Connecting Externally Proven Devices to NXF4000 or PPC4000

Revision September 25, 2020

Connecting an externally proven device such as a third-party draft control or combustion air damper is sometimes necessary with the NXF4000 or PPC4000. With a traditional flame safeguard this is accomplished by deriving the call for the draft control or combustion air damper from the call for heat at the end of the recycle limit string. An additional contact is then added at the end to keep the control from starting the sequence until the draft control or combustion air damper has proven.

This method does not work with an NXF4000 since the call for heat is derived internally from the load controller. If this method was used, the draft control or combustion air damper would run whenever the recycle limit string was complete. When a PPC4000 is used, this method could work depending upon the flame safeguard used – this is an alternative.

METHOD OF CONTROL

This method takes advantage of the time allowed by the control while waiting for a profile selection. Normally the output from the blower terminal is wired through a fuel selection switch to engage a profile. The control will wait indefinitely after a call for heat for a profile to be selected.

Two DPDT relays are required to be added for this method to work. The first will connect to the existing blower command. This will interpose to the external voltage to command the external device to open. The second will connect to the voltage at the external device to signal that the interlock is proven and the sequence can continue. One normally open contact from the second relay will supply power to the fuel selection switch (or profile selection terminal directly if only one profile is used). The second normally open contact will start the blower by connecting line voltage from the blower terminal to the blower contactor or by closing the VFD start contact. This allows the external device to prove before the blower runs.

WAIT FOR PROFILE will be displayed while waiting for the proven signal during the startup of the sequence. Losing the proven signal at any other time will cause the blower to shut off, resulting in either a return to standby or a lockout due to the loss of airflow (depending upon the operating state).

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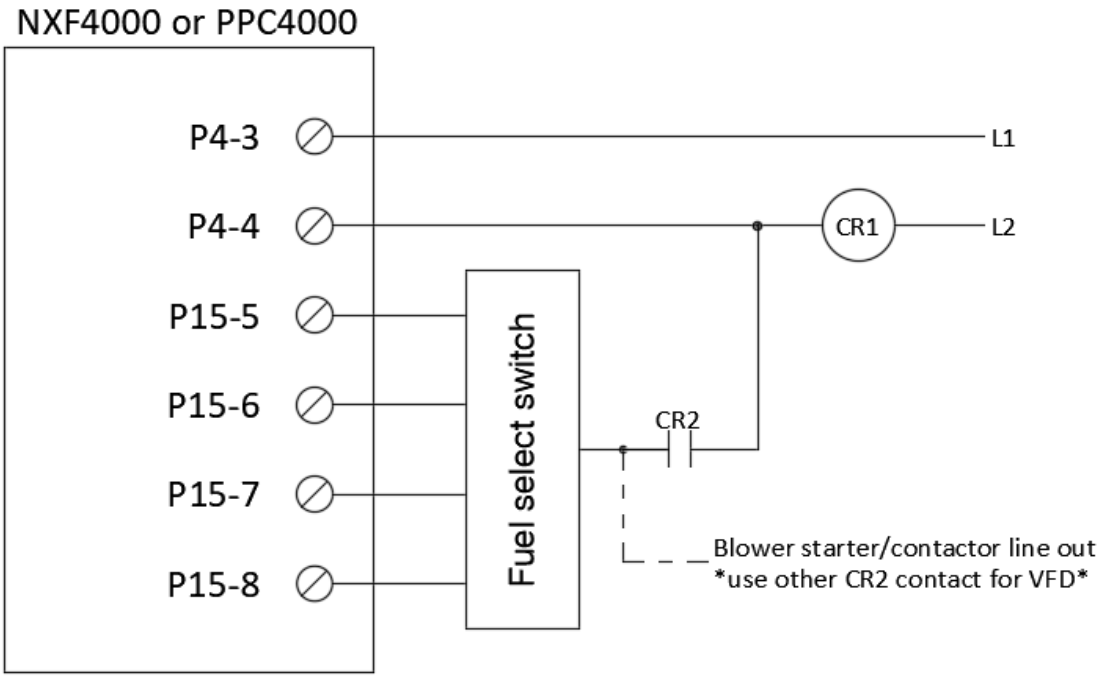
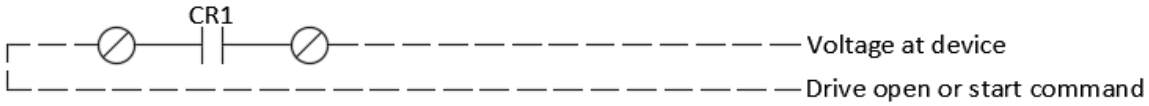
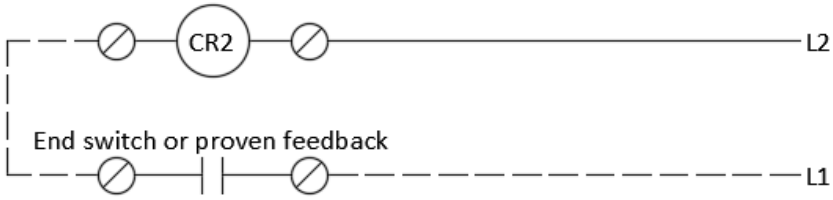
WIRING DIAGRAM



To CALL on external device



To PROVEN on external device



To VFD (ABB ACS550 example)