Cruisair®

For Tempered Water Systems using SMX II
and SMX Online Network

Revised: 7-21-05
L-0650 CE **For LP-14**

SMX II/SMX Online Net Controls • User Operation

Warning

This manual contains essential information concerning the operation and maintenance of your SMX Series Control. It is very important that you read and understand the contents of this manual thoroughly before using the equipment, and you should keep it on your boat for future reference. If there are any statements in this manual that you do not understand, contact the Taylor Made Environmental, Inc. Service Department or your local dealer for assistance.

Introduction

This manual covers SMX II and SMX Online Net SMX Series computerized air conditioning controls.

SMX II. SMX Series switch assembly with soft-touch membrane keys. Includes all programmable functions. It may be used with the optional SMX Modem.

SMX Online Net. Multiple SMX Online Net units may be linked together in a local area network. Each unit has all of the programmable functions as the SMX II. In addition, it has "click-type" keys, two-speed blower control and optional outside temperature sensing. Additional programmable features available with optional convenience panel. It may also be used with the optional SMX Modem.

(OPTIONAL) SMX Modem. The SMX Telephone Data Modem is sold as a separate unit and **IS NOT** included in a standard SMX II or SMX Online Net System. If you have purchased an SMX Modem, installation and operation of this product is described in the SMX Modem Control System Operation Manual (L-0896).

Most of the basic operating principles are the same for all SMX Series systems, but there are some differences. For instance, the SMX II only displays inside temperature, while the SMX Online Net has an optional outside thermistor and can therefore also display outside temperature. We have identified those paragraphs applying only to specific systems.

If you need additional help, after reading these instructions, please contact the Taylor Made Environmental service department at 804-746-1313.

Table of Contents

The SMX Keypad

SMX II and SMX Online Network

The SMX keypad is arranged for logical operation. The SMX II and SMX Online keypads are very similar, with minor differences as noted below.

1. Data Display.
Large alphanumeric readout. Provides indication of current setpoint, temperatures, programmed values and error messages.

SMXOnline^NET **SMX Online Network Only**
Provides scrolling readout of IDs for all units. Provides data readouts for remote units.

2. Cooling Indicator.
Small LED to left of data display. Lights when bypass valve is operating in cooling mode.

3. Heating Indicator.
Small LED to right of data display. Lights when bypass valve is operating in heating mode.

4. Setpoint Indicator.
Small LED below data display. Lights when setpoint is displayed. Off when inside or outside temperature is displayed.

5. SET Key.
Press the SET key to display your currently selected setpoint (the temperature you wish to maintain in the cabin). You can display setpoint temperature at any time, with the system off or on, without affecting other system operations.

SMX II **SMX II Only**
The SET key also is used to dim the data display readout. Press once to display setpoint. Press again one or two times to dim the display.

6. UP-DOWN Keys.
Press UP or DOWN to raise or lower the setpoint. Press once to change setpoint by one degree. Press and hold to make larger changes. Note: if inside or outside is being displayed (see TEMP), touching the UP or DOWN key will cause the setpoint to be displayed.

SMXOnline^NET SMX Online Network Only
UP and DOWN keys are used to scroll through ID numbers of all units in the network.

2. Cooling Indicator
1. Data Display
3. Heating Indicator
4. Setpoint Indicator
5. SET Key
Cooling   Heating
6. UP-DOWN Keys
Down   Set   Up
7. TEMP Key
8. Inside Indicator (SMX Online & Net Only)
Inside   Outside
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Temp
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Run   Off   Aux Heat
13. AUX HEAT Key
Manual   Mode
11. RUN Key
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Slow   Fan   Fast
16. Fan Indicator
17. SLOW-FAST Keys
18. Fan Speed Indicators

7. TEMP Key.
Press once to display inside temperature.

SMX II **SMX II Only**
Press TEMP a second time, and the display will alternate between inside temperature and setpoint. Press it a third time to return to inside temperature only.

SMXOnline **SMX Online Network**
Press TEMP a second time to display outside temperature, if the optional outside thermistor is installed with your system. Press a third time for a rotating display of inside temperature, outside temperature and setpoint. Press a fourth time to return to inside temperature only.

8. Inside Temperature Indicator.

SMX Online Network
Small LED to left of TEMP key. Lights when data display is showing inside temperature. This LED is not available on SMX II.

9. Outside Temperature Indicator.

SMX Online Network
Small LED to right of TEMP key. Lights when data display is showing outside temperature if optional outside thermistor is installed. This LED is not available on SMX II.

10. OFF Key.

Halts operation of the air handler. Note that the data display remains on. You can continue to adjust setpoint, display temperature readings and activate the manual fan to circulate air while the air handler is in the OFF mode.

11. RUN Key.

Turns the system on in the Run mode.

12. Run Indicator.

Small LED above RUN key. Lights when you press the RUN key to select the Run mode.

13. AUX HEAT Key.

Turns the system on in the heating only mode. If your boat has auxiliary heating, the HEAT key is used to select the aux heat mode. See page 9 for instructions.

14. Aux Heat Indicator.

Small LED above AUX HEAT key. Lights when you press the AUX HEAT key to select the aux heating mode.

15. FAN Key.

Controls fan operation. Selects manual or automatic fan speed control. Press once to select manual control. The LED above the key lights. Press FAN again to select automatic fan speed control. In this mode, the fan speed is controlled by the microprocessor as a function of the difference between setpoint and inside temperature.

16. Manual Fan Indicator.

Small LED above the FAN key. Lights when fan is running in manual mode.

17. SLOW-FAST Keys.

Control fan speed when the fan is in the manual mode.

18. Fan Speed Indicators.

Row of five small LEDs below FAN key. Indicate the current fan speed.

Definitions

LED. Light Emitting Diode. An indicator or "pilot light" used on the SMX to denote mode or operating status.

Setpoint. The selected temperature you want to maintain in the area being heated or cooled.

The Convenience Panel Keypad

SMX Online Network Only

The SMX Online Convenience Panel provides handy single-key control over many network functions. The Convenience Panel is normally mounted adjacent to the SMX Online Net control panel.

4. PHONE Key.
Turns the telephone modem off and on.

5. Phone Indicator.
Small LED above the PHONE key. Lights when the telephone modem is online.

6. AUX 1 Key.
Reserved for future applications.

7. Aux 1 Indicator.
Reserved for future applications.

8. OFF Key.
Turns off all SMX units on the network.

9. Off Indicator.
Small LED above OFF key. Lights when system is in OFF mode.

10. LOCK Key.
Locks off all units in the network that are currently in the OFF mode, rendering those local control panels inoperative. To unlock press OFF and RESUME.

11, Lock Indicator.
Small LED above LOCK key. Lights when the LOCK mode is engaged.

12. RESUME Key.
When in OFF mode, turns on the system so that all SMX units in the network resume the mode they were in when the system was turned OFF.

1. SCROLL Keys.
Selects the remote unit to be controlled. Pressing the left or right key scrolls through the controller IDs of all possible systems in the network.

2. REMOTE Key.
Selects remote control mode.

3. LOCAL Key.
Select local display mode. Returns the SMX Online switch to local operation.

13. Resume Indicator.
Small LED above RESUME key. Lights when the RESUME key is pressed.

14. DAY Key.
Selects the daytime operating mode. Places all units in the network in the preprogrammed daytime configuration. See page 19 for programming.

15. Day Indicator.
Small LED above the DAY key. Lights when the system is operating in the daytime mode.

16. NIGHT Key.
Selects the nighttime operating mode. Places all units in the network in the preprogrammed nighttime configuration. See page 19 for programming.

17. Night Indicator.
Small LED above the NIGHT key. Lights when the system is operating in the nighttime mode.

18. ABSENT Key.
Selects the absent mode. Places all units in the network in the preprogrammed absent configuration. See page 19 for programming.

19. Absent Indicator.
Small LED above the ABSENT key. Lights when the system is operating in the absent mode.

Hint

It's a good idea to write down the DAY, NIGHT and AB-SENT configurations to help you remember your programmed settings. Use the form on page 23 of this manual.

Basic Operation

SMX II and SMX Online Network

POWER ON

When AC power is applied to the system at the circuit breaker, the SMX microprocessor retrieves from permanent memory the operating system and the last operating configuration. This process takes about four seconds, after which the system will begin operating just as it had been when power was last turned off.

SYSTEM OFF

Off

Press the OFF key to turn the system off. Note that the data display remains energized even when the system is off. Also, you can turn the fan on and off manually when the system is in the off mode.

Note

The SMX has built-in protection against sudden power interruptions. The system automatically stores the current operating configuration in permanent memory every time you make changes. When AC power is lost, the SMX system retains these settings, and when AC power is restored it resumes operation using the same settings as before.

SELECTING SETPOINT

Set

Press the SET key. The indicator above the key will light, and the current setpoint will be displayed. Press the UP or DOWN key to change the setpoint.

DISPLAYING TEMPERATURE

Temp

To display cabin temperature, press the TEMP key.

SMX II

SMX II Only
Press TEMP a second time for an alternating display of inside temperature and setpoint. Press a third time to return to inside temperature only.

SMXOnline

SMX Online Network
If your boat is equipped with the optional outside thermistor, press TEMP a second time to display outside temperature. Press a third time for an alternating display of setpoint, inside temperature and outside temperature. Note that the inside and outside indicators show you which temperature is being displayed.

SELECTING THE RUN MODE

Run

Press the RUN key. The Run Indicator above the RUN key will light to show that you have selected the run mode. Once the run mode has been selected there are other parameters that determine how/when the air handler will begin conditioning the air. They are as follows:

For air handler to activate in cooling while in the run mode the following conditions must exit:
  • The tempering unit is in the cooling mode.
  • The loop water temperature is below 65° F.
  • The room temperature is above the setpoint of the cabin control.

For air handler to activate in heating while in the run mode the following conditions must exit:
  • The tempering unit is in the heating mode.
  • The loop water temperature is above 85° F.
  • The room temperature is below the setpoint of the cabin control.

SELECTING THE AUX HEAT MODE

Aux Heat

Press the AUX HEAT key. The Heat Indicator above the AUX HEAT key will light to show that you have selected the Aux Heat mode. For the Aux Heat mode to function the following conditions must exist:
  • The electric Aux Heater must be installed.
  • The Aux Heat must be enabled.
    (See Programming AUX HEAT, pg. 15)
  • The room temperature is below the setpoint of the cabin control.

NOTE: If the loop water temperature is above 85° F the by-pass valve will also open allowing the hot water to circulate through the coil at the same time the electric aux heater is energized.

SELECTING THE AUTOMATIC CHANGEOVER MODE
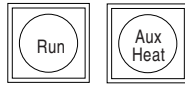
Press the RUN and AUX HEAT keys simultaneously. The indicators above both keys will light, to show that the system is in the automatic changeover mode. The air handler will now respond to heating and cooling needs automatically based on the following conditions:

For air handler to activate in cooling while in the automatic changeover mode the following conditions must exist:
- The tempering unit is in the cooling mode.
- The loop water temperature is below 65° F.
- The room temperature is above the set point of the cabin control.

For air handler to activate in heating while in the automatic changeover one set of the following conditions must exist:
- The tempering unit is in the heating mode.
- The loop water temperature is above 85° F.
- The room temperature is below the set point of the cabin control.

Or

- The electric Aux Heater is installed.
- The Aux Heat mode must be enabled. (See Programming Aux Heat, pg. 15)
- The loop water temperature is below 65° F.
- The room temperature is below the set point of the cabin cotnrol.

NOTE: If the loop water temperature is above 85° F only the by-pass valve will open allowing the hot water to circulate through the coil. The electric aux heater will not energize.

ADJUSTING FAN SPEED MANUALLY

Press the FAN key to select manual fan control. The Fan Indicator will light to show that it is in the manual mode. Then use the SLOW and FAST keys to select the desired fan speed.

Note that you can use the manual fan control to circulate air even when the air handler is in the OFF mode.

ADJUSTING FAN SPEED AUTOMATICALLY

Press FAN a second time to select automatic fan control. The Fan Indicator goes off. Now the system will automatically adjust fan speed as the actual cabin temperature deviates from the setpoint. As setpoint is approached, the fan speed automatically slows. Once setpoint is reached, the by-pass valve cycles off and the fan keeps running on low speed.

ADJUSTING BRIGHTNESS CONTROL

With the SMX Online and SMX Online Net, the display brightness is adjusted automatically according to cabin lighting conditions.

SMX II Only
Press the SET key once to display setpoint. Press SET a second time to dim the data display. Press it a third time to dim the display further. Press it again, and it returns to full brightness.

USING THE HUMIDITY CONTROL ROUTINE
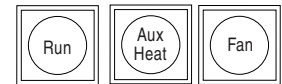
When engaged, the SMX humidity control routine automatically turns the air handler on at preselected intervals to remove moisture from the air. The air handler is programmed at the factory for average values. To change the factory settings, see page 17.

To start the dehumidification program:

- Place Tempering Unit in cooling mode.
- Press OFF.
- Press RUN, AUX HEAT and FAN keys simultaneously.
- The data display will flash HU, indicating that the program is active.
- To halt the dehumidification program, press any key. The HU message will stop flashing.

Safety Note

If AC power is interrupted, the system will automatically resume operation in the dehumidification mode when power is restored.

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Network Operation

SMX Online Network Only

A network consists of several SMX Online units connected in a serial chain as shown below. Each SMX Online unit is assigned a controller ID code, which serves as its unique "address" on the network.

   You can perform network functions from any SMX Online control panel on the network, or from the convenience panel.

   A convenience panel is not necessary for network operation. However, the convenience panel offers single-key control over certain functions and allows operation of multiple units with a single keystroke.

CONTROLLER ID NUMBERS
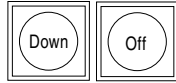
Normally, ID numbers are assigned when the air handler is installed, and you will not need to change them. To make it easier, you can use one of the two-letter codes for spaces such as the Main Salon (SL) or Forward Stateroom (FS), or you can use numbers.

CONTROLLER ID CODES:

--	Null (no ID assigned)	PS	Port Stateroom
SL	Salon	SS	Starboard Stateroom
LL	Galley	S1	Stateroom #1
Fb	Flybridge	S2	Stateroom #2
PH	Pilot House	S3	Stateroom #3
FS	Forward Stateroom	13-28	Additional cabins
AS	Aft Stateroom		
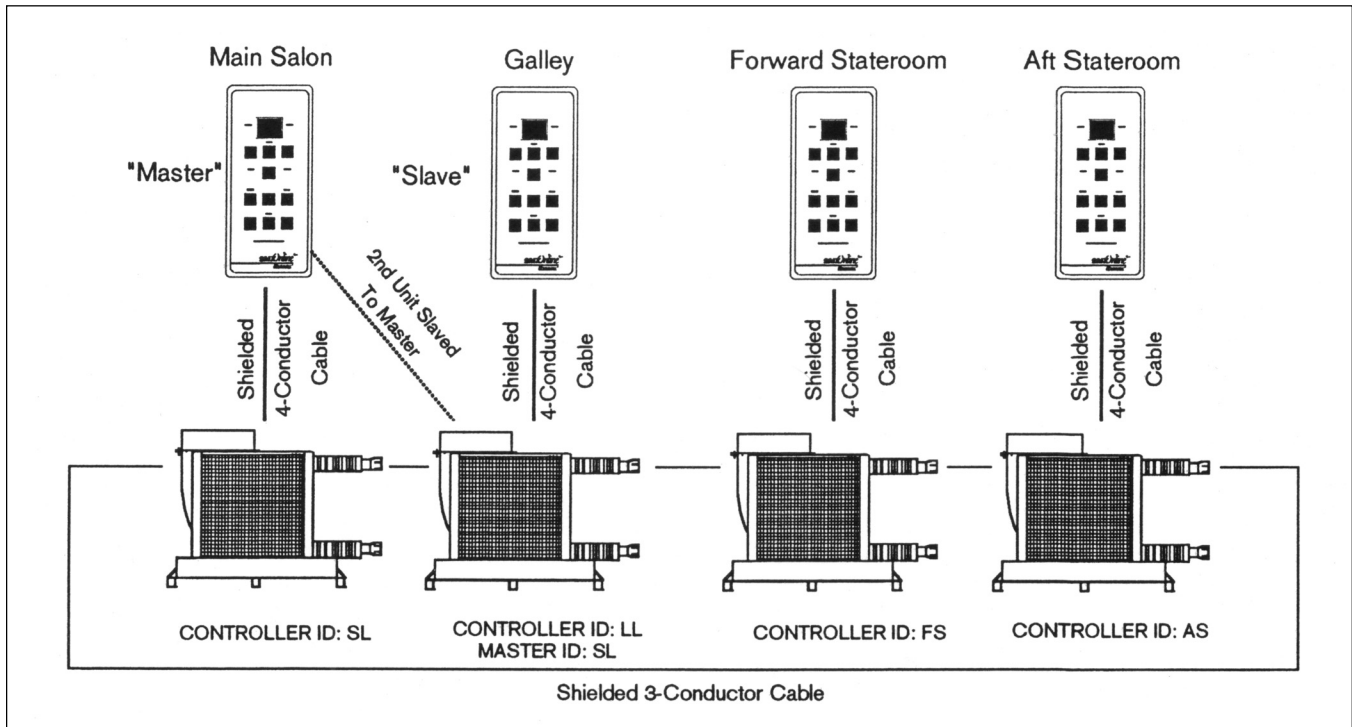
Hint

Make sure you keep a written record of all ID numbers. A convenient form is provided in the back of this manual. We suggest that you make a copy of this list and store it separately in case the manual is misplaced.

Hint

In order for the network to function properly, every unit must have a unique ID. If two of the units are programmed with the same controller ID, you will have to change one of them.

REMOTE CONTROL

The SMX Online Network permits you to take control over remote SMX Online units from any SMX Online unit or from the Convenience Panel. In the remote control mode, you can perform the following functions for the remote unit:

- change setpoint
- view cabin or outside temperature
- turn the unit off
- select Run or Aux Heat mode or automatic changeover
- control fan speed
- enter or exit the auto dehumidification mode
- enter and change program settings

## REMOTE CONTROL FROM CONVENIENCE PANEL

[Remote]

To take control of a remote system from the convenience panel:

• Press the SCROLL▲ or SCROLL▼ key to display the Controller ID of the unit you wish to control.

• Press REMOTE. A flashing decimal will appear in the center of the data display of the SMX Online keypad to indicate that you are in the remote control mode. Change the settings for the remote unit as desired, using the SMX Online control panel (see Basic SMX Operation on pages 8-9).

• Press LOCAL to exit the remote control mode.

REMOTE CONTROL FROM SMX ONLINE CONTROL PANEL

[Slow] [Fan] [Fast]
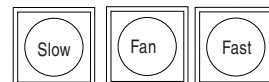
To take control of a remote system from the SMX control panel:

• Press SLOW, FAST and FAN simultaneously.

• Press the UP or DOWN key to scroll through controller IDs until the one you want appears in the data display. Press SLOW, FAST and FAN again simultaneously. A flashing decimal will appear in the center of the data display to indicate that you are in the remote control mode.

• Change the settings for the remote unit as desired. (see Basic SMX Operation on pages 8-9).

• Press RUN, OFF and AUX HEAT simultaneously to exit the remote control mode.

LOCKING AND UNLOCKING

[Lock]

Using the Convenience Panel, you can lock out all SMX Online air handlers that are currently in the OFF mode. When a unit is locked out, its keypad is disabled. Pressing any key will cause the data display to show the code LC. Turn the desired air handler(s) off by going to each location and pressing the OFF key, or by turning them off remotely.

Press LOCK. The indicator above the LOCK key will light. Press OFF and RESUME to unlock the air handlers. The LOCK indicator will go out.

Note

Whenever you select the Day, Night, Resume or Absent mode, the data display will go through a brief program loading sequence, and the system will begin operating in the selected mode.

SELECTING THE DAYTIME CONFIGURATION

[Day]

Using the Convenience Panel, press DAY to instruct all air handlers in the network to operate in the preprogrammed daytime mode. The day indicator will light. To reprogram your daytime configuration, see page 19.

SELECTING THE NIGHTTIME CONFIGURATION

Night

Using the Convenience Panel, press NIGHT to instruct all systems in the network to operate in the preprogrammed nighttime mode. The night indicator will light. To reprogram your nighttime configuration, see page 19.

SELECTING THE ABSENT CONFIGURATION

Absent

Press ABSENT on the Convenience Panel. All systems in the network will revert to the preprogrammed absent mode. When you return, press RESUME, and the system will start operating in the configuration it was in when you pressed ABSENT. The RESUME Indicator will light. Alternatively, press DAY or NIGHT to operate in the daytime or nighttime mode. To reprogram your absent configuration, see page 19.

TURNING ALL SYSTEMS OFF

Off

Press OFF on the Convenience Panel to turn all systems in the network off. The indicator above the OFF key will light. Press RESUME, DAY, NIGHT or ABSENT to resume operation.

USING THE TELEPHONE DATA MODEM

To call the phone transponder from your home or car phone:

Dial the number of the SMX modem from a touch-tone phone. It will answer with a low-frequency slow beeping sound.

Enter one of the following commands (see box) plus the pound (#) sign, using your touch-tone phone keypad. Note that you can dial the first three letters or the whole word.

The SMX telephone responder will answer with a low-frequency slow beep when it accepts your instruction. If it does not recognize your command (e.g., if you dial the incorrect code), it will respond with a high-frequency warble tone.

When you are finished, hang up the phone.

You may issue commands in any order, and you can repeat any command. If you hit the wrong key,

go ahead and enter the correct command and the # sign. The system will operate according to the most recently received command.

Modem Commands

OFF# Turn all air handlers off.

RESUME# Resume operation in the mode in which the air handler was operating when it was turned off. Also unlocks all locked out systems.

LOCK# Locks out all air handlers that are in the off mode.

DAY# Operate all air handlers in the daytime mode.

NIGHT# Operate all air handlers in the nighttime mode.

ABSENT# Operate all air handlers in the absent mode.

AON# Reserved for future applications.

AOFF# Reserved for future applications.

Note: You only have to press the first three letters of the command plus the # key.

Hint

The SMX telephone responder expects a key entry at least every 15 seconds. If you wait longer, the line will be disconnected. It will then continue operating in the mode according to the last command you successfully entered.

Note

The SMX telephone modem is a sophisticated data communications device, which is used to transmit digital data over telephone lines. We recommend that you check with your telephone service provider to determine the optimum method of establishing the telephone connection. In some cases, you may be able to avoid installing a separate dedicated telephone line to the SMX modem by sharing the standard telephone line to your boat and using separate "rings" for different devices.

Programming The SMX

SMX control systems are programmed at the factory for average values. For optimum performance, you may wish to change these settings to suit your individual preferences.

FACTORY MEMORY RESET

| Off | Set | Fan |
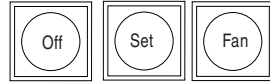
You can use the memory reset sequence to restore all programmed functions to the factory settings. To do this:

To restore programmed functions to factory setting:

• Press OFF, SET and FAN simultaneously.

• Press SET.

• After a delay, the memory will be reset from stored values. After another delay, the display will come back on normally.

FAHRENHEIT/CELSIUS DISPLAY

| Down | Temp | Up |

(Factory Set: Degrees Fahrenheit)

You can choose to view temperature in degrees Fahrenheit or Celsius.

To select Fahrenheit or Celsius:

• Enter the programming mode:
  Press OFF.
  Press SET.

• Press DOWN, TEMP and UP simultaneously.

• Use the UP or DOWN key to select F for Fahrenheit or C for Celsius.

• Press OFF to exit programming mode.

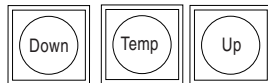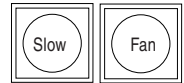   Note that changing from Fahrenheit to Celsius will affect the bypass valve cycle differential and fan response differential, since these settings will now be expressed in degrees Celsius. You should reprogram these values following the instructions on pages 14-15.

BYPASS VALVE CYCLE DIFFERENTIAL

| Slow | Fan |

(Factory set: 1.5 degrees Fahrenheit)

The bypass valve response differential is the amount of temperature change in the room needed for the bypass valve to cycle on and off. The factory setting is 1.5 degrees Fahrenheit, which should be adequate for most applications. Differential selections are available in increments of 1/8 degrees. Thus, to select one degree, you should choose 8 (for 8 eighths).

To program the cycle differential:

• Enter the programming mode:
  Press OFF.
  Press SET.

• Press SLOW and FAN simultaneously. The restart differential will be displayed.

• Use the UP or DOWN key to change the setting.

• Press OFF to exit the programming mode.

Note

If you switch from Fahrenheit to Celsius for temperature displays, the bypass valve cycle differential will also operate on degrees Celsius. Thus, the factory-set compressor restart differential will be 1.5 degrees Celsius, which is quite wide. To correct this, reset the differential value from 12 to 6. This will provide a differential of about 0.75 degrees Celsius, roughly corresponding to 1.5 degrees Fahrenheit.

   This will also affect the Fan Response Differential, which is factory set at a value of 4 for one-half degree Fahrenheit. When shifting from Fahrenheit to Celsius, you should reset the Fan Response Differential from 4 to 2. This will provide a value that is roughly equivalent to one-half degree Fahrenheit.

CONTINUOUS OR INTERMITTENT FAN

[Down] [Fan] [Up]

(Factory set: Continuous)

You can select continuous fan operation or instruct the fan to cycle on and off with the system bypass valve.
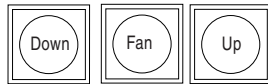
To select continuous or intermittent fan:

• Enter the programming mode:
  Press OFF.
  Press SET.

• Press DOWN, FAN and UP simultaneously.

• Use the UP or DOWN key to select C (continuous) or I (intermittent).

• Press OFF to exit the programming mode.

Hint

If you select intermittent fan operation, you may have to relocate the thermistor from the return air duct to an inside wall for best results. Check with your dealer or call the Cruisair Applications Department for more information.

LOW FAN SPEED ADJUSTMENT

[Down] [Set]

(Factory set: 32)

You can adjust the lowest fan speed to suit individual preferences. For instance, you may wish to decrease the low fan speed setting in your stateroom to minimize fan noise.

To adjust low fan speed:

• Enter the programming mode:
  Press OFF.
  Press SET.

• Press DOWN and SET simultaneously. The current low speed reference number will be displayed (factory set at 32).

• Press UP or DOWN to raise or lower speed reference number.

• Press OFF to exit the programming mode.

HIGH FAN SPEED ADJUSTMENT

[Set] [Slow]

(Factory set: 80)

The high fan speed should be set at the fastest possible speed level the fan or blower can attain. This will give you the most efficient cooling or heating capacity. To maximize performance, you should set the high fan speed value at the lowest number beyond which the fan speed does not increase.

To adjust high fan speed:

• Enter the programming mode:
  Press OFF.
  Press SET.

• Press SET and SLOW simultaneously. The current high speed reference number will be displayed (factory set at 60).

• Use the UP key to raise the displayed value to 80.

Listen to the fan until you have its sound well in mind.

• Press and hold the DOWN key until you hear a drop in the fan noise level. As soon as the drop occurs, release the DOWN key. Observe the displayed number, and use the UP key to raise this number 3 units. Write down this number.

• Press and hold the UP key. As the displayed value increases up to 99, there should be no change in the fan speed level. If there is, add 3 more units to the recorded number and repeat the process, listening for fan speed changes.

• Once you have determined the lowest number beyond which the fan noise level does not increase, reset the display at that number. This will be your new high fan speed.

• Press OFF to exit the programming mode.

14

FAN RESPONSE DIFFERENTIAL

(Factory set: 1/2 degree Fahrenheit)
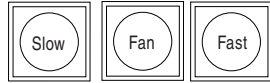
When the fan is in the automatic mode, its speed is governed by how far the room temperature differs from the setpoint. The fan runs faster when the difference is great. As the room cools or warms, the temperature approaches setpoint, and the fan slows down automatically. The amount of temperature rise in the room above setpoint needed to cause the fan to increase in speed one step is called "fan speed differential." It can be adjusted from 1/4 to 4 degrees Fahrenheit in 1/8 degree increments.

The fan speed range is divided by the SMX microprocessor in five 20% increments. If the fan response differential is set at 1/2 degree, the fan speed will change 20% for each 1/2 degree of temperature deviation from setpoint. Lowering the fan speed differential will cause the fan to increase speed quickly as temperature changes. Raising the fan speed differential will result in slower fan speed changes for a given temperature change. The factory setting of 1/2 degree Fahrenheit is about right for most applications, but you may wish to try a slightly higher setting in your salon and a lower setting in your stateroom. See note on page 13 concerning Fan Response Differential in degrees Celsius.
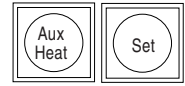

To adjust fan response differential:

• Enter the programming mode:
  Press OFF.
  Press SET.

• Press SLOW, FAN and FAST simultaneously. The differential will be displayed in increments of 1/8 degrees Fahrenheit (factory set at 4, for 1/2 degree).

• Use the UP or DOWN key to raise or lower this value.

• Press OFF to exit the programming mode.

AUXILIARY HEAT

(Factory set: disabled)

Normally, the aux heat function is disabled. If the air handler is equipped with aux heat, the function must be enabled to operate. (See selecting the aux heat mode for operation, pg. 8)

To enable or disable aux heat:

• Enter the programming mode:
  Press OFF.
  Press SET.

• Press AUX HEAT and SET simultaneously.

• Use the UP or DOWN key to toggle the aux heat on or off. When aux heat is enabled the letters AH will be displayed . When aux heat is disabled, the Null sign (--) will appear.

• Press OFF to exit the programming mode.

TEMPERATURE CALIBRATION

(Factory set: +/- 1 deg. Fahrenheit)

The SMX II has one thermistor for cabin temperature. The SMX Online system has both inside and outside thermistors. These sensors are calibrated at installation.

To check or recalibrate the thermistors:

• Use the TEMP key to select inside temperature (SMX Online only).

• Enter the programming mode:
  Press OFF.
  Press SET.

• Press SET and UP simultaneously. The temperature will be displayed in degrees Fahrenheit or Celsius, depending on which you have selected.

• Place an <u>accurate</u> thermometer beside the thermistor you are using and compare the temperatures.

• Use the UP or DOWN key to adjust the displayed temperature to the correct value.

• Press OFF to exit the programming mode.

TWO-SPEED OR VARIABLE BLOWER CONTROL
(*Factory set: Variable*)
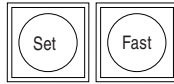
SMX Online Network
The SMX Online Net control can be programmed for use with variable-speed or two-speed blowers. The SMX II can only be used with variable-speed blowers.

To program for variable or two-speed blower control:

• Enter the programming mode.
  Press OFF.
  Press SET.

• Press SET and FAST simultaneously.

• Use the UP or DOWN key to toggle the display for F1 for variable-speed or F2 for 2-speed.

• Press OFF to exit the programming mode.

PROGRAMMING SUMMARY TABLE

All programming steps are entered by touching the OFF key, followed by touching the SET key, followed by simultaneously depressing the two or three keys noted in the code table below. Successful entry into a programming mode is indicated by the presence of a decimal point to the right of the two displayed characters. To raise or lower a value, touch the UP or DOWN keys. To exit the programming mode, touch the OFF key.

FUNCTION	CODE	FACTORY SETTING	RECOMMENDED VALUE
Temperature	SET & UP	± 1%	± 1%
Cont. (C) or Int. (I) Fan	DOWN & FAN & UP	C	C or I
Low Fan Speed	DOWN & SET	32	30 to 56
High Fan Speed	SET & SLOW	80	41 to 90
Fan Differential	SLOW & FAN & FAST	4	2 to 8
Bypass Valve Differential	SLOW & FAN	12	4 to 24
Fahrenheit/Celsius	DOWN & TEMP & UP	F	F or C
HU Precirculation	TEMP & DOWN	10 Min.	See Page 18.
HU Dehumidification	TEMP & SET	30 Min.	See Page 18.
HU Time Period	TEMP & UP	12 Hrs.	See Page 17.
Variable/2-Speed Blower	SET & FAST	Variable	F1 or F2
Auxiliary Heat	SET & AUX HEAT	Disabled (--)	-- or Aux Heat (AH)
Factory Reset	OFF & SET & FAN & then SET		

Humidity Control Program

SMX II and SMX Online Network

DEHUMIDIFICATION PROGRAMMING SUMMARY

	Climate	Time Period	Precirculation Time	Dehumidification Time
Summer	Cool	6 Hrs.	10 Min.	30 Min.
	Moderate	8 Hrs.	10 Min.	30 Min.
	Tropical	6 Hrs.	20 Min.	60 Min.
Fall	Cool	12 Hrs.	10 Min.	10 Min.
	Moderate	8 Hrs.	10 Min.	20 Min.
	Tropical	6 Hrs.	20 Min.	30 Min.
Winter	Cool	- - - -	- - - - -	- - - - - -
	Moderate	12 Hrs.	10 Min.	10 Min.
	Tropical	8 Hrs.	20 Min.	30 Min.
Spring	Cool	12 Hrs.	10 Min.	10 Min.
	Moderate	8 Hrs.	10 Min.	20 Min.
	Tropical	6 Hrs.	20 Min.	30 Min.

HUMIDITY CONTROL PROGRAM

The SMX dehumidification program automatically cycles the air handler on at preselected intervals to control humidity in the boat. The dehumidification process works like this. First, the fan comes on at high speed to circulate the air. After a preprogrammed period of time, the fan drops to low speed and the bypass valve* cycles on in the cooling mode. After another preprogrammed interval, the air handler cycles off. The process repeats according to the programmed time period. (*Note: The tempering units must be left in the cooling mode.)


The factory set sequence is:

Overall time period	12 hours
Precirculation cycle	10 min.
Dehumidification cycle	30 min.

These settings should be adequate for most moderate climates. For very humid climates, you may wish to shorten the overall period and extend the dehumidification cycle. In dryer climates, you can select longer intervals between cycles and a shorter dehumidification time. The above table provides guidelines for programming these settings.

PROGRAMMING THE TIME PERIOD

(Factory set: 12 hours)
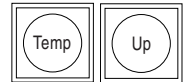
The time period determines how often the air handler performs the dehumidification process. You can select intervals of 2, 4, 5, 8, 10, 12, 14 or 16 hours.
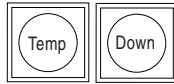

To select time period:

• Enter the programming mode:
  Press OFF.
  Press SET.

• Press TEMP and UP simultaneously. The display will show the overall time period in hours.

• Use the UP or DOWN key to select the desired time period.

• Press OFF to exit the programming mode.

PROGRAMMING THE PRECIRCULATION TIME

`Temp` `Down`

(Factory set: 10 minutes)

The precirculation time governs how long the fan runs before the bypass valve cycles on during the dehumidification process. You can select 0, 10, 20 or 30 minutes.
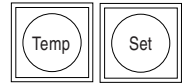

To select precirculation time:

• Enter the programming mode:
  Press OFF.
  Press SET.

• Press TEMP and DOWN simultaneously. The display will show the time period in minutes.

• Use the UP or DOWN key to select the desired time period.

• Press OFF to exit the programming mode.

PROGRAMMING THE DEHUMIDIFICATION TIME

`Temp` `Set`

(Factory set: 30 minutes)

The dehumidification time determines how long the bypass valve operates in the dehumidification mode. You can select 10, 20, 30, 40, 50 or 60 minutes.

To select dehumidification time:

• Enter the programming mode:
  Press OFF.
  Press SET.

• Press TEMP and SET simultaneously. The display will show the time period in minutes.

• Use the UP or DOWN key to select the desired time period.

• Press OFF to exit the programming mode.

Programming The Network

SMX Online Network Only

You can program the DAY, NIGHT and ABSENT modes to suit your individual preferences. We suggest that you write down these configurations and keep them in a convenient location for ready reference.
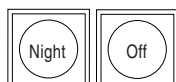
PROGRAMMING THE DAYTIME CONFIGURATION

| Day | Off |

To program your daytime operating mode:

• At the Convenience Panel, press DAY.

• Go to each SMX Online control panel in the network, and set it for the desired daytime mode, or set each system remotely from the Convenience Panel. (See "Reminder" on this page.)

• Press DAY and OFF simultaneously to save the daytime settings and exit the programming mode.

PROGRAMMING THE NIGHTTIME CONFIGURATION

| Night | Off |

To program your nighttime operating mode:

• At the Convenience Panel, press NIGHT.

• Go to each SMX Online control panel in the network, and set it for the desired nighttime mode, or set each system remotely from the Convenience Panel. (See "Reminder" on this page.)

• Press NIGHT and OFF simultaneously to save the nighttime settings and exit the programming mode.

PROGRAMMING THE ABSENT CONFIGURATION

| Absent | Off |
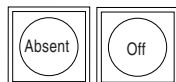
When you leave the boat, you may wish to have one or more of the air handlers to be in the automatic dehumidification mode.

To program your absent configuration:

• At the Convenience Panel, press ABSENT.

• Go to each SMX Online control panel in the network, and set it for the desired absent mode, or set each system remotely from the Convenience Panel. (See "Reminder" on this page.)

• Press ABSENT and OFF simultaneously to save the absent settings and exit the programming mode.

Reminder . . .
Remote Control From The Convenience Panel

1. Press the SCROLL▲ or SCROLL▼ key to display the Controller ID of the unit you wish to control.

2. Press REMOTE. A flashing decimal will appear in the center of the data display of the SMX Online keypad to indicate that you are in the remote control mode.

3. Change the settings for the remote unit as desired using the SMX Online keypad (see Basic SMX Operation on pages 8-9).

4. Press LOCAL to exit the remote control mode.

5. Repeat Steps 1-4 for all systems on the network.

Slaving Systems

SMX Online Network Only

The SMX Online Network permits multiple air handlers to be "slaved" together, so that all of them are operated from a single master control. This is often desirable when more than one air handler is installed in a single spacious cabin, such as a main salon and the sum of the air handler amperage exceeds the maximum (7 amps) a single power board can drive.

It is not necessary for the "slave" unit to have a separate control panel. In that case, there will be only one control panel in the cabin. The installer will have programmed the system so that the slave unit is controlled by the master control panel. If a separate "slave" control panel is installed, it will work just like the "master" control panel.

The slave receives operating commands from the master control unit and cycles on and off according to master's setpoint and inside temperature sensor. Fan speeds also operate in tandem, although you can operate the manual fan speed of the slave when the master is off.
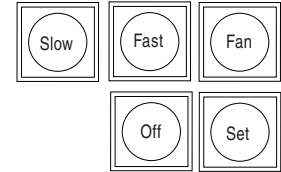
SLAVING FROM THE SLAVE CONTROL PANEL

To slave one unit to another, using the slave's control panel:

• Enter the programming mode:
  Press OFF.
  Press SET.

• Press OFF and SET simultaneously.

• Use the UP or DOWN key to scroll to the ID of the unit that will be the master.

• Press OFF to save the master ID selection and exit the programming mode.

SLAVING FROM THE MASTER CONTROL PANEL

To slave one unit to another using the master's control panel:

• Press SLOW, FAST and FAN simultaneously.

• Use the UP or DOWN key to scroll to the ID number of the unit to be slaved to the master.

• Press SLOW, FAST and FAN again simultaneously. A flashing decimal will appear in the center of the display to indicate you are in the remote control mode.

• Enter the programming mode.
  Press OFF.
  Press SET.

• Press OFF and SET simultaneously.

• Use the UP or DOWN key to scroll to the ID number of the master.

• Press OFF to save the master ID selection and exit the programming mode.

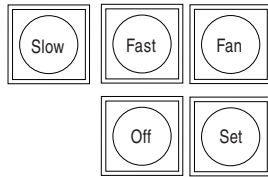• Press RUN, OFF, and AUX HEAT simultaneously to return to local control mode.

UNSLAVING SYSTEMS FROM THE SLAVE CONTROL PANEL

To unslave the systems and return the slave to local control:

• Enter the programming mode.
  Press OFF.
  Press SET.

• Press OFF and SET simultaneously.

• Use the UP or DOWN key to scroll to the null sign (--).

• Press OFF to exit the programming mode.

UNSLAVING SYSTEMS FROM THE MASTER CONTROL PANEL

Slow	Fast	Fan
	Off	Set

To unslave systems from master control panel:

• Press SLOW, FAST and FAN simultaneously.

• Use the UP or DOWN key to scroll to the ID number of the slaved unit.

• Press SLOW, FAST and FAN again simultaneously. A flashing decimal will appear in the center of the display to indicate you are in the remote control mode.

• Enter the programming mode.
  Press OFF.
  Press SET.

• Press OFF and SET simultaneously.

• Use the UP or DOWN key to scroll to the null sign (--).

• Press OFF to exit the programming mode.

• Press RUN, OFF and AUX HEAT simultaneously to return to local control mode.

Fault Shutdowns and Error Messages

The SMX control contains a built-in self-check routine described below.

SOFTWARE ERROR

Whenever power is applied to the SMX, the microprocessor goes through an automatic self check and software loading process. If all is well, the SMX loads the most recent operating configuration from its internal memory, and turns on normally. If a program fault is found during the self check, the error message PE will be displayed.

Likewise, the self-diagnostic routine runs continuously whenever the SMX system is on. If a system fault is detected, the system shuts down, and the PE error message appears.

If this message occurs, contact your nearest Cruisair dealer, or call the Factory Service Department in Richmond, Virginia (804-746-1313) for assistance.

DETERMINING YOUR SOFTWARE VERSION NUMBER

When you call your dealer or the factory for service assistance, it's helpful to know the Software Version Number for your SMX system.

To display your software number:

• Press OFF.

• Press OFF, SET and FAN simultaneously.

• Press RUN twice until display reads 68.

• Press UP once. The display should read Version Number.

• Press SLOW until display reads F2.

• Press UP once. The display should read Revision Level.

ID Programmed Settings Form

Use this table to record your programmed settings.

ID	Location	Day	Night	Absent
SL	Salon			
LL	Galley			
Fb	Fly Bridge			
PH	Pilot House			
FS	Forward Stateroom			
AS	Aft Stateroom			
PS	Port Stateroom			
SS	Starboard Stateroom			
S1	Stateroom 1			
S2	Stateroom 2			
S3	Stateroom 3			
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WARNING

Dometic Environmental Corporation (Dometic) manufacturers of Cruisair, Grunert, Marine Air and Sentry Products, makes the following safety warnings concerning the application, installation, use and care of its products. Although these warnings are extensive, there may be specific hazards which may arise out of circumstances which we have not outlined herein. Use this as a guide for developing an awareness of potential hazards of all kinds. Such an awareness will be a key factor in assuring your SAFETY and comfort.

ELECTRICITY - Many Dometic products operate on 115, 230 or 440 volt AC power. Such voltages can be LETHAL; therefore, the chassis, cabinets, bases, etc., on all components must be grounded together and connected to the vessel's grounding system. Sparks can occur as switches, thermostats and relays open and close in the normal operation of the equipment. Since this is the case, ventilating blowers for the removal of hazardous fumes or vapors should be operated at least 5 minutes before and during operation of any Dometic product or group of TME products. All electrical connections must be covered and protected so accidental contact cannot be made by persons using the equipment, as such contact could be LETHAL.

ELECTROLYSIS - Electrical leakage of any component can cause electrolytic deterioration (electrolysis) of thru-hull components which could result in leakage serious enough to sink a vessel which could result in loss of life. All TMES components must be kept clean and dry and checked periodically for electrical leakage. If any electrical leakage is detected, the component should be replaced or the fault causing the leakage corrected before the component is put back into service.

GAS - CRUISAIR, MARINE AIR and GRUNERT components utilize R134a refrigerant, tetrafluoro-ethane or R404A, R125/R143a/R134 (44%/52%/47%) which are non-toxic, non-flammable gases; however, these gases contain no oxygen and will not support life. Refrigerant gas tends to settle in the lowest areas of the compart-ment. If you experience a leak, evacuate all personnel, and ventilate area. Do not allow open flames in the area of leaks because refrigerant gas, when burned, decomposes into other potentially LETHAL gases. Refrigerant components operate at high pressure and no servicing should be attempted without gloves, long-sleeved clothing and eye protection. Liquid refrigerant gas can cause severe frost burns to the skin and eyes.

VENTILATION - To cool or heat air, CRUISAIR, MARINE AIR and GRUNERT components are designed to move air through a heat exchanger by a blower or propeller fan. This design necessarily produces a suction on one side of the air handling component and a pressure on the other side. Air handling components must be installed so that the suction-pressure action does not: (1) pressurize an area to the extent that structural failure occurs which could cause harm to occupants or bystanders, or (2) cause a suction or low pressure in an area where hydrogen gas from batteries, raw fuel vapor from fuel tanks, carbon monoxide from operating propulsion engines, power generators or heaters, methane gas from sewage holding tanks, or any other dangerous gas or vapor could exist. If an air handling unit is installed in such a manner that allows potentially lethal gases or vapors to be discharged by the air handling unit into the living space, this could result in loss of life.

Maximum protection against the introduction of dangerous gases or vapors into living spaces can be obtained by providing living spaces which are sealed from all other spaces by use of airtight bulkheads and decks, etc., and through the introduction of clean air into the living space. Bear in mind that the advent of air conditioning, whether it be for cooling or for heating, naturally leads to the practice of closing a living space tightly. Never close all windows and doors unless auxiliary ventilating systems, which introduce clean outside air into the living space, are used. Always leave enough window and door openings to provide adequate ventilation in the event potentially lethal gases or fumes should escape from any source.

CONDENSATE - All cooling units produce water condensate when operating on the cooling cycle. This water must be drained from the cooling unit overboard. If condensate is allowed to drip on a wooden structure, rotting or decay and structural failure may occur which could result in loss of life. If condensate is allowed to drip on electrical components, deterioration of the electrical components could result in hazardous conditions. When an air conditioning system is in operation, condensate drains may be subjected to negative pressure. Always locate condensate drains as far as possible from points where engine waste and other dangerous gases are exhausted so no such dangerous gases can be drawn into the condensate drains.

Warning

Never sleep in a closed area on a boat when any equipment, which functions as a result of the combustion of a volatile fuel, is in operation (such as engines, generators, power plants, or oil-fired heaters, etc.) At any time, the exhaust system of such devices could fail, resulting in a build-up of LETHAL gases within the closed area.
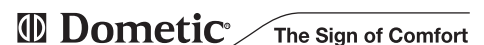
Warning Revised: 7-6-99

The Sign of Comfort

L-0650