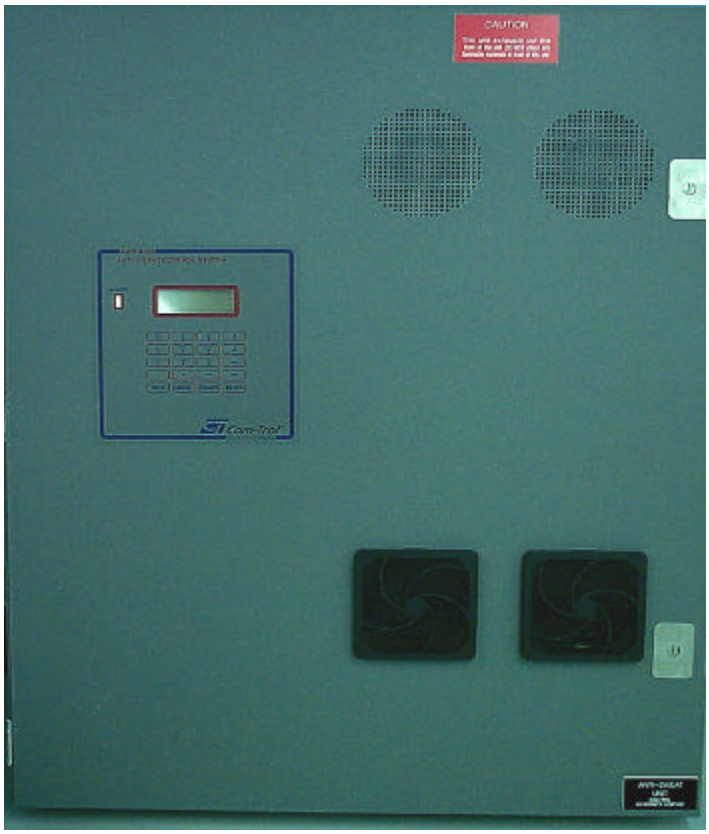
Com-Trol

User's Manual

Anti-Sweat Heater Control Panel



Model

ASW - 4500

Table of Contents

Introduction

Effective anti-sweat heater control is necessary in today's high energy cost market. Supermarket fixtures use anti-sweat heaters to prevent moisture from condensing on surfaces where refrigerated air meets ambient or store air. Proper store temperature and humidity are necessary for the anti-sweat heaters and their controller to be energy efficient.

The Com-Trol ASW-4500 has been specifically designed to operate solid state relays through its pulsed output board. The ASW-4500 is a microprocessor based control system which uses Com-Trol's exclusive anti-sweat heater control strategy from their software/firmware library.

The ASW-4500 will control, monitor, and alarm up to 4 separate anti-sweat heater circuits (Tasks). All four tasks use a common relative humidity (RH) sensor and zone temperature sensor. Each task may have separate setpoints. This depends on the application and store environment.

The ASW-4500 logs the last 71 days of readings for each task at 10 minute intervals and the last 40 alarms.

The ASW-4500 connects to the Anti-sweat Control Panel via the RS-485 communications (Local) bus.

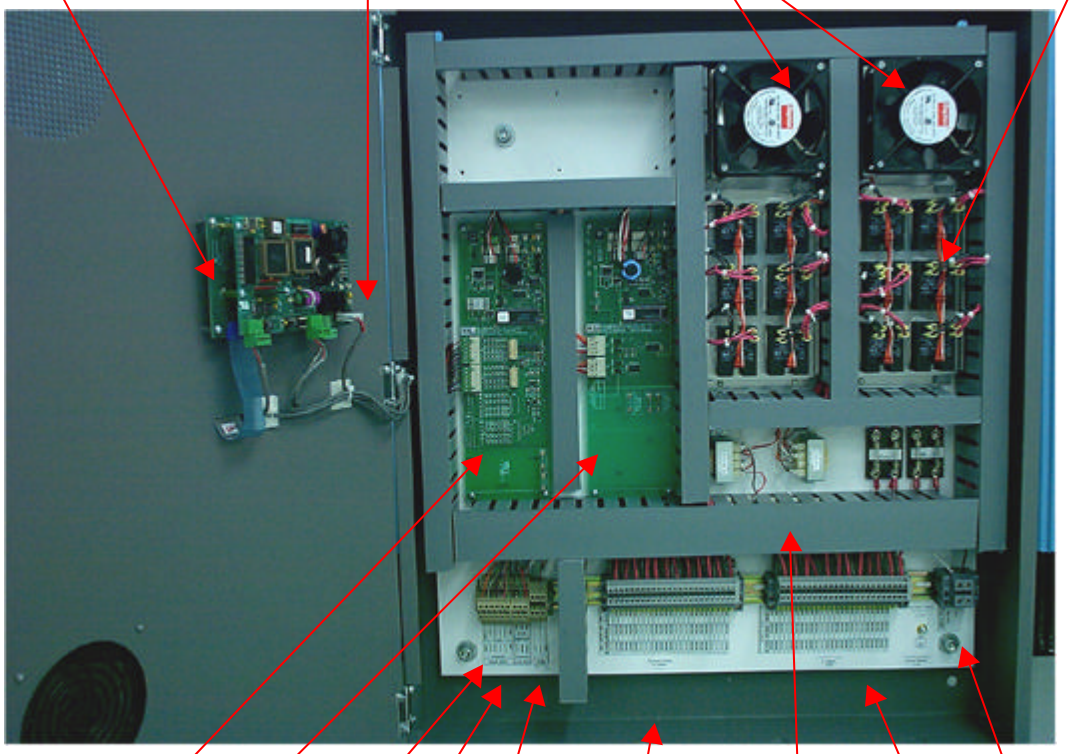
The ASW-4500 has a 4 line by 20 character display and 20 character touch keyboard for easy set-up and use. It has a flashing set of LED's which remain on until all alarms are clear and a buzzer that may be silenced by touching CLEAR on the touch pad.

Two alarm outputs are provided to drive a remote audible (SONALERT) alarm and a visual alarm (flashing LED's).

The HELP key provides information for each screen, reducing the need for a reference manual.

The ASW-4500 is a standalone device and may be networked with Com-Trol's COM-5000 or ADV-6000 for remote communications.

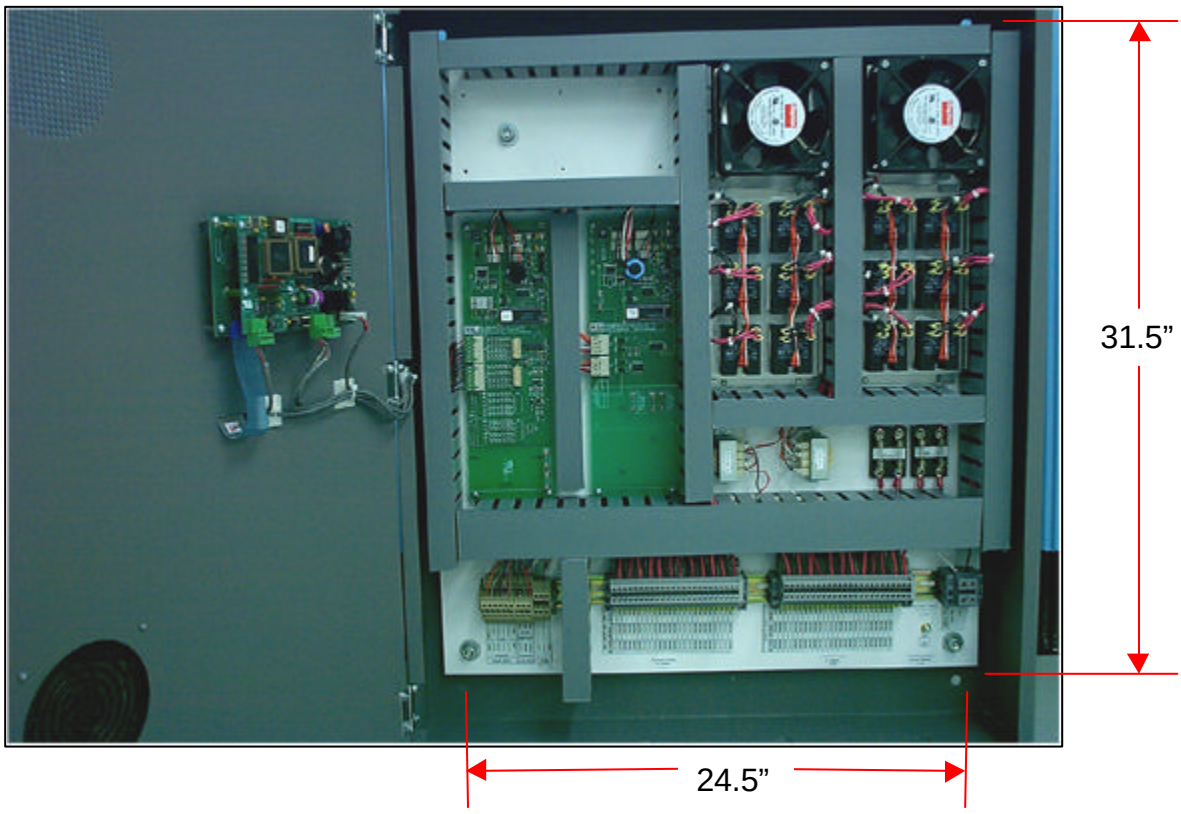
Component Identification



Installation

The installation of the ASW-4500 is quite simple, mount the unit, Connect 120VAC and anti-sweat heater power. Connect sensor inputs and RS-485 Bus if remote communications are desired. Use “Components Identification” page as a guide.

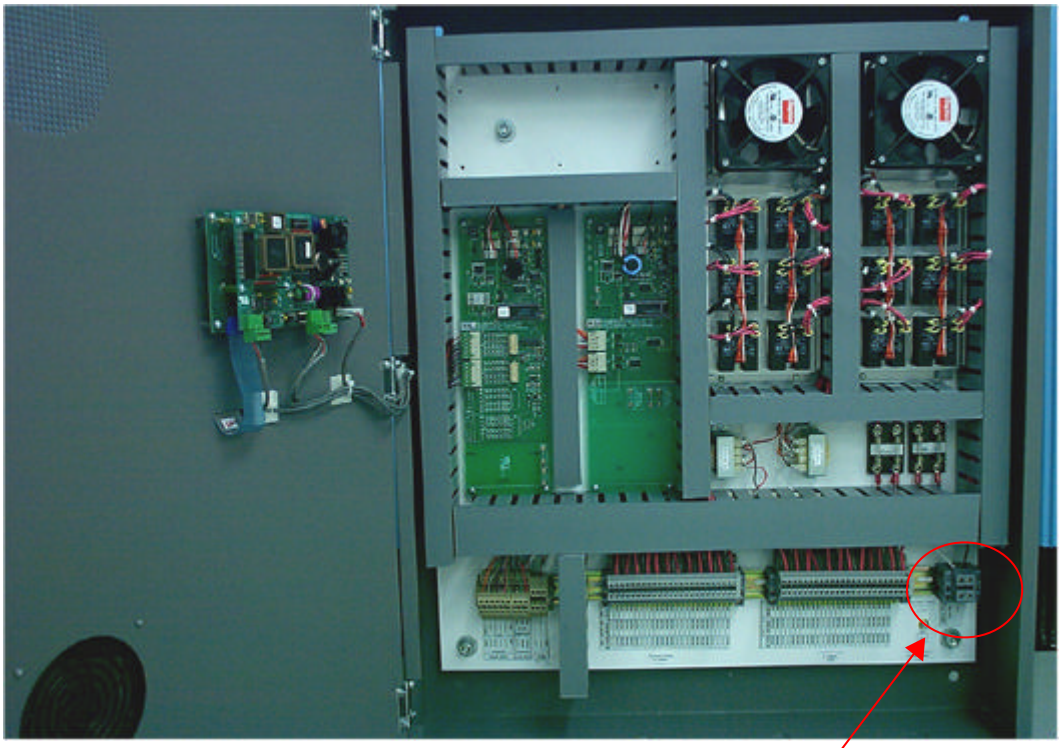
Mounting the ASW-4500



Normally the ASW-4500 unit would be mounted in or near the compressor room. However, since this is a standalone device it can be mounted anywhere within the facility where convenient. Four .50” mounting holes are provided. See picture for mounting hole dimensions. Allow 28” clearance for door opening.

Overall control panel size with door : 28.00” W x 35.25” H x 5.25” D

Connecting Power



Connect 120VAC to these terminals. Be sure panel is grounded.

The ASW-4500 requires 1 amp and should be connected to a 15 amp/120v circuit breaker that is a dedicated power source for the ASW-4500.

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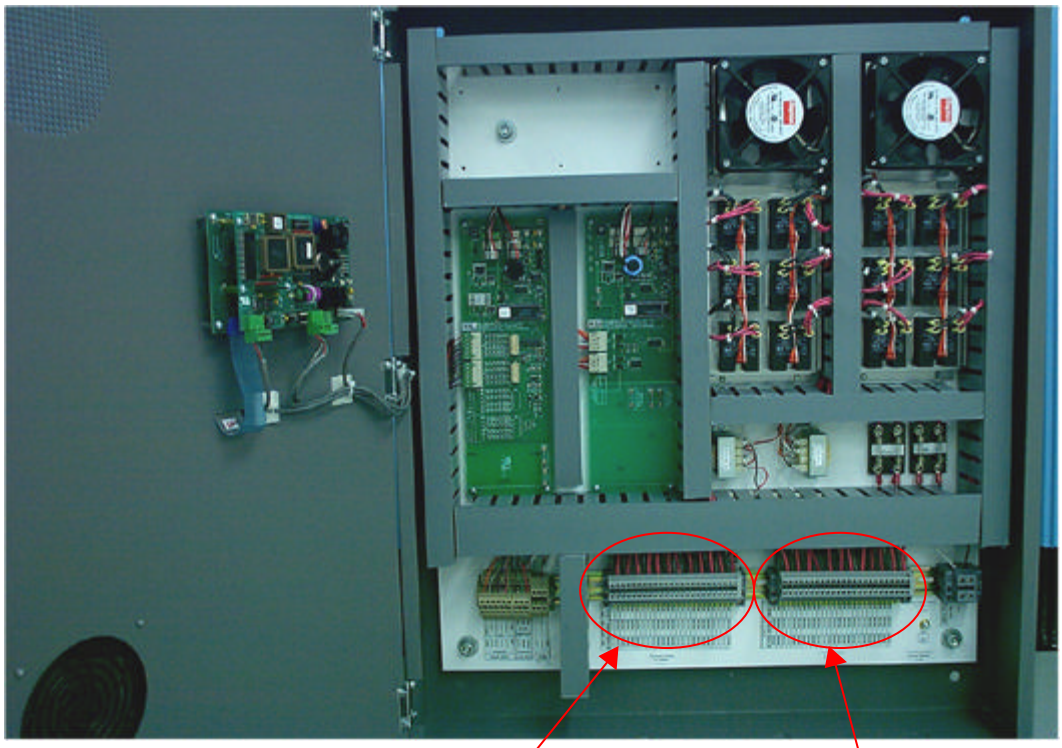
Use #14 copper clad conductors with a minimum of 75*C rated insulation.

To prevent damage and to ensure proper operation be sure to connect grounding wire to lug provided.

Connecting Anti-Sweat Heater Circuits



Connect 120VAC anti-sweat circuits from circuit breaker panel. 24 terminals available

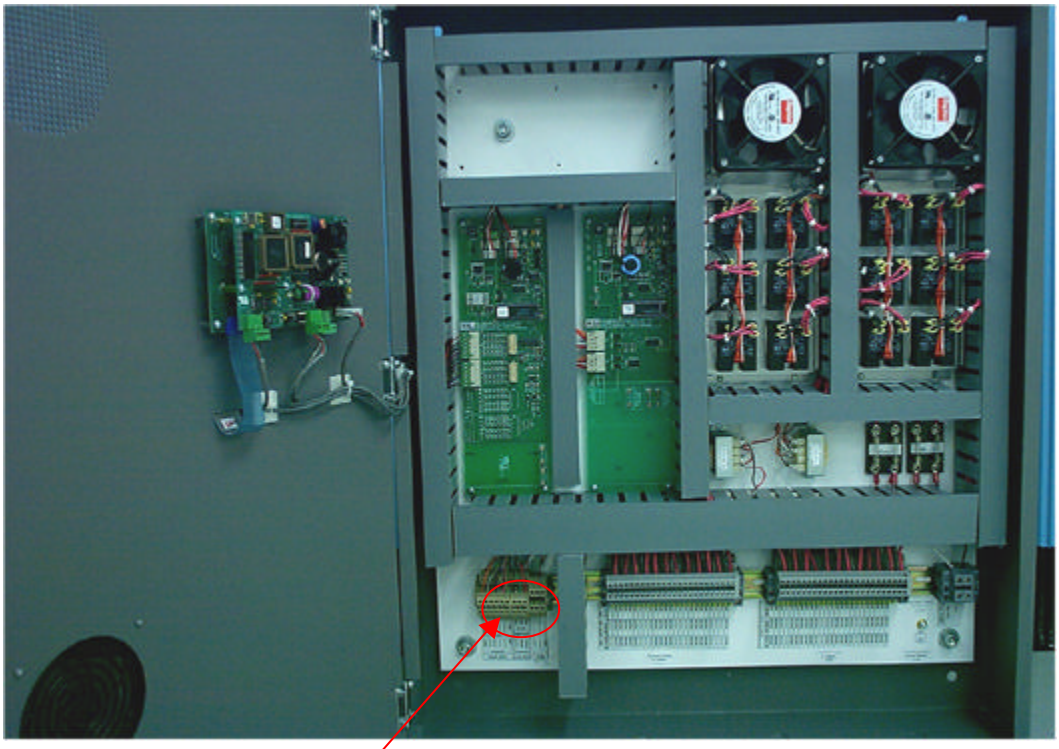
Connect to anti-sweat heater circuits in refrigerated cases. 16 amps maximum for each circuit

The Anti-Sweat Heater Circuit terminal strips are divided into two sections. The terminal strip on the left is for 120VAC coming from the circuit breaker panel. The terminals on the right are for anti-sweat heater power to the refrigerated cases.

Maximum continuous current for each circuit is 16 amps. A total of 24 circuits are available.

Use #10 copper clad conductors with a minimum of 75*C rated insulation for each anti-sweat circuit.

Analog Input Connections



Connect using 5/C – 22AWG cable.

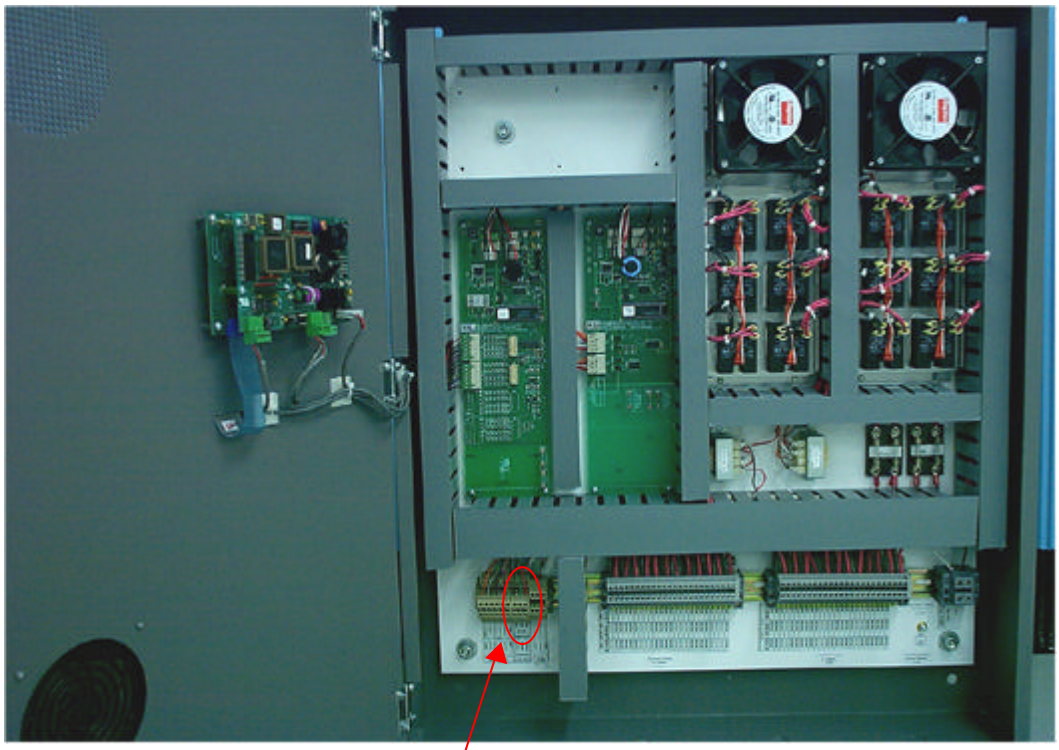
Relative humidity sensor & zone temperature sensor

The analog inputs include a relative humidity (RH) sensor and a zone temperature sensor. Both sensors can be in the same enclosure.

The ASW-4500 will control up to 4 separate anti-sweat circuits (Tasks)

All use a common relative humidity (RH) sensor and zone temperature sensor
Low voltage wiring shall be class – 2 (30 volts maximum) for sensors.

Communications Connections



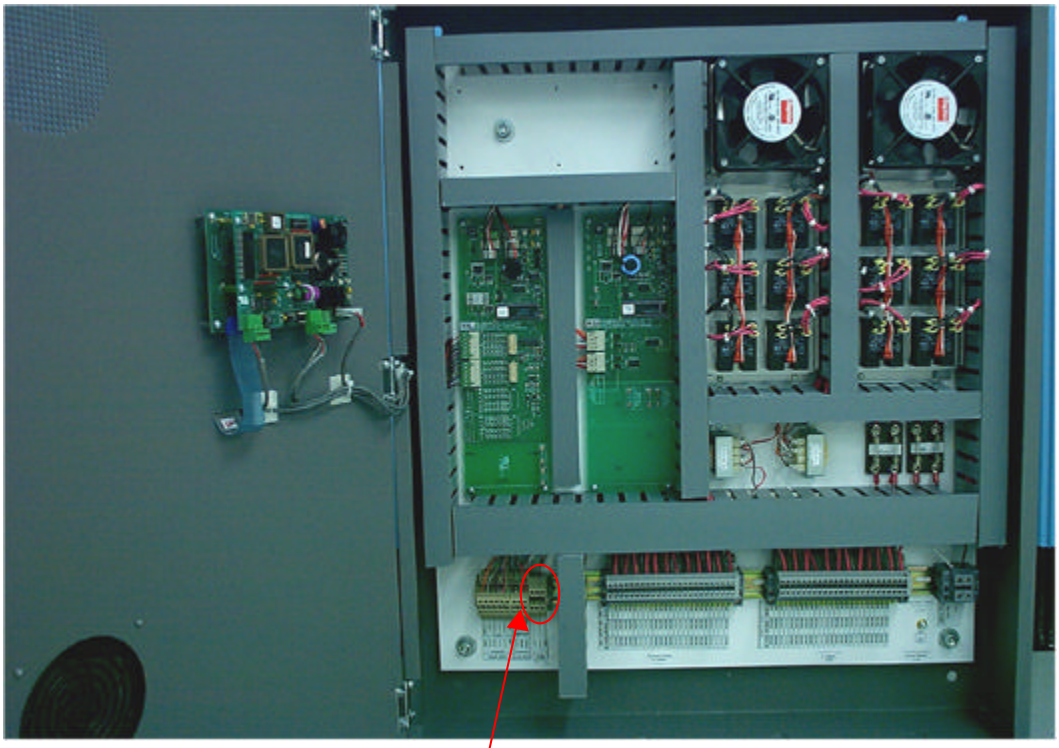
Connect the RS-485 Bus
using 3/C – 22 AWG cable

Com-Trol 5002

If the ASW-4500 is being networked to a Com-Trol communications interface (COM-5000) or GUI (such as the Advantage 6000), simply connect the Global Bus at the ASW-4500 terminals to the Global Bus on the interface or on any other controller.

Low voltage wiring only : Class – 2 (30 Volts Maximum) for RS485 communications wiring.

Local Alarm Connection



Connect using 3/C – 22AWG cable

Sonalert has a 4 wire cable, only three wires are connected. Do not terminate green wire.
Red = +12V
Black = Alarm Buzzer
White = Alarm LED
Green = Alarm Silence

Sonalert

Flasher

Two relays are provided on the processor board that can drive a Com-Trol remote audible Sonalert alarm and a visual alarm that consists of flashing LED's

This panel may be directly connected to the alarm outputs.
Alarm can be silenced by "Cancel" button on keypad on door of ASW-4500

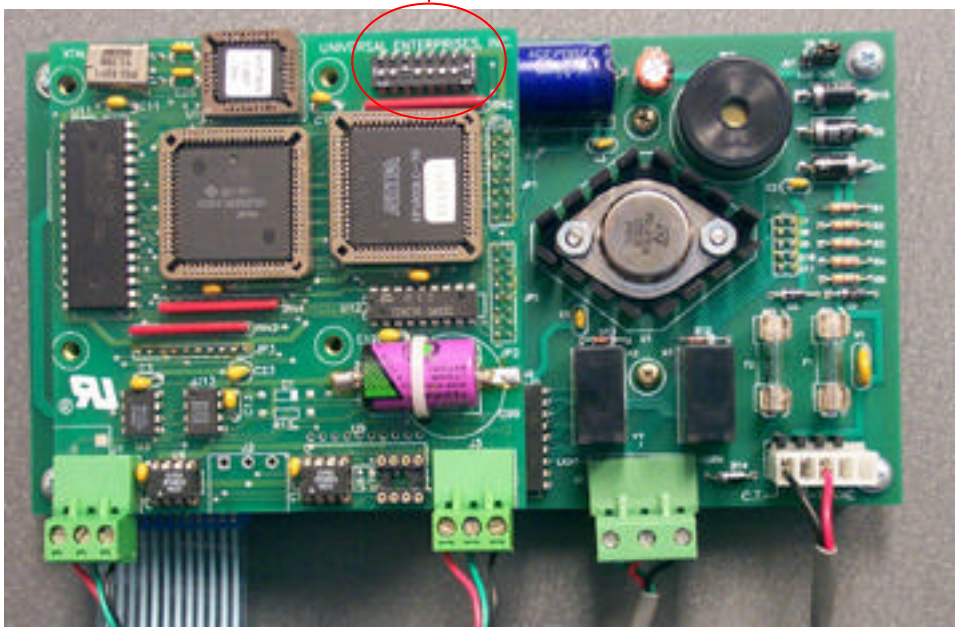
Hardware Setup

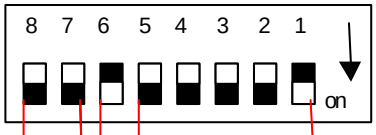
There are several switches that need to be set/checked on the ASW-4500. An eight position switch on the processor board controls global communications addressing, if used, and memory initialization/ clearing. Check to see that these switches are set properly as follows.

Processor/ASW-4500 Dip Switches:
Switches 1-5 -- only used if connected to Com-Trol global bus. Set to next available address, binary addressing.

Switch 6 – not used

Switch 7 & 8 can be used to clear the memory/program.





Board Addressing : Set to next available address.

Protocol : Not used

Configuration (Resetting Ram)
With unit powered down, set switches 7 & 8 to "on" (down), then power up at disconnect.
Move switch 7 to "off" (up) position and wait for 8 seconds, then
Move switch 8 to "off" (up) position and wait for 8 seconds, then
Move switch 7 back to "on" (down) position and wait 8 seconds, then
Move switch 8 back to "on" (down) position and wait 8 seconds, then
Turn unit off then back on again at the disconnect --- configuration complete.

Programming

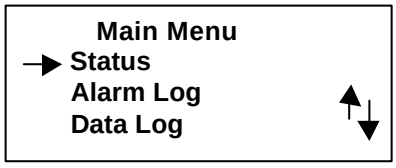
To program the system, you need to know the following :

How many anti-sweat circuits – 4 max.

For each circuit :

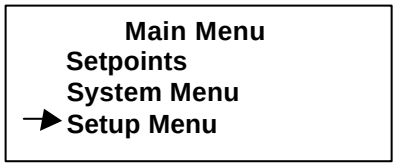
Begin Day	(time)
End Day	(time)
Day Min On	(%)
Day Min On @	(Dewpoint Temperature)
Day Max On	(%)
Day Max On @	(Dewpoint Temperature)
Nite Min On	(%)
Nite Min On @	(Dewpoint Temperature)
Nite Max On	(%)
Nite Max On @	(Dewpoint Temperature)

Press **Escape** to get to the **Main Menu** from the Normal Scan Screen



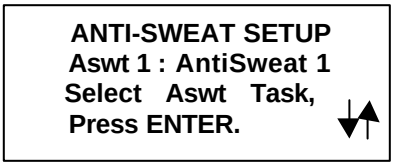
Setup Menu

Press the down arrow until the cursor is next to **Setup Menu,** then press **ENTER.**

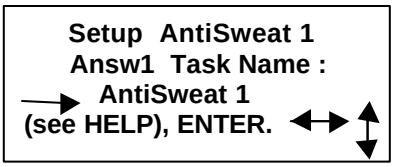


The Password screen will come up. Type in the high level-2 password (default is 9999), then press **ENTER**, as indicated.

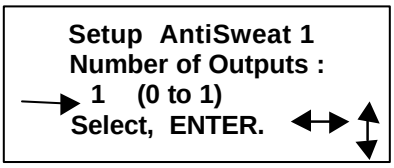
Use the ↓↑ keys to select the zone you wish to set-up, then press **ENTER.**



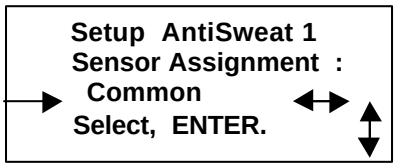
The next screen gives you the opportunity to change the name of the zone. Press the **HELP** key to get the instructions for entering text. Help pages 2 through 7 cover this operation. Press **ENTER** or ↓ to secure the name change and move to the next screen.



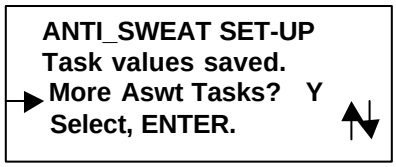
The next screen allows you to select the number of Outputs. 4 is the maximum. Use the ↔ to select the number. The screen shows the number available. Then push **ENTER.**



The next screen allows you to select sensor assignment : Common or New. Use the ↔ to select a common or new sensor. After selection press **ENTER**

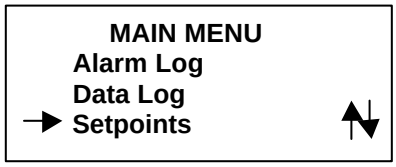


By moving to this screen you have saved the preceeding selections for the task you selected. You now have the opportunity to move to another Awst task to program it. Using the ◄► you can select “Y” or “N”. Selecting “Y” then **ENTER** allows you to program additional Awst tasks. Selecting “N” then **ENTER** will return you to the **MAIN MENU**.



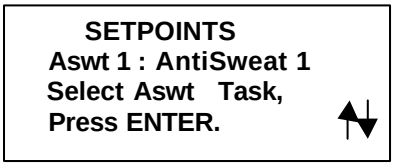
Setpoints

Pressing **ENTER** returns you to the **MAIN MENU**. From the **MAIN MENU** press the down arrow until the cursor is next to the **SETPOINTS MENU.** Press **ENTER**

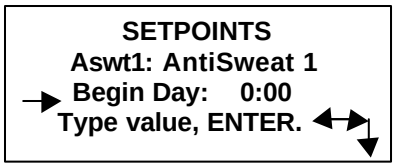


The Password screen will come up. Type in the high level 2 password (default is 9999), then press **ENTER**, as indicated.

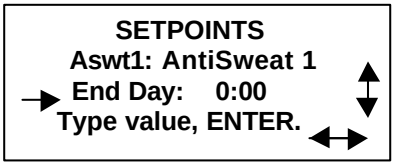
The next screen allows the user to select the Aswt circuit (1to 4) to set setpoints. Use ▲▼ to select circuit. Then press **ENTER.**



This screen allows the user to set the Begin Day time. Using the ↔ move the cursor under the digit you want to enter. Then press the number, continue moving the cursor and entering numbers until the Begin Day time is entered. Then press **ENTER.**



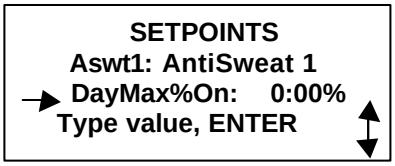
This screen allows the user to set the End Day time. Using the ↔ move the cursor under the digit you want to enter. Then press the number, continue moving the cursor and entering numbers until the End Day time is entered. Then press **ENTER.**



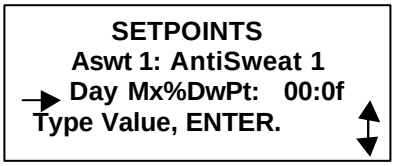
This screen allows the user to set the Day Min % On. Type value. This represents the minimum value (%) of anti-sweat heaters that can operate during "Day" schedule. Then press **ENTER.**

This screen allows the user to set the Day Min On at a specified dewpoint temperature. Type dewpoint value. Then press **ENTER.**

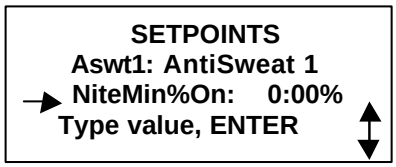
This screen allows the user to set the Day Max % On. Type value. This represents the maximum value (%) of anti-sweat heaters that can operate during "Day" schedule. Then press **ENTER.**



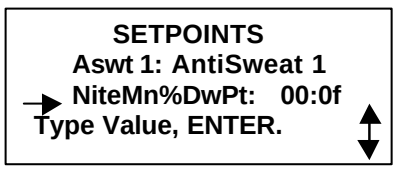
This screen allows the user to set the Day Mx On at a specified dewpoint temperature. Type dewpoint value. Then press **ENTER.**



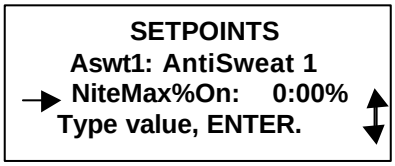
This screen allows the user to set the Nite Min % On. Type value. This represents the minimum value (%) of anti-sweat heaters that can operate during "Nite" schedule. Then press **ENTER.**



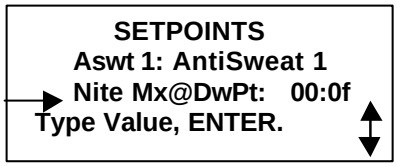
This screen allows the user to set the Nite Min On at a specified dewpoint temperature. Type dewpoint value. Then press **ENTER.**



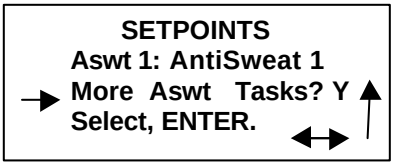
This screen allows the user to set the Nite Max % On. Type value. This represents the maximum value (%) of anti-sweat heaters that can operate during “Nite” schedule. Then press **ENTER.**



This screen allows the user to set the Nite Mx On at a specified dewpoint temperature. Type dewpoint value. Then press **ENTER.**

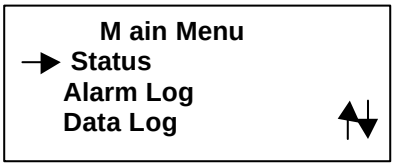


This screen allows you to change the setpoints of other AntiSweat tasks. Using the ◄► enter Y or N . If Y is entered it will let you enter setpoints for other AntiSweat Tasks. If N is entered it will return you to the **MAIN MENU**.

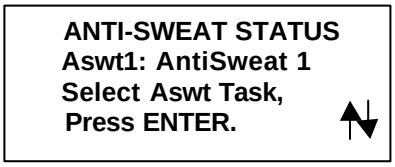


Status Screen

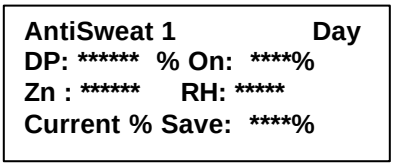
From the **Main Menu** press the ↕ until the cursor is next to **Status,** then press **ENTER.**



The next screen allows the user to see the status of each AntiSweat Heater Task. Using the ↕ select the task to view then press **ENTER .**



This screen shows the status of the selected Antisweat Task. In normal operation the ASW-4500 will scan through all of the enabled AntiSweat Tasks and show its content status. The status screen has the Task name and Mode, Day or Nite, on the first line; dew point (DP) and % On Time on the second line; Zone temperature (ZN) and Relative Humidity (RH) on the third line & Savings on the fourth line. Pressing the ↕ allows you to move from task to task.



Pressing the → shows the I/O assignment locations.

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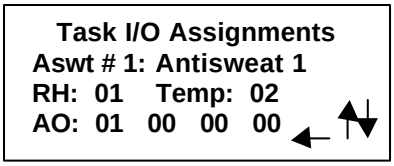
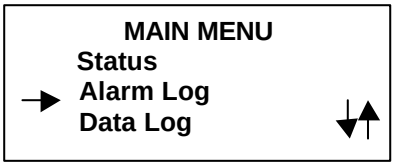
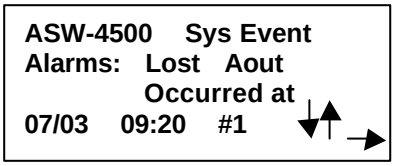


Viewing Alarms

To view the Alarm Log, go to the **MAIN MENU,** press the ↕ keys until the arrow is pointing to Alarm Log, then press **ENTER.**



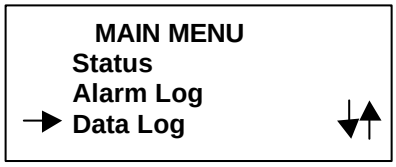
This screen allows you to view the last 40 alarm events. The 2nd line shows the event type: Lost Aout, Lost Analog, or Power Down or Up. The 3rd line shows Occurred at, and the 4th line the date and time of the event followed by the event number. Pressing the ↕ keys will scan all the alarms.



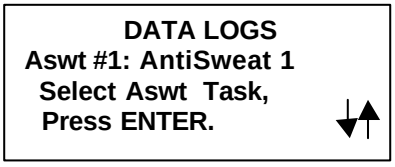
Pressing the → key brings up another screen which shows the time and date the alarm Cleared, or In Alarm until it does Clear. When done viewing alarms press **ESCAPE** this will return you to the **MAIN MENU**.

Viewing Logged Data

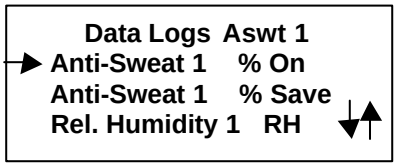
To view the Data Log, go to the **MAIN MENU**, press the ↕ keys until the arrow is pointing to Alarm Log, then press **ENTER.**



With the Data Log screen, you first use the ↓ key to select a task, unless there is only one task. Press **ENTER.**



Use the → key to select the desired item to view, then press **ENTER**.

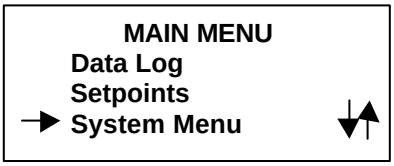


This screen allows you to view the data for the item selected. Press the ↓ key to step back through the data, or the ↑ key to go to the oldest entry. An asterisk indicates the newest entry. The date and time are given beside each reading. There are 1024 entries for each item, logged every 10 minutes.

Pressing **ESCAPE** returns you to the **MAIN MENU**.

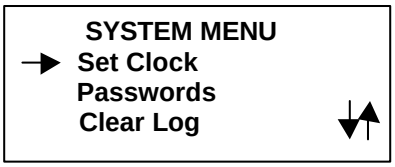
THE SYSTEM MENU

The System Menu is accessed from the Main Menu by pressing the ↕ until the → is next to the System Menu. Press ENTER to access System Menu screen.



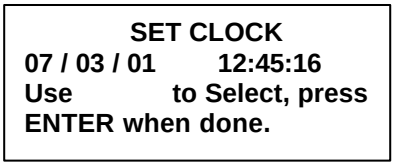
Setting the Clock

The System Menu screen allows you to Set Clock, Change Passwords, Clear Log, Clear Memory and Calibration. Position the → next to the item you wish to access, then press **ENTER**.



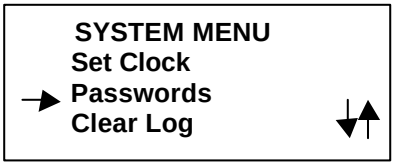
If Set Clock is accessed, this area requires entry of a level –1 password. Enter password, then press **ENTER**.

This screen allows the user to set the system clock to the current time and date. Use the ↔ keys to move to the date or time item you want to change. Type in the value, press the **ENTER** key when done. The system uses 24 hour / military time.



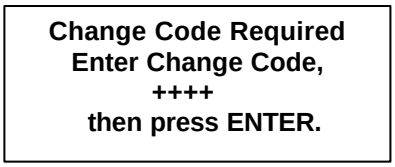
Changing Passwords

After the System Menu appears, press ↓↑ keys until the → is next to Passwords, then press **ENTER.**

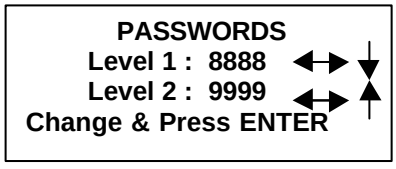


Access to Passwords requires entry of a level-1 password. Type In password, then press **ENTER.**

As a secondary protection a change code is required for the passwords. This code is 1843. Type in the code, then press **ENTER.**



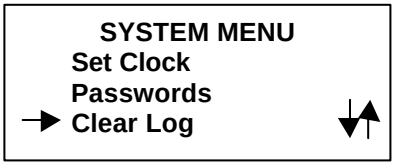
This next screen allows you to change the passwords for levels 1& 2. Press the ↓↑ keys to select the level in which to change the password. Use the ↔ to move the cursor then type in the new password, then press **ENTER**.



Note: Make sure you do not forget the password as the only way to get back to a known password is to clear the memory on the ASW-4500 and do the complete set-up over again.

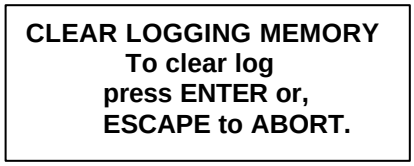
Clearing Logging Memory

The logging memory on the ASW-4500 can be cleared by accessing the Clear Log item on the System Menu.
From the System Menu align the → next to Clear Log, then press **ENTER.**



Access to this area requires entry of a level-1 password. Enter password, then press **ENTER.**

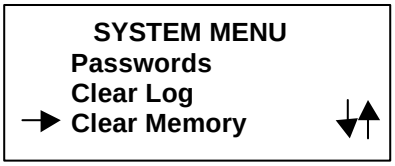
This screen will clear all logging memory. Pressing **ENTER** will clear all memory. If you not not want to clear memory, then press **ABORT.**



Clearing Memory

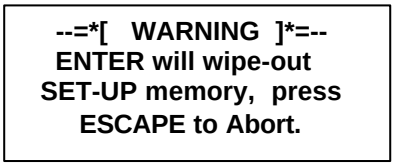
The memory on the ASW-4500 can be cleared, if required. In normal operation this function should not be used. This action should only be taken if you are instructed to do so by Com-Trol personnel.

From the System Menu align the → next to Clear Memory then press **ENTER.**



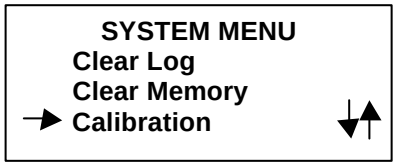
This function requires the entry of the level 2 password. Type in the password and press **ENTER.**

This screen gives you a warning that you will wipe out all programming and the set-up will have to be performed again. Pressing Enter again will activate the memory clear function or you can press Escape to abort the process.



System Calibration

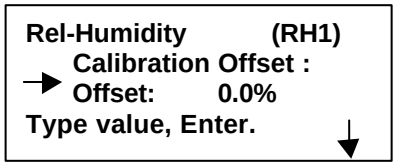
All field installed sensors may have to be calibrated after they are installed. From the System Menu align the → next to Calibration, then press **ENTER.**



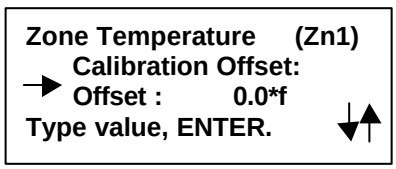
Access to this area requires entry of a level-1 password. Enter password, then press **ENTER.**

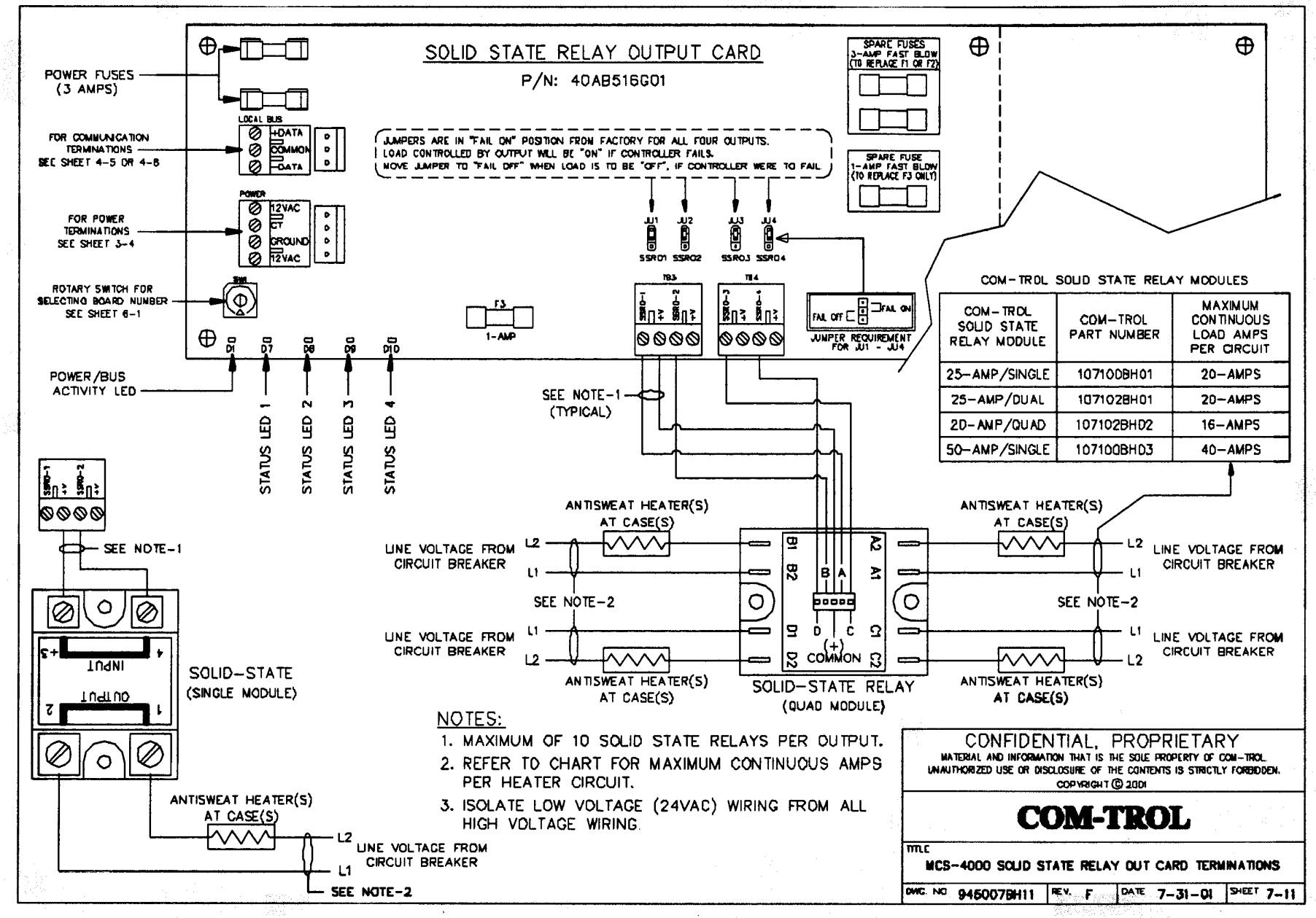
The Calibration Offsets are used to adjust the Zone temperature and Humidity sensor readings based upon an accurate calibration reference. The sensors are normally very accurate, so make sure that calibration is really required before proceeding. The offset value entered is added or subtracted from the sensor reading prior to displaying or using for control.

This screen allows you to calibrate the Rel-Humidity (RH1) sensor. Enter the RH% offset, then press **ENTER.**



Pressing the ↓ will display the screen to calibrate the Zone temperature sensor. Enter the Zone temperature offset in *f., then press ENTER.




SOLID STATE RELAY OUTPUT CARD
P/N: 40AB516G01
POWER FUSES (3 AMPS)
FOR COMMUNICATION TERMINATIONS SEE SHEET 4-5 OR 4-6
FOR POWER TERMINATIONS SEE SHEET 3-4
ROTARY SWITCH FOR SELECTING BOARD NUMBER SEE SHEET 6-1
POWER/BUS ACTIVITY LED
STATUS LED 1
STATUS LED 2
STATUS LED 3
STATUS LED 4
SPARE FUSES 3-AMP FAST BLOW (TO REPLACE F1 OR F2)
SPARE FUSE 1-AMP FAST BLOW (TO REPLACE F3 ONLY)
JUMPERS ARE IN "FAIL ON" POSITION FROM FACTORY FOR ALL FOUR OUTPUTS.
LOAD CONTROLLED BY OUTPUT WILL BE "ON" IF CONTROLLER FAILS.
MOVE JUMPER TO "FAIL OFF" WHEN LOAD IS TO BE "OFF", IF CONTROLLER WERE TO FAIL.
JUMPER REQUIREMENT FOR JU1 - JU4
SEE NOTE-1 (TYPICAL)
COM-TROL SOLID STATE RELAY MODULES
COM-TROL SOLID STATE RELAY MODULE
COM-TROL PART NUMBER
MAXIMUM CONTINUOUS LOAD AMPS PER CIRCUIT
25-AMP/SINGLE 107100BH01 20-AMPS
25-AMP/DUAL 107102BH01 20-AMPS
20-AMP/QUAD 107102BH02 16-AMPS
50-AMP/SINGLE 107100BH03 40-AMPS
SOLID-STATE (SINGLE MODULE)
SOLID-STATE RELAY (QUAD MODULE)
ANTISWEAT HEATER(S) AT CASE(S)
LINE VOLTAGE FROM CIRCUIT BREAKER
SEE NOTE-2
NOTES:
1. MAXIMUM OF 10 SOLID STATE RELAYS PER OUTPUT.
2. REFER TO CHART FOR MAXIMUM CONTINUOUS AMPS PER HEATER CIRCUIT.
3. ISOLATE LOW VOLTAGE (24VAC) WIRING FROM ALL HIGH VOLTAGE WIRING.
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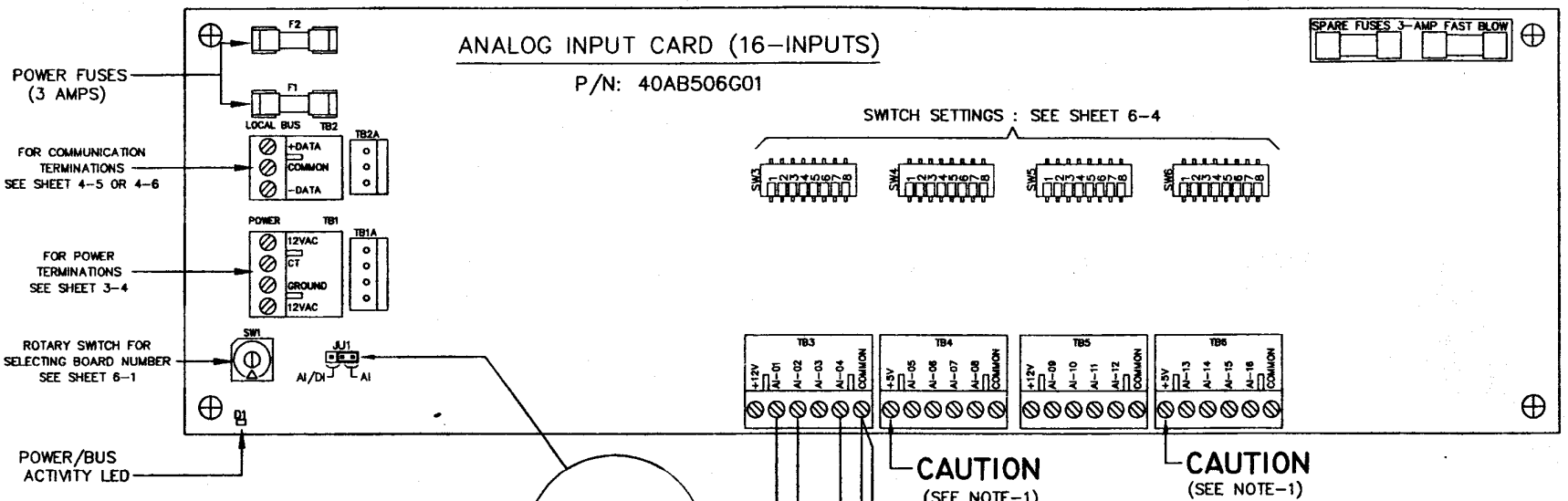
COM-TROL
TITLE
MCS-4000 SOLID STATE RELAY OUT CARD TERMINATIONS
DWG. NO 945007BH11
REV. F
DATE 7-31-01
SHEET 7-11



NOTES:

1. CAUTION: +5VDC ON TERMINAL BLOCKS TB4 & TB6.
   IF FIELD DEVICE OR SENSOR REQUIRES 12V,
   TERMINATE TO +12VDC TERMINALS ON
   TERMINAL BLOCK TB3 OR TB5.

2. IF TERMINATING ONLY ANALOG INPUTS, KEEP JUMPER
   IN "AI" POSITION AS RECEIVED FROM FACTORY.
   IF TERMINATING ANY DIGITAL INPUTS (DRY CONTACTS ONLY),
   MOVE JUMPER TO "AI/DI" POSITION.

   WITH JUMPER IN "AI/DI" POSITION, ONE ANALOG
   AND ONE DIGITAL INPUT ADDRESS WILL BE
   ASSIGNED TO SYSTEM.

3. WIRING SPECIFICATIONS:
   USE 22-AWG, STRANDED, COLOR CODED, VINYL JACKETED, MULTI-CONDUCTOR
   CABLE (BELDEN 8443, 8444, 8456, 8457, 8458, 9430 OR EQUIVALENT).

4. WIRING RECOMMENDATIONS:
   KEEP SPLICES TO A MINIMUM AND ALWAYS MAINTAIN COLOR CODING.
   CABLES SHOULD BE PERMANENTLY NUMBERED AT BOTH ENDS WITH STANDARD
   NUMBERED WIRE MARKERS.
   CABLES MAY BE RUN EXPOSED (CODE PERMITTING) WHERE THEY WILL NOT BE
   SUBJECT TO DAMAGE. USE CONDUIT WHERE DAMAGE MAY OCCUR.
   CONNECTION OF 24 GAUGE SENSOR WIRE TO 22 GAUGE CABLE SHOULD BE
   JOINED BY SOLDER JOINT OR BUTT SPLICE CONNECTOR OF PROPER SIZE.
   FOR WIRE SPLICING USE BUTT SPLICE CONNECTOR - 3M P/N: UR.
   THE BLACK CONDUCTOR WITHIN A CABLE SHOULD BE USED AS THE COMMON.

5. WIRING WARNINGS:
   DO NOT USE WIRE NUTS FOR JOINTS/SPLICES.
   DO NOT RUN CONTROL WIRING WITHIN SAME CABLE AS ANALOG WIRING.
   DO NOT RUN ANALOG WIRING WITHIN CONDUIT CONTAINING HIGH VOLTAGE WIRING.

CAN ALSO TERMINATE DIGITAL INPUTS AT ANY INPUT - DRY CONTACT ONLY!
AI AND DI POINTS CAN BE MIXED.
REFER TO DETAIL-A & NOTE-2 IF TERMINATING ANY DIGITAL POINTS.

RGR TECHNOLOGIES, INC.
535 BEER RD. MANSFIELD, OHIO 44906

DIVISION: SPECIAL COMPONENTS / COM-TROL / UNIVERSAL REFRIGERATION

TITLE: MCS-4000 ANALOG INPUT CARD TERMINATIONS (16-CH)

DWG. NO. 945007BH05 | REV. F | DATE 9-10-98 | SHEET 7-5