675-TS21
2 Heating and 1 Cooling

Standard in all DiversiTech Touch Screen Thermostats: Complete and quick set-up with gas, oil, electric, heat pump, air conditioning and multi-stage HVAC systems.

- 7 Day programmable with 4 events per day – including fan
- Large, easy to read dot matrix display
- True touch screen technology
- Automatic selection of cool or heat mode
- Programmable fan mode
- Programmable filter monitor
- Programmable installer message
- Configurable humidification relay
- Customizable full and partial lock security
- Adjustable differential settings for multistage installations
- Energy watch calculates kWh and HVAC costs
- Simple mode for non-programmable usage
- Programmable Vacation Mode
Outdoor Wireless Temperature Transmitter and Receiver Kit

Your Kit Includes: Outdoor Wireless Temperature Transmitter + Antenna + Receiver Module + 2 Batteries

This convenient feature provides you the outdoor temperature right on your DiversiTech thermostat.
Anticipator control – Anticipator control is used to turn off the heating equipment before the room temperature actually reaches the cut-out point.

Cut-in Point – The air temperature at the thermostat at which it initiates action of heating/cooling equipment.

Cut-out Point – The air temperature at the thermostat at which it terminates action of heating/cooling equipment.

Cycle rate – Cycle rate is the frequency that heating or cooling equipment is turned on during a certain period of time. Cycle rate is often given in units of cycles per hour (CPH).

Differential – Differential is defined as the difference between the cut-in and cut-out points as measured at the thermostat under specified operating conditions. For example, if the thermostat turns the heating equipment on at 70 degrees F and turns the heating equipment off at 74 degrees F, then the differential is 4 degrees F.

Programmable thermostat – A thermostat with the capability of automatically adjusting temperature set point to pre-selected settings at pre-selected times.

Setback – The automatic alteration of the thermostat control point(s) by means other than manually changing the temperature set point.

Set point – The desired temperature setting on an electromechanical or electronic thermostat.

Avoid the following locations:
- Hot or cold air from ducts
- Radiant heat for appliances or sun such as a skylight
- Unheated areas or uncooled areas: for example an outside wall behind the thermostat.

Install your DiversiTech thermostat approximately 5 feet (1.5 meters) above the floor in an area with good air circulation.
1. Make sure to turn off the power supply located at the electrical service panel. All heating and cooling units should be OFF.

2. Remove the cover plate by pulling up the cover from the left or right side only.

3. Align the thermostat unit to the wall.

4. Mark the two locations for drilling the 3/16” holes required for the plastic screw anchors.

5. Remove the thermostat and drill the two 3/16” holes in these locations.

6. Insert the plastic gyproc screw anchors and tighten them securely.

7. Make the appropriate wire connections based on the specifications of the household HVAC unit(s). Please refer to Wiring Table to determine the appropriate wire connections.

8. Securely mount the thermostat unit to the wall with the two supplied screws.

9. Fit the cover plate back by clipping one side first (left or right) and then push down on the opposite side.

10. Turn on the electricity at the electrical service panel.

NOTE: The above colors are standard in HVAC industry. The wiring should be confirmed before installation.
1 AIR CONDITIONER

I2  I1  RC  DH  H  C

Y2  RH  OBW  W2  G  Y1

24V

FAN

AC

COMMON

1 AIR CONDITIONER AND 1 HEAT

I2  I1  RC  DH  H  C

Y2  RH  OBW  W2  G  Y1

24V

HEAT

FAN

AC

COMMON

1 AIR CONDITIONER AND 2 HEAT

I2  I1  RC  DH  H  C

Y2  RH  OBW  W2  G  Y1

24V

HEAT 2

HEAT 1

FAN

AC

COMMON
1 HEAT PUMP

<table>
<thead>
<tr>
<th>I2</th>
<th>I1</th>
<th>RC</th>
<th>DH</th>
<th>H</th>
<th>C</th>
<th>Y2</th>
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<th>OBW</th>
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- 24V
- REVERSE VALVES
- COMMON
- HP
- FAN

1 HEAT PUMP AND 1 HEAT

<table>
<thead>
<tr>
<th>I2</th>
<th>I1</th>
<th>RC</th>
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- 24V
- REVERSE VALVES
- HEAT
- COMMON
- FAN
- HP
1 TRANSFORMER

2 TRANSFORMERS
The DiversiTech thermostat Control Page provides you with an easy and intuitive screen to set your thermostat—all functions are available at the touch of a finger! To access the Control Page, simply touch the Home Page Screen... anywhere!

To return to the Home Page, simply touch the icon at any time!

Home Page displays the following information:

1. Current Room Temperature
2. °F/°C Indicator
3. Thermostat Control Mode: Run Program or Hold Temperature
4. Temperature Control Mode: Auto, Heat and Cool
5. Fan Operation Mode: Fan Automatic, Fan Intermittent, Fan Off
6. Fan Operation Indicator
7. Heat Setpoint and Cool Setpoint
8. Date Stamp (Month/Day/Year)
9. Time: Choose between 12 hour or 24 hour clock
10. Outdoor Temperature

Now that you know the basics let's review the Control Page - and begin to learn about all the unique features!
• Your DiversiTech thermostat can run in Program Mode or can hold a fixed temperature.

• **RUN PROGRAM**: Your custom program settings will be initiated - 4 events per day including the fan mode

• **HOLD TEMPERATURE**: Allows you to raise or lower the temperature setpoint by touching the heat/cool - to lower + to raise

• **AUTO, HEAT, COOL AND OFF**
  Based on your HVAC equipment you can quickly and easily select the mode of operation - Automatic • Heat • Cool • Off
  • AUTO – choose your heat and cool temperature setpoints – the temperature will automatically adjust according to the requirement
  • HEAT – choose your Heat setpoint
  • COOL – choose your Cool setpoint
  • OFF - no heating or cooling

• **PROGRAM TEMPERATURE SETPOINTS**:
  • Choose HEAT: Heat will appear with a temperature range, select your temperature
  • Choose COOL: Cool will appear with a temperature range, select your temperature
  • Choose AUTO: A combined heat/cool button will appear – when heat flashes – choose your temperature setpoint, touch the button to toggle to cool, then set your temperature setpoint.
To access the Menu Page, simply touch Menu from the Control Page. Remember it is as easy as a touch of the button.

- Set-up of your DiversiTech thermostat is effortless with intuitive menu driven programming - on our patented touchscreen.
- Enter Date and Time Settings: Program 7 days with 4 events per day to improve efficiency and reduce energy costs.
- Energy Watch: display kWh consumption as well as the dollar cost of the HVAC System - configure this feature in Advanced Settings.
- Clean the Screen without worry
- Access the Set Screen menu
- Advanced Settings for configuration of equipment
- Vacation Mode
- View Filter Monitor

- There are three modes of fan operation: Fan Auto, Fan On, Fan Off. When the fan is running, the animated fan icon will appear on the Home Page.

- FAN AUTO: The fan will run on only when there is a demand for heating or cooling.

- FAN ON: The fan runs continuously.

- FAN INTERMITTENT: The fan will run 10 minutes per 1/2 hour providing a convenient way to improve air quality and save energy.
PROGRAM SETTINGS:

- Select the 12 or 24 hour clock display.
- Set the time of day by choosing hour and minute buttons.
- Set the Month, Day and Year by choosing the buttons.

DiversiTech Thermostat Program Settings:

- 7 Day Programmable with 4 events per day including Fan Mode
- Select the Day of the Week
- Select the Event number: for example 1
- Select the Start Time: for example 7:00 AM
- Choose desired temperature setpoint – by raising or lowering the heat/cool button
- Choose the next event: for example 2 and repeat the steps

Once you have set all the events for one day you may copy the same settings to other days of the week. First ensure that your program settings are correct. Then select the next day of the week that you would like to have the same program setting. DiversiTech thermostat will then prompt you to copy the settings. Remember that you must choose Run Program from the Control Page to activate this feature.
**ENERGY WATCH:** This unique and patented feature provides a display of system energy consumption and the cost of running your HVAC system. This feature must be activated in the Advanced Settings - page 28.

**SET SCREEN:** Your DiversiTech thermostat has a number of options to ensure clear viewing throughout the day and night, firstly:
- Backlight: choose between Auto or ON
- Reverse: Choose between a dark background (ON) or light background (OFF)
- Night Reverse: Another patented feature – ON: at 9PM the screen automatically reverses the background for comfortable viewing at night – at 6:00AM it returns to the Normal Mode for clear daytime viewing. OFF: screen background determined by “Reverse” function setting.
- Contrast: Provides a range from 1 – 10 to lighten or darken the screen best suit your surroundings – we advise the setting of 7.

**CLEAN SCREEN:** This function allows you to safely wipe and clean the screen with a dampened cloth without accidentally changing any of the settings; it places the DiversiTech thermostat screen in a sleep mode for 15 seconds.
**IMPORTANT INSTALLER SET-UP**
This DiversiTech thermostat works with many different HVAC systems – Gas, Oil, Electric Heat Pump, 2 Stage Heat Pump, 2 Stage Furnace and Compressors. You must enter this menu to configure the thermostat with HVAC operating equipment, and to fully customize the thermostat.

**ADVANCED SETTINGS:** To begin, hold your finger for 5 seconds on the Advanced Settings Button – you will hear a beep telling you that you are in the process of entering this feature.

A warning message will appear:

**CAUTION: INCORRECT CONFIGURATION CAN DAMAGE YOUR SYSTEM, CONTINUE?**
YES NO
ACCEPT – YES

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**VACATION SETTINGS:** Allows you to set the temperature to a fixed setpoint during the time you are on vacation, providing energy savings and comfort for your return home. IMPORTANT: Heat or Cool must be selected from the Control Page before entering the Vacation Settings page. To begin select Vacation Mode ON:

- Select the Start Date
- Select the End Date
- Adjust the Heat or Cool temperature setpoint; the Vacation mode begins at 10 PM on the day of your departure and ends at Midnight on the day of your arrival.
- When the Vacation mode is active the suitcase icon will appear on the Home Page. Upon your return from vacation, a message *Vacation Mode Ended* will be displayed on the screen. Simply touch the screen to acknowledge the message, and your DiversiTech thermostat will automatically revert to the Program Settings if you are in Run Program Mode or your can choose to Hold Temperature to raise or lower the setpoint.

**FILTER MONITOR:** Displays filter usage in days and resets filter timer – when activated the Filter Monitor icon will appear on your Home Page – this feature must be activated in Advanced Settings.
• HOME BUTTON: Returns you to the Home Page at anytime- remember you will have to re-enter through the Advanced Settings button.

• DAYLIGHT TIME: Choose Daylight Time On or Off dependent on your Time Zone.

• FILTER: A Helpful reminder to change or clean your air filter. The Filter Monitor function indicates how many days of "fan run time" the air filter has been used. Reset it each time after changing your air filter.

• ENERGY WATCH: By entering the HVAC system consumption parameters rounded off to kW, you will have a real time total of kilowatts and cost of consumption. To review touch the Energy Watch button on the Menu Page. EXAMPLE: Fan 1kW, Heat Pump 1kW/ton, Furnace 5-30 kW, 7-9¢/kW
  • This feature will run consecutively for 255 days. If you do not enter your information what will appear on the display is the total time the Compressor and the Furnace have been operating.

• °F: Choose between display units of Fahrenheit or Celsius for thermostat temperature

• SECURITY: The security settings allow you to protect your DiversiTech thermostat from unauthorized use, and provides 2 levels of security. On your Home Page once this feature is activated you will see a small lock icon.
  • Turn Security On or Off – the Factory Setting PIN is 1111
  • As a first time user you will be prompted to enter the Factory Setting PIN 1111
  • Enter your new PIN and then Re-enter your new PIN once more.
  • There are two modes of password protection: Full Lock Function does not allow any changes unless the user enters the PIN.
  • Partial Lock Function allows you to change only the temperature setpoint without entering a PIN.

• INSTALLER MESSAGE: (up to 42 characters) to appear at programmable intervals. Enter your message on the screen using the keyboard – for example service reminders or emergency contact information. Type your message in using the keyboard, upon completion choose OK. Set the number of months after which you with the message to appear. Touch the home or menu icon to exit.
DIVERSITECH TOUCH SCREEN THERMOSTAT CONFIGURATION
ADVANCED SETTINGS – SETTING THE DIFFERENTIAL

➢ 1ST STAGE DIFFERENTIAL: Set temperature difference between temperature set point and actual temperature reading before 1st stage heating or cooling is initiated.

➢ 2ND STAGE DIFFERENTIAL: Set temperature difference between 1st stage initiation and 2nd stage heating or cooling initiation.

➢ OB ENERGIZED: Reverses the Heat Pump OB Valve contact to HEAT or COOL (manufacturer dependent).

DIVERSITECH TOUCH SCREEN THERMOSTAT CONFIGURATION
ADVANCED SETTINGS – CONFIGURING YOUR EQUIPMENT

➢ IMPORTANT: BY INADVERTENTLY MODIFYING COMPRESSOR AND FURNACE SETTINGS, YOU MAY SERIOUSLY DEGRADE SYSTEM PERFORMANCE.

➢ CHOOSE SYSTEM HEATING AND/OR COOLING EQUIPMENT – REMEMBER ALL YOU NEED TO DO IS TOUCH THE BUTTON WITH YOUR FINGER.

• Choose Heat Pump, 2 Stage Heat Pump, Air Conditioning, No Compressor – please review the wiring table and diagram for wiring instructions.

• Choose Furnace Off (No Furnace), Electric Furnace, Emergency Electrical Furnace (additional electric furnace which will come on in emergency mode in conjunction with electric furnace), Gas Furnace, Oil Furnace, and 2 Stage Gas Furnace; please review the wiring table and diagram for wiring instructions.

• CYCLE RATE: Set Maximum compressor cycles per hour.

• AUTO CHANGE: Set the minimum difference between Auto Mode, Heat and Cool temperature set points.
DIVERSITECH TOUCH SCREEN THERMOSTAT CONFIGURATION
ADVANCED SETTINGS – TIMER FEATURE

- Specify the number of minutes for which Stage 1 will function until Stage 2 is activated to help raise (or cool) temperature (if the temperature set point is not reached). This unique function avoids excess compressor wear in the case where the necessary temperature set point is not met through setting of the Staging Differentials. Set to “00” to disable.

DIVERSITECH TOUCH SCREEN THERMOSTAT CONFIGURATION
ADVANCED SETTINGS – HEAT PUMP

- HP “ON” when Furnace On: Heat Pump and Furnace can operate together when 2nd stage furnace is required. HP “OFF” when Furnace On: turns off the Heat Pump when the furnace is On (required on some gas or oil furnaces).
CALIBRATION OF TEMPERATURE
Your DiversiTech thermostat is rated for +/-1° temperature accuracy.

- If you have determined due to drafts, sunlight or other environmental factors that your thermostat needs calibration, follow this easy guide. Common causes of offset are lack of air circulation in the vicinity of your DiversiTech thermostat or skylights.

TEMPERATURE CALIBRATION TABLE

- Firstly, determine with a calibrated thermometer the temperature difference – then use the following table to adjust your thermostat.

<table>
<thead>
<tr>
<th>Thermostat Calibration Number</th>
<th>Fahrenheit Change</th>
<th>Celsius Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>+3.0</td>
<td>+6°F</td>
<td>+3.0°C</td>
</tr>
<tr>
<td>+2.5</td>
<td>+5°F</td>
<td>+2.5°C</td>
</tr>
<tr>
<td>+2.0</td>
<td>+4°F</td>
<td>+2.0°C</td>
</tr>
<tr>
<td>+1.5</td>
<td>+3°F</td>
<td>+1.5°C</td>
</tr>
<tr>
<td>+1.0</td>
<td>+2°F</td>
<td>+1.0°C</td>
</tr>
<tr>
<td>+0.5</td>
<td>+1°F</td>
<td>+0.5°C</td>
</tr>
<tr>
<td>Factory Setting</td>
<td>00</td>
<td>No Correction Required</td>
</tr>
<tr>
<td>-0.5</td>
<td>-1°F</td>
<td>-0.5°C</td>
</tr>
<tr>
<td>-1.0</td>
<td>-2°F</td>
<td>-1°C</td>
</tr>
<tr>
<td>-1.5</td>
<td>-3°F</td>
<td>-1.5°C</td>
</tr>
<tr>
<td>-2.0</td>
<td>-4°F</td>
<td>-2.0°C</td>
</tr>
<tr>
<td>-2.5</td>
<td>-5°F</td>
<td>-2.5°C</td>
</tr>
<tr>
<td>-3.0</td>
<td>-6°F</td>
<td>-3.0°C</td>
</tr>
</tbody>
</table>
Simple Mode has the following basic features:

Temperature Control Modes:

- OFF
- COOL
- HEAT
- EMER HEAT

Fan Operation Modes:

- FAN ON
- FAN OFF

➤ DIVERSITECH THERMOSTAT CAN ALSO FUNCTION AS A NON-PROGRAMMABLE THERMOSTAT AFTER IT HAS BEEN CONFIGURED.

- To enable “Simple Mode”, press the reset button (take off the thermostat faceplate and press the reset button located in the bottom right-hand corner). The message “Touch for simple thermostat” will appear. Touch the screen, and DiversiTech thermostat becomes a simplified non-programmable thermostat.

- Please note that when changing to Simple Mode, you will not lose any of the settings you have previously entered in the “Programmable Mode”.

- To revert back to the Programmable DiversiTech Thermostat, simply press the reset button and touch the screen when the message “Touch for Programmable Thermostat” appears.

➤ Touch screen buttons do not function properly. Remove cover, press the reset button located in the bottom left corner then accurately touch 3 target centers on the screen when prompted.

➤ Air conditioning turns on in HEAT mode and heating turns on in COOL mode. Reverse the OB valve (see “Advanced Settings” Page 31).

➤ PARTIAL LOCK and FULL LOCK do not function. You must not touch the screen for 1 minute for DiversiTech thermostat to automatically lock.

➤ Thermostat appears normal until the screen becomes blank when the compressor or heating system turns on. You need to connect the “C” wire. 4 wire system will not function unless the heat and compressor contactors can supply enough current to power the thermostat with only 4 wires, if you cannot hook up the “C” wire another possible solution is to connect one 250 ohm 10 watt resistor in the HVAC room, for cooling problems between C and W or in the case of heating problem between C and Y1.

➤ I forgot my PIN and cannot unlock the thermostat. Remove the cover plate, press the reset button located in the bottom right corner, as soon as the message “touch to reset password” appears touch the screen, your PIN will be erased and the thermostat will unlock.
**WARRANTY**

**Hardware**
DiversiTech warrants the original end user ("Customer") that new DiversiTech branded products will be free from defects in workmanship and materials, under normal use, for two (2) years from the original purchase date.

**Software**
DiversiTech warrants to Customer that the DiversiTech thermostat software will perform in substantial conformance to its program specifications for a period of two (2) years from the date of the original purchase.

**Exclusions**
This warranty excludes (1) physical damage to the surface of the product, including cracks or scratches on the touch-screen or outside casing; (2) damage caused by misuse, neglect, improper installation, unauthorized attempts to open, repair, or modify the product, or any other cause beyond the range of intended use; (3) damage caused by accident, fire, power changes, other hazard, or Acts of God; or (4) use of the product with any device if such device causes the problem.

**Exclusive Remedies**
Should a covered defect occur during the warranty period and Customer notifies DiversiTech, Customer’s sole and exclusive remedy will be, at DiversiTech’s sole option and expense, to repair or replace the product. Replacement products or parts may be new or reconditioned or a comparable version of the defective item. DiversiTech warrants any replaced product or part for a period of ninety (90) days from shipment, or through the end of the original warranty, whichever is longer.

**Obtaining Warranty Service**
Customer must contact and return product to a local DiversiTech product dealer or installer within the applicable warranty period to obtain warranty service. Dated proof of original purchase will be required. DiversiTech will not be responsible for Customer’s memory data contained in, stored on, or integrated with any products returned to DiversiTech for repair, whether under warranty or not.

**Warranty Exclusive**
The foregoing warranties and remedies are exclusive and in lieu of all other warranties, express or implied, including warranties of merchantability, fitness for a particular purpose, correspondence with description, and non-infringement, all of which are expressly disclaimed by DiversiTech and its suppliers.

**Disclaimer**
NEITHER DIVERSITECH NOR ITS SUPPLIERS SHALL BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL, OR PUNITIVE DAMAGES OF ANY KIND, OR FINANCIAL LOSS ARISING OUT OF OR IN CONNECTION WITH THE SALE OR USE OF THIS PRODUCT, WHETHER BASED IN CONTRACT, TORT (INCLUDING NEGLIGENCE) OR ANY OTHER THEORY, EVEN IF DIVERSITECH HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. DIVERSITECH’S ENTIRE LIABILITY SHALL BE LIMITED TO REPLACEMENT OR REPAIR OF THE PRODUCT.

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**IMPORTANT NOTICE**

➤ **WHEN USING THIS THERMOSTAT WITH A GAS FURNACE**
A COMMON WIRE (C) MUST BE CONNECTED.

- When working without a common wire:
  A confirm in heat mode the cooling does not switch on or B confirm in cooling mode the heat does not switch on.

- If test A or B fail or the thermostat shuts down in either heat or cool mode then it is necessary to connect a common wire, (C), alternatively it may be possible to solve this issue by simply connecting the 250 ohm 10 watt resistor between C and W (in the case of a cooling problem – see B) or between C and Y1 (in the case of a heating problem - see A) at the HVAC equipment.

- When working without a common wire, A confirm that when there is a call for heat, cooling does not also activate, and when there is a call for cool, heating does not also activate.

- If using the configuration of Heat Pump and Furnace with no Common Wire confirm that when Heat Pump and Furnace are working together (both stages are operating at the same time) that the display does not go blank, if so you must use a Common Wire.

- This thermostat is equipped to run with two separated power transformers if required RC and RH. Terminals RC and RH are internally connected together however you should wish to use two transformers simply cut with a blade the copper trace on the printed circuit board located between the C and Y2 screw terminals.

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Physical Dimensions
Case: 5.75” x 4.75” x 1.25” (145mm x 120mm x 30mm)
Display: 3.625” x 2.125” (95mm x 55mm)

Electrical Rating
24 volt AC/DC
Class 2 maximum 2 amps
Temperature Accuracy +/-1°F degree
Power failure protection safeguards clock and memory.

FCC Statement
THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

US Patents
7,185,825; 7,156,318; 7,146,110; 7,050,026; 7,028,912; 6,902,117; 6,786,421;
Other Patents Pending