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Book Descriptions:

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The system The negative and sig Individual See Table 11 for recommended wire It is recommended that red be used Use a similar scheme for cables contain If the communication bus is If the commu To connect the unit to Both relays connected to these contacts The alarm relay, indicating that the The action of the alarm and alert re The tables are the See Tables 12 and 13. NOTE Always perform an Upload to obtain the latest config Run new cable if. Find an expertExcellence that is synonymous with the Carrier name. Finally, a building automation system that plays well with others. You may have to register before you can post click the register link above to proceed. To start viewing messages, select the forum that you want to visit from the selection below. Download Controls, StartUp, Operation, Service and Troubleshooting. Follow all safety codes. Wear safety glasses and work gloves. Use care in handling, rigging, and setting this equipment, and in handling all electrical components. WARNING Electrical shock can cause personal injury and death. Shut off all power to this equipment during installation and service. There may be more than one disconnect switch. Tag all disconnect locations to alert others not to restore power until work is completed. WARNING DO NOT VENT refrigerant relief valves within a building. The accumulation of refrigerant in an enclosed space can displace oxygen and cause asphyxiation. Provide adequate ventilation in enclosed or low overhead areas. Inhalation of high concentrations of vapor is harmful and may cause heart irregularities, unconsciousness or death. Misuse can be fatal. Vapor is heavier than air and reduces the amount of oxygen available for breathing. Product causes eye and skin irritation. Decomposition products are hazardous. WARNING DO NOT USE TORCH to remove any component. System contains oil and refrigerant under pressure. To remove a component, wear protective gloves and goggles and proceed as follows

a. <http://www.planet-for-events.de/userfiles/bose-321-home-theater-system-manual.xml>

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Shut off electrical power to unit. b. Recover refrigerant to relieve all pressure from system using both highpressure and low pressure ports. c. Traces of vapor should be displaced with nitrogen and the work area should be well ventilated. Refrigerant in contact with an open flame produces toxic gases. d. Cut component connection tubing with tubing cutter and remove component from unit. Use a pan to catch any oil that may come out of the lines and as a gage for how much oil to add to the system. e. Carefully unsweat remaining tubing stubs when necessary. Oil can ignite when exposed to torch flame. Failure to follow these procedures may result in personal injury or death. 2 configuration. The user would scroll through the modes and submodes using the and keys on the Navigator display. For the Touch Pilot display, the user would simply touch the menu item on the screen. The arrow symbol in the path name represents pressing ENTER to move into the next level of the menu structure for the Navigator module, or touching the menu item on the screen for the Touch Pilot display. CAUTION This unit uses a microprocessorbased electronic control system. Do not use jumpers or other tools to short out components, or to bypass or otherwise depart from recommended procedures. Any shorttoground of the control board or accompanying wiring may destroy the electronic modules or electrical components. When a value is included as part of the point name, it will be shown after the point name after an equals sign. If the value represents a configuration setting, an explanation will be shown in parentheses after the value. The Touch Pilot name will be shown first with the Navigator name following. Press the ESCAPE and ENTER keys simultaneously on the Navigator module to display an expanded text description of the point name or value. The expanded description is shown in the Navigator display tables Appendix B but will not

be shown with the path names in

text. http://fanaf.com/article_ressources/bose-321-gsx-series-iii-manual.xml

The Touch Pilot display will show an expanded description of the point name. To view the expanded point name for the Touch Pilot display go to Appendix A. CAUTION To prevent potential damage to heat exchanger tubes, always run fluid through heat exchanger when adding or removing refrigerant charge. Proof of flow switch is factory installed on all models. Do NOT remove power from this chiller during winter shut down periods without taking precaution to remove all water from heat exchanger. Failure to properly protect the system from freezing may constitute abuse and may void warranty. CAUTION Compressors require specific rotation. Test condenser fans first to ensure proper phasing. Swap any two incoming power leads to correct condenser fan rotation before starting compressors. Operating the unit without testing the condenser fans for proper phasing could result in equipment damage. Display Module Usage TOUCH PILOT DISPLAY — The Touch Pilot display is the standard user interface for the AquaForce 30XA chillers with the ComfortLink control system. Dispose of oil per local codes and regulations. DO NOT leave refrigerant system open to air any longer than the actual time required to service the equipment. Seal circuits being serviced and charge with dry nitrogen to prevent oil contamination when timely repairs cannot be completed. Failure to follow these procedures may result in damage to equipment. ALARM INDICATOR LIGHT GENERAL This publication contains Controls, Operation, StartUp, Service and Troubleshooting information for the 30XA080500 aircooled liquid chillers with electronic controls. For operation under these circumstances, contact your Carrier representative. Operation of the Touch Pilot display is driven from the displays on the touch screen. The Touch Pilot display uses the following screen “buttons” to allow the user to operate the display and navigate within and between screens. “BACK” Returns to the next higher screen in the hierarchy.

“HOME” Displays the Default Group Display screen for Touch Pilot display. The Default Screen is a userconfigured display of up to 9 points on each of 8 screens. This allows for quick access to various, frequently viewed points, without navigating through the Main Menu structure. This button is available at all menu levels and returns the user to the first Default Group Display screen.

Conventions Used in This Manual — The following conventions for discussing configuration points for the Navigator module and Touch Pilot display will be used in this manual. Point names for the Touch Pilot display will be shown in bold. See Appendix A for a complete list of point names. Item names for the Navigator module will be shown in bold italics. See Appendix B for the complete path name preceeding the item name. The point and item names in Appendices A and B will be listed in alphabetical order and the path name for each will be written with the mode name first, then any submodes, each separated by an arrow symbol . This path name will show the user how to navigate through the Navigator module or the Touch Pilot display to reach the desired 3 612 with up to 9 points on 8 separate screens. For more information on adding or removing points from the Group Display screen, see the Group Display Screens section on page 6. Touch any of the screen point buttons and Point Data Dialog box will be displayed with expanded information. Main Menu Display — The default screen for the Touch Pilot controller is the Group Display screen. To access the Main Menu, press the button. The screen shown in Fig. 4 will be displayed. Selecting a button will display the screens associated with that category. The user can also access the login screen from the Main Menu if needed. “MAIN MENU” Displays the Main Menu screen. This allows access for viewing and configuration, where possible, of all points supported by the controller. This includes points such as set point and operational configuration.

This button is available at all menu levels and returns the user to the Main Menu screen.

“PREVIOUS” In a group of sequential screens of the same type, pressing this button moves the user to the next earlier screen in the group. “NEXT” In a group of sequential screens of the same type, pressing this button advances the user to the next screen in the group. “OK” Agrees with, or says

“yes” to a prompt and performs the appropriate processing. “NO” Rejects, or says “no” to a prompt and performs the appropriate processing. “CANCEL” Terminates an ongoing action and returns to the current screen without any other processing. “CLEAR DATA” Clears the data value in a data entry dialog box. See EnableOffRemote Contact Switch SW1 on page 17 for additional information. Several items are password protected. When required, a Password dialog box will be displayed for field input of the password. The default password is 3333. The password can be changed if desired. PowerUp Display — When the Touch Pilot display is powered up, it displays an initialization progress bar and attaches initiates communication to the Main Base Board. The Touch Pilot display then shows that controller’s default Group Display screen. See Fig. 2. This is a userconfigured display screen Touch Pilot Menu Structure — The user can navigate through the Touch Pilot display screens by selecting the buttons that appear on the screen. When a button is selected, either a submenu or a list of point names and values will be shown. Submenus will display a list of associated point names. See Fig. 5 for the Touch Pilot menu structure. If the list of point names and values are shown, the top line of the display is the table name. The line and total line counter is displayed in the upper right corner of the display. Selecting an item will cause a Point Data dialog box to appear. Setup Menu Screen — The Setup Menu screen, shown in Fig. 6, is accessed by pressing the Setup button from the Main Menu.

This configuration allows the user to configure the basic operation and look of the display. The date can be formatted in one of 3 settings, MMDDYYYY MonthDayYear, DDMMYYYY DayMonthYear, or YYYYMMDD YearMonthDay. Units of measure can be either US English or Metric SI. This button selects the active language and font of the display. Available languages are English and Spanish Espanol. Contact your Carrier representative for instructions and software. This button adjusts the LCD contrast. NOTE Touching the screen anywhere for 5 seconds while poweringup will prompt the user to restore contrast and calibration settings to factory defaults. This button specifies whether backlighting should be kept on at all times or turned off during inactive periods. This button is used to adjust the LCD touch screen calibration. Touch the screen in the circular targets located first in the upper left and then in the lower right corner of the screen to adjust. This button is used to configure the limited and full loggedin access system passwords. In order to change passwords, the user must be logged in with full access to view and change the passwords. All passwords must consist of 4digits, which can be entered using the numeric keypad. If the user does not log in, readonly access to all tables is allowed. The user will be prompted to log in when attempting to access passwordrequired functions. This button is used to view the description data and part number from the CtrlID Table and to specify the Operating Mode. The Operating mode can be configured for Equipment mode or Network mode. For Touch Pilot displays that are standard with the unit, Operating mode should not be changed from Equipment mode. Equipment mode provides access only to the chiller’s MBB via the Local Equipment Network LEN Bus. For remote access, a remote Touch Pilot display can be set to Network mode.

DISPLAY NOTE When changing the operating mode, a power cycle is required in order for the new operating mode to take effect. The user should view and correct the following CCN data address and baud rate, alarm acknower, and broadcast acknower designation. This button is used to configure the bus and element numbers and the baud rate of the control on the network. Group Display screens show status information along the top of the screens and nine buttons that display nine point names and point values that are chosen by the user. All Group Display screen points are user configurable. The bottom line of the screen contains navigation buttons that can be used to move between the Group Display screens. Pressing a point button will show that point’s Point Data dialog box. See Fig. 2 and 3. This box contains buttons that remove the point from the group display and apply or remove a force point override. When touching any button in the display screen, the button will be outlined to acknowledge input. There may be a delay in response to input, but if the button is outlined, do NOT press any other button until the previous input has been processed. If

there is a communication failure with the MBB Main Base Board, all point buttons will be displayed in inverse video and the message Communication Failure will be displayed in the top left line of the screen. Default Group Designation — The default group is the first of the 8 Group Display screens. This is the default screen of the display. Information on this screen as well as the other 7 screens can be usermodified to meet the needs of the site. To Add a Point To a Group Display — From the Main Menu, press the desired menu button Status, Setpoint, Service, Maint, or Config and, if necessary, the submenu button to access the point to be added. Press the point button to show the source point's Point Data dialog box. See Fig. 3. From the Point Data dialog box, press the ADD button.

The display will show the last Group Display accessed. Use the navigation buttons to access the destination Group Display. This can be useful for diagnostics to determine when alarms occur. The control is factory configured for the proper date and is set for the Eastern Time Zone. The date and time zone must be checked and corrected if necessary, to allow the machine to function on an internal time schedule and to display a proper time and date stamp for alarms. The time and date is displayed on the Group Display Screen. To change the Time and Date, press the Main Menu button. Select Time. On the display, a day and date box with a time box will be shown. To change the day and date, press the day and date box. A calendar will be displayed. If the correct month is displayed, touch the correct date. If the wrong month is displayed, use the or to change to the correct month and select the correct date. The date will be highlighted. Press to accept the change. The previous screen will be displayed with the corrected day and date shown. To correct the time, use the the or or on the left to change the hour. Use on the left to change the minutes. Continuously touching the or will sequence the numbers. The time is shown in a 24hour format. To accept the changes, press the or buttons. A "Save" dialog box is displayed with the words, "Do you wish to save changes" Press to accept the changes. 6 display will be shown. If communication is not established, the Navigator module will display Communication Failure If the Navigator module is connected to a Main Base Board without software loaded, the display will remain at the poweredup initialization display. Setting the Time and Date — The ComfortLink control has a time and date function. The control is factory configured for the proper date and for use in the Eastern Time Zone. The control must be checked and corrected if necessary.

The correct time is important if the machine is to function on an internal time schedule and display a proper time and date stamp for alarms. The time and date will be displayed on the default rotating display of the Navigator module. The time and date can also be checked and changed under the Time Clock mode as described below. Press to add the highlighted point to the group and return to the table display. To Remove a Point From a Group Display — From the Point Data Dialog box, press the REMOVE button and follow the prompts. The display will return to the Group Display screen from which the point was removed, and the button corresponding to the deleted point will be blank and disabled. The display has up and down arrow keys, an ENTER key, and an ESCAPE key. These keys are used to navigate through the different levels of the display structure. Pressing the ENTER and ESCAPE keys simultaneously will put the Navigator module into expanded text mode where the full meaning of all submodes, items, and their values can be displayed. When a specific item is located, the item name appears on the left of the display, the value will appear near the middle of the display and the units if any will appear on the far right of the display. Press the ENTER key at a changeable item and the value will begin to flash. Use the up and down arrow keys to change the value, and confirm the value by pressing the ENTER key. ITEM EXPANSION Time of Day PATH Time ClockTIME VALUE XX.XX To change the time, press the arrow key to move to the correct hour and press ENTER. The minutes can be changed in a similar manner. To check or change the date, the following items must be checked and changed if necessary. The factory default for the units of measure is English. To change the unit of measure, the following item must be changed. Changing item values or testing outputs is accomplished in the same manner. Locate and display the desired

item. Press ENTER so that the item value flashes.

Use the arrow keys to change the value or state and press the ENTER key to accept it. Press the ESCAPE key to return to the next higher level of structure. The words Enter Password will be displayed when required, with 1111 also being displayed. The default password is 0111. Use the arrow keys to change each number and press ENTER to accept the digit. Continue with the remaining digits of the password. To adjust the backlight of the Navigator module, enter the LED Test mode of the device. Changing the Display Language — The Navigator display has five language options to select from, English, Espanol, Francais, Portugues, and Translated. The “Translated” option is not supported at this time. The factory default language is English. To change the display language, the following item must be changed. ITEM ITEM EXPANSION LANG Language Selection PATH Configuration DISP ITEM ITEM EXPANSION PATH TEST Test Display LEDs Configuration Mode DISP Pressing ENTER will access the TEST point. Pressing ENTER again will cause the “OFF” to flash. Use the up or down arrow to change “OFF” to “ON.” Pressing ENTER will illuminate all LEDs and display all pixels in the view screen. Pressing the up and down arrow keys simultaneously allows the user to adjust the display brightness. The display will read VALUE English Espanol Francais Portugues Translated NOTE When the Language Selection Configuration DISPLANG variable is changed, all appropriate display expansions will immediately change to the new language. No poweroff or control reset is required when reconfiguring languages. Adjusting the Contrast — The contrast of the display can be adjusted to suit ambient conditions. To adjust the contrast, enter the LED Test mode of the device. Press ENTER to accept the change. The Navigator module will keep this setting as long as it is plugged in to the LEN bus. The control system is composed of several components as listed in the following sections. Pressing ENTER will access the TEST point.

Pressing ENTER and ESCAPE simultaneously allows the user to adjust the display contrast. The display will read Main Base Board MBB — The MBB is the core of the ComfortLink control system. The MBB receives inputs from status and feedback switches, pressure transducers and thermistors. The MBB also controls several outputs. Some inputs and outputs that control the chiller are located on other boards, but are transmitted to or from the MBB via the internal communications bus. Information is transmitted between modules via a 3wire communication bus or LEN Local Equipment Network. Connections to both LEN and CCN buses are made at TB3. The screen’s contrast will change with the adjustment. The Navigator module will keep this setting as long as it is plugged in to the LEN Local Equipment Network bus. Adjusting the Backlight Brightness — The backlight of the display can be adjusted to suit ambient conditions. The CPM also monitors the compressor motor temperature, high pressure switch, oil level switch, discharge gas temperature, oil pressure transducer, motor current, MTA must trip amps setting and economizer pressure transducer. The CPM responds to commands from the MBB Main Base Board and sends the MBB the results of the channels it monitors via the LEN Local Equipment Network. The CPM has three DIP switch input banks, Switch 1 S1, Switch 2 S2, and Switch 3 S3. The CPM board DIP switch S1 configures the board for the type of starter, the location and type of the current transformers and contactor failure instructions. See Table 4 for description of DIP switch 1 S1 inputs. See Appendix D for DIP switch settings. The CPM board DIP switch S2 setting determines the must trip amps MTA setting. The MTA setting which is calculated using the settings S2 must match the MTA setting in the software or an MTA alarm will be generated. See below for CPM board DIP switch S3 address information. See Table 5 for CPM inputs and outputs.

CPMA DIP Switch Address 1 OFF 2 OFF 3 OFF 4 OFF CPMB DIP Switch Address 1 OFF 2 OFF 3 ON 4 OFF CPMC DIP Switch Address 1 OFF 2 OFF 3 OFF 4 ON NOTE The CPMA and CPMB DIP switches are for all units. The CPMC DIP switches are for 30XA400500 units. Electronic Expansion Valve EXV Board — The 30XA080,082 unit has one EXV board. The 30XA090500 units have one EXV

board per circuit. See Fig. 10. The board is responsible for monitoring the suction gas temperature and economizer gas temperature thermistors. The board also signals the main EXV and economizer EXV ECEXV motors to open or close. The electronic expansion valve board responds to commands from the MBB and sends the MBB the results of the channels it monitors via the LEN Local Equipment Network. See below for DIP switch information. See Tables 6 and 7 for EXV inputs and outputs. One with and one without an analog output signal for the low ambient temperature head pressure control fan speed controllers. If a unit does not have low ambient temperature head pressure control installed, it will not have the analog connection terminals. The fan board responds to commands from the MBB and sends the MBB the results of the channels it monitors via the Local Equipment Network LEN. See below for fan board A, B and C DIP switch addresses. See Tables 810 for inputs and outputs. See Table 11. EnableOffRemote Contact Switch SW1 — This switch is installed in all units and provides the owner and service person with a local means of enabling or disabling the machine. It is a 3position switch and it is used to control the chiller. When switched to the Enable position, the chiller will be under its own control. When switched to the Off position, the chiller will shut down. When switched to the Remote Contact position, a fieldinstalled dry contact can be used to start the chiller. The contacts must be capable of handling a 24vac, 50mA load.

In the Enable and Remote Contact dry contacts closed positions, the chiller is allowed to operate and respond to the scheduling configuration, CCN configuration, and set point data. Refer to the Machine Control Methods section on page 22 for more details. CAUTION Care should be taken when interfacing with other manufacturer's control systems due to possible power supply differences, full wave bridge versus half wave rectification, which could lead to equipment damage. The two different power supplies cannot be mixed. A signal isolation device should be utilized if incorporating a full wave bridge rectifier signal generating device is used. Hot gas bypass is available as a factoryinstalled option or as a fieldinstalled accessory for 30XA080500, and the pump package is available as factoryinstalled option for sizes 30XA090162. See Fig. 14. The board is not required for single pump operation. Power to all modules is interrupted when this switch is off and all outputs from these modules will be turned off. Energy Management Module EMM — The EMM is available as a factoryinstalled option or as a fieldinstalled accessory. See Fig. 13. The EMM receives 4 to 20 mA inputs for the temperature reset, cooling set point and demand limit functions. The EMM also receives the switch inputs for the fieldinstalled second stage 2step demand limit and ice done functions. If necessary, reload current software. If the problem still persists, replace the MBB. A red LED that is lit continuously or blinking at a rate of once per second or faster indicates that the board should be replaced. GREEN LED — All boards have a green LEN SIO LED which should be blinking whenever power is on. If the LEDs are not blinking as described check LEN connections for potential communication errors at the board connectors. A 3wire bus accomplishes communication between modules. These 3 wires run in parallel from module to module. YELLOW LED — The MBB has one yellow LED.

Local Equipment Network — Information is transmitted between modules via a 3wire communication bus or LEN Local Equipment Network. External connection to the LEN bus is made at TB3. Board Addresses — All boards except the Main Base Board and Energy Management Module Board have 8position DIP switches. Wiring is shown in Fig. 15. Control Module Communication RED LED — Proper operation of the control boards can be visually checked by looking at the red status LEDs lightemitting diodes. When operating correctly, the red status LEDs will blink in unison at a rate of once every 2 seconds. If the red LEDs are not blinking in unison, verify that correct power is being supplied to all modules. Be sure that the Main 19 It is important when connecting to a CCN communication bus that a colorcoding scheme be used for the entire network to simplify the installation. It is recommended that red be used for the signal positive, black for the signal negative, and white for the signal ground. Use a similar scheme for cables containing different colored wires. At each system element, the shields of its communication bus cables must be tied together. If the

communication bus is entirely within one building, the resulting continuous shield must be connected to a ground at one point only. If the communication bus cable exits from one building and enters another, the shields must be connected to grounds at the lightning suppressor in each building where the cable enters or exits the building one point per building only. The communication bus wiring is a shielded, 3conductor cable with drain wire and is field supplied and installed. The system elements are connected to the communication bus in a daisy chain arrangement. The positive pin of each system element communication connector must be wired to the positive pins of the system elements on either side of it. The negative and signal ground pins of each system element must also be wired in the same manner.

Wiring connections for CCN should be made at TB3. Consult the CCN Contractor's Manual for further information. See Fig. 16. NOTE Conductors and drain wire must be 20 AWG American Wire Gage minimum stranded, tinned copper. See Table 14 for recommended wire manufacturers and part numbers. IMPORTANT A shorted CCN bus cable will prevent some routines from running and may prevent the unit from starting. If abnormal conditions occur, disconnect the CCN bus. If conditions return to normal, check the CCN connector and cable. Run new cable if necessary. A short in one section of the bus can cause problems with all system elements on the bus. Remote Alarm and Alert Relays — The 30XA chiller can be equipped with a remote alert and remote alarm annunciator contacts. Both relays connected to these contacts must be rated for a maximum power draw of 10 va sealed, 25 va inrush at 24 volts. The alarm relay, indicating that the complete unit has been shut down, can be connected to TB512 and TB513. Refer to unit wiring diagrams. For an alert relay, indicating that at least 1 circuit is off due to the alert, a field-supplied and installed relay must be connected between MBBJ3CH253 and TB513. The tables are the CtrlID Controller Identification configuration table and the USERCONF User Configuration table. See Tables 15 and 16. NOTE Always perform an Upload to obtain the latest configuration before making configuration table changes. These tables are accessible by using Network Table 15 — Touch Pilot Controller Identification Configuration Table CONTROLLER ID DATA BLOCK NO. NOTE The display must be in Network mode and connected to the primary CCN bus and this decision set to Yes for alarm acknowledgement to be enabled. Allowable Entries No Yes Default Value No BROADCAST ACKNOWLEDGER — This configuration is used to indicate whether the Touch Pilot display will act as the broadcast acknowledger for its CCN bus. There can be only one broadcast acknowledger per CCN bus.