

AUTOMATIC TRANSFER SWITCH (ATS) GUIDE



MEDELEC



Certificate Number FM35831

The Automatic Control Switch (ATS) controls the switching between two or more electrical power sources connected on the same network. Automatic switching is required in order to ensure maximum continuity of service when one of the sources is lost due to fault or any other power loss. The ATS system is highly reliable and can be engineered to meet customer needs and requirements. System integration is possible on both MV and LV networks. Typical applications for ATS include substations, hospitals, desalination plants, data centres, factories and other critical loads which require secure power supply.

STANDARD AUTOMATIC TRANSFER SCHEMES

1 OUT OF 2 - TRANSFER SCHEME

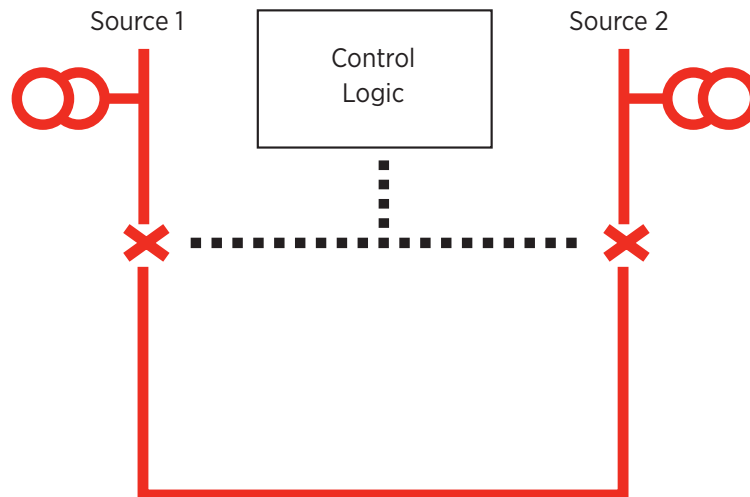


Figure 1 SLD for 1 out of 2

Normal Operation

- The normal operation of the scheme is either:
- Source 1 main supply, Source 2 alternative supply or
- Source 2 main supply, Source 1 alternative supply

Main Supply Loss

- Loss of supply is detected when an under voltage condition is present on one of the phases.
- When main supply is lost, providing alternative supply is available, the main supply circuit breaker is opened and the standby supply circuit breaker is closed, completing the transfer between sources.

Main Supply Loss due to Fault

- In the presence of a fault condition by the protection scheme, the system is inhibited and no transfer is done. Further operation is inhibited until system is reset manually.
- If the main supply circuit breaker does not open or the alternative supply circuit breaker does not close, further operation is inhibited until it is manually re-configured and reset.

Restoration of Main Supply

- Restoration can be done either manually or automatic.
- If Manual restoration is selected, the transfer to the original configuration can be done manually.
- If Automatic restoration is selected, the transfer back to the original configuration is completed when main supply is back healthy.
- Synchronising the sources on restoration is possible by means of a synchronising relay. This avoids loss of supply on returning to the normal operation.

Main and Alternative Supply Loss

- If both supplies are lost, the transfer scheme is inhibited until one of the supplies is restored back to the healthy state. Thereafter transfer to the healthy supply is done.

2 OUT OF 3 - TRANSFER SCHEME 1

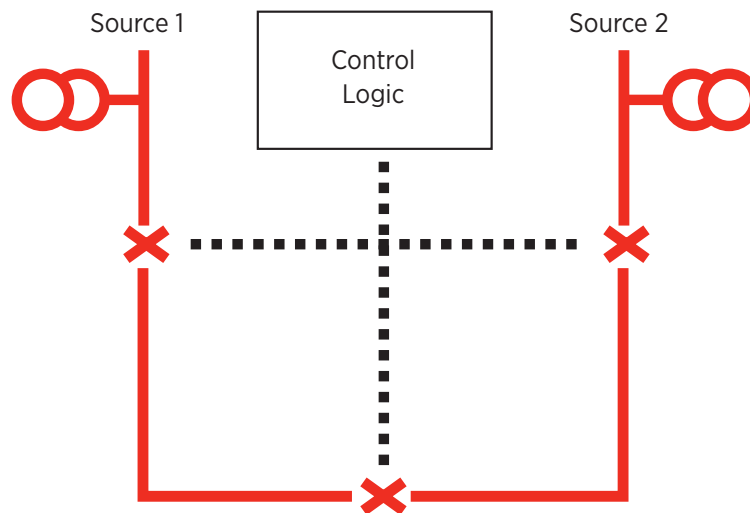


Figure 2 SLD for 2 out of 3

Normal Operation

- The normal operation of the scheme is either:
- Source 1 main supply, Source 2 alternative supply and bus section closed or
- Source 2 main supply, Source 1 alternative supply and bus section closed.

Main Supply Loss

- Loss of supply is detected when an under voltage condition is present on one of the phases.
- When the main supply is lost, providing an alternative supply is available, the main supply circuit breaker is opened, the standby supply circuit breaker is closed and bus-section remains closed, completing the transfer between sources.
- If the main supply circuit breaker does not open or the alternative supply circuit breaker does not close, further operation is inhibited until it is manually re-configured and reset.

Main Supply Loss due to Fault

- In the presence of a fault condition detected by the protection scheme of the main supply, the bus-section is opened, and the alternative supply is closed keeping half of the network healthy.
- If the main supply circuit breaker does not open or the alternative supply circuit breaker does not close, further operation is inhibited until it is manually re-configured and reset.

Restoration of Main Supply

- Restoration can be done either manually or automatic
- If Manual restoration is selected, the transfer to the original configuration can be done manually.
- If Automatic restoration is selected, the transfer back to the original configuration is completed when main supply is back in the healthy state.
- Synchronising the sources on restoration is possible by means of a synchronising relay. This avoids loss of supply on returning to the normal operation.

Main and Alternative Supply Loss

- If both supplies are lost, the transfer scheme is inhibited until one of the supplies is restored back to the healthy state. Thereafter transfer to the healthy supply is done.

2 OUT OF 3 - TRANSFER SCHEME 2

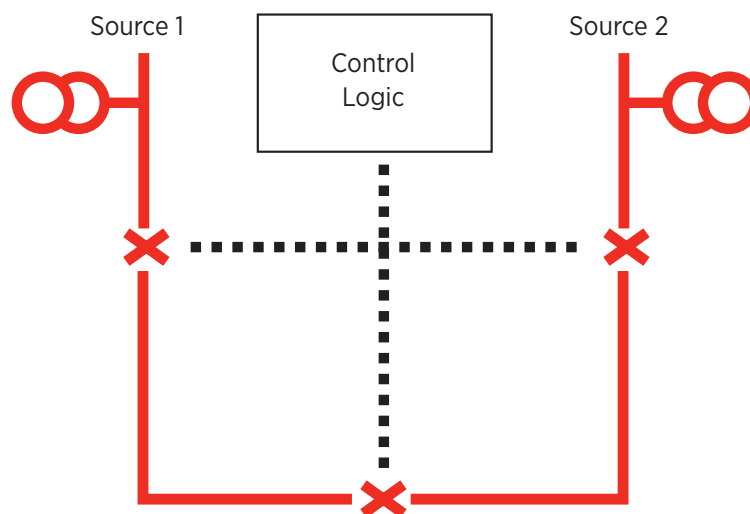


Figure 3 SLD for 2 out of 3

Normal Operation

- Source 1 and Source 2 healthy with circuit breaker closed and the bus section open.

Source of Supply Loss

- Loss of supply is detected when an under voltage condition is present on one of the phases.
- When one of the supplies is lost, providing that an alternative supply is available, the lost supply circuit breaker is opened and the bus-section is closed.
- If the main supply circuit breaker does not open or the bus section circuit breaker does not close, further operation is inhibited until it is manually re-configured and reset.

Source of Supply Loss due to Fault

- In the presence of a fault condition detected by the protection scheme of one of the sources, the system is inhibited and no transfer is done. Further operation is inhibited until system is reset manually.
- If the source supply circuit breaker does not open or the bus section circuit breaker does not close, further operation is inhibited until it is manually re-configured and reset.

Restoration of Supply

- Restoration can be done either manually or automatic
- If Manual restoration is selected, the transfer to the original configuration can be only done manually.
- If Automatic restoration is selected, the transfer back to the original configuration is completed when both supplies are both in the healthy state.
- Synchronising the sources on restoration is possible by means of a synchronising relay. This avoids loss of supply on returning to the normal operation.

Main and Alternative Supply Loss

- If both supplies are lost, the transfer scheme is inhibited until one of the supplies is restored back to the healthy state. Transfer to this supply is done.

Other transfer schemes can be customised as per client's requirements.



Enclosure

- Enclosure typical dimensions
 - 1875 x 600 x 450 mm or
 - Custom sized enclosure.
- Free standing, floor fixing holes provided on bottom frame.
- Hinged front door, lockable to prevent access to unauthorized personnel.
- Front access for operation.
- Cable supports and removable gland plates.
- Lifting points available.
- Common earth bar along enclosure.

Figure 4 ATS Enclosure

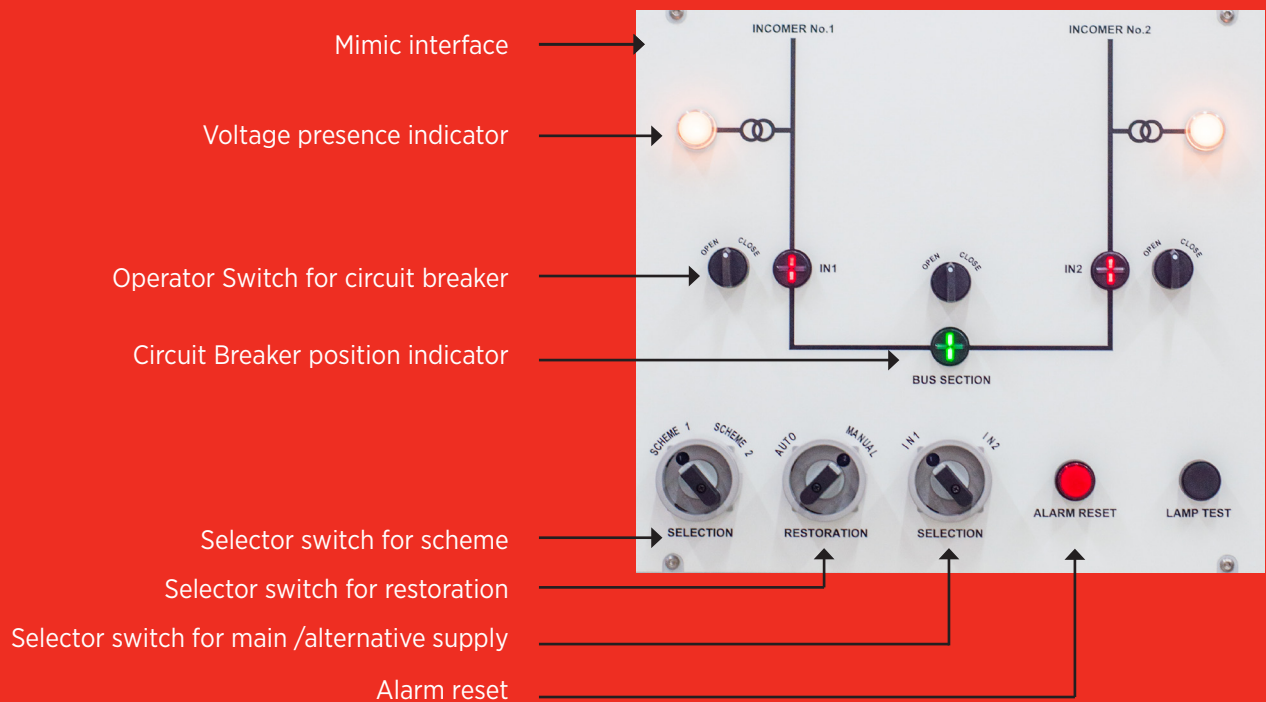


Figure 4 - Front Mimic Interface



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