Using External End Switches with an NXF4000

Revision November 4, 2020

It is possible to wire external purge and low fire end switches to an NXF4000 if some additional wiring is added. These may be desired if the burner design or preference of the customer calls for end switches to monitor the physical position of the air damper.

METHOD OF CONTROL

This method takes advantage of the time allowed by the control for the airflow switch to prove. The airflow switch must prove within 60 seconds of the purge position being reached.

Using this method requires two digital inputs to be programmed for use with an air switch. The action “AND” allows this function to be used on multiple sets of inputs, so the actual air switch can also be wired to two digital inputs or can be in the safety limit string. Two inputs are used so that there can be a switch check to ensure that the purge end switch changes states when the burner is idle.

The end switch for the purge position latches a relay using power from the blower output. One contact of this relay is in series with the normally open contact from the airflow switch. This only allows the switch to prove if the end switch is made.

After purging finishes, the relay stays latched on, allowing the airflow switch to stay made. The latching relay also provides power to the low fire end switch. The low fire end switch also latches a relay when made. One contact of this relay is in series with the pilot valve output, allowing the pilot to light only if the end switch closes.

Each relay requires two poles and operates at line voltage. The low fire end switch relay can be omitted, and the low fire end switch directly wired in series with the pilot valve if the pilot is interrupted.

PROGRAMMING

Using digital inputs 13 and 14 as examples:

DIGITAL INPUT SETUP → DI 13 → USE → AIRFLOW N.OPEN
DIGITAL INPUT SETUP → DI 13 → ACTION → AND
DIGITAL INPUT SETUP → DI 14 → USE → AIRFLOW N.CLOSED
DIGITAL INPUT SETUP → DI 14 → ACTION → AND

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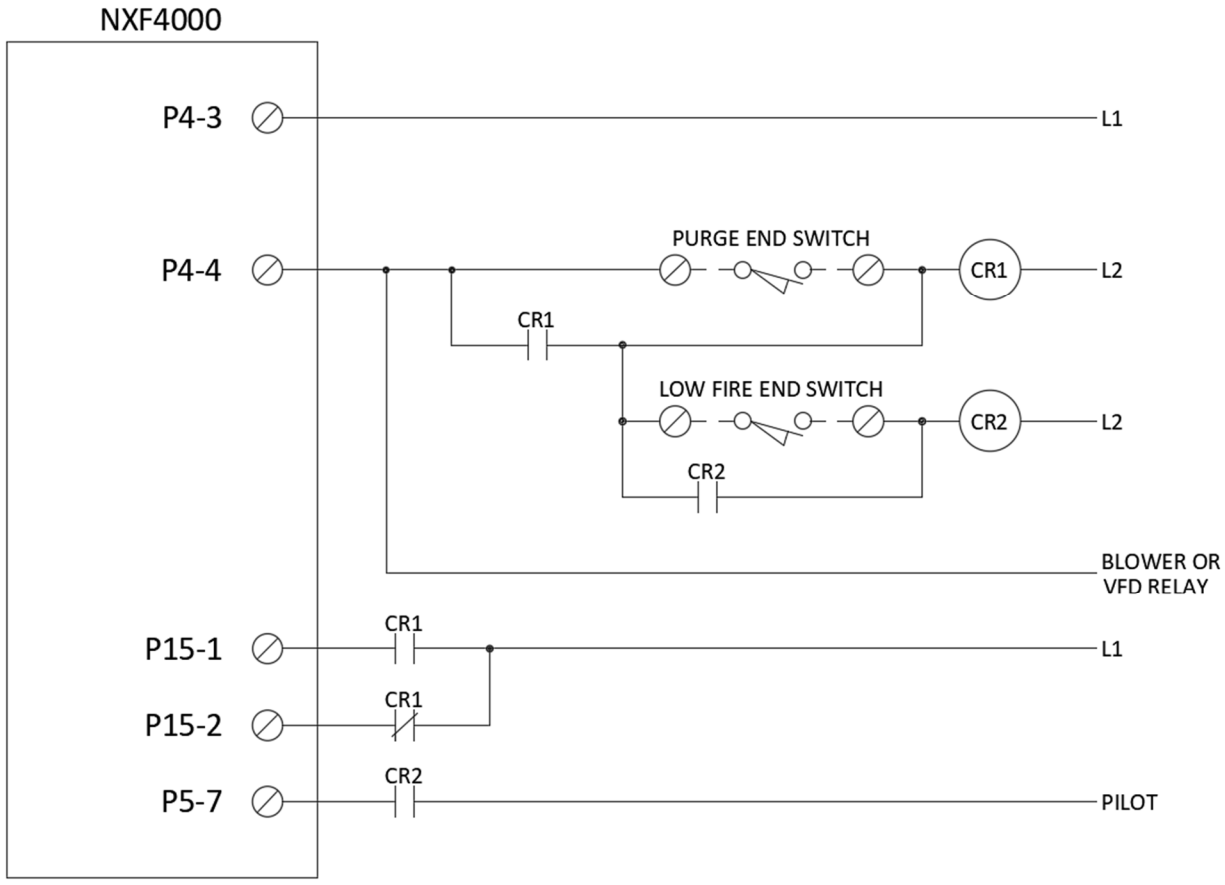
WIRING DIAGRAM

This diagram requires two double-pole relays. Use this wiring for an intermittent pilot (or if pilot type is not known).



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This diagram requires one double-pole relay. Use this wiring for an interrupted pilot.