TECH CONNECT
Sweet UPS Service

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X-Switch Specifications:

1. **Enclosure**
   a. 12 or 14 gauge cold-rolled steel is used throughout, per UL requirements.
   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.

2. **Breakers**
   a. Breakers are Thermal Magnetic type without rating plugs.
   b. Standard kAIC breaker ratings are as follows:
      i. 14 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 350 Amps

3. **Solid copper bus bars are used to make connections between the breakers**
   a. The bars are braced for 100 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 – two, three, or four.
      ii. UPS input configuration: whether single or dual input.
      iii. Kirk Keys versus no Kirk Keys.
      iv. SKRU (Solenoid Key Release Unit) 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 to operate the X-Switch safely.
   b. A second one-line diagram is attached inside the box to help the installer.
   c. 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 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.
    b. The door includes a key lock as a standard feature.

8. **Optional Safety Features: Kirk Keys and SKRU**
    a. Safety features on a UPS External Maintenance Bypass Switch are provided to prevent two common operational errors:
        i. Opening breakers out of order can drop the critical load.
        ii. Closing breakers out of order can short the inverter to utility power.
    b. The X-Switch safety options includes the following items:
        i. If Kirk Keys are specified without any SKRU, they are mounted *under* the “Bypass” breaker and the “From UPS Output” breaker. In this position they prevent the first error from occurring.
        ii. A 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. Kirk Keys mounted above the “Bypass” breaker and the “From UPS Output” breaker work with the SKRU to prevent the second error.
        iv. A complete set of safeties includes two Kirk Keys under the breakers to prevent error #1, plus an SKRU with a second set of Kirk Keys over the breakers to prevent error #2.