Troubleshooting Guide

400 House Control

Sensor Testing

- Start by going through the View menu and ask the question, am I getting accurate numbers back
- If you're in the middle of a New England blizzard and the outdoor sensor says it's 90°F outside, is this reasonable?
- If you see bad numbers it's time to grab an ohm meter and start measuring. Refer to the sensor manual or 'Sensor Troubleshooting Guide' and follow testing instructions

System Pump Not Running

- Is the 400 showing a call on the boil bus?
- Is the unit in WWSD? What is the WWSD set to?
- Are we receiving a DHW call and the DHW mode gives DHW priority? Check the setting for DHW mode and check the manual for detailed explanation of the various modes
- If the system pump icon is showing, are we getting 120VAC at the pump? If not, check the contacts to see if we have 120VAC at the output on the back of the 400

Boiler Not Running

- Is there a call or is the 400 in WWSD?
- In the View menu, what is the Boiler Target vs Boiler Supply? Why fire the boiler if its at target?
- What is the boiler differential? The 400 fires the boiler until it reaches the boiler target, plus half of the differential. Then it waits until it reaches half the differential below the target before firing the boiler again. Is the boiler in the cool down cycle?
- If the boiler symbol is on the screen, is the boiler type configured properly?
- Check the boiler outputs with a multimeter to see if the 400 is sending correct signals to the boiler
- Set Boil Type to signal you are sending the boiler. Some boilers will self modulate when they receive a heat call

No Domestic Hot Water

- Is DHW mode turned off? Note the DHW does not follow WWSD
- Is the 400 showing a DHW call?
- If using an aquastat are the contacts for DHW Call closing?
- If a sensor is wired, is the DHW sensor returning an accurate number?
- Is DHW pump wired up and is there voltage at the pump output?

⚠ WARNING

As with any electrical product, care should be taken to guard against potential risks, including electric shock or personal injury.

Zone Valves Not Opening

- Is there a call for that zone?
- Is there 24VAC between C & Vlv for the zone
- Is there a DHW call and the DHW mode has given it priority over zones?

Thermostats Calling, Valves Not Opening

- With all the thermostats disconnected, start by connecting the Zone 1 thermostat
- Turn up the Zone 1 thermostat until it says 'Heat On'
- Look for 24VAC at the 400 zone valve outputs
- If it has power but isn't opening, you may have a valve failure or wiring short. Make note, remove wires and repeat for zone 2, 3 etc.
- When you know which zone(s) cause the issue check the field wiring and valve for shorts or mechanical failures

Multiple Valves on a Single Zone Output

- Connect one at a time to the output to see which valve is causing the issue
- If the individual valves are good the combined load may exceed the 400's max zone output (89VA) or external transformer's capacity
- If the load exceeds the 400's max rating, use the 400's zone output to power an external relay rated for the load

Notes

- To see all the temperatures and settings you will have to be in the Installer access level. This is set in the Toolbox menu
- Select the Boil Type setting based on the wiring to the boiler. Even though the boiler may be a modulating boiler, if you are only enabling the boiler with the dry 'Stage 1' contacts, then set the Boil Type to 1STG. Only set Boil Type to a modulating signal if wiring the 'Mod dc/mA' terminals to the boiler
- The 400 requires tekmarNet thermostats to recognize a space heating call. If remote access is desired please add either a 482 or 486 Gateway. The 482 is used to let a system like Crestron, Control4 etc. access the system while the 486 will let the system be accessed by the tekmarNet app/web page

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Sensor Resistance vs Temperature

Call customer service if you need assistance with technical details.

TEMPERATURE		RESISTANCE	TEMPERATURE		RESISTANCE	TEMPERATURE		RESISTANCE	TEMPERATURE		RESISTANCE
°F	°C	Ω	°F	°C	Ω	°F	°C	Ω	°F	°C	Ω
-50	-46	490,813	20	-7	46,218	90	32	7,334	160	71	1,689
-45	-43	405,710	25	-4	39,913	95	35	6,532	165	74	1,538
-40	-40	336,606	30	-1	34,558	100	38	5,828	170	77	1,403
-35	-37	280,279	35	2	29,996	105	41	5,210	175	79	1,281
-30	-34	234,196	40	4	26,099	110	43	4,665	180	82	1,172
-25	-32	196,358	45	7	22,763	115	46	4,184	185	85	1,073
-20	-29	165,180	50	10	19,900	120	49	3,760	190	88	983
-15	-26	139,403	55	13	17,436	125	52	3,383	195	91	903
-10	-23	118,018	60	16	15,311	130	54	3,050	200	93	829
-5	-21	100,221	65	18	13,474	135	57	2,754	205	96	763
0	-18	85,362	70	21	11,883	140	60	2,490	210	99	703
5	-15	72,918	75	24	10,501	145	63	2,255	215	102	648
10	-12	62,465	80	27	9,299	150	66	2,045	220	104	598
15	-9	53,658	85	29	8,250	155	68	1,857	225	107	553