STATIC TRANSFER SWITCHES

SS, SSN, SST, SSTN SERIES

MEDCOM

AC & DC POWER SOLUTIONS
TRACTION CONVERTERS

APPLICATION

Static Transfer Switches (STS) are designed to transfer supply between independent one-phase or three-phase AC power sources. Unlike traditional automatic transfer switches (ATS), STS provides 20 times faster load transfer (typically 1/4 of a cycle), which ensures the uninterrupted operation of even the most sensitive electronic equipment. Load retransfer to a preferred input source is virtually instantaneous (typically 100 µs). The basic applications of STS are in automatic systems for power industry, power supply systems for petrochemical industry, computer and telecommunication centres, operating theatres, intensive care units, automatic and security systems of 'intelligent' buildings as well as other equipment which is highly sensitive on supply interruption.
It's high overload capacity and transfer algorithm enables rapid fuse blow during short-circuits. In consequence voltage immediately returns to normal value to supply other loads. The built-in transient voltage surge suppression system for SCR switches provides additional protection against damage to supplied devices.

DEVICE NAME	
SS	1-phase 1-pole static transfer switch
SSN	1-phase 2-poles static transfer switch
SST	3-phases 3-poles static transfer switch
SSTN	3-phases 4-poles static transfer switch

Static Transfer Switch SSTN400AC400

STANDARD FEATURES

- Ability to create systems with redundancy (switching between independent electrical supply lines, various UPS devices and generators)
- Short transfer time (typically 3 ms after line failure)
- Elimination of voltage swells, sags and interruptions on loads (switch-over)
- Protection against voltage variations out off range
- Switches are controlled by Fail-Safe CMOS Logic
- Internal redundancy for power supply systems and SCR drivers (eliminating failures in single points)
- Easy to operate
- Easy to install
- Lowest MTTR (mean time to repair)
- Low installation and maintenance costs
- Bypass switches to provide continuous non-break operation during STS maintenance
- Remote switching of power sources
- Status indication for power supply system and STS

Options

- RS485 communications interface
- Measurements in A, V, kW and kVar

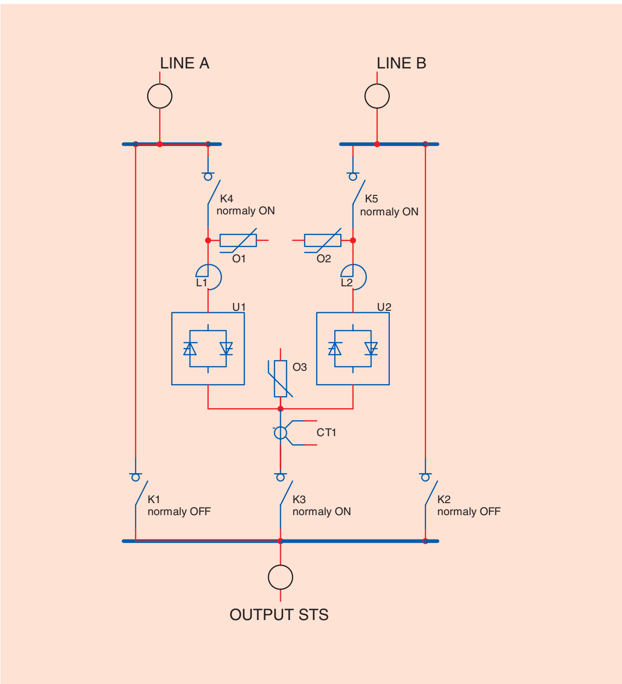


Fig. 1. Single line diagram of STS with maintenance bypasses.

2002: Gold Medal at the 74th Poznań International Fair for the Static Transfer Switches series SS, SSN, SST, SSTN.

The quality system has an ISO9001:2000 certificate, which covers research and development, design, production and servicing of industrial electronic products.

AC & DC POWER SOLUTIONS
TRACTION CONVERTERS

STANDARDS APPLIED

Standards	Description
European standards	
EN 50178	Electronic Equipment for Use in Power Installations.
IEC 60146-1-2	General Requirements and Line Commutated Converters.
IEC 60529	Degrees of Protection Provided by Enclosures (IP Code).
EN 50091-2	Electromagnetic Compatibility Requirements.
EN 55022	Limits and methods of radio disturbanse charakteristics of information technology equipment (CISPR 22:1993).
EN 60555-2	Disturbances in supply systems caused by household appliances and similar electrical equipment- Part 2: Harmonics.
EN 60555-3	Disturbances in supply systems caused by household appliances and similar electrical equipment- Part 3: Voltage fluctuations.
PN-IEC 146-5	Switches for Uninterrupted Power Systems.
Canadian standards, C22.2 Series	
0-M1991 (R1997)	General Requirements Can. El. Code P.II.
0.4-M1982 (R1993)	Bonding and Grounding of Electrical Equipment.
0.12-M1985 (R1992)	Wiring Space and Wire Bending Space.
14-1995	Industrial Control Equipment.
107.1-95	Commercial and Industrial Power Supply Equipment.
CSA Publication SPE-1000-94	Model Code for the Field Evaluation of Electrical Equipment.

BLOCK DIAGRAMS

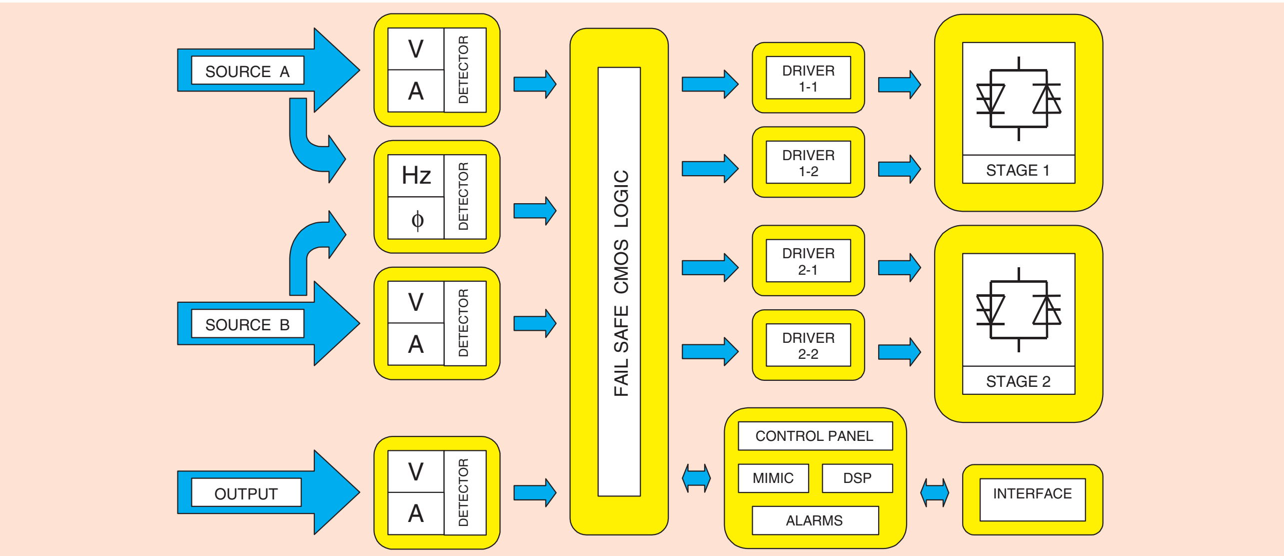


Fig. 2. Block diagram of STS control unit.

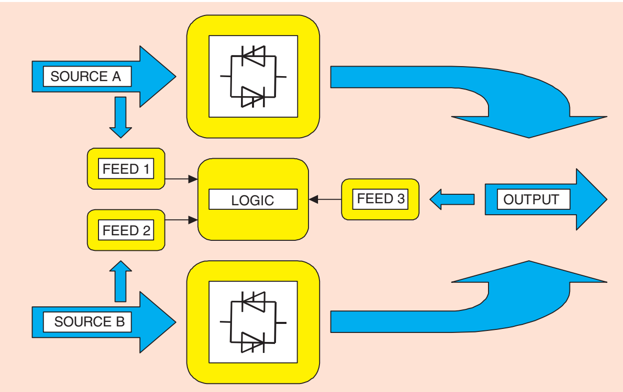


Fig. 3. Internal supply redundancy system concept.

STATIC TRANSFER SWITCHES

SCHEMATIC DIAGRAMS

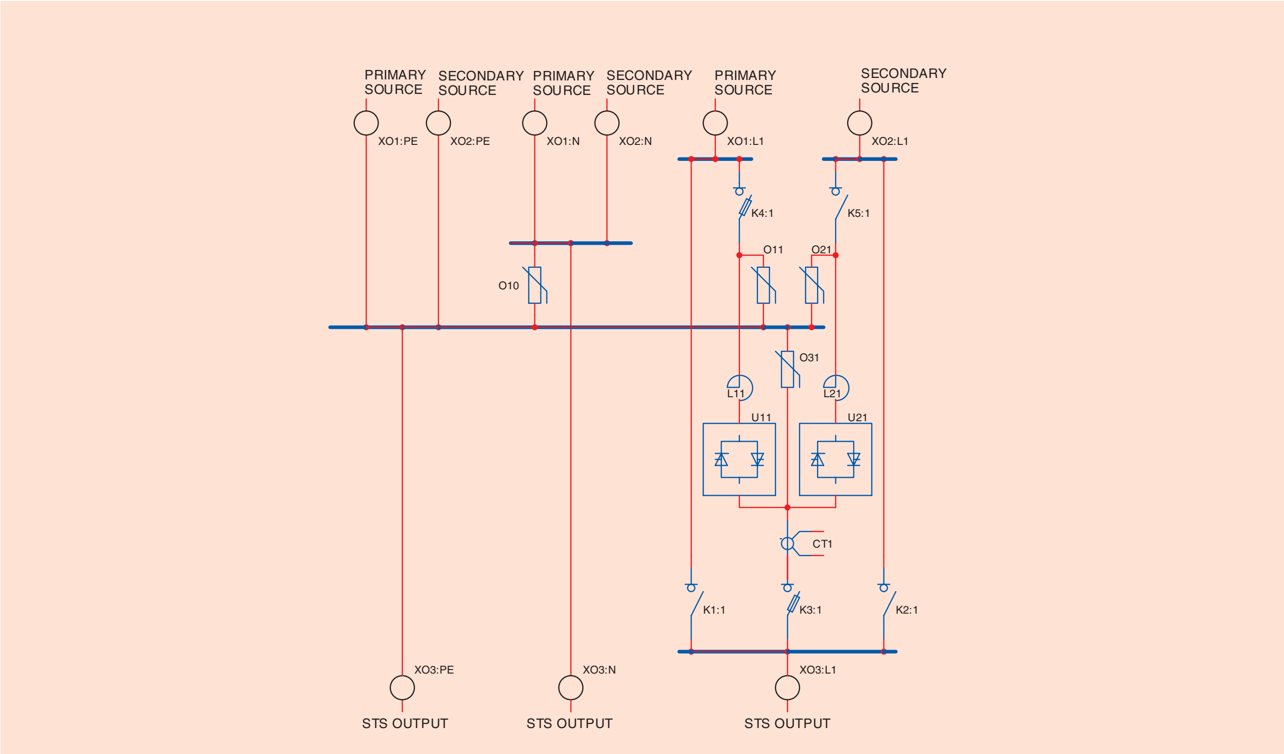


Fig. 4. Power stage circuit of 1-phase 1-pole switch SS.

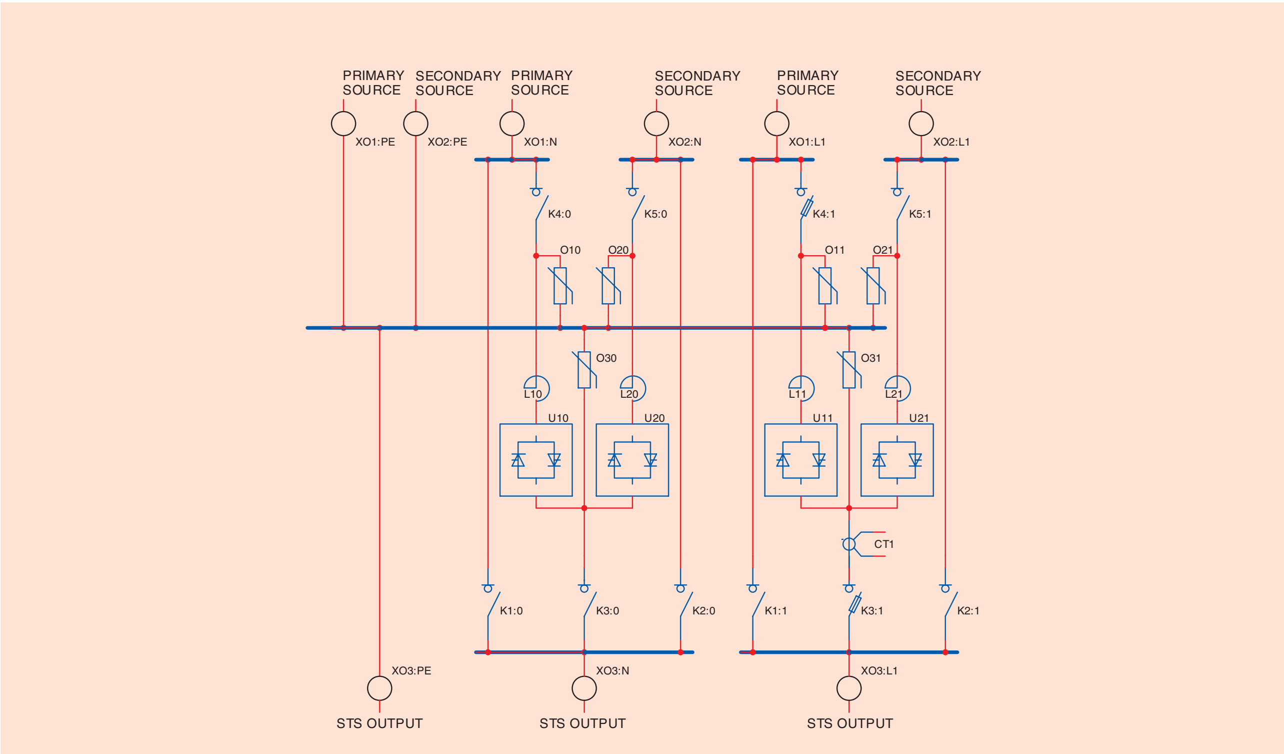


Fig. 5. Power stage circuit of 1-phase 2-poles switch SSN.

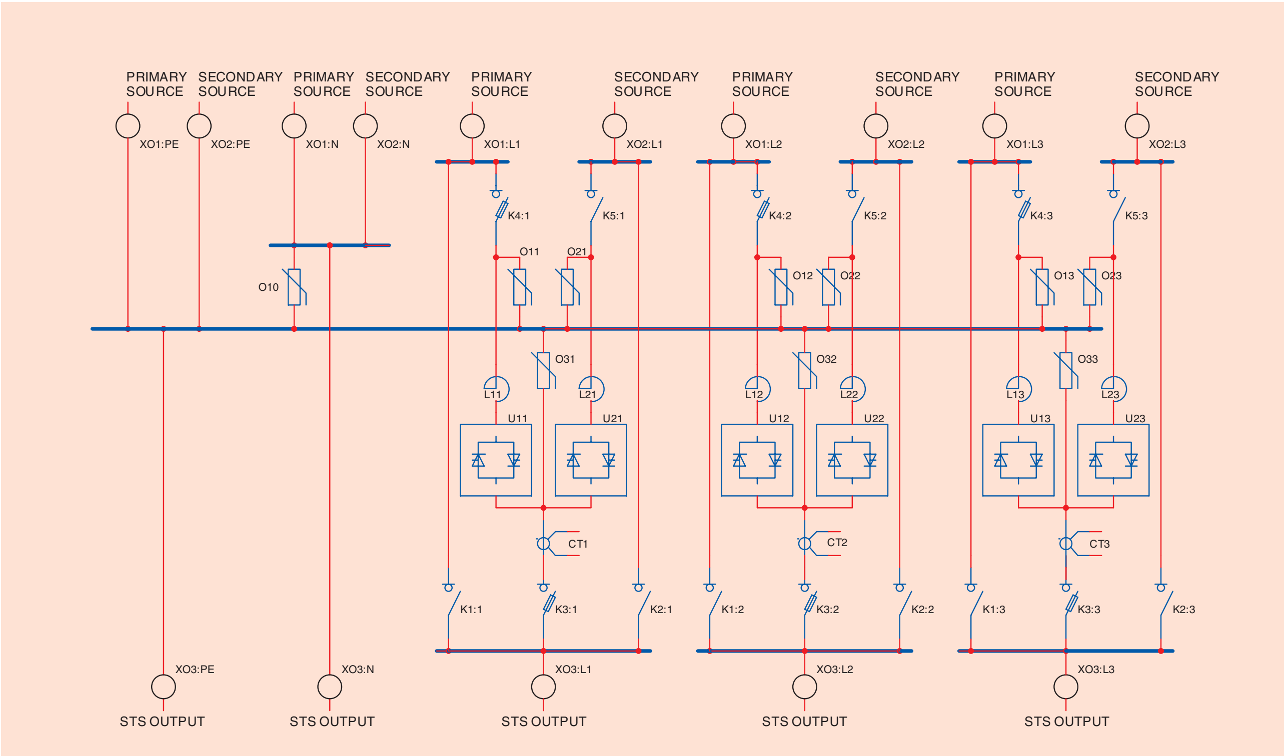


Fig. 6. Power stage circuit of 3-phases 3-poles switch SST.

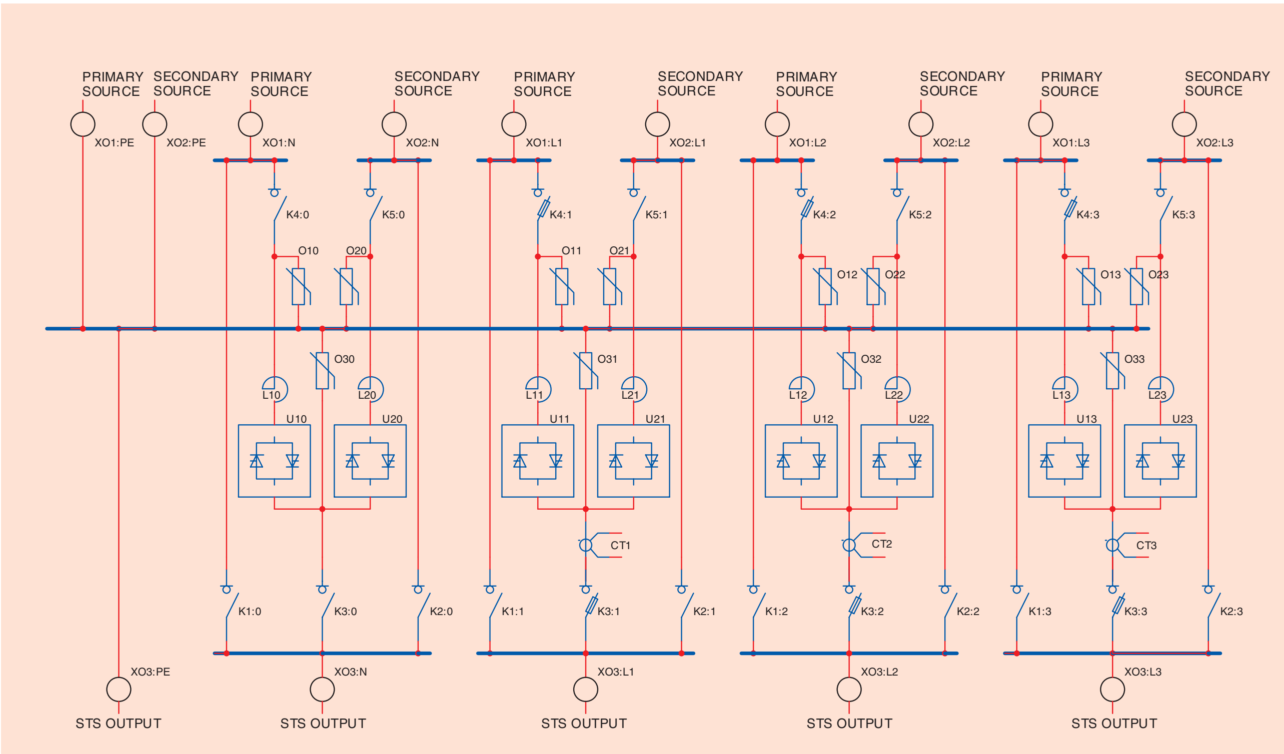


Fig. 7. Power stage circuit of 3-phases 4-poles switch SSTN.

PRINCIPLE OF OPERATION

The SS (1-phase 1-pole) Static Transfer Switch consists of two bidirectional thyristor switches equipped with control and protection system. The SSN (1-phase 2-poles) switch has an additional neutral line switch. Control system is based on the fail-safe CMOS logic. Input source and output line are protected by transient voltage surge suppression varistors.
After failure of preferred source, STS checks the state of the alternate power source and transfers load to the source that provides better quality power.
Many modes of operation and many additional settings are provided to meet site-specific requirements.

Transfer may be triggered by:
- Disturbance of preferred source voltage
- Overcurrent in source
- Manual change of preferred source
- Remote change of preferred source

Transfer is not allowed in the event of:
- Incorrect voltage in the alternate source
- Excess output current (in load dedicated STS installation)

Transfer is delayed in the event of:
- No synchronization between preferred and alternate source
- Exceeding of the phase shift limit between the two sources.

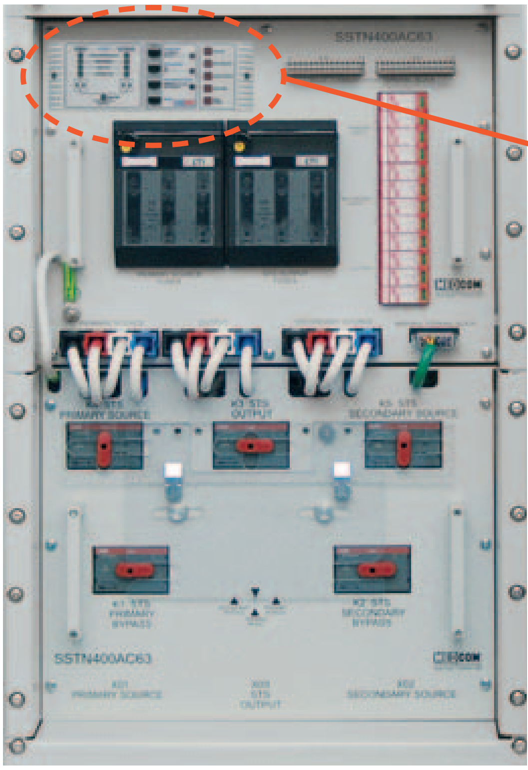
With both sources correct and synchronised (phase error within the acceptable range), manual or remote transfer is performed in less than 200 µs. Transfers initiated by fault conditions on the preferred source depend on the status of the alternate source. For synchronised power sources with phase error within the limits, switching to an alternate source is obtained within 6 ms delay. Lack of synchronisation causes delay before transfer. It is possible to set delay time with dipswitches (11 ms, 15 ms, 23 ms or 48 ms). Total transfer time is equal to the sum of 2 ms detection time and the alternate source thyristor delay time (so 13, 17, 25 or 50 ms respectively).

The SST (3-phases 3-poles) Static Transfer Switch consists of a set of three 1-phase switches. The SSTN (3-phases 4-poles) Switch has an additional neutral line switch. For both switches, load capacity of neutral line is rated to 200% of phase line load capacity.
Internal mechanical bypasses enable correct servicing. Transfer for maintenance mode is performed without interrupting the load with delay (less than 200 µs). As an option, a maintenance bypass may be equipped with mechanical interlocks to avoid short circuit during manipulation.

Internal redundancy for power supply systems and for cooling systems, with internal system monitoring ensure extremely high reliability of the STS.

DESIGN

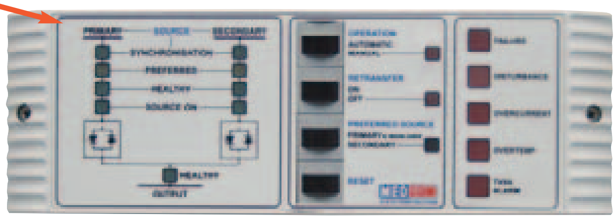
Static Transfer Switch SSN230AC63



Static Transfer Switch SSTN400AC63 rack

CONTROL PANEL

All products are equipped with LED indicators and control panel. Optionally, measurement panel may be added to control panel.



Control panel view.

Static Transfer Switches are designed for operation in three modes:

PREFERRED SOURCE MODE – selected preferred source supplies the load. The load is transferred to the other source if measured voltage of the preferred source is exceeding beyond acceptable range (if disturbances appear).

AUTOMATIC RETRANSFERRING MODE – after transferring triggered by disturbances in the preferred line, the load is transferred to the preferred line again with delay which is set by dipswithes (if preferred line is healthy).

MANUAL MODE – connections are set manually (not automatically).

INSTALLATION

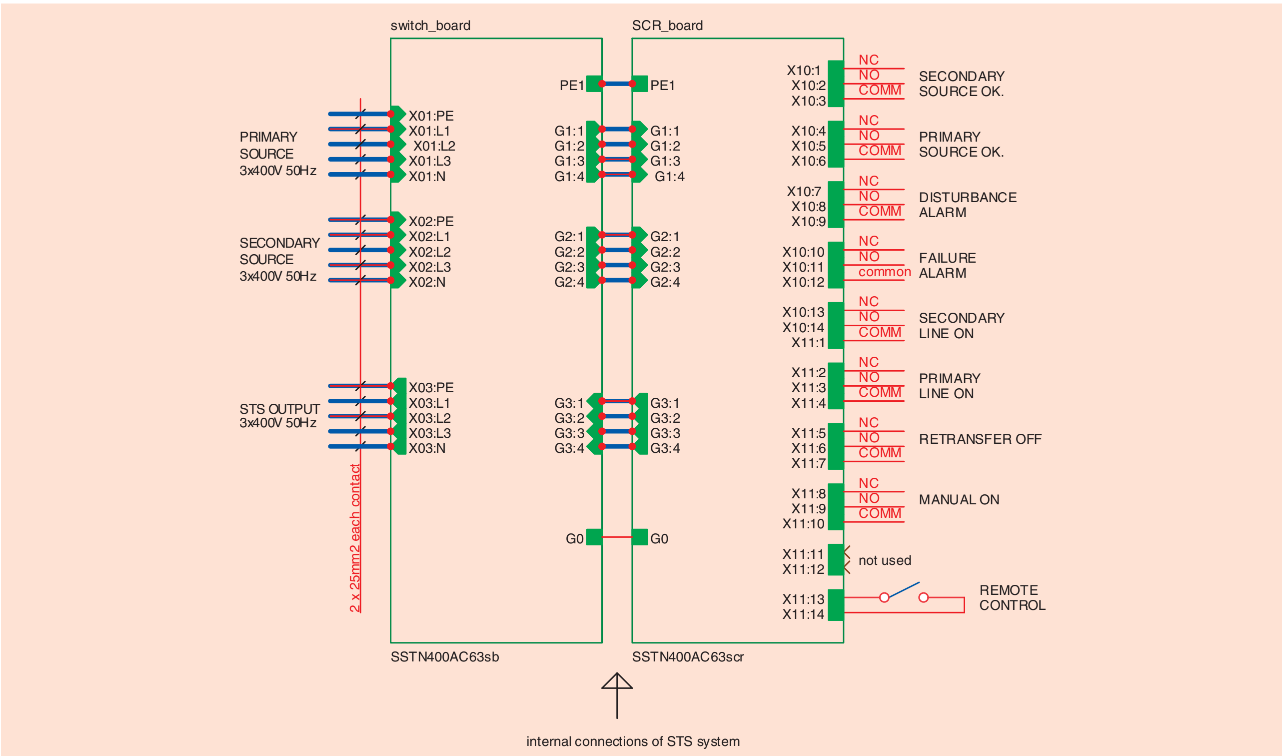


Fig. 8. An example of a SSTN400AC63 rack installation diagram. NC - Normally close, NO - Normally open.

OSCILLOGRAMS

OUTPUT VOLTAGE

PRIMARY SOURCE CURRENT

SECONDARY SOURCE CURRENT

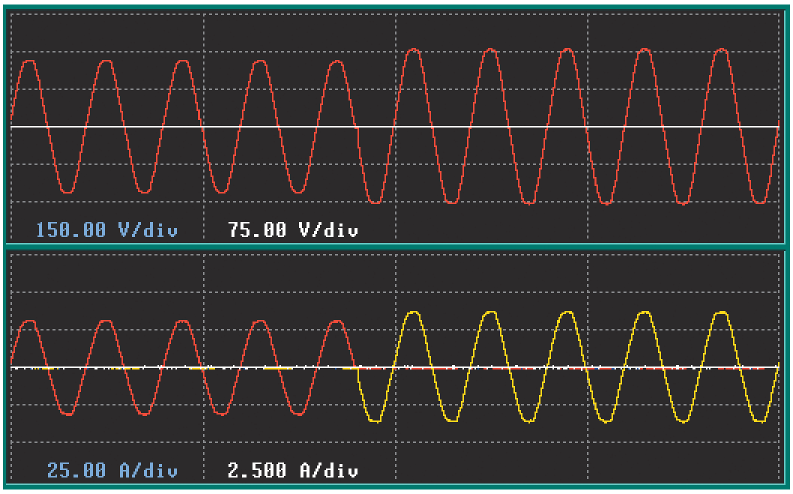


Fig. 9. SS transfer to redundant power source initiated by change of preferred input source.

OUTPUT VOLTAGE

PRIMARY SOURCE CURRENT

SECONDARY SOURCE CURRENT

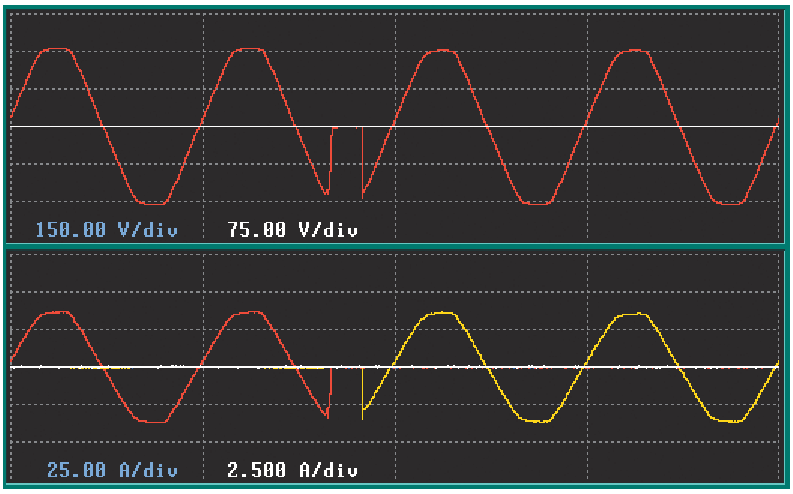


Fig. 10. SS transfer to redundant power source caused by power interruption on preferred input source.

OUTPUT VOLTAGE

PRIMARY SOURCE CURRENT

SECONDARY SOURCE CURRENT

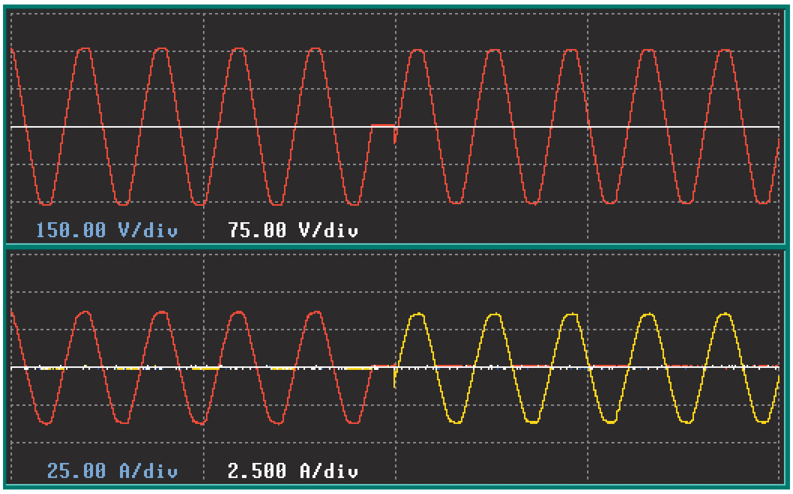


Fig. 11. SS transfer to redundant power source – unsynchronised lines.

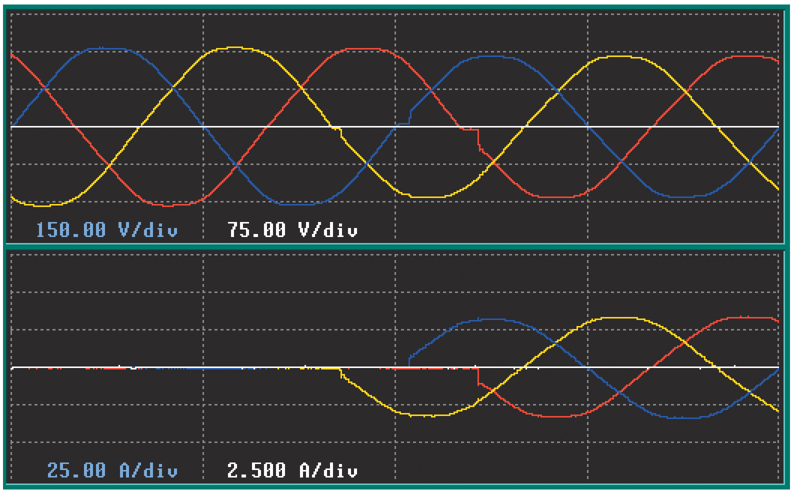


Fig. 12. SST transfer to redundant power source initiated by change of preferred input source.

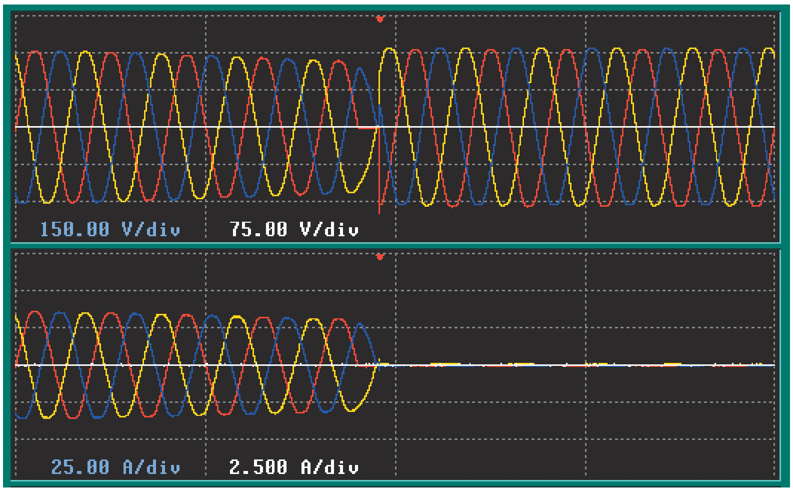


Fig. 13. SSTN transfer to redundant power source caused by power sag on preferred input source.

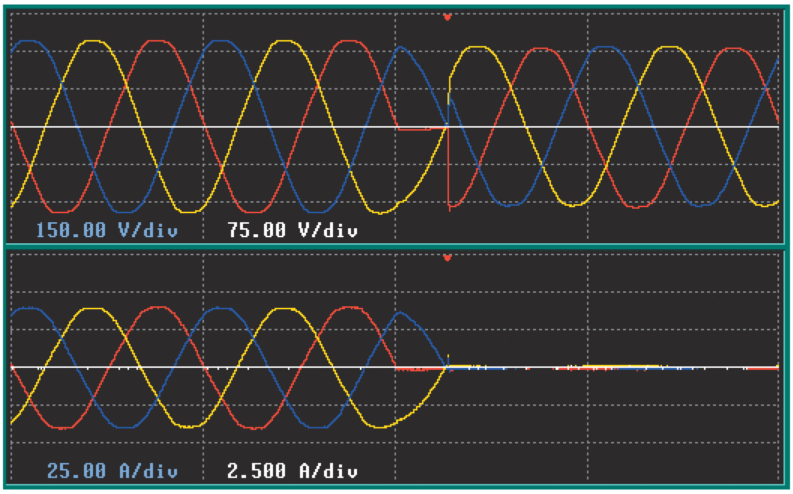


Fig. 14. SSTN transfer to redundant power source caused by power swell on preferred input source.

OUTPUT VOLTAGES

PRIMARY SOURCE CURRENTS

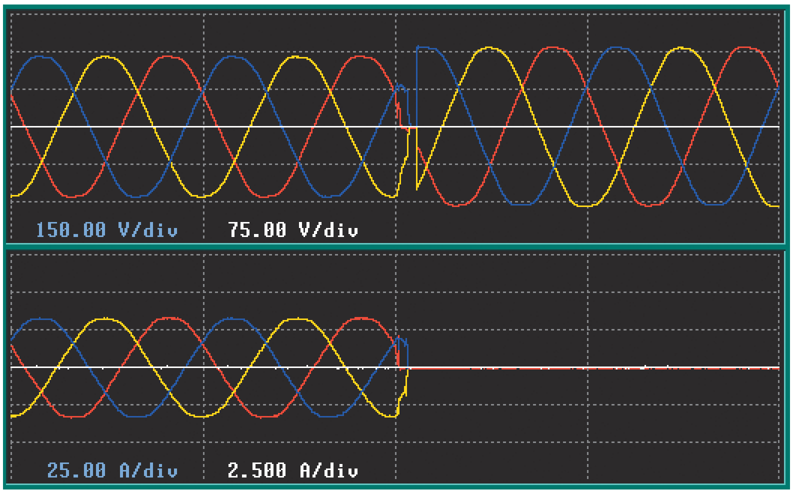


Fig. 15. SSTN transfer to redundant power source initiated by power interruption on preferred input source.

OUTPUT VOLTAGES

SECONDARY SOURCE CURRENTS

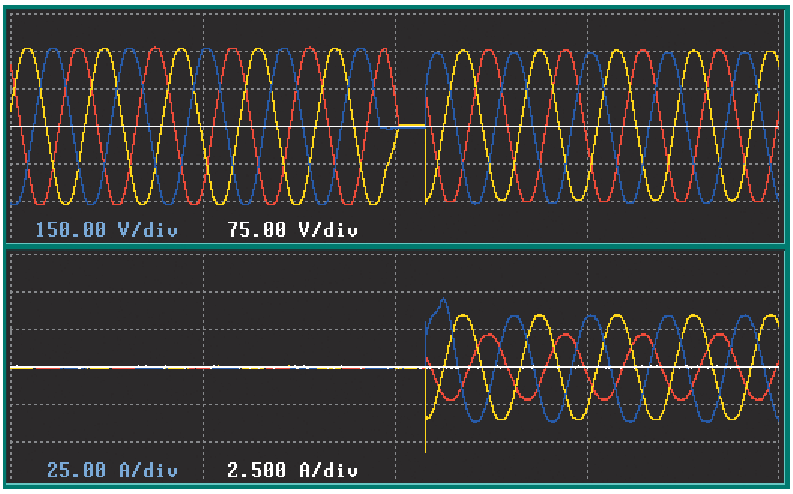


Fig. 16. SSTN transfer to redundant unsynchronised power source initiated by change of preferred input source – asymmetrical load.

OUTPUT VOLTAGES

SECONDARY SOURCE CURRENTS

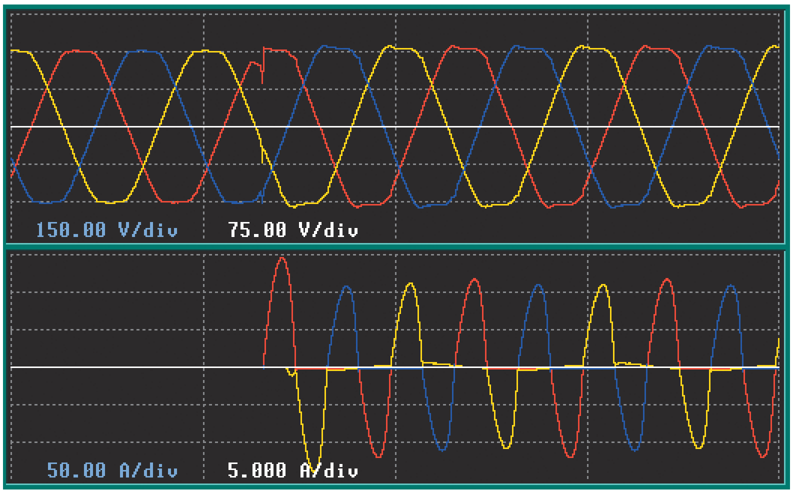


Fig. 17. SSTN transfer to redundant synchronised power source – computer load.

CONFIGURATIONS

STS SETS FOR POWER DISTRIBUTION UNIT (PDU)

STS sets for power distribution unit (PDU) are produced by leading international companies. During production, simple PDU monitoring system based on STS control unit may be applied. Transfer to redundant source is caused by faulty operation of preferred source, for example when voltage range exceeds beyond acceptable range. It is possible to transfer "connection" on demand UPS system, for example when the state of batteries is getting too low. An instantaneous transfer is performed even before the preferred UPS voltage drops under acceptable value.

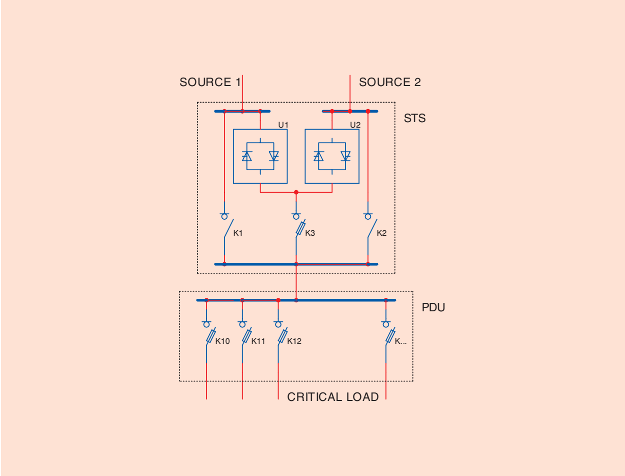


Fig. 18. STS set for power distribution unit.

TWO-STS SET FOR TWO-SECTION POWER DISTRIBUTION UNIT WITH A TIEBREAKER

Two-STS set for two-section power distribution unit with a tiebreaker allows independent operation of two STS-PDU section sets. It is possible to transfer both sections to one STS unit without interruption. The tiebreaker is switched on after prior maintenance-related transfer of both STS units to one of the power sources. When one of the STS units is switched off, the remaining STS provides independent redundancy power for the two PDU sections.

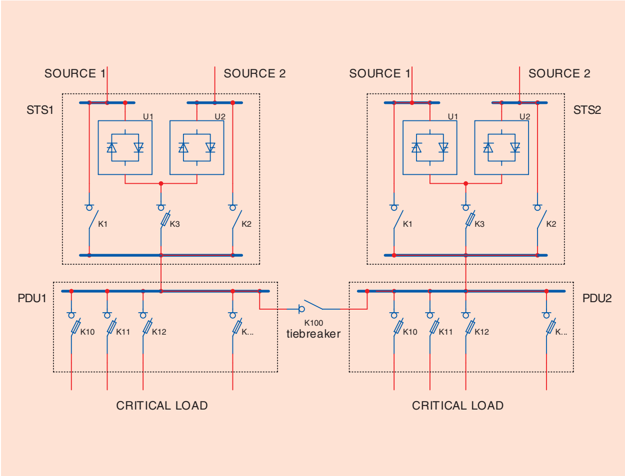


Fig. 19. Two-STS set for two-section power distribution unit with tiebreaker.

STS SET FOR VOLTAGE INVERTERS

STS set for voltage inverters. Independent voltage inverters with limited output current are susceptible to short-circuits and overloads caused by sags and outages in output current. An additional bypass through the STS unit to inverter output eliminates voltage outage. Transfer to redundant source is triggered by faulty operation of inverter, for example when voltage value or current value are not in acceptable range.

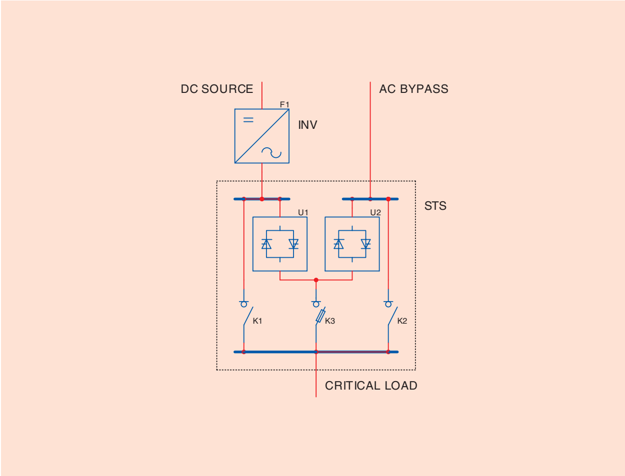


Fig. 20. STS set for voltage inverters.

LOCAL STS INSTALLATION WITH DUAL AC POWER SYSTEM

Local STS installation with dual AC power system. Conventional power systems are susceptible to voltage outages which are transferred to all loads placed below the short-circuiting or below high overloaded site. This phenomenon is seen especially in systems with low current limitation, for example in UPS systems. The dual AC power system eliminates voltage outage effects. Transfer of local STS units to redundant source is caused by faulty operation of preferred source, for example when voltage range exceeds beyond acceptable range. Transfer is not performed if overcurrent in load occurs. Faulty load is disconnected from the system by its STS unit (it keeps running on the disrupted line while the remaining STS units perform transfers to efficient power source). The installation is highly recommended for complex power supply networks.

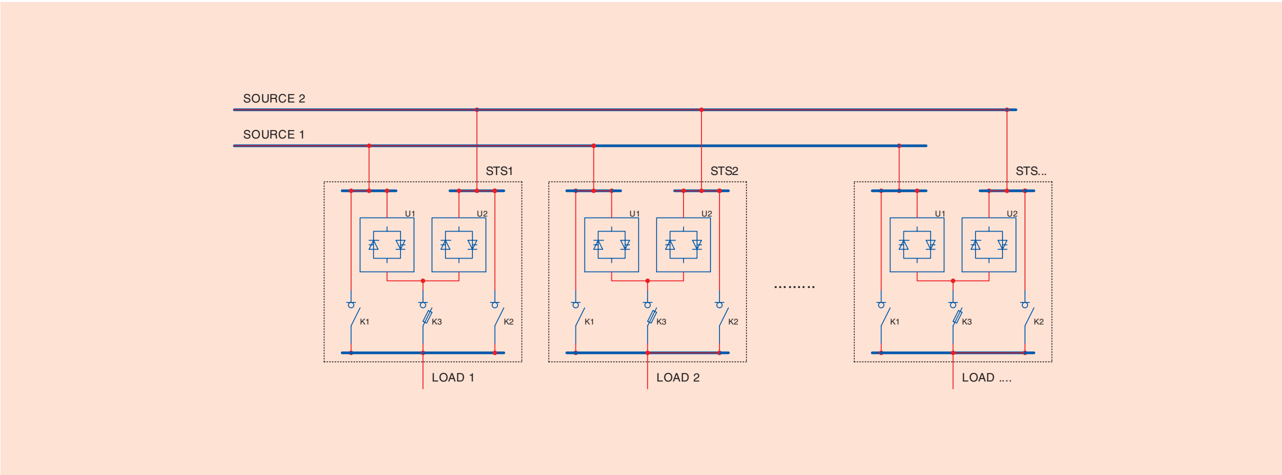


Fig. 21. Local STS installation with a dual AC power system.

UPS SUPPLY SYSTEM WITH REDUNDANCY

UPS supply system with redundancy and with disconnection ability for one line are power supply systems frequently used in computer centres. It enables proper mating of different UPS devices and provides continuous non-stop operation even during periods of scheduled maintenance. It eliminates single point failure. UPS synchronisation is required.

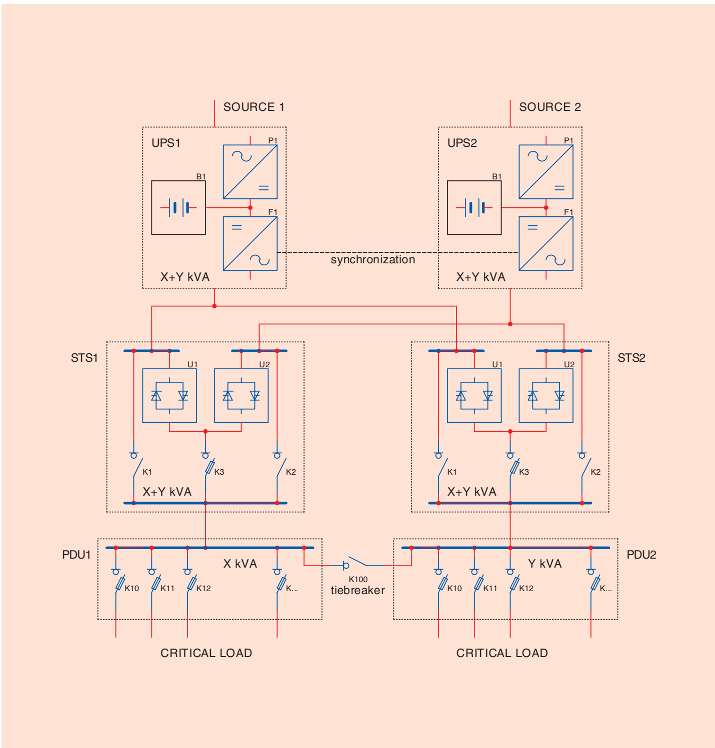


Fig. 22. Redundancy provided UPS powered installation with available failure disconnection.

SPECIFICATIONS*

Power supply			
Nominal input voltage	120 V 3×208 V 3×480 V	230 V 3×400 V	For TN-C, and TN-S networks
Acceptable voltage range	-25 % ÷ +20 %		Operation
Frequency	60 Hz	50 Hz	
Frequency tolerance	-9 % ÷ +6 %		
Transient voltage surge suppression level	<1.5 kV		For Iimp 15 kA 8/20us
	<1.0 kV		For Iimp 5 kA 8/20us
Dielectric strength test	AC 2 kV 60 s		
Efficiency	>98 %	>99 %	for cos(ϕ) > 0,8
Output			
Nominal output current	25 A, 40 A 63 A, 100 A 150 A, 250 A 400 A, 63 0A		Available configurations: ● 1-phase 1- pole ● 1-phase 2-poles (neutral line switch) ● 3-phases 3-poles ● 3-phases 4-poles (neutral line switch)
Crest factor	3.5		
Power factor cos (ϕ)	0.5 ÷ 1		Inductive, capacitive
Transient voltage surge suppression level	<1.5 kV		For Iimp 15 kA 8/20us
	<1.0 kV		For Iimp 5 kA 8/20us
Overload capacity	125 % 400 % 800 % 1000 % 1500 %		t = 1 h t = 5 s t = 0.4 s t = 0.2 s t = 20 ms
Short-circuit strength of thyristor switches	3 kA / 20 ms 8 kA / 20 ms 15 kA / 20 ms 28 kA / 20 ms		In=25, 40, 63 A In=100, 150 A In=250, 400, In=630 A
Fuse interrupting capacity	50 kA		
Switching			
Selection of preferred input source	L1 / L2		With or without retransfer after restoring preferred input source power
Remote selection of preferred input source	L1 / L2		Two-state input for L1 / L2 line
Setting range for upper input voltage limit	+6 % ÷ +20 % by 3 %		Switching to alternative source on exceeding the limit
Setting range for lower input voltage limit	-8 % ÷ -24 % by 4 %		
Phase error limit for synchronised lines	±8° ÷ ±24° by 4°		Setting by DIPSWITCH
Switching interlock for output over current	3 In 6 In 9 In no interlock		Setting by DIPSWITCH
Manual transfer time for synchronised lines of a phase error within the limits	< 0.2 ms		
Automatic transfer time for synchronised lines of a phase error within the limits	< 6 ms		
Manual or automatic transfer time for not synchronised lines	12 ms 17 ms 25 ms 50 ms		Setting by DIPSWITCH
Retransfer time	1 s 8 s 25 s		Setting by DIPSWITCH (both lines healthy)

* Possibility for unique configurations depending on customer needs. Please contact us by phone or e-mail.

Measurement of		
Inputs sources voltage	±1 % ±1 V	Optional equipment
Output currents	±2 % ±1 A	
Active power P	±3 % ±0,1 kW	
Apparent power S	±3 % ±0,1 kVA	
Alarms		
Failure	Relay	Overload Overtemperature Fuse failure Internal STS failure
Disturbance	Relay	Primary source not healthy Secondary source not healthy Lack of synchronisation Transient voltage surge suppression alarm Manual control ON Automatic retransfer switched OFF
Manual ON	Relay	Service operation
Retransfer OFF	Relay	Retransfer to preferred source is not perform
Primary source OK.	Relay	Indicating if primary source is healthy
Secondary source OK.	Relay	Indicating if secondary source is healthy
Primary line ON.	Relay	Indicating if primary source is active
Secondary line ON.	Relay	Indicating if secondary source is active
Alarm connectors parameters		
Max operating voltage	300 V= or 250 V~	
Max load capacity	4 A for 220 V~ 0.3 A for 220 V=	
Communications interface		
Optional	RS232 / RS485	
Ambient conditions (storage and operation)		
Operating temperature	0÷40 °C	
Storage temperature	0÷40 °C	
Relative humidity (noncondensing)	max 98 %	
Installation Site Altitude	below 1000 m	
Air cooling	Natural	For In=25, 40, 63 A
	Forced with built-in fan redundancy	For In=100, 150, 250, 400, 630 A
EMC	Class B	EN55022, EN60555-2, EN60555-3
Enclosure		
Degree of protection	IP20	
Dimensions (H × W × D)	See detailed information table	

RULES FOR MARKING STATIC TRANSFER SWITCHES

SSTN 400 AC 630

DEVICE NAME	
SS	1-phase 1-pole static transfer switch
SSN	1-phase 2-poles static transfer switch
SST	3-phases 3-poles static transfer switch
SSTN	3-phases 4-poles static transfer switch

INPUT VOLTAGE
120 = 120V / 60Hz
208 = 3×208V / 60Hz
230 = 230V / 50Hz
400 = 3×400V / 50Hz
480 = 3×480V / 60Hz

OUTPUT CURRENT (NOMINAL PHASE LINE CURRENT)	
25 = 25A	40 = 40A
63 = 63A	100 = 100A
150 = 150A	250 = 250A
400 = 400A	630 = 630A

MEDCOM
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TRACTION CONVERTERS

STATIC TRANSFER SWITCHES SERIES

120V/60Hz

Type	U_N [V]*	Frequency [Hz]*	I_N [A]	Losses [W]	Enclosure	Dimensions W × S × G [mm]	Weight [kg]
1-phase 1-pole freestanding units							
SS120AC25	120	60	25	70	Rack 126	340 × 507 × 440	26
SS120AC40	120	60	40	80	Rack 126	340 × 507 × 440	28
SS120AC63	120	60	63	120	Rack 126	340 × 507 × 440	30
SS120AC100	120	60	100	170	Sarel S2	1100 × 800 × 400	96
SS120AC150	120	60	150	250	Sarel S2	1100 × 800 × 400	105
SS120AC250	120	60	250	370	Rittal TS1	1900 × 800 × 500	135
SS120AC400	120	60	400	550	Rittal TS1	1900 × 800 × 500	162
1-phase 1-pole rackmount 19" units							
SS120AC25-RM	120	60	25	70	3U	133,5 × 483 × 415	9,5
SS120AC40-RM	120	60	40	80	3U	133,5 × 483 × 415	10,5
SS120AC63-RM	120	60	63	120	3U	133,5 × 483 × 415	12,5
MB120AC25-RM	120	60	25	-	3U	133,5 × 483 × 197	4,5
MB120AC63-RM	120	60	63	-	3U	133,5 × 483 × 197	5,5
1-phase 2-pole freestanding units							
SSN120AC25	120	60	2 x 25	140	Rack 126	340 × 507 × 440	29
SSN120AC40	120	60	2 x 40	160	Rack 126	340 × 507 × 440	31
SSN120AC63	120	60	2 x 63	240	Rack 126	340 × 507 × 440	33
SSN120AC100	120	60	2 x 100	340	Sarel S2	1100 × 800 × 400	104
SSN120AC150	120	60	2 x 150	500	Sarel S2	1100 × 800 × 400	114
SSN120AC250	120	60	2 x 250	740	Rittal TS1	1900 × 800 × 500	165
SSN120AC400	120	60	2 x 400	1100	Rittal TS1	1900 × 800 × 500	190
1-phase 2-pole rackmount 19" units							
SSN120AC25-RM	120	60	2 x 25	70	3U	133,5 × 483 × 415	11,5
SSN120AC40-RM	120	60	2 x 40	80	3U	133,5 × 483 × 415	12,5
SSN120AC63-RM	120	60	2 x 63	120	3U	133,5 × 483 × 415	14,5
MBN120AC25-RM	120	60	2 x 25	-	3U	133,5 × 483 × 197	5,5
MBN120AC63-RM	120	60	2 x 63	-	3U	133,5 × 483 × 197	6,5

230V/50Hz

Type	U_N [V]*	Frequency [Hz]*	I_N [A]	Losses [W]	Enclosure	Dimensions W × S × G [mm]	Weight [kg]
1-phase 1-pole freestanding units							
SS230AC25	230	50	25	70	Rack 126	340 × 507 × 440	26
SS230AC40	230	50	40	80	Rack 126	340 × 507 × 440	28
SS230AC63	230	50	63	120	Rack 126	340 × 507 × 440	30
SS230AC100	230	50	100	170	Sarel S2	1100 × 800 × 400	96
SS230AC150	230	50	150	250	Sarel S2	1100 × 800 × 400	105
SS230AC250	230	50	250	370	Rittal TS1	1900 × 800 × 500	135
SS230AC400	230	50	400	550	Rittal TS1	1900 × 800 × 500	162
1-phase 1-pole rackmount 19" units							
SS230AC25-RM	230	50	25	70	3U	133,5 × 483 × 415	9,5
SS230AC40-RM	230	50	40	80	3U	133,5 × 483 × 415	10,5
SS230AC63-RM	230	50	63	120	3U	133,5 × 483 × 415	12,5
MB230AC25-RM	230	50	25	-	3U	133,5 × 483 × 197	4,5
MB230AC63-RM	230	50	63	-	3U	133,5 × 483 × 197	5,5
1-phase 2-pole freestanding units							
SSN230AC25	230	50	2 x 25	140	Rack 126	340 × 507 × 440	29
SSN230AC40	230	50	2 x 40	160	Rack 126	340 × 507 × 440	31
SSN230AC63	230	50	2 x 63	240	Rack 126	340 × 507 × 440	33
SSN230AC100	230	50	2 x 100	340	Sarel S2	1100 × 800 × 400	104
SSN230AC150	230	50	2 x 150	500	Sarel S2	1100 × 800 × 400	114

Type	U_N [V]*	Frequency [Hz]*	I_N [A]	Losses [W]	Enclosure	Dimensions W × S × G [mm]	Weight [kg]
SSN230AC250	230	50	2 x 250	740	Rittal TS1	1900 × 800 × 500	165
SSN230AC400	230	50	2 x 400	1100	Rittal TS1	1900 × 800 × 500	190
1-phase 2-pole rackmount 19” units							
SSN230AC25-RM	230	50	2 x 25	70	3U	133,5 × 483 × 415	11,5
SSN230AC40-RM	230	50	2 x 40	80	3U	133,5 × 483 × 415	12,5
SSN230AC63-RM	230	50	2 x 63	120	3U	133,5 × 483 × 415	14,5
MBN230AC25-RM	230	50	2 x 25	-	3U	133,5 × 483 × 197	5,5
MBN230AC63-RM	230	50	2 x 63	-	3U	133,5 × 483 × 197	6,5

3 × 208V/60Hz

Type	U_N [V]*	Frequency [Hz]*	I_N [A]	Losses [W]	Enclosure	Dimensions W × S × G [mm]	Weight [kg]
3-phase 3-pole freestanding units							
SST208AC25	3 × 208	60	3 × 25	130	Sarel S2	1100 × 800 × 400	93
SST208AC40	3 × 208	60	3 × 40	180	Sarel S2	1100 × 800 × 400	100
SST208AC63	3 × 208	60	3 × 63	300	Sarel S2	1100 × 800 × 400	107
SST208AC100	3 × 208	60	3 × 100	450	Sarel S2	1100 × 800 × 400	120
SST208AC150	3 × 208	60	3 × 150	700	Rittal TS1	1900 × 800 × 500	195
SST208AC250	3 × 208	60	3 × 250	1100	Rittal TS1	1900 × 800 × 500	225
SST208AC400	3 × 208	60	3 × 400	1600	Rittal TS2	1900 × 1200 × 500	315
SST208AC630	3 × 208	60	3 × 630	2700	Rittal TS3	2240 × 1200 × 600	365
3-phase 3-pole rackmount 19” units							
SST208AC25-RM	3 × 208	60	3 × 25	130	Rack 19”	710 × 483 × 465	60
SST208AC40-RM	3 × 208	60	3 × 40	180	Rack 19”	710 × 483 × 465	68
SST208AC63-RM	3 × 208	60	3 × 63	300	Rack 19”	710 × 483 × 465	72
SST208AC100-RM	3 × 208	60	3 × 100	450	Rack 19”	710 × 483 × 465	76
3-phase 4-pole freestanding units							
SSTN208AC25	3 × 208	60	3 × 25 + 50	145	Sarel S2	1100 × 800 × 400	100
SSTN208AC40	3 × 208	60	3 × 40 + 80	195	Sarel S2	1100 × 800 × 400	107
SSTN208AC63	3 × 208	60	3 × 63 + 125	320	Sarel S2	1100 × 800 × 400	114
SSTN208AC100	3 × 208	60	3 × 100 + 200	480	Rittal TS1	1900 × 800 × 500	195
SSTN208AC150	3 × 208	60	3 × 150 + 300	850	Rittal TS2	1900 × 1200 × 500	225
SSTN208AC250	3 × 208	60	3 × 250 + 500	1425	Rittal TS2	1900 × 1200 × 500	315
SSTN208AC400	3 × 208	60	3 × 400 + 800	2300	Rittal TS3	2240 × 1200 × 600	365
SSTN208AC630	3 × 208	60	3 × 630 + 1000	3300	Rittal TS3	2240 × 1200 × 600	440
3-phase 4-pole rackmount 19” units							
SSTN208AC25-RM	3 × 208	60	3 × 25 + 50	145	Rack 19”	710 × 483 × 465	64
SSTN208AC40-RM	3 × 208	60	3 × 40 + 80	195	Rack 19”	710 × 483 × 465	72
SSTN208AC63-RM	3 × 208	60	3 × 63 + 125	320	Rack 19”	710 × 483 × 465	76

3 × 400V/50Hz

Type	U_N [V]*	Frequency [Hz]*	I_N [A]	Losses [W]	Enclosure	Dimensions W × S × G [mm]	Weight [kg]
3-phase 3-pole freestanding units							
SST400AC25	3 × 400	50	3 × 25	130	Sarel S2	1100 × 800 × 400	93
SST400AC40	3 × 400	50	3 × 40	180	Sarel S2	1100 × 800 × 400	100
SST400AC63	3 × 400	50	3 × 63	300	Sarel S2	1100 × 800 × 400	107
SST400AC100	3 × 400	50	3 × 100	450	Sarel S2	1100 × 800 × 400	120
SST400AC150	3 × 400	50	3 × 150	700	Rittal TS1	1900 × 800 × 500	195
SST400AC250	3 × 400	50	3 × 250	1100	Rittal TS1	1900 × 800 × 500	225
SST400AC400	3 × 400	50	3 × 400	1600	Rittal TS2	1900 × 1200 × 500	315
SST400AC630	3 × 400	50	3 × 630	2700	Rittal TS3	2240 × 1200 × 600	365

Type	U_N [V]*	Frequency [Hz]*	I_N [A]	Losses [W]	Enclosure	Dimensions W × S × G [mm]	Weight [kg]
3-phase 3-pole rackmount 19” units							
SST400AC25-RM	3 × 400	50	3 × 25	130	Rack 19”	710 × 483 × 465	60
SST400AC40-RM	3 × 400	50	3 × 40	180	Rack 19”	710 × 483 × 465	68
SST400AC63-RM	3 × 400	50	3 × 63	300	Rack 19”	710 × 483 × 465	72
SST400AC100-RM	3 × 400	50	3 × 100	450	Rack 19”	710 × 483 × 465	76
3-phase 4-pole freestanding units							
SSTN400AC25	3 × 400	50	3 × 25 + 50	145	Sarel S2	1100 × 800 × 400	100
SSTN400AC40	3 × 400	50	3 × 40 + 80	195	Sarel S2	1100 × 800 × 400	107
SSTN400AC63	3 × 400	50	3 × 63 + 125	320	Sarel S2	1100 × 800 × 400	114
SSTN400AC100	3 × 400	50	3 × 100 + 200	480	Rittal TS1	1900 × 800 × 500	195
SSTN400AC150	3 × 400	50	3 × 150 + 300	850	Rittal TS2	1900 × 1200 × 500	225
SSTN400AC250	3 × 400	50	3 × 250 + 500	1425	Rittal TS2	1900 × 1200 × 500	315
SSTN400AC400	3 × 400	50	3 × 400 + 800	2300	Rittal TS3	2240 × 1200 × 600	365
SSTN400AC630	3 × 400	50	3 × 630 + 1000	3300	Rittal TS3	2240 × 1200 × 600	440
3-phase 4-pole rackmount 19” units							
SSTN400AC25-RM	3 × 400	50	3 × 25 + 50	145	Rack 19”	710 × 483 × 465	64
SSTN400AC40-RM	3 × 400	50	3 × 40 + 80	195	Rack 19”	710 × 483 × 465	72
SSTN400AC63-RM	3 × 400	50	3 × 63 + 125	320	Rack 19”	710 × 483 × 465	76

3 × 480V/60Hz

Type	U_N [V]*	Frequency [Hz]*	I_N [A]	Losses [W]	Enclosure	Dimensions W × S × G [mm]	Weight [kg]
3-phase 3-pole freestanding units							
SST480AC25	3 × 480	60	3 × 25	130	Sarel S2	1100 × 800 × 400	93
SST480AC40	3 × 480	60	3 × 40	180	Sarel S2	1100 × 800 × 400	100
SST480AC63	3 × 480	60	3 × 63	300	Sarel S2	1100 × 800 × 400	107
SST480AC100	3 × 480	60	3 × 100	450	Sarel S2	1100 × 800 × 400	120
SST480AC150	3 × 480	60	3 × 150	700	Rittal TS1	1900 × 800 × 500	195
SST480AC250	3 × 480	60	3 × 250	1100	Rittal TS1	1900 × 800 × 500	225
SST480AC400	3 × 480	60	3 × 400	1600	Rittal TS2	1900 × 1200 × 500	315
SST480AC630	3 × 480	60	3 × 630	2700	Rittal TS3	2240 × 1200 × 600	365
3-phase 3-pole rackmount 19” units							
SST480AC25-RM	3 × 480	60	3 × 25	130	Rack 19”	710 × 483 × 465	60
SST480AC40-RM	3 × 480	60	3 × 40	180	Rack 19”	710 × 483 × 465	68
SST480AC63-RM	3 × 480	60	3 × 63	300	Rack 19”	710 × 483 × 465	72
SST480AC100-RM	3 × 480	60	3 × 100	450	Rack 19”	710 × 483 × 465	76
3-phase 4-pole freestanding units							
SSTN480AC25	3 × 480	60	3 × 25 + 50	145	Sarel S2	1100 × 800 × 400	100
SSTN480AC40	3 × 480	60	3 × 40 + 80	195	Sarel S2	1100 × 800 × 400	107
SSTN480AC63	3 × 480	60	3 × 63 + 125	320	Sarel S2	1100 × 800 × 400	114
SSTN480AC100	3 × 480	60	3 × 100 + 200	480	Rittal TS1	1900 × 800 × 500	195
SSTN480AC150	3 × 480	60	3 × 150 + 300	850	Rittal TS2	1900 × 1200 × 500	225
SSTN480AC250	3 × 480	60	3 × 250 + 500	1425	Rittal TS2	1900 × 1200 × 500	315
SSTN480AC400	3 × 480	60	3 × 400 + 800	2300	Rittal TS3	2240 × 1200 × 600	365
SSTN480AC630	3 × 480	60	3 × 630 + 1000	3300	Rittal TS3	2240 × 1200 × 600	440
3-phase 4-pole rackmount 19” units							
SSTN480AC25-RM	3 × 480	60	3 × 25 + 50	145	Rack 19”	710 × 483 × 465	64
SSTN480AC40-RM	3 × 480	60	3 × 40 + 80	195	Rack 19”	710 × 483 × 465	72
SSTN480AC63-RM	3 × 480	60	3 × 63 + 125	320	Rack 19”	710 × 483 × 465	76

* Possibility for unique configurations depending on customer needs. Please contact us by phone or e-mail.

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