

# Single and Three Phase Static Inverters for Nuclear Plants



- ◆ High reliability, Ferroresonant Design
- ◆ Field proven, Fail-Safe Static Switch
- ◆ 40 year Qualified Design Life Available
- ◆ Seismic Grade cabinets and packaging to meet most seismic levels
- ◆ Qualified to your facility requirements
- ◆ Integral and Stand Alone patented Zero-Break Static Switch
- ◆ Integral or stand alone, make-before-break, manually operated maintenance Bypass Switch
- ◆ True KVA/KW rating 20KVA/20KW
- ◆ Available with Rectifier & Bypass Options

Solidstate Controls, Inc. (SCI) has designed manufactured and maintained hundreds of safety related, (1E) and non-safety related, yet essential, inverters in Nuclear Generating Facilities around the world. Designing and manufacturing solutions for Nuclear Plants has been a major focus of SCI for over 35 years.

Solidstate's Safety Class Inverters are true on-line ferroresonant transformer-based designs intended for use in UPS systems or in stand-alone applications. The inverter's basic function is to convert DC power from a rectifier/charger or battery to an extremely accurate regulated AC output for powering safety and non-safety loads.

Designed and engineered around your specific facility requirements to meet all the mild environment, seismic, and physical needs demanded by today's standards.

SV Series-Single Phase						
Model	DC		Cabinet* Style	Weight		
	kVA	kw		Bus	Lbs.	Kg.
85-VC0030-XX	3	3	130 & 260	A	525	238
85-VC0050-XX	5	5	130 & 260	A	1000	454
85-VC0075-XX	7.5	7.5	130 & 260	A	1250	567
5-VC0100-XX	10	10	130 & 260	A	1400	635
85-VC0150-XX	15	15	130 & 260	G	1825	828
85-VC0200-XX	20	20	130 & 260	G	2425	1100
85-VC0250-XX	25	25	130 & 260	H	2625	1190
85-VC0300-XX	30	30	130 & 260	H	2825	1281
85-VC0400-XX	40	40	130 & 260	GH	3925	1780
85-VC0500-XX	50	50	130 & 260	GH	4675	2120
85-VC0600-XX	60	60	130 & 260	GH	5350	2427
85-VC0750-XX	75	75	260	GH	7300	3311
85-VC1000-XX	100	100	260	GHH	8625	3912

SV Series-Three Phase						
Model	DC		Cabinet* Style	Weight		
	kVA	kw		Bus	Lbs.	Kg.
86-VC0100-XX	10	10	130 & 260	B	1700	771
86-VC0150-XX	15	15	130 & 260	G	2500	1134
86-VC0200-XX	20	20	130 & 260	H	3250	1474
86-VC0250-XX	25	25	130 & 260	H	3350	1519
86-VC0300-XX	30	30	130 & 260	GH	3450	1565
86-VC0400-XX	40	40	130 & 260	GH	4525	2052
86-VC0500-XX	50	50	130 & 260	HH	5125	2325
86-VC0600-XX	60	60	130 & 260	HH	5650	2563
86-VC0750-XX	75	75	130 & 260	GHH	7575	3436
86-VC0100-XX	100	100	260	GHH	9075	4116
86-VC0150-XX	150	150	260	GHHH	12450	5647

\*Cabinet Dimensions subject to change based on optional selections

Cabinet Dimensions -Typical Dimensions; Consult Factory for custom enclosures										
Style	inches					mm				
	H	x	W	x	D	H	x	W	x	D
A	78	x	29	x	36	1981	x	737	x	914
B	78	x	56	x	36	1981	x	1422	x	914
G	85	x	29	x	36	2159	x	737	x	914
H	85	x	56	x	36	2159	x	1422	x	914

## GENERAL SPECIFICATIONS

### INVERTER

#### DC Input (nominal):

- 3-60kVA; 48 (3-7.5kVA), 110, 125, 135, 220, 250, 260
- 75-50 kVA; 220, 250, 260, other input voltages available

#### Nominal AC Output Voltage:

- Single phase models: 110 VAC, 120 VAC, 220 VAC, 240 VAC 120/240, 110/220
- Three phase models: 120/208 VAC, 220/380 VAC, 277/480 VAC four or five wire
- Other single and three phase voltages available for 50 & 60 HZ

#### AC Output Voltage Regulation:

±2% of nominal for all conditions of input line and output load variation, 0.8 to 1.0 power factor.

#### Voltage Unbalance, Three-Phase Systems:

For balanced loads the voltage unbalance will be less than ±2%; for 100% load unbalance the output voltage will be balanced to within ±5%.

#### Output Frequency:

60 Hz ± 1/2 % over full range of input voltage, temperature, and load; 50 Hz available.

#### Wave Form:

Sine wave with less than 5% RMS, total harmonic content.

#### Efficiency:

78-88% at full load 7.5 kVA and up  
70-80% below 5 kVA at full load and on 48 VDC units.

#### Overload:

120% continuous at nominal input.

#### Ambient Temperature Range:

-10° to + 40°C, convection and forced air cooled. (On some models, or for higher temperatures, convection may be aided by low velocity fans not requiring filters.) Humidity to 95% relative.

**Note:** 50°C designs available .....contact the factory

#### Instrumentation:

AC output voltmeter, AC output ammeter, frequency meter. On three phase units, each output phase voltage and current is metered.

#### Circuit Protection:

Circuit breakers and/or fuses. Output current limited.

#### Transient Protection:

Input filtered to withstand transients of 4000 volts for 10 microseconds with 40 ohms or greater transient source impedance.

#### Construction:

Nema-1 (IP-20 and 1E): Seismic Grade

#### Accessories: (sample)

- \* Rectifier panels.
- \* Transfer switches.
- \* Low DC alarm relay.
- \* Battery in operation relay.
- \* Line synchronization circuit.
- \* Reverse polarity light for DC input.
- \* Low DC disconnect.
- \* Specialized metering, alarms, and controls, to meet your needs
- \* Standard LED indicators

#### Custom Capabilities:

- \* Modular Packaging and custom cabinetry for Limited Installation Access
- \* Multiple Alarm Capabilities
- \* Mimic Panels
- \* Additional Options.....contact the Factory

### STATIC SWITCH

#### Power Sizes:

Same kVA range as SCI single and three phase inverters.

#### Transfer Time:

Zero-break (make-before-break).

#### Transfer Initiation:

- \* Inverter failure.\*
- \* Overcurrent (continuously adjustable).\*
- \* Inverter output voltage failure\*
- \* Manual push-button.
- \* auto retransfer available

#### Retransfer:

Initiated by manual push-button/automatic on 3 of 4 initiations\*

#### Transfer Inhibit:

- \* Manual transfer of load from the inverter to the alternate source, or vice versa, is inhibited when the inverter frequency is not synchronized to the alternate source.
  - \* Transfer resulting from inverter overload is inhibited when the alternate source is not available.
- Automatic retransfer can be disabled

#### Indicators:

Pilot lamps to indicate which source is supplying load.

#### Overload Capability:

125% continuous; 400% 1/2 cycle

#### Protection:

Circuit breaker on alternate source, current-limiting fuses to inverter

#### Fail-Safe:

Malfunction of switch will not interrupt power to the load.

#### Ambient Temperature Range:

-10° to + 40°C, convection & forced air cooled, 0-95% relative humidity. 50° C designs available...contact the factory

#### Mounting:

In inverter cabinet, or optional separate wall-mount or floor cabinet.

### BYPASS SWITCH:

#### Power Sizes:

Same kVA range as SCI single and three phase inverters (single, two or three pole).

#### Voltage Rating:

Compatible with system voltages up to 600 VAC.

#### Transfer Time:

Make-before-break types require inverter synchronized with alternate source. Break-before-make types have a maximum interruption of 16 milliseconds.

#### Transfer/Retransfer Initiation:

Hand-operated.

#### Overload Capacity:

125% continuous.

#### Protection:

Optional circuit breaker on alternate source.

#### Ambient Temperature Range:

-0°C to 40°C (50°C optional)

#### Mounting:

In inverter cabinet; optional wall mounting.

#### Switch Positions:

1. Normal operation
2. Alternate source to load

Additional switch positions available for complete UPS isolation including synchronizing input.

Specifications subject to change without notice

# AMETEK®

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