



# SYSTEMS

## ELECTRONICS GROUP

### SYSTEMS S3000

### INDUSTRIAL CONTROLLER

#### **S3073: DIGITAL OUTPUT BOARD** **16 POINT 10-30VDC SOURCING**

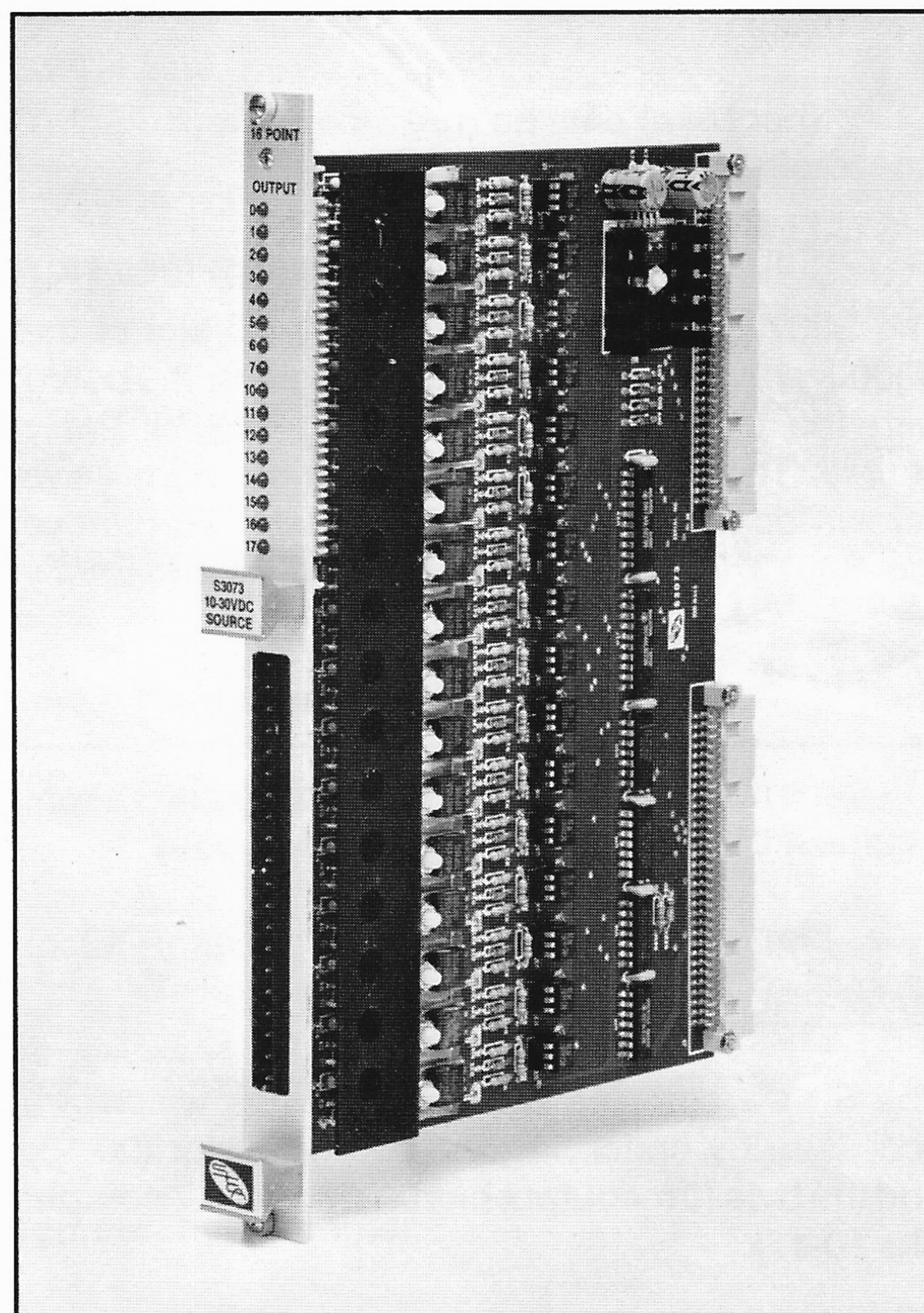
##### **FEATURES:**

- 16 DIGITAL OUTPUT POINTS
- 2 INDIVIDUALLY ISOLATED SECTIONS OF 8 POINTS EACH
- 1 AMP DRIVE CAPABILITY PER OUTPUT POINT
- OUTPUT TRANSIENT PROTECTION
- 16 INDIVIDUAL STATUS LEDS (1 LED PER OUTPUT POINT)
- REMOVABLE FIELD WIRING CONNECTOR
- OPTICAL ISOLATION - BUS INTERFACE LOGIC TO OUTPUT
- STANDARD DOUBLE HEIGHT EUROCARD

##### **GENERAL DESCRIPTION:**

The S3073 10-30VDC Output Board contains 16 identical solid state circuits which convert the logic status of 2 output bytes, written from the Main Processor Board, to the appropriate voltage in order to drive user devices such as relays, solenoids, and lamps. On any given output point, writing a "1" to that point turns the output "on"; writing a "0" turns the output "off". When the output is "on", the voltage at the output is high (approximately equal to the users supply voltage). When the output is "off", the voltage at the output is low (approximately zero). An output will "source" current to the load when "on", thus the outputs are defined as "sourcing".

The 16 outputs are split into two separate, isolated sections of eight points each. This allows two differ-



ent user voltage supplies (VCC and COMMON) to be connected to the same output board. Each output is rated at 1 amp DC (continuous) with an inrush (pulsed) current drive capability of 5 amps for 100msec. The sum of all outputs current cannot, however, exceed 10 amps. The S3073 does not contain output fusing, therefore external fusing at each output point and at the user's Vcc connection point should be provided. Refer to Figure 3 for an example of externally fusing the S3073.

Each output contains a transient suppression circuit which clamps any transient overvoltage to a level that will not damage the output circuitry. This allows solenoids and other inductive loads to be connected directly to an output point without connecting "fly-back" diodes or other surge



suppression devices to the load itself. Outputs may be "collector or'd" such that applying 10-30VDC to an "off" output will not damage the output.

The on/off status of each output is indicated with individual LEDs located on the faceplate. The LEDs provide the status of the actual output points (field side) rather than the internal logic status. A given

LED also shows the correct status of the respective output point whether or not a load is connected to the output. No minimum load is required for proper output operation.

Output and user power wiring is implemented with a removable 20-pin field wiring connector which allows easy board replacement. Refer to Figure 3 for typical field wiring connections.

---

### **INSTALLATION:**

The S3073 may be installed in any I/O slot of the S3000 rack. Install the S3073 by aligning the board with the card guides and sliding in until firmly seated. The board is held in the rack via captive screws located on the S3073 faceplate. To remove the S3073, loosen the captive screws and gently

pull the board out of the rack using the handles located on the S3073 faceplate.

**NOTE:** When installing or removing an S3073, the System should be in power-down mode (PS3007 power supply "off").

---

### **MAIN PROCESSOR INTERFACE:**

The S3073 contains two output bytes which are accessed by specifying the two digit slot (00-15) and the byte (0 for output bits 00-07 and 1 for output bits 10-17).

When specified in the system configuration of the main processor board the S3073 is automatically written to as part of the I/O update. The status of a variable type (Y) is written to the output. The format of this variable is:

output byte: Yaab

output bit: Yaab.c

Where: Y = output variable type (Y)

aa = two digit slot address  
(00-15)

b = byte address  
(0 for outputs 00-07,  
1 for outputs 10-17)

c = bit address (0-7)

These variables are set in the user program and written to the S3073 during the I/O update at the beginning of the main program scan.



## **SPECIFICATIONS:**

**Number Of I/O Slots Required:** 1

### **Board Size:**

Length: 9.15"

Height: 6.30"

Width: 0.80"

**Number Of I/O Points:** 16

**Number Of Isolated Sections:** 2

### **Output Voltage:**

Voltage Range: 10 to 30 volts

Vout(on-min) -minimum on voltage  
(Iout=1.0 amps): Vcc-2.00 volts

Vout(on-max) -maximum on voltage  
(no load): Vcc-0.75 volts

Vout(off-max)-maximum off voltage  
(no load): 1.50 volts

[Note: Vcc = users supply voltage]

### **Output Current:**

Iout(max)-maximum continuous output current  
(Vout=24v): 1.00 amp DC

Iout(min)-off state leakage current  
[Vout=Vout(off-max)]: 100 microamps

Iout(pul)-maximum pulsed output current  
(t=100msec): 5.00 amps

### **Output Impedance (approximate):**

Zout(on)-output on impedance: 0.50 ohms

Zout(off)-output off impedance: 2.2k ohms

### **Output Response Time:**

Tplh(min)-minimum turn on time (max load):  
10 microsec

Tplh(max)-maximum turn on time (min load):  
25 microsec

Tphl(min)-minimum turn off time (max load):  
75 microsec

Tphl(max)-maximum turn off time (min load):  
200 microsec

### **Optical Isolation (bus interface to output):**

1500 Vrms

### **Power Requirements (all outputs on):**

IccEXT(max)-maximum users supply current  
(Vcc=24v): 10.0 amps

IccEXT(max)-maximum users supply current  
(all outputs off): 20 milliamps

IccBUS(max)-maximum S3000 bus current:  
200 milliamps

### **Temperature Ranges:**

Storage: 0 to 85° C

Operating: 0 to 60° C

**Relative Humidity:** 5 to 95%



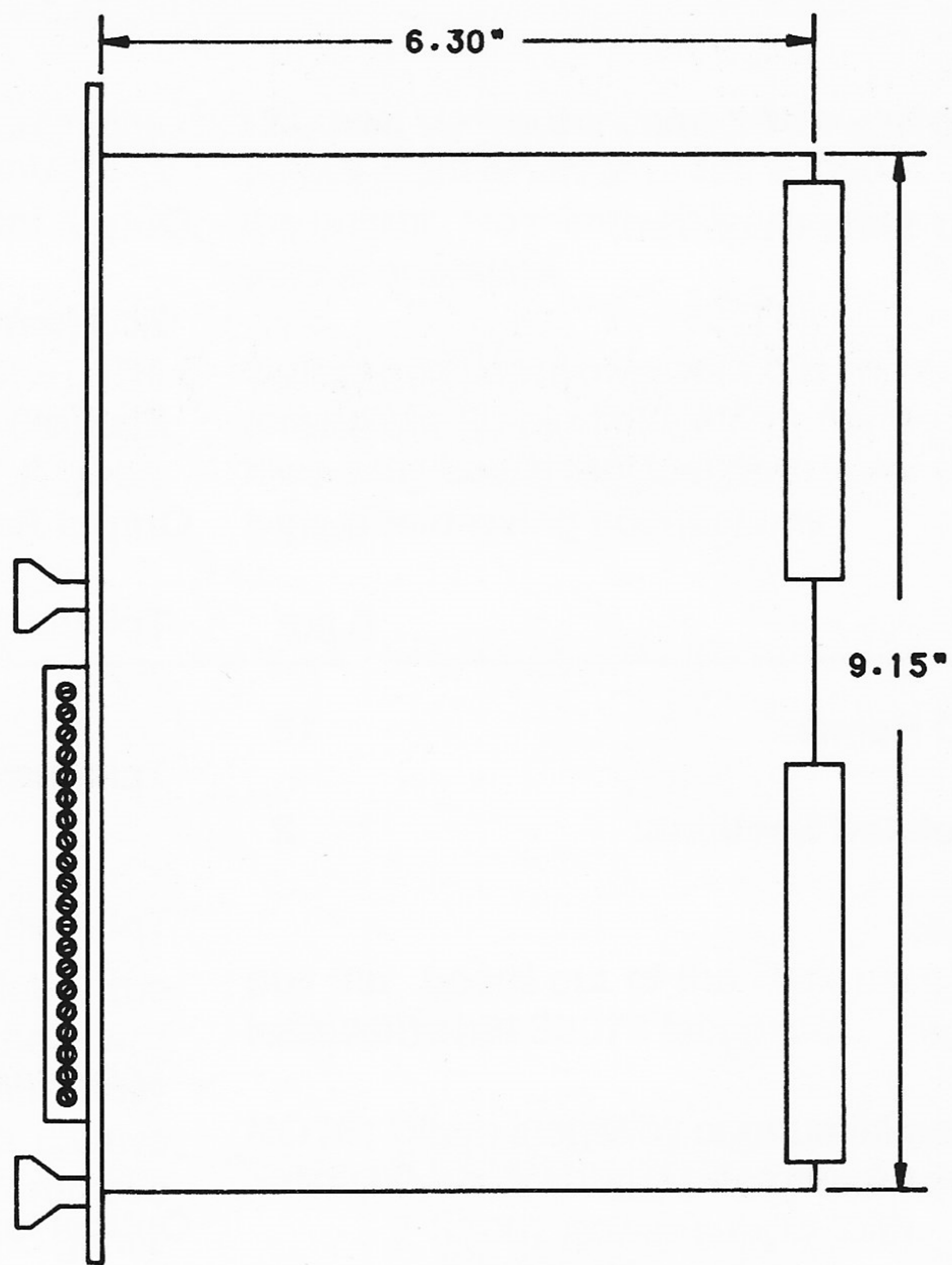
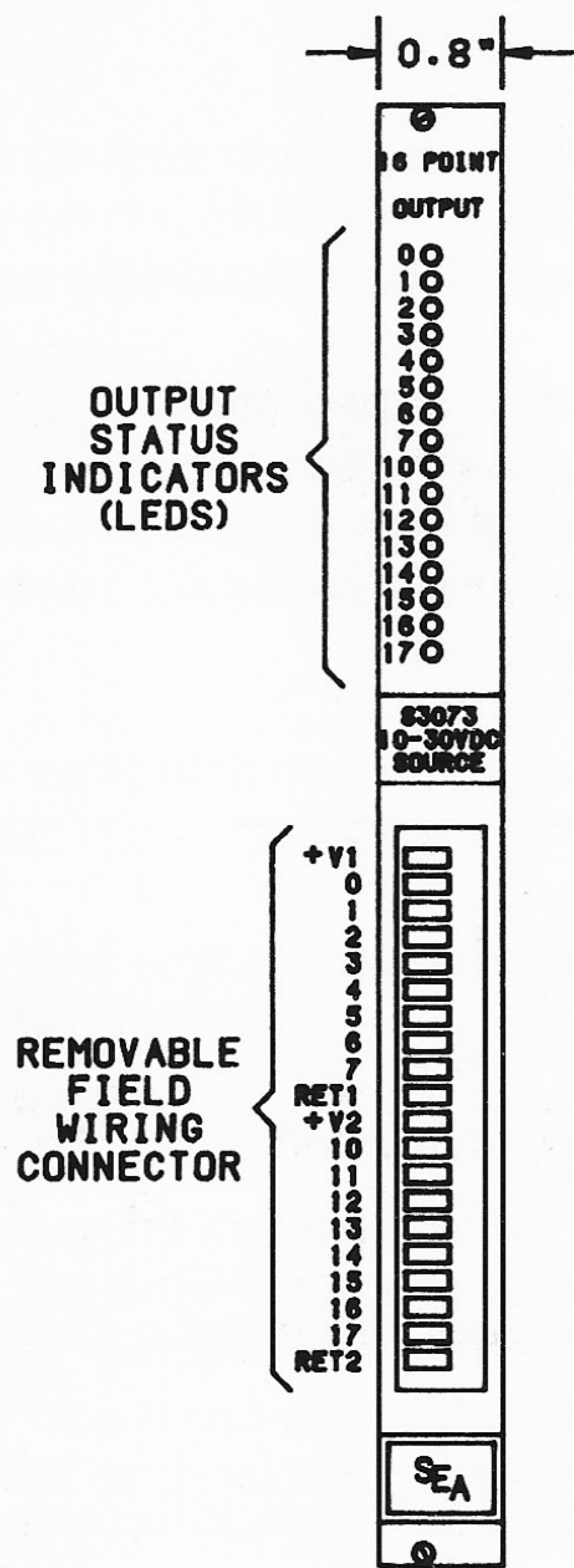


FIGURE 2  
BOARD OUTLINE

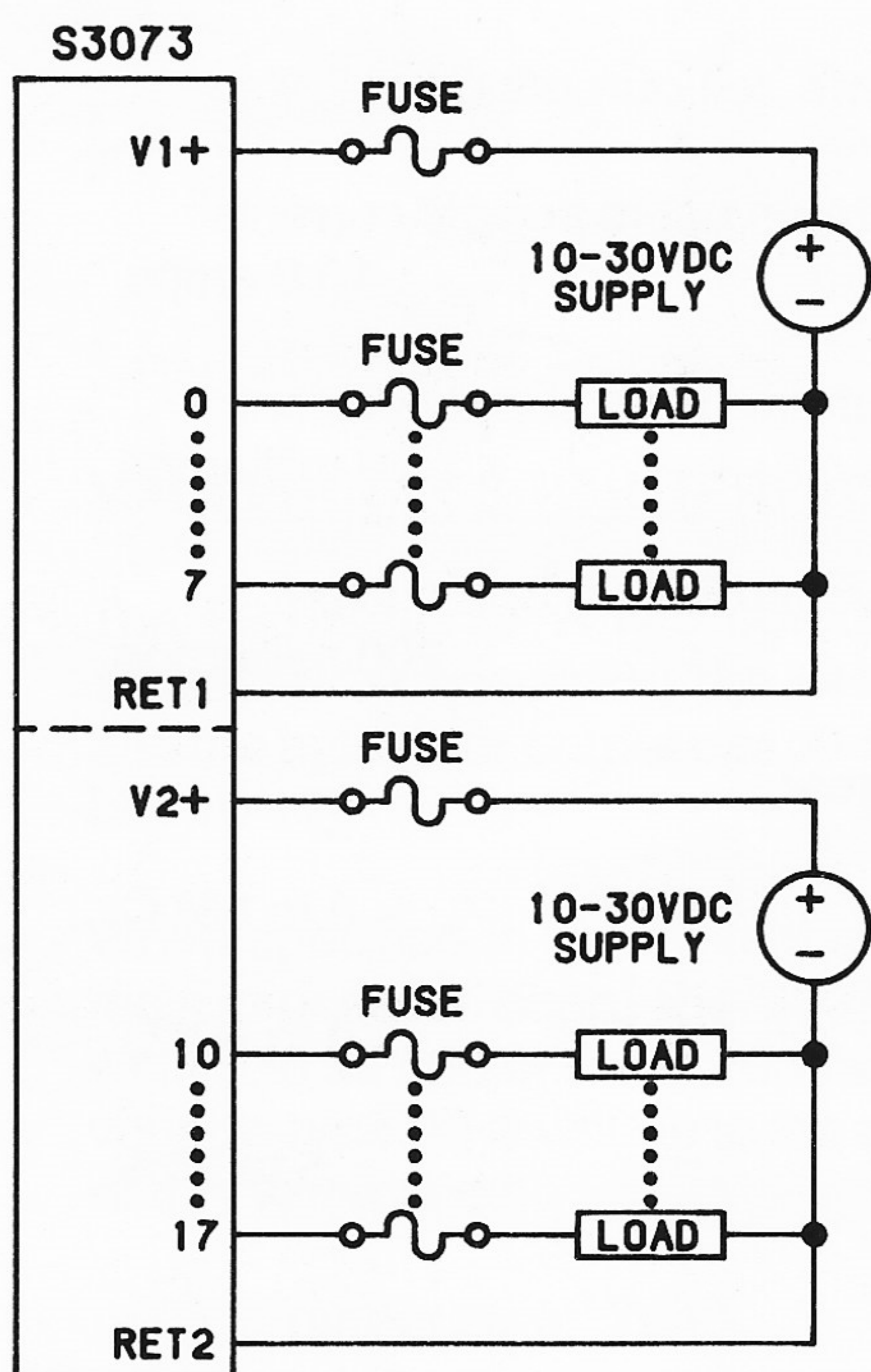


FIGURE 3  
TYPICAL USER WIRING

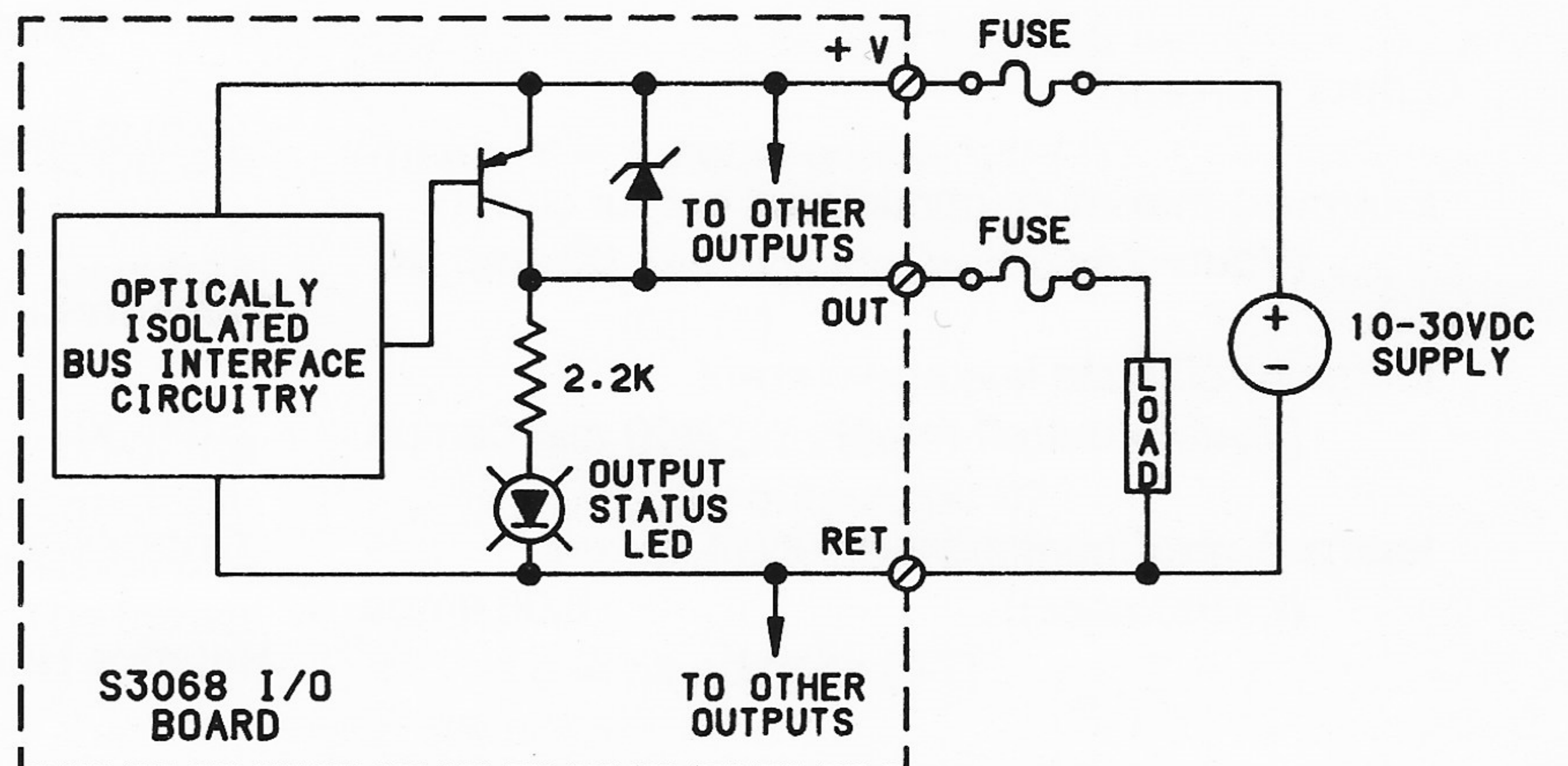


FIGURE 1  
TYPICAL OUTPUT CIRCUIT



**SYSTEMS ELECTRONICS GROUP**

DIVISION OF SYSTEMS ENGINEERING ASSOCIATES, INC.  
14989 W. 69TH AVE, ARVADA, COLORADO, P.O. BOX 750 80001  
(303) 421-0233 FAX (303) 421-8108