



Alternative
Energy

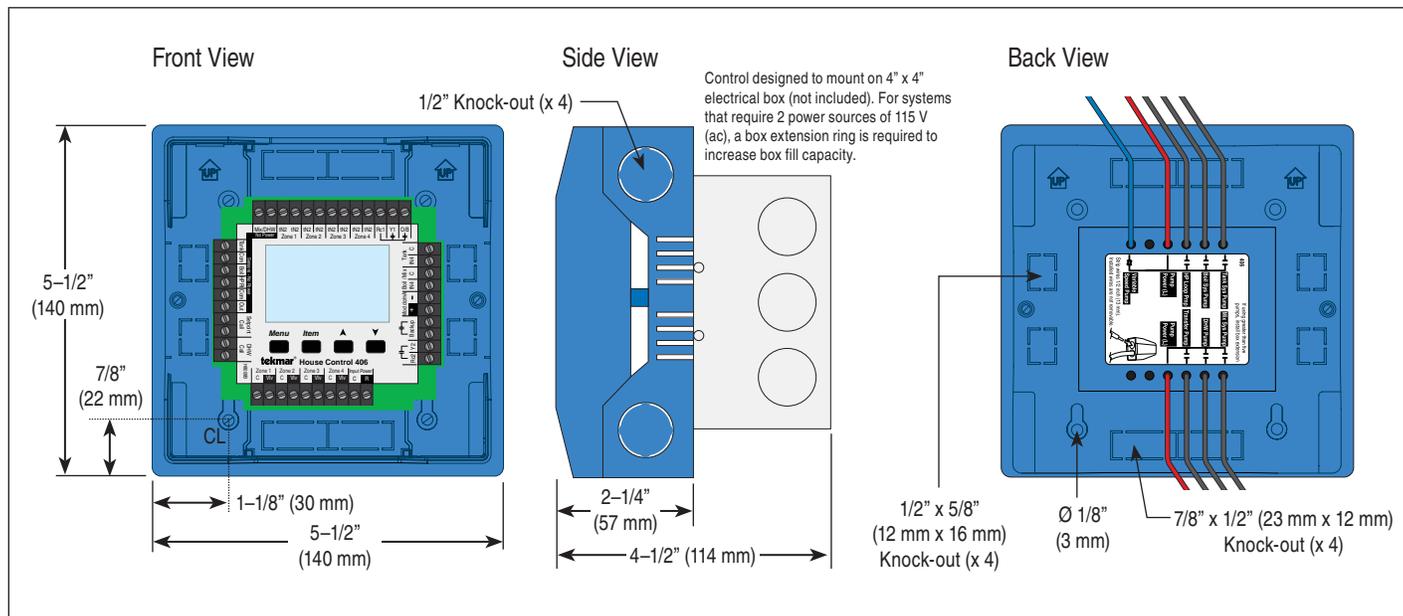
C 406

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Replaces: New

Job _____ Designer _____ Contact _____

The tekmarNet®2 House Control 406 is designed to operate the equipment in a 2-pipe, single tank, hydronic heating and cooling system. It operates two heat pump stages (water-to-water or air-to-water) with a backup heat source (boiler or electric resistance). The heat pump provides either hot or chilled water to a storage tank loop and optional mixed temperature loop. For radiant heating, the water temperature is calculated using outdoor temperature reset. For radiant cooling, the chilled water temperature is maintained at an adjustable setpoint, or is adjusted using dew-point reset with a humidity sensor. A backup boiler can provide an outdoor reset water temperature as well as domestic hot water and setpoint water temperatures. The 406 operates 4 on-board heating and cooling zones and is expandable up to 52 zones on the boiler, tank, and mix water temperatures.



Specifications

tN2 House Control 406 Heat Pump & Backup, Four Zone Valves	
Literature	D406, Q406
Control	Microprocessor control. This is not a safety (limit) control
Packaged weight	1.4 lb. (640 g)
Dimensions	5.5" H x 5.5" W x 2.25" D (140 x 140 x 57 mm)
Enclosure	NEMA 1 rated, blue PC+ABS plastic
Approvals	CSA C US, meets class B: ICES & FCC Part 15
Ambient conditions	Indoor use only, 32 to 104°F (0 to 40°C), RH 90% Noncondensing
Power supply	24 V (ac) ±10% 60 Hz, 100 VA max, Class 2
Control Load	2 VA
Zone, Y1 and O/B Relays	24 V (ac) 3.7 A combined
Y2, Backup Relays	24 V (ac) 5 A
Pump Relays	115 V (ac) 5 A 1/6 hp
Variable Power	115 V (ac) 2.4 A
Pump Power	115 V (ac) 12 A
Sensors	NTC thermistor, 10 kΩ @ 77°F (25°C ±0.2°C) β=3892
-Included	Outdoor Sensor 070 and 4 of Universal Sensors 082
Warranty	Limited 3 Year (See D406 for full warranty)

Energy Saving Features

- Outdoor Temperature Reset
- Indoor Temperature Feedback
- Warm Weather Shut Down
- Zone Synchronization
- Automatic differential for heat pump and boiler
- DHW Post Purge
- Intelligent heat/cool switchover
- System setback (with optional timer)
- One touch overrides (with optional User Switch)

Additional Features

- Expandable up to 52 zones
- Controls 2-stage heat pump
- Controls on/off or modulating boiler
- Electric resistance backup optional
- Variable speed mixing control
- DHW control with priority
- Equipment exercising
- Floor cooling capable
- Four 24 V (ac) powered zone valve outputs

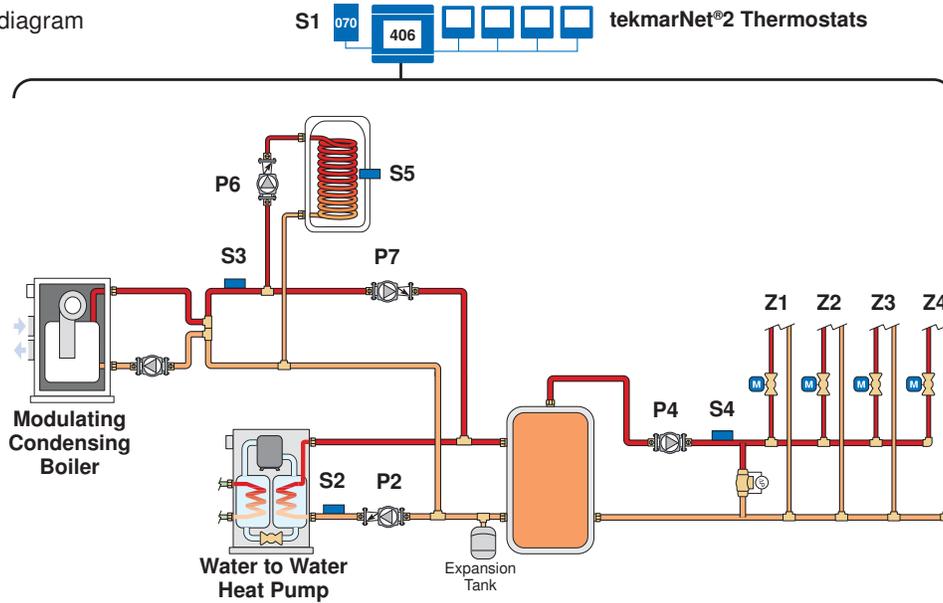
SPECIAL REQUIREMENTS

This control is designed to mount on a 4" x 4" electrical box, and must use tekmarNet® thermostats to communicate heat demands. For floor cooling or hydronic cooling with a fan coil, use tekmarNet®2 thermostats 527, 528, 529, 530 or tekmarNet®4 thermostats 537, 538, and 540 with a date code of **December 2011** or newer.

Sample Application Drawing

Below is a sample application drawing for this product. This application may include other tekmar products that are required for installation. More sample applications can be found at www.tekmarcontrols.com.

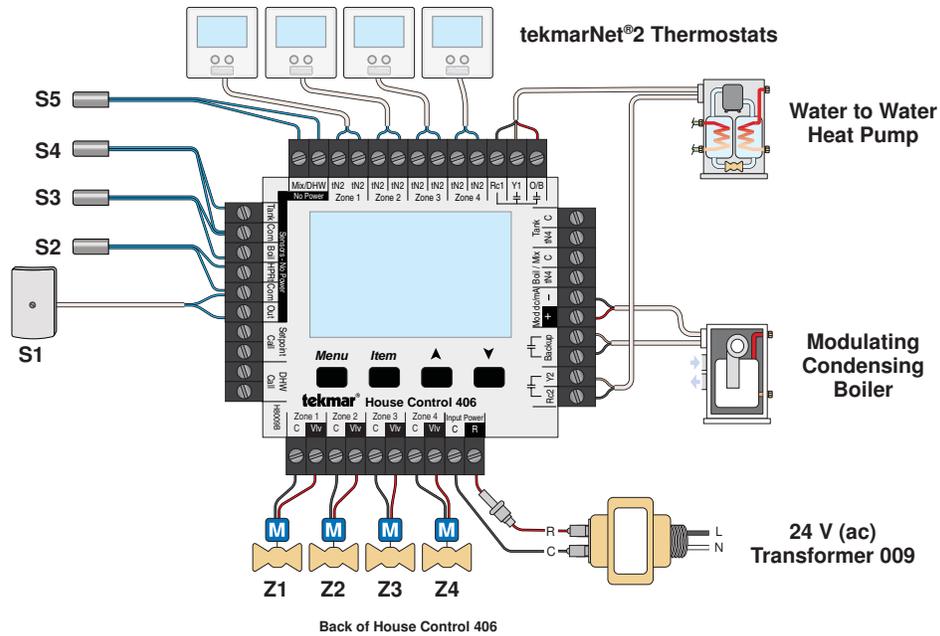
Sample Mechanical diagram



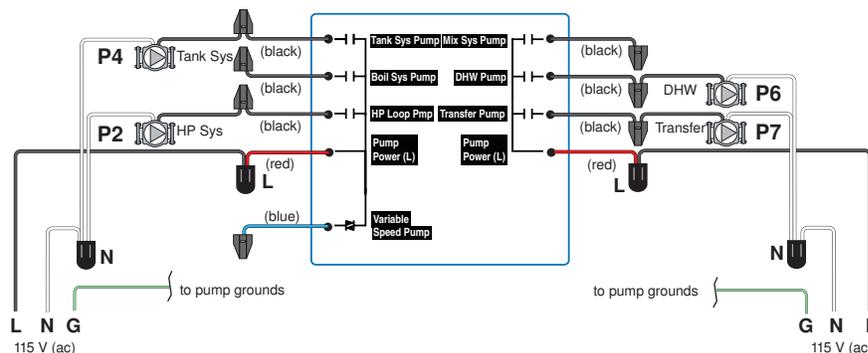
Sample Electrical diagram

Legend

- P2 = Heat Pump Loop Pump
- P4 = Tank System Pump
- P6 = DHW Pump
- P7 = Transfer Pump
- Z1 = Zone 1
- Z2 = Zone 2
- Z3 = Zone 3
- Z4 = Zone 4
- S1 = Outdoor Sensor
- S2 = Heat Pump Return Sensor
- S3 = Boiler Sensor
- S4 = Tank Sensor
- S5 = DHW Sensor



Back of House Control 406



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