

# Asynchronous Mains Generator no-break Transfer Switch (ASTS) *i* - STS

The ASTS, Mains Generator Asynchronous no-break Static Transfer Switch takes the place of a convention ATS scheme to allow asynchronous transfers between sources of differing frequencies / phase without a break to the connected loads.

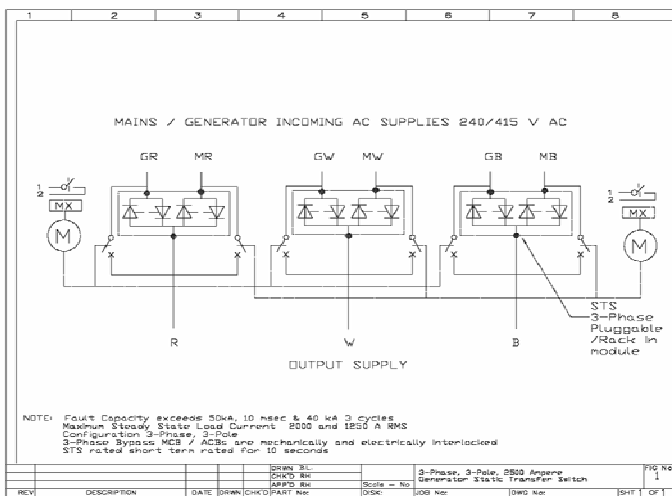
These units are available in 3 or 4 pole, three phase configurations.

The 2500 Ampere units utilizes motorized, ACBs, below 1600 Amperes motorized MCBs are utilized.

ASTS's up to 600 Amperes can be supplied on a panel for inclusion within an existing board.

The implementation is based on standard design philosophies and provides for a safe, robust all copper double bolted bus bar high fault current capable implementation.

Referring to the diagram below the ASTS consists of conventional supply change-over breakers and a static portion. The static portion (STS) undertakes the transition from one source to the other. This is accomplished at the instant where the supplies are momentarily in synchronism. After the transition the corresponding STS bridging circuit breaker carries the load.



The STS portion will support the load for up to 10 seconds with a corresponding cool down period of 15 minutes between activations.

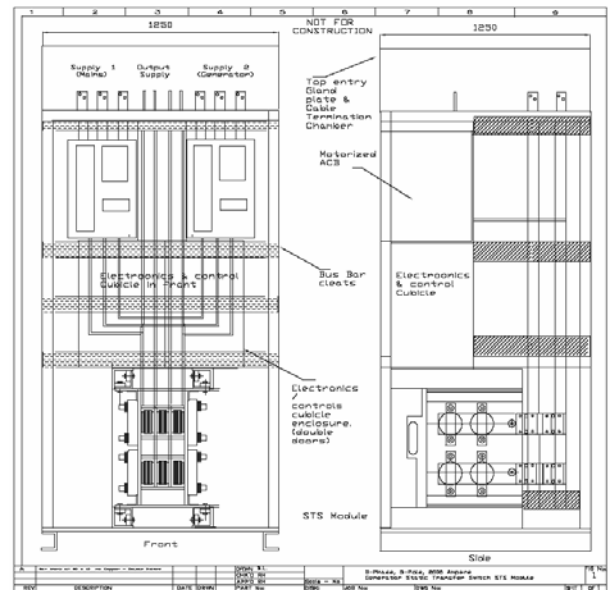
The STS portion of the ATS comprises a pluggable / rack in module. The plugs utilized are manufactured by Multi-Contact. The electronic controls provide for thyristor open, short circuit and overcurrent protection. In case of short circuit or open circuit the load will be protected and no further cascading failures will occur. In the case of control failure thermal protection will ensure that the STS portion does not sustain permanent damage or failure as a result of overheating that may be caused by circuit breaker / controls malfunction. IEC backfeed detection warning devices are incorporated.

The Semiconductors forming the STS are necessarily large because of the low system impedances and potentially large fault currents in the supply network. Thyristors with a diameter of 150 mm (x 27 mm thick) rated to 6000 Amperes, 2200 Volts and having an 80,000 Amps for 10 msec capacity are typical. Smaller fault levels of 50 kA for 10 msec are also typical and significant savings can be made if it is known that the fault levels are lower.

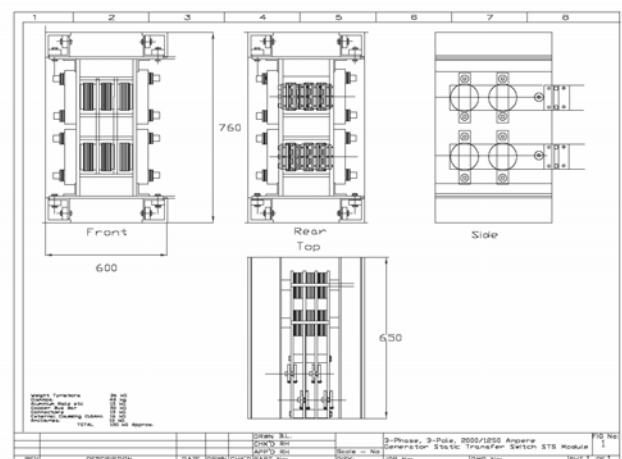
The devices are adequately rated to be protected by upstream discrimination. (The upstream breakers must clear the downstream fault and limit the fault current to 40,000 Amperes.

The accompanying drawings and schematics outline a typical implementation.

We provide solutions to switch between asynchronous sources such as generator and mains. Quite useful if your UPS has failed and your sitting in bypass, (Mains).



Typical Physical Layout for 2000 Ampere ASTS



STS Withdrawable Module

# Specifications

These specifications refer to a typical three phase 400, 800, 1250, 2000 & 2500 Ampere Asynchronous Static Transfer Switch

Rating	400, 800, 1250, 2000 & 2500 Amperes RMS
Voltage Rating	415/240 V $\pm$ 20%
Permissible Voltage Distortion	20% THDV
Frequency	50 Hz $\pm$ 5%
Type	3 + N (3-phase, 4-pole, or 3 phase, 3-pole)
Efficiency	99.9 %
Transfer Type	Thyristor (break-before-make, no source overlap, zero current)
Detection	Digital (< 1 msec)
dV/dt	>1000 V/ $\mu$ sec
MTBF	> 250,000 Hrs
Device Ratings	6000 Amperes RMS, 2200 Volts, 80 kA 10msec, > 2,000,000 A <sup>2</sup> Sec
Fault rating	80 kA for 10 msec (or 50 kA for 30 msec)
Change-over Lock-out	>10 degrees (transfer lock-out) or > 1 Hz / sec
Protection	External
Overload Capacity	Up to 100% for 10 seconds, 15 minute cools down lock-out 500% for 0.5 second 1000% for 100 msec 80,000 Amperes for 10 msec
Remote I/O	7 x Voltage free contacts (50 V DC, 1 Ampere N/C)
LAN Browser	Optional
Modbus TCP	Optional
Modbus RTU (RS232)	Optional
Operating Temperature	0 - 40 °C
Cooling	Fan forced, redundant for units > 100 Amperes
Noise	< 60 dB(A) typically
Physical Size	2000 Ampere STS is 1250 x 1250 x 2400 (WxDXH) 1250 Ampere STS is 1000 x 1000 x 2400 (WxDXH) 400 Ampere STS is 800 x 600 x 1800 (WxDXH) subject to site suitability.
Cable Entry	Top
Maintenance Access	Front Only
Weight	355 kg (typical)
Colour	RAL7035 (off white)
Compliance	AS3100 & AS/NZ/IEC 62310-1 (for STSs)
Warranty	24 months

Subject to change without notice.

## Static Transfer Switches

⚡ STS Manufacturing is a subsidiary of

**STATIC POWER PTY. LTD.**

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