



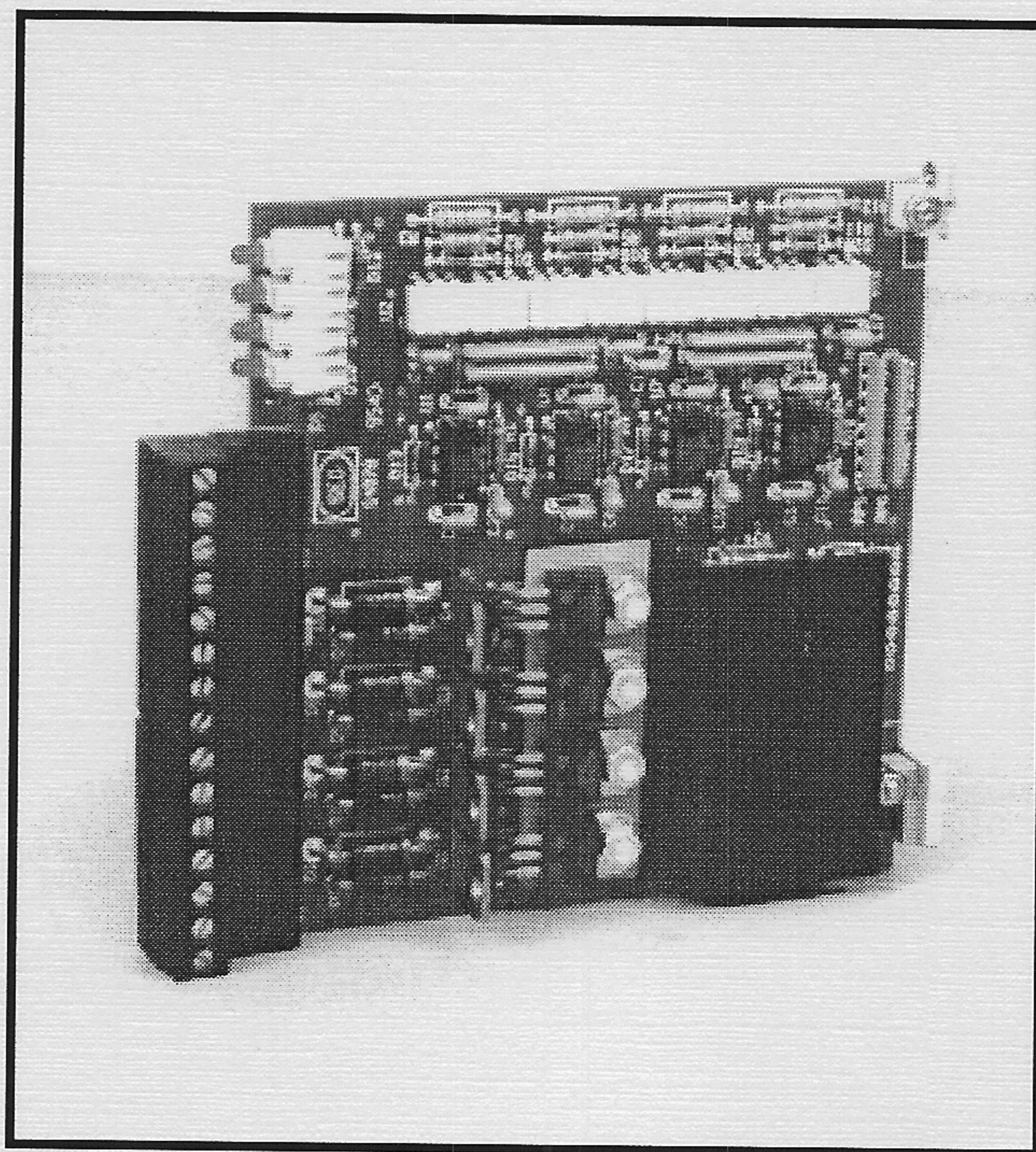
SYSTEMS M4500

INDUSTRIAL CONTROLLER

S4078: QUAD HIGH SPEED SOLENOID DRIVER

FEATURES:

- 4 INDIVIDUAL HIGH SPEED SOLENOID DRIVERS ON ONE BOARD THAT IMPROVES SOLENOID RESPONSE TIME, REPEATABILITY, AND RELIABILITY
- QUAD VERSION OF THE M273
- PROVIDES 39 VOLT DC TURN "ON" PULSE FOR FASTER SOLENOID "ON" RESPONSE AND 13.5 VOLT HOLDING VOLTAGE FOR FASTER SOLENOID "OFF" RESPONSE
- OPTICALLY ISOLATED, 15-30VDC SOURCING INPUTS
- OPTIMIZED FOR 24VDC SOLENOIDS
- RATED FOR 5 AMP INRUSH AND 3 AMP CONTINUOUS CURRENT ON EACH DRIVER CIRCUIT
- INDIVIDUAL LED STATUS INDICATION OF SOLENOID "ENERGIZED".
- REMOVABLE FIELD WIRING CONNECTORS
- POWERED FROM EXTERNAL + 24VDC AND -15VDC USER POWER SUPPLIES
- 4.25" X 4.10" BOARD FOR MOUNTING EITHER IN I/O SLOTS OF M4500 CHASSIS OR BACK-PANEL MOUNTING



GENERAL DESCRIPTION:

The S4078 contains 4 identical High Speed Solenoid drivers which reduce the response times (both "on" and "off") and improves the repeatability of +24VDC solenoids. Compared to a standard solid state output, which applies and maintains +24VDC to the solenoid, each solenoid driver of the S4078 applies a pulsed turn "on" voltage of 39VDC for 15 milliseconds when the respective solenoid is first energized, then drops to a holding voltage of 13.5 volts until the solenoid is de-energized. Improvement

in solenoid response time from 50 to 100% can be obtained using the S4078.

The advantages of this type of driver are: When the solenoid is energized, the initial pulse provides a turn "on" voltage which is considerably greater than the rated voltage of the solenoid (which causes no damage to the solenoid since it is of a short duration). This provides a greater degree of energy to overcome the initial inertia of the spool quicker

GENERAL DESCRIPTION:(cont'd)

and with a greater degree of repeatability. After approximately 15 milliseconds, the voltage drops to a holding voltage which is lower than the rated voltage of the solenoid but enough to maintain the solenoid in the energized state (at a lower energy level). When the solenoid is then de-energized, the solenoid will then turn "off" faster because less energy needs to be dissipated from the coil. The S4078 incorporates a transient suppressor on each driver which allows the inductive EMF of the coil at turn "off" to drop to -39 Volts. This contributes to the quicker turn "off" of the solenoid as well (the energy of the coil is dissipated at a higher voltage, thus dissipates quicker). Note that fly-back diodes should not be added to the solenoid coil for this reason.

The inputs of the S4078 are 15-30VDC optically isolated sourcing inputs. These are usually driven from 15-30VDC outputs from a PLC. The outputs of the S4078 are then wired directly to the respective solenoids (see figure 1 for a typical wiring diagram). The outputs of the S4078 are rated for up to a 5 amp inrush current for 50 milliseconds with a continuous holding current of 3 amps. Individual LEDs are provided on the front of the S4078 to indicate when the respective solenoid is "on". These LEDs are driven directly from the S4078 outputs. The S4078 requires +24VDC and -15VDC power from user supplied power supplies rated appropriately for the required current.

Typical applications include any +24VDC solenoid applications which require the quickest possible solenoid response times or the greatest degree of repeatability.

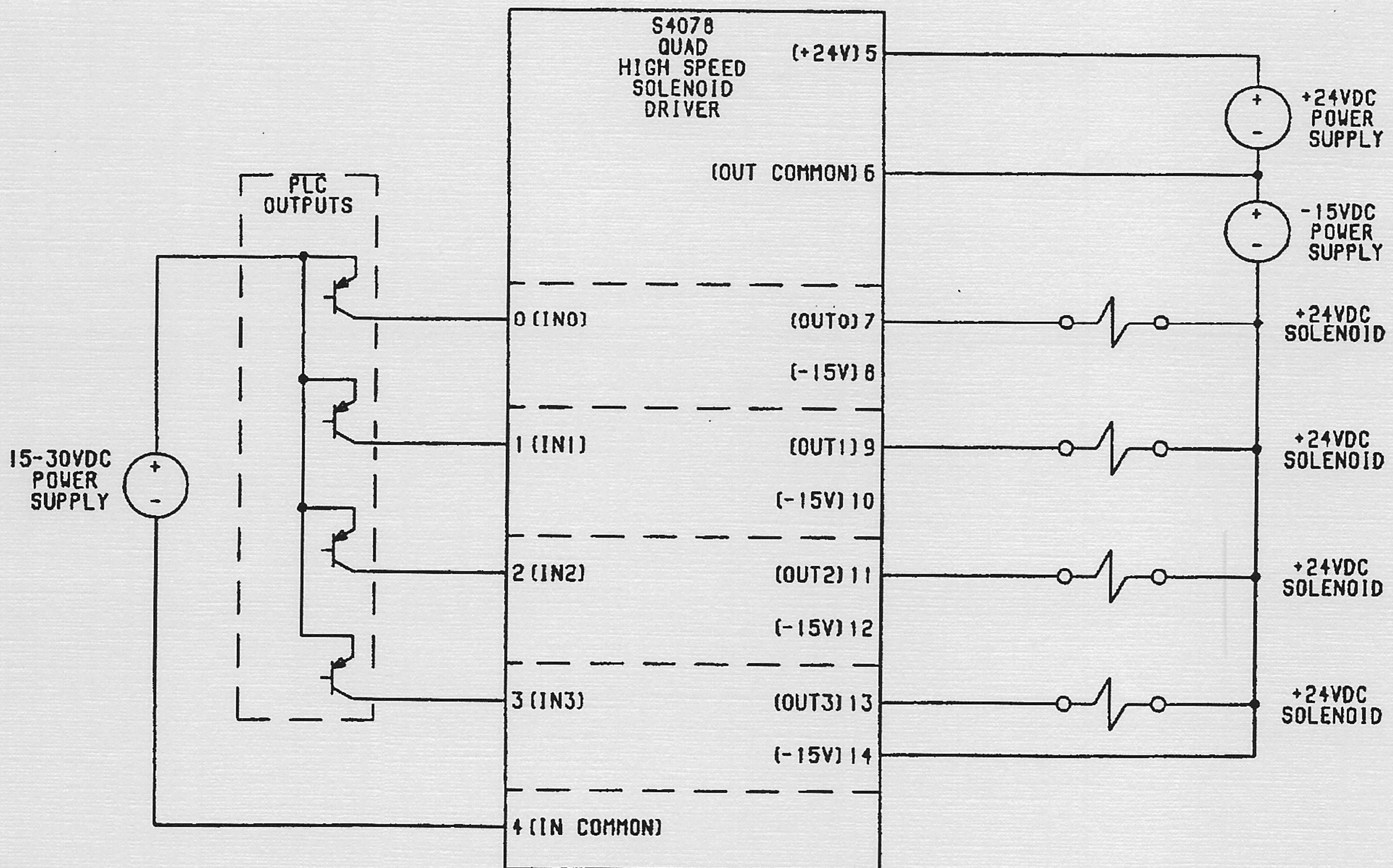


FIGURE1
TYPICAL USER WIRING



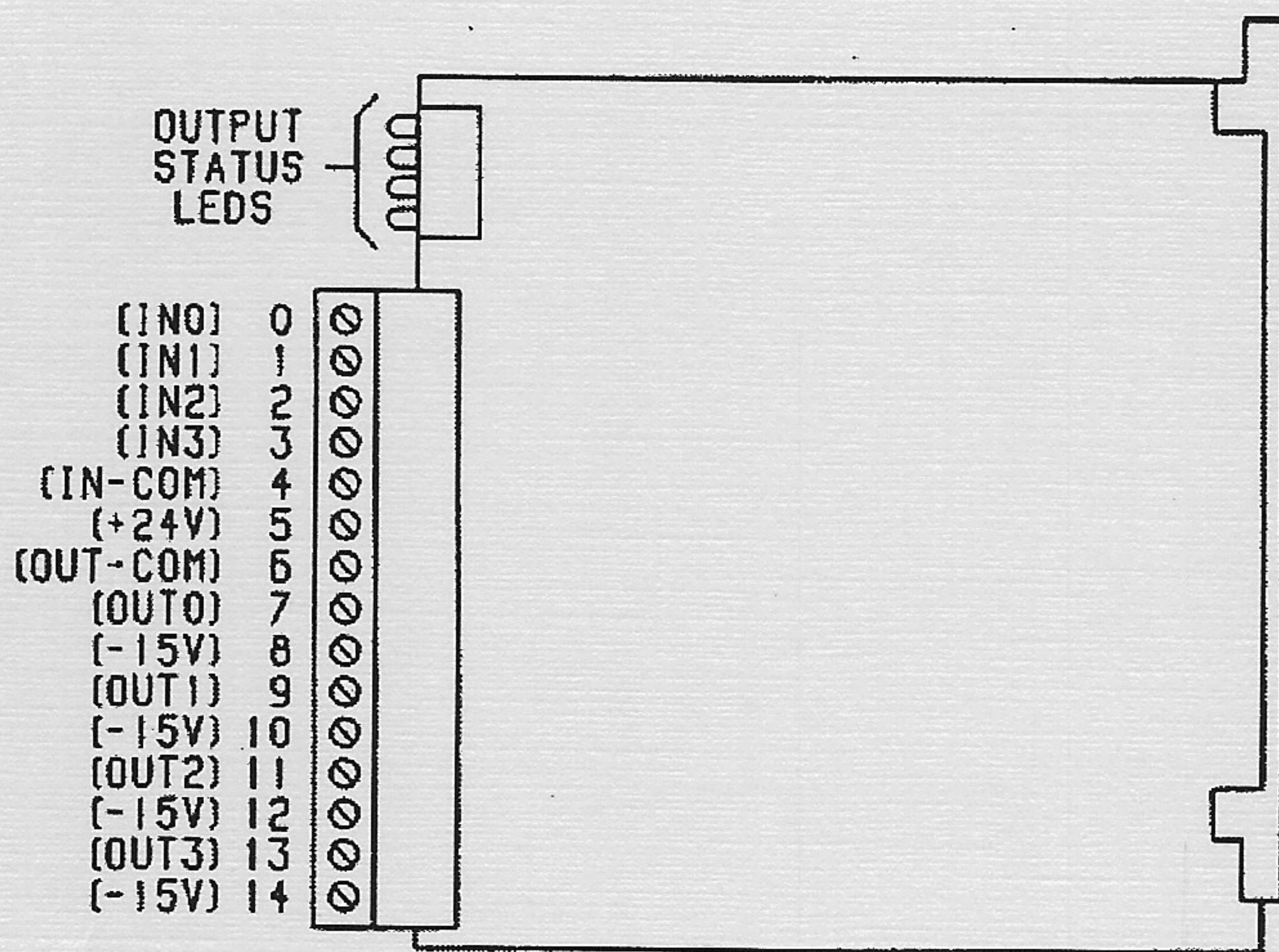
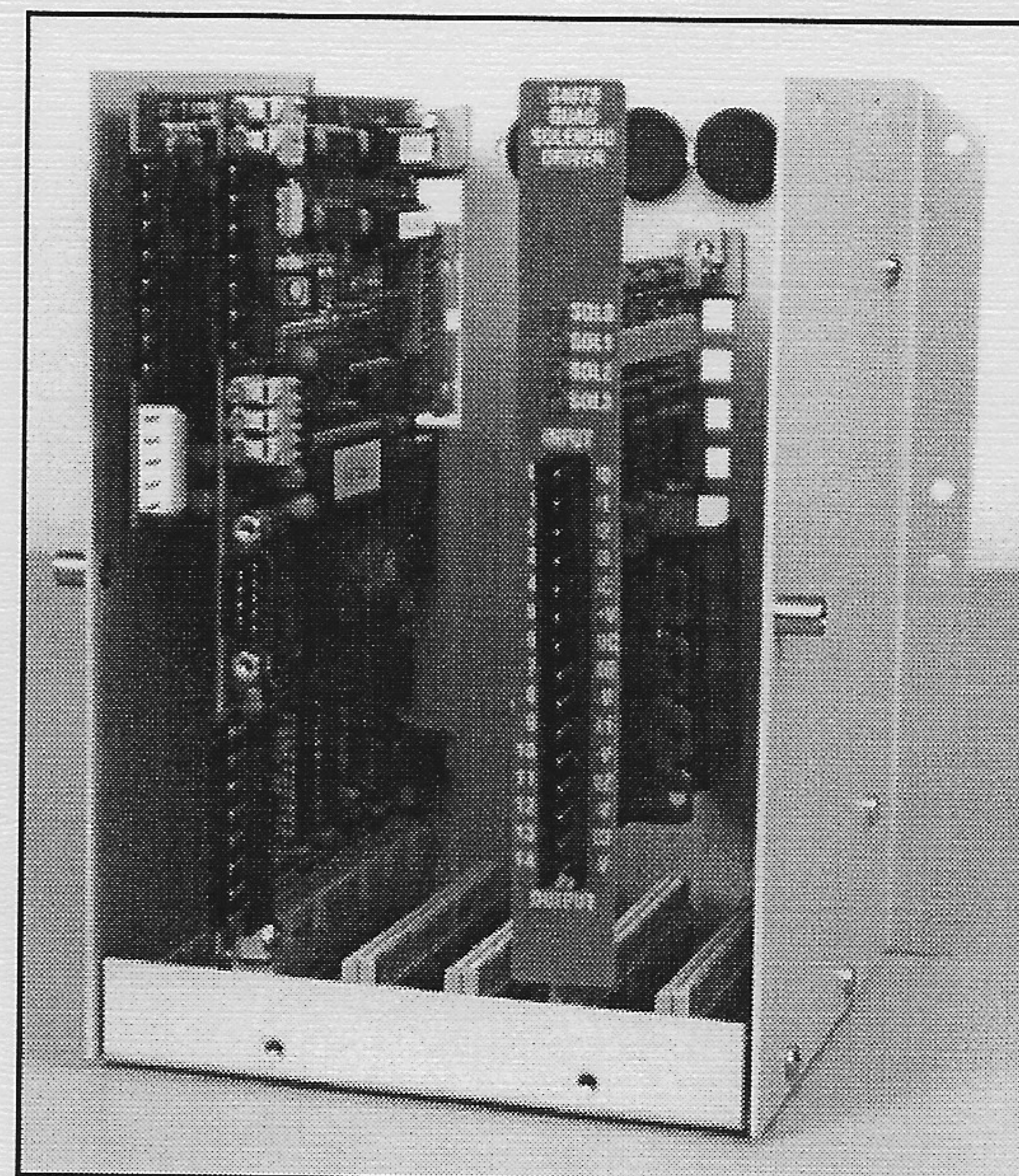


FIGURE 2
S4078 CONNECTOR PIN-OUT



S4078 MOUNTED IN M4500 RACK

SPECIFICATIONS:

Board Size:

Length: 4.25"
Height: 4.10"
Width: 0.80"

Number of Solenoid Drivers: 4

Input Section:

Vin (on-min): 15.0 volts
Vin (on-max): 30.0 volts
Vin (off-min): 5.0 volts

Input Current (max): 13 milliamps at
Vin = 30 volts

Input to Output
Optical Isolation: 1500 Vrms

Input configuration: Sourcing

Output Section:

Output Voltage:(typical)
Turn "ON" Voltage: 39 Volts DC
Holding Voltage: 13.5 Volts DC

Output Current:
Inrush (<50msec) 5 Amps
Continuous "on" current: 3 Amps

Output Section:(Con'd)

Output Impedance (approximate):
Output "ON" impedance: 0.50 ohms
Output "OFF" impedance: 2.5K ohms

Output Response Time:

Max "on" time: 10 microseconds
Max "off" time: 100 microseconds

Power Required:

+ 24VDC Power:

Voltage: 24VDC +/-25%
Regulated or
Unregulated

Current: Rated for inrush
current of solenoid
(min)

-15VDC Power:

Voltage: 15VDC +/-10%
Regulated

Current: Rated for inrush
current of solenoid
plus 100mAmp

Temperature Ranges:

Storage: 0 to 70 degrees C
Operating: 0 to 50 degrees C
Relative Humidity: 5 to 95%
(non-condensing)

