Sentor Remote Communications
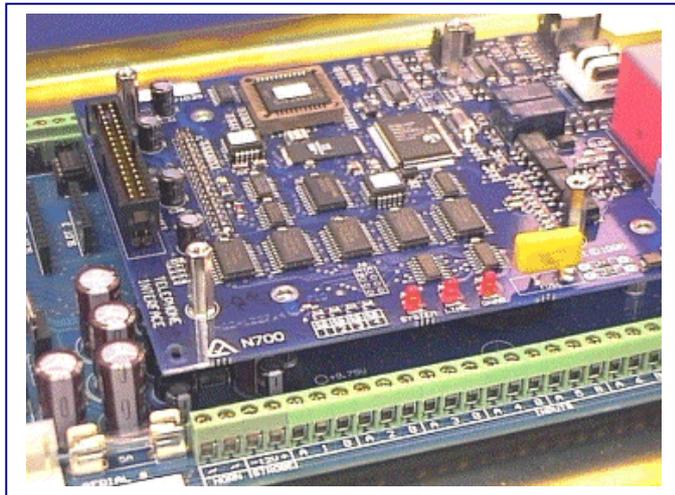
Remote base site monitoring and control

Installing Sentor

Hardware Installation

Contents:

1 Introduction

This guide explains how to install a Sentor system. It covers the following topics:

- [Sentor GUI](#)

- [ST3000 Controller](#)

- [ST07 LCD Keypad](#)

- [ST08 LED Keypad](#)

- [ST330 Telephone Support](#)

- [ST317 General Input/Output](#)

- [Sentor Devices](#)

Depending on what options you selected, you may not have all the above.

We strongly recommend that you read [Getting Started with Sentor](#) before beginning your installation. As well as familiarising you with what is involved in setting up Sentor, it contains some hints on how to optimise site automation and security.

If you are adding an option to an existing Sentor system, you will only need the relevant chapter in this guide.

There is a Device Record chart on page [26](#) that you can print out and fill in as you connect devices. You will need this information in order to configure Sentor as described in [Setting Up Sentor](#).

2 Sentor GUI

The Sentor GUI (Graphical User Interface) is an application that runs on a PC and communicates with the controller. You use it to set up a Sentor system so it knows about all the connected devices and for programming scenarios (the instructions that tell Sentor what to do). Information on how to use the GUI is in Getting Started with Sentor, with more details in Setting Up Sentor and Programming Sentor.

The software installation procedure should have already installed the GUI on your PC (or Macintosh running a PC emulator). If for some reason you omitted that step by carrying out a custom installation of the documentation only, you need to run the installer again and choose to install the Sentor GUI.

3 ST3000 Controller

You should have the following items:

- ST3000 Controller, with the main board already mounted (removing the board will void warranty).

- A 16VAC 3A transformer, of the correct mains voltage for your location.

- A parts pack containing:
    1. Two pushbutton switches for tamper detection, together with three leads for connecting them.
    2. Four self-tapping screws and rawlplugs.
    3. Two plastic grommets.
    4. Two cable ties.
    5. Two battery leads, red and black.
    6. 16 resistors, 3.3 K ohms, 0.25 watt.

Inside the controller cover is a diagram showing the various connection options. You will probably find it helpful to refer to this while you carry out the installation.
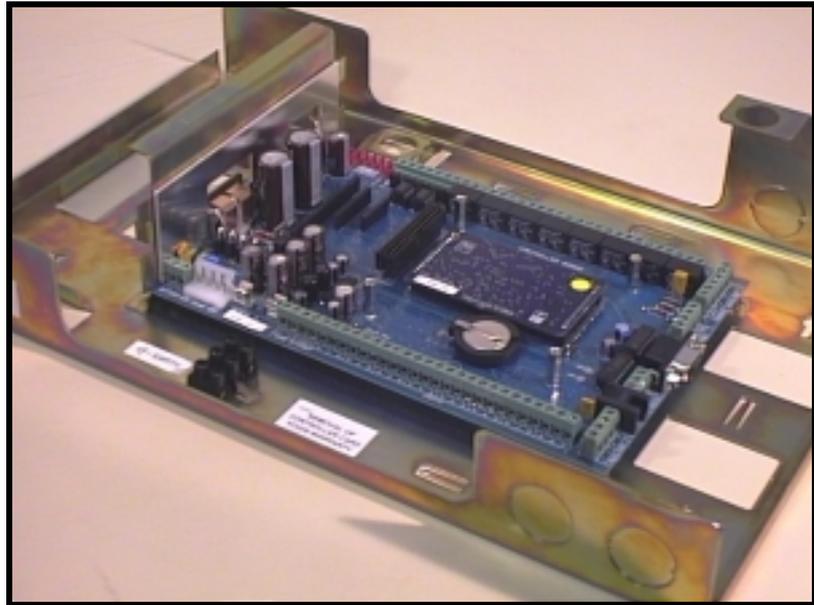
Controller Chassis

Mounting the Controller

The controller is designed to be wall mounted using the four screws (and rawlplugs if necessary).

1. Choose a location that is in reach of a power point, and a telephone socket if you have the ST330 Telephone Support card.

2. Decide how you are going to route the wiring to the controller. There are two knock-out discs on each side, and ports that open to the rear. Knock out one or two discs if necessary.

    To use one of side ports, insert one of the grommets and cut a cross in the middle. This will allow you to push a cable through and will provide some cable relief.

3. Mount the controller chassis securely on the wall in a horizontal position, with the backup battery compartment on the left.

4. Run in the lead from the transformer (but do not plug the transformer into the power point yet). Push the connector into the socket marked 16 VAC and connect the earth lead (green and yellow wire) to the centre terminal on the adjacent connector.
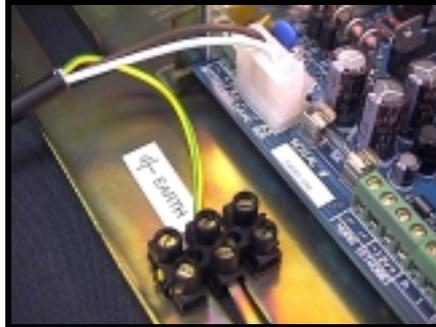
Important   5. Remove the cardboard tab from under the lithium battery.
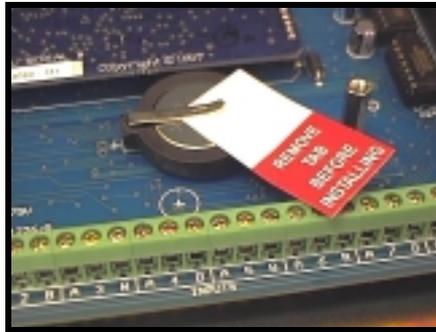
6. If you are going to work through the *Guided Tour* in Getting Started with Sentor, connect a keypad before plugging in the transformer.

In any case, be sure the controller is powered down before adding any options or making connections.

Connecting Devices

Instructions for connecting an LCD or LED keypad are given in other chapters. This section offers general guidance on the connections you can make to the controller's input and output terminals.

Be sure to keep a record of exactly what is connected to each terminal as this information is vital to the setting up of Sentor later.

Important   Remove power from the controller before making any connections.

General Inputs

There is a set of 16 inputs on the bottom of the controller board (1A through 8A and 1B through 8B – the numbered terminal being common to each pair). Each 'A' connection has a pull-up resistor and is meant for unpowered inputs such as digital (switches), protected loops and thermistors. Each 'B' connection is floating and is suitable for analog voltage and current inputs.

Digital Inputs

Connect a digital input between the numbered terminal and A as shown below. It should provide a clean contact closure.
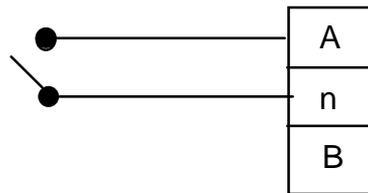
Voltage Inputs

Connect these with the negative wire to the numbered terminal and the positive wire to B as illustrated in the next diagram.
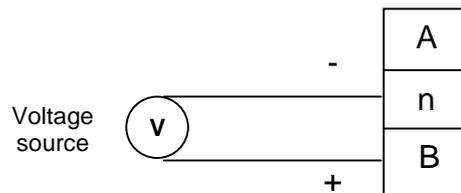
Current Loop

Connect one wire from the 4-20 mA transducer to an Auxiliary 12 V + terminal (Aux 1 or Aux 2) and the other wire to the B terminal, with a 47 ohm 0.5 watt 1% resistor to the numbered terminal as follows:

A

47R

n

B

4 – 20 mA
Transducer

Aux 2

Aux 1

Controller

-

+

Aux

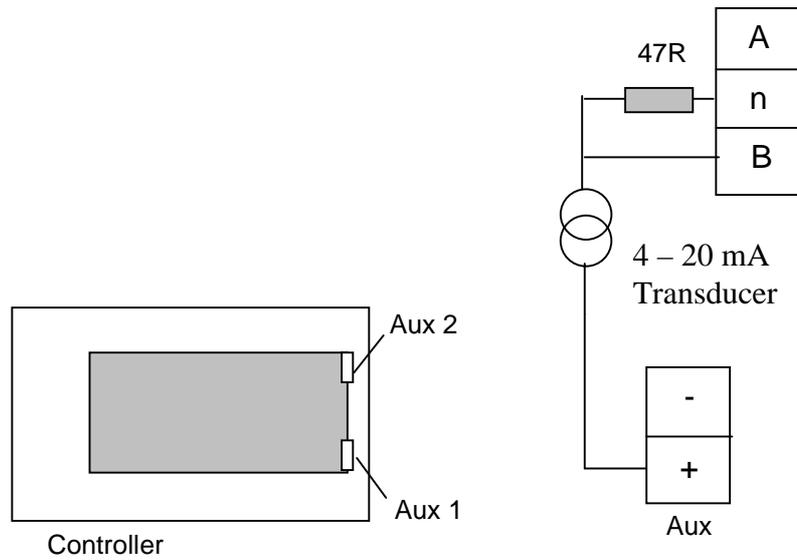Note that Auxiliary 1 is powered from the backup battery (if fitted) in the case of a power failure, whereas Auxiliary 2 is not.

Protected Loop

Connect as shown below. Note that the 3.3K ohm resistors are provided with your controller.

3.3K EOL

3.3K EOL

A

Tamper

n

Alarm

B
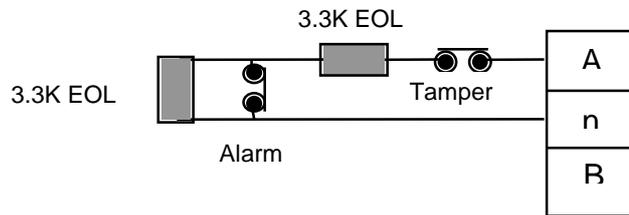
If you need to use other EOL resistor values, such as for older style security controllers, look up Breakpoint in Appendix C of the on-line Help.

Temperature

Connect a ST325 Temperature Sensor as follows:

+

A

ST325

n

-

B
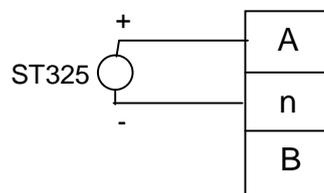
Digital Outputs

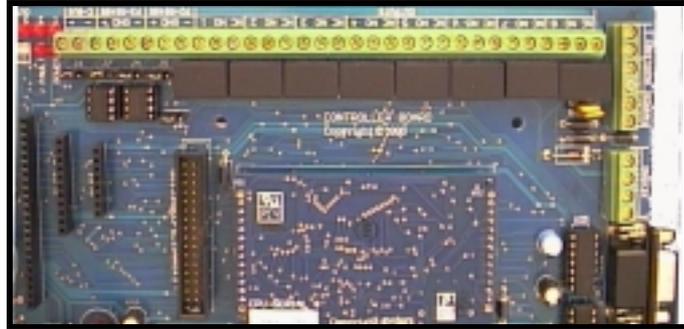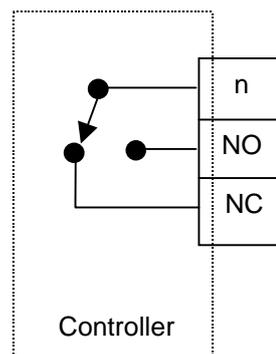There are eight digital outputs on the top of the controller board:

Each output has a numbered terminal and NC (Normally Closed) and NO (Normally Open) terminals. These are connected internally to a relay as shown below.

Connect to the numbered terminal and either the NC or NO terminal as required.

The rating is 1 amp maximum switching with the maximum voltage depending on whether the application is required to meet UL approval:

- Required: 24 Volts DC, 24 Volts AC.

- Not required: 48 Volts DC, 32 Volts AC.

Tamper Detection

Use the provided pushbutton switches to fit tamper detection that will determine if the controller lid is removed or it is taken off the wall. This also conserves power by extinguishing all internal LEDs when the Tamper Input tracking flag is Off (which happens if both switches are depressed (i.e. not tampered).

You may prefer to fit only the lid switch

1. Cut three vertical grooves in the barrel of each switch, just below the top flange. This makes them easier to insert.

2.   Fit the provided cables to the switches via the push–on connectors.

3.   Push one switch into the hole in the flange on front of the chassis.

4.   Push the other switch into the hole in the back of the chassis, from the outside.

5.   Connect the switches in series to the Input Tamper terminals on the right hand end of the controller board, as shown below.

Controller   INPUT
                                    TAMPER
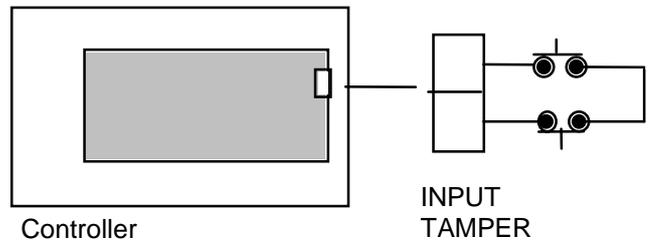
The final wiring should look something like that pictured below (showing both switches fitted).
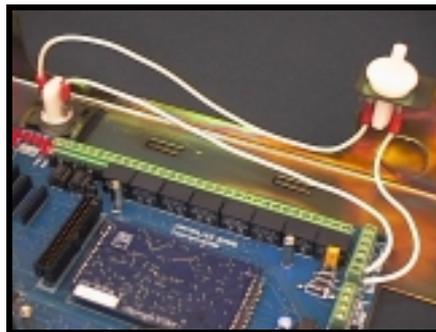
Connecting a PC

Follow the instructions in Getting Started with Sentor for information on how to connect a PC via a serial cable.

See Setting Up Sentor for information on communicating via a modem.

4 ST07 LCD Keypad

You can have up to five LCD keypads communicating with the controller. (You cannot mix LCD and LED keypads).

This section first explains how to mount and connect a single keypad, then describes the addition of others. A keypad may be a ST07V (vertical) or ST07H (horizontal) as shown below.

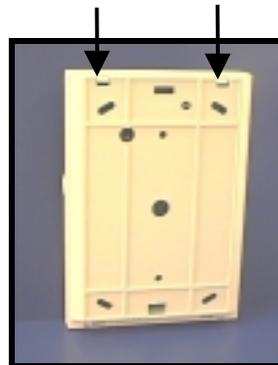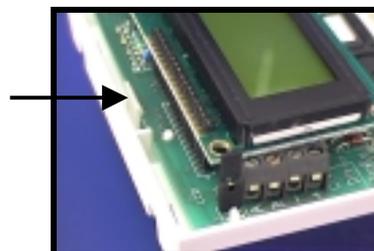

ST07V   ST07H

ST07V Mounting

1. Remove the top cover by pushing the two clips on the rear of the keypad in and downwards:

2. Turn the keypad on its back and remove the circuit board by pushing back the clip holding the top of the board.

3. Mount the back cover of the keypad, using the four slotted holes.

Leave the circuit board out for now.

ST07H Mounting

1. Turn the keyboard on its front and remove the back cover by pushing in the two clips.
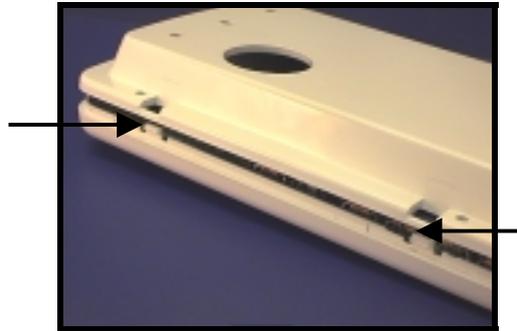
2. Mount the rear using the screw holes.

Connecting a Keypad

You need four-wire cable to connect the keypad to the controller if the latter is to provide the power. Alternatively, you can use two-wire cable if you provide power separately (such as via a 12V plug pack). The maximum length is 1200 metres, and shielded cable is highly recommended.

1. Bring the cable through the back of the keypad case, or drill a hole in the side or top of the cover, and connect the wires to the terminal block shown below, noting the colour of the wire to each terminal.

ST07H   ST07V

2. Make connections to the controller's P2-RS485 terminals (shown below) and Auxiliary 1 terminals as indicated in the diagram on the next page, connecting the shield to the controller's P2 GND terminal if you are using shielded cable.
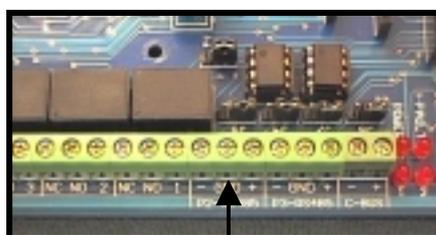
P2-RS485
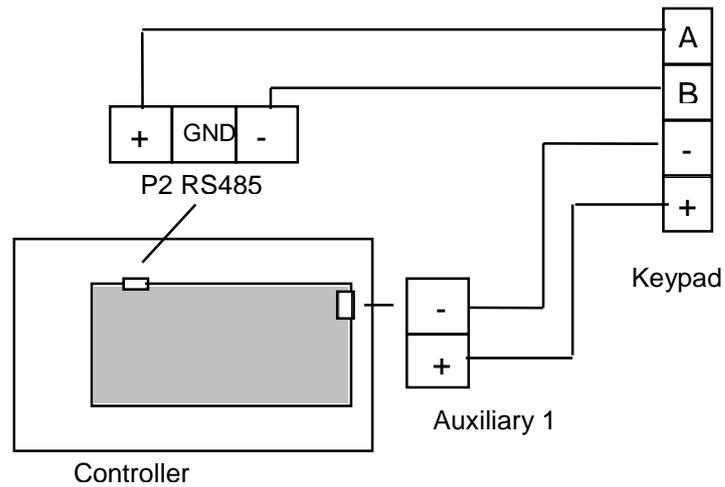
Do not connect the shield at the keypad.

Use Auxiliary 1 if you have the optional backup battery, because Auxiliary 2 is not battery-backed if there is a mains failure.

3. Replace the circuit board.
4. Replace the cover.

Keypads have an internal address that Sentor uses for communication. You need to set this address on the keypad (and later, in the Sentor setup procedure). It is convenient to make the first keypad's address 01. Do the following:

1. While holding down the Menu key, press the 1 key.
2. Release the keys and press 1 again to choose address setting.
3. Type in a two-digit number (01 recommended here).
4. Press the Enter key to confirm the address.

A message will announce Local Mode Off and the keypad will now be ready to communicate with the controller when its address has been configured in the Sentor GUI.

Adding More Keypads

Up to five keypads can be connected, and Sentor will identify each by its address.

You connect extra keypads in parallel. That is, wire terminals A, B, + and – on one keypad to the corresponding terminals on the next and so on as illustrated below. With shielded cable, connect the shields together.

Controller
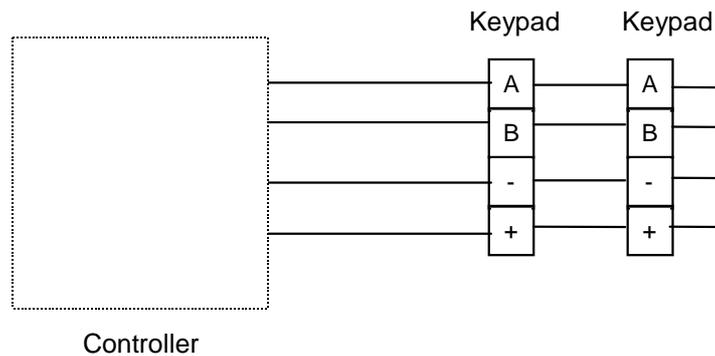
On all except the last keypad, remove the shorting plug from the TERM socket, which is located just above the terminal block.

The next diagram shows which shorting plugs should be removed in a multiple keypad installation.

Controller   Remove
                               TERM
                               Plugs
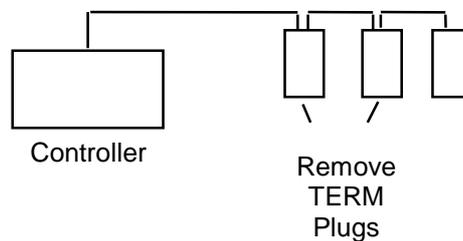
You now need to set the addresses of the keypads. Provide power to the keypads (by powering up the controller or an external supply if applicable).

Set each keypad's address as described previously, making a note of the address and the location (for when you set up devices later).

5 ST08 LED Keypad

The ST08 is a serial keypad, and you can have up to four connected to a controller. Maximum cable length is 200 m. It is not possible to have both LED Keypads and LCD Keypads connected.

There is a four-pole DIP switch on the back of the keypad circuit board (accessible through the rear cut-out). Set switch 1 to On and leave the others Off.

Mounting a Keypad

Do the following to mount a keypad:

1. Using a small screwdriver, press in the two tabs on the bottom of the case and remove the back.
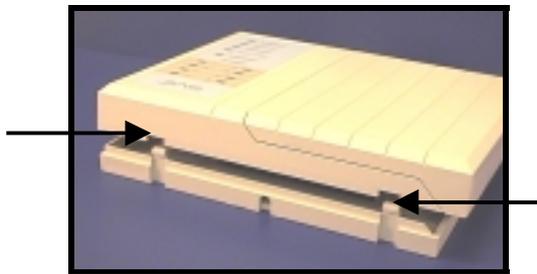
2. Mount the back with screws through four of the slotted holes.

Connecting a Keypad

You will need to drill a hole in the case if you want cable entry to be other that through the rear or the bottom.

1. Use four-wire cable and suitable connectors to extend the leads from the keypad. If the cable colours are not the same as those coming from the keypad, make a note of how you have matched them.

2. Make connections to the Keypad terminals on the right hand end of the controller as shown below. This indicates the colours of the cables at the keypad end.

Controller

GND — Black
12V — Red
CK — Yellow
DATA — Green
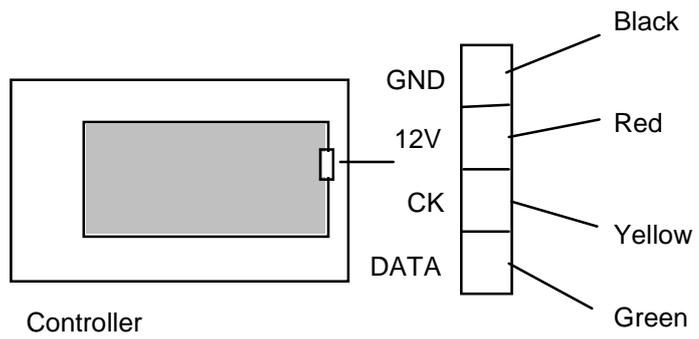
Adding More Keypads

Up to four keypads can be used. Each keypad may be wired directly to the controller as shown above, or you can extend the wiring from one to the next (in parallel).

6 ST330 Telephone Support

The ST330 is an expansion card that fits in the ST3000 Controller.
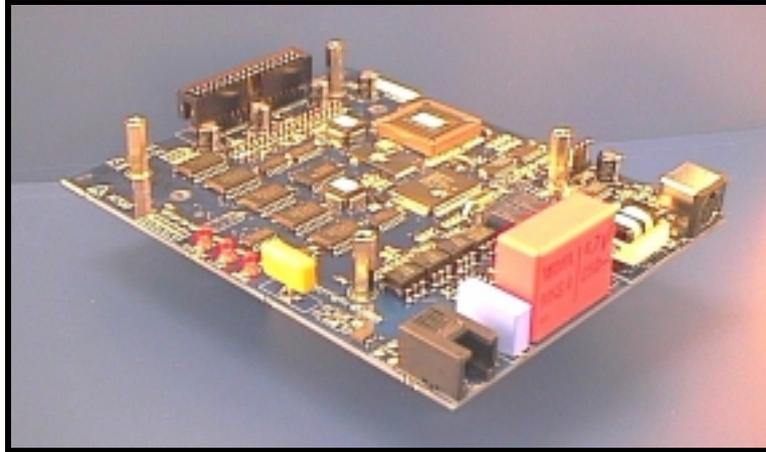
As it is fairly wide, you should install the ST330 before any other expansion options. You should have the following:

- ST330 expansion card in an anti-static bag.

- Four screws for securing the card.

As described later, you will need to have your telephone company install a Mode 3 connection for Sentor unless it will be on a dedicated line.

Installing the Card

Follow the usual static discharge precautions when handling any circuit cards:

Important
- Leave the card in its anti-static bag until you are ready to install it.

- Handle the card only by the edges.

- Touch the controller chassis before mounting the card.

Do the following to install the ST330:

1. Turn off power to the controller.
2. With the component side up, position the card so that the plug on the bottom aligns with the expansion connector on the left end of the controller board.
3. Gently press the connector home so the ST330 sits snugly on the support pillars.
4. Use the supplied screws to secure the ST330 to the controller card.
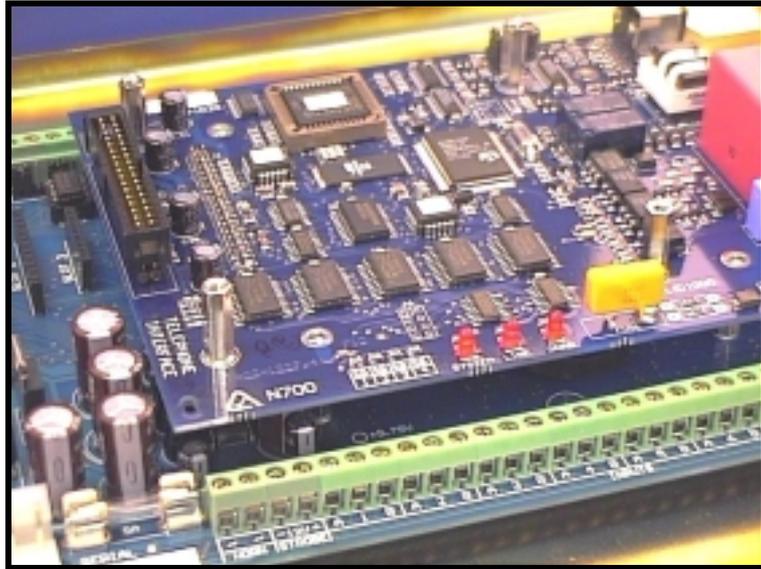
ST330 in position

Connecting to a Telephone Line

How you connect to a telephone line depends on whether other handsets or devices are on the same line.

Dedicated Line

If Sentor is using a dedicated line (with no handsets or other devices on it), you can plug the line directly into the J7 Tel socket on the right hand end of the ST330 card. Its location is indicated below.
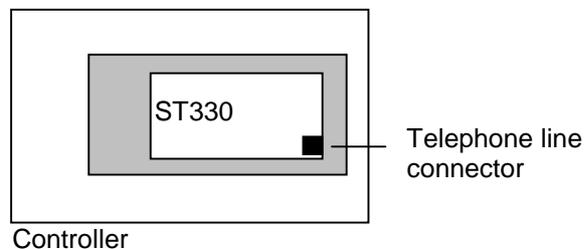
Caution

Be careful not to use the similar X-10 socket underneath, on the ST3000 mother board.

Shared Line

For security purposes, Sentor needs to be able to 'grab' the telephone line even if another handset is in use or off the hook. For this reason, you cannot simply plug in Sentor in the same way as an extension telephone, if the line is used by other devices.

You need to ask your telephone company to install a Mode 3 connection for you. Then connect a 6-wire RJ12 cable between the Mode 3 outlet and the J7 Tel socket on the right hand end of the ST330 card as indicated above for a dedicated line.

Caution   Be careful not to use the similar X-10 socket underneath, on the ST3000 mother board.

Central Monitoring

The ST330 supports automatic dial out to a central monitoring service. No extra wiring is needed for this as it uses the same connection as above.

7 ST317 General Input/Output

This is an expansion card that provides another 16 general inputs and eight digital outputs.
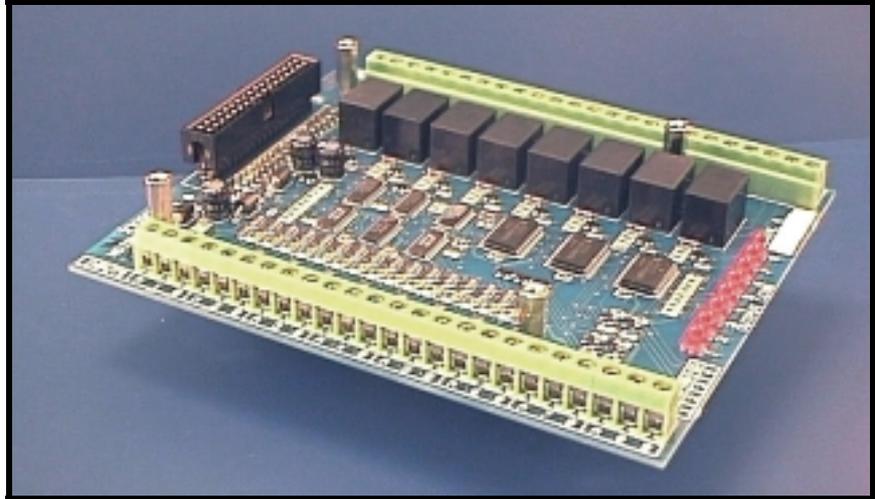
Note that if you also have a ST330 Telephone Support card, you should install that first.

With no ST330, you can install up to three ST317 cards. With an ST330 you can install one or two.

Installing the Card

Follow the usual static discharge precautions when handling any circuit cards:

Important
- Leave the card in its anti-static bag until you are ready to install it.
- Handle the card only by the edges.
- Touch the controller chassis before mounting the card.

Do the following to install the ST317:

1. Turn off power to the controller.
2. With the component side up, position the card so that the plug on the bottom aligns with the expansion connector on the left end of the controller board (or another option board if one is fitted).
3. Gently press the connector home so the ST317 sits snugly on the support pillars.
4. Use the supplied screws to secure the ST317 to the controller card (or to the ST330 if fitted).

ST317 Mounted above a ST330

Making Connections

Make connections to the input and output terminals in exactly the same way as described for the ST3000 Controller.

8 Sentor Devices

This chapter describes how to install and connect devices that may be supplied as options with Sentor. Third party devices are not covered here, and you should refer to their user guides for information, although the way to connect X-10 and C-Bus is noted.

ST29 Battery Backup

This is a 12V 7 amp-hour sealed lead-acid battery that is constantly trickle charged by the controller. A scenario instruction can also boost charge the battery when necessary.

Mounting

Place the battery in the left hand end of the controller chassis, with the battery terminals at the bottom. The top of the battery should slide in behind the flange on the battery's right as illustrated below.
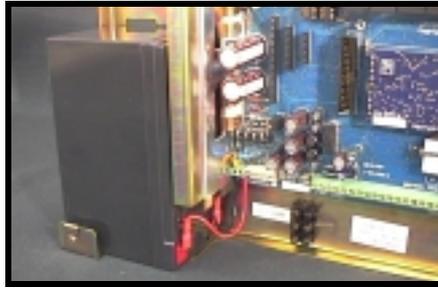
Wiring

Use the cables provided to wire battery positive to the Battery + terminal on the bottom left of the controller board, and battery negative to the Battery – terminal:

ST351 Infra-red Tx/Rx Stations

These provide support for the control of devices by infra-red signals, typically TVs, stereos, and satellite receivers.

You need to install stations so that every device to be controlled is within line of site of a ST351 transmitter. Each station is supplied as a small circuit board as shown below.
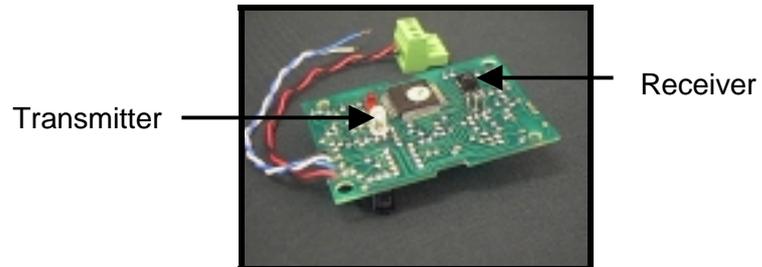
Mounting

You can mount the boards in any convenient enclosure, making sure that the infra-red transmitters and receivers are in view. Alternatively, you can use the optional Sentor enclosures:

The next illustration shows the rear of the housing with the board in position.

Wiring

The Tx/Rx stations connect to the controller via RS-485 (that is, the same network as LCD Keypads if used).

The position of the P2-RS485 terminals is shown below.
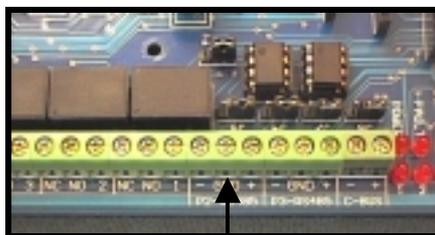
P2-RS485

Connect the first station as indicated in the next diagram. You can use either Auxiliary 1 or Auxiliary 2 to provide the power, but the latter is not powered by the controller's backup battery (if fitted) in the event of a power failure.
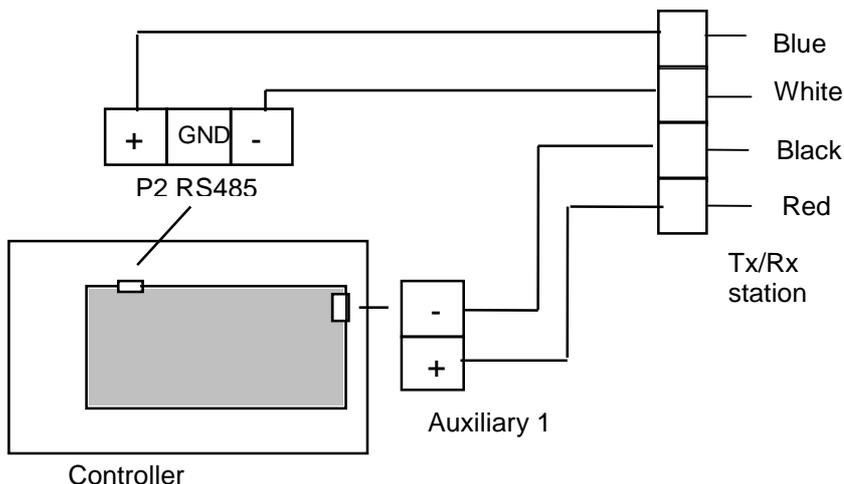
You can connect other stations by extending the wiring from each station to the other.

Setting Addresses

Each station needs a unique address from 1 – 15. Set this on the rotary switch mounted on the circuit board and make a note of the location of each station for use when you set up the software.

If you will be using the infra-red command learning facility, choose one station for that purpose and set its address to 15.

C-Bus

A C-Bus SIM (Single In-line Module) is needed to support C-Bus operation.

Plug the module into slot 2 at the left hand end of the controller board as shown below. The side holding components with leads should be facing to the right (away from the battery compartment).

Terminals

Slot 2
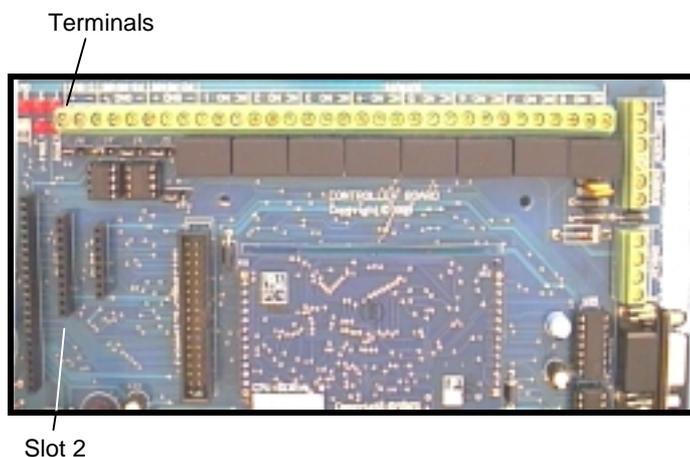
Connect the controller into the C-Bus via the C-Bus terminals on the top left of the controller board (indicated above).

X-10

Connect an RJ11 cable between the X-10 Power Line Interface and the telephone-type socket marked X-10 on the right hand end of the controller board:

Caution Be careful not to use the similar socket on the ST330 Telephone Support board (if fitted).

Strobe and Horn Connections

Connect a strobe to the plus and minus STROBE terminals on the bottom left of the controller board.

Connect a horn (speaker) to the HORN terminals in the same location.
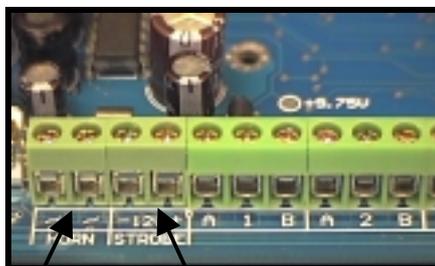
Horn   Strobe

9 Device Record

Print these pages as required and fill in the charts as you connect devices to the controller. This information will be needed when you configure your system as described in Setting Up Sentor. You can then insert the names you give the devices, for reference in scenarios.

ST3000 Main Board Inputs

#	Description	Configured Name
1A		
1B		
2A		
2B		
3A		
3B		
4A		
4B		
5A		
5B		
6A		
6B		
7A		
7B		
8A		
8B		

ST3000 Main Board Outputs

#	Description	Configured Name
1		
2		
3		
4		
5		
6		
7		
8		

ST317 General I/O #1 Inputs

#	Description	Configured Name
1A		
1B		
2A		
2B		
3A		
3B		
4A		
4B		
5A		
5B		
6A		
6B		
7A		
7B		
8A		
8B		

ST317 General I/O #1 Outputs

#	Description	Configured Name
1		
2		
3		
4		
5		
6		
7		
8		

ST317 General I/O #2 Inputs

#	Description	Configured Name
1A		
1B		
2A		
2B		
3A		
3B		
4A		
4B		
5A		
5B		
6A		
6B		
7A		
7B		
8A		
8B		

ST317 General I/O #2 Outputs

#	Description	Configured Name
1		
2		
3		
4		
5		
6		
7		
8		