Troubleshooting Guide

403 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

Boiler Not Running

- Is there a call or is the 403 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 403 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 403 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 403 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?

Zone Pumps Not Running

- Is there a call for that zone?

- Is there 120VAC at the pump output

- Is there a DHW call and the DHW mode has given it priority over zones?

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

No Mixing Output

- Is the 403 receiving a mix call?

- Is the 403 in WWSD?

- Is the mixing loop already at the mixing target?

- The 403 can control either a floating action valve or variable speed pump. Is the mixing configured properly and connected to correct outputs?

- Have you checked with your multimeter that the outputs are sending the proper signals?

Variable Speed Mixing

- The 403 operates a standard wet rotor non-ECM pump as a variable speed pump. It does this by controlling the voltage's sine wave that goes out to the pump. It is normal to measure the full 120Vac while operating below 100% mixing output, even at 0% output

Floating Action Mixing

- A floating action valve will open and close in response to the 403 to keep the temperature in the mixing loop at target

- Floating action valves receive power at either the CW or CCW input to adjust the temperature in the mix loop

- If the temperature in the mix loop goes up when it should go down try reversing the open and close contacts

Analog Mixing

- If the 403 is configured for a 1-stage or 2-stage boiler enable, the mod output can be configured to send out a 0-10V or 4-20mA signal to a mixing device

- Note the output may not power the device. Most mixing devices of this type require a separate source of power. The 402 sends out a control signal so the mixing device knows how to respond

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

- There are 2 temperature buses. Zones who's primary heat requires mixing are wired to the Mix Exp. terminals. Zones who's primary heat are high temp are wired to the Boil Exp. terminals. The 403's on-board zones are mix zones

- The 403 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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Change to: 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

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