



# starkstrom

a Progility company

Powering Healthcare

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## Starkstrom Automatic Transfer System (SATS)

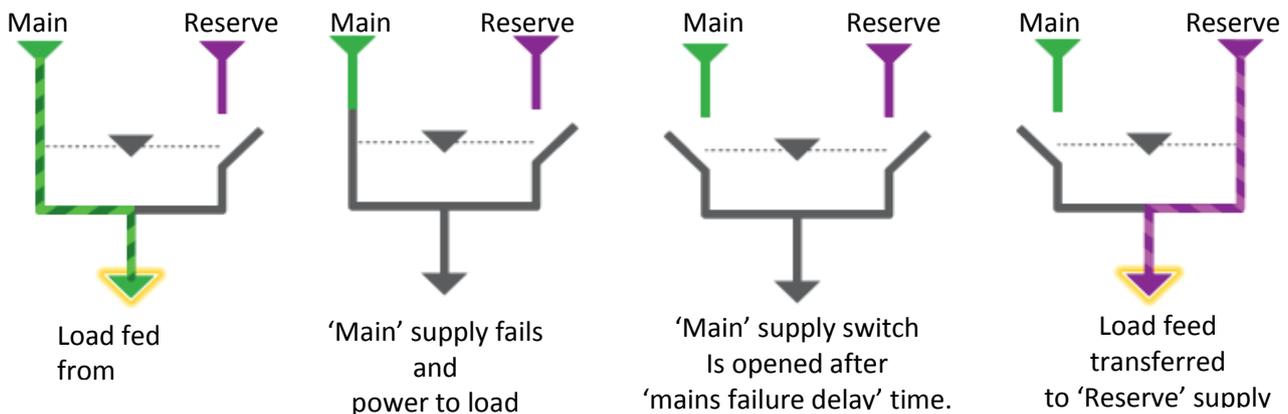
### Overview

Auto Transfer Systems are used extensively wherever there is a need for high availability of the power supply. They may be used to feed Isolated Power Supplies (IPS), with or without UPS backup.

International and UK standards recommend the use of an Auto Transfer System for power supply units in group 2 or category 4 or 5 medical locations.

The Auto Transfer System automatically switches a load on to a reserve or backup supply, in the event that the main supply fails, or goes outside the  $\pm 10\%$  value of the nominal voltage.

Below is a schematic of a typical Auto Transfer System:



Advanced SATS shown

Two varieties of Auto Transfer System are available, as listed below. Each variety is designed to meet specific performance and budget criteria, and not all features are available for each variety of Auto Transfer System (full spec. in table overleaf).

1. Standard - Suitable for most applications, a balance between simplicity and functionality.
2. Advanced - Transfer Device same as motorised, but upgrades the control to integrated.

Each of the above options can be mounted within the IPS enclosure (depending on IPS configuration) or can be mounted in a standalone enclosure.

### Benefits

1. Where a UPS is not supplying the IPS, the SATS will allow power from a reserve source to be restored in less than 0.5s.
2. The SATS moves the potential single point of failure closer to the user, as there is only the IPS transformer and final circuit remaining as a single path.
3. Could be used as an automatic UPS By-pass switch in the unlikely event that the UPS fails and does not go into static bypass thus resulting in the load being dropped.
4. It keeps the TN-S (grounded) supply in a completely separate housing to the IT (ungrounded) supply.
5. Where many IPS systems are supplied from a single source, a delay can be set, to sequence the supply return changeover to avoid multiple simultaneous in-rush currents.



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## Product Specification – Standard v Advanced SATS Comparison

FEATURE	STANDARD SATS	ADVANCED SATS
Transfer Device	Changeover Contractor	ATyS 3M Motorised changeover
Monitoring Device	Undervoltage Relay	SATS Controller
Supply Monitoring	U1 only	U1, U2 and U3 (output)
Current Rating	40A (AC3), 60A (AC1)	63A (AC23)
Short time withstand current (<1 sec)	720A	4kA
Prospective short circuit current	50kA	50kA
Rated impulse withstand voltage (Uimp)	6kV	6kV
Rated insulation voltage	690V	800V
Supply nominal voltage / frequency (Unom) main and reserve supplies	230AC/50Hz	110 to 270AC / 50 to 60Hz
Supply Voltage and Frequency Display	-	U1 and U2
Output Voltage And Frequency Display	-	U3
Overcurrent And Short Circuit Detection	-	Yes
Transfer time	<0.5 sec	<0.5 sec
Network nominal settings “capture”	-	Yes
Voltage window adjustment (default is 10%)	+/- 20% from nominal	+/- 20% (in 0.1% inc)
Independent upper and lower voltage window adjustment	Yes	Yes
Hysteresis	< 20% Unom	< 20% Unom
Voltage out of limits delay	0.1 to 1 sec	0 to 60 sec (inc 0.01 sec)
Return to main supply delay	6 to 600 sec	0 to 3600 sec (inc 0.01 sec)
Supply status LED's	(x3) Main Supply >Unom Unom <Unom	(x8) On, Edit, U1, U2, U3 over current, transfer position.
Auto return to main supply	Yes	Selectable
Supply in use indication	-	Yes
3 stable positions (I-O-II)	-	Yes
Manual emergency operation (I-O-II) with tamperproof restriction of use	-	Yes
Padlockable (I-O-II)	-	Yes
Selectable 'Zero Position' with null timer	-	Yes
Real time internal clock	-	Yes
Internal daylight savings setting	-	Yes
System alarm and communications	VFC	Modbus, TCP/IP Webserver, Email and VFC
Alarm history	-	1800 events
System set up protection	-	Password
Predictive maintenance	-	Periodic and cyclic
Transfer sequence test	-	Yes
Transfer switch failure mode supply	Reserve	No change
'Priority supply' selection	Optional Upgrade	Set in SATS controller
Transfer system by-pass switch	Optional Upgrade	Option Upgrade
By-pass alarm indication	-	Yes
Rated operational cycles	100,000	10,000
Environmental limits	Environmental limits -10°C to +40°C / < 80% RH Non Con. / < 2000m alt.	
Applicable standards	BS EN 60947-1, BS EN 60947-6-1, HTM06-01, HD 60364-7-710	