



Power Conditioning — SRT2

Product Aid

**Sag Ride Through
Device for Providing
Facility Uptime**



The “SRT2” is the latest revision of Eaton’s Sag Ride Through (SRT) products.

The operation of the system is specifically designed to meet the demanding requirements of industrial load protection where the following features are particularly important:

- Extremely high electrical efficiency meaning much lower ongoing cost of ownership than traditional UPS solutions and much less needed heat dissipation from the room in which the SRT is located.
- High reliability due to the three levels of redundancy offered in the SRT design.
- High levels of fault clearing capacity (typically 20 times current short term) to allow for the discrimination of protection systems.
- Ability to cope with industrial loads such as motor drives which are high in harmonic draw and also loads that may regenerate power.

Industries & Applications Affected by Sags

Key Industries

- Semiconductor Manufacturers
- Communications
- Steel Mills
- Petroleum & Chemical Processing
- Health Care
- Paper Mills
- Automotives
- Textile
- Printing
- Plastics

Equipment or Processes

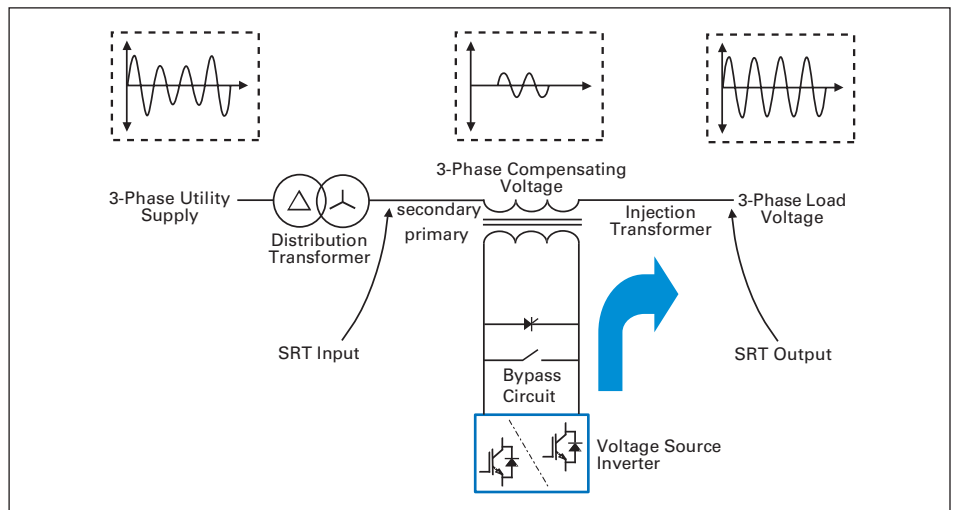
- Manufacturing Process Controllers
- Variable Speed Drives
- Robotics
- Motor Conductor
- Telephone Systems
- HID Lighting
- HVAC Controls
- Medical Equipment
- Computers

The SRT2 meets the stringent requirements of the SEMI-F47 standard; a key requirement for sag correction in the semiconductor industry.

Continuous Sag Regulation

The Sag Ride Through is an active voltage conditioner. This means it will constantly respond to voltage sags and swells in the $\pm 10\%$ range with a regulated output in the $\pm 1\%$ range. The SRT2 can be applied to the main service entrance, at branch locations or in front of critical loads. Eaton’s SRT2 provides an outstanding return on investment. It delivers operation productivity that is just not possible with traditional tap switching or ferroresonant technologies.

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 (see diagram below).



Block Diagram of the SRT2 Active Voltage Conditioner

Sag Correction Using the Sag Ride Through

The 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
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Load Capacity

Capacity	150–2400 kVA (Consult factory for 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)	480V, 600V 50/60Hz 400V 50Hz (380/400/415V) 208V 50/60Hz Voltages up to 38kV available as custom applications.
Power System Type	3 Ø, 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	100% of nominal supply voltage
Min. 3Ø Supply Voltage	80% without using storage

Output Supply

Nominal Voltage (V)	Set to match nominal supply voltage
3Ø V Regulation Range	±10% continuous
3Ø V Regulation Accuracy	±1%
3Ø Balanced Sag Correction Ability:	
- 40% Model (SRTS2)	+40% / -10% at least 30s at full load
- 30% Model (SRT2)	+30% / -10% at least 30s at full load
Sag Correction Accuracy (within specified range)	±2.5%
Sag Correction Response:	
- Initial	<250µs
- Complete	<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	125%
- For 1 Minute	150%
- For 1 Second	500%
- For 200 Milliseconds	2000%
Transfer Time:	
- Inverter to Bypass	<0.5 ms
Equivalent Series Impedance (in Bypass)	<2.5% typical

Interface

Access Protocol	Ethernet connectivity; Modbus-RTU, dry contacts
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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 100m above 1000m
Cooling:	
- Inverter	Forced ventilation
- Transformer	Fan assisted ventilation
Humidity	<95%, non-condensing
EMC Emissions	CISPR 22 level G
Noise	65dBA
Warranty	1 year

Standards

Designed To	UL/CSA; EN50178; C-Tick; CISPR22
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System Capacities

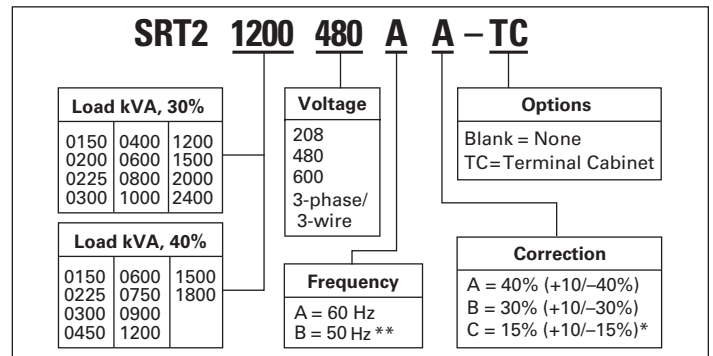
Model Number 40% Correction	Load Capacity at Normal Voltage 480V (kVA)	Fault Capacity (kVA)	System Efficiency (%)	System Dissipation (worst case) (kW)	Airflow (m³/min)
SRT20150480AA	150	40	97.5	3.8	18
SRT20225480AA	225	40	97.7	5.2	18
SRT20300480AA	300	40	98.0	6.1	18
SRT20450480AA	450	40	98.2	8.0	36
SRT20600480AA	600	40	98.4	9.8	36
SRT20750480AA	750	40	98.4	12.2	54
SRT20900480AA	900	40	98.5	13.2	54
SRT21200480AA	1200	40	98.5	18.1	72
SRT21500480AA	1500	50	98.7	20.2	90
SRT21800480AA	1800	50	98.8	22.1	108

Model Number 30% Correction	Load Capacity at Normal Voltage 480V (kVA)	Fault Capacity (kVA)	System Efficiency (%)	System Dissipation (worst case) (kW)	Airflow (m³/min)
SRT20150480AB	150	40	98.5	2.85	18
SRT20200480AB	200	40	98.5	3.80	18
SRT20225480AB	225	40	98.6	4.30	18
SRT20300480AB	300	40	98.6	5.20	18
SRT20400480AB	400	40	98.8	6.10	18
SRT20600480AB	600	40	99.0	8.00	36
SRT20800480AB	800	40	99.1	9.80	36
SRT21000480AB	1000	40	99.1	12.20	54
SRT21200480AB	1200	40	99.3	13.20	54
SRT21500480AB	1500	40	99.2	18.10	72
SRT22000480AB	2000	50	99.3	20.20	90
SRT22400480AB	2400	50	99.4	22.10	108

Dimensions

Model Number 40% Correction	Cabinet Dimensions H.W.D. (inches)	Model Number 30% Correction	Cabinet Dimensions H.W.D. (inches)
SRT20150480AA	85.64.32	SRT20150480AB	85.64.32
SRT20225480AA	85.64.32	SRT20200480AB	85.64.32
SRT20300480AA	85.64.32	SRT20225480AB	85.64.32
SRT20450480AA	85.64.32	SRT20300480AB	85.64.32
SRT20600480AA	85.64.32	SRT20400480AB	85.64.32
SRT20750480AA	85.96.32	SRT20600480AB	85.64.32
SRT20900480AA	85.96.32	SRT20800480AB	85.64.32
SRT21200480AA	85.126.96	SRT21000480AB	85.96.32
SRT21500480AA	85.126.96	SRT21200480AB	85.96.32
SRT21800480AA	85.126.96	SRT21500480AB	85.126.96
		SRT22000480AB	85.126.96
		SRT22400480AB	85.126.96

Ordering Guidelines



* For 15% Correction, consult factory.

** For 50 Hz international applications, consult factory.

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 Printed in USA
 Pub. No. PA01002003E
 September 2007