

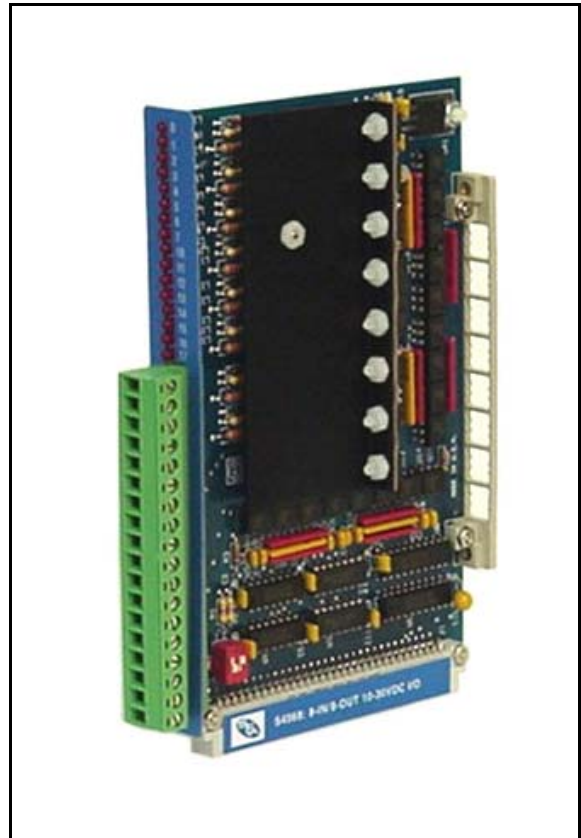


SYSTEMS M4500

INDUSTRIAL CONTROLLER

S4568: DIGITAL DC I/O BOARD **8-IN/8-OUT 10-30VDC SOURCING (0.5 Amp)**

- **8 Digital Input Points And 8 Digital Output Points**
- **16 Individual Status LED's (One Led Per Input Point)**
- **0.5 Amp Drive Capability Per Output Point**
- **Output Transient Protection**
- **Removable Field Wiring Connector**
- **Optical Isolation**
- **Standard M4500 I/O Form Factor**



General Description

The S4568 10-30VDC I/O Board, for use with the M4500 series of modules, contains 8 digital inputs and 8 digital outputs. One-half of the board utilizes the circuitry of an S4563 10-30VDC input board while the other half utilizes the circuitry of an S4573 10-30VDC output board.

The Input section contains 8 identical solid state input circuits which accept the on/off status of user devices such as push-buttons, limit switches, and proximity sensors. The inputs sense the voltage lev-

els of digital DC input signals, with the devices driving the inputs being defined as sourcing (positive current into the input). When the voltage at the input is high (above the input "on" threshold), the input is read as a "1". When the input is low (approximately zero), the input is read as a "0". The on/off status of each input is indicated with individual LED's located on the front of the board. The LED's provide the status of the actual input points (field side) rather than the internal logic status.

The output section contains 8 identical solid state circuits which convert the logic status of a byte, written from the M4500 processor, to the appropriate voltage in order to drive user devices such as solenoids, relays, and lamps. On any given output point, writing a "1" to the 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 user's 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".

Each output is rated at 0.5 amp DC (continuous) with an inrush (pulsed) current drive capability of 3 amps for 100msec. The sum of all outputs current cannot, however, exceed 6 amps continuous. The S4568 does not contain output fusing, therefore external fusing at each output point and at the user's Vcc connection point should be provided. Each output contains a transient suppression circuit which clamps any transient over voltage to a level that will not damage the output circuitry. This allows solenoids and other inductive loads to be connected di-

rectly 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 LED's located on the front of the board. The LED's provide the status of the actual output points (field side) rather than the internal logic status. A given LED 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. Input, output and user power wiring is implemented with a removable 18-pin field wiring connector which allows easy board replacement.

The 8 input points are read in the least significant byte of the slot that the board is addressed as. Inputs 0 through 7 are mapped in bits 0 through 7 of byte 0 of the slot. The 8 output points are mapped in byte 1 of the slot that the board is addressed as. Outputs 10 through 17 are mapped in bits 0 through 7 of byte 1 of the slot.

Installation

Prior to installing the S4568, the I/O slot addressing dip switch on the board must be set for the slot the board will be addressed as.

Note: Geographical addressing is not used in the M4500. The slot the S4568 is addressed as is solely defined by the dip switch settings on the S4568 itself not by the slot in the M4500 chassis that the board is placed in. Two poles on the dip switch of the board set the binary slot address of the board as follows:

S4568 SW1 Dip Switch Slot Addressing

<u>2</u>	<u>1</u>	<u>Slot Address</u>
off	off	0
off	on	1
on	off	2
on	on	3

The SW1 Slot address dip switch is located in the lower left hand corner of the component side of the S4568. The respective switch pole is "on" when in

either the "on" or "close" position and "off" when either in the "off" or "open" position depending on the type of dip switch used.

To install the S4568 in the M4500 chassis, turn power to the M4500 "off" and remove the cover plate of the M4500 by loosening the captive screws that retain it. Install the S4568 in the respective slot of the M4500, making sure the DIN connector on the S4568 fully mates with the DIN connector in the M4500 motherboard and that the top of the S4568 is seated correctly in the card guides at the top of the M4500. Install the M4500 cover back onto the M4500 making sure the LED's and Field connector protrude through the respective openings in the cover. The M4500 cover will retain the S4568 both from the top and the front, holding the S4568 in place during normal operation. Tighten the captive screws that retain the cover on the M4500. Install the female field wiring connector to the corresponding male connector on the S4568. The S4568 is now installed and ready to run. To remove the S4568, simply perform the previous steps in reverse.



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8-IN/8-OUT 10-30VDC SOURCING (0.5 Amp)

Specifications

Board Size:	
Length:	6.50"
Height:	4.25"
Width:	0.80"
Number of Inputs:	8
Input Voltage:	
Vin(on-min):	10.0 volts
Vin(on-max):	30.0 volts
Vin(off-min):	5.0 volts
Input Current (max):	15 milliamps at Vin=30volts
Input Filter Delay:	
typ delay:	0.50 milliseconds
min delay:	0.35 milliseconds
max delay:	0.80 milliseconds
Number of Outputs:	8
Output Voltage:	
Voltage Range:	10-30VDC
Vout (on-min):	VCC-2.00 volts
Vout (on-max):	VCC-0.25 volts
Vout (off-min):	1.5 volts
Output Current:	
Iout (on max - continuous):	0.5 amps DC
Iout (on max - pulsed):	3.0 amps DC (for 100msec)
Iout (off max - leakage):	100 microamps
Output Response Time:	
max on time:	50 microseconds
max off time:	75 microseconds
Optical Isolation:	1500 Vrms
Power Requirements:	
Icc (typ - M4500 BUS):	50 milliamps
Temperature Ranges:	
Storage:	0 to 85 degrees C
Operating:	0 to 60 degrees C
Relative Humidity:	5 to 95% non-condensing



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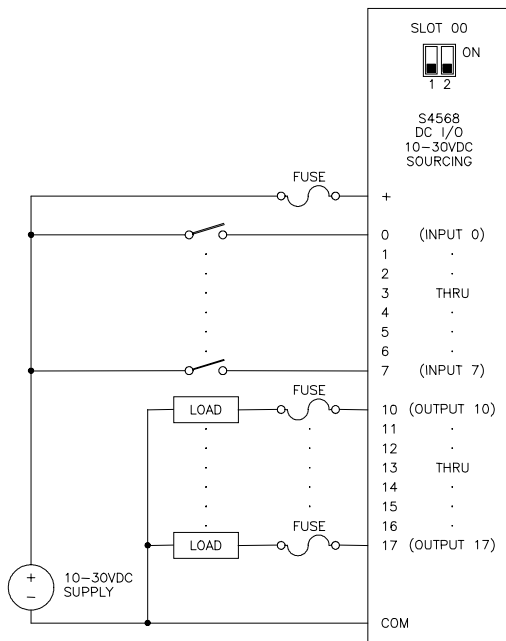


Figure 1
Typical User Wiring

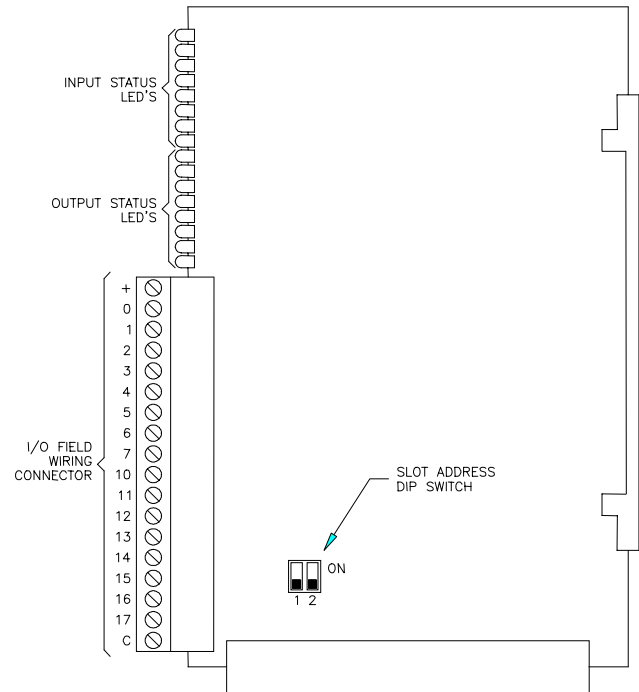


Figure 2
Board Outline

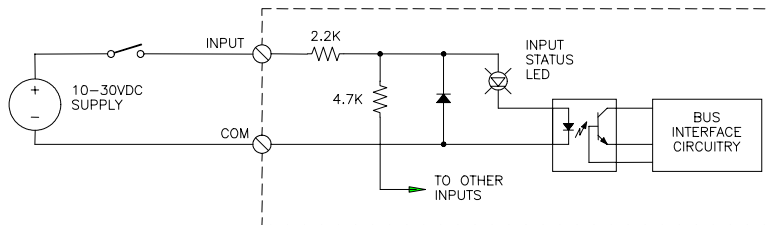


Figure 3
Typical Input Circuit

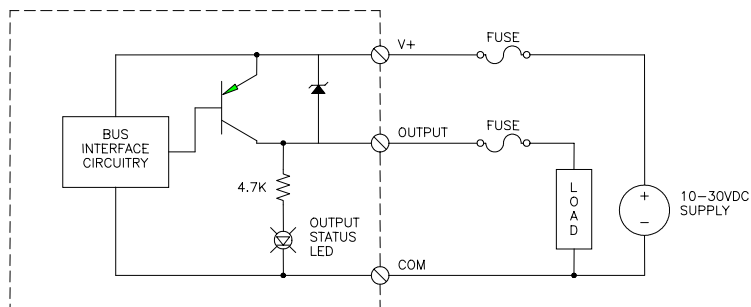


Figure 4
Typical Output Circuit

