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Premium X-Switch Specifications:

1. Enclosure

- a. 14 gauge cold-rolled steel is used throughout.
- b. Steel surface is phosphetized for corrosion resistance and powder coat adherence.
- c. Sealer is applied after phosphetizing for better powder coat bond.
- d. Finish is 3 mil U.V. Stable ANSI 61 polyester powder coat.
- e. The standard enclosure is wall mounted, and rated NEMA 1.
- f. Floor mounted enclosures are available as an option.

2. Breakers

- a. Breakers are Solid State Current Limiting type, for long term calibration stability and low thermal drift.
- b. Breakers utilize rating plugs to allow coordination with upstream and downstream devices.
- c. Standard kAIC breaker ratings are as follows:
 - i. 18 kAIC – up to 100 Amps
 - ii. 35 kAIC – 480 V. breakers 100 to 600 Amps
 - iii. 50 kAIC – 480 V. breakers 800 to 1000 Amps
 - iv. 65 kAIC – 208 V. breakers 100 to 300 Amps
- d. High and Extra High kAIC rated breakers are available as an option.

3. Solid copper bus bars are used to make connections between the breakers

- a. The bars are braced for 65 kAIC

4. Clear, simple instruction sets

- a. Instructions for using the X-Switch are permanently attached in plain sight.
- b. Each bypass switch has an instruction set customized for its specific application. The instructions are specific and straightforward, not generic for all variations. No “if - then” statements are used in the instructions. The instruction set used is different for each variable in X-Switch design:
 - i. Number of breakers
 - ii. UPS input configuration: whether single or dual input
 - iii. Interlock keys versus no interlock keys
 - iv. SKRU (Solenoid Key Release Unit) installed or not
 - v. Safety Slide Bar installed or not

5. One Line Diagram

- a. A one-line diagram is permanently attached in plain view of the operator, to increase understanding of how the X-Switch operates. A second one-line diagram is attached inside the box to help the installer.

- b. The one-line diagram shows the connections between the upstream circuit breaker panel, the UPS, the X-Switch, and the load.

6. Clear, understandable labels by each circuit breaker

- a. The labels use understandable words: “Bypass,” “To UPS Input,” and “From UPS Output.” Labels using acronyms or abbreviations are not allowed.
- b. There is a set of labels in plain sight for the user, and another set inside the box for the use of the installer.

7. All breakers mounted vertically

- a. All the breakers (whether 2, 3, or 4) mount in a single row, and the breaker handles operate vertically, similar to a standard light switch. This helps the user understand intuitively whether the breaker is being turned on or off.

8. All breakers mounted behind a closed door

- a. A safety door covers all the breakers so they are not exposed to view. The door has to be opened in order to see the breakers or to operate them. This discourages inadvertent touching or accidental or malicious operation. Optionally, the door can include a key lock.

9. Main front cover is hinged

- a. The whole main front cover of the X-Switch is hinged. During installation, the main cover is opened on its hinge – it doesn’t have to be lifted off and back on.

10. Optional Safety Features: Interlock Keys, SKRU, Safety Slide Bar

- a. Safety features on a UPS External Maintenance Bypass Switch are provided to prevent two common operational errors:
 - i. Closing breakers out of order can short the UPS inverter to utility power.
 - ii. Opening breakers out of order can drop the critical load.
- b. The X-Switch complete safety set prevents both errors, and includes the following items:
 - i. Interlock Keys mounted above the “Bypass” breaker and the “From UPS Output” breaker work with the SKRU to prevent the first error.
 - ii. Solenoid Key Release Unit (SKRU) – receives a signal from the UPS indicating that the UPS is bypassed, so it’s safe to switch the external bypass breakers.
 - iii. Safety Slide Bar under the same two breakers prevents the second error
 - iv. Caution: Standard industry SKRU and/or Kirk Key sets prevent only one error or the other. Complete protection requires SKRU, Kirk Keys, and a Safety Slide Bar.
- c. The SKRU includes two additional functions:
 - i. Auxiliary contact – can be used to send “Inhibit Inverter” signal to the UPS.
 - ii. Audible Alarm – alerts the user that the switching procedure is incomplete. The alarm is activated while switching the X-Switch to Bypass Mode, and also while switching back to Normal Mode.