

Automatic Transfer Switch Assembly with Single Line Bypass Facility

Automatic Transfer Switch Assemblies (ATSA) are widely used in many sectors, to provide $N+1$ redundancy for critical electrical supplies. Applications can range from rock concerts (the show must go on) to providing back-up supplies for Life Safety Systems, such as sprinkler systems and fire fighting lifts installed in high rise buildings. Clearly some applications are more critical than others.

Where an ATSA is installed as part of a Life Safety System, there is a need to carry out periodic testing and maintenance of the installation without any interruption of the mains supply to the critical equipment and without exposing operatives to danger. For these reasons, in an increasing number of Life Safety applications, ATSAs are required to incorporate a bypass facility, which enables the actual automatic transfer switch within the overall assembly to be isolated, maintained and tested in complete safety.

On a recent project there was a requirement for a 250A rated ATSA with a single line bypass facility (a dual line bypass was considered but was not required in this instance). There was the requirement for a seamless transition from normal operation to bypass mode and back to normal i.e. with no loss of mains supply to the critical equipment at any stage of the procedure.

To meet this requirement, a purpose built ATSA was designed, comprising of a substantial, wall mounting, IP55, enclosure with a top, segregated section housing the automatic transfer switch and a separate lower section housing a load break switch and a separate manual changeover switch, which also controlled the supply from the stand-by generator. Cable entry and exit was via removable gland plates in the underside of the enclosure.

To bypass the actual automatic transfer switch (ATS) for maintenance, first ensure that the mains supply is selected on the ATS and it is connected to the load terminals. Then move the manual changeover switch to the bypass position, which isolates the generator supply from the ATS and connects the mains supply directly to the load terminals. The load break switch can then be opened, which isolates the mains supply to the ATS and the ATS from the load terminals. At this stage the top compartment housing the ATS is fully isolated from both supplies. When the ATS is to be put back into circuit, first the load break switch is closed. Once the mains supply is registered by the ATS and, if required, it has successfully switched to the mains supply, the manual changeover switch can be changed back to normal mode, which connects the generator to the ATS. The load terminals are once again supplied via the ATS i.e. normal service is resumed.

To assist users, the ATS, which is housed in the top section of the assembly, incorporates a range of indicators so that the status of the supplies can be established (a view window is provided). Timers are also incorporated and a start signal can also be sent to the stand-by generator. There is also the facility to integrate the ATS within a BMS system but this was not implemented in this instance.



Automatic Transfer Switch Assembly rated at 250A 4P, Part No. A7292677



Automatic Transfer Switch Assembly rated at 250A 4P, inset plates removed