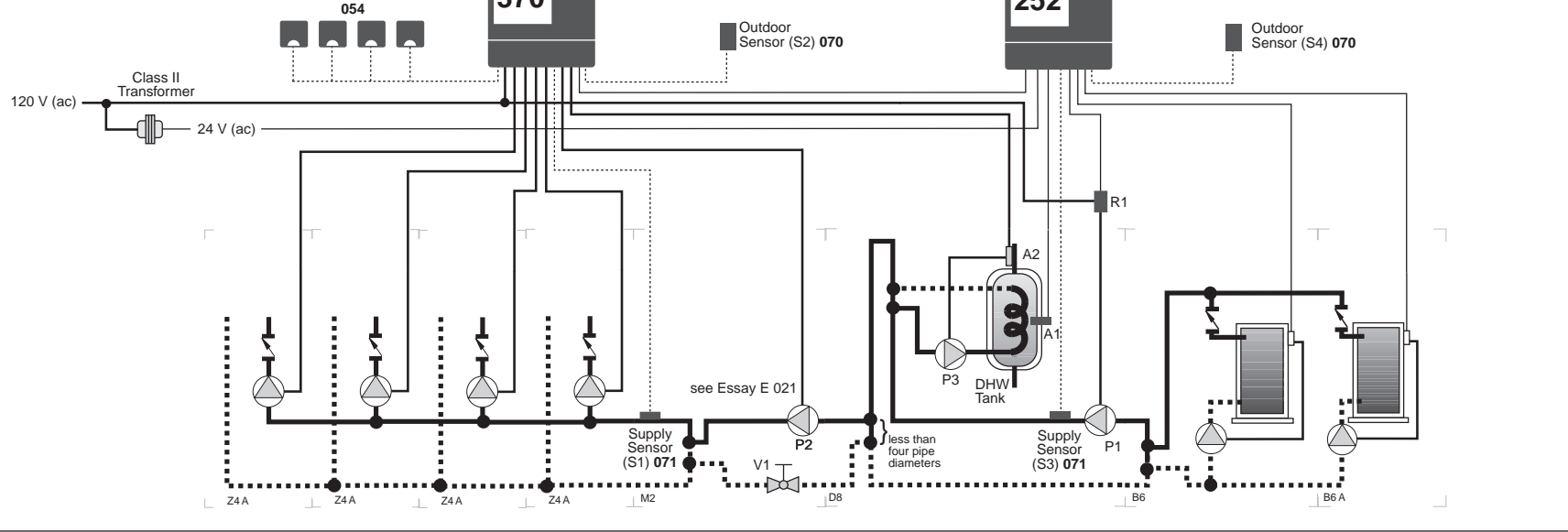
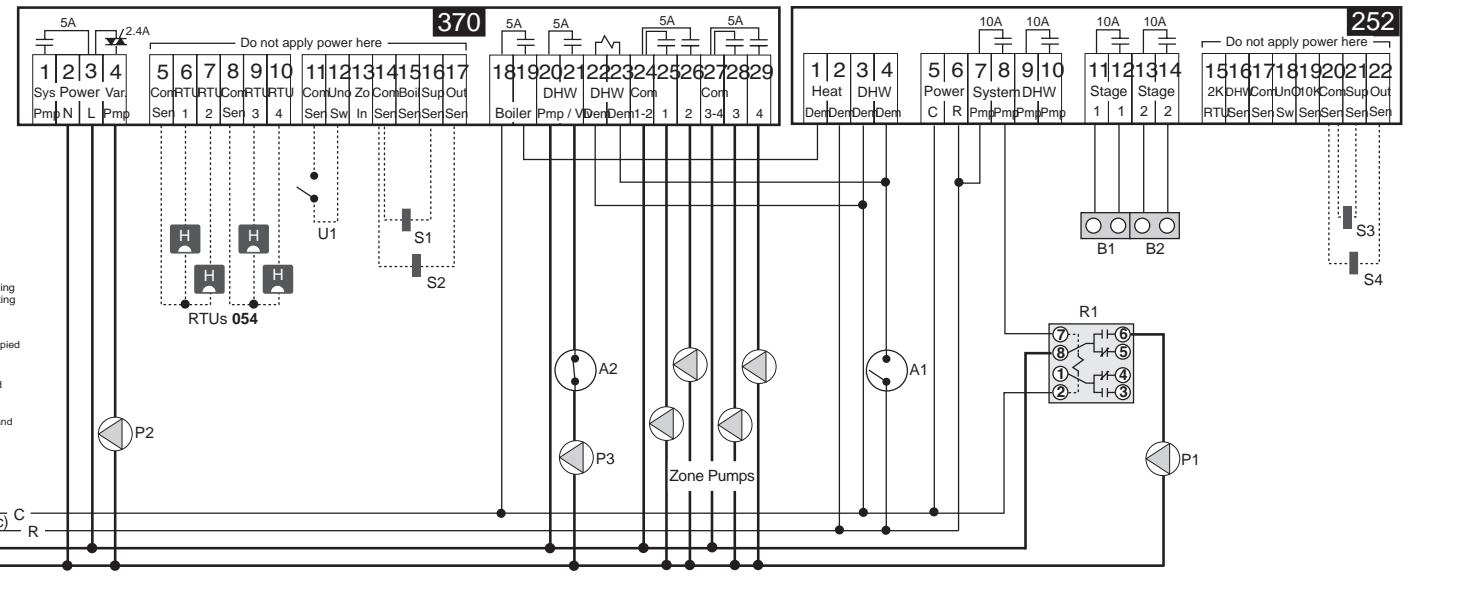


Mechanical

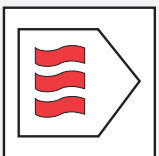


Electrical

- A1 = DHW Aquastat
 - A2 = DHW High Limit Aquastat
 - B1, B2 = Boilers
 - P1 = Primary Pump
 - P2 = Variable Speed Injection Pump
 - P3 = DHW Pump
 - R1 = Relay 003
 - S1, S3 = Supply Sensors 071
 - S2, S4 = Outdoor Sensor 070
 - U1 = tekmar Timer 031 (optional)
 - V1 = Balancing Valve or Globe Valve
- Thermal Motor: DHW during UnOcc, Optimum Start, DHW Priority, DHW Valve, Mixing Occ/UnOcc, Zone 1 Cooling, Zone 1 Heating
 Boiler: 1, 2, 3, 4, DHW Pump, Occ. only, Off
 Stage: 1, 2, Rotate, DHW during unoccupied, DHW priority, DHW valve, Auto, Perm. Heat Demand, Zone control, Off, Indoor sensor, External Heat Demand, DHW pump
- Legend:
 [] = Required
 [] = Optional
 [] = Not Used



Note: This is only a concept drawing. The designer must determine whether this application will work in his system and must ensure compliance with code requirements. Necessary auxiliary equipment, isolation relays (for loads greater than the specified tekmar internal relay ratings), and other safety and limit devices must be added.



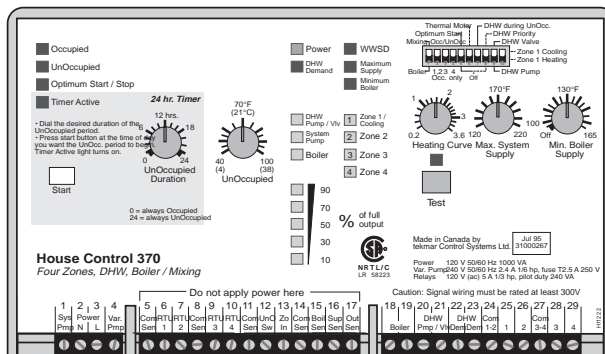
A 370-6
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Technical Data

House Control 370 Four Zones, DHW, Boiler / Mixing

- Literature — A 000, A 370's, E 021, D 370, D 001, D 054, D 055, D 070, D 074
- Control — Microprocessor PID control; This is **not a safety (limit) control**.
- Packaged weight — 3.5 lb. (1600 g), Enclosure A, PVC plastic
- Dimensions — 6-5/8" H x 7-9/16" W x 2-13/16" D (170 x 193 x 72 mm)
- Approvals — CSA NRTL / C, meets ICES & FCC regulations for EMI/RFI.
- Ambient conditions — Indoor use only, 32 to 122°F (0 to 50°C), < 90% RH non-condensing.
- Power supply — 120 V ±10% 50/60 Hz 1000 VA
- Variable Pump — 240 V 50/60 Hz 2.4 A 1/6 hp, fuse T2.5 A 250 V
- Relays — 120 V (ac) 5 A 1/3 hp, pilot duty 240 VA
- DHW Demand input — Off @ 0 to 5 V (ac), On @ 15 to 120 V 50/60 Hz 0.6 VA
- Sensors — NTC thermistor, 10 kΩ @ 77°F (25°C ±0.2°C) β=3892
- included: Outdoor Sensor 070 and 2 of Universal Sensor 071
- required: 10K RTU or 10K Sensor for each active zone (Order separately)
- Timer — 24 hour, 1 event / day, 3 minute backup
- UnOcc. Duration — 0 to 24 hours
- UnOccupied — 40 to 100°F (4 to 38°C)
- Heating Curve — 0.2 to 3.6

- Max. System Supply — 120 to 220°F (49 to 104°C)
- Min. Boiler Supply — Off, 100 to 165°F (Off, 38 to 74°C)



System Operation & Specifications

The House Control 370 controls the space temperature of four heating zones. A variable speed injection pump is controlled by the 370 to maintain the required system supply water temperature. The boilers are staged and rotated through the Two Stage Boiler Control 252. Both the 252 and the 370 are used to control the supply of heat to a DHW tank.

Piping and Heat Source Details The system is plumbed in a primary-secondary piping arrangement. Primary pump (P1) circulates heat from the boilers to the DHW tank and / or heating system. The variable speed injection pump (P2) injects heat from the primary loop to the system loop. A balancing valve or globe valve (V1) may be required for optimum control operation as described in Essay E 021. The boilers are plumbed with a primary secondary connection to the primary loop. This plumbing arrangement prevents water flow through the boilers when they are not operating. Either high mass or low mass boilers can be used with this application. The DHW pump (P3) transfers heat from the primary loop to the DHW tank.

Warm Weather Shut Down (WWSD) When the outdoor temperature rises above the highest RTU dial setting and the heating zones are satisfied, the 370 shuts down the heating system. The DHW system does, however, continue to operate.

Boiler Operation When the 252 receives a Heat demand from the 370, it turns on the primary pump (P1) and stages the boilers based on an outdoor reset strategy. The 252 has an adjustable minimum target supply water temperature to prevent flue gas condensation.

Mixing Operation The 370 uses an outdoor reset strategy together with indoor temperature feedback from the RTUs to adjust the system supply water temperature. When heat is required in the zones, the 370 varies the speed of the variable speed injection pump (P2) and supplies a Heat Demand to the 252.

Domestic Hot Water (DHW) When the DHW aquastat (A1) calls for heat, it gives a DHW demand to both the 370 and the 252. The 370 then turns on the DHW pump (P3) and the 252 turns on the primary pump (P1) and raises the boiler water temperature up to the DHW dial setting. If *DHW Priority* is chosen on the 370, the variable speed injection pump (P2) is turned off. Once the DHW demand is removed, the 252 performs a DHW Post Purge.

Zoning Operation The 370 varies the on time of each zone pump based on a 15 minute cycle. The control staggers the operating times of the zones in order to achieve a steady load on the boiler and prevent boiler short cycling.

UnOccupied (Night Setback) Selected zones can be switched into an UnOccupied (Night Setback) mode through either the built-in 24 hr. Timer or by closing an external UnOccupied switch (U1). When the 370 is switched into UnOccupied mode, the UnOccupied dial is used to set the desired indoor temperature. An Optimum Start / Stop feature can be used to ensure the zones are returned to their Occupied temperatures as the UnOccupied period ends.

Other features Additional control features are listed in the table in the Heating Controls section of the Product Catalog I 000.

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