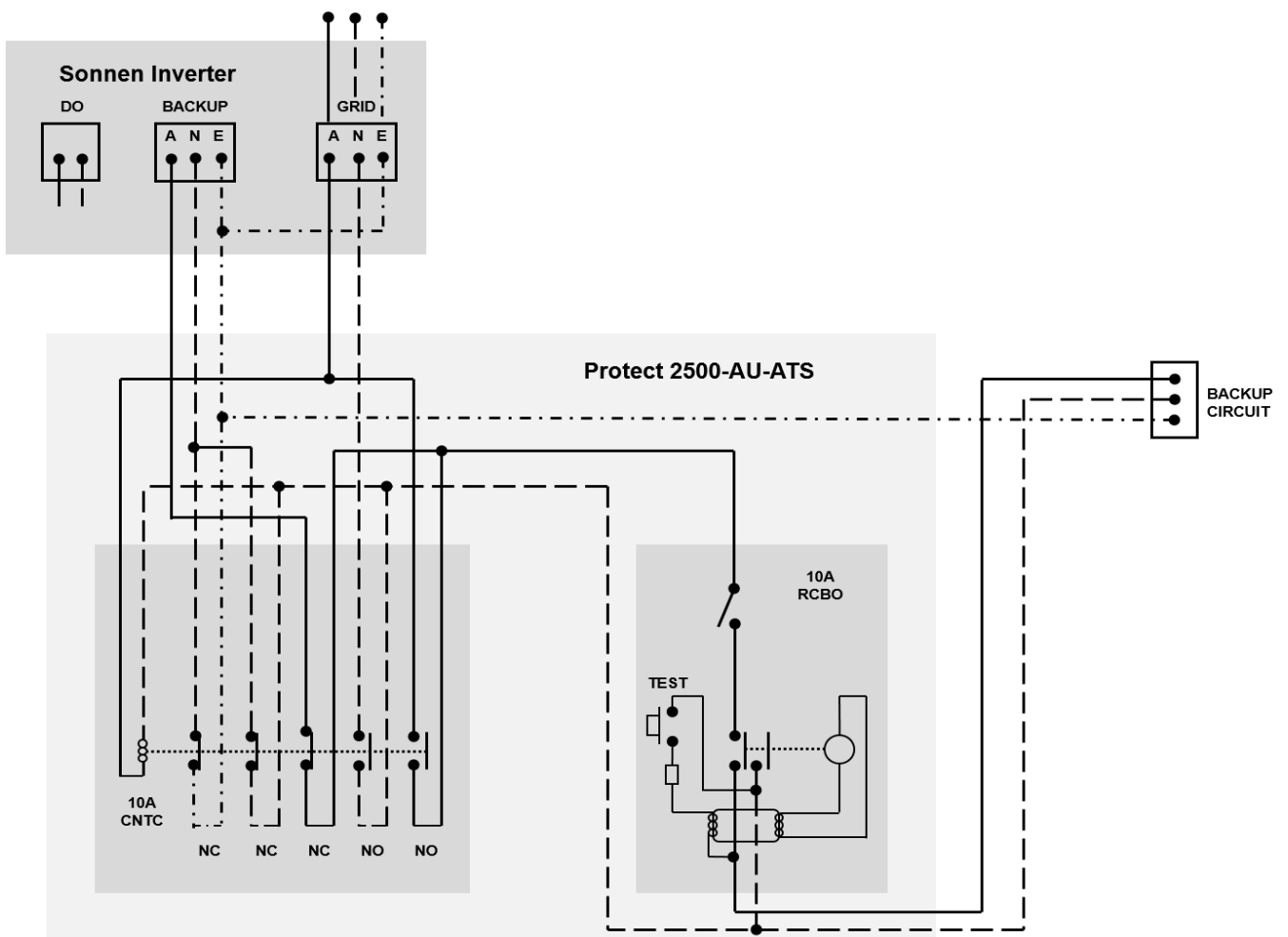


TN026 – Sonnen Protect 2500 AU-ATS – Functional Description

Overview

The sonnenProtect 2500 AU-ATS provides power to a dedicated backup circuit both when the grid is present and if the grid supply power fails to a rate of 2500W. The accessory makes sure that the sonnen system can continue to provide dedicated hard-wired circuits with power and the connected electrical consumer can proceed as usual. The sonnenProtect module is currently compatible with the eco 8.2 single phase systems only.

The sonnenProtect 2500 AU-ATS accessory is an external device that has dual AC connections, one coming from the normal grid supply and one from backup load terminal of the embedded inverter. The device then has a single AC output which can supply a dedicated backup circuit or circuits as designed to a maximum of 2500W, the backup circuit/s is also protected by a 30mA RCD. The minimum battery capacity for the sonnenProtect 2500 AU-ATS is 6kW (x3 Battery Modules).



Operation

In normal grid mode (with the grid supply powered) the sonnenProtect 2500 AU-ATS acts in transfer mode so that the backup circuit is fed directly from the grid supply. The accessory has a bank of contactors acting as an Auto-Changeover Switch (ATS) as the coil switching the contacts is AC grid powered.

If the grid fails and the AC power to both the sonnen and the sonnenProtect 2500 AU-ATS is cut off the bank of contactors switch their operation. The normally open (NO) contacts supplying the Active and Neutral supply to the backup circuit/s from the grid open thus disconnecting the supply. At the same time the normally closed (NC) contacts supplying power to the backup circuit/s become closed thus allowing the backup power from the sonnen system to supply the circuit/s connected.

MEN Consideration

As the sonnenBatterie system contains an AS 4777 compliant inverter in the event of grid failure or grid parameters such as voltage or frequency being out of range the inverter will activate its anti-islanding function and disconnect from the grid. The process of disconnection will therefore isolate both the Active and Neutral grid supply. Importantly as the grid supply Neutral conductor has been disconnected as part of the anti-islanding function the backup circuit from the embedded inverter has lost its connection to the MEN link in the main switch board.

In the process of the sonnenProtect 2500 AU-ATS switching from grid supply to backup supply an additional normally closed (NO) contact will shut and connect the continuous Earth conductor to the Neutral supply from the backup circuit thus creating a new MEN link.

Compliance to AS/NZS 3000

Common questions arise with the compliance of the sonnenProtect 2500 AU-ATS with regards to the following two clauses of AS/NZ 3000

Earthing: AS/NZS 3000:2007 & AS/NZS 3000:2018 clause 4.12.6 states that:

The output of an electricity converter shall be provided with the same type of earthing system used for the associated electrical installation. Protective earthing conductors shall not be switched. Provision shall be made to ensure that all necessary connections for protection, such as the MEN connection, remain intact when supply is available from the output of the system.

The sonnenProtect 2500 AU-ATS does not switch the earthing protector at all. When the 'battery only' backup supply is energised a new MEN link is enabled to ensure that necessary connections for protection, such as the function of an MEN connection remains intact.

Control: AS/NZS 3000:2007 & AS/NZS 3000:2018 clause 4.12.3 states that

Where an electrical installation, or part thereof, is supplied through an electricity converter, the converted supply shall be controlled by an isolating switch, or switches, at the output of the converter, or at the switchboard to which the output is connected.

Each electricity converter shall be controlled by switches or devices suitable for starting and stopping the converter. Where there is more than one switch or device for this purpose, they shall be grouped together and clearly identified. An electricity converter shall be so arranged that it cannot supply energy upstream of the point of connection to the installation either directly or indirectly.



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Exception: Electricity converters may be arranged to supply energy upstream of the point of connection to the installation subject to any additional conditions required by the electricity distributor.

Provision shall be made to ensure that all necessary connections for protection in the installation remain intact when supply is available from the output of the electricity converter.

The sonnenProtect 2500 AU-ATS has a 10A RCD (RCBO) which functions as the main isolating switch out for the backup supply from the sonnenBatterie system / electricity converter.

The backup supply / electricity converter function of the sonnenBatterie via the grid powered contactor switching arrangement of the sonnenProtect 2500 AU-ATS ensures that in backup mode only the connected essential load / backup circuits can be supplied. No power can flow upstream of the point of connection either from the sonnenBatterie as a function of its ant-islanding compliance with AS 4777 or via the isolation / switching function of the sonnenProtect 2500 AU-ATS once switched between grid supply to backup supply only.

If you have any further questions or require support or assistance, please contact us at support@sonnen.com.au.

Yours faithfully,

A handwritten signature in blue ink, appearing to read "J Sturch".

James Sturch
Technical Business Manager Australia & New Zealand