 V, 50 Hz (380/400/415 V) 208 V, 50/60 Hz Voltages up to 38 kV available as custom applications
Power System Type	3-phase, center ground referenced
Supply Voltage Category	Level III transient voltage capability
Fault Capacity	Refer to model tables
Required Transformer Supply Bus Bar Size Rating	<80°C operating temperature at rated load
Operating Voltage Range for Regulation and Sag Correction	
Maximum Supply Voltage	110% of nominal supply voltage
Min. 3-Phase Supply Voltage	80% without using storage
Output Supply	
Nominal Voltage (V)	Set to match nominal supply voltage
3-Phase Voltage Regulation Range	±10% continuous
3-Phase Voltage Regulation Accuracy	±2%
3-Phase Balanced Sag Correction Ability: 40% Model 30% Model	 +40% / -10% at least 10 s +30% / -10% at least 10 s
Sag Correction Accuracy (Within Specified Range)	±2%
Sag Correction Response: Initial Complete	 <250 µs <0.5 cycle
Equivalent Series Impedance (Operating)	<4% typical
Outage Response	<0.25 cycle for non-regenerating loads
Efficiency of System	0.98 to 0.99 (refer to model tables)
Bypass	
Capacity	100% model rating (kVA)
Maximum Overload Capacity (in Bypass): For 10 Minutes For 1 Minute For 1 Second For 200 Milliseconds Transfer Time: Inverter to Bypass	 125% 150% 500% 2000% <0.5 ms
Equivalent Series Impedance (in Bypass)	<2.5% typical
Interface	
Access Protocol	Ethernet connectivity; Modbus® RTU, dry contacts
Environmental	
Enclosure Rating	NEMA® 1, IP20
Pollution Degree Rating	2
Minimum Operating Temp.	0°C
Maximum Operating Temp.	40°C
Temperature Derating	Above 40°C derate at 2% per °C to a max. of 50°C
Capacity Elevation Derating	-2% every 100 m above 1000 m
Cooling: Inverter Transformer	 Forced ventilation Fan-assisted ventilation
Humidity	<95%, non-condensing
EMC Emissions	CISPR 22 level G
Noise	65 dBA
Standards	
Designed to:	UL®/CSA®; EN50178; C-Tick; CISPR22

System Capacities

MODEL NUMBER 60 HZ / 480 V / 40%	FRAME SIZE	LOAD CAPACITY AT NOMINATED VOLTAGE 480 V (KVA)	FAULT CAPACITY (KA)	SYSTEM EFFICIENCY (%)	SYSTEM DISSIPATION (WORST CASE) (KW)	AIRFLOW (M^3/MIN.)
SRTS20150480AA	0.5B	150	40	97.5	3.8	18
SRTS20225480AA	0.75B	225	40	97.5	5.2	18
SRTS20300480AA	1B	300	40	98.0	6.1	18
SRTS20450480AA	1.5B	450	40	98.2	8.0	36
SRTS20600480AA	2B	600	40	98.4	9.8	36
SRTS20750480AA	2.5B	750	40	98.4	12.2	54
SRTS20900480AA	3B	900	40	98.5	13.2	54
SRTS21200480AA	4B	1200	40	98.5	18.1	72
SRTS21500480AA	5B	1500	50	98.7	20.2	90
SRTS21800480AA	6B	1800	50	98.8	22.1	108

MODEL NUMBER 60 HZ / 480 V / 30%	FRAME SIZE	LOAD CAPACITY AT NOMINATED VOLTAGE 480 V (KVA)	FAULT CAPACITY (KA)	SYSTEM EFFICIENCY (%)	SYSTEM DISSIPATION (WORST CASE) (KW)	AIRFLOW (M^3/MIN.)
SRT20200480AA	0.5B	200	40	98.5	3.8	18
SRT20300480AA	0.75B	300	40	98.6	5.2	18
SRT20400480AA	1B	400	40	98.8	6.1	18
SRT20600480AA	1.5B	600	40	99.0	8.0	36
SRT20800480AA	2B	800	40	99.1	9.8	36
SRT21000480AA	2.5B	1000	40	99.1	12.2	54
SRT21200480AA	3B	1200	40	99.3	13.2	54
SRT21500480AA	4B	1500	40	99.2	18.1	72
SRT22000480AA	5B	2000	50	99.3	20.2	90
SRT22400480AA	6B	2400	50	99.4	22.1	108

Dimensions

MODEL NUMBER 60 HZ / 480 V / 40%	FRAME SIZE	LOAD CAPACITY 480 V (KVA)	CABINET DIMENSIONS H X W X D IN INCHES (MM)
SRTS20300480AA	1B	300	85.00 x 64.00 x 32.00 (2159.0 x 1625.6 x 812.8)
SRTS20450480AA	1.5B	450	85.00 x 64.00 x 32.00 (2159.0 x 1625.6 x 812.8)
SRTS20600480AA	2B	600	85.00 x 64.00 x 32.00 (2159.0 x 1625.6 x 812.8)
SRTS20750480AA	2.5B	750	85.00 x 96.00 x 32.00 (2159.0 x 2438.4 x 812.8)
SRTS20900480AA	3B	900	85.00 x 96.00 x 32.00 (2159.0 x 2438.4 x 812.8)
SRTS21200480AA	4B	1200	85.00 x 126.00 x 96.00 (2159.0 x 3200.4 x 2438.4)
SRTS21500480AA	5B	1500	85.00 x 126.00 x 96.00 (2159.0 x 3200.4 x 2438.4)
SRTS21800480AA	6B	1800	85.00 x 126.00 x 96.00 (2159.0 x 3200.4 x 2438.4)

MODEL NUMBER 60 HZ / 480 V / 30%	FRAME SIZE	LOAD CAPACITY 480 V (KVA)	CABINET DIMENSIONS H X W X D IN INCHES (MM)
SRT20400480AA	1B	400	85.00 x 64.00 x 32.00 (2159.0 x 1625.6 x 812.8)
SRT20600480AA	1.5B	600	85.00 x 64.00 x 32.00 (2159.0 x 1625.6 x 812.8)
SRT20800480AA	2B	800	85.00 x 64.00 x 32.00 (2159.0 x 1625.6 x 812.8)
SRT21000480AA	2.5B	1000	85.00 x 96.00 x 32.00 (2159.0 x 2438.4 x 812.8)
SRT21200480AA	3B	1200	85.00 x 96.00 x 32.00 (2159.0 x 2438.4 x 812.8)
SRT21500480AA	4B	1500	85.00 x 126.00 x 96.00 (2159.0 x 3200.4 x 2438.4)
SRT22000480AA	5B	2000	85.00 x 126.00 x 96.00 (2159.0 x 3200.4 x 2438.4)
SRT22400480AA	6B	2400	85.00 x 126.00 x 96.00 (2159.0 x 3200.4 x 2438.4)

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