Comfort-Aire® Century®

Installation and Operation Manual

7602-444

Communicating Service Tool

Table of Contents

mars® Delivering Confidence

Equivalent Model Numbers	
Heat Controller	**Climate Master**
HE-Series	TZ
HZ-Series	TE
HZS-Series	TES
HB-Series 0.5-5T	TC
HB-Series 7-25T	TL
HKV-Series	TL
HRC-Series	TRC

1.0 Connection

Comfort-Aire/Century Communicating Service Tool 7602-444 allows install and service technicians to configure and diagnose Comfort-Aire/Century Digital Communicating Units without installing a digital communicating thermostat.

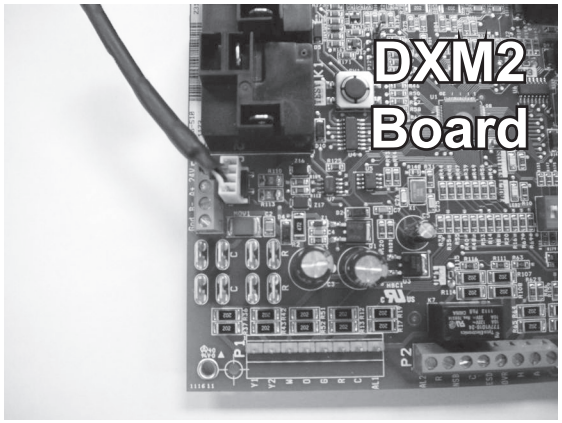
Using the Service Tool, a technician can ELECTRONICALLY:

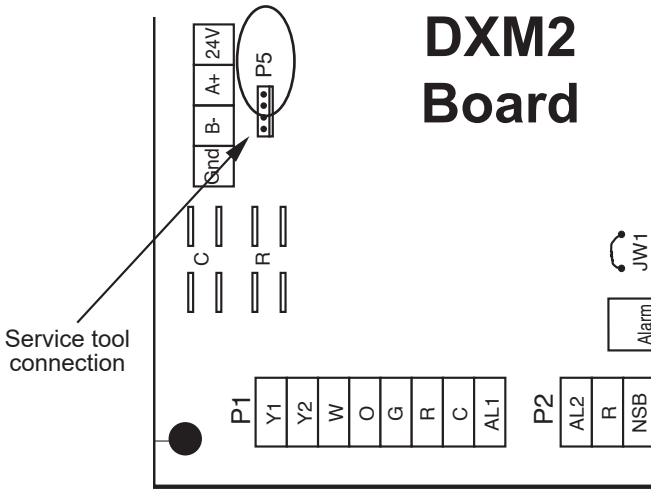
1. Configure items like: airflow, heat pump options and configuration, pump or modulating valve operation, unit family, unit size, etc.

   AND

2. Diagnose the unit by operating it manually, performing control diagnostics, viewing dip switch configurations, or by viewing fault history and operating conditions when a fault occurred.

The Service Tool connects to the DXM2 board with a 4-Wire Connector as shown below:





⚠ WARNING! ⚠

WARNING! Connecting wire harness while unit is powered on or connecting backward may damage service tool.

2.0 Menu Structure

Menu Structure

- System Configuration
  - Airflow Selection
  - Option Selection
  - Unit Configuration
  - Pump Configuration
  - Valve Configuration
- Service Mode
  - Manual Operation
  - Control Diagnostics
  - Dipswitch Configuration
  - Fault History
  - Clear Fault History

3.0 System Configuration

Use the System Configuration option on the start-up screen to adjust critical equipment settings.

The System Configuration information will be automatically obtained from each communicating control in the system.

Note 1: The Airflow Selection menu (section 3.1) will not be present if the connected communicating control system has no blower.

Note 2: The Pump Configuration menu (section 3.4) will not be present if the connected communicating control is configured for No Loop Configuration (OTHER).

Note 3: The Valve Configuration menu (section 3.5) will not be present if the connected communicating control is configured for No Loop Configuration (OTHER).

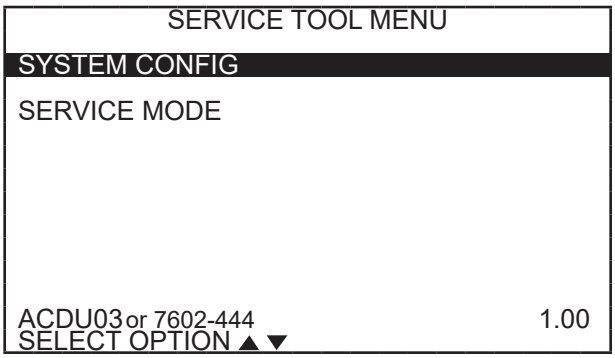
3.1 AIRFLOW SELECTION

Adjust the airflow settings for each system operating mode using the up/down arrow buttons. Press the center button to select each item.

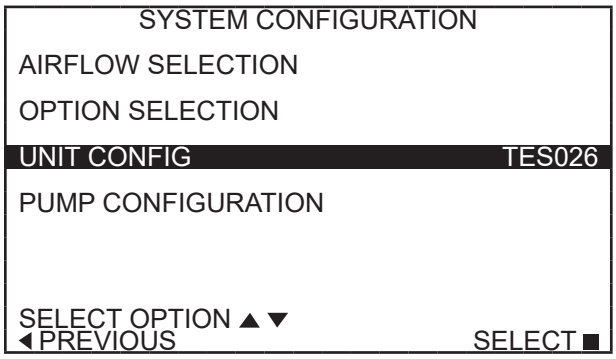
- Airflow Settings (defaults stored in control) - valid range: obtained from control (in 25 CFM increments)
- Blower Off Delay (default 60 seconds) – valid range: 0 to 255 seconds (in 5 second increments)

NOTE 1: The Airflow Settings will only be present if the connected communicating control is configured for ECM blower.

NOTE 2: If multiple units are connected to one thermostat, refer to section 3.6 for unit selection.



Start-up Screen



System Configuration Menu

3.2 OPTION SELECTION

This option allows the configuration of heat pump options to be modified.

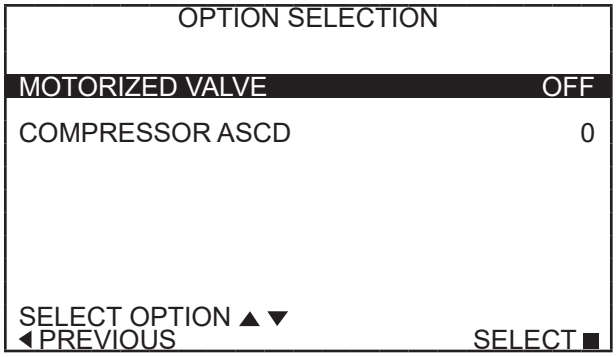
Adjust the Option settings using the up/down arrow buttons. Press the center button to select each item.

- Motorized Valve (defaults stored in control) – valid range: Off, On "On" delays compressor start until the valve is fully open.
- Compressor ASCD (Anti-Short Cycle Delay (default stored in control) – valid range: 5 to 8 (in 1 minute increments)

NOTE 1: The Compressor Anti-Short Cycle Delay setting provides equipment protection by forcing the compressor to wait a few minutes before restarting.

NOTE 2: If multiple units are connected to one thermostat, refer to section 3.6 for unit selection.

NOTE: "Motorized Valve" used here refers to a two-position motorized water valve, not to be confused with the modulating motorized water valve found in the LOOP CONFIG.



Option Selection Menu

3.3 UNIT CONFIGURATION

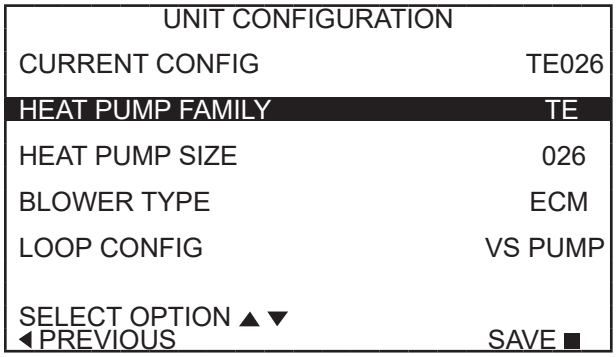
Adjust the Unit Configuration settings including Heat Pump Family, Heat Pump Size, Blower Type, and Loop Configuration using the up/down arrow buttons. Press the center button to select each item.

- Heat Pump Family (default stored in control) – valid range: TE, TY, TES, TEP, TRT, TSM, TSL
- Heat Pump Size (default stored in control) – valid range: depends on Heat Pump Family setting
- Blower Type (default stored in control) – valid range: NO BLOWER, 2-SPD PSC, COM ECM-V, 1-SPD PSC, 2-SPD CTM, PWM ECM, VFD
- Loop Config (default stored in control) – valid range: Other, VS PUMP, MOD VALVE

Airflow, pump and valves can be configured from 'System Configuration' screen.

Select 'VS PUMP PARALLEL' when applying an internal variable speed flow controller with other flow controllers on a single loop in parallel.

NOTE: Refer to section 3.6.3 for multi-unit configuration instructions.



Unit Configuration Menu

Equivalent Model Numbers

Heat Controller	Climate Master
HE-Series	TZ
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3.4 PUMP CONFIGURATION

vFlow™ vs internal flow control pump can be controlled either through temperature differential (Delta T) or can be set to specific speed (fixed; % of full speed for each heat and cool stage).

Can be configured for either single pumping or parallel pumping.

Configure temperature differentials at the thermostat for vFlow™ units with an internal flow control pump.

Adjust the Pump Configuration settings using the up/down arrow buttons. Press the center button to select each item.

- Heating Delta T (default stored in control) – valid range: 4 to 12ºF (in 1ºF increments)
- Cooling Delta T (default stored in control) – valid range: 9 to 20ºF (in 1ºF increments)

Maximum Heat LWT (valid range based on specific model; refer to model IOM). Minimum Cool LWT (valid range based on specific model; refer to model IOM).

NOTE: Refer to section 3.6.3 for multi-unit configuration instructions.

To control vs pump by fixed speed, select 'Pump Control', press ■, use down arrow to select 'Fixed', and press ■ to save.

Default stored in control. Valid range: 15% - 90% (in 1% increments)

Heating Stage 1	Cooling Stage 1
Heating Stage 2	Cooling Stage 2

If Pump Configuration is set to 'VS PUMP PARALLEL', valid range changes to 50-90% (in 1% increments).

VARIABLE SPD INTERNAL PUMP CONFIGURATION

LOOP OPTION	PARALLEL
PUMP CONTROL	DELTA T
HEATING DELTA T	7 F
COOLING DELTA T	10 F
MAXIMUM HEAT LWT	80 F
MINIMUM COOL LWT	40 F
◄ PREVIOUS	SELECT ■

VARIABLE SPD INTERNAL PUMP CONFIGURATION

LOOP OPTION	SINGLE
PUMP CONTROL	FIXED
HEATING STAGE 1	60%
COOLING STAGE 2	75%
COOLING STAGE 1	50%
COOLING STAGE 2	70%
◄ PREVIOUS	SELECT ■

3.5 VALVE CONFIGURATION

Configure temperature differentials at the thermostat for vFlow™ units with a motorized modulating valve.

Adjust the Valve Configuration settings using the up/down arrow buttons. Press the center button to select each item.

- Heating Delta T (default stored in control) – valid range: 4 to 12ºF (in 1ºF increments)
- Cooling Delta T (default stored in control) – valid range: 9 to 20ºF (in 1ºF increments)

NOTE 1: Minimum and Maximum degree values are shown only when the control is configured with the appropriate values.

NOTE 2: Refer to section 3.6.3 for multi-unit configuration instructions.

MODULATING VALVE CONFIGURATION

OFF POSITION	0.0
VALVE CONTROL DELTA T	
HEATING DELTA T	7 F
COOLING DELTA T	10 F
MAXIMUM HEAT LWT	80 F
MINIMUM COOL LWT	40 F
◄ PREVIOUS	SELECT ■

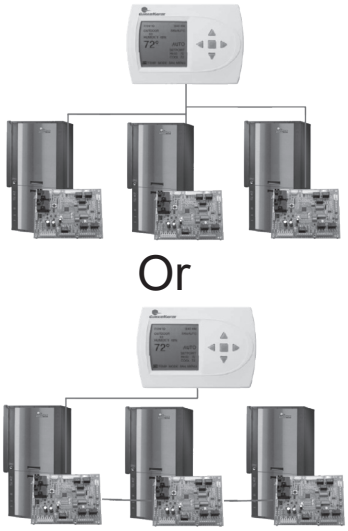
3.5.1 MODULATING VALVE OFF POSITION

For certain commercial multi-unit applications, the modulating valve can be kept slightly open by choosing values 3.3-4.0.

3.6 MULTI-UNIT CONFIGURATION

If multiple units are connected to one 7602-457 thermostat upon unit start-up, the thermostat will automatically register the serial numbers of all units connected to it.

NOTE: Multiple units may be connected directly to the 7602-457 thermostat or connected to one another in series, as shown by the figure below.



3.6.1 MULTI-UNIT AIRFLOW SELECTION

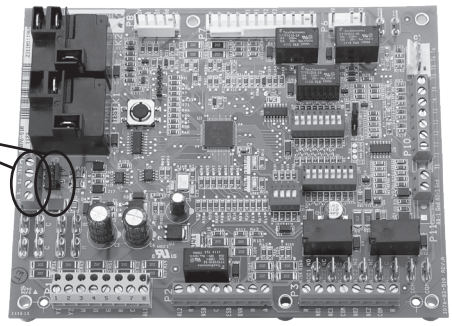
In section 3.1, when an installer selects “Airflow Selection” from the System Configuration menu, the installer may choose the unit to configure by the last 4 digits of its serial number from the following screen.

3.6.2 MULTI-UNIT OPTION SELECTION

In section 3.2, when an installer selects “Option Selection” from the System Configuration menu, the installer may choose the unit to configure by the last 4 digits of its serial number from the following screen.

3.6.3 Multi-Unit, Unit, Pump, & Valve Configuration

To configure Unit, Pump, and Valve options in sections 3.3-3.5, the thermostat must be connected to only one unit at a time.



AIRFLOW SELECTION

TT026	S N - - - - - 1 2 3 4
TT026	S N - - - - - 5 6 7 8
TT038	S N - - - - - 9 0 1 2

◄ PREVIOUS SELECT ■

OPTION SELECTION

TT026	S N - - - - - 1 2 3 4
TT026	S N - - - - - 5 6 7 8
TT038	S N - - - - - 9 0 1 2

◄ PREVIOUS SELECT ■

4.0 Service Mode

4.1 MANUAL OPERATION

Manual Operation mode allows service personnel to manually command operation for any of the thermostat outputs, blower speed, as well as pump speed or valve position to help troubleshoot specific components.

NOTE 1: The ECM Airflow adjustment will not be present if the connected communicating control (DXM2) is not configured for ECM (section 3.1).

NOTE 2: The Pump Speed adjustment will not be present if the connected communicating control (DXM2) is not configured for Pump (section 3.4).

NOTE 3: The Valve Position adjustment will not be present if the connected communicating control (DXM2) is configured for Valve (section 3.5).

4.2 CONTROL DIAGNOSTICS

Control Diagnostics mode allows service personnel to view the status of all physical inputs, switches and temperature sensor readings, as well as the operational status of the heat pump at the thermostat.

Navigate between diagnostic screens using the left/right arrow buttons.

NOTE: The Pump Status will not be present if the connected communicating control (DXM2) is not configured for Pump (section 3.4).

SERVICE MODE

MANUAL OPERATION

CONTROL DIAGNOSTICS

DIPSWITCH CONFIG

FAULT HISTORY

CLEAR FAULT HISTORY

SELECT OPTION ▲▼

◀ PREVIOUS SELECT ■

MANUAL OPERATING MODE

Y1	COMM	OUTPUT	OFF
Y2	COMM	OUTPUT	OFF
W	COMM	OUTPUT	OFF
O	COMM	OUTPUT	OFF
G	COMM	OUTPUT	OFF
H	COMM	OUTPUT	OFF
DH	COMM	OUTPUT	OFF
ECM	AIRFLOW		0
PUMP	SPEED		0%
TEST	MODE		OFF

SELECT OPTION ▲▼

◀ PREVIOUS SELECT ■

CONTROL DIAGNOSTICS

HP SWITCH	CL
LOC SWITCH	CL
Y1 PHYSICAL INPUT	ON
Y2 PHYSICAL INPUT	OFF
W PHYSICAL INPUT	OFF
O PHYSICAL INPUT	ON
G PHYSICAL INPUT	ON
H PHYSICAL INPUT	OFF
EMERG SHUTDOWN	OFF
NIGHT SETBACK	OFF
OVR INPUT	OFF

◀ PREVIOUS NEXT ▶

CONTROL STATUS
TEMPERATURES

LT1 TEMP	38.1
LT2 TEMP	79.9
COMP DISCHARGE	157.7
HOT WATER EWT	121.5
LEAVING AIR	75.1
LEAVING WATER	73.3
ENTERING WATER	78.5
CONTROL VOLTAGE	26.4
ECM BLOWER RPM	550
ECM TARGET CFM	800
ECM BLWR STATIC	N/A

◀ PREVIOUS NEXT ▶

CONTROL DIAGNOSTICS
PUMP OPERATION

PUMP SPEED	60%
PUMP WATTS	140
FLOW RATE GPM	7.4

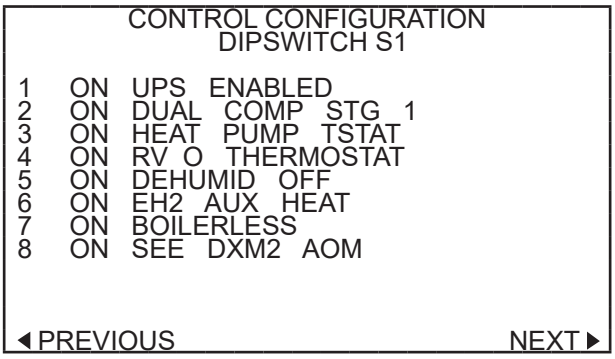
◀ PREVIOUS

4.3 DIPSWITCH CONFIGURATION

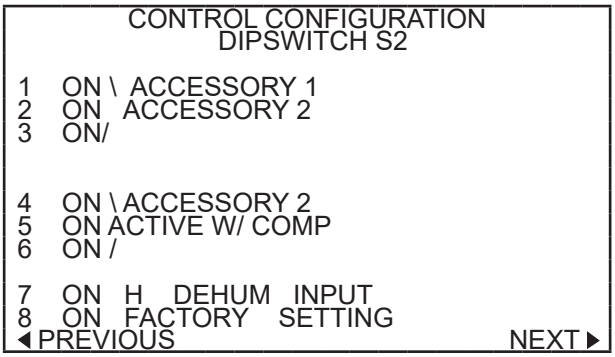
Dipswitch Configuration mode allows the service personnel to view the status of all dipswitch settings for the connected communicating control (DXM2/AXM) at the thermostat.

Navigate between configuration screens using the left/right arrow buttons.

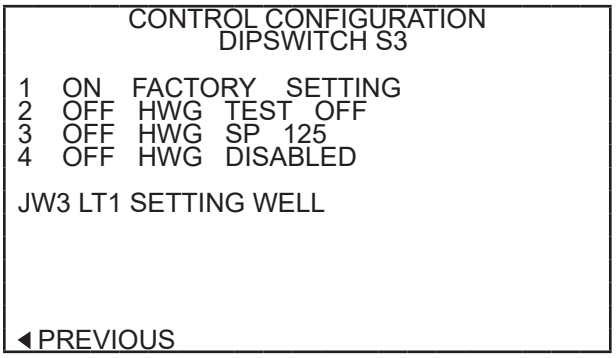
NOTE: The unit control dipswitch settings cannot be changed from the thermostat or configuration/diagnostics tool.



S1 Dipswitch Status



S2 Dipswitch Status

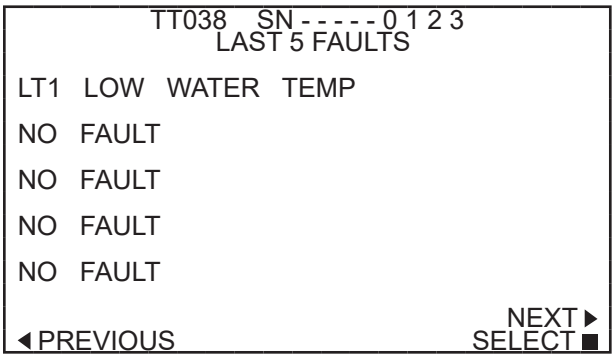


S3 Dipswitch Status

4.4 FAULT HISTORY

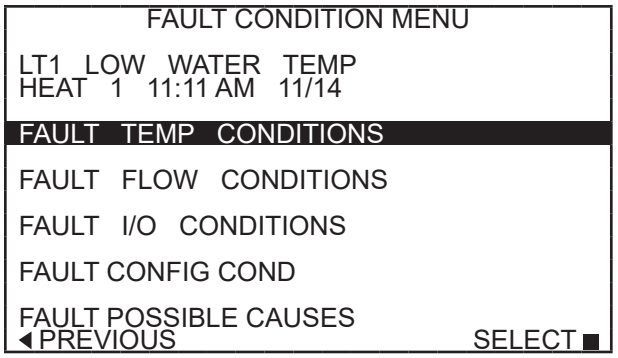
Fault History mode displays the five most recent stored fault codes for the connected communicating control (DXM2).

Navigate between control fault codes using the up/down arrow buttons. Press the center button to view more information about the highlighted fault code.



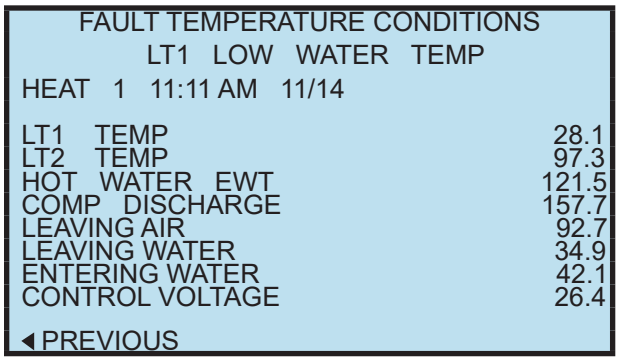
Fault History

4.4.0 Fault Conditions Menu



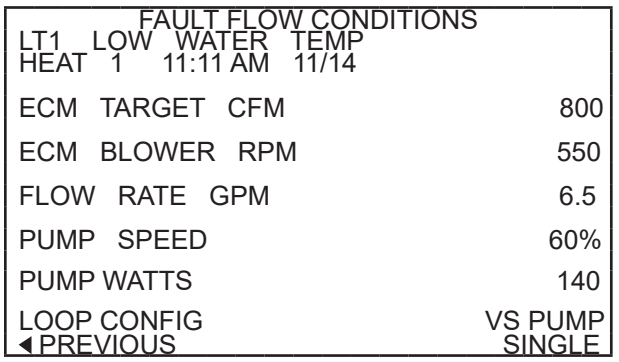
4.4.1 Temperature Conditions

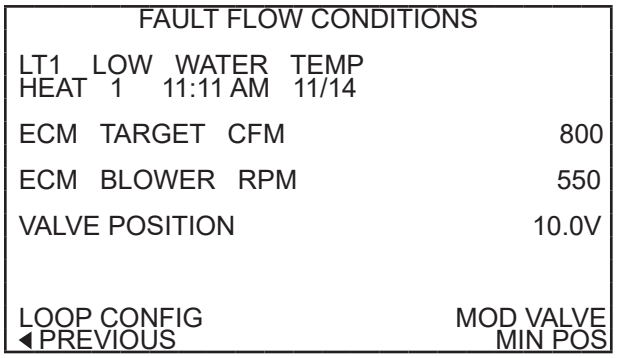
Displays detailed temperature readings that were recorded at the time the fault occurred



4.4.2 Flow Conditions

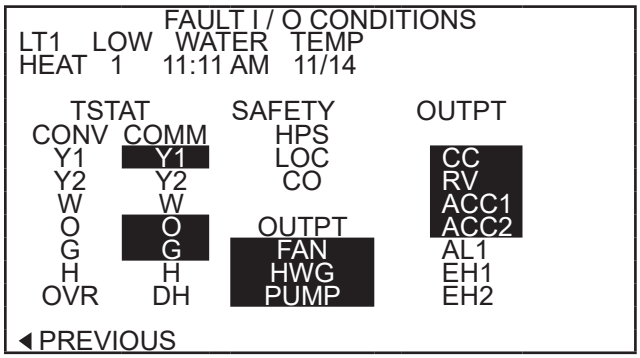
Displays detailed blower and pump speed / valve position readings that were recorded at the time the fault occurred.





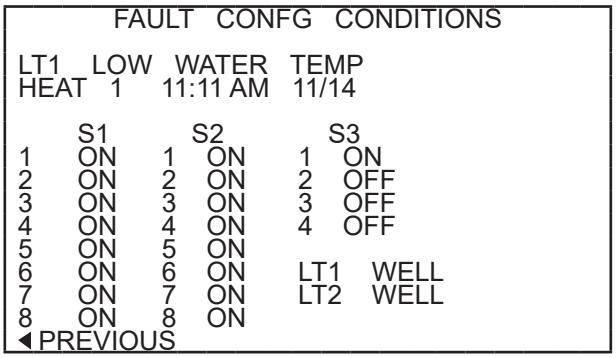
4.4.3 Input/Output Conditions

Displays the status of all physical and communicated inputs, switches, and control outputs that were recorded at the time the fault occurred.



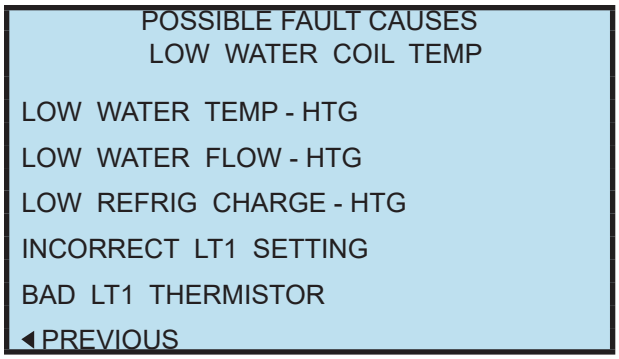
4.4.3 Configuration Conditions

Displays the status of all dipswitch settings that were recorded at the time the fault occurred.



4.4.4 Possible Causes

Displays possible causes as to why the fault occurred



4.5 CLEAR FAULT HISTORY

Clear Fault History will clear all fault codes stored in the thermostat as well as the fault history in any connected communicating controls (DXM2/AXM).

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