Application Note: Three-Wire Control (STA, STP, F/R) with L100 and SJ100 Series Inverters

Please refer also to the L100 or SJ100 Inverter Instruction Manual

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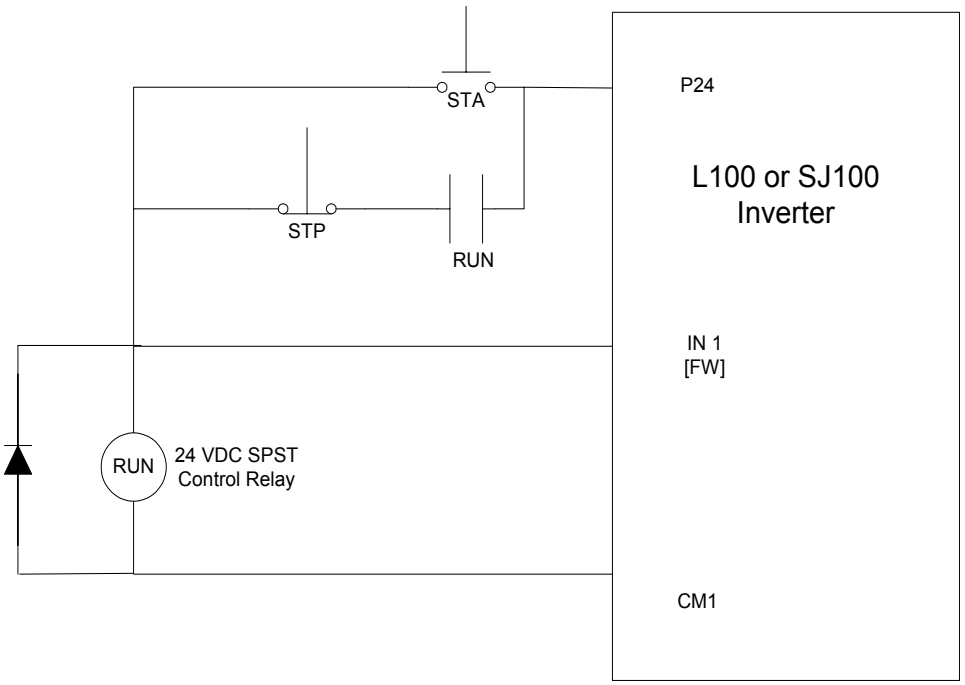
Application Note for “Three-Wire Control” with Hitachi L100 & SJ100 Series Inverters

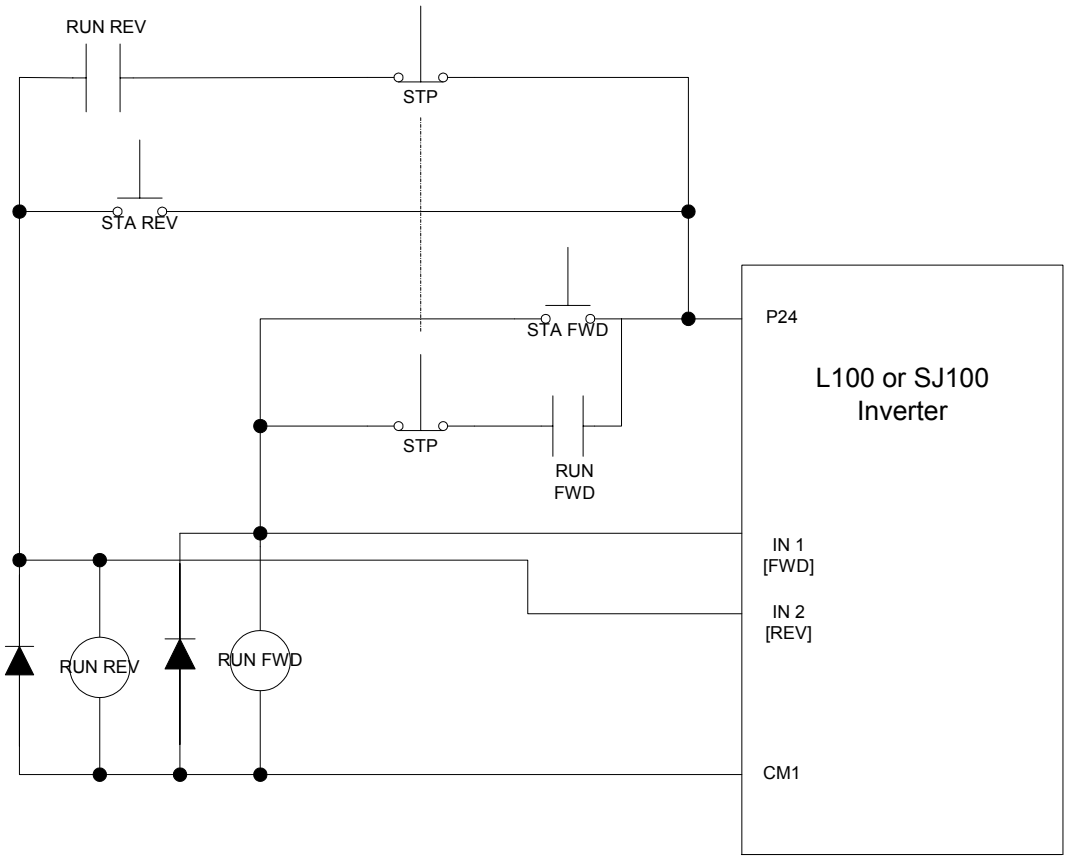
Sometimes it may be desirable to use a remote START/STOP pushbutton arrangement together with an inverter. This often occurs when a machine is being retrofitted or upgraded with the addition of a Hitachi inverter as a replacement for a motor starter. The pushbuttons that interfaced with the original motor starter would typically be a single-pole normally-open momentary pushbutton for the START button, and a single-pole normally-closed momentary pushbutton for the STOP button. Sometimes a switch may also be present for selecting the forward or reverse direction of rotation.

In the case of the L300P or SJ300 Series of inverters, a function is built-in to directly interface to a START/STOP pushbutton arrangement of this type without any additional hardware. Additionally, a FORWARD/REVERSE signal can be accommodated, hence the term “three-wire” control. The three signals are wired directly to three intelligent input terminals.

In the case of the L100 and SJ100, such a function is not built in. However the START/STOP functionality (without direction control, i.e. FWD only) can be accomplished simply with the addition of a single external control relay, using a circuit similar to that in the diagram below. This is a simple seal or latch circuit.



The above circuit does not include FWD/REV direction change functionality. If this is a requirement, a more elaborate arrangement is needed. Two relays would be necessary, and the STOP pushbutton would have to be DPST NC type, as shown in the example that follows on the next page.



In this circuit, pushing the STA FWD button would start the inverter in the forward direction, while pushing the STA REV button would start reverse operation. If it is desired to change rotation direction while running, the STOP button would have to be pushed first, then the desired run direction button. That is because the inverter will ignore a REV run command when a FWD run command is already present, and vice versa. Pushing the buttons in this sequence will cause the inverter will ramp the motor down to a stop, then ramp up in the opposite direction, according to its configuration settings.