

# THYCON

Est.1968



**Static Bus Tie**

SBT | 100 - 3000A

## Concept

Static Bus Ties (SBT) are essential for achieving highly reliable independent, stand-by, parallel or redundant supply to critical systems.

Bus ties are fully automatic. Once set, they ensure that critical loads are supplied in case of supply failure or during maintenance procedures.

## Applications

The SBT configuration is ideal for implementing dual cord AC distribution systems or independent load applications where loads must be supplied independently while the supplies are operating normally.

A typical application is described opposite.

The front panel and LCD layout are shown.

The three LEDs adjacent to each UPS symbol indicate the operating state of each UPS and are labelled and coloured as follows:

ONLINE: green	UPS is online / normal
BYPASS: red	UPS is offline / in bypass
ISOLATE: yellow	UPS output is isolated from the load

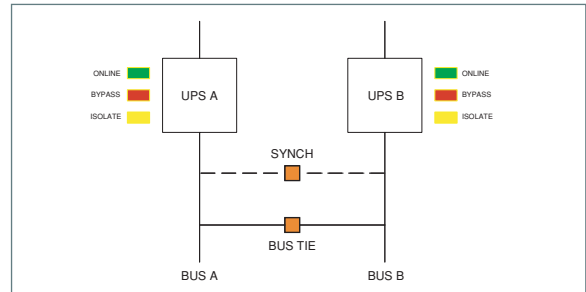
LEDs also indicate when the bus tie is on and when the UPS equipment is not in synchronism.

## SBT features and benefits

- microprocessor-based diagnostics and controls
- robust technology
- no moving parts
- fuseless design
- high efficiency
- high reliability
- long life
- cost effective
- low maintenance cost
- compact, modular construction
- indoor or outdoor enclosures
- Australian made

## Principles of operation

Automatically operated, the SBT operates on the basis of each supply's performance. Sensing of each supply determines when it should go offline and when the SBT is to be activated.



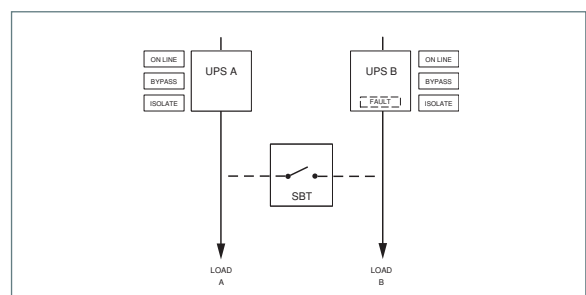
When restoring the units to online status, the operator merely initiates an ONLINE request from the operator control panel at the offline supply. The make-before-break transition is transparent to the load. Similarly, should maintenance be required on a supply the operator issues an OFFLINE command from the supply control panel.

The SBT enables two independent supplies to operate in one of four modes.

- independent
- redundant
- stand-by
- parallel

Each supply provides static or electromechanical isolation. Push buttons are used to select the mode of operation. Once selected, operation is fully automatic.

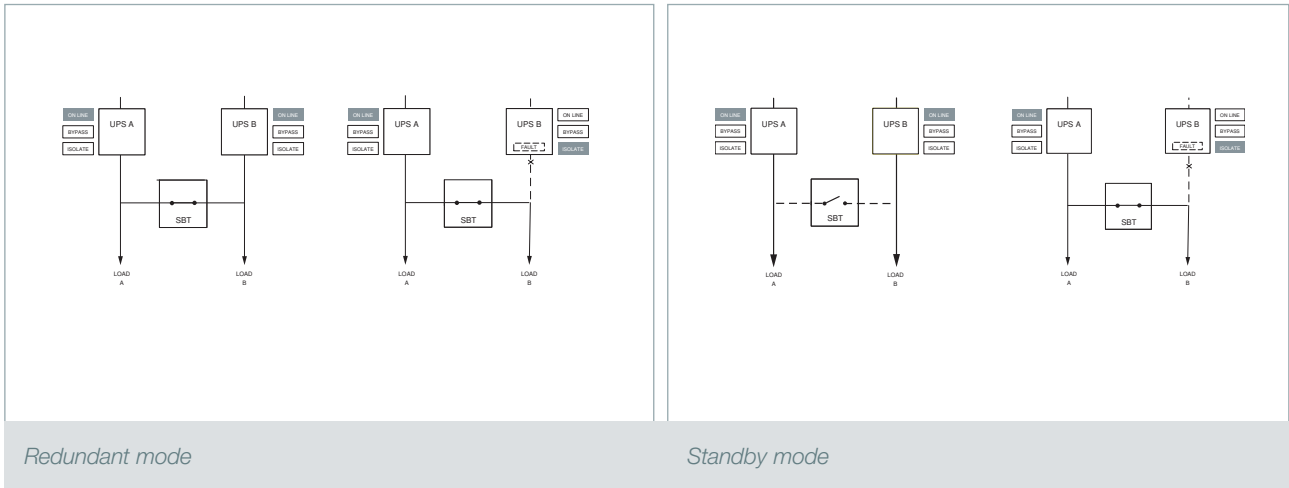
## Independent mode



This is used where:

- the requirement of either load exceeds half the rating of either supply (i.e. where redundancy is impossible to achieve)
- each UPS is to operate separately (i.e. as if the bus tie was not present)
- maintenance is being performed

In this mode, all automatic functions are disabled and the SBT is always open



## Redundant mode

This mode provides full parallel redundant operation, as long as the combined load on the two UPS equipments does not exceed the rating of one UPS (i.e. each UPS should have a load of less than half the unit rating). Normally both units operate online in parallel with the SBT closed. If one UPS fails, then the unit isolates from the output bus. In this set-up the SBT is normally closed and the failed unit is isolated, leaving the remaining unit to supply both loads via the SBT, which does not operate until there is a mode change to *Independent* or *Stand-by*.

## Stand-by mode

This mode provides a redundant capability, as long as the combined load on both UPS equipmenst does not exceed the rating of one UPS (i.e. each UPS should have a load of less than half the unit rating). Normally both units operate independently online, with the SBT open. If one UPS fails, then the SBT is closed and the failed unit is isolated, leaving the remaining unit to supply both loads. Once transferred, the critical load is supplied by the remaining online unit, in this case A, and the bus tie remains closed.

## Parallel mode

This is used where the load exceeds the capacity of a single unit and redundancy can no longer be provided. In this mode the bus tie is always closed and both UPS operate as one.

*... essential for achieving highly reliable independent, stand-by, parallel or redundant supply to critical systems.*

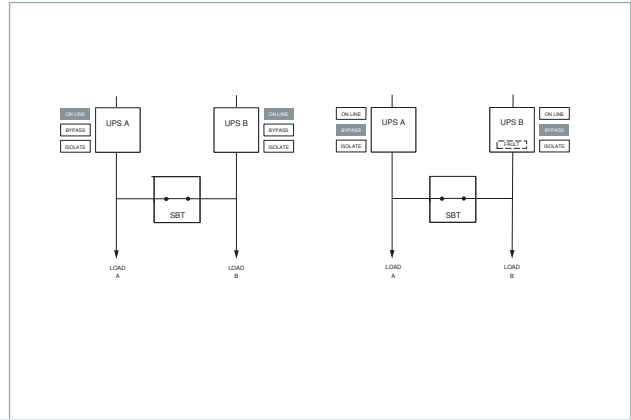
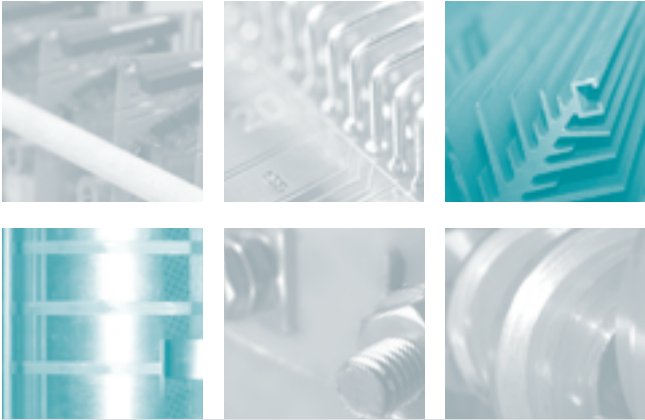
## Installation and testing

The SBT is designed for simple installation and testing. All that is required is the installation of power cables and control and monitoring cabling. The SBT is tested comprehensively prior to delivery and needs minimal site commissioning.

## Reliability and maintenance requirements

Thycon has been supplying static bus ties for over 20 years and has demonstrated their high reliability and low maintenance demands in critical applications for defence, telecommunications, computer centres and manufacturing.

Thycon SBT maintenance requirements are dependent on environmental and application conditions. We accommodate customer requirements from basic to full warranty maintenance. Each maintenance plan ensures the equipment operates in top condition with maximum availability of engineers and parts at minimum cost to the customer. Qualified engineers perform the maintenance with the full back up and resources of Thycon.



Parallel mode

### Training and support

Training and support can be provided to on-site personnel to ensure that they are fully versed in the operation, maintenance and fault rectification of the Thycon SBT.

### Control and monitoring

The digital processor control and display package incorporates a user-friendly interface with smart hardware, enabling immediate operating mode control and status monitoring.

An LCD display provides further information, operator mode change facilities, alarm and a mimic diagram indicates the state of the bus tie and each supply. The LCD is not required for normal operation.

A 32-level real-time event history buffer provides a list of the last 32 state changes for the bus tie PLC. Each event is labelled with the date and time of occurrence and may be used as a diagnostic aid. It should be noted, however, that the messages stored are not necessarily fault indications but rather changes in operating state.

### Thycon SBT advantages

#### **Simple, reliable design**

Uncomplicated design facilitates high strength, durability and reliability.

#### **Robust technology**

Robust construction achieves reliable performance and long equipment life, as proven by over 20 years of Thycon installations.

#### **Compatibility**

The control panel provides the operator with an efficient, user-friendly interface.

#### **Modular construction**

Construction from standardised components and modules ensures high mean time between failures (MTBF) and low mean time to repair (MTTR).

#### **Environment**

No special ventilation or air conditioning is required. The equipment is at home in computer rooms or in harsher environments without de-rating. Thycon equipment can be containerised and installed in the extremes of Australian environments.

#### **Efficiency**

System operates up to 99% efficiency resulting in low running costs and heat dissipation.

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