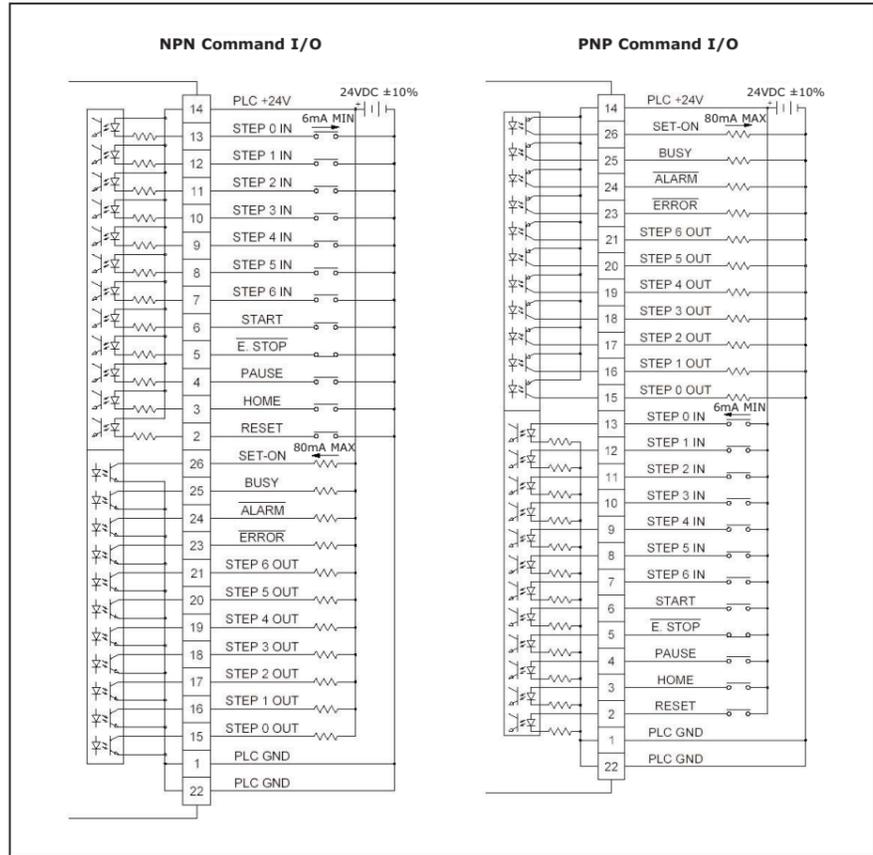


The command I/O for the LC8 is available in two different configurations, NPN (sink type) and PNP (source type):

Model Number	LC8-B□□□N-□□□□	LC8-B□□□P-□□□□
Command I/O Input	+24V common, 24VDC ± 10%, Min.6mA	PLC GND common, 24VDC ± 10%, Min.6mA
Command I/O Output	NPN open collector (sink type), 24VDC ± 10%, Max.80mA	PNP open collector (source type), 24VDC ± 10%, Max.80mA
Leakage Current	Less than 10µA	
Internal Voltage Drop	Less than 0.8V	
PLC Power Supply	24VDC ± 10%	



9 OPERATION

WARNING

- Never access or touch terminals and switches while energized. It may lead to electric shock.
- Never touch any moving part of the actuator when it is powered up or operating. This may lead to injury.

CAUTION

- Do not touch the driver radiator and motor for some time after power has been disconnected, as they heat up when energized. It may lead to a burn.
- Immediately stop the operation in the event of failure. There is a possibility of electric shock, injury and fire.
- Check the rotating direction before connecting with other devices. It may cause injury and damage.

10 MAINTENANCE INSPECTION

DANGER

Do not overhaul the product, it could lead to fire and electric shock.

Check the voltage using a tester, more than 1 minute after the power is turned off before commencing any wiring and inspection.

CAUTION

Ask SMC for repair. This product may become inoperable if disassembled.

10.1 General

It is important to perform regular maintenance inspections of the LC8 positioning driver, to optimise its performance and safe operation. Please familiarize yourself with the information given below, this will enable you to perform the maintenance inspections in a safe and proper manner.

Before performing an inspection it is important to ensure that the power to the positioning controller is switched off/disconnected to avoid the risk of electric shock.

Do not touch the circuits inside the positioning driver.

Avoid performing an inspection while the positioning driver is in operation, as the heat sink may become quite hot during operation.

Disassembling the controller may cause it to malfunction.

If a fault is detected during the inspection, contact your nearest SMC service department as soon as possible.

11 GENERAL EMC PRECAUTIONS

Noise Considerations

The "Q" version of the LC8 Positioning Driver has been designed and tested to meet the emission and susceptibility requirements of the CE (European Economic Area) without the aid of external filters. This compliance is based on following the instructions in this manual for installing and wiring the LC8.

Noise Sources

Two types of noise will affect the LC8 positioning driver and all other electronic devices, radiated noise and conducted noise.

Radiated noise is electromagnetic interference (EMI) that travels through the air and couples to the circuits and/or cables of the LC8. Radiated noise is always present but generally at harmless levels. Circuits and cables can act as antennas and as amounts of noise increase, signals traveling in the circuits and cables can have enough noise coupled to them that the signal is lost in the noise. Very large amounts of EMI can even damage components. Power equipment and cables can be unintentional sources of radiated noise. Radio equipment is designed to be a source of radiated noise.

Conducted noise is electrical noise that travels through wires. This kind of noise is also always present but usually harmless. Conducted noise problems are usually associated with power supply and grounding issues. If there is an extreme amount of noise on the AC power lines it can pass through the filtering built into the LC8 and have a negative effect on the circuit. The LC8 positioning driver has been tested to make sure that it is not susceptible to normal amounts of radiated and conducted noise and also to make sure that it is not a significant source of radiated or conducted noise.

Noise Suppression/Prevention

The following guidelines will insure robust performance:

- General noise reduction
 - Avoid bundling power cables (motor and power) and control cables together.
 - Use shielded or twisted pair cables for control cables whenever possible.
 - Ground the LC8 positioning driver and its actuator together at one point or a ground plane (metal enclosure).
- Reduce EMI of other instruments and devices
 - Use surge absorbers on the noise sources (such as magnetic contactors, AC relays, AC valves, etc) to reduce noise.
 - Separate noisy equipment or devices from the LC8 positioning driver. Maintaining the maximum physical distance can be an effective method to reduce radiated noise couplings.
 - Signal cables (I/O, encoder, communications) should be routed away from power cables. Version 1.02
- Improve noise immunity in high noise environments
 - Install ferrite filters on the encoder and signal lines (as well as RS-232 lines during setup and testing).
 - Ground the shields of the encoder and the control signal lines with cable clamp fittings (Pclips).
- Optional components to improve noise immunity
 - Power Line Filter

Recommended part numbers:

Tokin GT Series or equivalent

- Ferrite EMI suppressor: The noise immunity of the driver can be improved by filtering the noise with clamp-on ferrites on the Encoder, Command I/O and RS-232 cables. Locate ferrite beads as close as possible to the source of noise to minimize radiation. Ferrite beads can be attached to cables with tie wraps or heat-shrink tubing.

Recommended part numbers:

Steward 25A2029-0A2 (Typ. 300. @300Mhz)

Steward 25B0735-000 (Typ. 243. @300Mhz)

Steward 28A2029-0A2 (Typ. 209. @100Mhz)

Steward 28B0735-000 (Typ. 201. @100Mhz)

or equivalent

- Ferrite EMI filter for multi-axis communication cables

Recommended part number:

Fair-Rite 0443166651 or equivalent

11.1 Conforming standards

Standard	Description
EN 55011	Conducted RF Emissions
EN 61000-3-2	Harmonics
EN 61000-3-3	Flicker
EN 61000-4-2	Electro Static Discharge
EN 61000-4-3	Radiated RF Susceptibility
EN 61000-4-4	Electrical Fast Transient
EN 61000-4-5	Surge
EN 61000-4-8	Magnetic Field Immunity
EN 61000-4-11	Voltage Dips & Variations

12 EUROPEAN CONTACT LIST

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