
S I T E M O N I T O R I N G

SiteI/O 10/0

INSTALLATION GUIDE



Installation Guide

Sitel/O 10/0

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Using the Site/I/O 10/0

The Site/I/O 10/0 is a general purpose controller that can be used for a variety of applications. The Site/I/O 10/0 is part of the Site/I/O-Line, which allows a complete SiteScan monitoring system to be built a piece at a time. Using the Site/I/O 10/0 as a base, you can attach other expander modules within a standard control panel as the size of the job increases.

The Site/I/O-Line consists of several general purpose controllers that provide different input and output point combinations. The Site/I/O 10/0 has ten (10) universal inputs.

The Site/I/O 10/0 provides the communications circuitry, non-volatile memory, and removable screw terminals for I/O connections. The Site/I/O 10/0 also has an expansion bus for adding expander modules.

NOTE This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

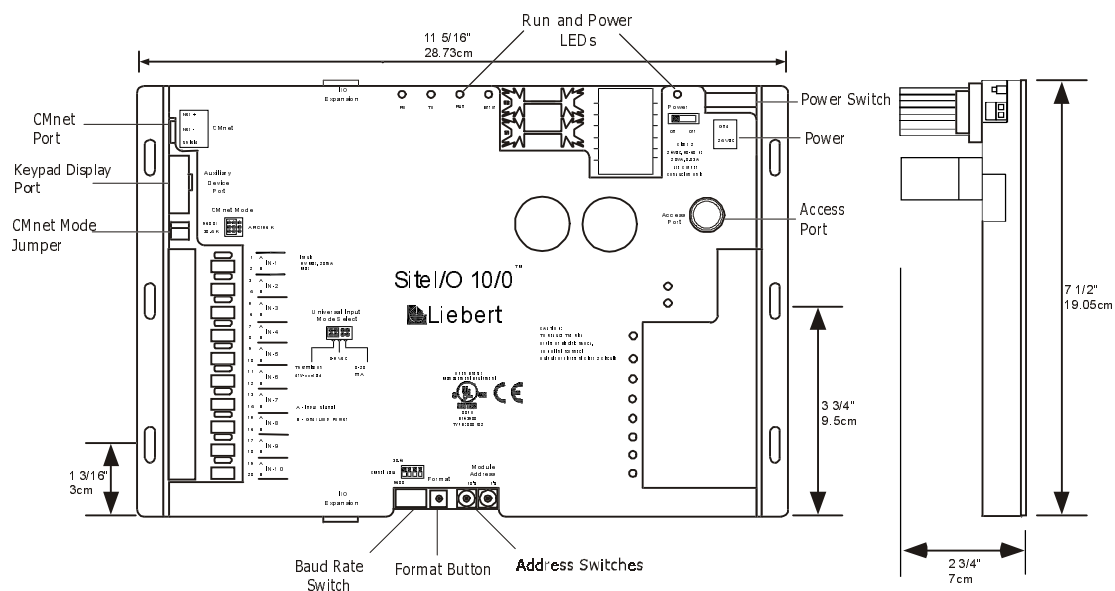


Figure 1. Module Dimensions and Layout

Specifications

Power 24VAC $\pm$ 10%, 50-60Hz, 20VA power consumption (single Class 2 source only, 100VA or less).

Inputs ten universal inputs, configurable for 0-5VDC, 0-20mA, or thermistor.

Input Resolution 12 bit A/D.

Communication 9600 bps or 38.4 kbps CMnet; twisted pair wiring.

Environmental Operating Range 0° to 130°F (-17.8° to 54.4°C); 10 to 90% relative humidity, non-condensing.

Status Indication Visual (LED) status of CMnet communication, running, errors, and power.

Memory 1MB Flash memory and 1MB non-volatile battery-backed RAM.

Protection Voltage, current, and ESD protection on incoming power and CMnet.

Battery Seven-year lithium battery provides a minimum of 10,000 hours of data retention during power outages.

Listed by UL 916 (PAZX), cUL C22.2 No. 205-M1983 (PAZX7), FCC Part 15 - Subpart B - Class A.

Mounting

Normally your Sitel/O 10/0 will be mounted in an enclosure by Liebert (Figures 2, 3, 4). If the enclosure was not ordered, screw the Sitel/O 10/0 into an enclosed panel using the mounting holes provided on the cover plate. Be sure to leave about 2 inches (5 centimeters) on each side for wiring.

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate equipment.

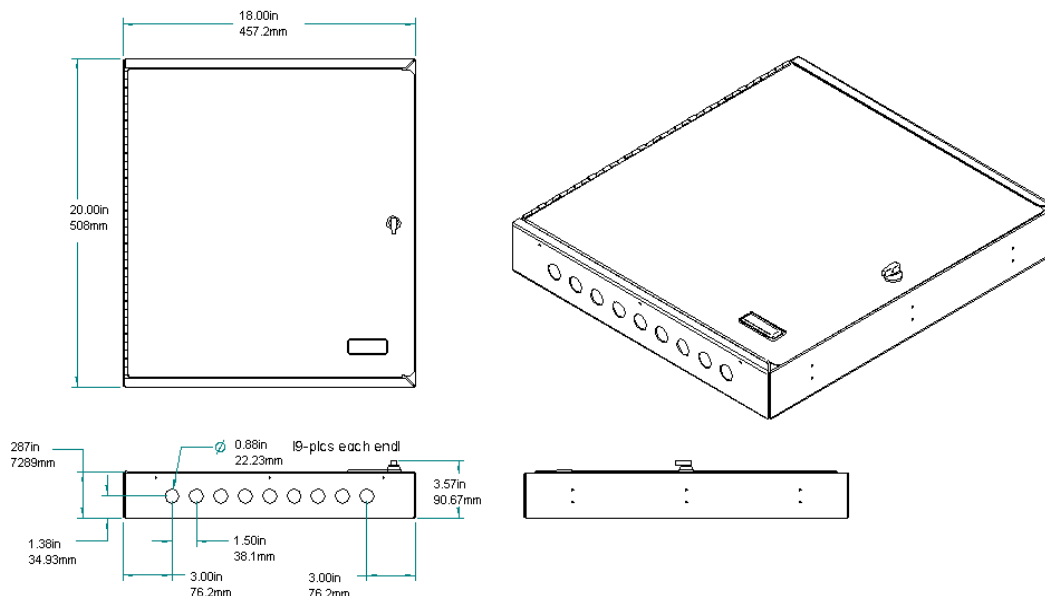


Figure 2. Module Enclosure

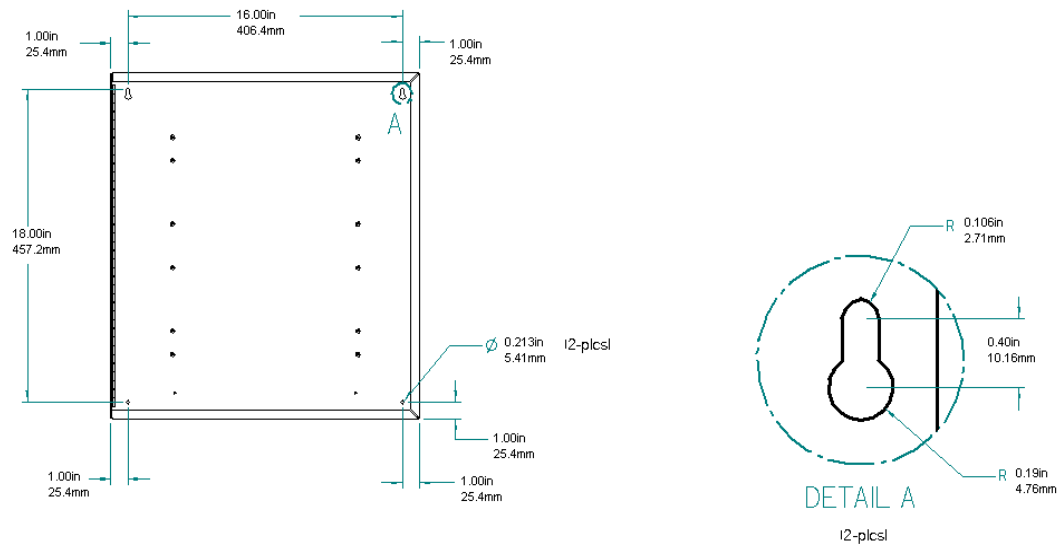


Figure 3. Module Enclosure Mounting Slots

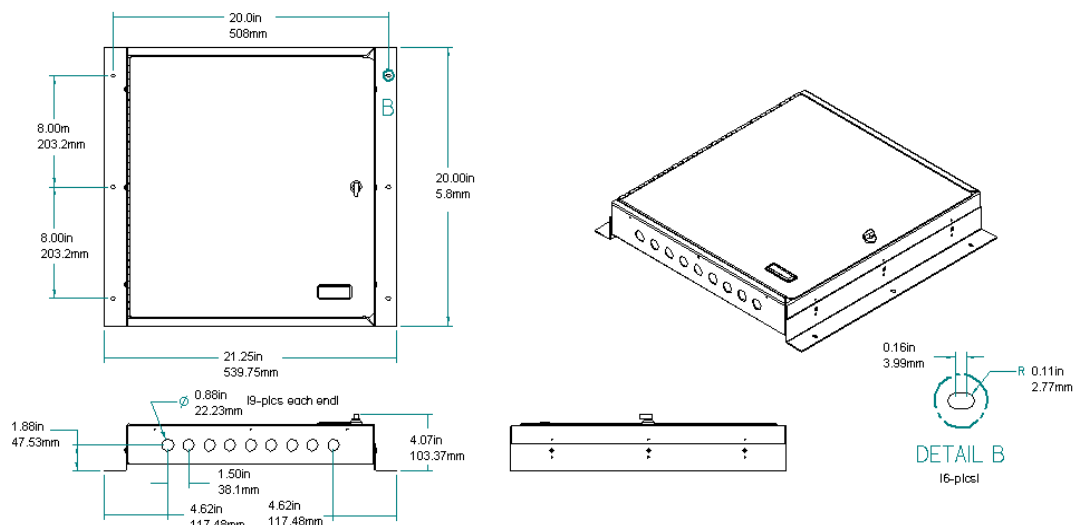


Figure 4. Floor-Mount Module Enclosure

You can connect up to five expander modules to the Sitel/O 10/0. You can arrange a stack as a single column of six boards or as two columns using an optional expansion cable. Use only one expansion cable per stack. You can position the Sitel/O 10/0 anywhere in the stack.

Addressing

Before setting or changing the address, make sure the Sitel/O 10/0's power is off. The Sitel/O 10/0 only reads the address when the module is turned on. After changing the address, you must transfer memory to the module. Refer to "Transferring Memory".

The Sitel/O 10/0 has two rotary switches for assigning the module's CMnet address. One switch corresponds to the tens digit and the other corresponds to the ones digit. For example, if the module's address is three, set the tens switch to zero and the ones switch to three, as shown in Figure 5.

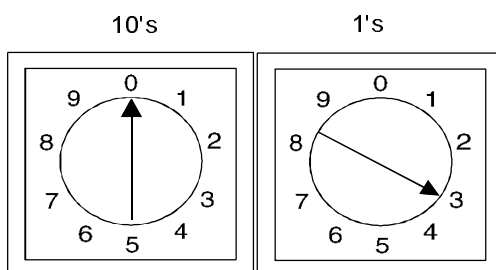


Figure 5. Setting the module's address

Power Wiring

Whenever possible, make sure the module's power and communications connections are working properly before connecting any input or output points.

CAUTION: The Sitel/O 10/0 module is a Class 2 device (less than 30VAC, 100VA maximum). Take appropriate isolation measures when mounting the Sitel/O 10/0 module in a control panel where non-Class 2 devices (120VAC or greater) or wiring are present.

You can power several modules from the same transformer if you

- maintain the same polarity
- use a transformer whose power rating is at least 20% greater than needed for the modules

For example, if the transformer is rated for 50VA and you connect it to two modules each rated at 20VA, the power trunk uses a recommended 80% of the transformer's power ($20+20=40$).

The Sitel/O 10/0 has an operating range of 21.6VAC to 26.4VAC. If voltage measured at the module's power input terminals is outside this range, the module may not work properly.

1. Turn the module's power off. This prevents the module from being powered up before the proper voltage is verified.
2. Make sure the 24VAC power source is off.

3. Connect the power wires to the module's power terminals labeled Gnd and 24VAC (see Figure 1 on page 2 for location).
4. Apply power to the transformer.
5. Make sure that 24VAC is present at the module's power input terminals.
6. Set the module's address. Refer to "Addressing" for details about setting the address.
7. Turn the module's power switch on.

When the module turns on, the Run and Power LEDs turn on and the Run LED begins blinking. (See Figure 1 for the LED's location.) If the module does not respond, call Liebert Global Services.

CMnet Communications

The SiteI/O 10/0 module can connect to the CMnet at 9600 bps or 38.4 kbps.

Use a dedicated 24AWG to 18AWG twisted pair stranded copper wire for CMnet (EIA-485) wiring. Wire sizes smaller than 24 gauge or wires that are not twisted may cause intermittent communication problems.

1. Be sure the module's power is off before wiring it to the CMnet.
2. Check the network communication wiring for shorts and grounds.
3. Connect the CMnet wires to the module's screw terminals as shown in Figure 6. Be sure to follow the same polarity as the rest of the CMnet.

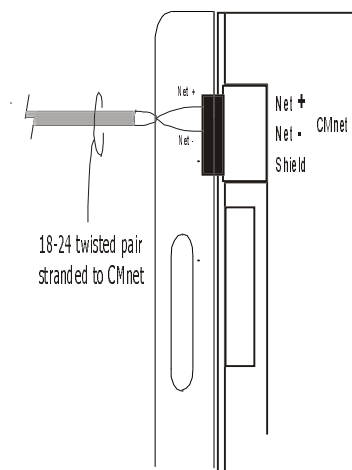


Figure 6. Wiring the CMnet

4. Make sure the module is configured for the correct baud rate. All modules on the CMnet must use the same baud rate.

Using a legacy CMnet (9600 bps or 38.4 kbps), set the CMnet Mode jumper to 9600 or 38.4k, and use the baud rate DIP switch to determine the baud rate (refer to Figure 7 for the switches' locations).

ARC156 CMnet (156 Kbps) is not currently available.

You can verify that the SiteI/O 10/0 is communicating on the CMnet by making sure the CMnet transmit and receive LEDs are active (see Figure 7).

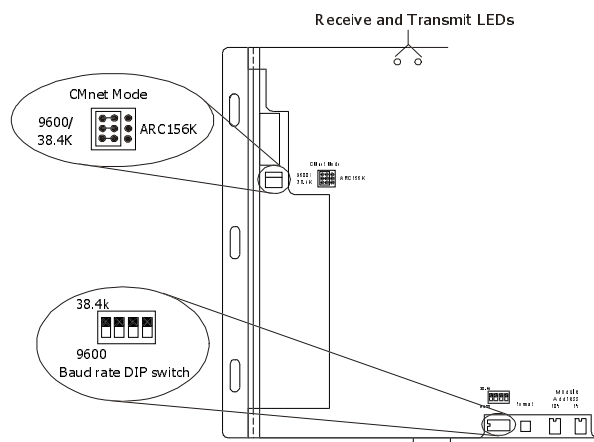


Figure 7. Using a Legacy CMnet

Inputs

The Site/O 10/0 module has sixteen universal inputs to accept the types of signals listed below. Refer to Table 1 for information about wire length, gauge, and shielding.

- Thermistor: Precon type 2 (10kohm at 77°F). Input voltages should range between 0.489V and 3.825V for thermistors.
- 0 to 5VDC: The output impedance of a 0 to 5VDC source must not exceed 10kohms. The input impedance of the Site/O 10/0 is approximately 1Mohm.
- 0 to 20mA: The input resistance on the “A” input is 250 Ohms. The “B” terminal supplies a voltage source to power the 4-20mA transducer. The “B” terminal is capable of supplying 18 to 24VDC, but the total current of all “B” terminals must not exceed 320mA. If the voltage measured from the “B” terminal to Gnd is less than 18VDC, you need to use an additional external power supply.
- Dry Contact: A 5VDC wetting voltage is used to detect contact position. This results in a 0.5mA maximum sense current when the contacts are closed.

The Site/O 10/0 accumulates up to 15 input pulses per second.

Table 1. Input wiring restrictions

Input	Maximum Length	Minimum Gauge	Shielding
0 to 5VDC	50 feet 15 meters	24AWG	shielded and grounded to module's “B” or Gnd terminal
Thermistor Dry contact	50 feet 15 meters	24AWG	shielded and grounded to module's “B” or Gnd terminal
0 to 20mA	150 feet 46 meters	20AWG	unshielded

1. Be sure the Sitel/O 10/0's power is off before wiring any inputs or outputs.
2. Connect the input wiring to the screw terminals on the module as shown in Figure 8.

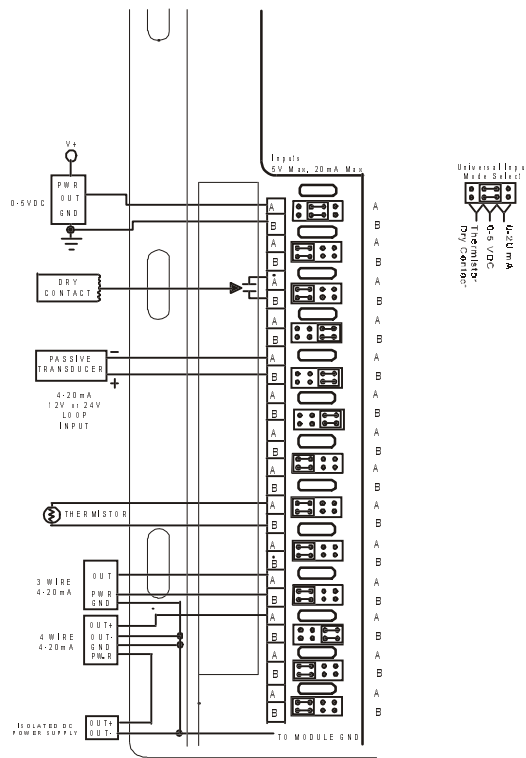


Figure 8. Input Wiring

3. Set the configuration jumper for each input to indicate the type of input used. Make sure the jumper is positioned correctly, and be sure to grip the jumper by the sides only (see Figure 9).

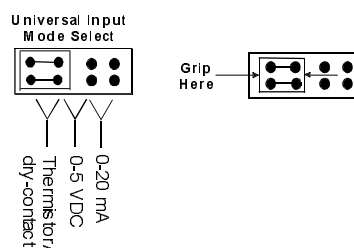


Figure 9. Jumper Position

4. For each input, enter the channel number, offset, and gain on the Function Block's Parameter page in SiteScan.
5. To verify each input's operation, have each sensor create a known value and compare it to the condition reported on the FB's Status page.

Transferring Memory

The SiteI/O 10/0 module can store up to 59 Function Blocks (FBs) and the SiteI/O module driver. A customer engineer from Liebert Global Services will perform this step at start-up.

1. Log in to SiteScan on a workstation connected to the CMnet.
2. Look at the module status page for this module in SiteScan to make sure the module type and number agree with the module.

To view the module status page in SiteScan, press the Esc key, type
`M0 , , module address, 15`
and press Enter.

3. In SiteScan download memory for This Module.
4. When the memory transfer is finished, check the module status page again. Make sure the FB List shows all the FBs you intended to transfer.

Troubleshooting

Formatting the Module

When you are unable to communicate with a module, you can, as a last resort, manually format the module to try to restore communication. Formatting the module erases all memory, so you must transfer memory back to the module once it is formatted (see “Transferring Memory” on page 9).

1. Turn the module's power off. Make sure the module's address switches are not set to '0 0'.
2. Press and hold the Format button (see Figure 1 on page 2 for location).
3. While continuing to hold the Format button, turn the module's power on.
4. Continue to hold the button until the Error LED flashes three times in sync with the Run LED.
5. Release the Format button.
6. Transfer memory to the module. Refer to “Transferring Memory” on page 9.

LEDs

The SiteI/O 10/0 module has several LED indicators to show the status of certain functions. Table 2 explains the Run and Error LED signals in detail to assist troubleshooting.

Table 2. LED signals

Run LED	Error LED	Condition
2 flashes per second	Off	Normal
2 flashes per second	1 flash per second	Normal, but module is alone on the CMnet
2 flashes per second	2 flashes per second	Five minute auto-restart delay after system error, or module is configured for a different baud rate than the rest of the CMnet
2 flashes per second	4 flashes per second	Two or more items in the database have the same node ID
2 flashes per second	On	Exec halted after frequent system errors

Table 2. LED signals

Run LED	Error LED	Condition
5 flashes per second	On	Exec start-up aborted, Boot is running
5 flashes per second	Off	Firmware transfer in progress
7 flashes per second	7 flashes per second	Ten second recovery period after brownout
14 flashes per second	14 flashes per second	Brownout

Power - lights when power is being supplied to the module.

Rx - lights when the module receives data from the CMnet.

Tx - lights when the module transmits data over the CMnet.

Protection

The Site/O 10/0 module is protected by internal solid state Polyswitches on the incoming power and CMnet. These Polyswitches are not replaceable and will reset themselves if the condition that caused the fault returns to normal.

Servicing

Call 1-800-LIEBERT for service. Be prepared to provide product information on the warranty tag.

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