



TYPE SPECIFICATION — SOLID STATE LINE CURRENT MONITOR RELAY

1.0 General.

1.1 This specification sheet describes requirements for the Bulletin 813S Solid State Line Current Monitor Relay. The device shall conform to these specifications and be built in accordance with industry standard practices outlined in NEMA ICS 1978.

1.2 Device shall be listed with Underwriters Laboratories, Inc. (UL).

2.0 Design Features.

2.1 The line current monitor shall be for use on 3 phase systems to protect against the abnormal current conditions specified in paragraph 4.0.

2.2 The device shall utilize solid state circuitry, continuously energized by a single phase supply voltage. A hermetically-sealed N.O./N.C. Form C switch shall be used in the output.

2.3 The inputs of the device shall be designed for use with 5-amp secondary rated line current transformers installed in the 3 phase circuit being monitored. Unbalanced input currents shall cause the output contacts to change state.

2.4 The device shall be factory-set to trip at approximately 1 ampere unbalance, which is 20% of the normal 5-amp current transformer full load secondary rating. The adjustment potentiometer shall be accessible from the front of the device, concealed behind a removable plastic cap.

2.5 The current monitor shall be supplied with an automatic reset or a manual reset.

2.6 Automatic and manual reset versions shall include a green LED which shall be On to indicate the supply voltage is present. The manual reset device shall also include a red LED which shall be On to indicate the output is energized.

2.7 Circuitry shall be encased in a housing made of Cyclac \square material, with wiring connections brought out to screw type terminals.

2.8 Terminals shall have self-lifting pressure plates and shall accommodate AWG wire sizes 14 to 22.

3.0 **Protection.** The line current monitor shall protect the load against abnormal conditions (para. 4.0) occurring on the line and load side of the device when used in a single motor branch circuit. If a single current monitor is used ahead of a multi-motor circuit, the load shall be protected against abnormal conditions occurring on the line side of the current monitor only (as detected by the current transformers).

4.0 Abnormal Current Conditions Detected.

4.1 **CURRENT UNBALANCE.** When the negative sequence current at the input exceeds 1 ampere (factory setting), the output contacts shall change state after a time delay inversely proportional to the magnitude of this current. The delay shall be approximately 3 seconds for a negative sequence current of 1.25 amp. Detection of current unbalance shall be effective during the motor running period only.

4.2 **PHASE FAILURE.** The output contacts shall change state for an open phase condition after a time delay of approximately 1.3 seconds. Detection of phase failure shall be effective during the motor starting and running periods.

4.3 **PHASE REVERSAL.** A reversal of phase sequence ABC shall cause the output contacts to change state after a time delay of approximately 0.7 second. Detection of phase reversal shall be effective during the motor starting and running periods.

5.0 **Ground Faults.** The device shall provide **limited load side** ground fault protection. The smallest ground fault detected shall be approximately 20% of full load current. On high current faults greater than 200% full load current, protection shall not be adequate because of slow response time.

6.0 Electrical Ratings.

6.1 The current monitor shall be available for specific single phase 60 Hz supply voltages of 120V, 208V, 240V, 480V, 600V, +10% -20%. Power requirement shall not exceed 4.4VA.

6.2 Input currents shall be 3 phase, 60 Hz, $\pm 1\%$, with a normal operating range of 0-5 A. Max. continuous current shall be 10 A. Max. inrush current shall be 35 A for 5 seconds. Input impedance shall not exceed 0.005 ohm for each phase.

6.3 The maximum output contact ratings shall be as follows:

Volts AC	Make	Break	Volts DC	Make/Break
125-250 1-125	2200VA 17.6A	220VA 1.76A	1-30	3A

Continuous Carrying Current: 55 Amp AAC or IDC

7.0 **Temperature Rating.** Operating range shall be -20°C to $+60^{\circ}\text{C}$.

8.0 **Reset Time.** The automatic reset device shall have a reset time of approximately 0.7 second.

9.0 Installation.

9.1 The device shall be position-insensitive, allowing it to be mounted in any position.

9.2 The device shall have 4 mounting slots for installation directly on a panel. Its design shall also allow installation on Bulletin 700 mounting strips. The device shall occupy approximately a 22 square inch area.

9.3 The device shall also be available in a NEMA Type 1 general purpose enclosure.

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