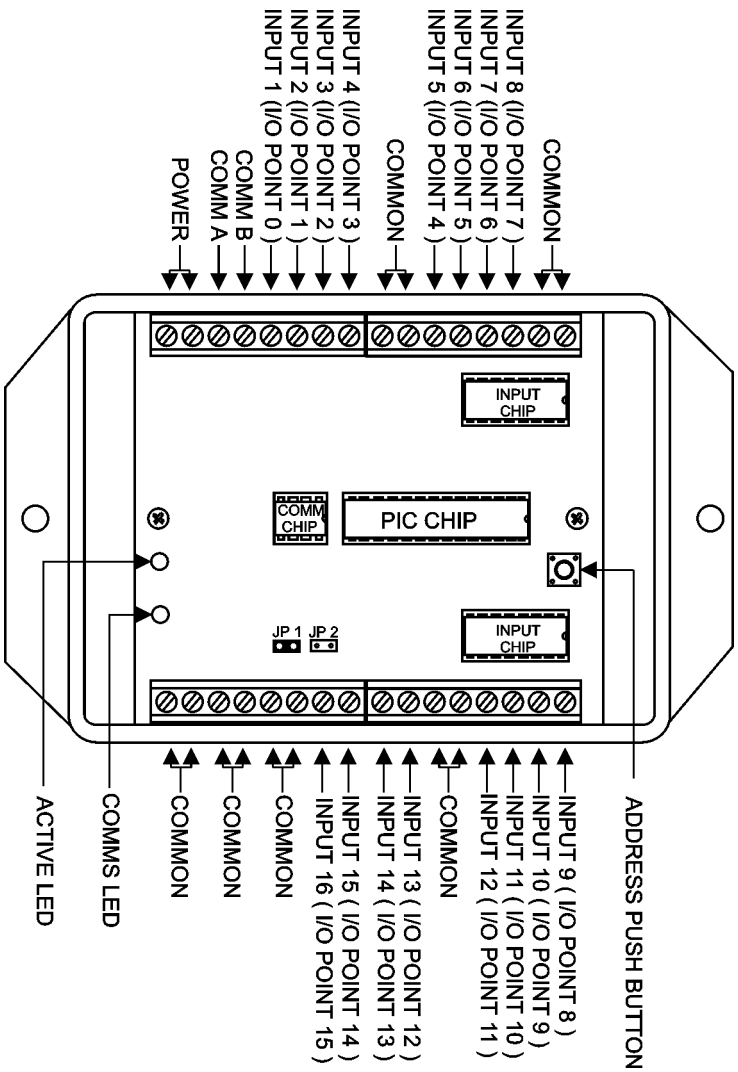
SECU-16I™



Introduction

The SECU-16I™ module allows 16 inputs to be added to an ADICON™ control system. The inputs may be supervised (switch closure) or analog.

Specifications

Power:	Input Voltage	9 - 12V DC or AC
	Input Current Max	200mA
Inputs:	16 2-wire inputs, Analog (0 – 5VDC) or Supervised	
Dimensions:	5.5”W x 3.25”L x 1.38”D	
Operating Temperature:	0ºC to 70ºC	

Setup

Remove the SECU-16I™ top cover.
Connect the power supply to the two screw terminals labeled POWER.
Connect the COM A and COM B terminals to the ADICON™ bus (see Figure 1).

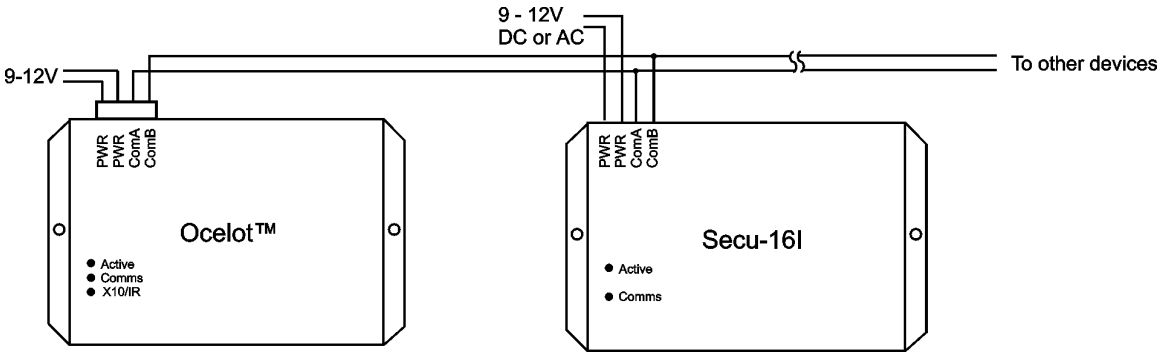


Figure 1. Typical Wiring Diagram

Two types of inputs may be used on the SECU-16I™, supervised and analog. A supervised input is a passive, non-current supplying input such as a relay or switch. An analog input provides a varying voltage such as a light sensor. Input types are controlled in groups of eight as shown in Table 1.

Jumpers JP1 and JP2 control the type if inputs used.

Input Type	Inputs 1 - 8	Inputs 9 - 16
Supervised	JP2 On	JP1 On
Analog	JP2 Off	JP1 Off

Table 1. Jumper Settings

To use an input as a supervised input a 1K Ohm resistor (supplied) must be placed across the input as shown in Figure 2.

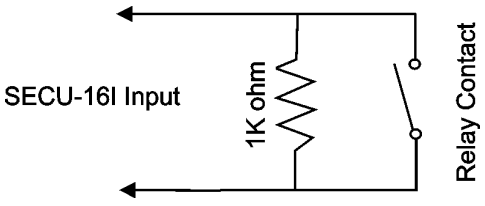


Figure 2

Operation

ADICON™ LED Codes

ACTIVE led – Slow Blink, Module has a valid address
ACTIVE led – Rapid Blink, Auto Address mode active

COMMS led – Blinks rapidly during ADICON™ communications

Parameter	Function
1	Module Address
2	Low Analog Threshold
3	High Analog Threshold
10	Analog Value Input 1
11	Analog Value Input 2
12	Analog Value Input 3
13	Analog Value Input 4
14	Analog Value Input 5
15	Analog Value Input 6
16	Analog Value Input 7
17	Analog Value Input 8
18	Analog Value Input 9
19	Analog Value Input 10
20	Analog Value Input 11
21	Analog Value Input 12
22	Analog Value Input 13
23	Analog Value Input 14
24	Analog Value Input 15
25	Analog Value Input 16

Table 2. SECU-16I™ Parameters

Inputs are represented by I/O points within a module. The SECU-16I™ has 16 I/O points, input 1 is represented by I/O point #0, input 2 is I/O Point #1, etc.

Supervised Inputs

A supervised input is a contact closure input such as a switch or relay. The SECU-16I™ will report OFF when the switch is open an ON when the switch is closed. See the example below on using a supervised input.

Line#	Program Text	Comments
1	If Module# 1/ Point# 0 Turns ON	If Front Door Opens
2	Then turn X10 A/1 ON	Turn living room light on
3	If Module# 1/ Point# 0 Turns OFF	If Front Door Closes
4	Then turn X10 A/1 OFF	Turn living Room Light Off

Analog Inputs

Analog inputs are inputs with a voltage that can vary from 0 – 5VDC such as a light sensor. The SECU16-I™ will read an analog input and compare the value to the low and high threshold parameters. If the analog value is between the low and high thresholds the SECU16-I™ will report that the input is OFF. If the analog input value is lower than the low threshold or higher than the high threshold the SECU-16I™ will report that the input is ON.

Setting Threshold Values

Threshold and analog values are determined using the following formula:

To determine the analog reading of an known input voltage:

Analog Reading = Sensor Voltage x (256 / 5) = Sensor Voltage x 51.2

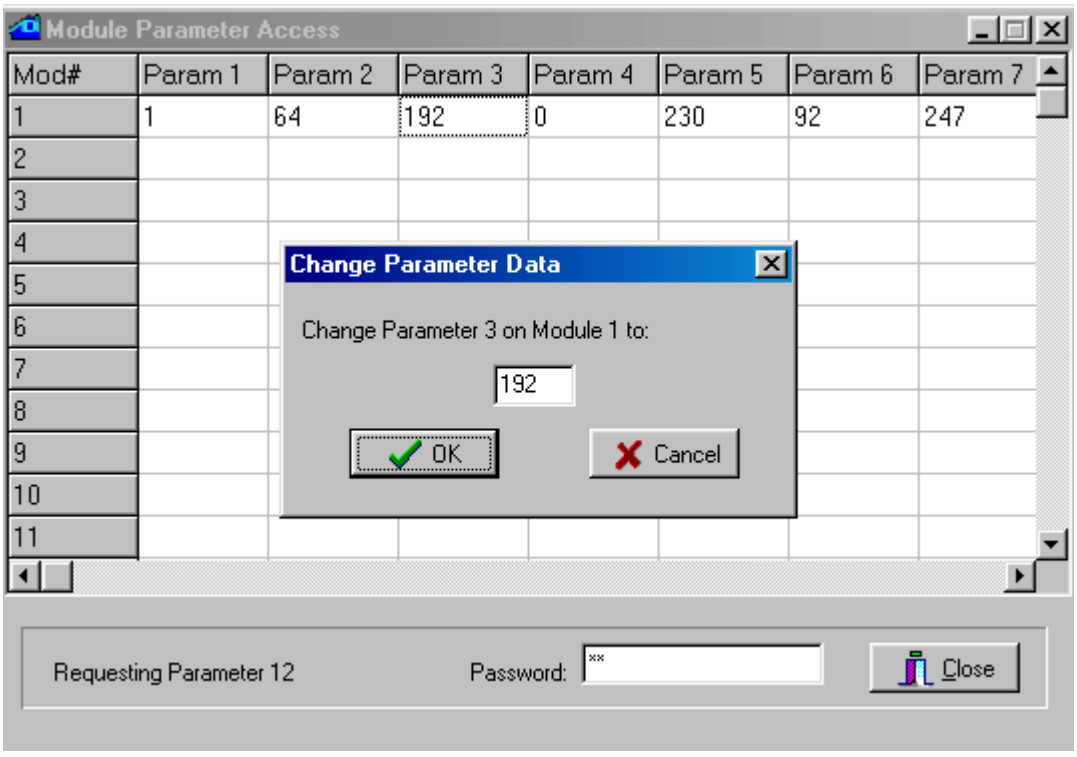
Example: If the analog voltage from a light sensor is 2 volts the analog reading would be
2 x (256/5) = 102

To determine the voltage of an analog reading use:

Voltage = Analog Reading x (5 / 256) = Analog Reading x 0.01953

Example: If the high threshold is 192 the voltage would be
192 x 5 / 256 = 3.75V

The threshold values are stored in parameters 2 and 3 (see Table 2). C-Max™ is used to change a parameter value. Below is a sample screen of the Module parameter utility



The threshold values can also be used to perform reverse logic. Lets say for example you want an input to be OFF when closed and ON when open, such as a door sensor in a security system. This can be done by setting the low threshold to 0 and the high threshold to 128. If you wanted to have the input report OFF when open and ON when closed, set the low threshold to 128 and the high threshold to 255. This can be done with analog or supervised inputs.

Example of Analog Input: Using a light sensor to turn outside lights on and off

First determine the threshold voltages of when you want the lights to turn on and off. For our example we will use 1.5V(77) to turn the lights on and 3.5V(179) to turn the lights off. The code example below shows how to turn the lights off after sunrise only if there is enough light and turn the lights off after dusk when dark enough. In this example, the more light on the sensor the smaller the analog reading.

Line#	Program Text	Comments
1	If Time of Day is = Sunrise + 0 minute(s)	If it's Sunrise
2	And Module# 1/ Param# 10 is < 77	And the light level is less than 77
3	Then turn X10 D/2 OFF	Tirn the light Off
4	If Time of Day is = Sunset + 0 minute(s)	If it's Sunset
5	And Module# 1/ Param# 10 is > 179	And the light level is more than 179
6	Then turn X10 D/2 ON	Turn light On