



Alternative Energy

**U 406**

12/11

Replaces: New



This brochure includes details about how to view and adjust settings within the tekmarNet® House Control 406. Advanced operational information is available in the Installation and Operation Manual D406. Please visit [www.tekmarcontrols.com](http://www.tekmarcontrols.com) for more detailed information on this or any other tekmar product.

This control operates a heat pump and backup boiler to provide hot or chilled water to a storage tank. Floor cooling is available with or without a humidity sensor. A backup boiler is able to provide heat for domestic hot water, setpoints, or as a backup to the storage tank.

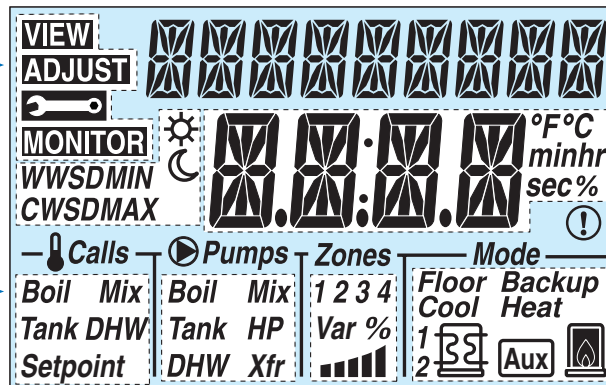
### Display

#### Menu Field

Displays the current menu

#### Status Fields

Displays the current status of the control's inputs, outputs and operation. Most symbols in the status field are only visible when the VIEW Menu is selected



#### Item Field

Displays the name of the selected item

#### Number Field

Displays the current value of the selected item

### Symbols

	<b>CALLS</b> Displays any call for heat or cool the control is receiving.		<b>HEAT PUMP</b> Heat pump stage 1 or 2 is operating.
	<b>PUMPS</b> Displays any pump currently operating.		<b>AUXILIARY</b> An auxiliary backup heat source is currently operating using the Backup relay.
	<b>ZONES</b> Displays if an on-board zone is operating.		<b>BOILER</b> Indicates that the boiler is operating (flashing flame indicates boiler is igniting).
	<b>VARIABLE SPEED PUMP OUTPUT</b> Displays percent output of the variable speed pump.		<b>FLOOR</b> Radiant floor cooling is currently active.
	<b>WWSD / CWSD</b> The system is currently in Warm Weather Shut Down or Cold Weather Shut Down.		<b>BACKUP</b> Backup heat source is required to assist in heating the tank sensor to its target.
	<b>MIN / MAX</b> Heat pump is prevented from operating due to high or low return water temperature.		<b>COOL / HEAT</b> The heat pump is operating in either cool or heat mode.
	<b>OCCUPIED</b> Indicates that a User Switch or Timer has put the system into Occupied.		<b>°F, °C, MINUTES, HOURS, SECONDS, %</b> Units of measurement for current number.
	<b>UNOCCUPIED</b> Indicates that a User Switch or Timer has put the system into UnOccupied.		<b>WARNING</b> Displays if an error exists on the system.

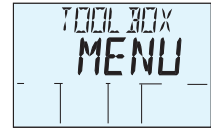
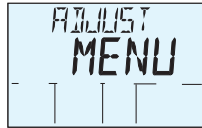
## Navigating The Display

The 406 uses a simple user interface to accomplish a variety of functions. The four buttons beneath the display are used to change the menu, sort through Items, and adjust each setting as required.

### Step 1 - Select A Menu

The menu is displayed in the Menu Field at the top left side of the display. Four menus are available: View, Adjust, Monitor and Toolbox (identified by the wrench symbol).

- Press the Menu button to switch between menus.



### Step 2 - Select An Item

Each menu contains a list of Items that can be viewed and, in some cases, adjusted. Press the item button to scroll through the list in each Menu.

- To view the next available item, press and release the Item button.
- To view the previous item, hold down the Item button, and press and release the Up button.



#### View Menu Items

- Outdoor
- Boiler
- Boil Target
- Boiler Modulation

#### Adjust Menu Items

- Mode
- WWSD
- Units

#### Monitor Menu Items

- Outdoor Low
- Outdoor High
- Run Time Heat Pump 1
- Run Time Heat Pump 2
- Run Time Boiler

#### Toolbox Menu Items

- Type 406
- Access

### Step 3 - Adjust The Item



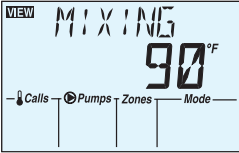
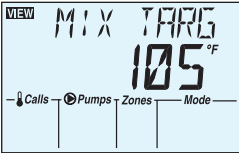
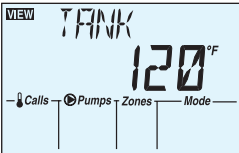
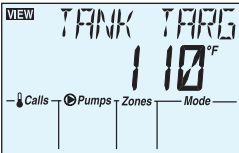
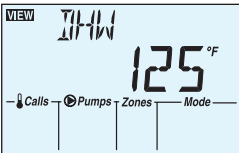
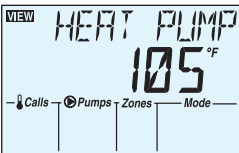
The Up and Down buttons are primarily used for adjusting settings. To adjust a setting:

- Select the appropriate menu using the Menu button.
- Select the item using the Item button.
- Use the Up or Down button to make the adjustment.

## View Menu

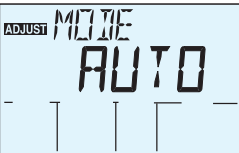
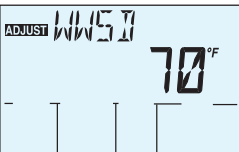
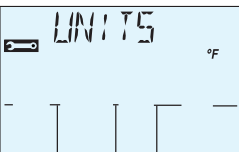
The View menu items display the current operating temperatures and status information of the system.

Item	Description
	<p><b>OUTDOOR</b> Current outdoor air temperature as measured by the outdoor sensor. The outdoor air temperature is shared to all thermostats in the tekmarNet® system.</p>
	<p><b>BOILER</b> Current boiler supply water temperature as measured by the boiler sensor. <b>Note:</b> This item is only available when a boiler water temperature is selected.</p>
	<p><b>BOILER TARGET</b> The boiler target is the temperature the control is currently trying to maintain at the boiler supply sensor. “---” is displayed when no heat is required for boiler zones. <b>Note:</b> This item is only available when a boiler water temperature is selected.</p>
	<p><b>BOILER MODULATION</b> Current percent modulation of the boiler's burner. <b>Note:</b> This item is only available when a modulating boiler is selected.</p>

Item	Description
	<p><b>MIXING</b> Current mix supply water temperature as measured by the mix sensor. <b>Note:</b> This item is only available when a mix water temperature is selected.</p>
	<p><b>MIX TARGET</b> The temperature the control is currently trying to maintain at the mix sensor. “— —” is displayed when no heat is required for mix zones. <b>Note:</b> This item is only available when a mix water temperature is selected.</p>
	<p><b>TANK</b> Current tank supply water temperature as measured by the tank sensor.</p>
	<p><b>TANK TARGET</b> The temperature the control is currently trying to maintain at the tank sensor. “— —” is displayed when no heat is required for tank zones.</p>
	<p><b>DOMESTIC HOT WATER</b> Current Domestic Hot Water tank temperature as measured by the optional DHW sensor. <b>Note:</b> This item is only available when a DHW sensor is installed.</p>
	<p><b>HEAT PUMP</b> Current heat pump return water temperature as measured by the HP Return sensor.</p>

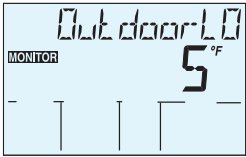
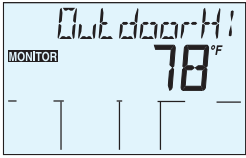
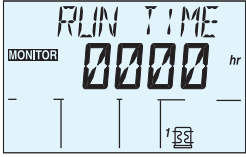
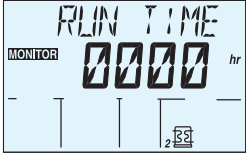
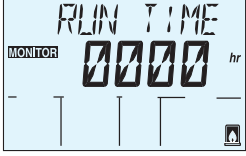
## Adjust Menu

The Adjust menu items are the programmable settings used to determine how to operate the system.

Item	Description
	<p><b>MODE</b> Select one of the following modes to operate the heat pump and backup.</p> <ul style="list-style-type: none"> <li>• AUTO - Automatic switchover between heating and cooling.</li> <li>• COOL - Heat pump only operates to satisfy cooling calls. A backup boiler satisfies DHW or Setpoint calls.</li> <li>• HEAT - Heat pump only operates to satisfy heating calls. A backup boiler satisfies any DHW, Setpoint, or Boil calls, and provides backup to Tank and Mix calls.</li> <li>• BKUP - The heat pump is disabled and the backup boiler satisfies any DHW, Setpoint, Tank, Mix or Boil calls.</li> <li>• OFF - Both the heat pump and backup are disabled.</li> </ul>
	<p><b>WWSD</b> Warm Weather Shut Down is the outdoor temperature at which the control will no longer turn on the heat pump or backup for space heating.</p> <ul style="list-style-type: none"> <li>• 40 to 100°F (4.5 to 38°C)</li> </ul>
	<p><b>UNITS</b> Selects units for temperature display.</p> <ul style="list-style-type: none"> <li>• °F or °C</li> </ul>

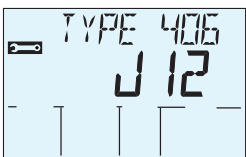

## Monitor Menu

The Monitor menu provides information about the systems operation and performance.

Item	Description
	<p><b>OUTDOOR LOW</b> Records the lowest outdoor temperature since the item was last reset.</p> <ul style="list-style-type: none"> <li>• Press and hold the Up and Down buttons while viewing to reset.</li> </ul>
	<p><b>OUTDOOR HIGH</b> Records the highest outdoor temperature since the item was last reset.</p> <ul style="list-style-type: none"> <li>• Press and hold the Up and Down buttons while viewing to reset.</li> </ul>
	<p><b>RUN TIME (HEAT PUMP STAGE 1)</b> The total 'on' time of the Y1 relay since the item was last reset.</p> <ul style="list-style-type: none"> <li>• Press and hold the Up and Down buttons while viewing to reset.</li> </ul>
	<p><b>RUN TIME (HEAT PUMP STAGE 2)</b> The total 'on' time of the Y2 relay since this item was last reset.</p> <ul style="list-style-type: none"> <li>• Press and hold the Up and Down buttons while viewing to reset.</li> </ul> <p><b>Note:</b> This item is only available when a second stage heat pump is available.</p>
	<p><b>RUN TIME (BOILER)</b> The total 'on' time of the backup relay since the item was last reset.</p> <ul style="list-style-type: none"> <li>• Press and hold the Up and Down buttons while viewing to reset.</li> </ul> <p><b>Note:</b> This item is only available when a backup boiler is available.</p>

## Toolbox Menu

The Toolbox menu is a location for system information and test functions.

Item	Description
	<p><b>TYPE AND SOFTWARE VERSION</b> Displays the type number of the product, followed by the current software version beneath.</p>
	<p><b>ACCESS LEVEL</b> Selects the access level of the control.</p> <p><b>Note:</b> When set to USER, all thermostats are locked and the number of thermostat settings available are reduced.</p>

## System In Away

The User Switch 479 allows for one-touch setback. This feature allows a user to lower the temperature of all thermostats on the network with the simple push of a button.

When the 'Away' button is selected, the House Control 406 will indicate that it is in the Away scene by saying 'System in Away' in the View menu.

