

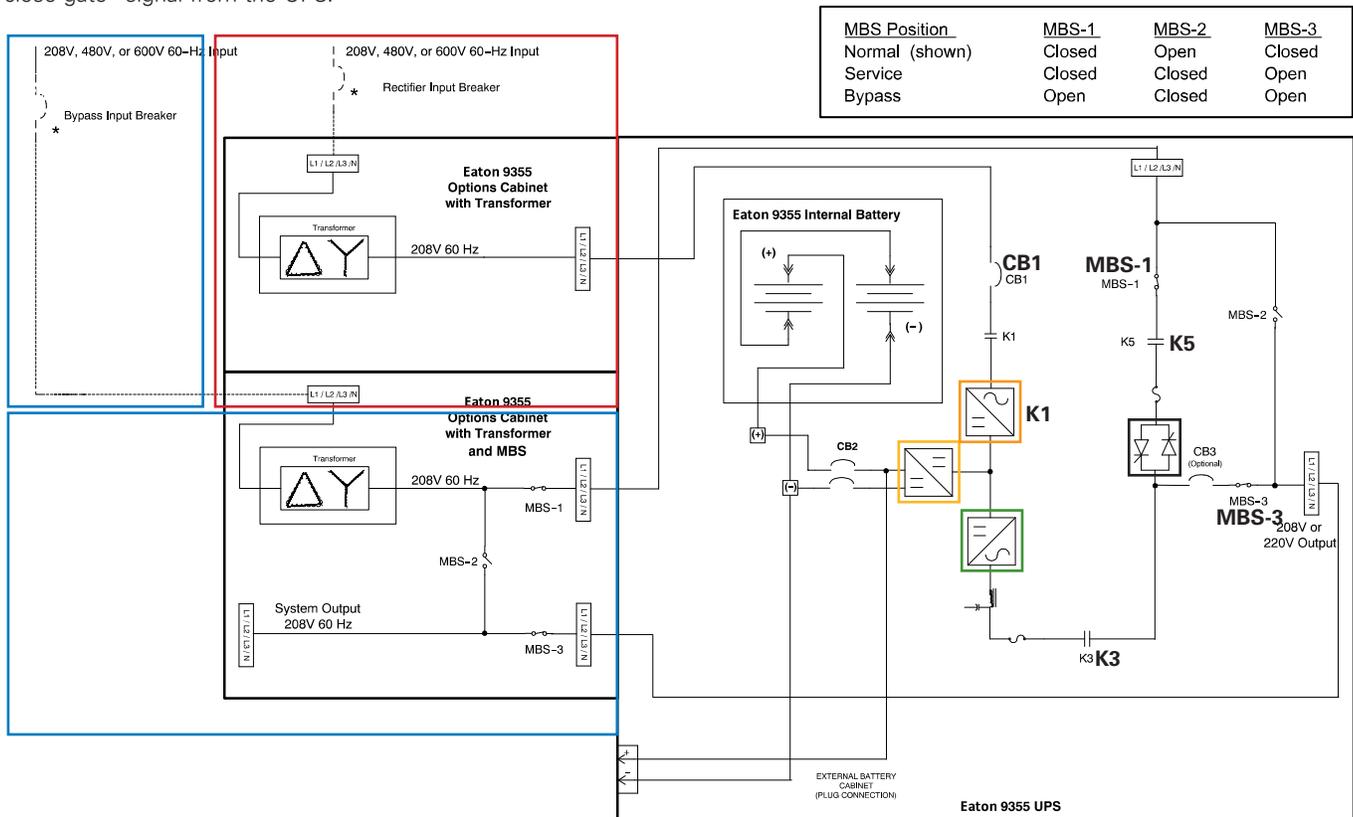
De-mystifying the dual-feed UPS (20 & 30 kVA – Eaton 9355 UPS)

This application note was created to help you understand the basic operations of the dual-feed UPS (20 & 30 kVA 9355 UPS) systems.

Let's assume you have two different utility companies (Utility A – red) and (Utility B – blue) providing power to the 20/30 kVA dual-feed 9355 shown below. During normal operation, Utility A (red) power is applied to the 9355 rectifier input (orange), DC-DC converter (yellow) and inverter (green) and Utility B (blue) power is applied to the 9355 static switch bypass feed (black). All contactors (K1, K3 and K5 in purple) within the UPS are closed during normal operation, which allows power to flow through them with no problem. Both utilities are operational, so power is flowing to both the rectifier input and static switch on the 9355. Power from Utility A is being sent to the rectifier, which converts AC to DC and sends the DC signal to both the DC-DC converter and the inverter. Power from Utility B is being sent to the static switch, but the static switch is "gated open," which means that bypass power is in a "hold" position within the static switch and doesn't release to the output until it receives a "close gate" signal from the UPS.

If Utility A power is removed from the rectifier input to the UPS, contactor K1 opens and forces the UPS to go to battery (DC) power. The DC power from the batteries then flows to the inverter, where it gets modified to AC. The K3 contactor is already closed, so power flows through the MBS-3 closed contact point and goes to the system output. This is how the UPS operates until the batteries hit their DC undervoltage limit, which then causes an AC undervoltage alarm to occur within the inverter. This alarm signals the UPS to "close gate on static switch," which allows the bypass power (blue) to flow through the MBS-3 closed contact point and go to the system output. The K3 contactor opens, which won't allow any bypass power to backfeed into the inverter.

The best-case scenario is that Utility A is providing power, which can be conditioned and sent to the loads. If Utility A becomes unavailable, you want the UPS to run on batteries (to provide conditioned power) as long as it can before it transfers to bypass power.



For more information, visit Eaton.com/9355