

PAPI Heaters for the Prevention of Frost and Condensation

Transport Canada Aerodrome Safety Circular ASC 2002-014 identifies a potential problem where the formation of frost and condensation on PAPI lenses can give false signals to pilots. To ensure that the correct visual information is provided by the PAPI, it is necessary to prevent frost or condensation from forming on the lenses or front glass of the PAPI units.

The *Spirit Series™* family of PAPI Heaters are designed to help eliminate this potential problem. They are designed to work with all manufacturer's PAPI units that are powered from a constant current series circuit.

Two versions of PAPI Heaters are available. Type A is designed as a standalone unit that can be connected to the output of a CCR, or to the output of an MGL Relay or other type of circuit selector switch. This version is compatible with any make or model of CCR or circuit selector.

Type B is designed specially to integrate with vacuum type circuit selector switches supplied by Honeywell, H&P and Liberty. These vacuum circuit selectors have been supplied since 1998 in upgrades to CSR6 MGL relay cells, or as new circuit selectors.

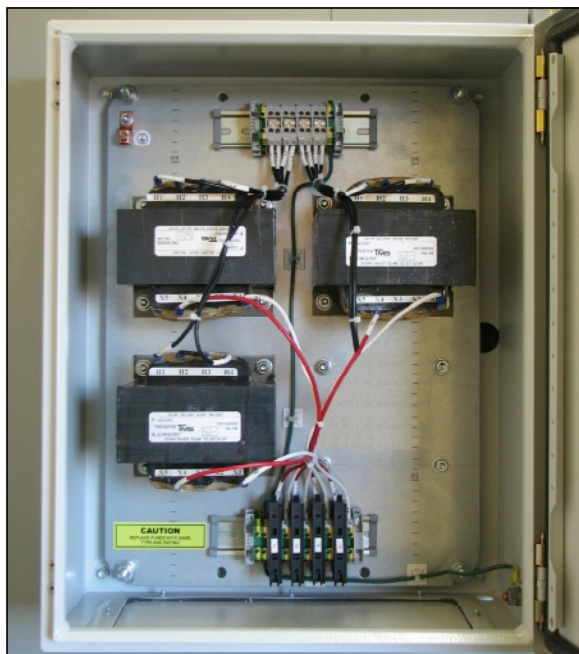


Fig. 2 Type B PAPI Heater Cabinet c/w 3 Heater Transformers for 3 Vacuum Circuit Selector Switches.



Fig. 1 Two Type A PAPI Heater Cabinets, 5KV, suitable for installation on CCRs rated up to 30KW with Circuit Selectors.

Type A: Standalone PAPI Heater

- Works with all PAPI units from any manufacturer. No modifications are required to the PAPI units.
- PAPI heaters use less energy than running the PAPI CCR at 2.8A (Brightness Step B1).
- Rated to operate at 5KV and up to 20A, this unit can safely and reliably operate on 20KW or 30KW CCRs. Although a PAPI may operate on a 4KW CCR with output voltage of only 606V, quite often multiple sets of PAPI's are fed from a single 20KW CCR with maximum output potential of 3680V, and are switched using circuit selectors.
- Can be supplied from 120V, 208V or 240V AC input power from a standard 15A circuit breaker located in the electrical vault.
- The PAPI heater interlocks with the CCR main contactor to ensure the PAPI heater is not energized when the CCR is operating.
- The PAPI heater can be installed on the output side of a circuit selector switch, allowing one PAPI to be energized while a second PAPI (fed from the same CCR) is in heating mode. Interlocks with the circuit selector relays prevent the PAPI heater from being energized when the corresponding circuit selector is energized.
- Timing relays ensure that there is an open transition when switching from CCR mode to PAPI heater mode.

Ordering Information

Type:

- A - PAPI Heater
- B - PAPI Heater for Existing Vacuum Circuit Selectors

Number of Circuits:

- 1 - 1 Circuit
- 2 - 2 Circuits (Type B Only)
- 3 - 3 Circuits (Type B Only)
- 4 - 4 Circuits (Type B Only)

Input Voltage:

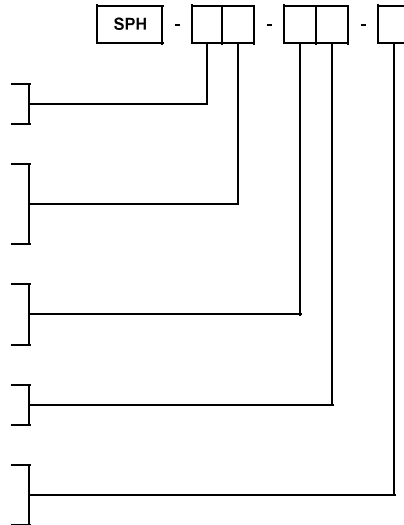
- A - 120 VAC
- B - 208 VAC
- C - 240 VAC

Control Voltage:

- 1 - 24VDC
- 2 - 120 VAC

Number of PAPI Lamps

- A - 4 to 8 lamps
- B - 12 to 16 lamps
- C - 18 to 24 lamps



Type B: With Circuit Selectors

- Vacuum type circuit selectors provided by Honeywell, H&P and Liberty, have a normally closed contact on each of the circuit selectors. The Type B PAPI heater uses these contacts and the inherent make before break operation of the selector switches, to simplify the installation and reduce the cost of the PAPI heater.
- Works with all PAPI units from any manufacturer. No modifications are required to the PAPI units.
- Rated to operate at 5KV and up to 20A, this unit can safely and reliably operate on 20KW or 30KW CCRs.
- Can be supplied from 120V, 208V or 240V AC input power from a standard 15A circuit breaker located in the electrical vault.
- Available with up to 4 PAPI heaters in one enclosure. Ideal for the situation where one CCR feeds 4 sets of PAPI's on different runway ends.
- The Type B PAPI heater is installed on the output side of each circuit selector, allowing one or more PAPIs to be energized while the other PAPIs are in heating mode. Interlocks with the circuit selector relays prevent the PAPI heater from being energized when the corresponding circuit selector is energized.

PAPI Heater using ALCMS

If the airport has a Liberty *Freedom Series™* or *Spirit Series™* Airfield Lighting Control and Monitoring System (ALCMS), a Winter Mode pushbutton can be incorporated into the maintenance graphics. This pushbutton ensures that the PAPI regulators remain at Brightness B1 when they are commanded off from the control tower, FSS or ARCAL. The CCR effectively operates as a PAPI heater without the additional cost of purchasing and installing a Type A or B PAPI heater. The B1 output current on a Liberty CCR can be adjusted lower to save power. This is ideal for a ferroresonant CCR as it draws only the power required.



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