Liquid Nitrogen Controller - LNN-101

Output Functions

1. General.

The LNN-101 is a liquid nitrogen controller suitable for use in the vacuum industry with pumping systems using a meissner coil in the vacuum chamber.

This document summarises the functions of each of the output relay functions. Refer to reference 602909 for terminal assignments. Refer to drawing C60200 for typical installation wiring.

2. Thermocouple Fault Relay.

A fully isolated relay contact is normally inactive. It is made active by the LNN-101 in the event of the detection of the meissner type T thermocouple becoming open circuit.

It is possible to configure the LNN-101 so that this output is either normally open or normally closed.

3. Common Control Relay Outputs.

Four relay outputs are wired internally to the same common line. The function of each of these relays is as follows.

3.1 LN2 Valve

This relay is closed when the LNN-101 requires liquid nitrogen to be admitted to the meissner.

3.2 Air Valve

This relay is closed when the LNN-101 requires compressed air to be admitted to the meissner to blow out liquid nitrogen. In traditional systems the same signal was also used to energise a resistor heater (typical value 3 ohm, 50W). Because of the actual power dissipated in the resistor the life time of the resistor was very short. The LNN-101 provides a separate output for controlling this resistor (see 3.3 below).

3.3 Resistor Heater

This relay is closed when the LNN-101 requires the resistance heater to be energised. The LNN-101 can be configured to burst fire this output over a mark / space ration of 0 to 100% thereby limiting the average power dissipated in the resistor. The LNN-101 can also be configured to de-energise this output after a preset period of time from the start of a meissner blow out function.

Because the LNN-101 output relays are rated at a maximum current of 1A it is normally necessary to drive the resistor heater via a suitable high power relay.

3.4 Vent Enable

This relay becomes active after the LNN-101 has energised the Air Valve output for a fixed (configurable) continuous period of time. It remains active until the next time the LN2 Valve output is energised.

It is possible to configure the LNN-101 so that this output is either normally open or normally closed.