



G-TRAC2 control board.

Operation guide.



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G-TRAC2 controller.

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Introduction.

- Part of the TRAC control family
- Used with DG and DJX200 / DJX300 units (1.8MBH and higher).
- Independent controller heating and ventilation controller.
- Can be used with C-TRAC3 cooling controller.



Introduction.

- Operating temperature:
-40 to 105°F (-40 to 40.6°C)
- Discharge setpoint:
50 to 95°F (10 to 35°C)
- Power supply:
24 VAC, 20va @ 0.9 amps
- Fuse Rating: 2 GDC slow-blow



Function.

Three main functions.

1. Supply blower and inlet damper control.
 2. Burner management.
 3. Temperature control.
- Stand alone.
 - Optional discharge temperature reset functions.
 - Controlled by C-TRAC3
 - P.I. control.



What is P.I. control?

P.I. control.

- P.I. stands for proportional and Integral control.
- What does that mean and how does it work?



What is P.I. control?

P.I. control.

- A Proportional-Integral (P.I.) controller in a heating system continuously adjusts the heating output based on both the current temperature error (how far you are from the setpoint) and the accumulated error over time. This prevents the system from oscillating while eliminating the "droop" (steady-state offset) common in basic proportional systems.



What is P.I. control?

P.I. control.

- P - Proportional: Acts as the "immediate reaction." The farther the current temperature is from the setpoint, the harder the unit works. As the temperature nears the setpoint, it scales back the signal to prevent overshooting.



What is P.I. control?

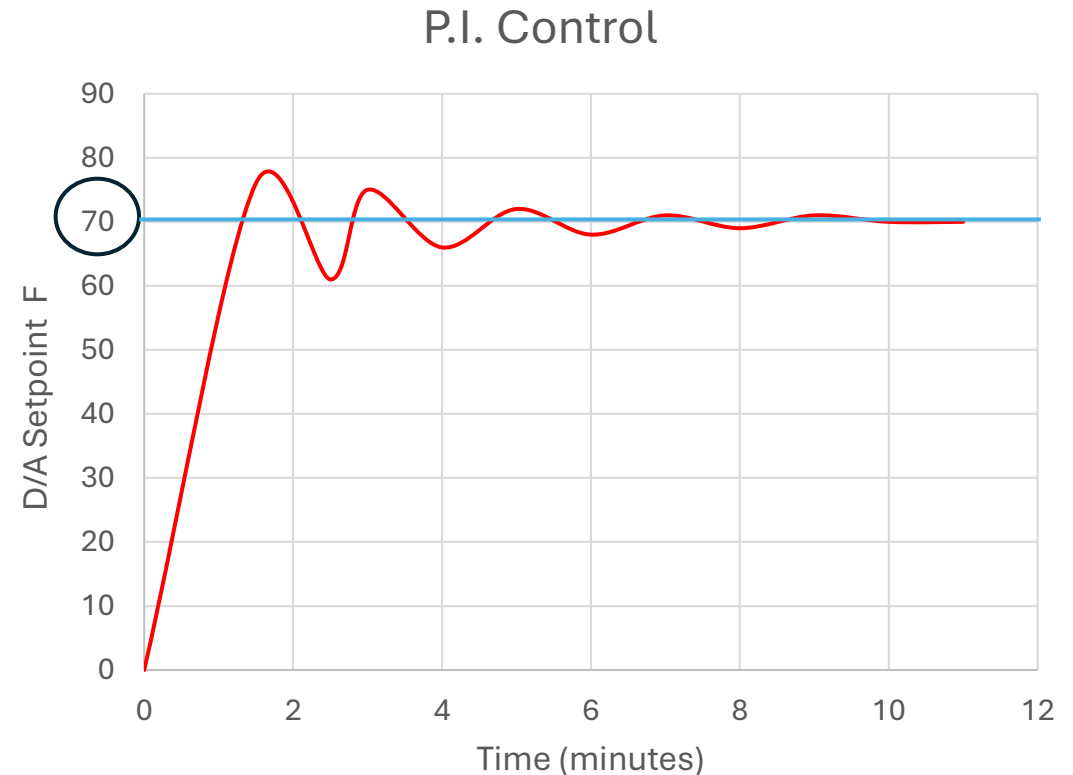
P.I. control.

- I - Integral: Acts as the "long-term memory." If the P-controller leaves the system stuck slightly below the setpoint temperature, the I-controller slowly accumulates that minor, lingering error over time. It continuously boosts the output until the temperature perfectly aligns with the setpoint.



What is P.I. control?

- On initial startup, the G-TRAC2 brings the discharge temperature quickly to within 10°F of the calculated set point.
- Small output corrections to the gas valve are gradually made until the discharge air temperature is within 1.5°F from the setpoint.
- During cycling between low fire / off, there will be some temperature swings (less for high efficiency burner).



20:1 turndown ratio.

Turndown ratio.

- The G-TRAC2 control board has a turndown ratio of 20:1.
- What does that mean?



20:1 turndown ratio.

Turndown ratio.

- A 20:1 turndown ratio means a heating appliance can reduce its maximum heat output to 1/20 (or roughly 5%) of its full capacity while still operating efficiently. For example, a 1,800,000 BTU/h DG can modulate its output down to 90,000 BTU/h when less heat is required.



20:1 turndown ratio benefits.

Benefits.

- **Prevents Short-Cycling:** Instead of constantly turning completely on and off (short-cycling) during mild weather, the appliance runs continuously at a lower firing rate.
- **Energy Efficiency:** Long, continuous burner operation reduces the energy lost during the appliance's pre-purge and post-purge ventilation cycles.
- **Less Wear and Tear:** Fewer mechanical start-ups put less stress on components, which can extend the lifespan of the equipment.
- **Consistent Temperature:** Because the heater is always lightly running, you experience more gradual, steady indoor temperature control rather than hot/cold swings.



How is the 20:1 turndown ratio achieved?

Turndown ratio.

- The G-TRAC2 eliminates the use of mechanical linkages between the combustion air and gas actuators. By using individual direct drive floating point air and gas actuators, along with a constant combustion fan motor; the G-TRAC2 can modulate both actuators to satisfy the discharge air temperature requirements.



How is the 20:1 turndown ratio achieved?

Turndown ratio.

- The gas valves opening curves are programmed into the G-TRAC2's logic. All the air and gas control is done electronically to simplify burner set up and eliminate the need to adjust troublesome mechanical air/fuel linkages.



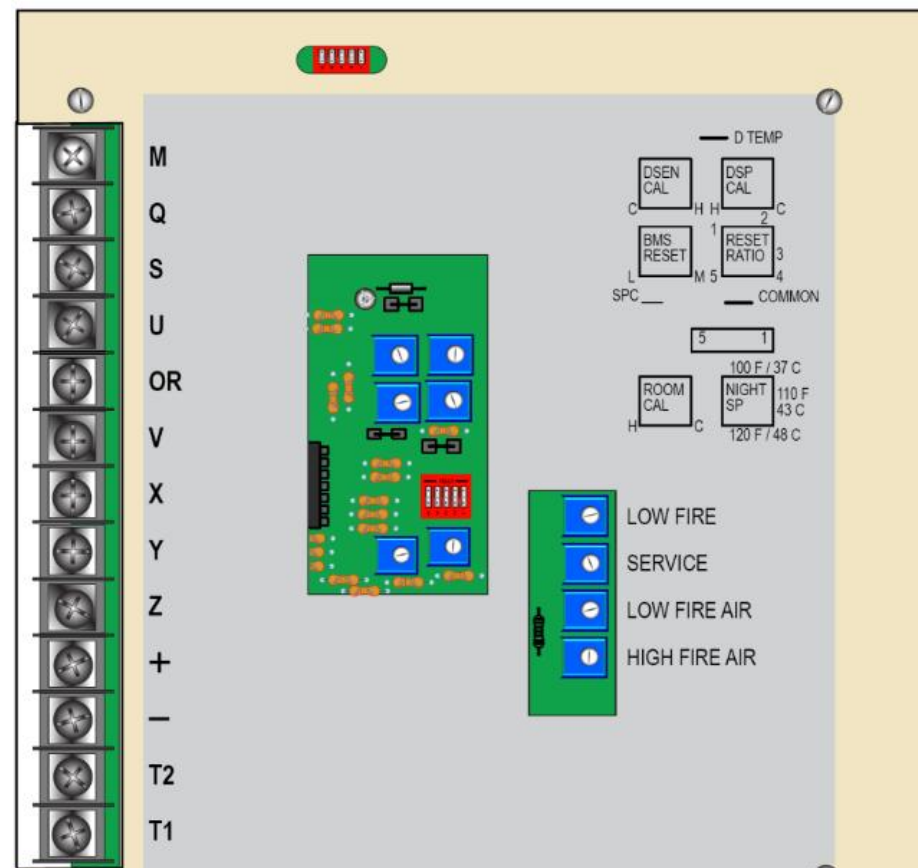
Navigating the G-TRAC2 control board.



Terminal descriptions.

Top terminals.

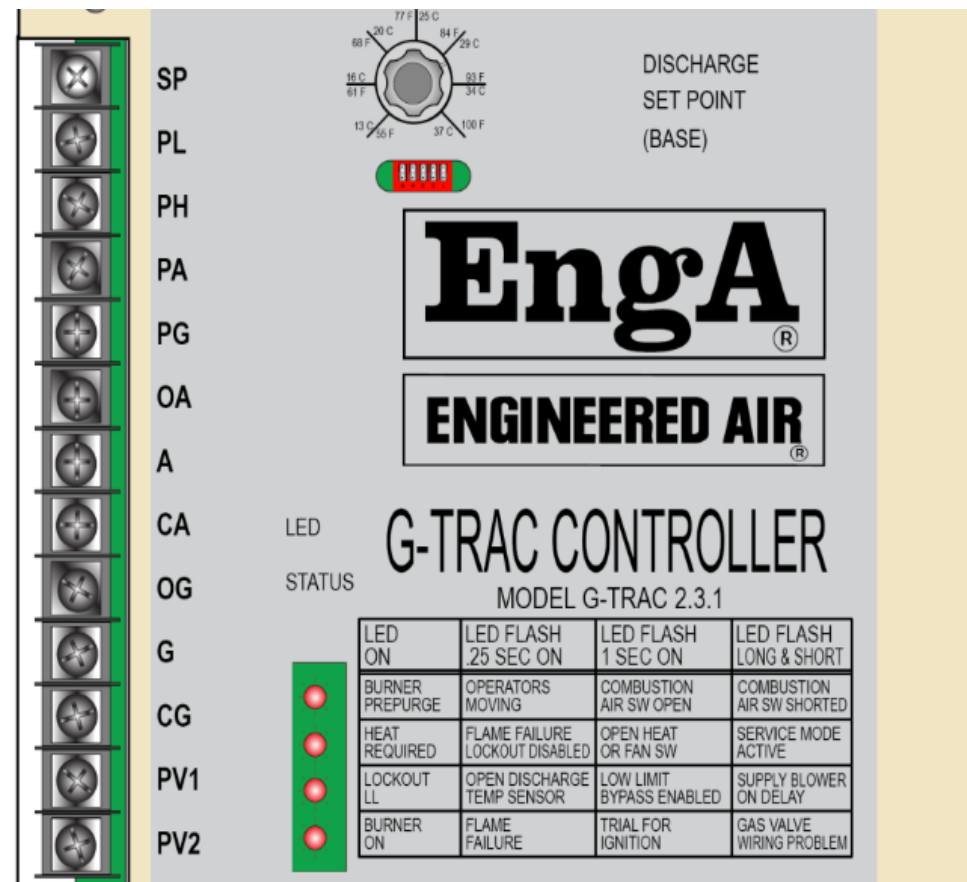
Terminal.	Description.
Q and U M,S,U.	Discharge sensor. Optional remote setpoint.
OR	Stepped discharge temperature override.
V,X,Y,Z	Room or ambient sensor setpoint.
+/-	0-10vdc or 4-20ma input. 4-20ma requires 500ohm resistor across +/-
T2, T1	Power supply 24vac, 20va.



Terminal descriptions.

Middle terminals.

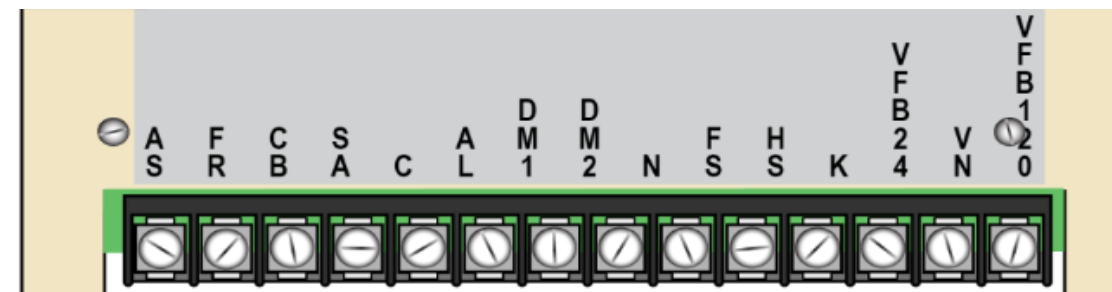
Terminal	Description
SP-S	Face setpoint.
PL	VDC Ground.
PH	VDC output.
PA	Air position feedback pot in.
PG	Gas position feedback pot in.
OA,A,CA	Combustion air damper operator, 24vac.
OG,G,CG	Gas valve operator, 24vac.
PV1,PV2	Pilot gas valve.



Terminal descriptions.

Bottom terminals.

Terminal	Description
AS	Combustion air switch.
FR	Flame relay.
CB	Combustion blower relay.
SA	S/A fan contactor.
C	Common input.
AL	Alarm contact, lockout condition.
DM1,DM2	Damper motor.
N	Neutral.

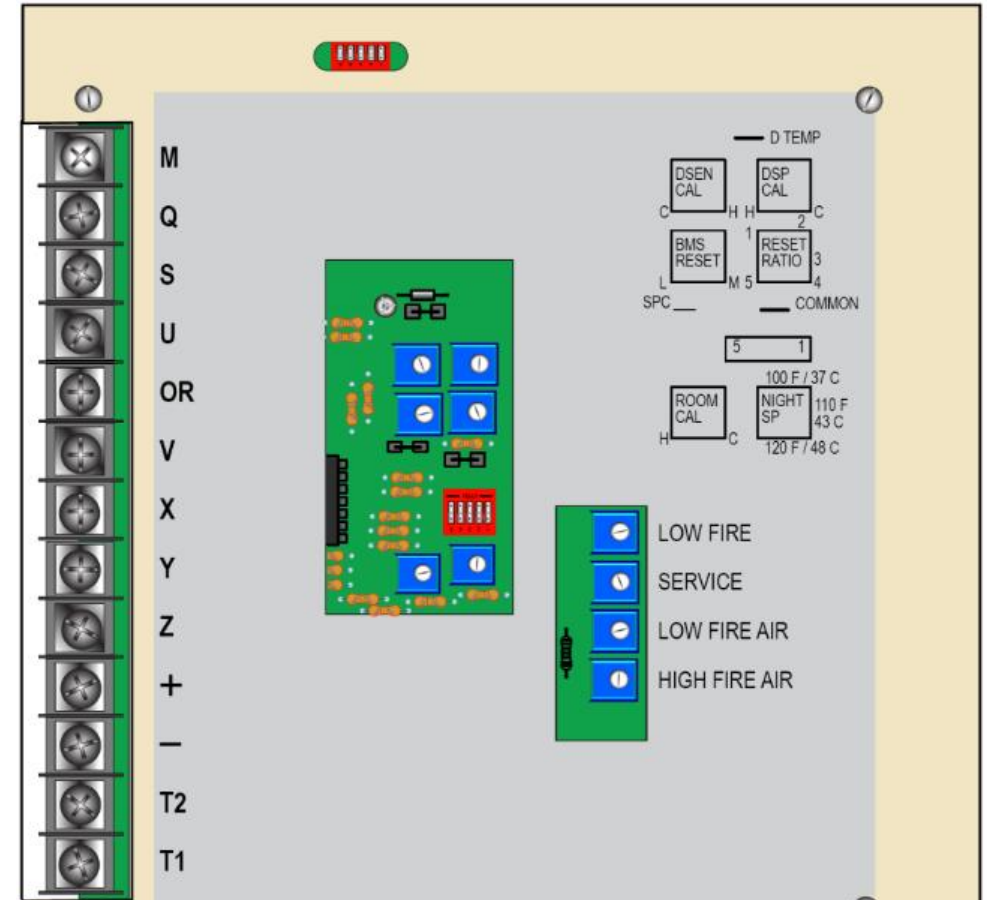


Terminal	Description
FS	Fans switch.
HS	Heat switch.
K	Night mode.
VFB24	24 vac gas valve feedback.
VN	Gas valve neutral.
VFB120	120 vac gas valve feedback.



Terminal operation.

Terminals M,S,U.
If using TE6100-960 as a remote
setpoint.



Terminal operation.

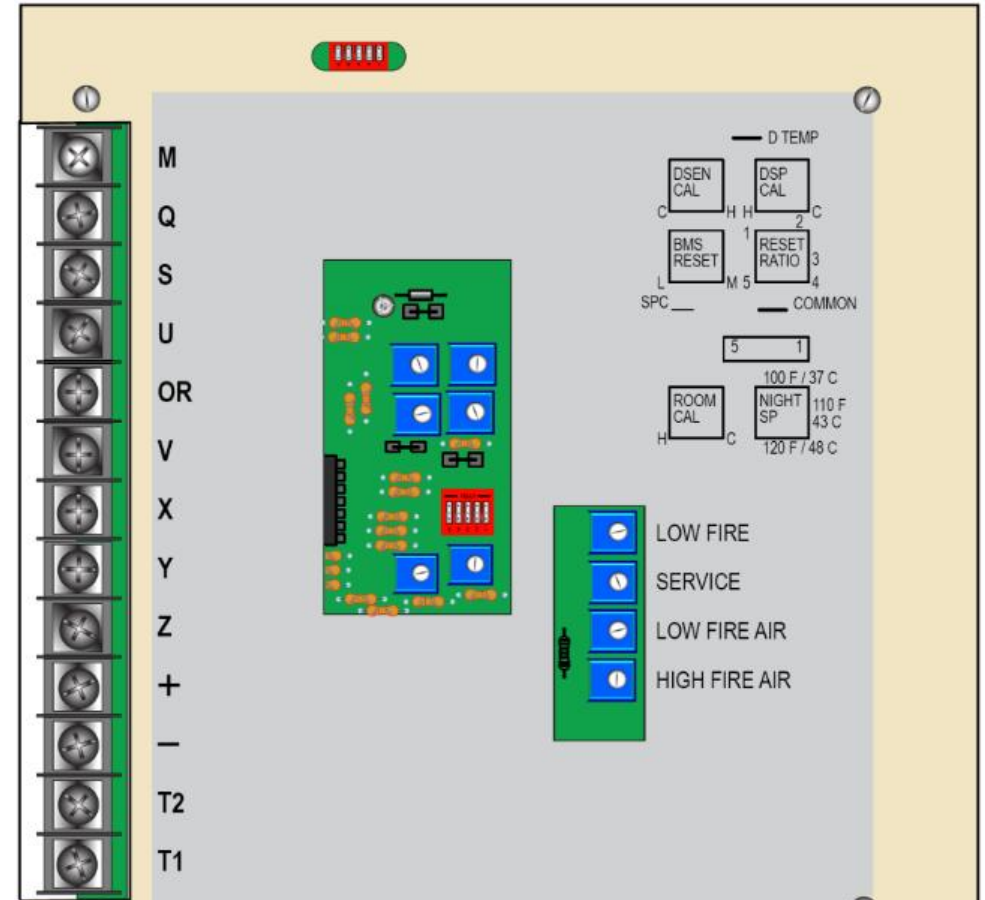
Terminals Q & U.

Discharge air temperature sensor.

Two types of sensors can be used.

Johnson TE6000 (not used anymore).

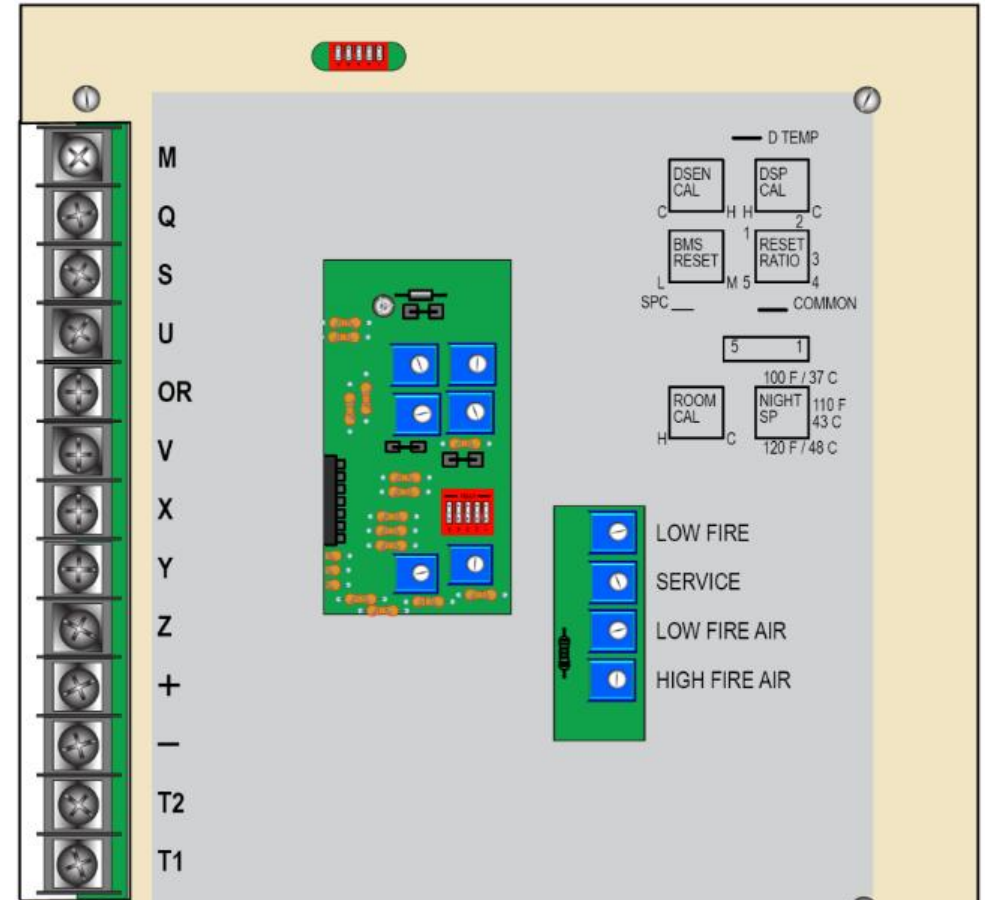
Engineered Air TE6000-EA3.



Terminal operation.

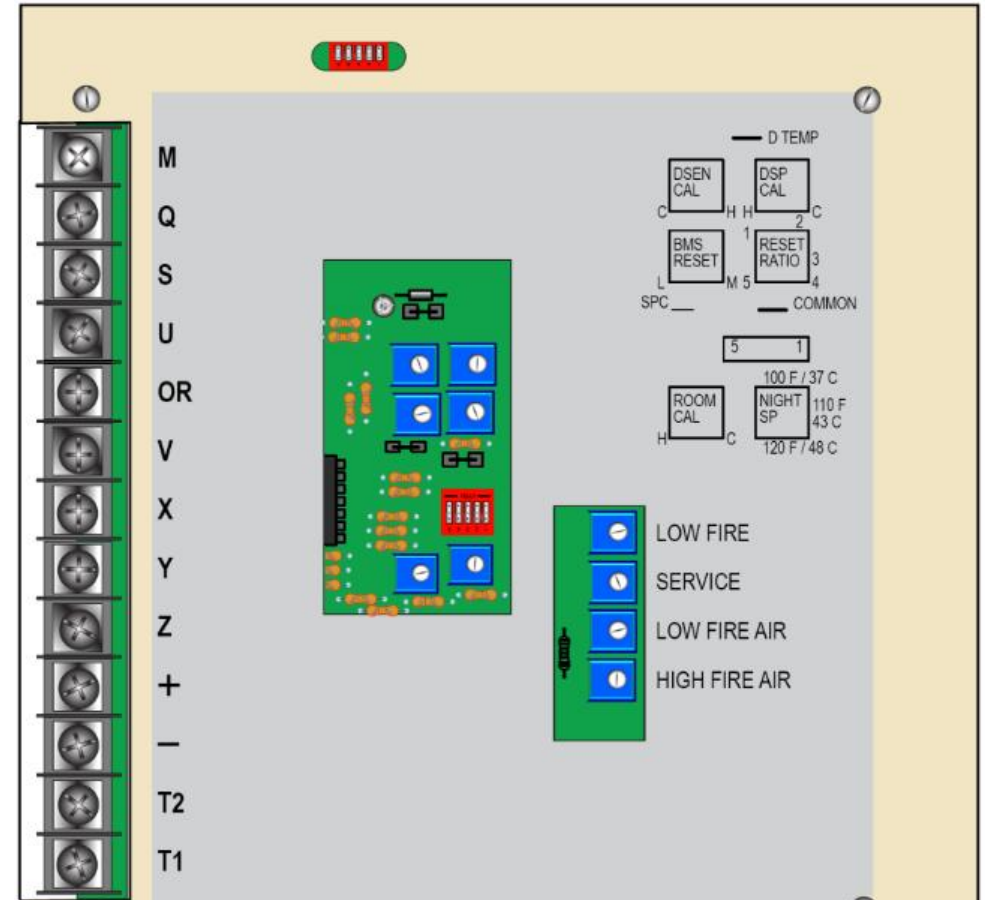
Terminals S & SP.

To activate the set point dial on G-TRAC2, place a jumper across S and SP. (Terminal SP located on lower terminal strip)



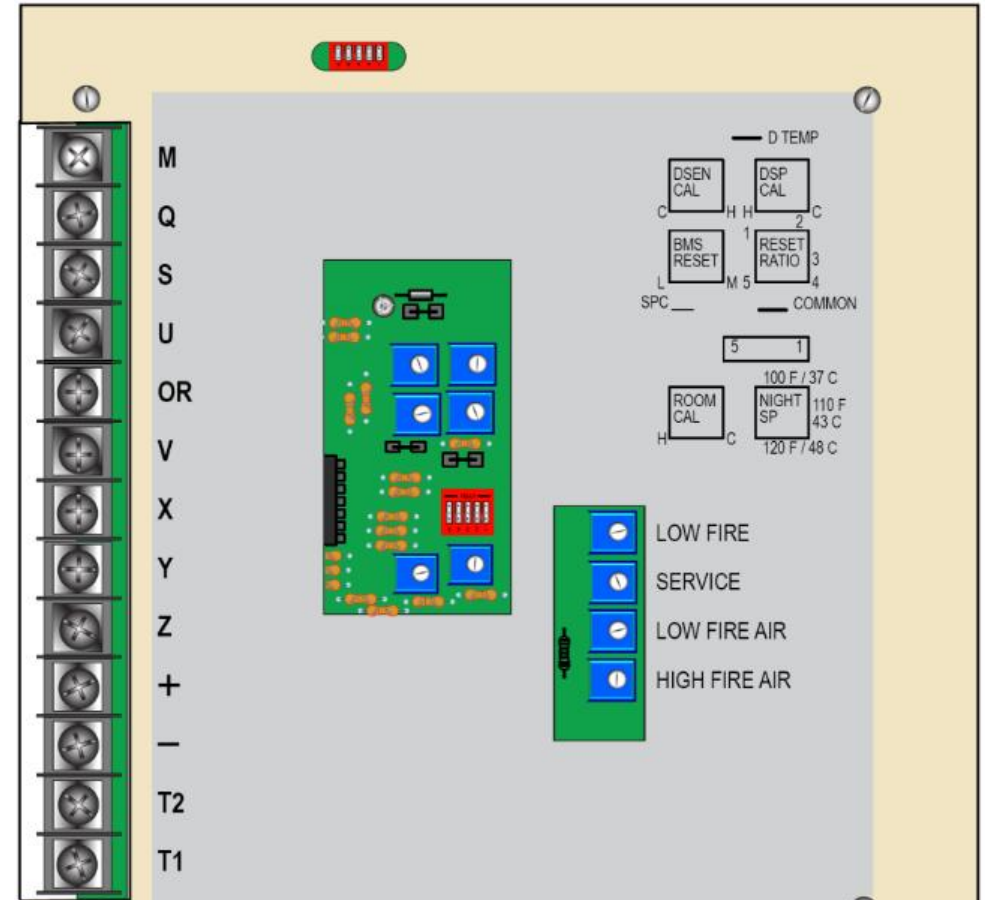
Terminal operation.

Terminals OR.
Stepped discharge temperature
override.



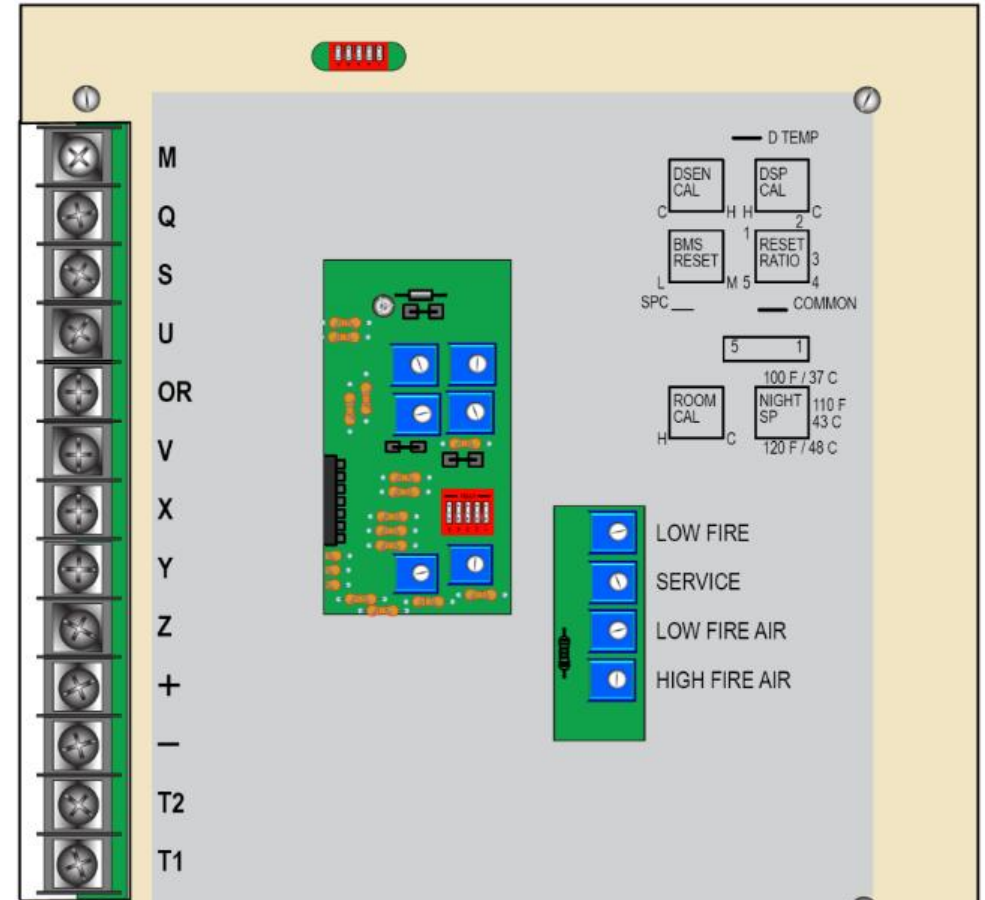
Terminal operation.

Terminals V,X,Y,Z.
Modulating(resistive) room/return
air thermostat inputs.
Ambient sensor reset.



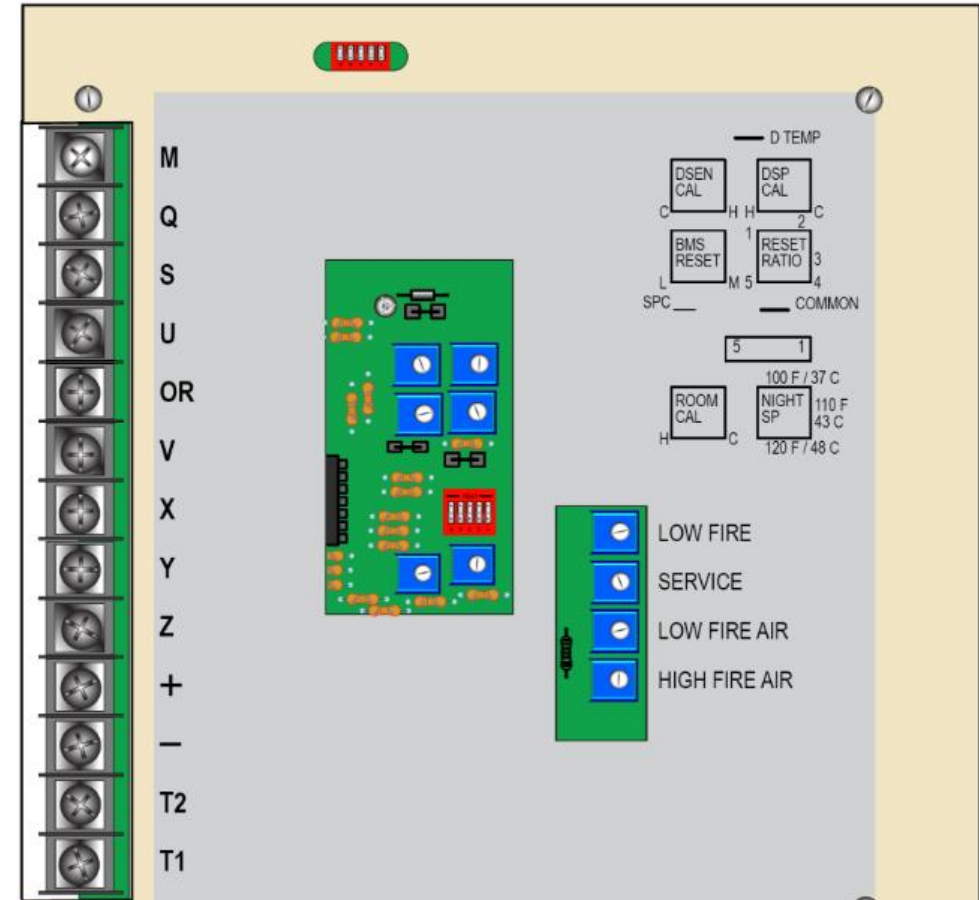
Terminal operation.

0-10vdc or 4-20ma input.
4-20ma requires 500ohm resistor
across +/-



Terminal operation.

Terminals T1 and T2.
Board power supply.
T2, (NEUTRAL) 24vac isolated.
T1, (HOT) 24vac isolated.



Terminal operation.

Terminals S & SP.

To activate the set point dial on G-TRAC2, place a jumper across S and SP. (Terminal S located on upper terminal strip)



DISCHARGE SET POINT (BASE)

EngA[®]

ENGINEERED AIR[®]

G-TRAC CONTROLLER
MODEL G-TRAC 2.3.1

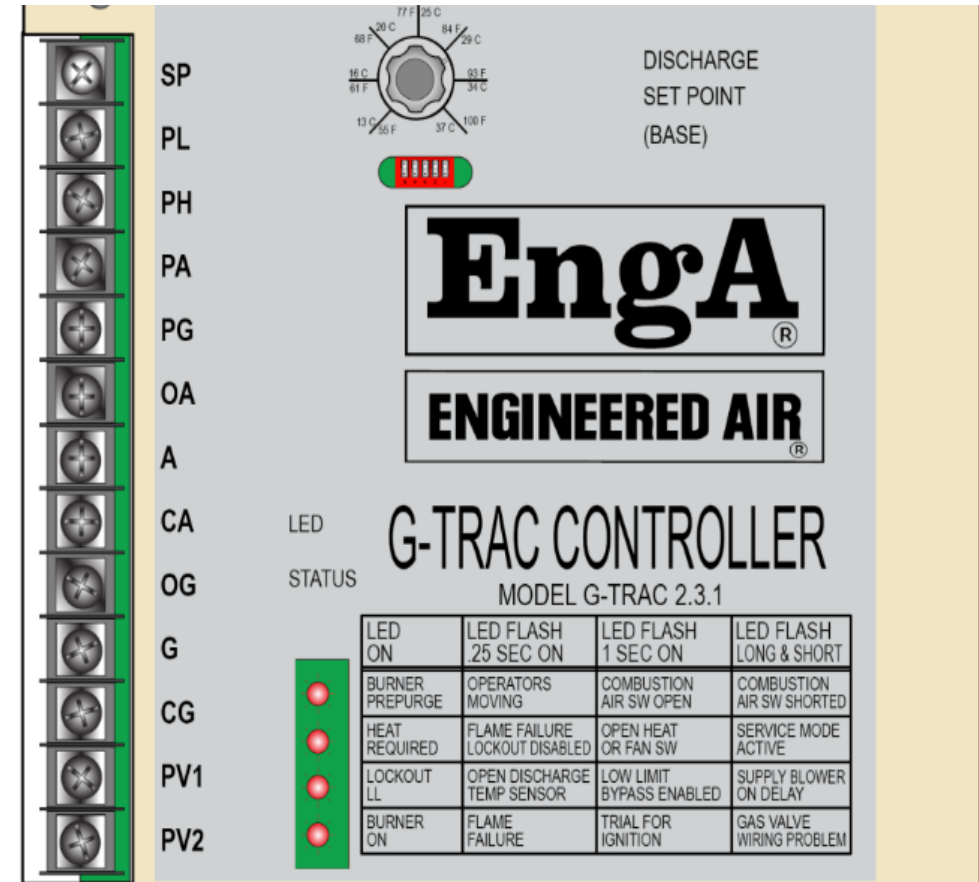
LED ON	LED FLASH 25 SEC ON	LED FLASH 1 SEC ON	LED FLASH LONG & SHORT
BURNER PREPURGE	OPERATORS MOVING	COMBUSTION AIR SW OPEN	COMBUSTION AIR SW SHORTED
HEAT REQUIRED	FLAME FAILURE LOCKOUT DISABLED	OPEN HEAT OR FAN SW	SERVICE MODE ACTIVE
LOCKOUT LL	OPEN DISCHARGE TEMP SENSOR	LOW LIMIT BYPASS ENABLED	SUPPLY BLOWER ON DELAY
BURNER ON	FLAME FAILURE	TRIAL FOR IGNITION	GAS VALVE WIRING PROBLEM



Terminal operation.

Terminal PL.
vdc Ground.

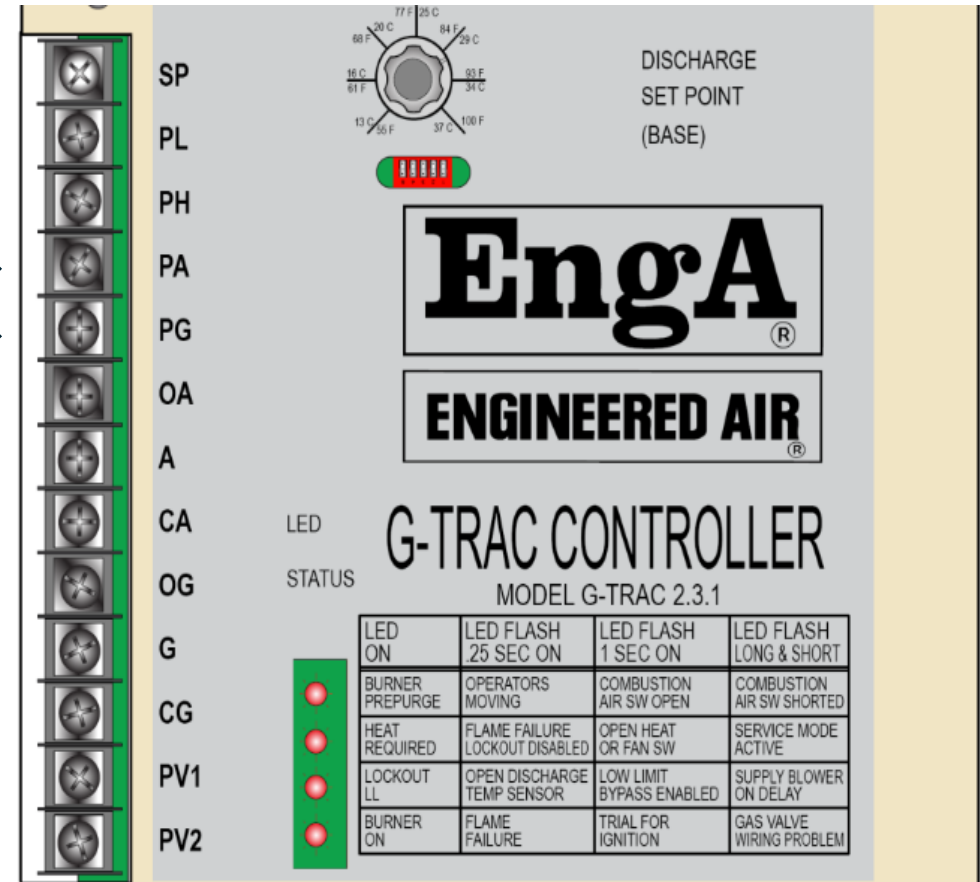
Terminal PH.
vdc Output.



Terminal operation.

Terminal PA.
vdc Feedback from air actuator.

Terminal PG.
vdc Feedback from gas actuator.



Terminal operation.

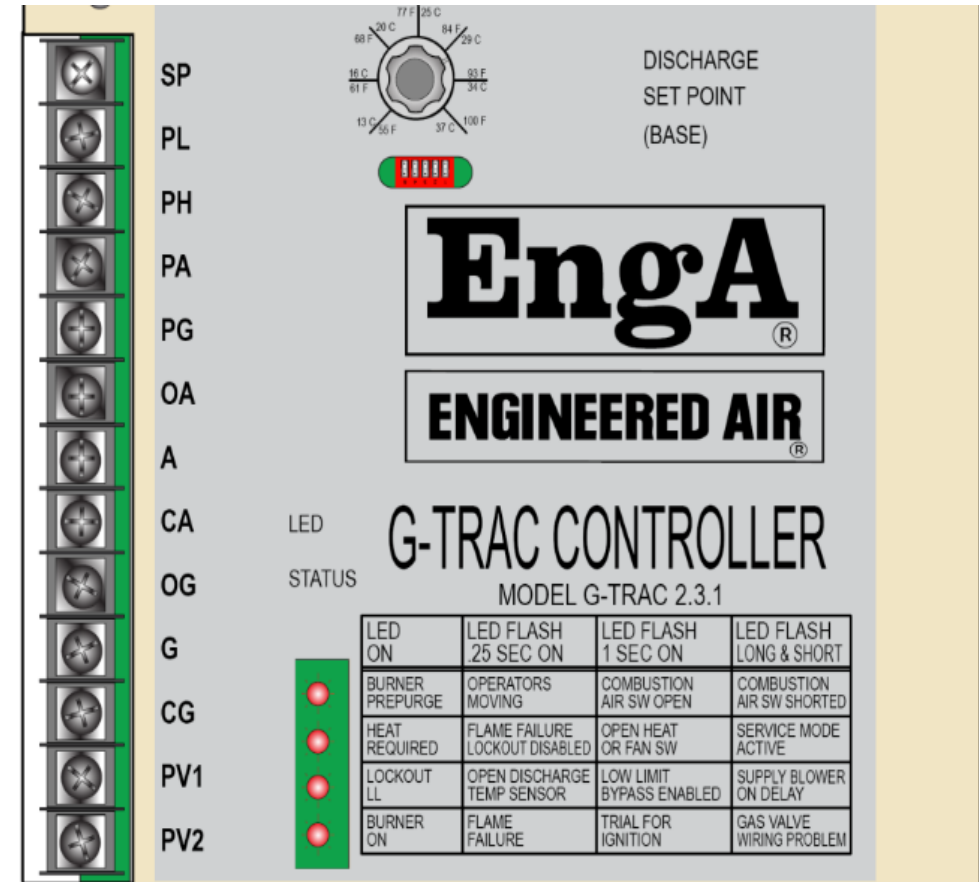
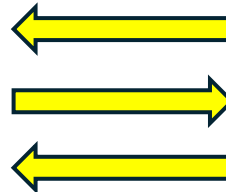
Terminal OA.

24vac output to open air actuator

Terminal A. 24vac input

Terminal CA.

24vac output to close air actuator

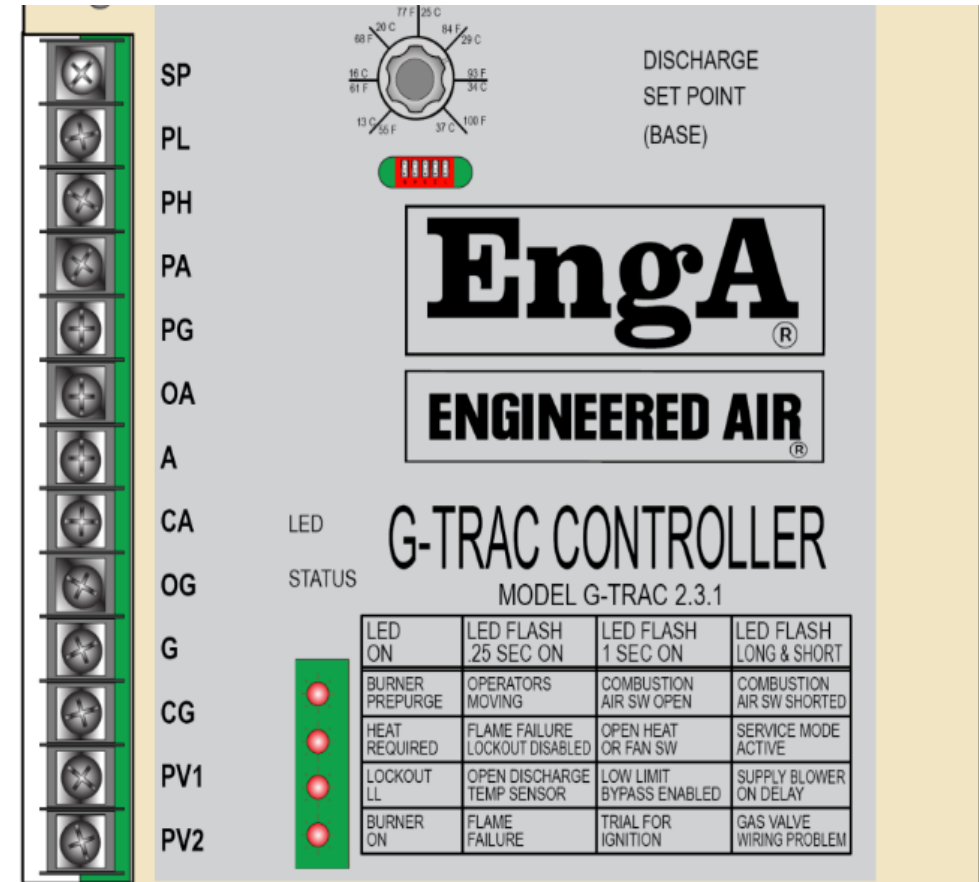
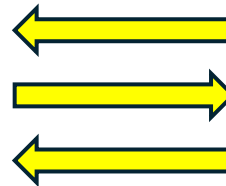


Terminal operation.

Terminal OG.
24vac output to close gas actuator

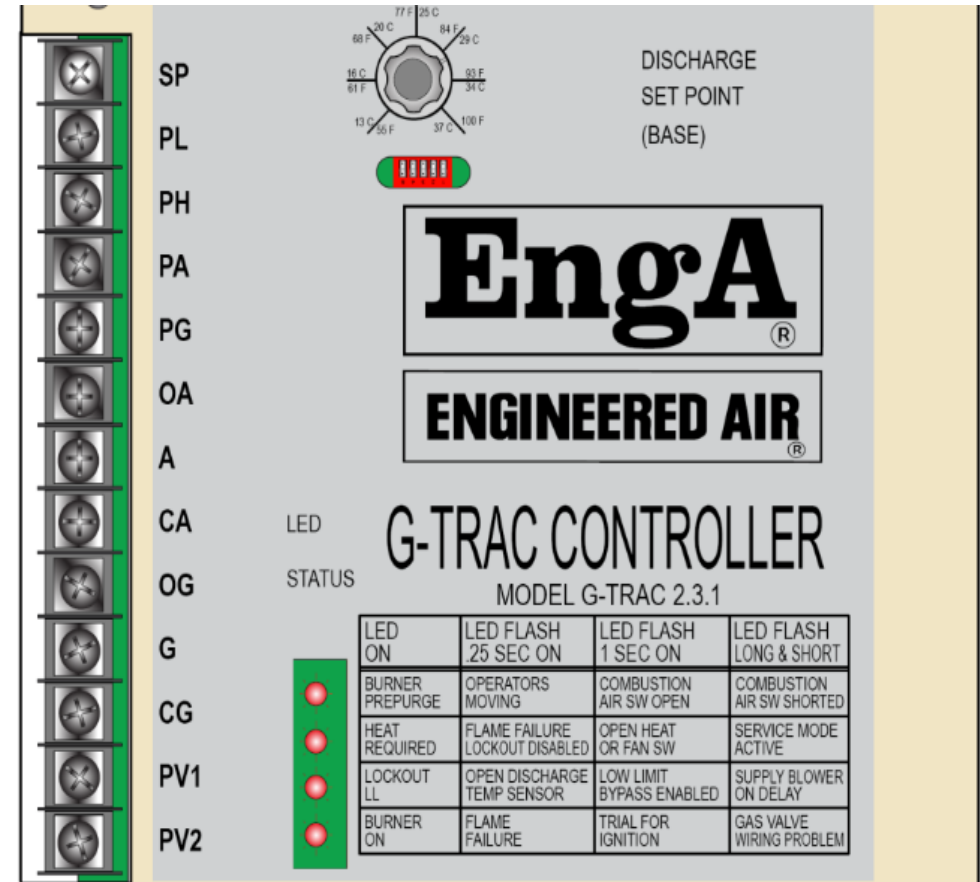
Terminal G. 24vac input

Terminal CG.
24vac output to open gas actuator

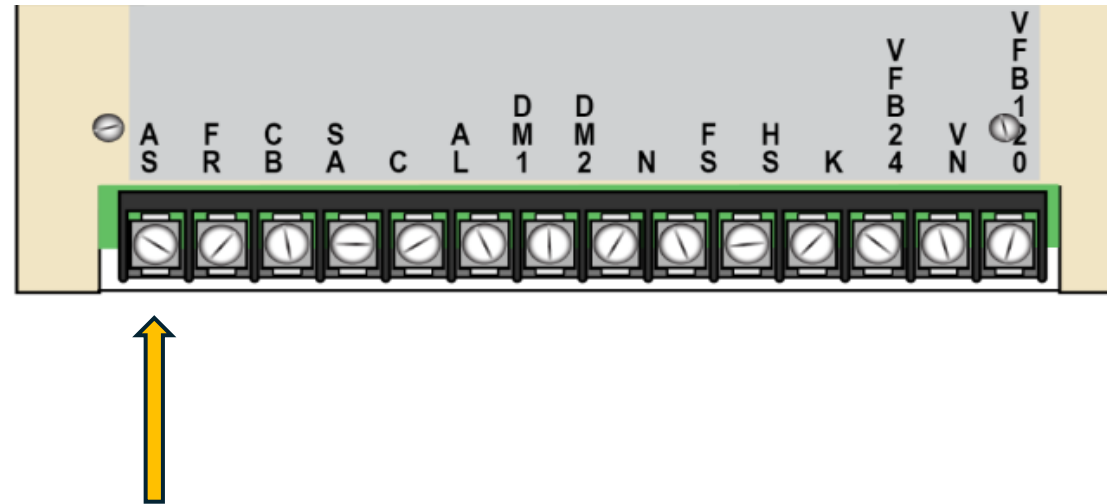


Terminal operation.

Terminals PV1 & PV2.
 PV1, PV2. Pilot valve contact.
 PV1, voltage from ignition controller.
 PV2, voltage to pilot valve.
 Closes to light pilot, opens
 once main flame is on.
 24vac.



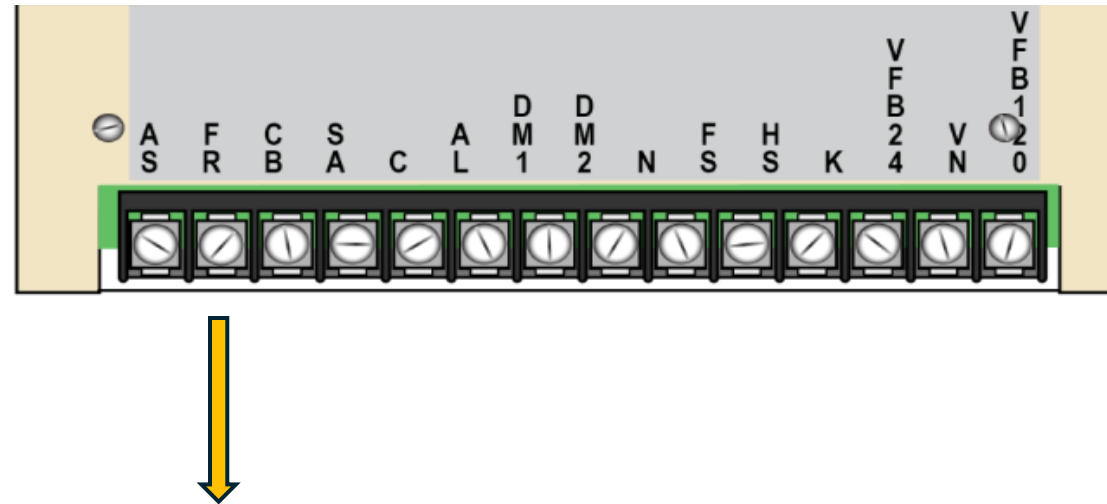
Terminal operation.



Terminal AS.
Combustion air switch, closes when
combustion fan motor is on.
24vac.



Terminal operation.



Terminal FR.

Flame relay output contact.

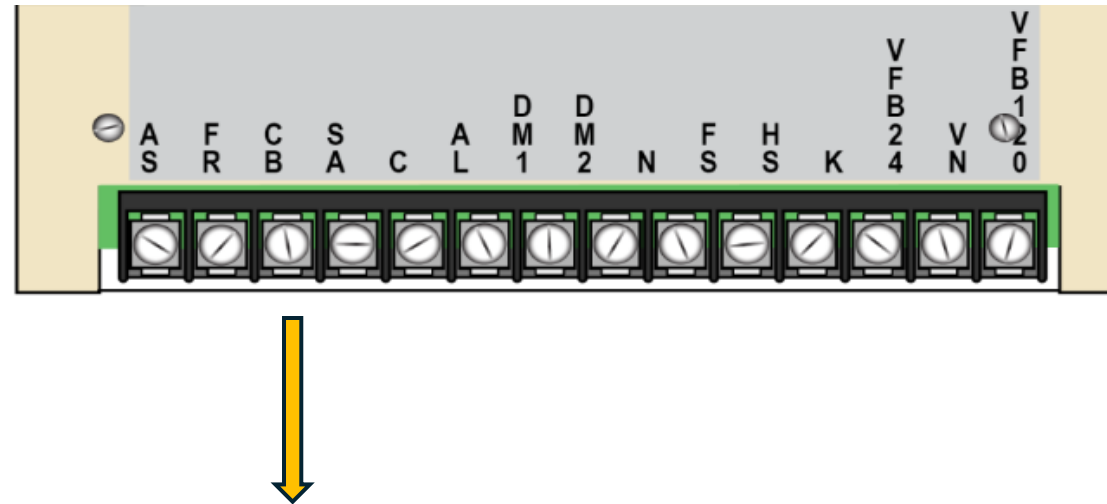
(Dry)

AS, voltage input to G-TRAC2.

FR, voltage output to ignition controller.



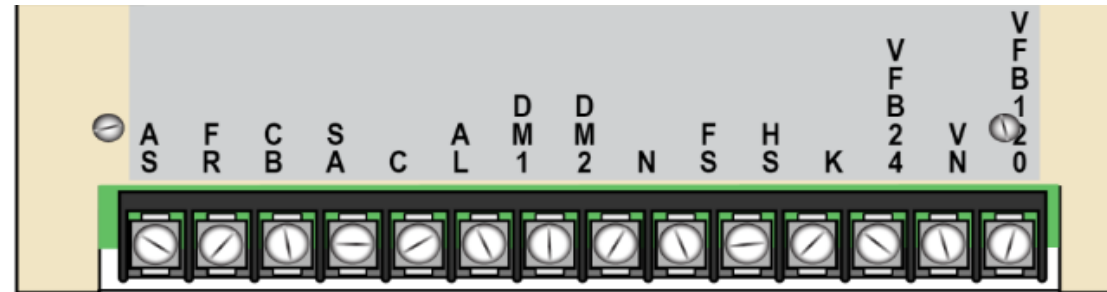
Terminal operation.



Terminal CB.
Combustion blower output contact.
Can be 120vac or 24 vac.



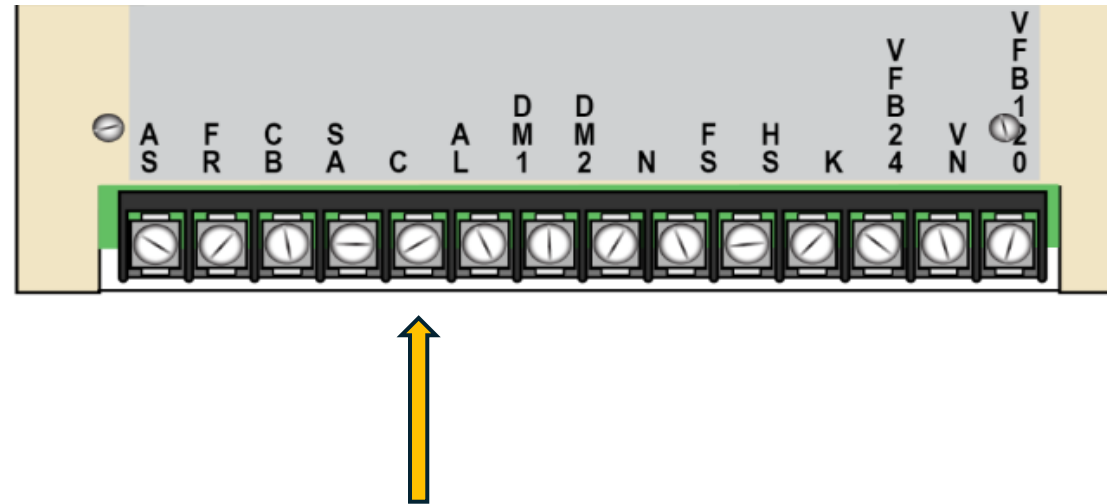
Terminal operation.



Terminal SA.
Supply fan motor output contact.
Can be 120vac or 24vac.



Terminal operation.



Terminal C.

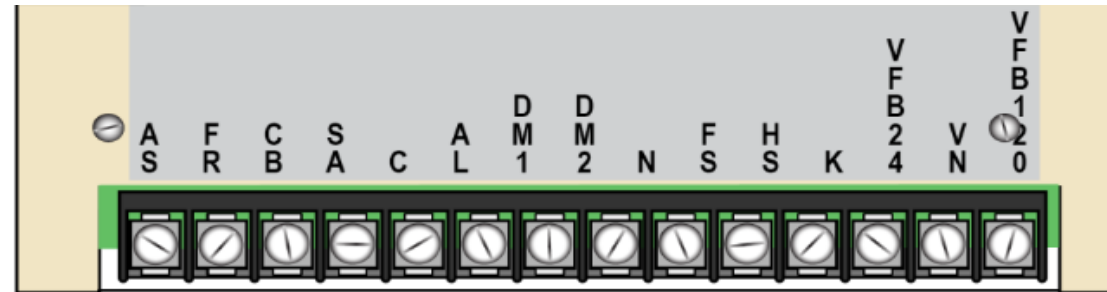
Common VAC input.

vac output to terminals, SA, CB and AL.

Can be 120vac or 24vac.



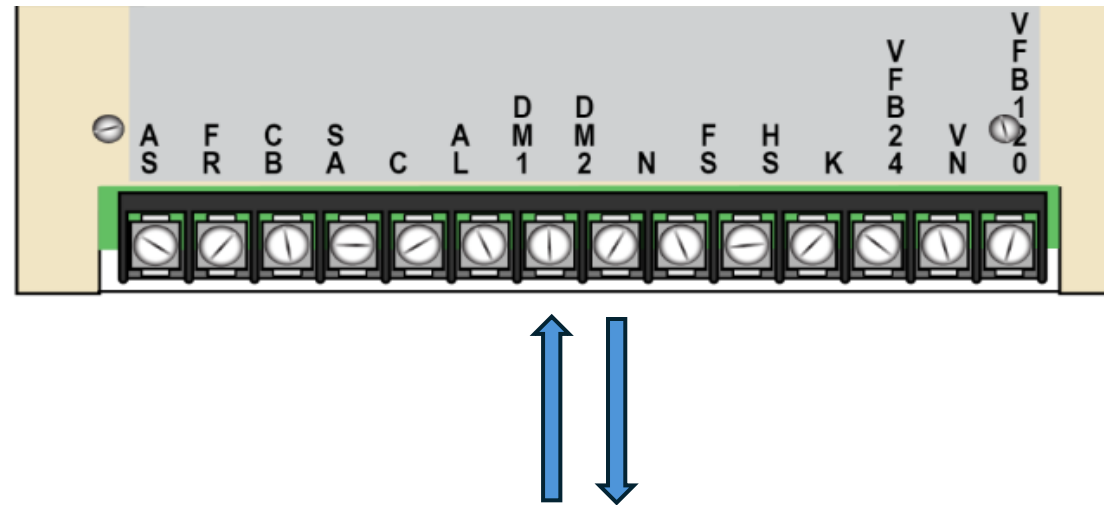
Terminal operation.



Terminal AL.
Alarm contact, lockout condition.
Can be 120vac or 24vac.



Terminal operation.



Terminals DM1 & DM2.

Damper motor output contact.

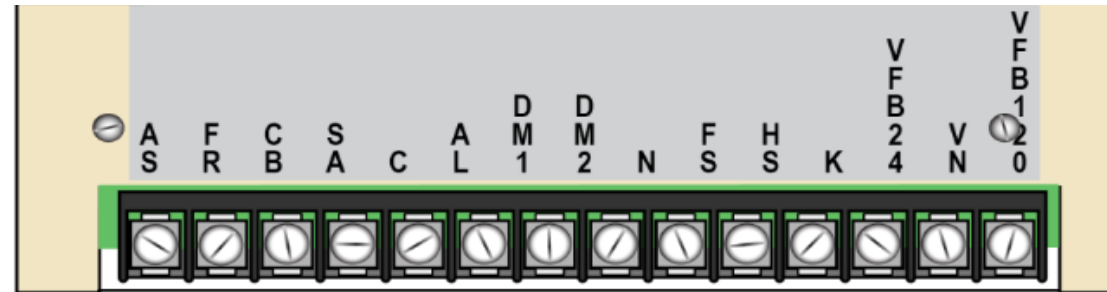
(Dry)

DM1, voltage input to G-TRAC2.

DM2, voltage output from G-TRAC2
to damper motor.



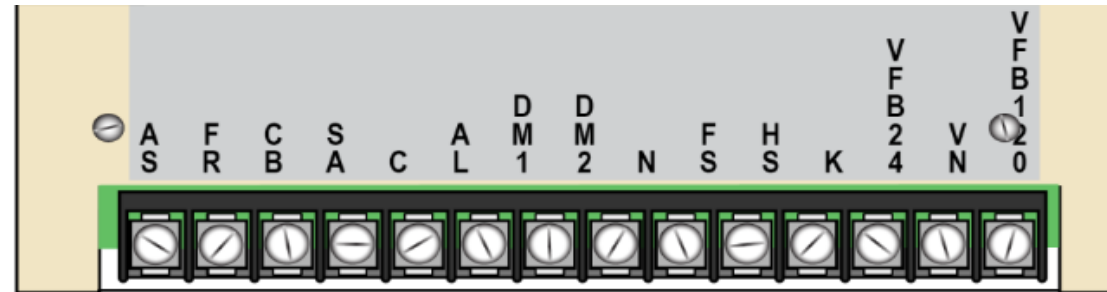
Terminal operation.



Terminal N.
Grounded 24vac neutral.
Reference to (FS,K,HS)



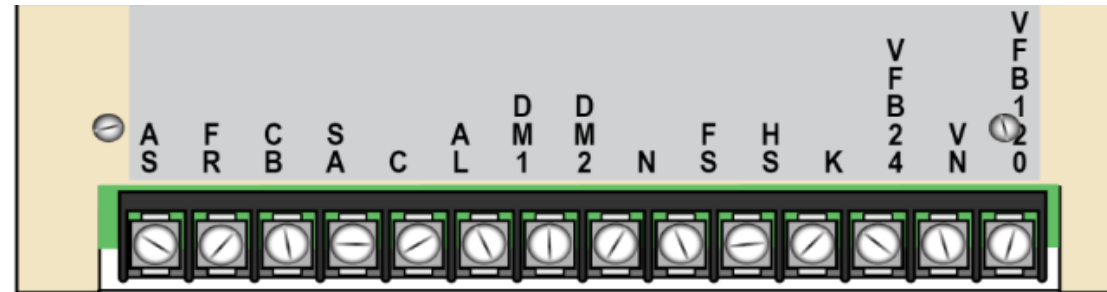
Terminal operation.



Terminal FS. Enable input.
Fan switch(or day mode)
24vac.



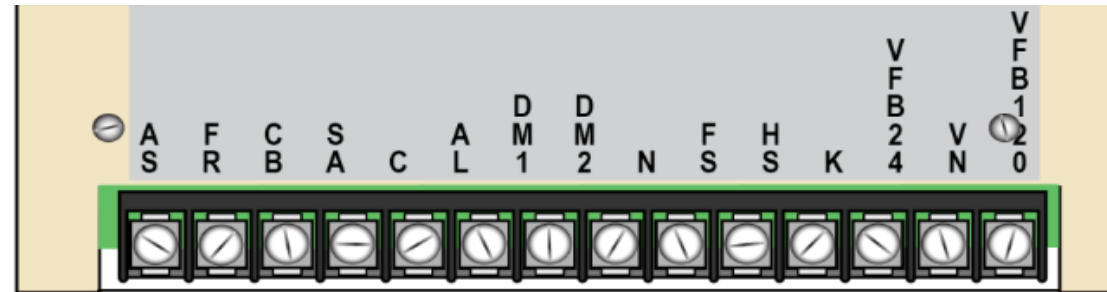
Terminal operation.



Terminal HS. Enable input.
Heat switch.
24vac.



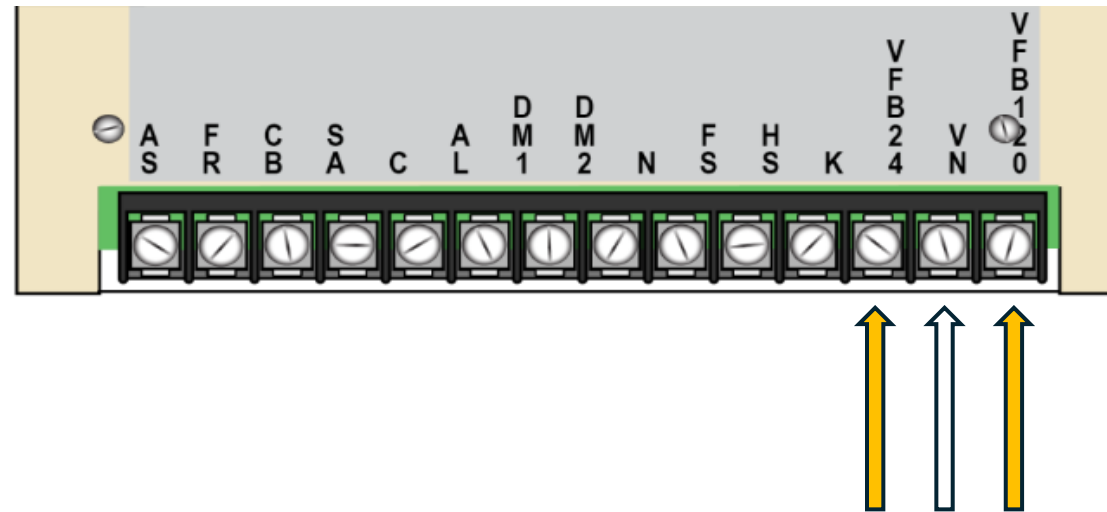
Terminal operation.



Terminal K, enable input.
Night (unoccupied) mode.
24vac



Terminal operation.



Terminals VFB120, VN, VFB24.

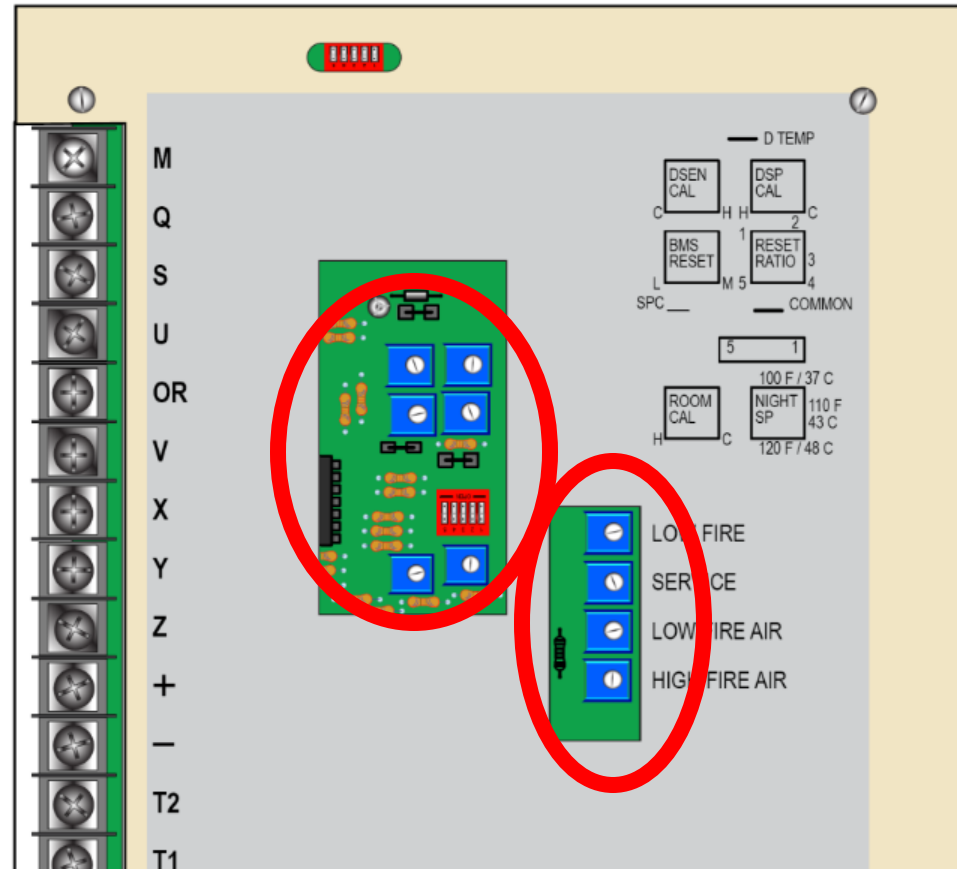
VFB120, Main gas valve feedback(SSOV) hot input for 120vac valves.

VFB24, Main gas valve feedback(SSOV) hot input for 24vac valves.

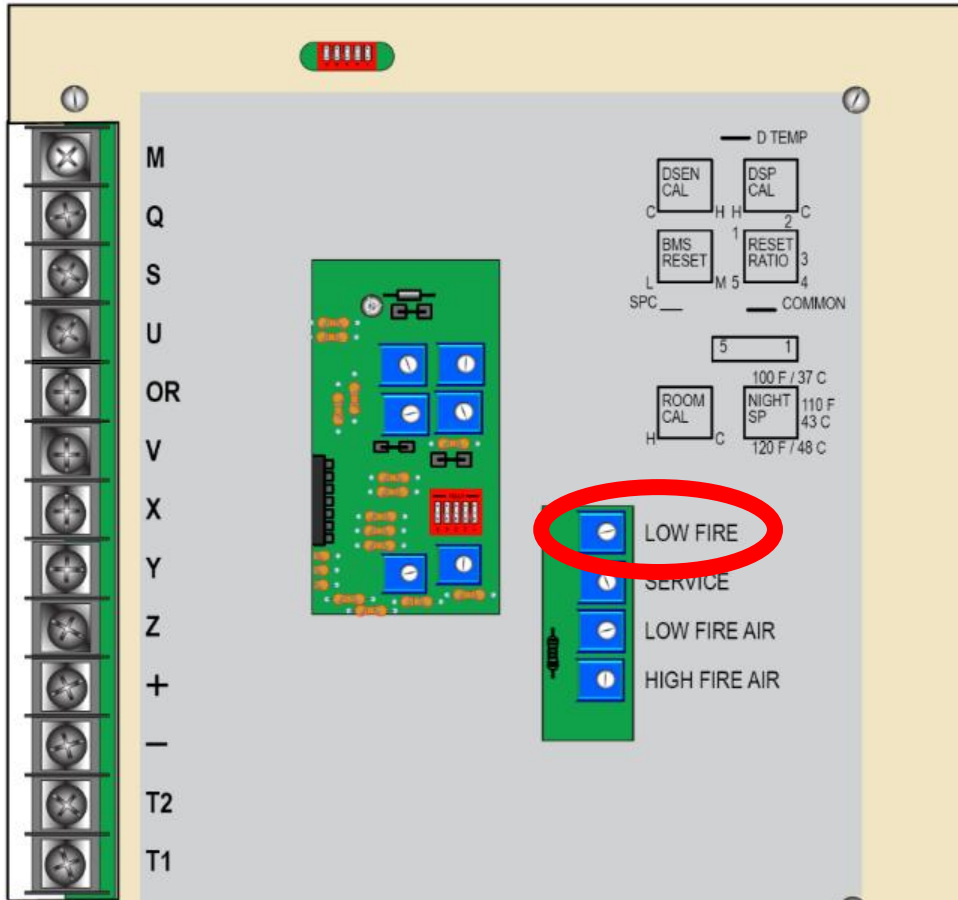
VN, Main gas valve feedback(SSOV) neutral input.



Adjustment pots.



Burner adjustment pots.

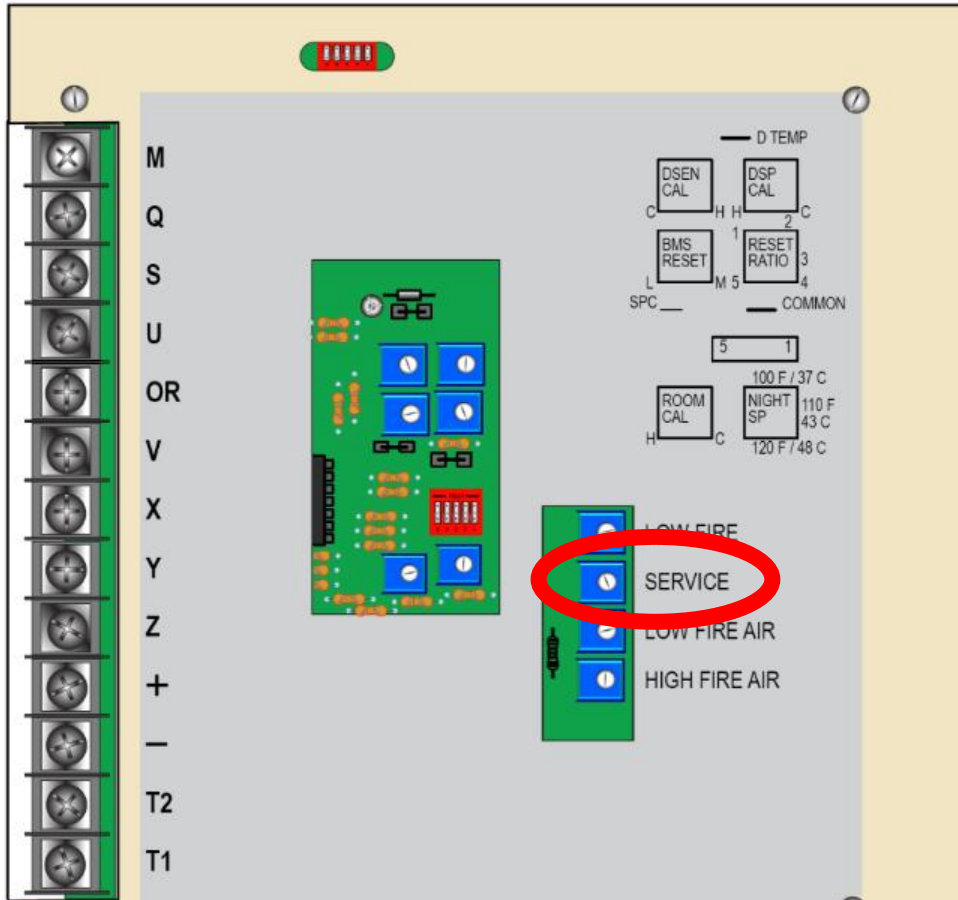


LOW FIRE pot.

- The LOW FIRE pot is to be adjusted by a qualified service technician only.
- This pot should only be adjusted when using a combustion analyzer.
- Controls the gas actuator.
- This pot is used to set gas flow to the burner at the minimum firing rate or 'LOW FIRE'



Burner adjustment pots.

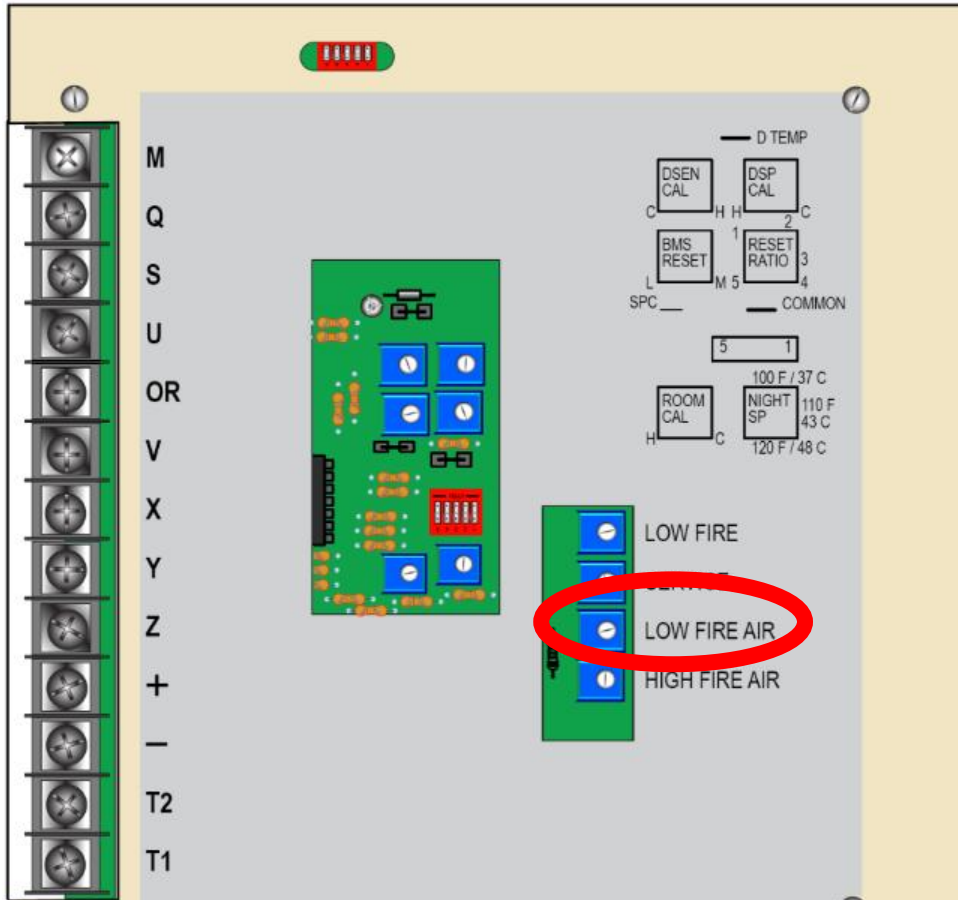


SERVICE pot.

- The SERVICE pot is to be adjusted by a qualified service technician only.
- This pot should only be adjusted when using a combustion analyzer.
- This is the service mode pot.
- The SERVICE pot is designed to allow the service technician to manually set the burner firing rate they choose. Dip switch #5 must be on.
- Rotating the pot fully clockwise will set the burner to HIGH FIRE.
- Rotating the pot fully counterclockwise will set the burner to LOW FIRE.



Burner adjustment pots.

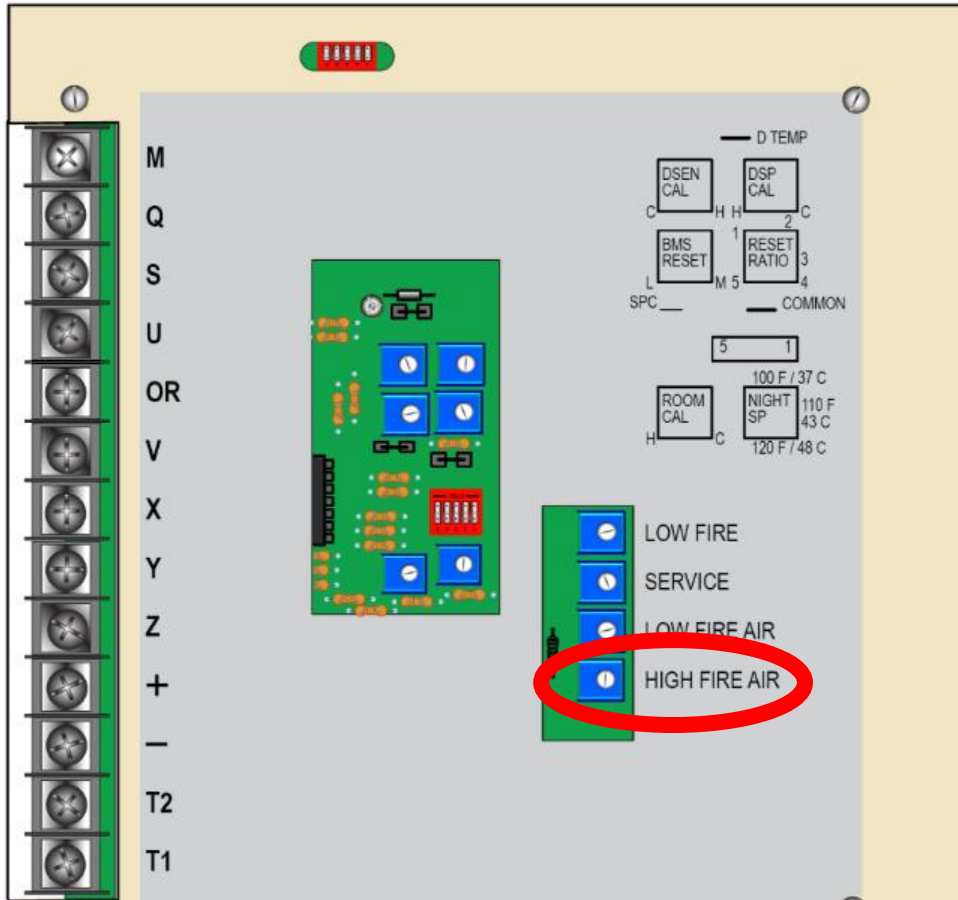


LOW FIRE AIR pot.

- The LOW FIRE AIR pot is to be adjusted by a qualified service technician only.
- This pot should only be adjusted when using a combustion analyzer.
- Controls the air actuator.
- This pot is used to set the combustion air to the burner at the minimum firing rate or 'LOW FIRE'



Burner adjustment pots.

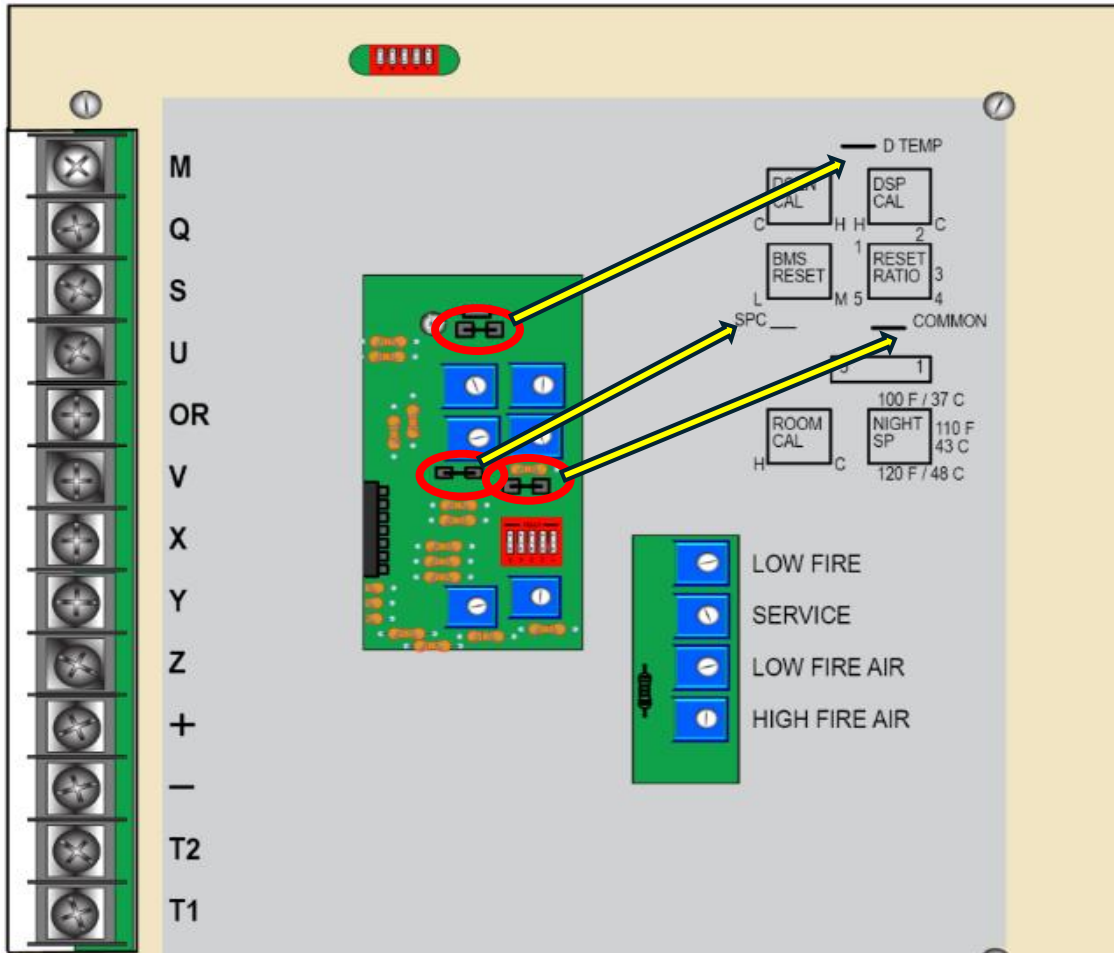


HIGH FIRE AIR pot.

- The HIGH FIRE AIR pot is to be adjusted by a qualified service technician only.
- This pot should only be adjusted when using a combustion analyzer.
- Controls the air actuator.
- This pot is used to set the combustion air to the burner at the maximum firing rate or 'HIGH FIRE'



Temperature test pins.



Temperature test pins(Located in large cutout).

- The test pins allow the service technician to measure the final calculated setpoint and the discharge temperature at the sensor.

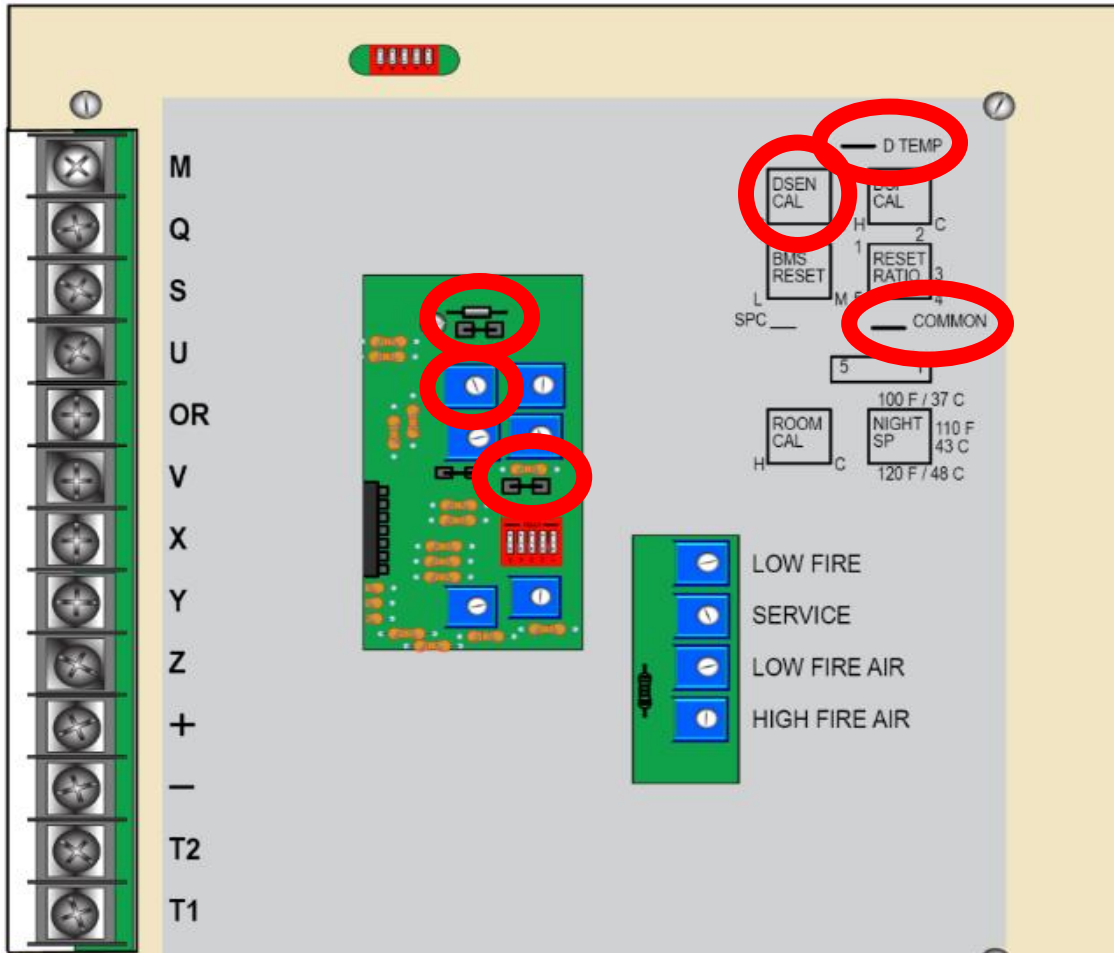
Temperature test pins (VDC, 1vdc=10C).

One voltmeter lead on COM the other lead on SPC. This will give you final calculated discharge setpoint.

One voltmeter lead on COM the other lead on D TEMP. This will give you the discharge temperature at the discharge sensor.



Temperature control adjustment pots.

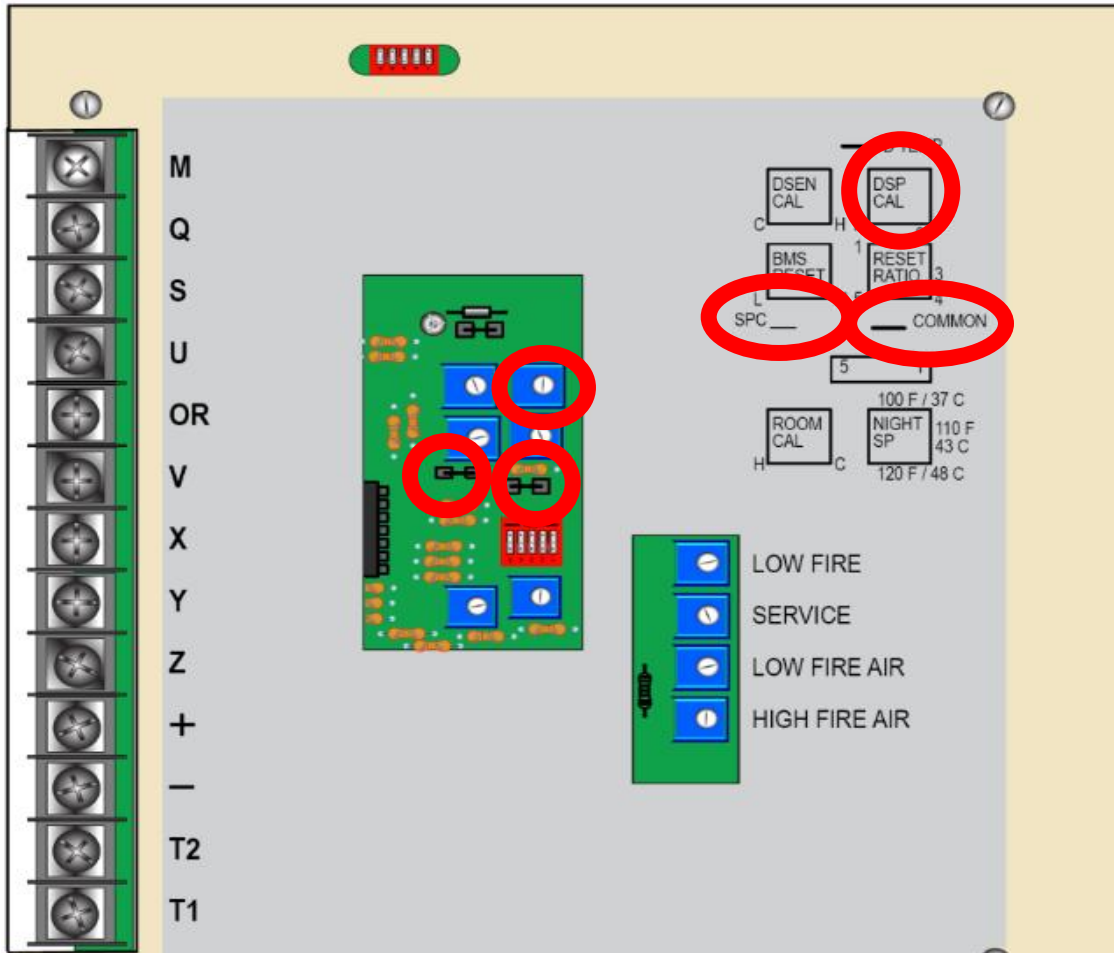


Discharge sensor calibration. (D SEN CAL).

- This pot is used to calibrate the discharge air sensor.
- This pot is used in conjunction with the temperature test pins.



Temperature control adjustment pots.



Discharge setpoint calibration. (DIS SP CAL).

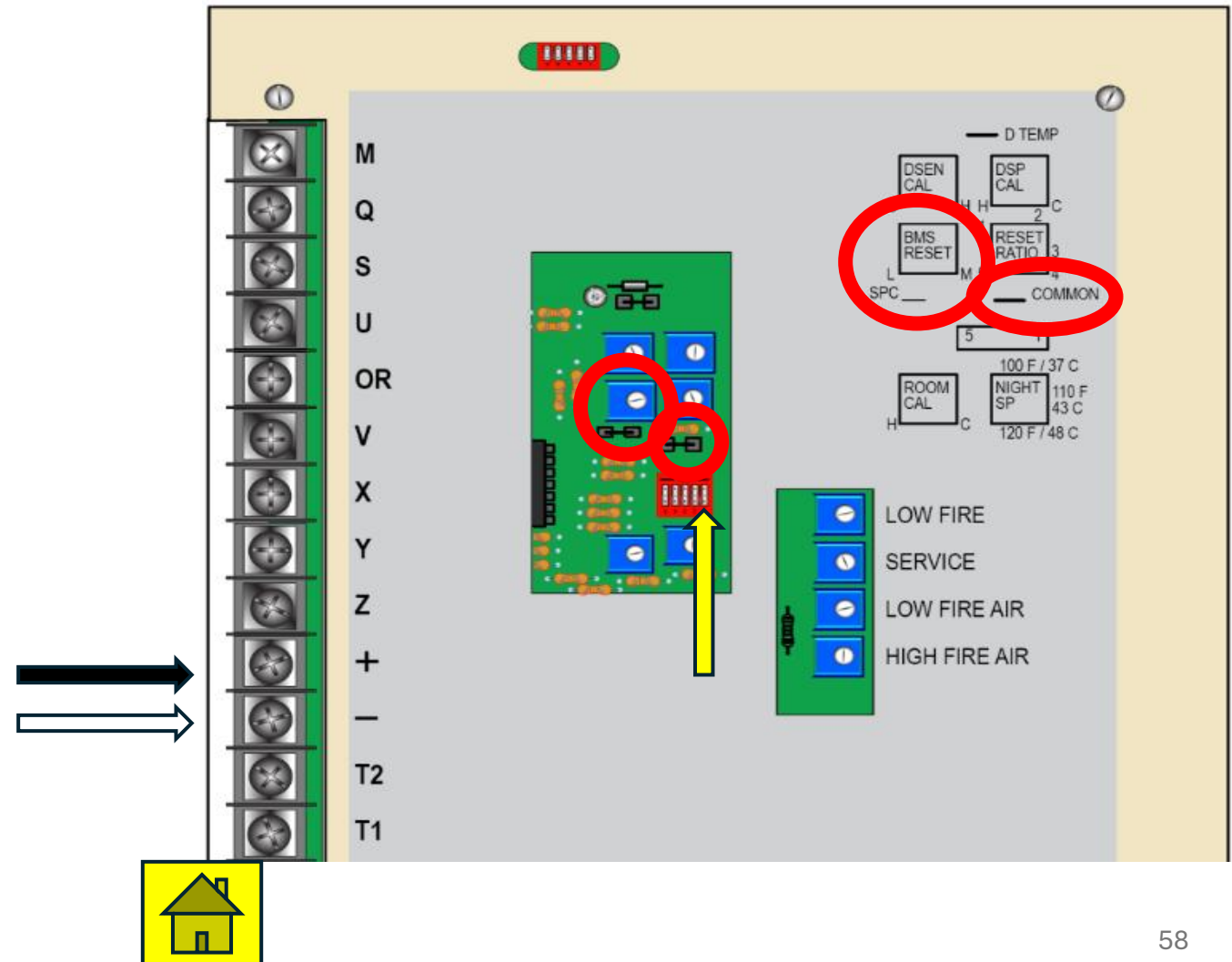
- This pot is used to calibrate the discharge air setpoint.
- This pot is used in conjunction with the temperature test pins.
- All discharge temperature reset dip switches must be in the 'OPEN' or off position to perform calibration.



Temperature control adjustment pots.

BMS signal calibration. (BMS CAL).

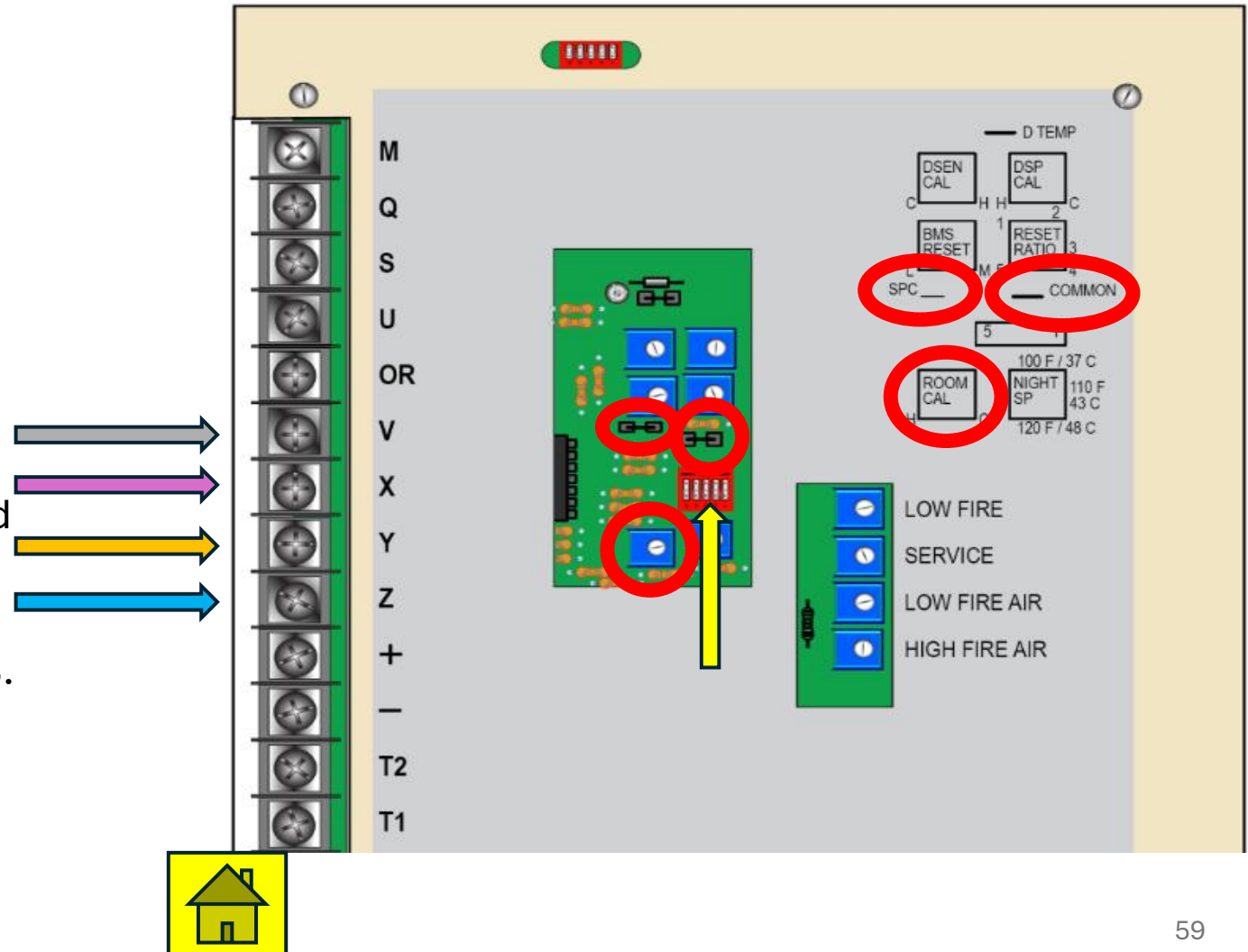
- This pot is used to calibrate the discharge air reset setpoint.
- Stand alone setpoint must be calibrated first.
- This pot is used in conjunction with the temperature test pins and dip switch #1.
- 0-10vdc or 4-20ma signal required at terminals + and -.



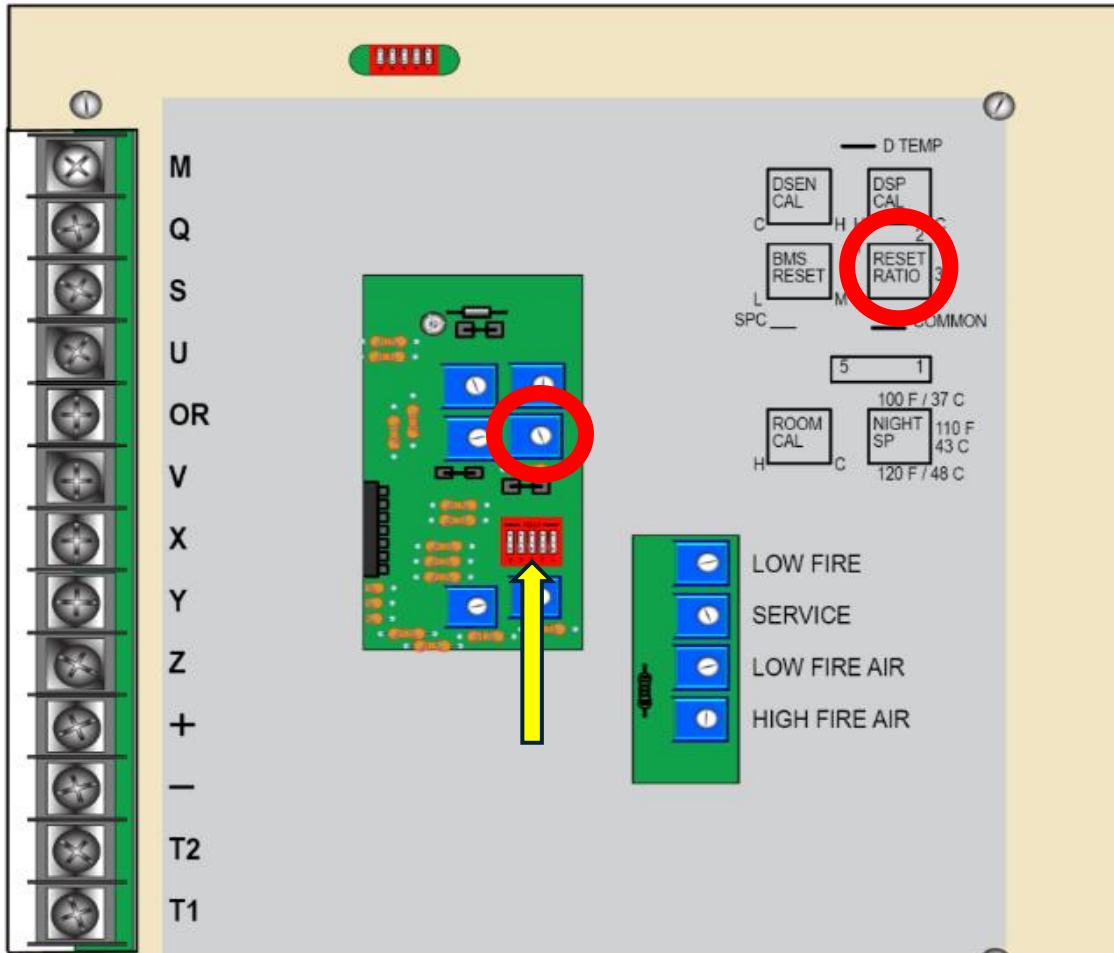
Temperature control adjustment pots.

Room sensor/setpoint calibration. (ROOM CAL).

- This pot is used to calibrate the discharge air reset setpoint.
- Terminals V,X,Y,Z.
Modulating(resistive) room/return air thermostat inputs.
- Johnsons TE6100-960 room stat (not used anymore).
- Stand alone setpoint must be calibrated first.
- This pot is used in conjunction with the temperature test pins and dip switch #3.



Temperature control adjustment pots.

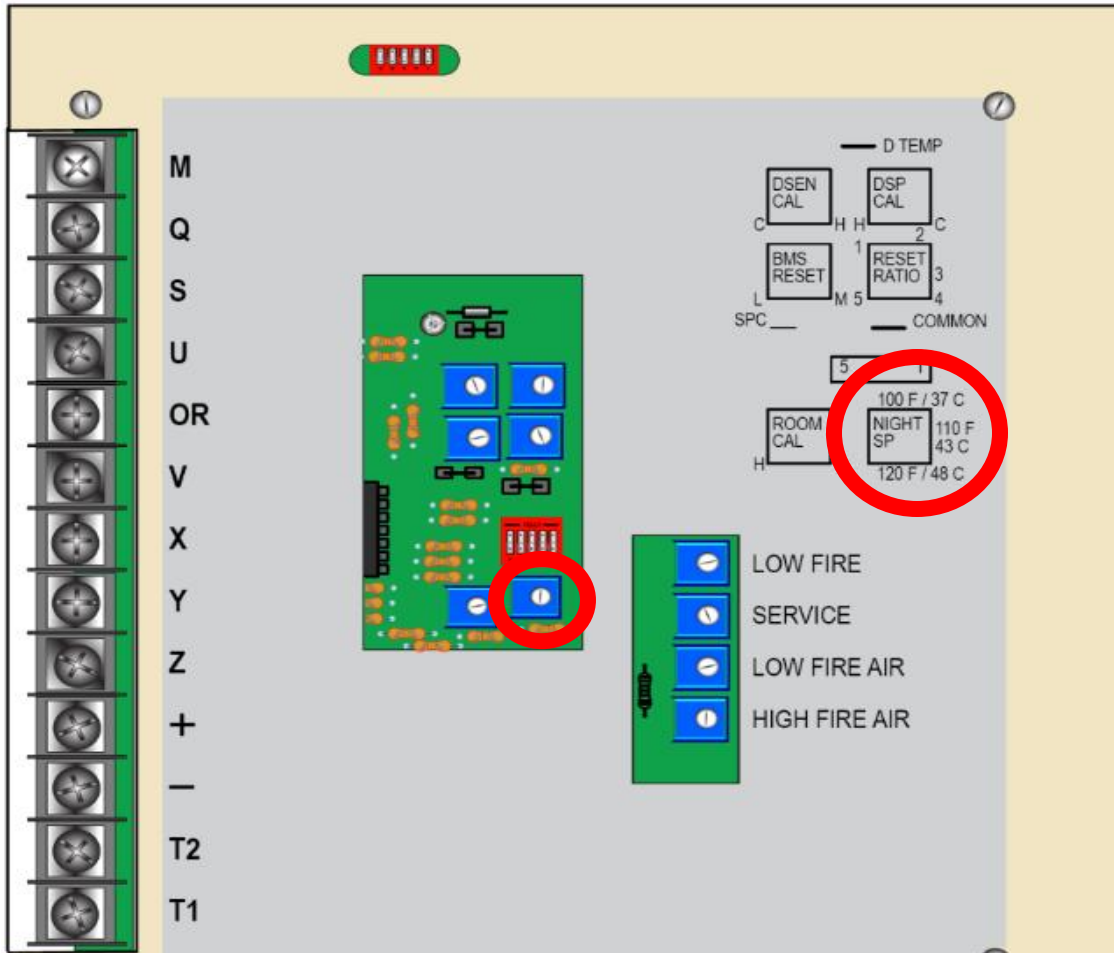


Reset ratio adjustment pot. (RESET RATIO)

- This pot is used to set the reset band width based on a setpoint and pot position.



Temperature control adjustment pots.



Night Setpoint pot. (NIGHT SP).

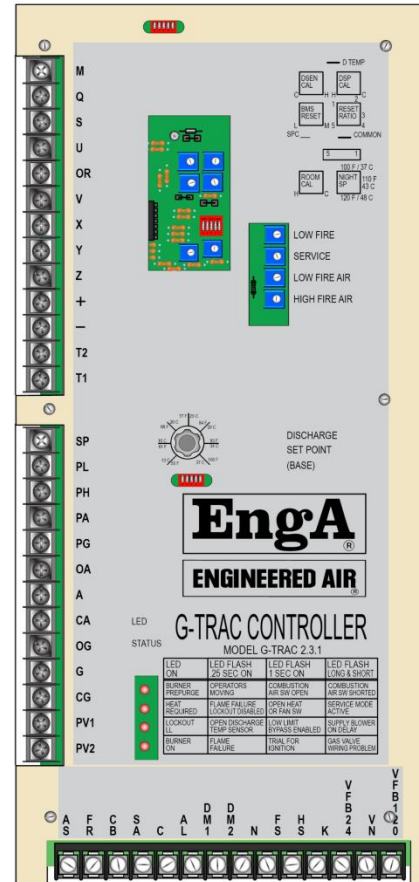
- This pot is used to set the maximum discharge temperature during night mode.



Temperature control.



Temperature control.



Temperature control.

- The G-TRAC2 is designed to be a discharge air temperature control.
- Stand alone temperature control (not modified by a remote signal, also know as 'reset').
- Stand alone control can be achieved two ways.
- 1, the face setpoint dial.
- 2, remote mounted setpoint dial.



G-TRAC2 set up sheet.

Job # _____ Tag # _____ Designer _____ Model # _____ Date _____

BASE SETPOINT LOCATION _____ G-TRAC2 _____ or Remote _____

Base discharge set point _____ * _____ degrees F

*Set point is not required when **GTrac-2** is **DIRECT** controlled by other controllers.

ROOM RESET _____ [YES] _____ [NO] _____
(dipswitch A-3)

Reset Ratio Pot Setting _____

NOTE: The room reset is bi-directional.

AMBIENT RESET _____ [YES] _____ [NO] _____
(dipswitch A-2)

Reset Ratio Pot Position _____

NOTE: Ambient reset is bi-directional. The ambient temperature range through which the discharge temperature is reset is -15 to 70°F.

BMS VOLTAGE or CURRENT RESET _____ [YES] _____ [NO] _____
(dipswitch A-1)

Reset Amount (specify amount 15°F(8.3°C) to 60°F(33.3°C)) _____ degrees F

NOTE: Voltage/Current reset is in the up direction only.

GTRAC-2 DIP SWITCH BLOCK "C" SETTING

Non-Direct Control (Including BMS Reset)		Direct Control (GTRAC-2 Slaved to other controllers)
Stand Alone _____ or		BMS or Metasys _____ or CTRAC3 _____
(C2 "on" only) (		C1, C3 & C4 "on" only) (C3 & C4 "on" only)

AUTO BYPASS LOW LIMIT
(dipswitch C-5)

OPERATIONAL ON _____ DISABLED OFF _____

BLOWER OPERATION
(dipswitch A-4)

Air Priority** "ON" _____ Temperature Priority "OFF" _____

**Air priority feature can not be used in cold weather with make up air function, unit will start supply fan before dampers open. If this option is needed size damper motor adequately or put 40seconds TDR on supply fan to allow dampers to open past 45% before supply fan to starts.

NIGHT OPERATION _____ [YES] _____ [NO] _____
(Terminal K is powered)



Temperature control face setpoint dial.

BASE SETPOINT LOCATION

☐

G-TRAC2

☐

Remote

Base discharge set point

* _____ °F

* *Set point is not required when when G-TRAC2 is ***DIRECT*** controlled by other controllers.*



Face setpoint unit function page.

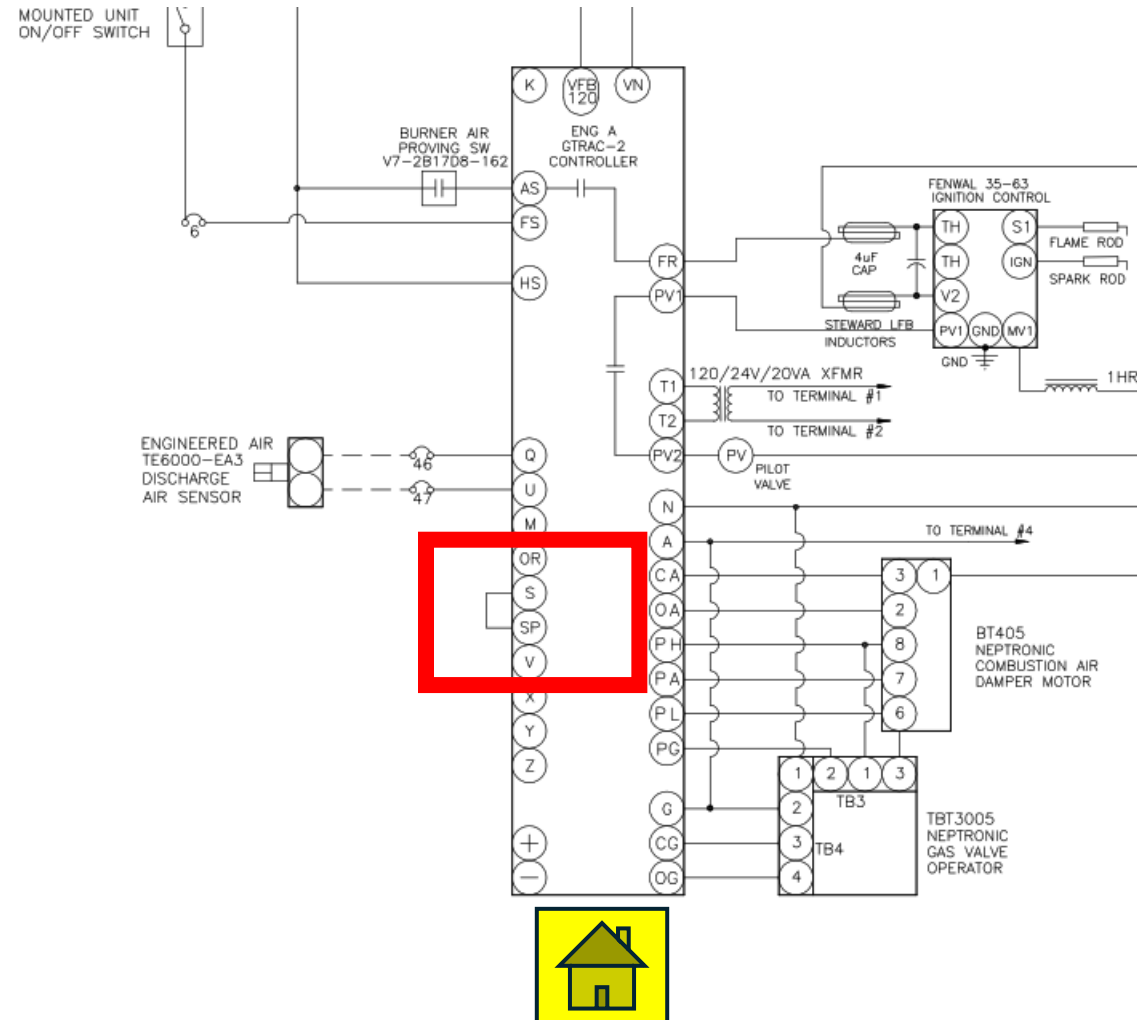
UNIT FUNCTION

Unit mounted non-fused disconnect switch 'on', service switch 'on', fire alarm contacts (by others) 'closed' (jumper if not required). Unit is ready for operation.

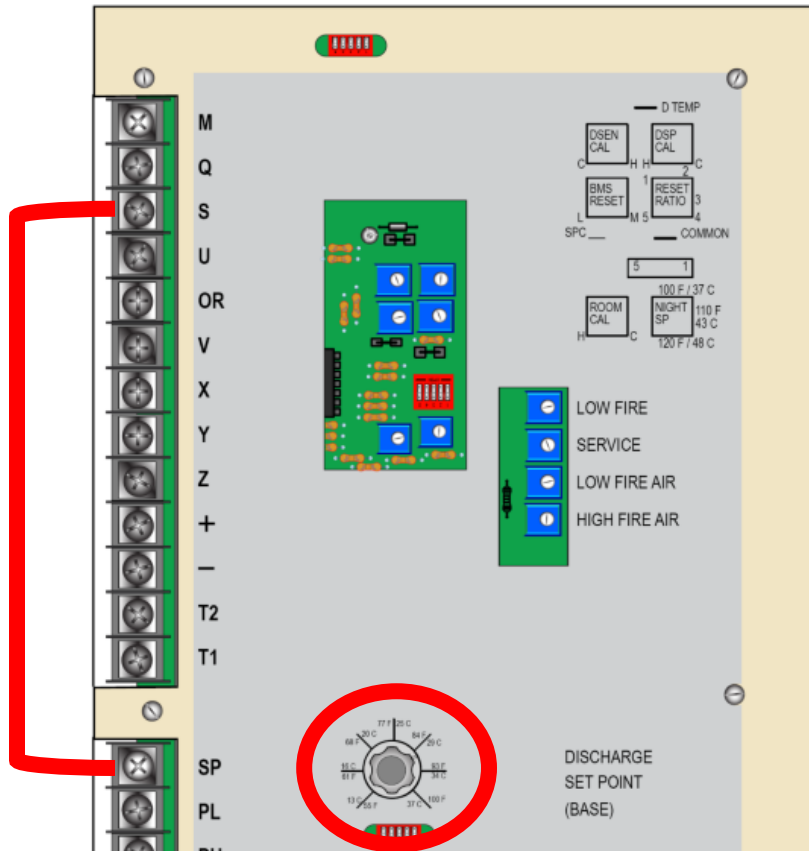
Unit on/off switch 'closed', outside air damper opens, blower will delay on and run continuously. The GTRAC controller with an integral setpoint fixed at 70°F (21.1°C) will modulate the gas flow and combustion air to maintain the required discharge air temperature.



Face setpoint unit wiring page.



Temperature control face setpoint dial.



Temperature control.

- To enable the stand-alone face setpoint dial, terminals S and SP must be jumped.



Temperature control remote setpoint dial.

BASE SETPOINT LOCATION

☐ G-TRAC2 ☐ Remote

Base discharge set point

* _____ °F

* *Set point is not required when when G-TRAC2 is ***DIRECT*** controlled by other controllers.*



Remote setpoint unit function page.

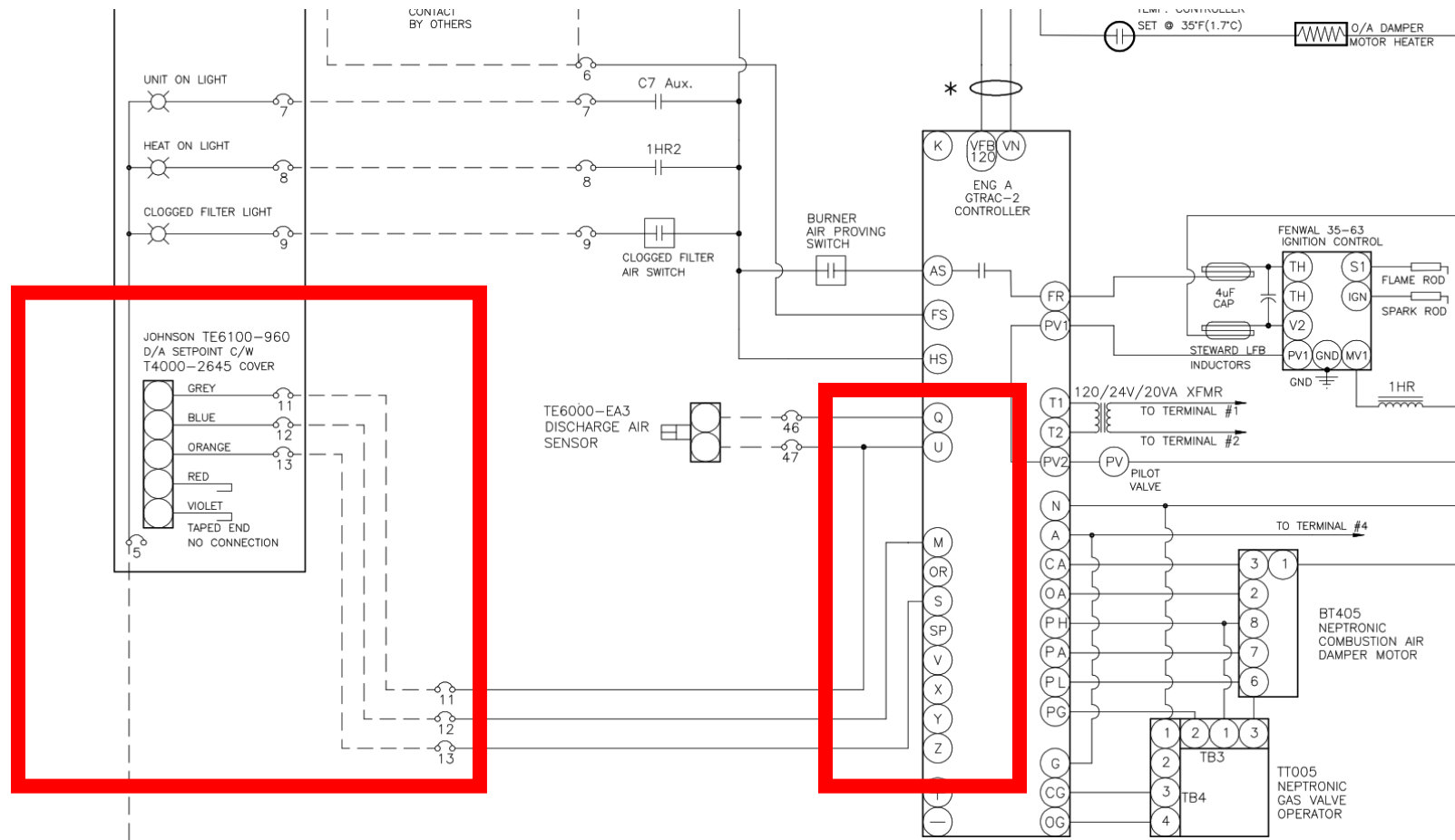
UNIT FUNCTION

Unit mounted non-fused disconnect switch 'on', service switch 'on', fire alarm contact (by others) 'closed' (jumper if not required), unit is ready for operation.

Remote panel mounted unit on/off/manual override switch in the 'on' position and CO monitoring device contact (by others) 'closed' or space thermostat contact (by others) 'closed', or unit on/off/manual override switch in the 'manual override' position, outside air damper opens, blower will delay on and run continuously. The GTRAC controller with an adjustable remote setpoint set at 70°F (21.1°C) will modulate the gas flow and combustion air to maintain constant discharge air temperature.



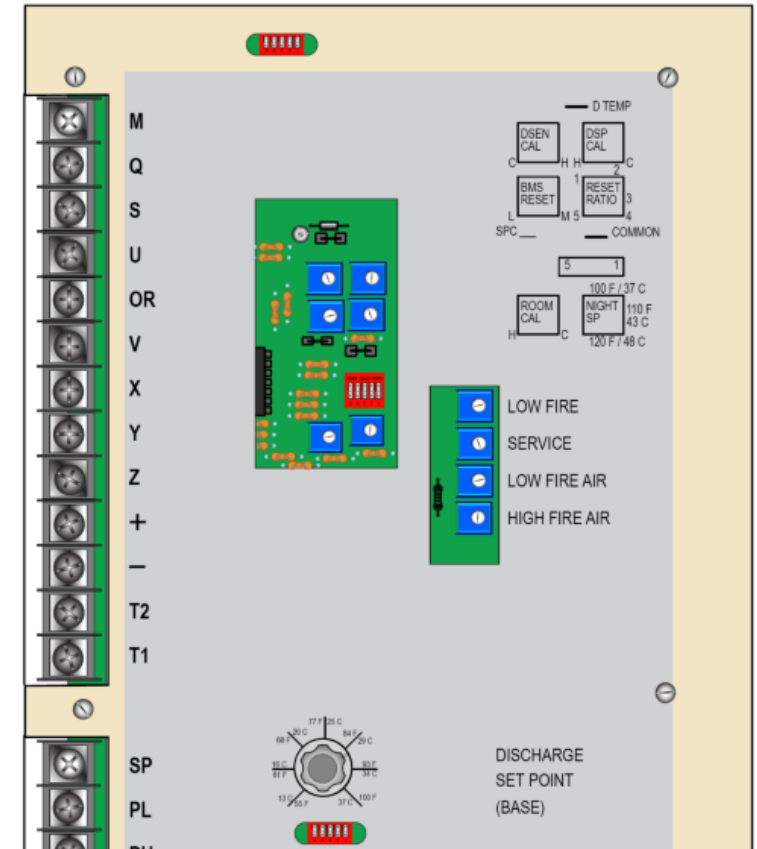
Remote setpoint unit wiring page.



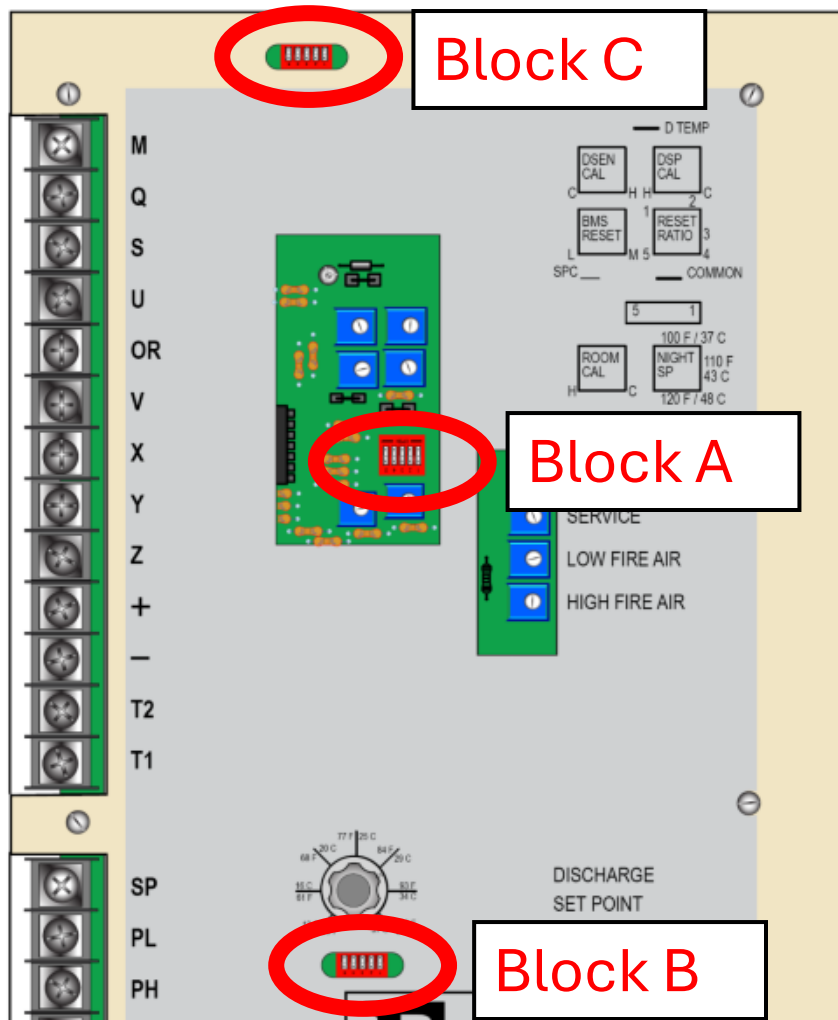
Temperature control remote setpoint dial.

Temperature control.

- To enable the remote setpoint dial, a Johnsons TE6100-960 room stat must be wired to terminal M,S,U. (This stat is not in use anymore.)



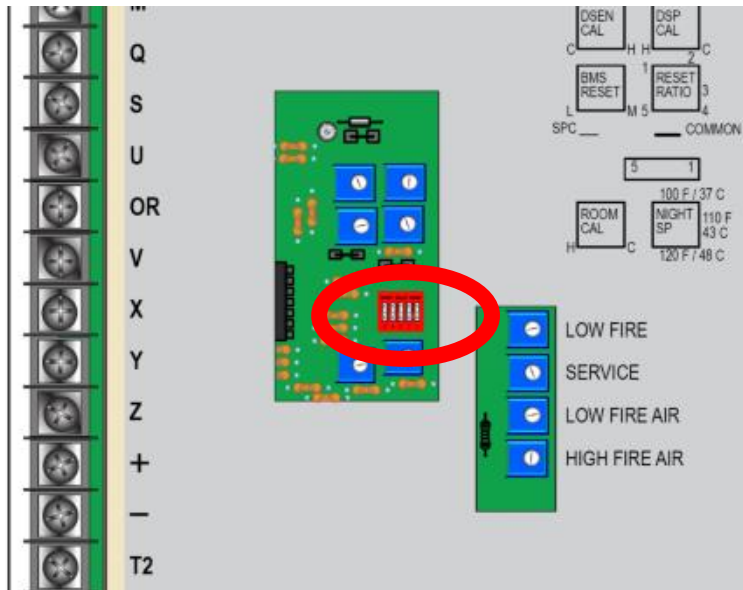
G-TRAC2 dip switches and discharge temperature resets.



Dipswitches.

- The G-TRAC2 has three dip switch blocks.
- Each block has a specific function.
- Each block has 5 switches.
- The switches are numbered 1 to 5.

G-TRAC2 dip switch block A.



Dip switch numbers.



5-1

DIP Switch	Description
A-1	BMS reset (0-10 VDC, 4-20 mA)
A-2	Ambient Reset
A-3	Room Reset
A-4	Supply Fan Configuration Switch
A-5	Service Mode

Dip switch block A.

- Located in the large cutout.
- The dipswitches are used to modify the following:
- The base temperature setpoint by a using a remote signal to maintain the desired temperature. This is called reset.
- Supply fan configuration.
- Placing the burner into service mode.



Dip switch A1 Voltage or current reset.

BMS VOLTAGE or CURRENT RESET*(dipswitch A-1)*☐ YES☐ NO**Reset Amount** *(specify amount 15°F (8.3°C) to 60° (33.3°C)* _____ °F*Notes: Voltage/Current reset is in the up direction only.**Dipswitch C2 must be on if BMS or current reset is selected. (Non-Direct Control)**When using direct control by C-TRAC dipswitch A-1 must be in the Off position.*

BMS reset unit function page.

UNIT FUNCTION

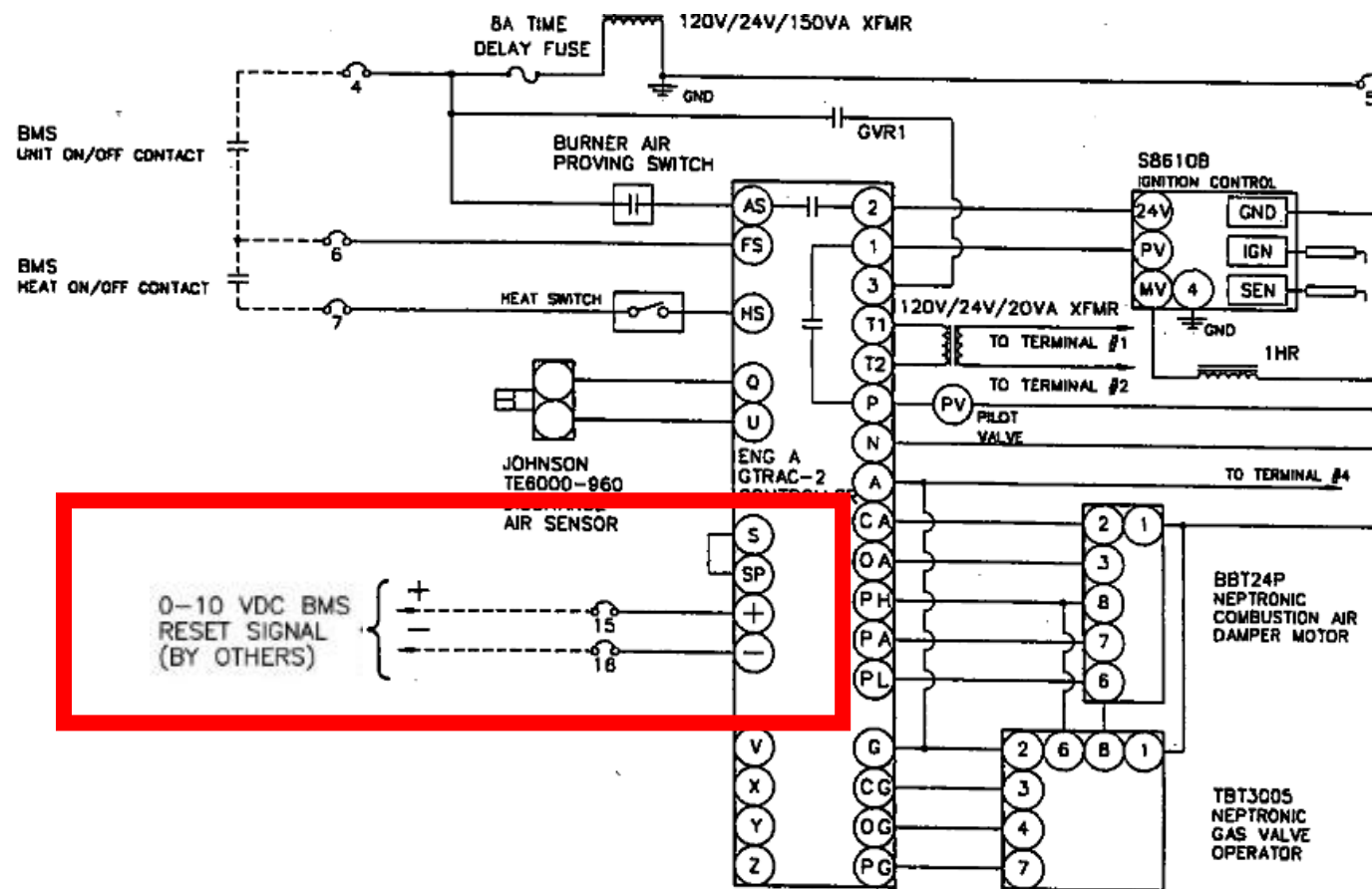
Non-fused disconnect switch (by others) closed, service switch closed, fire alarm contact (by others) closed, get power to BMS unit on/off contact (by others).

BMS unit on/off contact closed, supply air blower delays on and runs continuously.

BMS heat on/off contact (by others) closed, unit mounted heat on/off switch closed, the GTRAC-2 controller provides linearized proportional modulating gas and combustion air to maintain 60°F discharge air. The discharge air temperature increases proportionally from 60°F to 95°F as the BMS signal increases from 0-10vDC.



BMS reset unit wiring page.

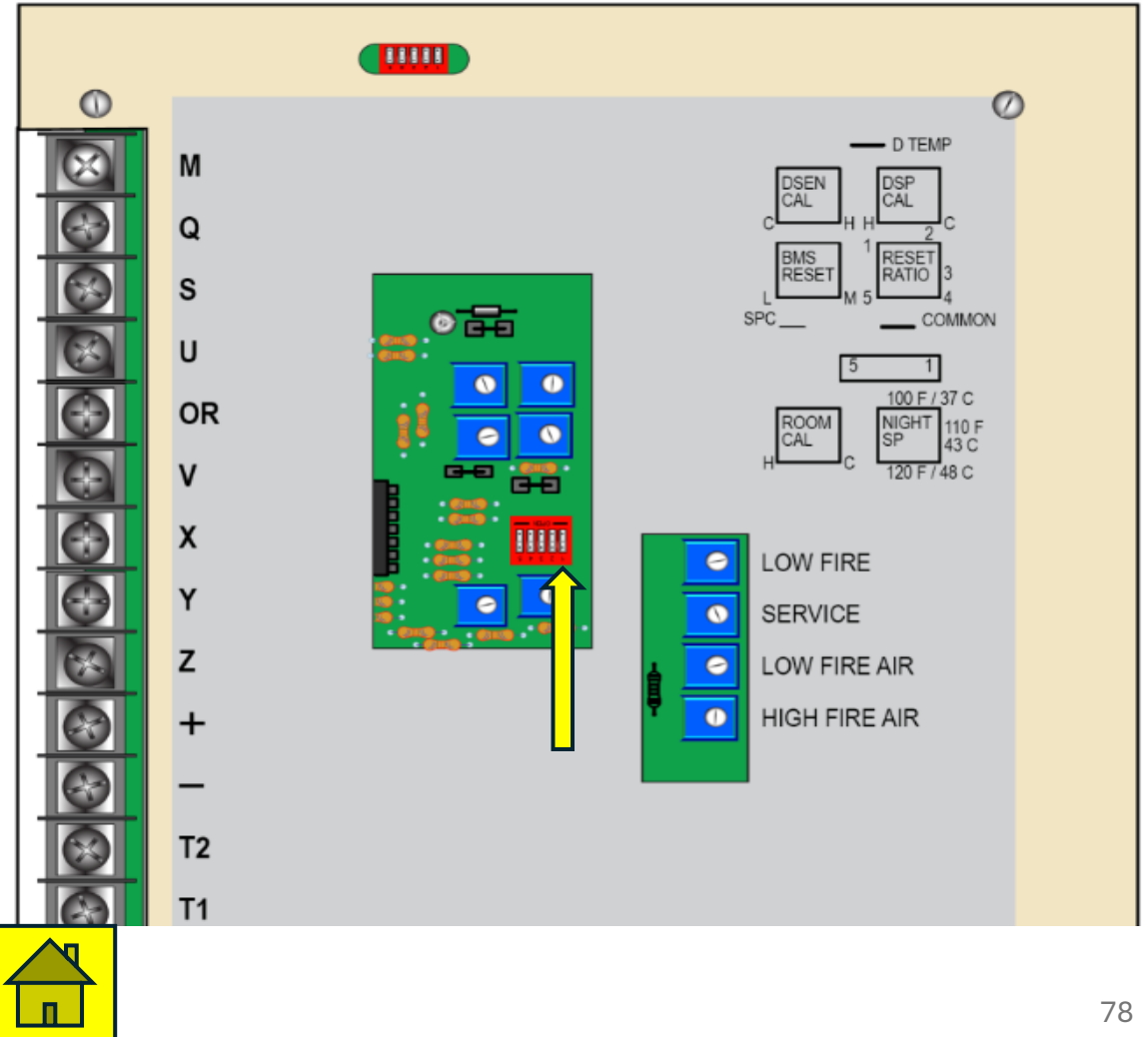
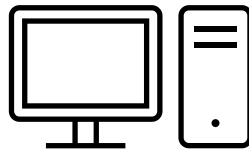


BMS reset.

BMS reset.

- Dip switch #1 on.
- Requires a 0-10vdc or 4-20ma signal to terminals + and -.
- 4-20ma signal requires a 500ohm resistor across terminal +/-.

Current Reset	Voltage Reset	Calculated Setpoint	
		°C	°F
mA	Vdc		
-	0	13	55
3	3	13.5	56
5	4	14.5	58
12	6	16	61
-	7	18	65
16	8	20	68
-	9	23	75
20	10	26	79



Dip switch A2 Ambient reset.

AMBIENT RESET*(dipswitch A-2)*☐ YES☐ NO**Reset Ratio Pot Position** _____

***Note:** Ambient reset is bi-directional. The ambient temp.range through which the discharge temperature is reset is -15 to 70°F.*



Ambient reset unit function page.

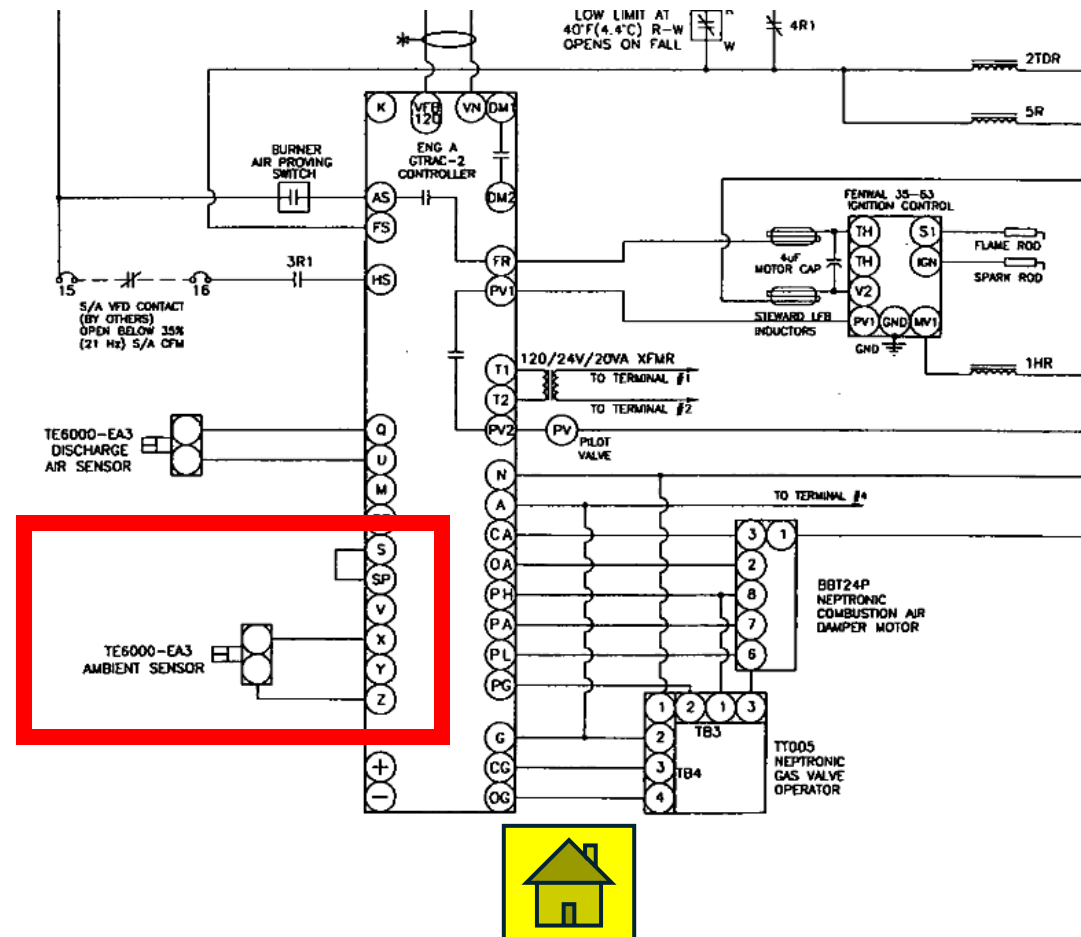
UNIT FUNCTION

Unit mounted non-fused disconnect switch 'on', service switch 'on', VFD fault contact (by others) 'closed', fire alarm contact (by others) 'closed' (jumper if not required), duct high pressure limit contact (by others) 'closed', unit is ready for operation.

Unit on/off contact (by others) 'closed', outside air damper and supply air damper open. After a short time delay, S/A VFD (by others) is enabled. S/A blower will start and run continuously. VFD (by others) will start unit at 75% of full CFM. With S/A VFD contact (by others) 'closed' and S/A blower runs for 15 seconds, the GTRAC controller with an integral reference setpoint set at 70°F (21.1°C) will modulate the gas flow and combustion air to maintain the required discharge air temperature. Ambient temperature will proportionally reset the minimum discharge temperature from 70°F (21.1°C) @ 70°F (21.1°C) ambient to maximum 91°F (32.8°C) @ 20°F (-6.7°C) ambient.



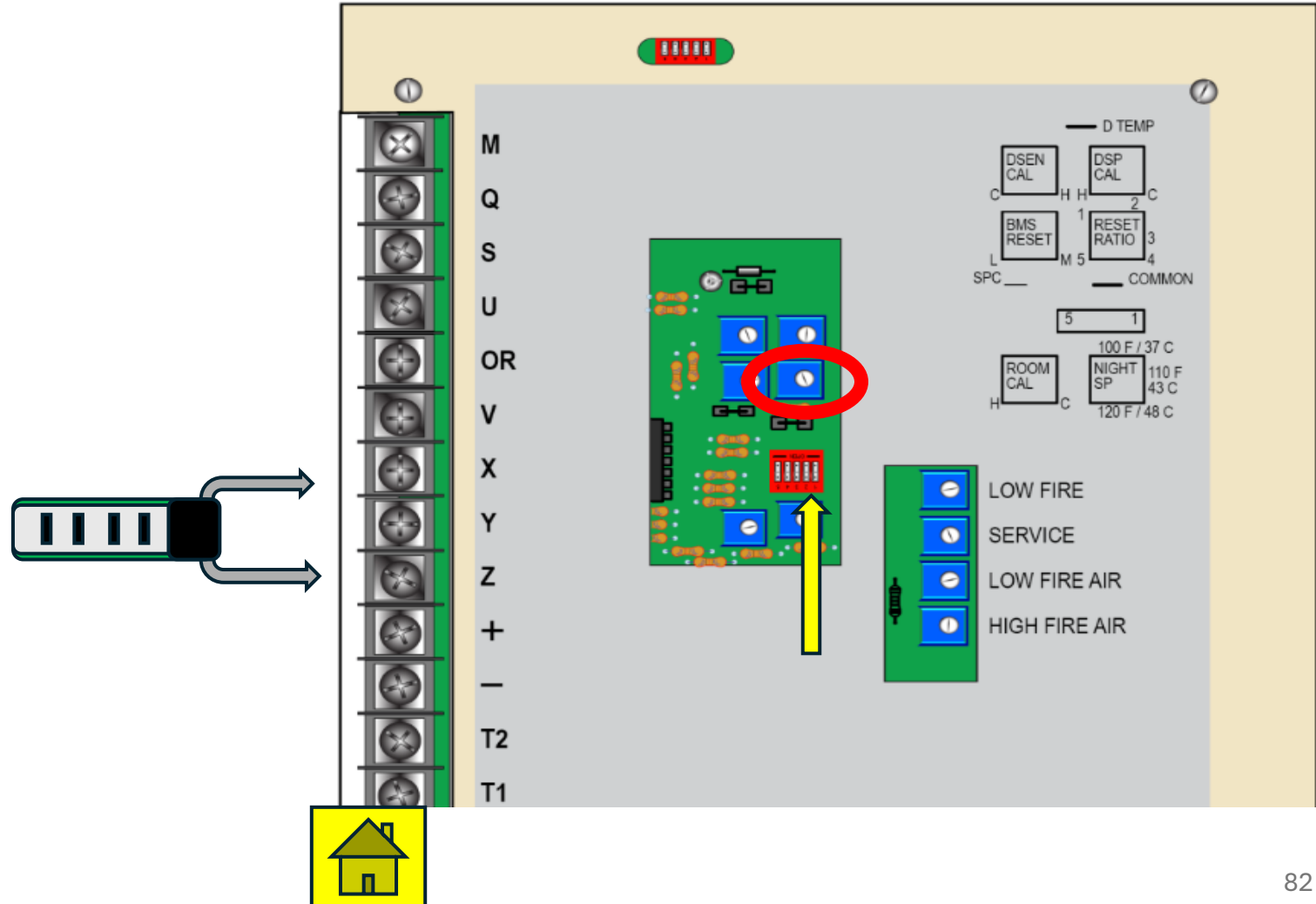
Ambient reset unit wiring page.



Ambient reset.

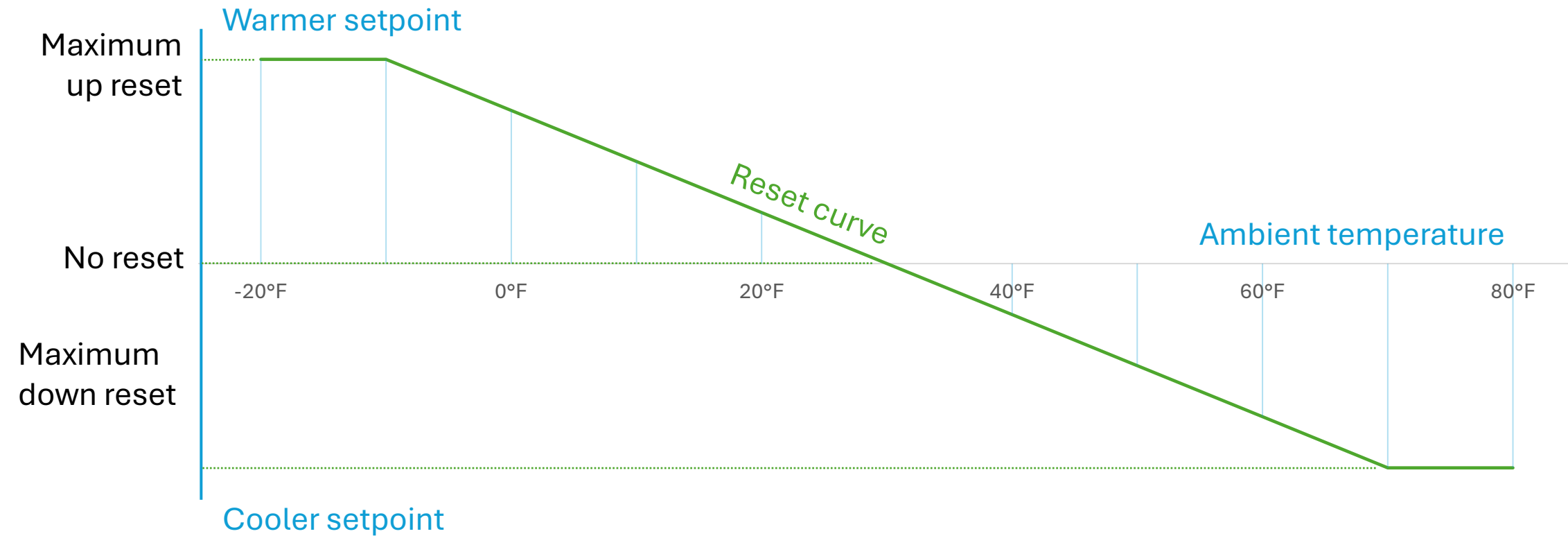
Ambient reset.

- Dip switch #2 on.
- Requires an ambient sensor to be wired to X and Z
- The D/A setpoint will be reset based on the ambient temperature.
- Reset ratio pot setting sets the reset temperature range.
- Extend range by placing 120 Ω resistor in series with ambient sensor
- Only positions 1, 3, & 5 are used on the pot.
- Day mode only.



Ambient reset.

Ambient Based Discharge Air Set Point Reset Curve.



Ambient reset.

ROOM RESET						AMBIENT RESET				
		Max. Discharge Temp. (when room is too heat)		Min. Discharge Temp. (when room is too warm)		Max. Discharge Temp. (when ambient is <15°C)		Min. Discharge Temp. (when ambient is >70°F)		Total Band Width
Discharge Set-Point	Pot 5 Setting	°C	°F	°C	°F	°C	°F	°C	°F	
15.5°C 60°F	1	2.5	72.5	12.5	54.5	21.5	70.5	13	55	15.5
	2	4	75	12	53.5					
	3	5.5	78	11.5	53	23.5	74.5	12	53.5	21
	4	8.5	83.5	10.5	51					
	5	15.5	96	9	48	26	79	11	52	27
21°C 70°F	1	8	82.5	17	62.5	26.5	79.5	18	64.5	15
	2	9.5	85	16	61					
	3	11	88	15	59	28	82.5	16.5	62	20.5
	4	14	93	13	55.5					
	5	21	106	9	48	29	84.5	15.5	59.5	25
30°C 86°F	1	15	95	24	75	34	93	26	78.5	14.5
	2	16	97	22.5	72.5					
	3	17	98.5	21	71	35	95	23.5	74.5	20.5
	4	19.5	103	17.5	63.5					
	5	24	111	13.5	56	37	99	21.5	71	28



Dip switch A3 Room reset.

ROOM RESET*(dipswitch A-3)*☐ YES☐ NO**Reset Ratio Pot Setting** _____***Note:** The room reset is bi-directional*

Room reset unit function page.

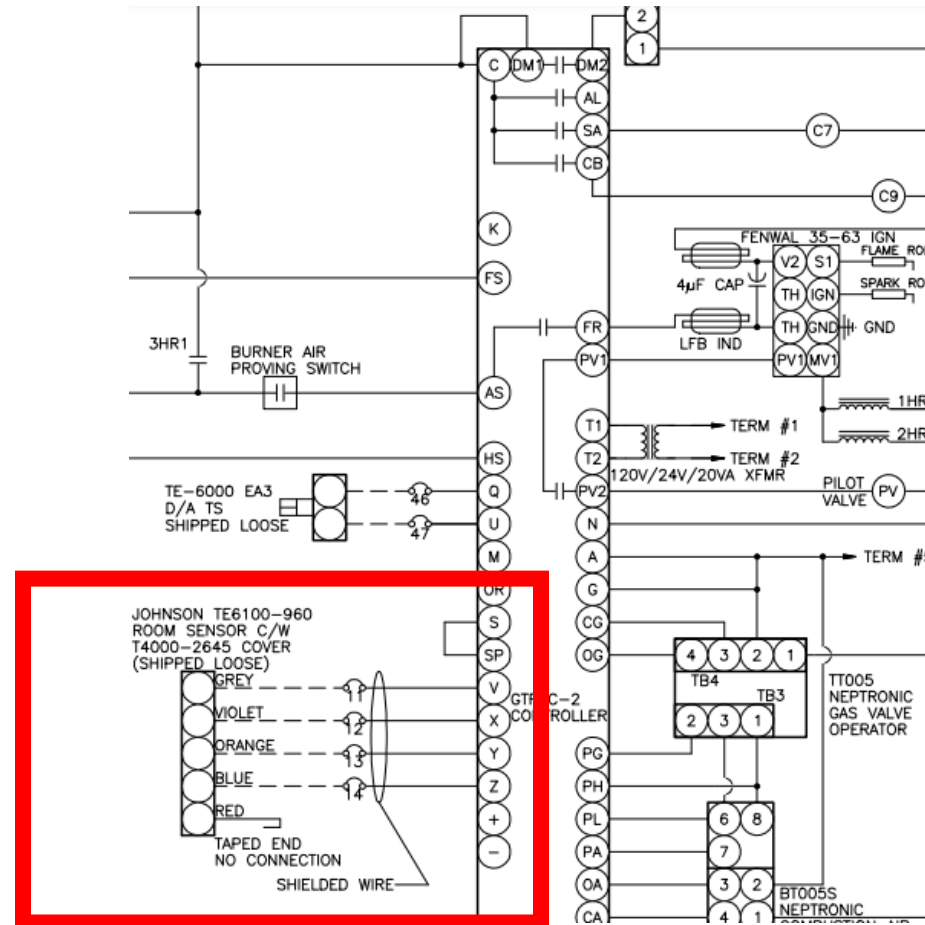
UNIT FUNCTION

Unit mounted non-fused disconnect switch 'on', service switch 'on', fire alarm contact (by others) 'closed' (jumper if not required), unit is ready for operation.

Remote panel mounted unit on/off switch 'on', outside air damper opens. Blower will delay on and run continuously. The DJM controller with an integral reference setpoint set at 70°F (21.1°C) will modulate the gas flow and combustion air to maintain the required discharge air temperature. Room sensor/setpoint (shipped loose) will reset the discharge air temperature between 55°F (12.8°C) to 90°F (32.2°C) to satisfy room setpoint requirements.



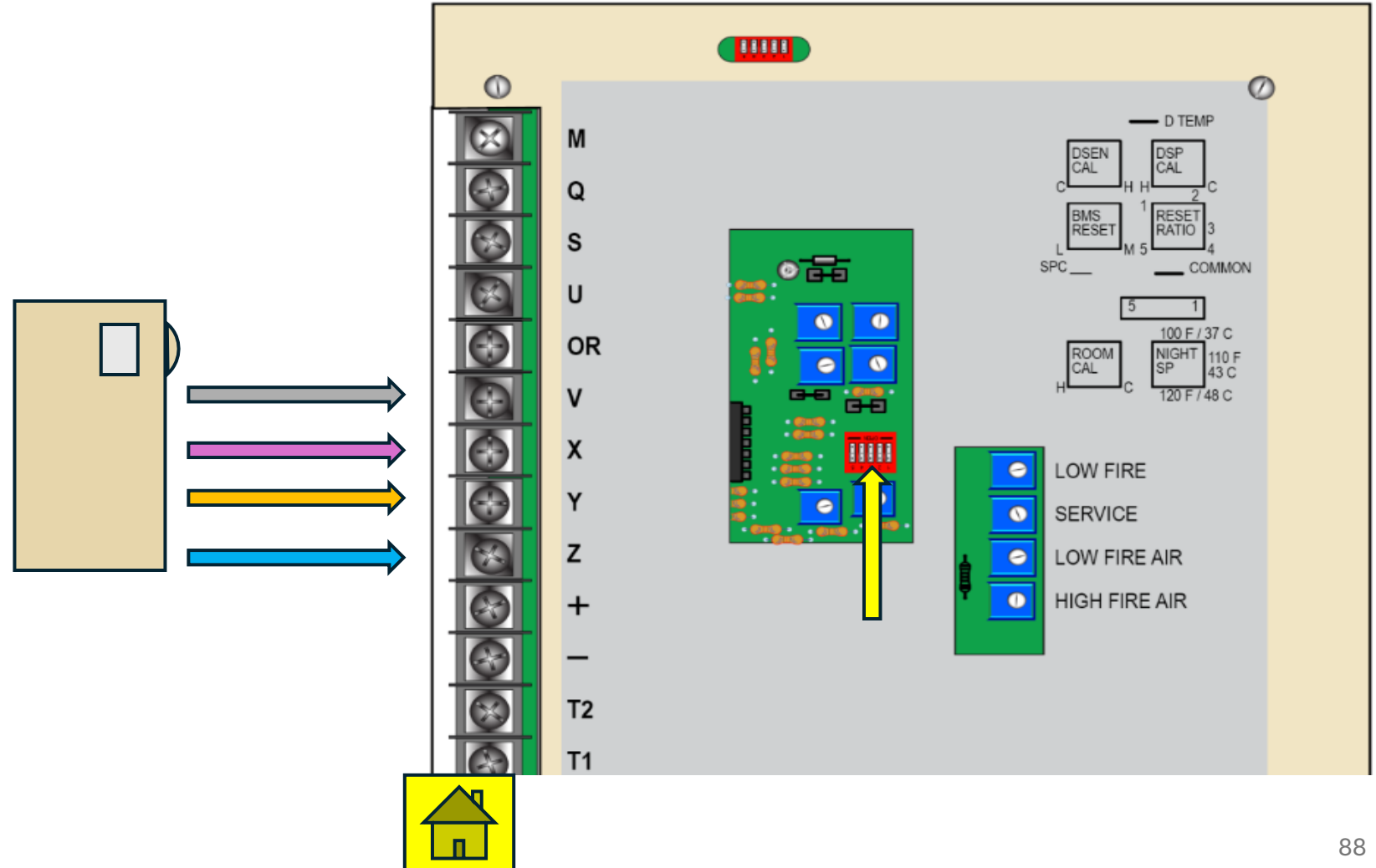
Room reset unit wiring page.



Room reset.

Room reset.

- Dip switch #3 on.
- ROOM CAL & RESET RATIO pots are used.
- Reset band is $\pm 3^{\circ}\text{F}$
- Actual degrees of reset depends on reset ratio pot settings and D/A setpoint.
- The calculated discharge air setpoint (dial setting + reset) is limited to between 48 and 120°F.



Room reset authority table.

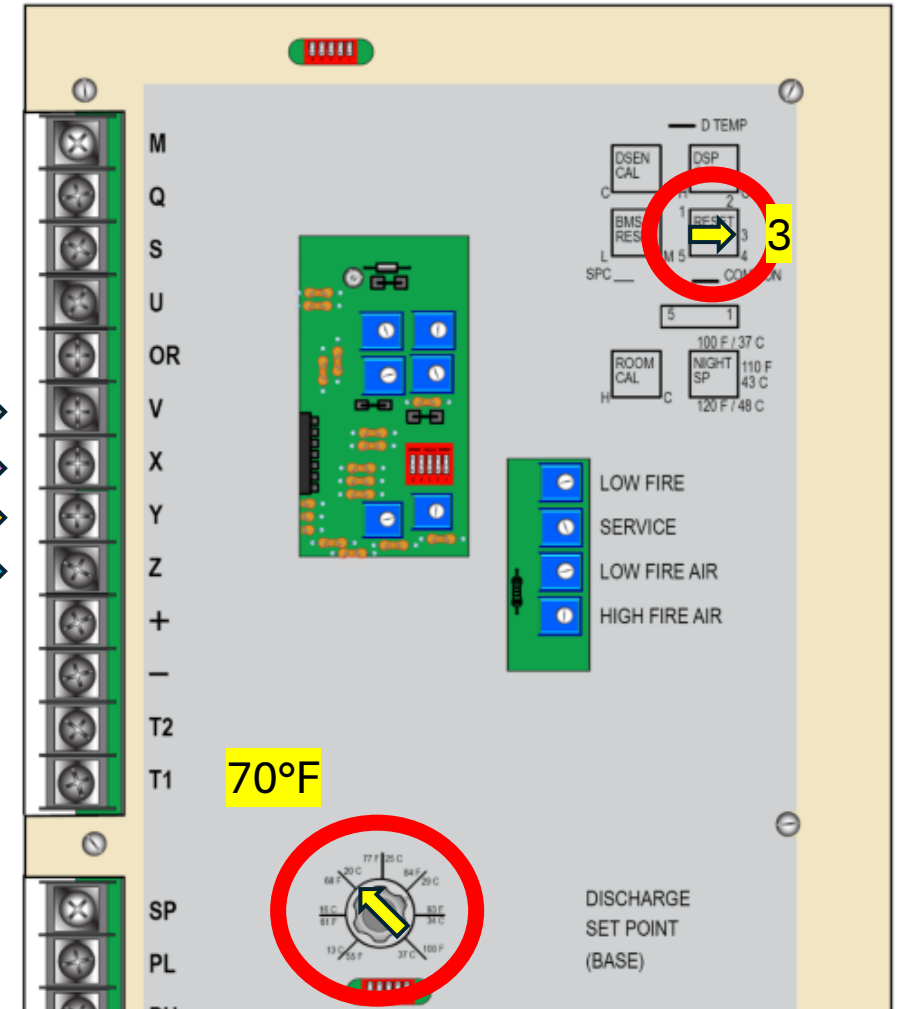
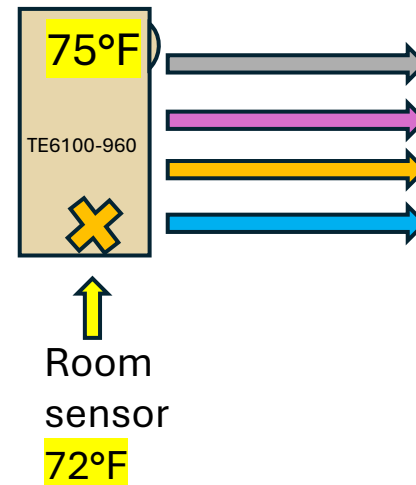
		ROOM RESET			
		Max. Discharge Temp. (when room calls for heat)		Min. Discharge Temp. (when room is too warm)	
Discharge Set-Point	Pot 5 Setting	°C	°F	°C	°F
15.5°C 60°F	1	22.5	72.5	12.5	54.5
	2	24	75	12	53.5
	3	25.5	78	11.5	53
	4	28.5	83.5	10.5	51
	5	35.5	96	9	48
21°C 70°F	1	28	82.5	17	62.5
	2	29.5	85	16	61
	3	31	88	15	59
	4	34	93	13	55.5
	5	41	106	9	48
30°C 86°F	1	35	95	24	75
	2	36	97	22.5	72.5
	3	37	98.5	21	71
	4	39.5	103	17.5	63.5
	5	44	111	13.5	56



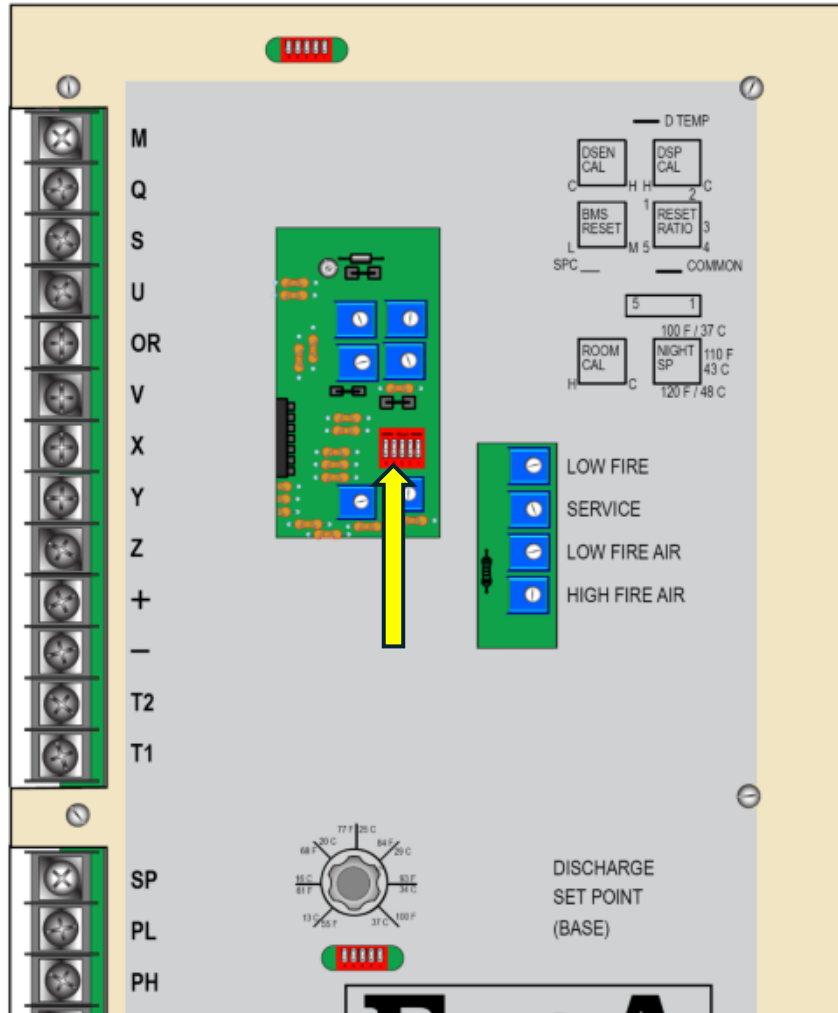
Room reset.

Example.

- G-TRAC2 setpoint 70°F.
- Reset ratio pot set at 3.
- Room thermostat set at 75°F.
- Room sensor is sensing 72°F.
- Discharge setpoint is reset up the full amount(+18) to 88°F.
- Unit will discharge 88°F until the room stat is satisfied. The setpoint will then decrease back to 70°F.
- Room sensor is sensing 78°F.
- Discharge setpoint is reset down the full amount(-11) to 59°F.
- Unit will discharge 59°F until the room stat is satisfied. The setpoint will then increase back to 70°F.



Dip switch A4 Supply fan configuration.



Supply Fan configuration.

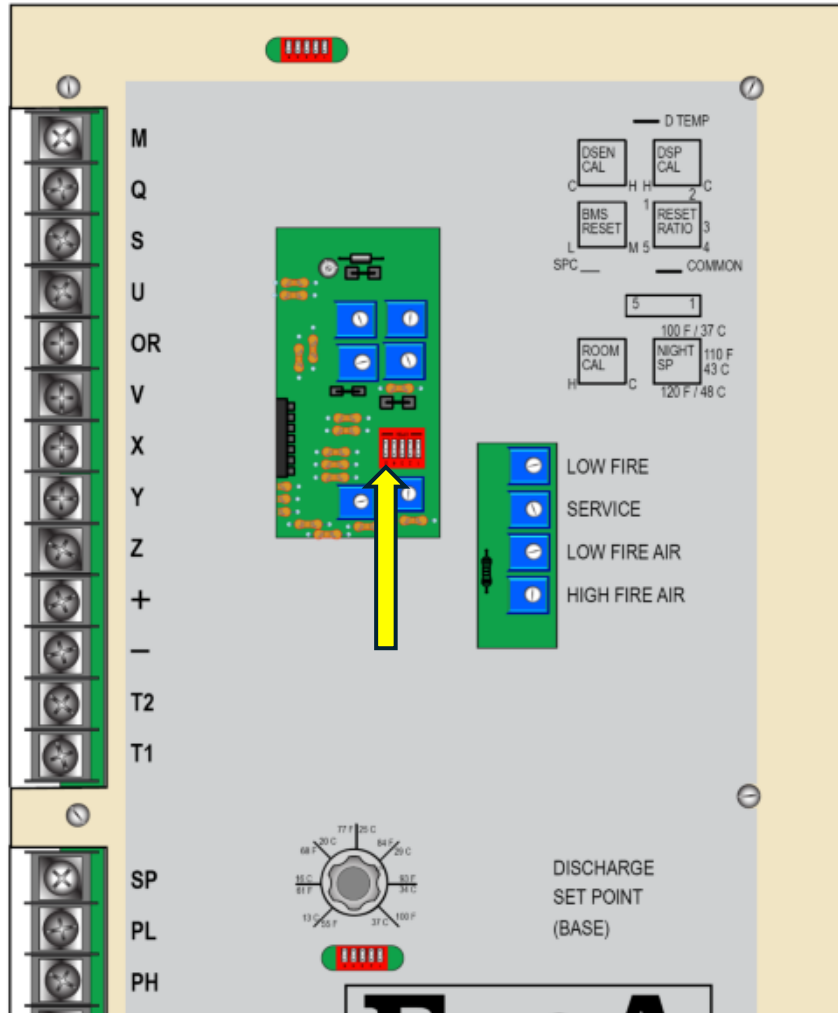
- Dip switch #4 on.
- “ON”: maintains airflow as a priority to pressurize space.
- “OFF”: D/A temperature has priority.

Note.

- If the airflow has priority, then the supply fan doesn't shut down if the D/A temperature is too cold.
- This applies to G-TRAC2 controls starting from a cold start.



Dip switch A5 Service mode.

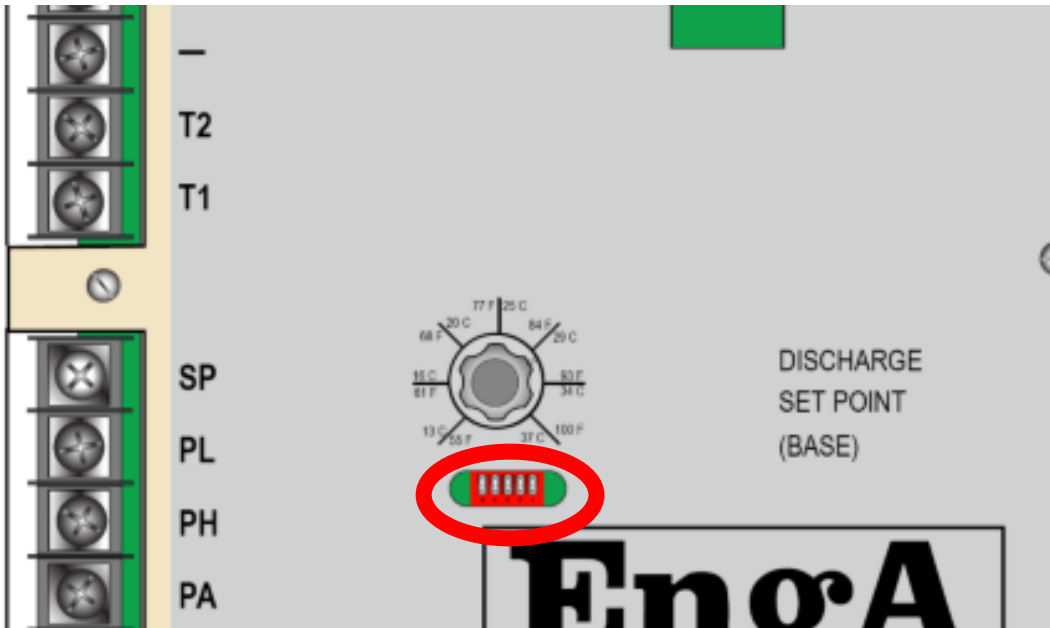


Service mode.

- Dip switch #5 on.
- The SERVICE pot is to be adjusted by a qualified service technician only.
- This pot should only be adjusted when using a combustion analyzer.
- Allows direct control of the burner firing rate.
- Used in conjunction with 'LOW FIRE', 'LOW FIRE AIR' and 'HIGH FIRE AIR' pots for combustion setup.
- Turn off dip switch #5 when done.



G-TRAC2 dip switch block B.



Dip switch numbers

5-1

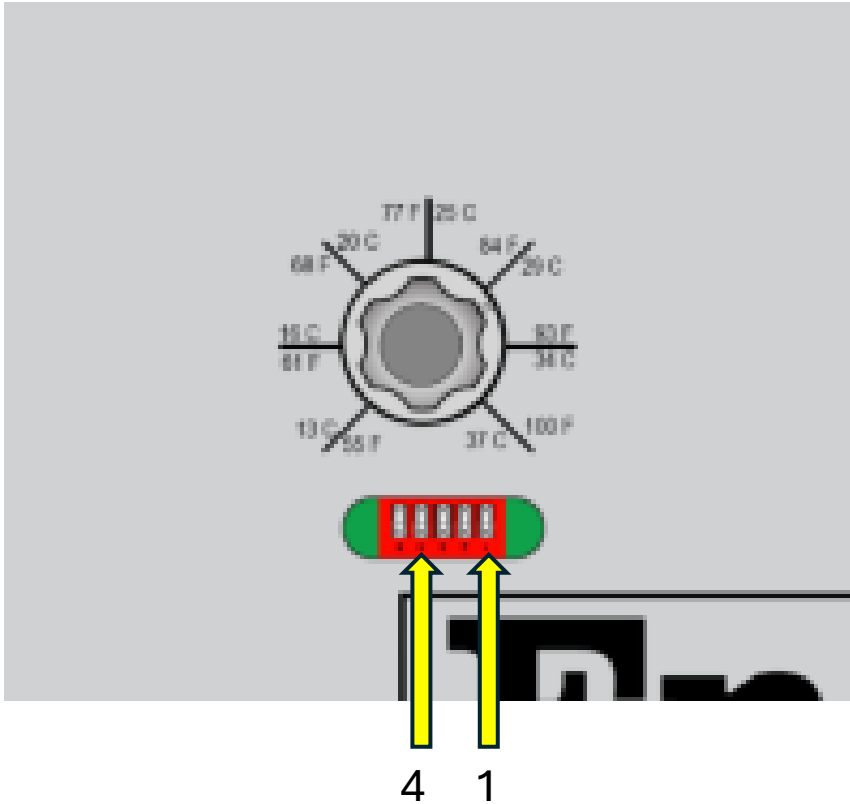


Dip switch block B.

- Located in a slot below the set-point knob.
- Dip switches are to be adjusted by a qualified service technician only and under the direction of Engineered Air tech support.
- These dip switches should only be adjusted when using a combustion analyzer.
- Used to adjust the built-in air and gas curves on the G-TRAC2.
- Dipswitches are factory set.
- 16 possible air and gas curve combinations.



G-TRAC2 dip switch block B, gas curves.



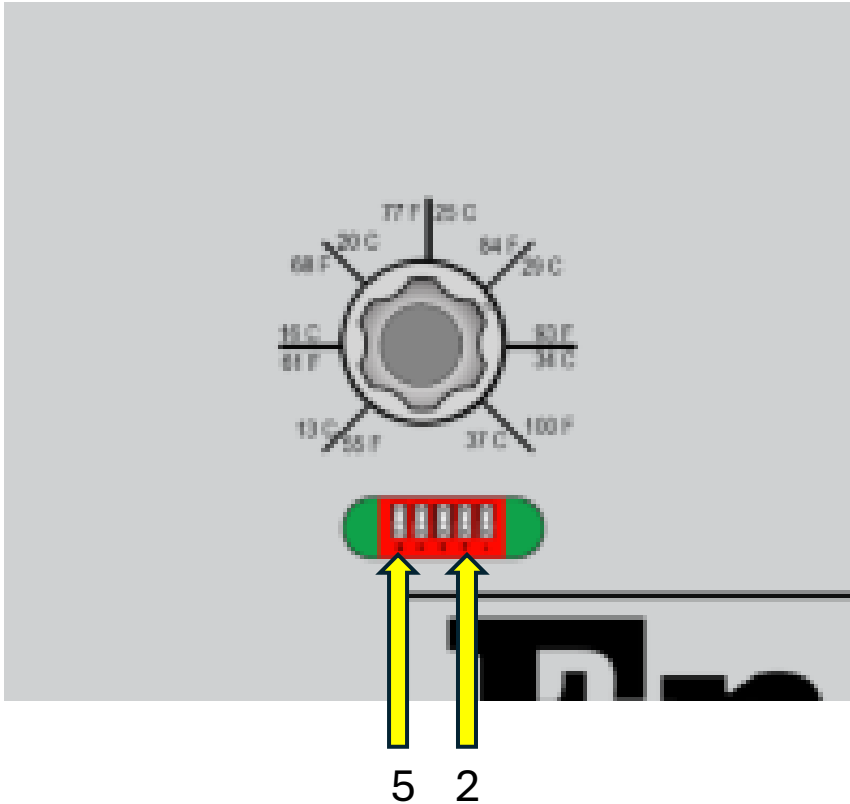
Gas curves.

- Dip switches 1 and 4 are used to the gas valve curves.

Gas Curve	DIP Switch 1	DIP Switch 4	Characteristics
1	OFF	OFF	Undersized valve or high efficiency application (lower O ₂ in midrange)
2	OFF	ON	Normal setting
3	ON	OFF	Oversized gas valve or condensate reduction (more O ₂ in midrange)
4	ON	ON	Even more O ₂ in low and midrange*



G-TRAC2 dip switch block B, air curves.



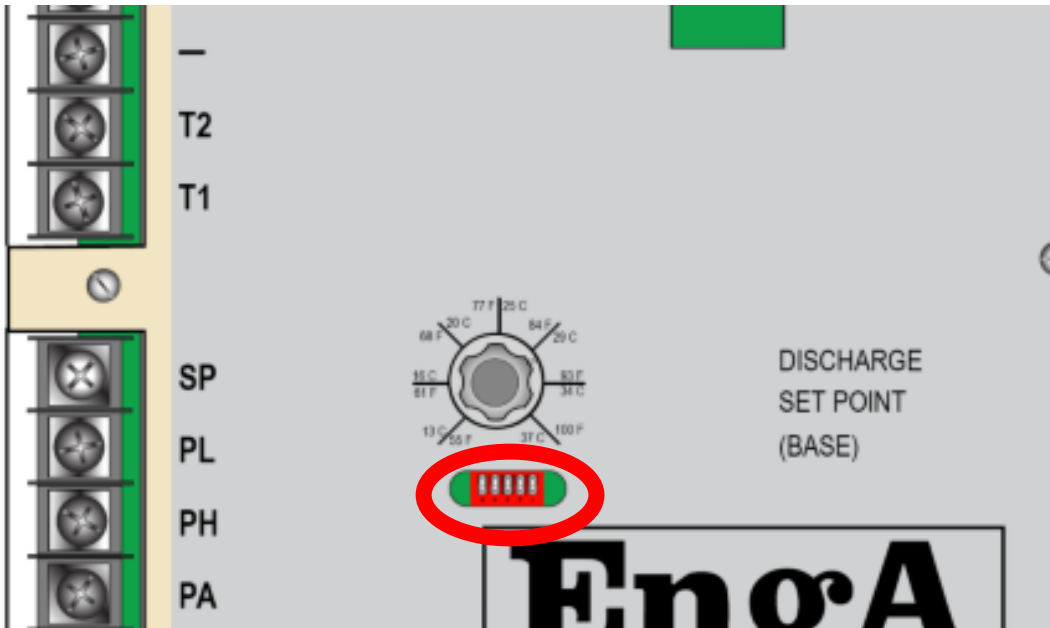
Air curves.

- Dip switches 2 and 5 are used to the air damper curves.

Gas Curve	DIP Switch 2	DIP Switch 5	Characteristics
1	OFF	OFF	Rich (lower O ₂ in midrange)
2	ON	OFF	Normal setting
3	OFF	ON	Lean (higher O ₂ in midrange)
4	ON	ON	Lean "S" Curve



G-TRAC2 dip switch block B.



Dip switch numbers

5-1

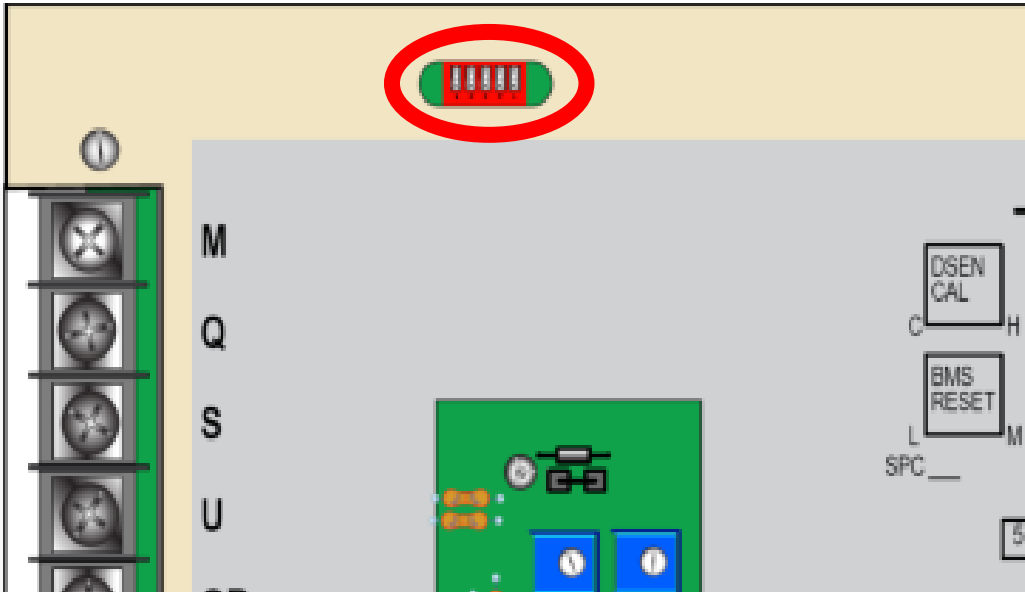


Dip switch block B.

- Correct curves vary based on the gas valve, air shutter, combustion air blower, and unit size.
- Condensate control can be set up
- Requires extra combustion air (higher O₂) in the mid-to-low fire range.
- This distributes the water vapour over larger volume of flue gases
- Dilutes concentration and lowers dew point temperature.
- Note: increasing amount of excess air too much will slightly reduce the burner efficiency.



G-TRAC2 dip switch block C.

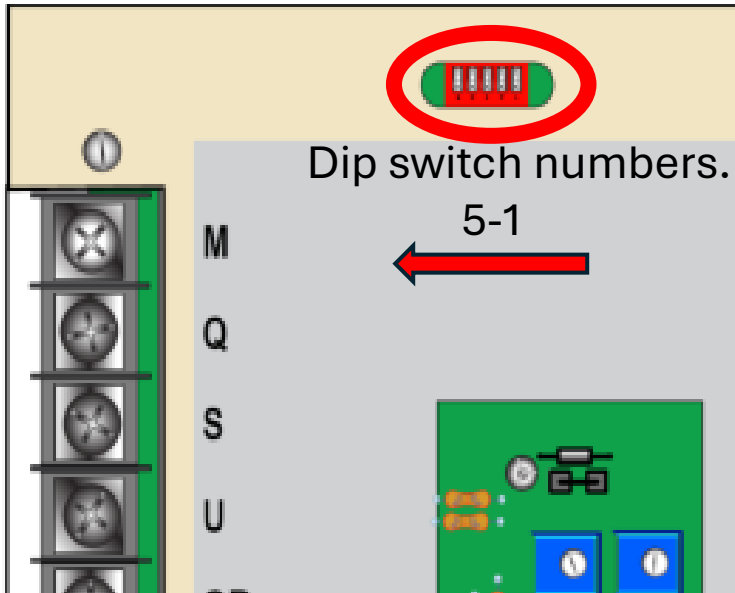


Dip switch block C.

- Located in the small slot at the top of the board.
- Used to enable the low limit.
- Sets the external control strategy for the G-TRAC2.



G-TRAC2 dip switch block C.



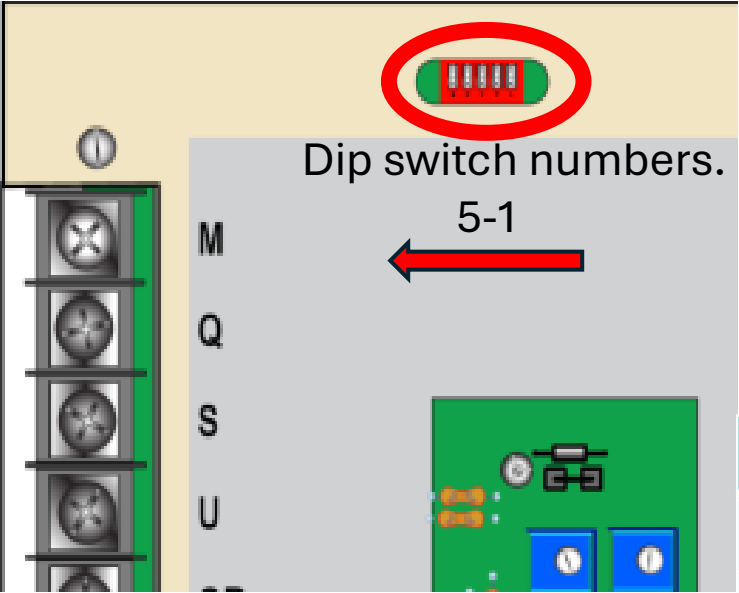
Dip switch block C.

- If the low limit is required:
- a D/A sensor must be connected to terminals Q and U and Jumper U to S
- If the low limit is not required, jumper terminals Q to U only.

DIP 1	DIP 2	DIP 3	DIP 4	DIP 5	Characteristics
–	–	–	–	ON	Low limit active*
–	–	–	–	OFF	Low limit disabled*
OFF	ON	OFF	OFF	–	Normal operation (PI control)
OFF	OFF	ON	ON	–	Direct C-TRAC3 control (reduced I)*
ON	OFF	ON	ON	–	Direct BMS 0-10 VDC control (P only)*



G-TRAC2 dip switch block C.



- Dip switch block C.
- When using direct control (not C-TRAC3 or BMS):
Terminal S must be connected to U.
 - DIP switch A-1 (Block A) must be in the off position, meaning BMS reset is disabled).

DIP 1	DIP 2	DIP 3	DIP 4	DIP 5	Characteristics
–	–	–	–	ON	Low limit active*
–	–	–	–	OFF	Low limit disabled*
OFF	ON	OFF	OFF	–	Normal operation (PI control)
OFF	OFF	ON	ON	–	Direct C-TRAC3 control (reduced I)*
ON	OFF	ON	ON	–	Direct BMS 0-10 VDC control (P only)*



Air side operation.



Blower strategies setup page.

Day/Night General Description of Fan/Damper Operation

The combination of energized night (K) and fan (FS) terminals set the blower and damper operation in day and night mode.

DAY (<i>FS on, HS on</i>)	Continuous Blower, Dampers Open, Discharge Control
NIGHT (<i>FS off, K on, HS on</i>)	Intermittent Blower, Dampers Off, Room Control
ALTERNATE NIGHT OPERATION (<i>HS, FS, K terminals all energized</i>)	Continuous Blower, Dampers Off, Discharge Control with Room Reset



Blower strategies day and night operation tables.

- Note 1** Unit is “off” on low limit.
- Note 2** In “day” operation, when the unit starts up, if the discharge sensor is warm the supply air fan will start in 64 seconds unless dipswitch A-4 is closed.
- Note 3** If the heat switch is on and there is an immediate heat call (*or a heat call within the first two minutes of the blower starting*), the blower will shut off or remain off until the burner has been running for 64 seconds. If during this time the heat call is lost, the blower will cycle back on but the pre-purge will continue. The supply fan may cycle a few times before the heat starts depending on dipswitch A-4 position.
- Note 4** If there is a heat call while the heat switch is off, and the discharge temperature is not below 40°F, the G-TRAC2 will ignore the requirements for having the burner on before the supply blower is started.
- Note 5** If the discharge temperature is below 40°F and the heat switch is off, the G-TRAC2 will not start the blower until the discharge sensor rises above 40°F. If the low limit is set in the activated position (*dipswitch C-5 “on”*). Note that this assumes the low limit bypass is still timing.
- Note 6** If the discharge sensing temperature falls below 40°F after the unit has started the unit will shut down in 12 seconds, but is not locked out. If the discharge temperature warms up the unit will restart.



Blower strategies day operation table.

NOTE	FS Fan SW	HS SW	Serv. SW	Term. K	Low Limit	Flame Fail	Config. Dip Sw A-4 open Temp. Priority	Config. Dip Sw A-4 closed Air Flow Priority
1	XX	XX	XX		Lock Out	XX	Unit locked off on L/L.*	Unit locked off on L/L.*
2, 3, 6	ON	OFF	OFF	OFF (day)	Enabled	NO	Discharge > 40°F, blower delays on (64 sec.). Discharge < 40°F, blower stays off.	S/A Blower instant on. Low limit functional. No damper delay.
3, 4, 5	ON	XX	OFF	OFF (day)	Enabled	YES	Unit locked off on F/F.	S/A Blower remains operational as long as the discharge temperature is over 40°F.
3	ON	ON	OFF	OFF (day)	Enabled	NO	If heat call, S/A Blower delays on after main flame. If no heat call, blower delays on (64 sec.). After on, uses standard G-TRAC blower function described below.	S/A Blower delays on (64 sec.).
	OFF	XX	XX	XX	XX	XX	Unit switched off.	Unit switched off.
3, 4, 5	ON	XX	ON	OFF (day)	Enabled	Disabled	Blower delays on after main flame (64 sec.).	S/A Blower delays on (64 sec.).

- XX means that switch can be either on or off.



Blower strategies night operation table.

Damper operation depends on fan switch position "ON". This opens dampers when the supply fan is on.

NOTE	FS Fan SW	HS Heat SW	Service SW	Low Limit	Flame Fail	Configure Dip Switch 1-4 OPEN Temperature Priority	Configure Dip Switch 1-4 CLOSED Air Flow Priority	Terminal K
1	ON	ON	OFF	Lock Out	N/A	Unit locked off on L/L.*	Unit locked off on L/L. *	
	OFF	OFF	OFF	Enabled	XX	Unit switched off.	Unit switched off.	ON (night)
6	OFF	ON	OFF	Enabled	NO	Intermittent S/A fan delays on 64 sec. After main flame starts. Call is from room thermostat.	Intermittent S/A fan delays on 64 sec. After main flame starts. Call is from room thermostat.	ON (night)
6	ON	XX	ON	Enabled	Disabled	Blower delays on after main flame (64 sec.).	S/A Blower delays on (64 sec.).	

- To reset a low limit and flame failure, remove power from terminals HS and FS at the same time and remove power from T1 and T2. Turning off switch at remote control panel can usually do this.



Blower operation day mode.

Supply Fan, Damper and Heat Operation

Standard G-TRAC2 Supply Fan Function (Temperature Priority Program)

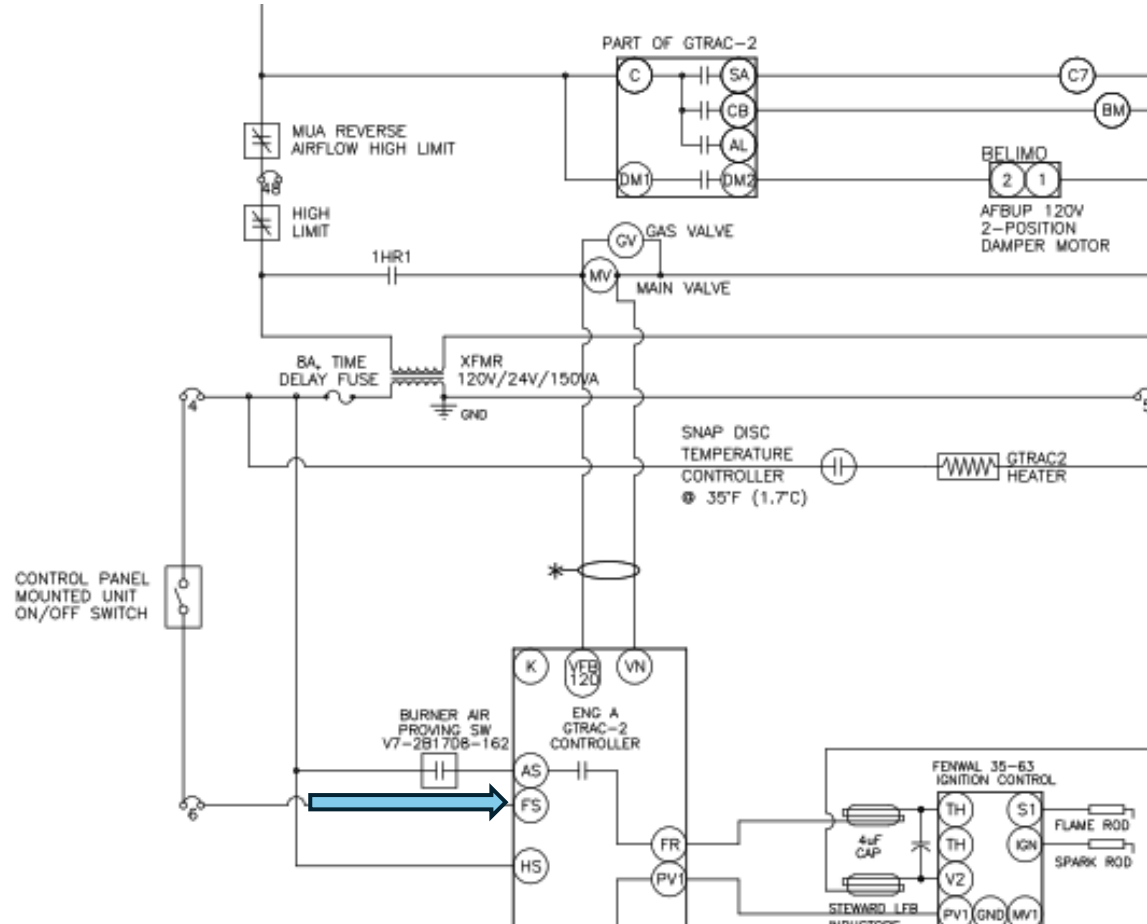
In normal operation dipswitch A-4 is off. The supply fan is operating with discharge temperature authority. During morning start-up, if there is no initial heat call (*due to a warm discharge sensor being exposed to building heat*) the supply fan will start after the outside damper is open. However if the discharge sensor is rapidly cooled, the G-TRAC2 senses a need to start the burner. As it takes time to start the burner and warm the heat exchanger the G-TRAC2 will shut off the supply fan until the main flame has been firing for about 64 seconds. This reduces the amount of cold air dumped into the building during start up. If dipswitch A-4 is turned 'on' after the fan starts, it stays on, (*Air Delivery Authority*). For other set ups, note below.

Fan/Damper During Day (Terminal "K" No Power) Dipswitch A-4

During day operation Terminal 'K' has no power. The unit dampers (*if controlled by the G-TRAC2*) will open before the blower starts and close after blower stops (*64 seconds*).



Blower operation day mode.



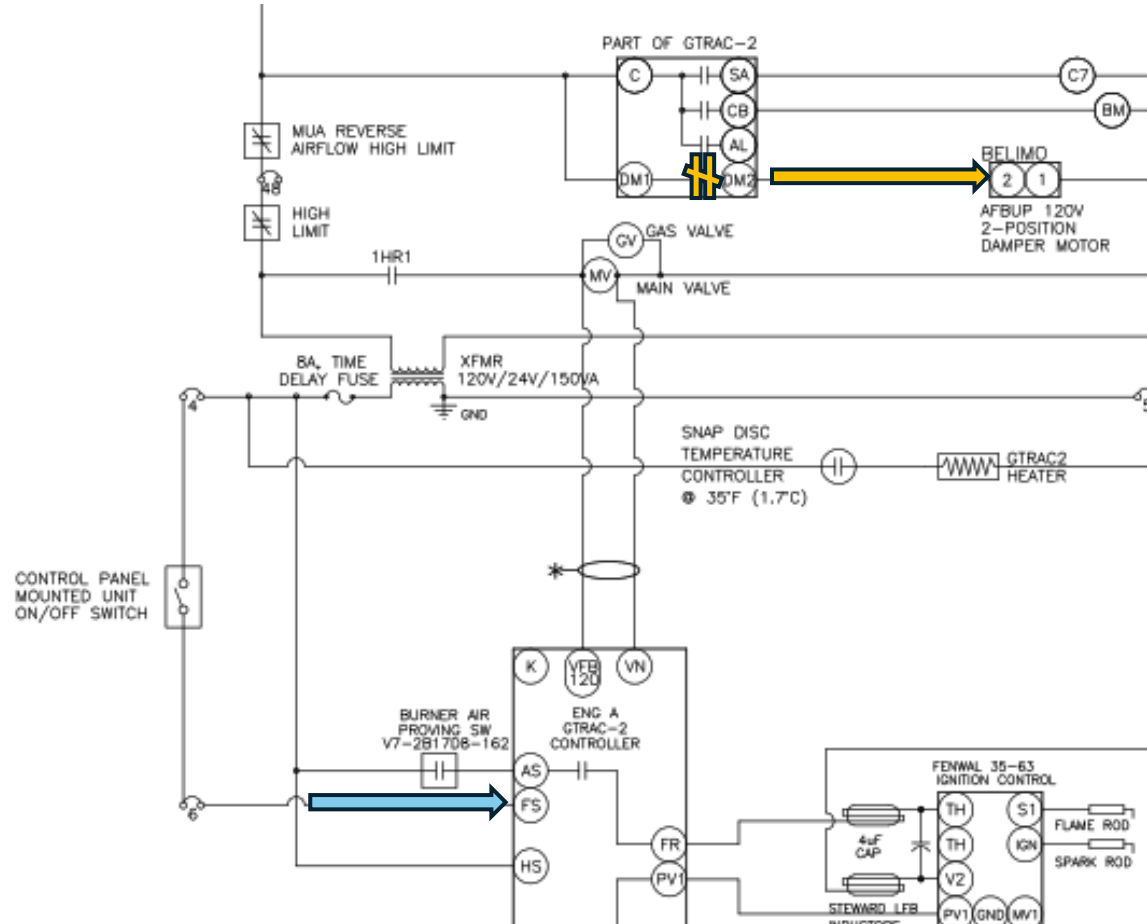
Day mode (No heat call).

Ventilation mode.

1. Terminal FS powered by 24vac input.



Blower operation day mode.



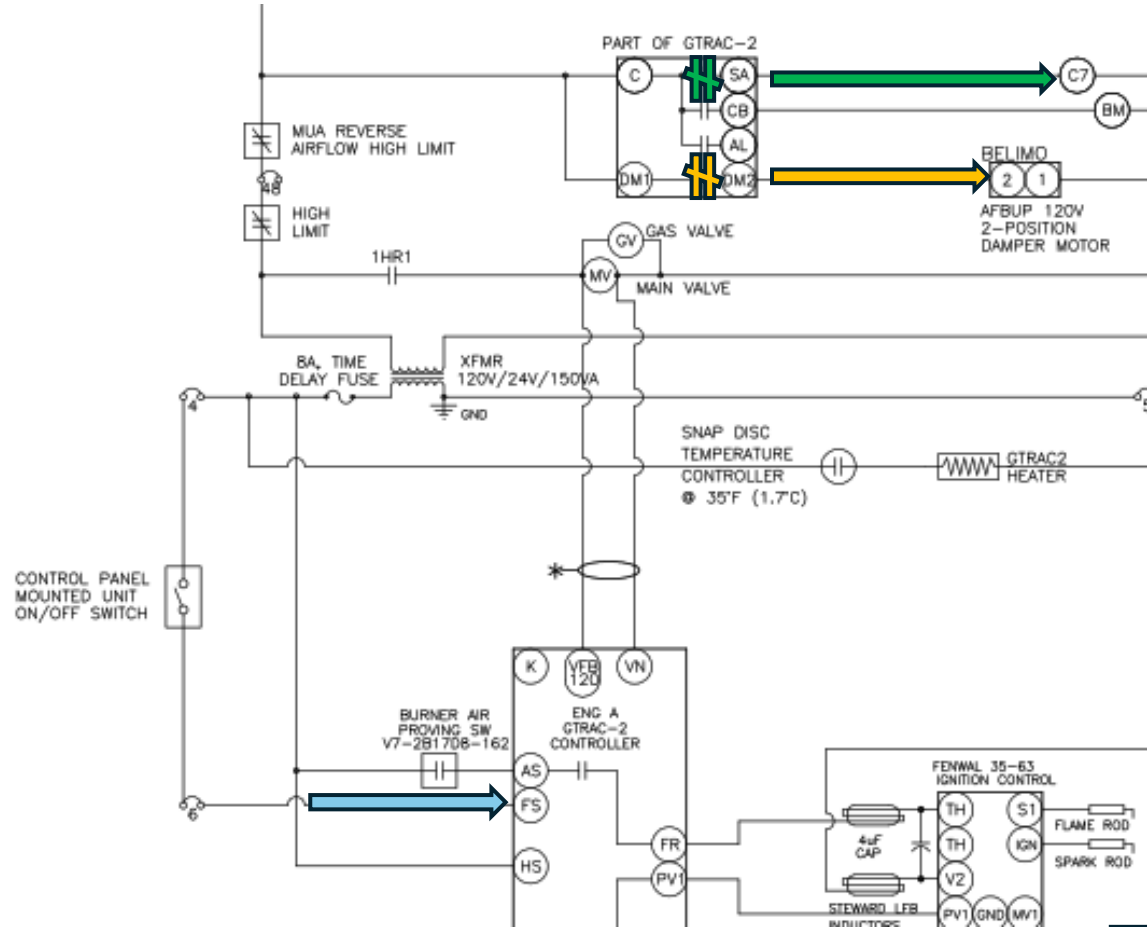
Day mode (No heat call).

Ventilation mode.

1. Terminal FS powered by 24vac input.
2. DM1 and DM2 contacts closed.
3. DM2 powers damper motor, dampers start to open.



Blower operation day mode.



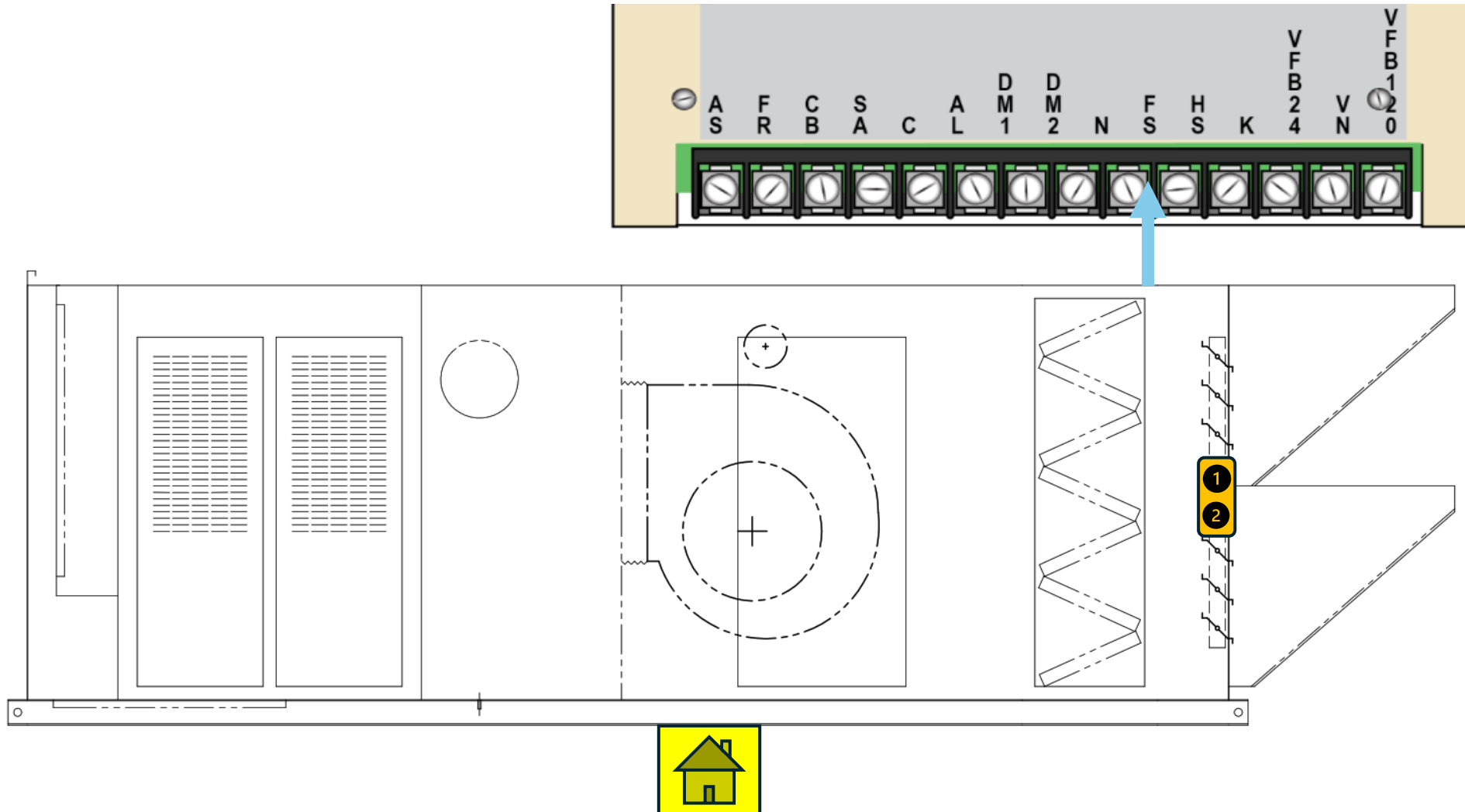
Day mode (No heat call).

Ventilation mode.

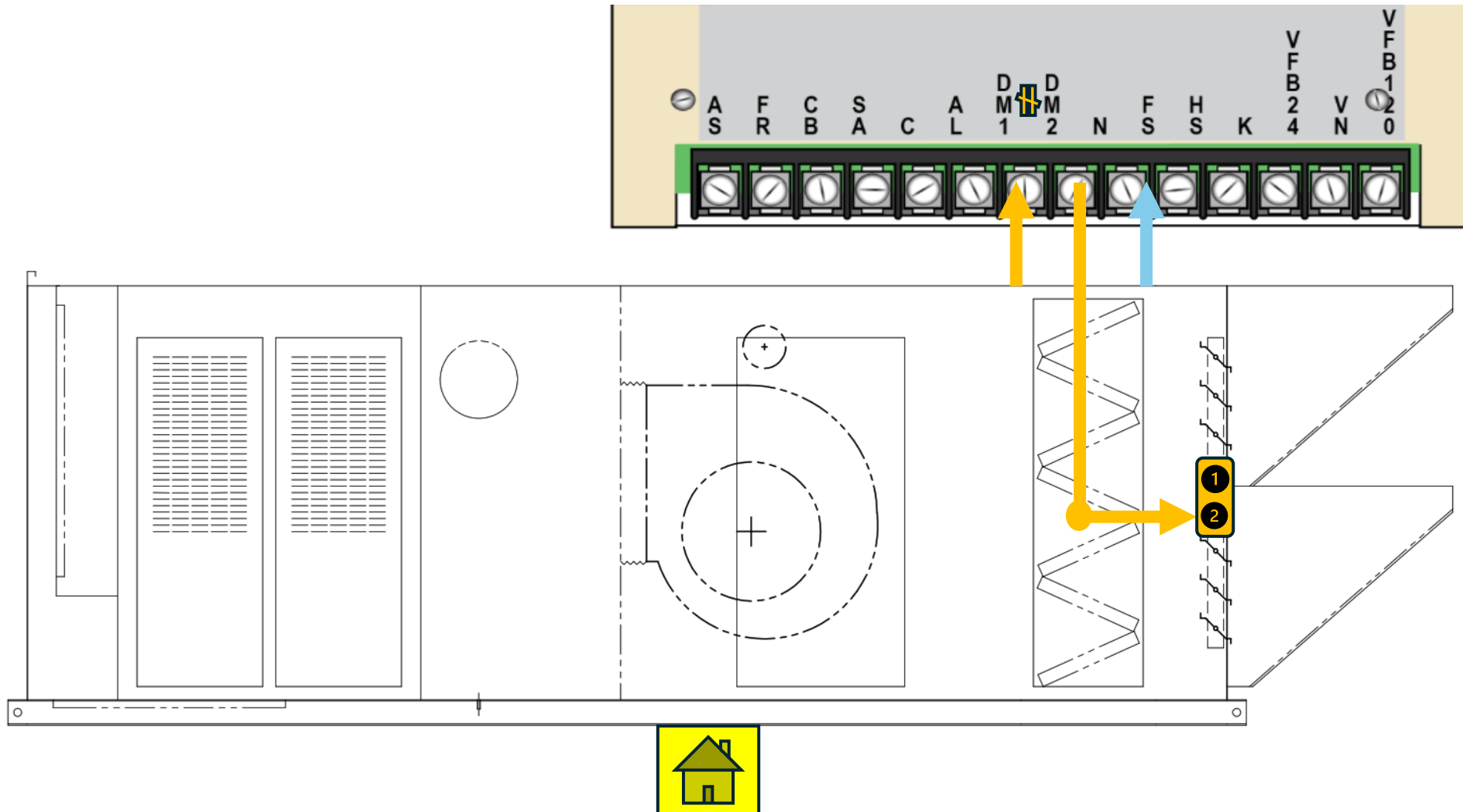
1. Terminal FS powered by 24vac input.
2. DM1 and DM2 contacts closed.
3. DM2 powers damper motor, dampers start to open.
4. Blower start delay = 64 seconds.
5. After 64 second delay expires, contacts between terminals C and SA close, terminal SA powers C7 contactor and the supply fan motor starts.



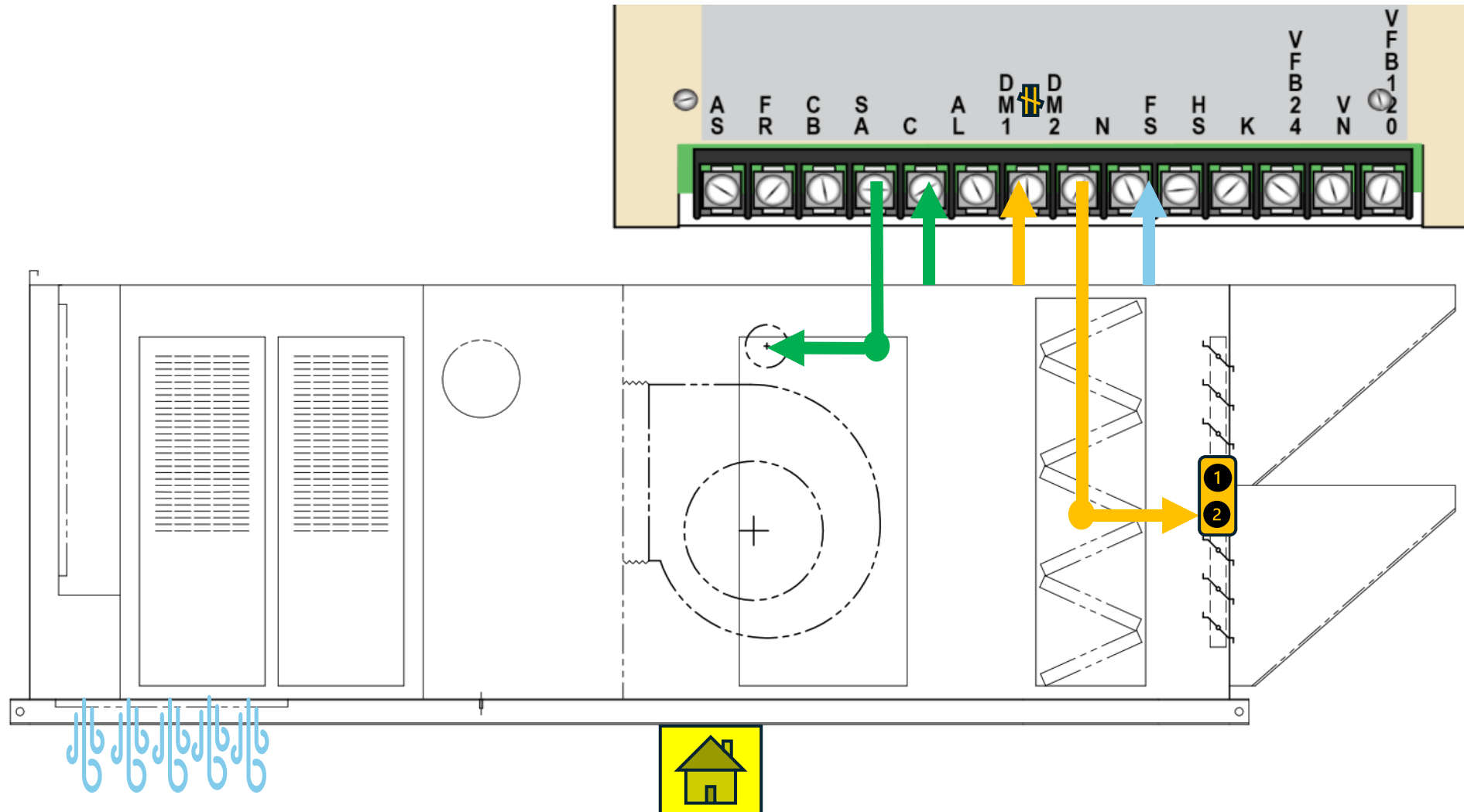
Blower operation day mode.



Blower operation day mode.

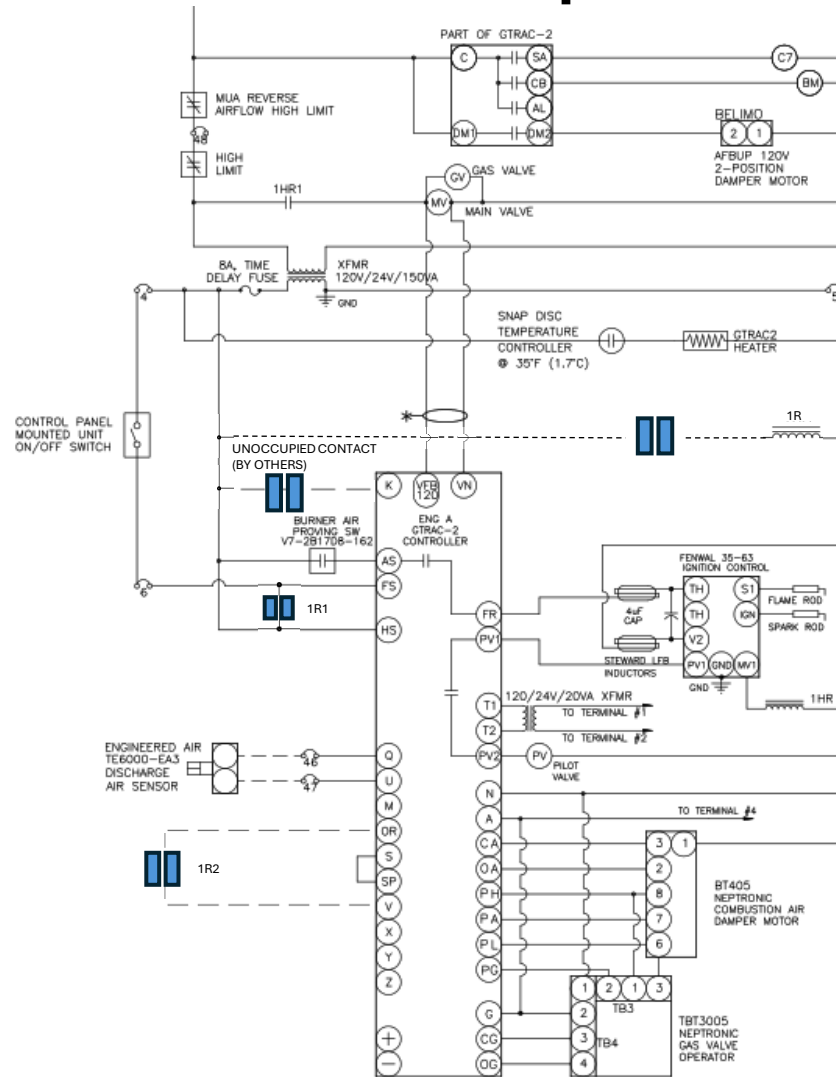


Blower operation day mode.

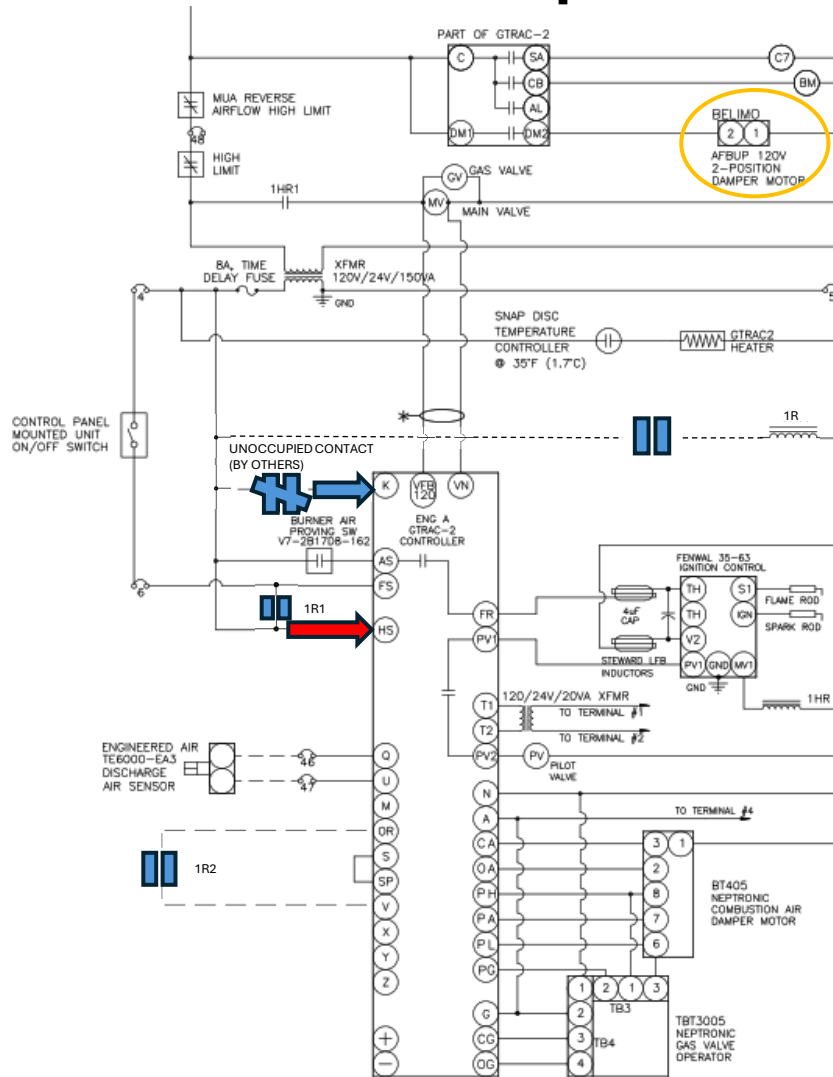


Blower operation night mode.(Make/Break stat)

Night mode.



Blower operation night mode.(Make/Break stat)

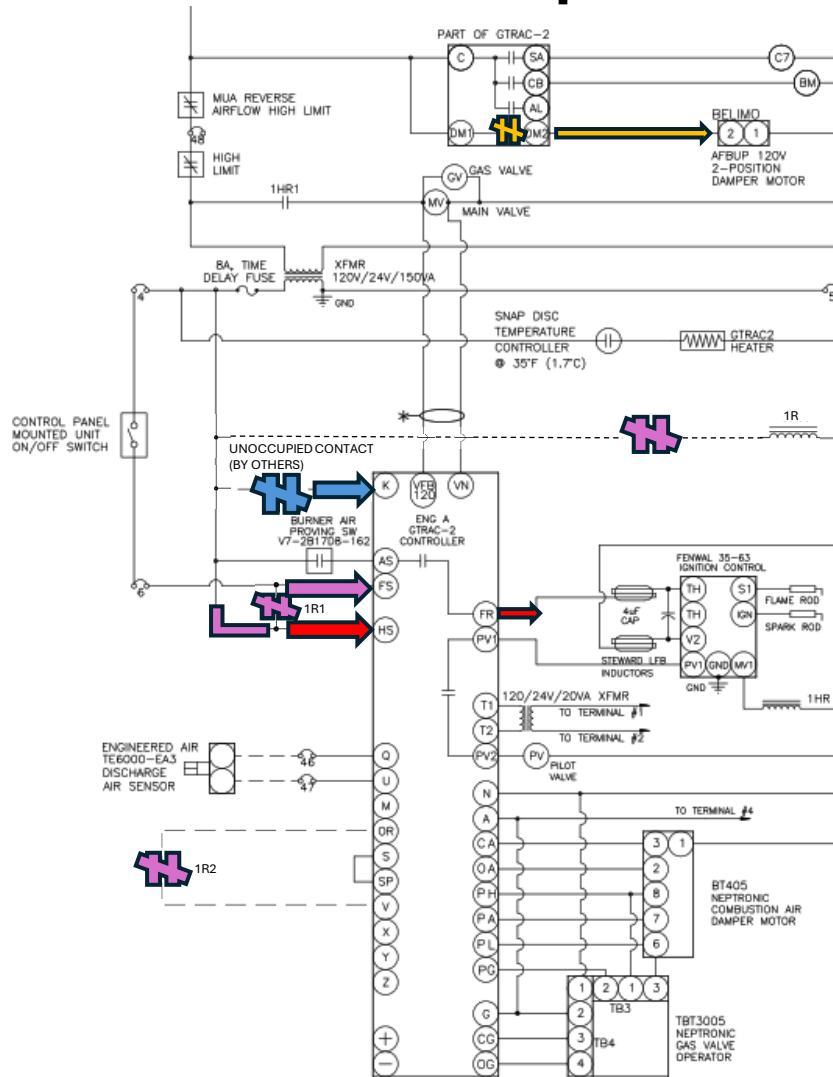


Night mode.

1. Terminal K powered by unoccupied contact, 24vac input. No power to FS, ON/OFF switch open.
2. Terminal HS powered by 24vac input.
3. Dampers remain closed.



Blower operation night mode.(Make/Break stat)

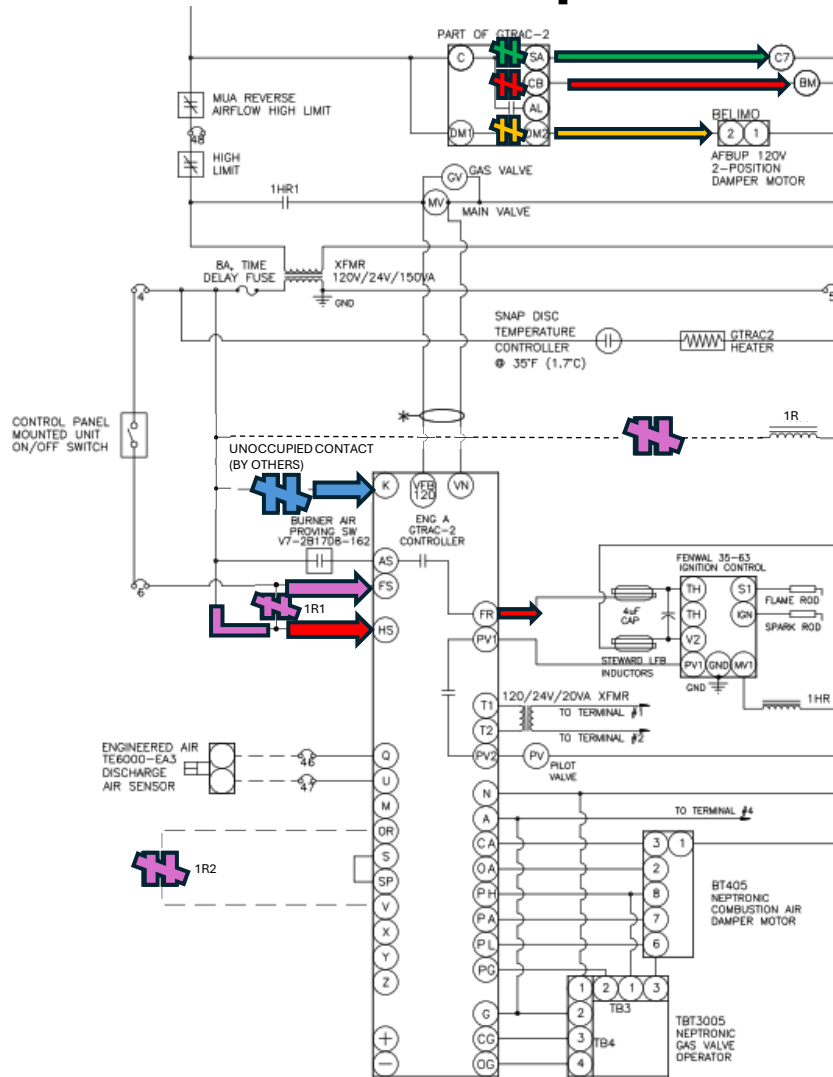


Night mode.

1. Terminal K powered by unoccupied contact, 24vac input. No power to FS, ON/OFF switch open.
2. Terminal HS powered by 24vac input.
3. Dampers remain closed.
4. Night thermostat calls for heat, energizing 1R relay.
5. 24vac is re-established to terminal FS and terminals OR and V close, discharge setpoint is now 120°F.
6. Dampers open.



Blower operation night mode.(Make/Break stat)

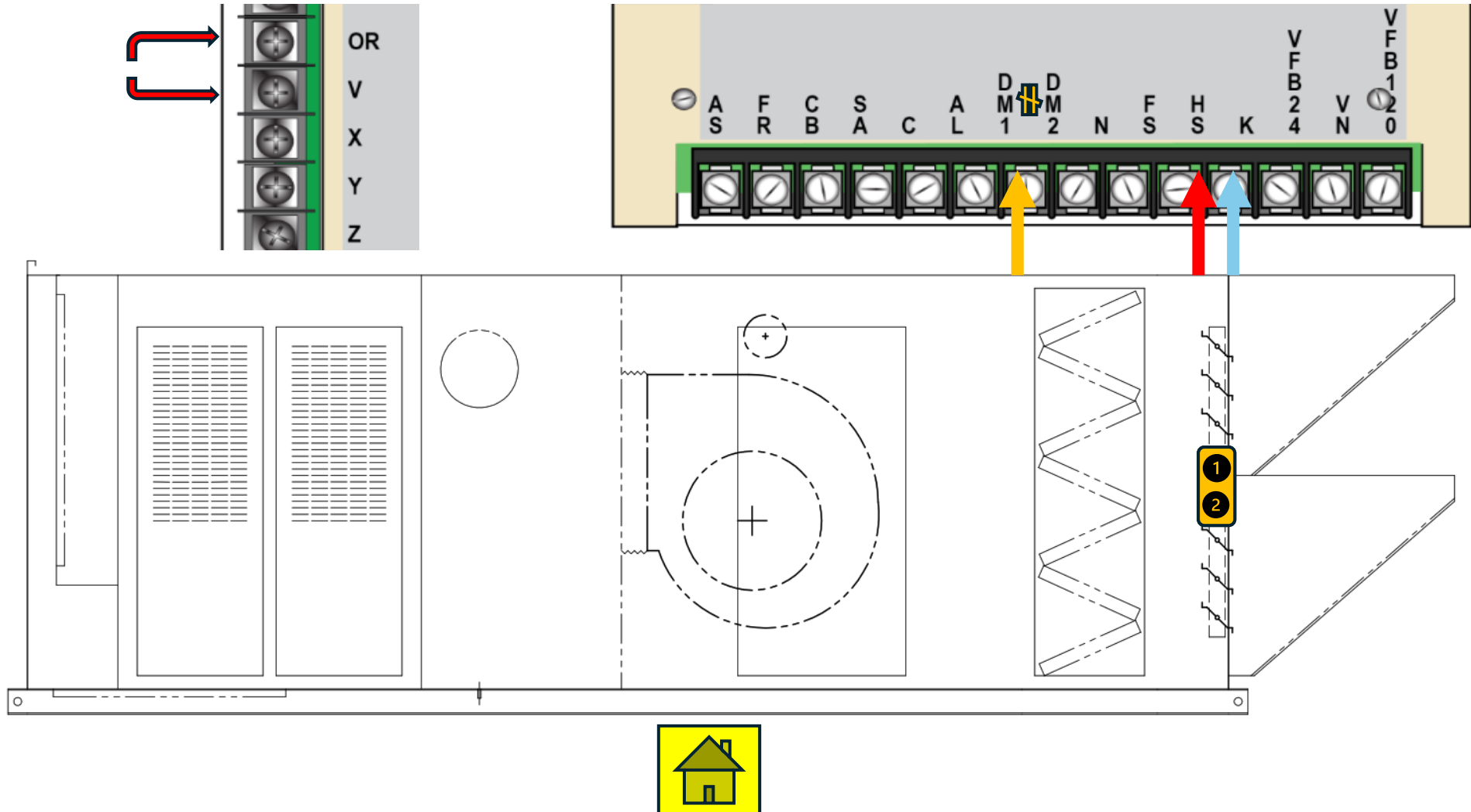


Night mode.

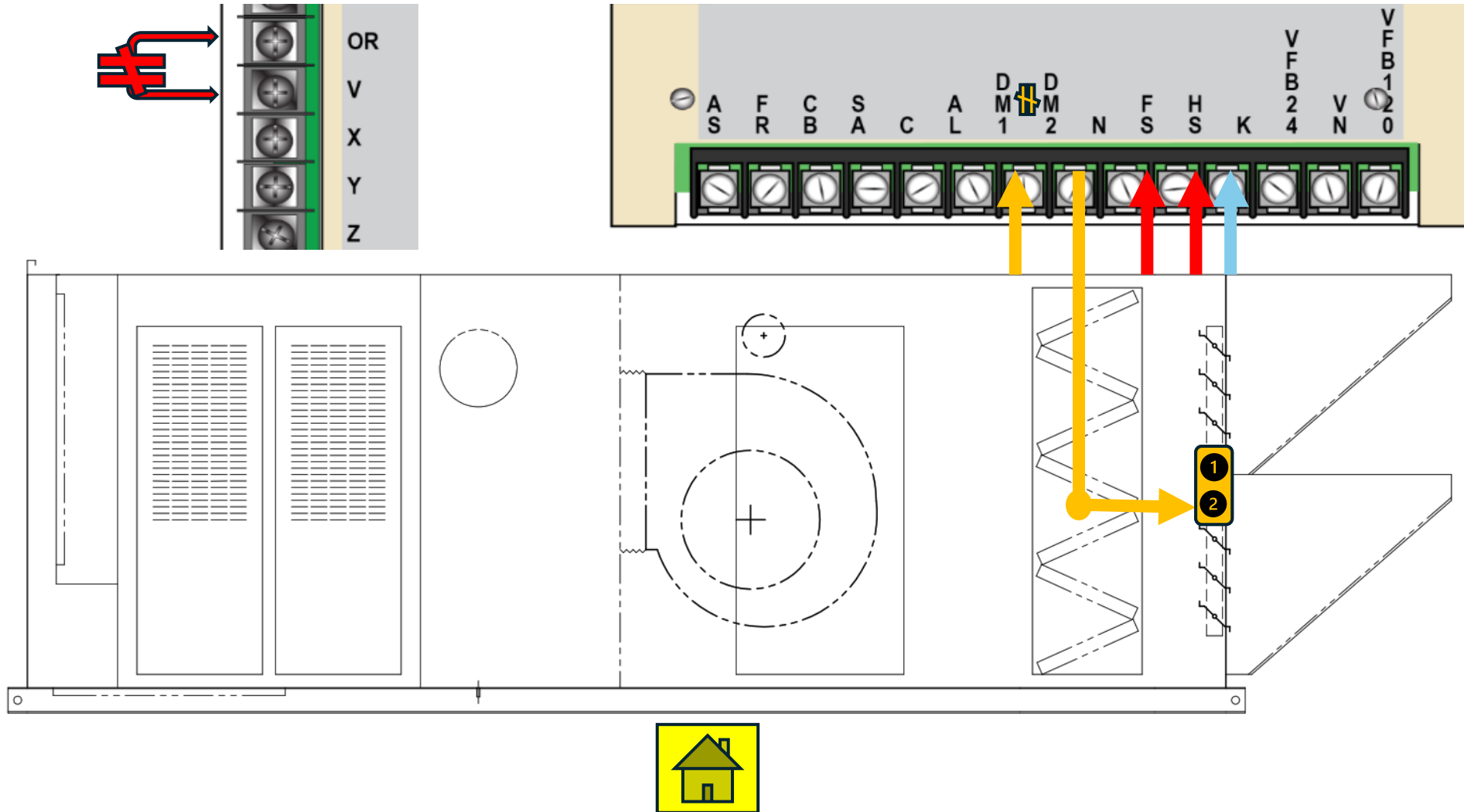
1. Burner sequence starts.
2. After 64 second delay expires, contacts between terminals C and SA close, terminal SA powers C7 contactor and the supply fan motor starts.



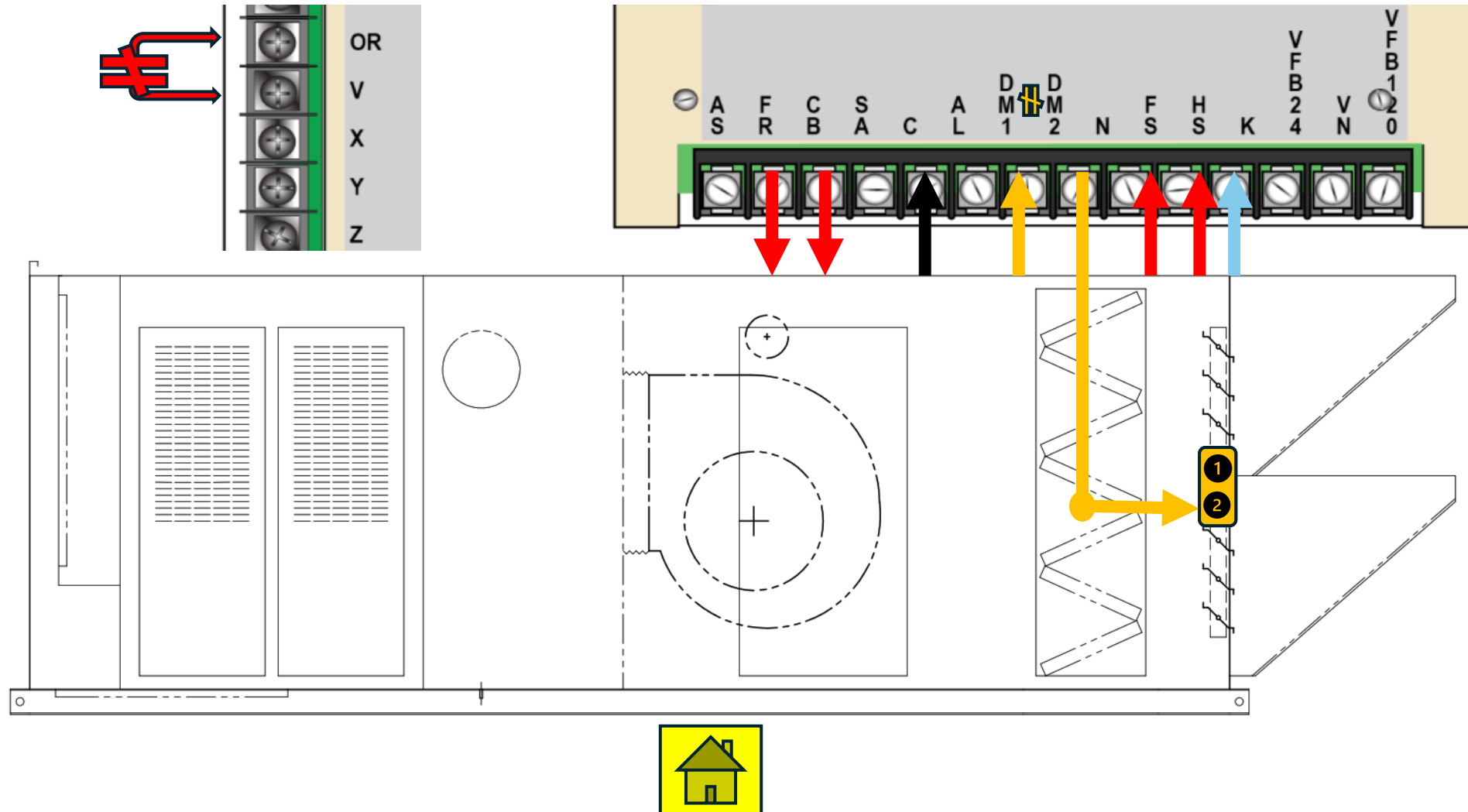
Blower operation night mode.(Make/Break stat)



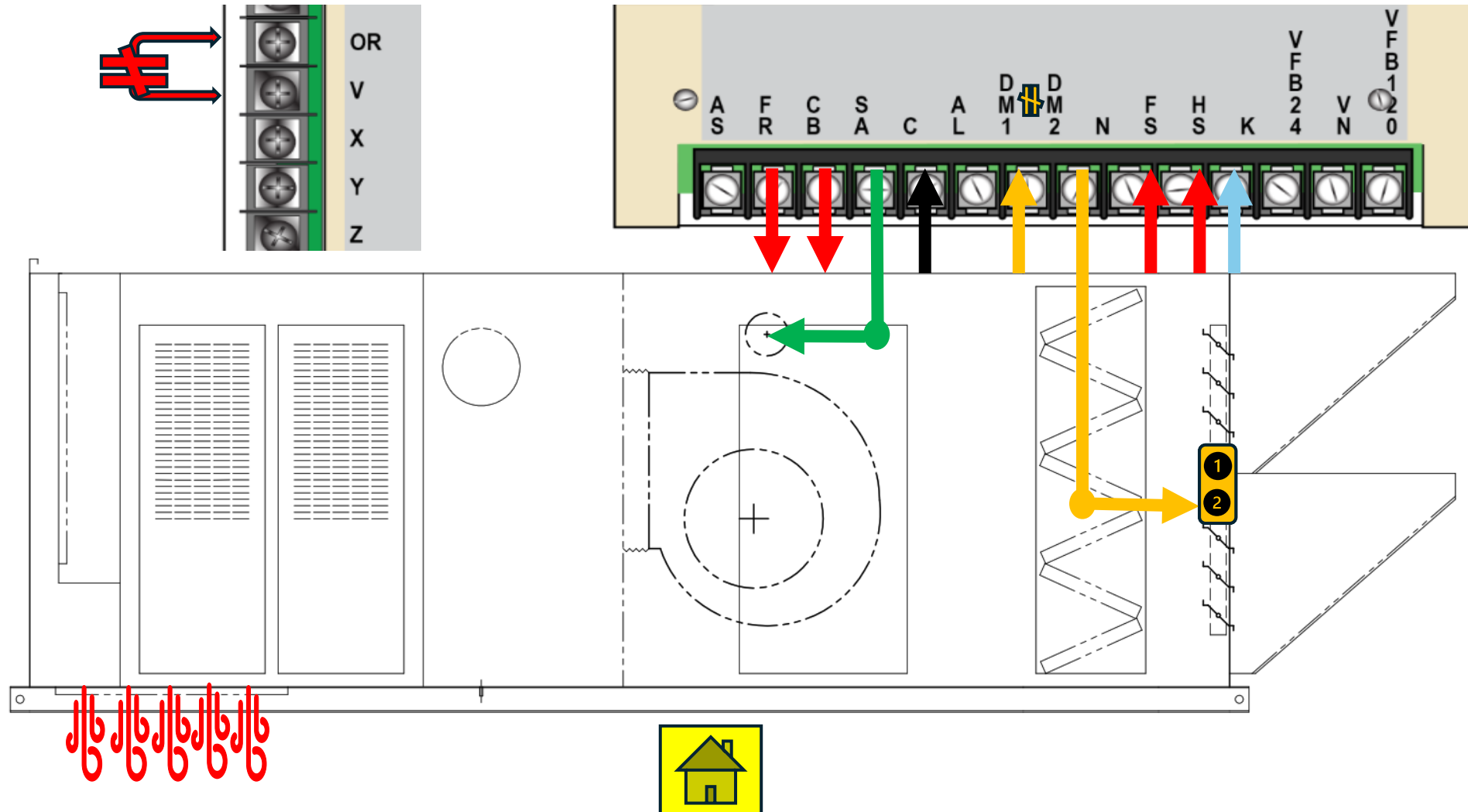
Blower operation night mode.(Make/Break stat)



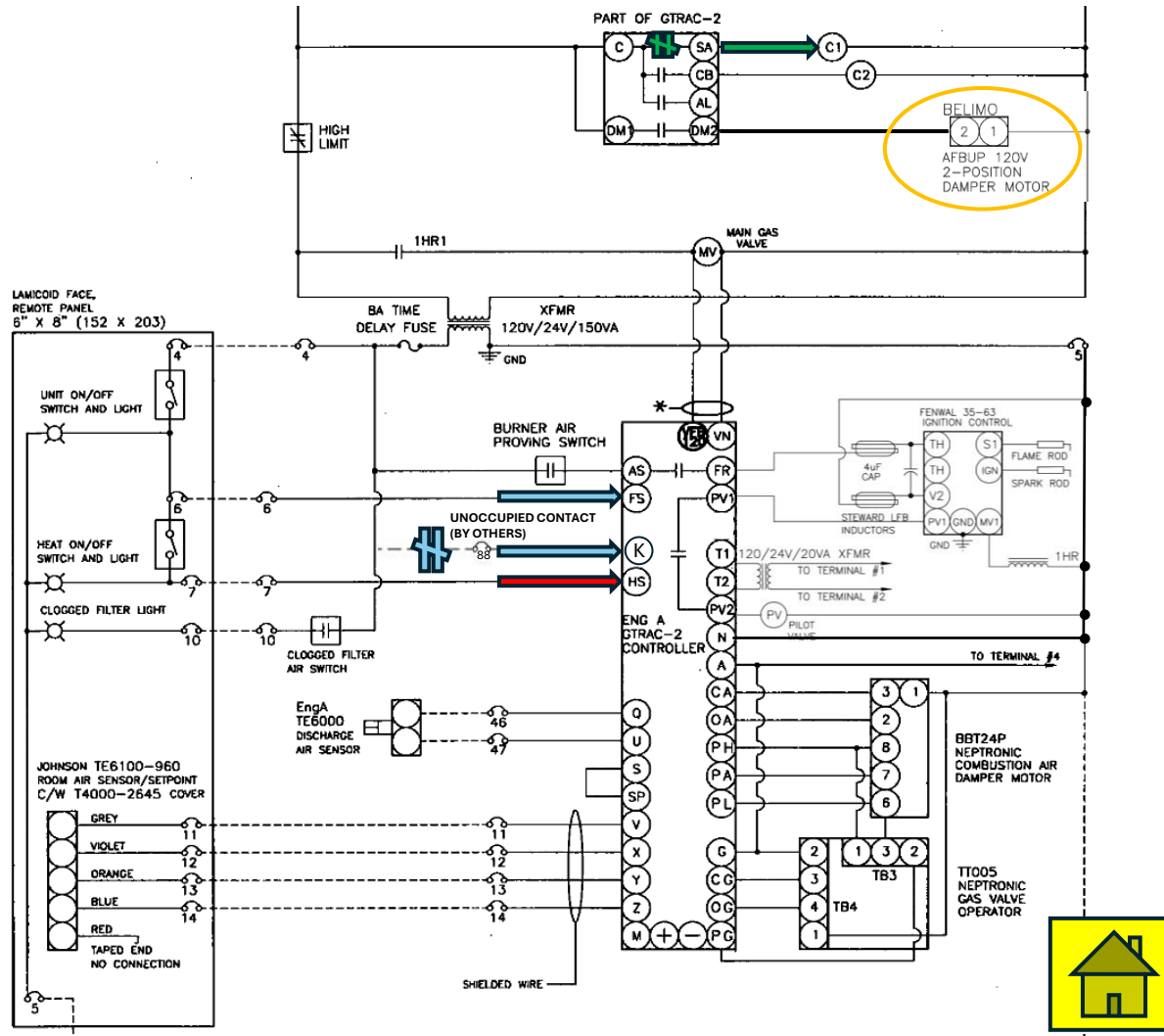
Blower operation night mode.(Make/Break stat)



Blower operation night mode.(Make/Break stat)



Blower operation night mode. (Modulating room stat)

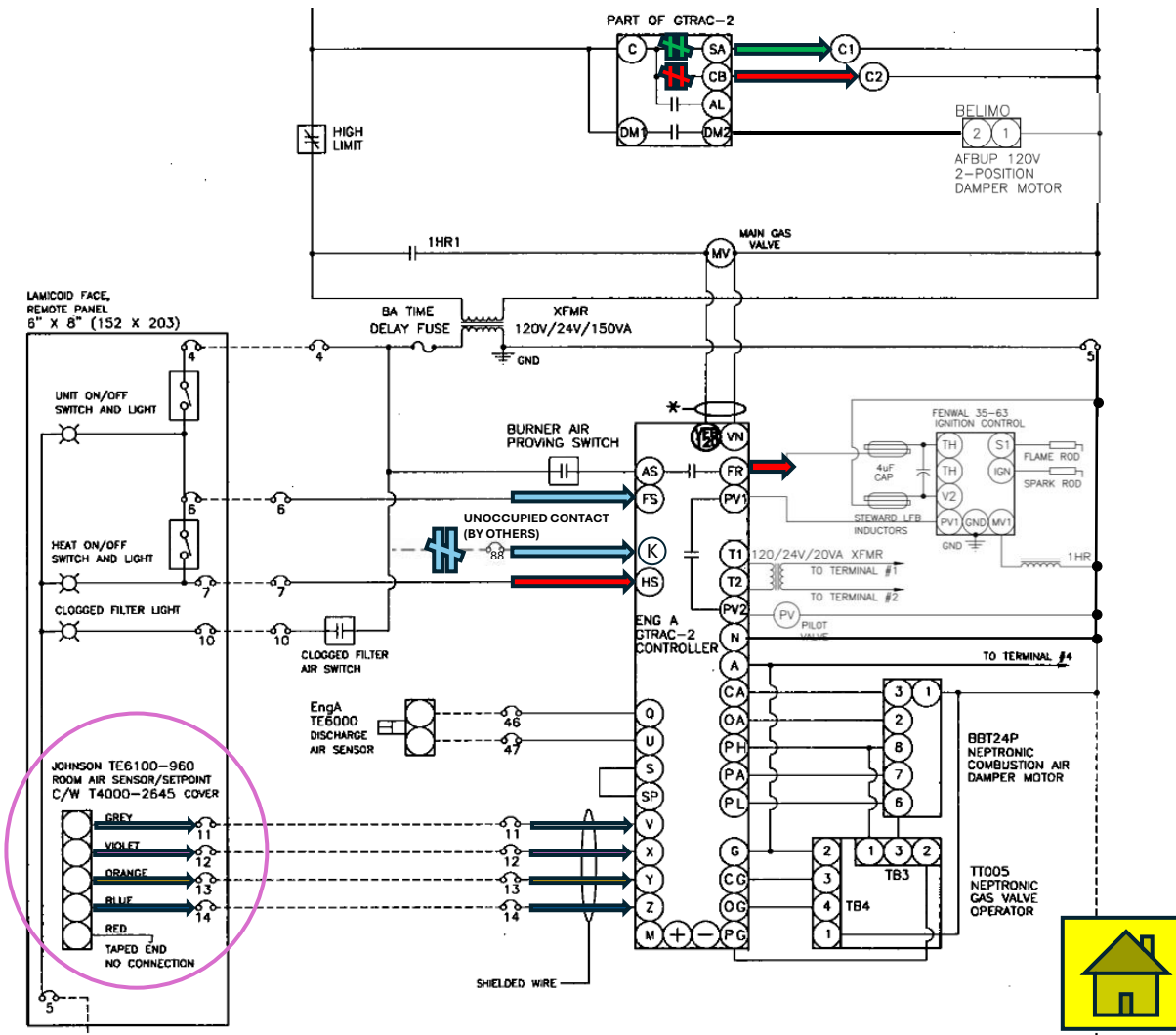


Night mode.

1. Terminal K,FS and **HS** powered by 24vac input.
2. Dampers remain closed.



Blower operation night mode. (Modulating room stat)

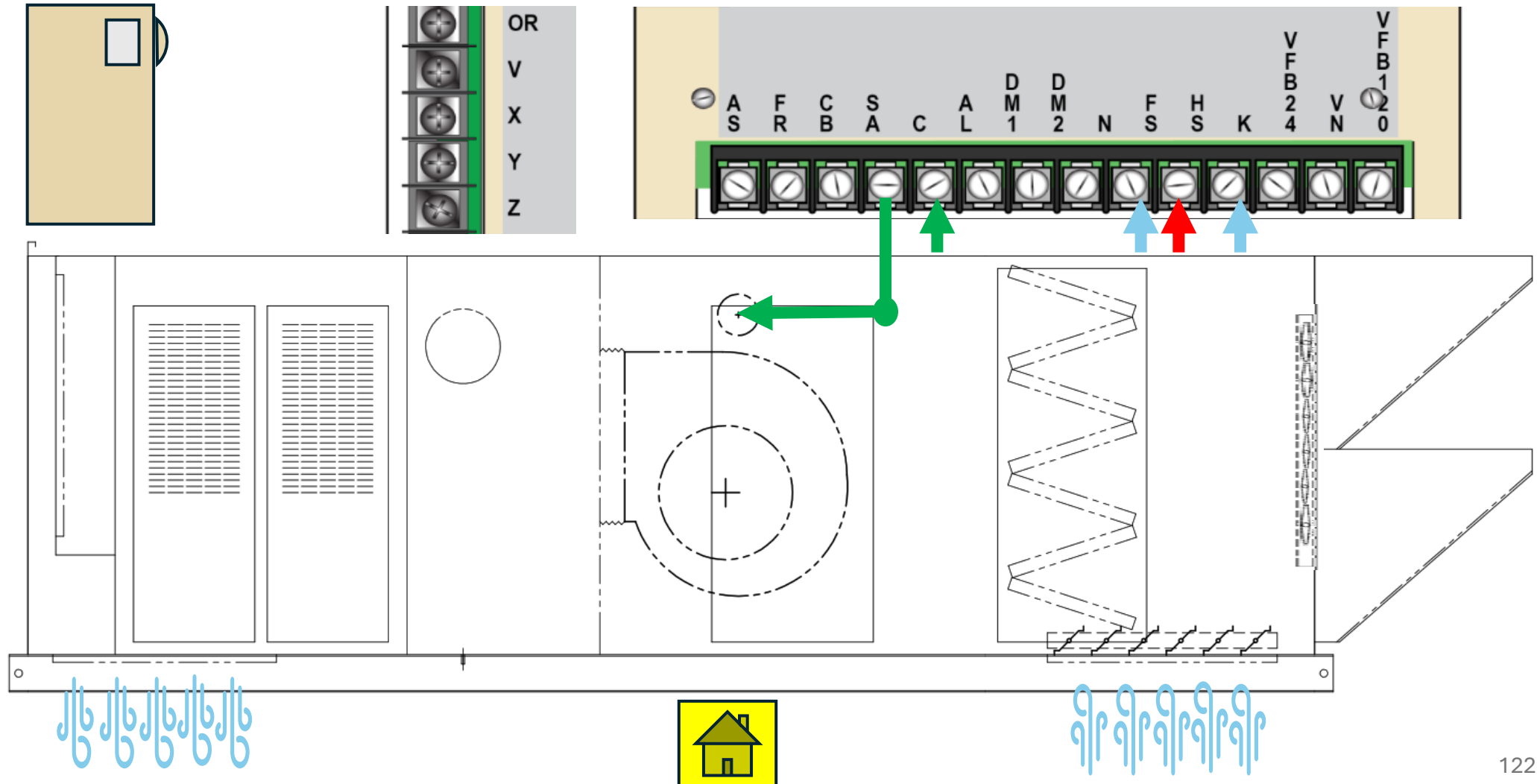


Night mode.

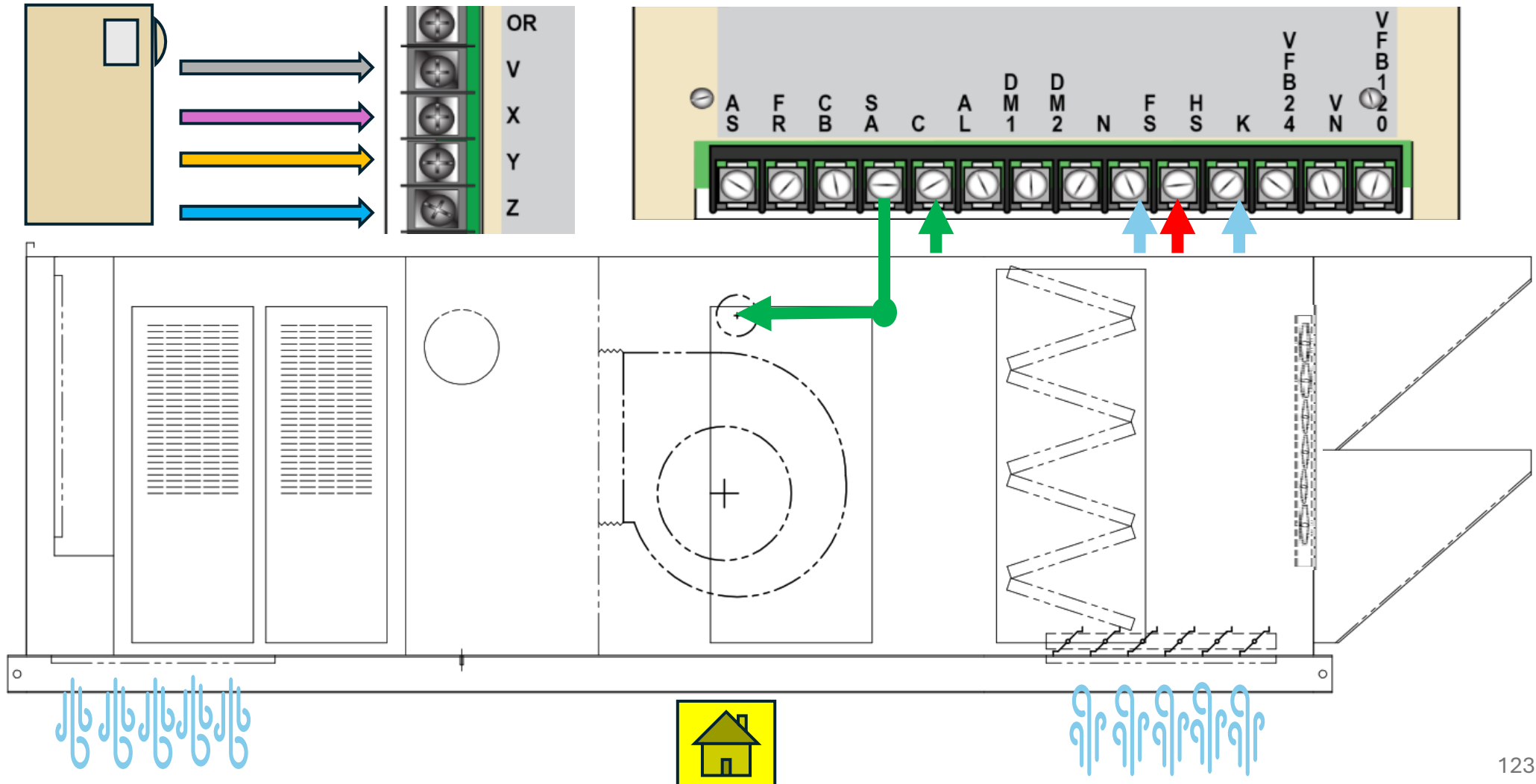
1. Room temperature drops 1.5°F below modulating room thermostat setpoint.
2. Burner sequence starts.
3. Burner will fire at maximum until room temp rises 1.5°F above setpoint.



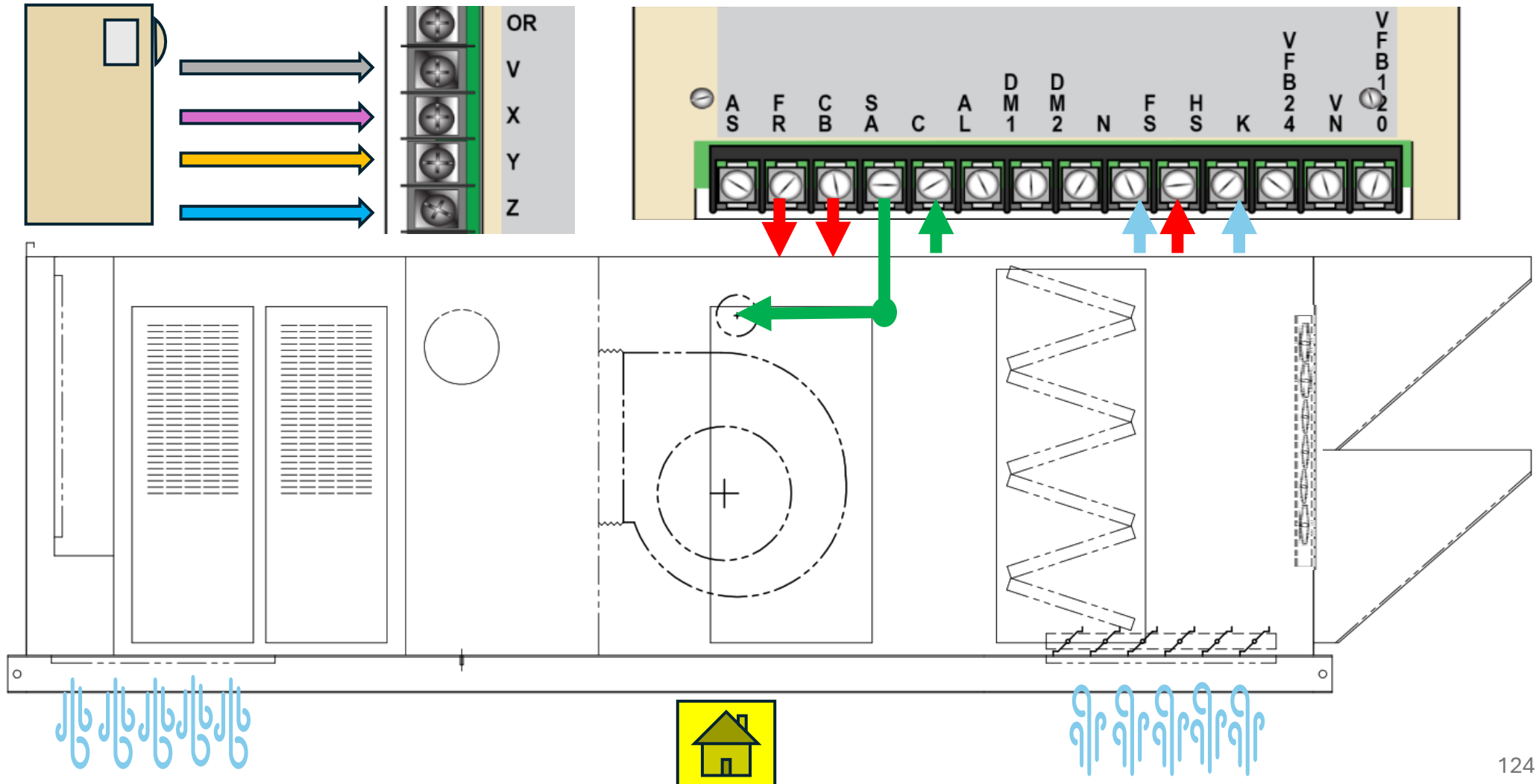
Blower operation night mode. (Modulating room stat)



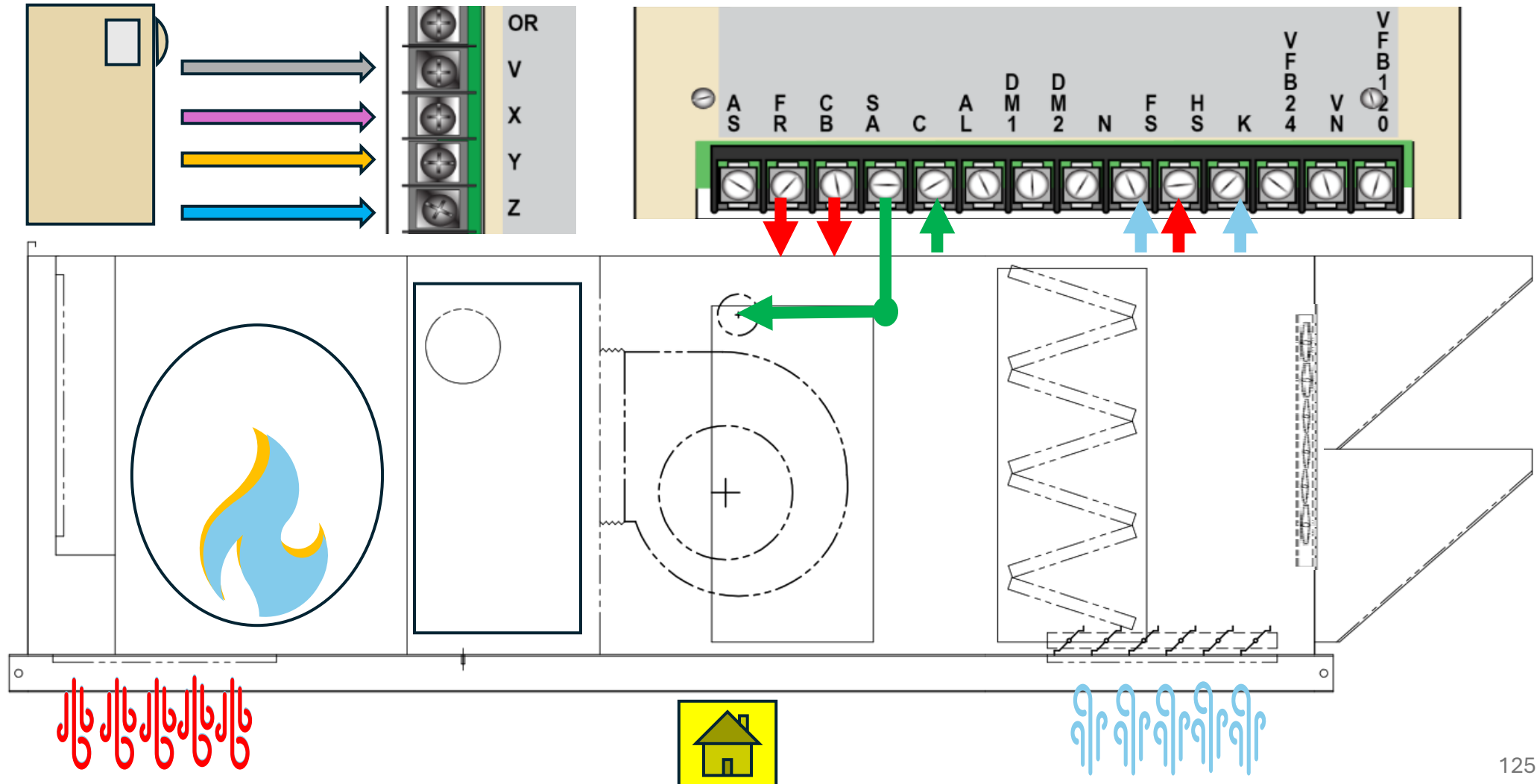
Blower operation night mode. (Modulating room stat)



Blower operation night mode. (Modulating room stat)



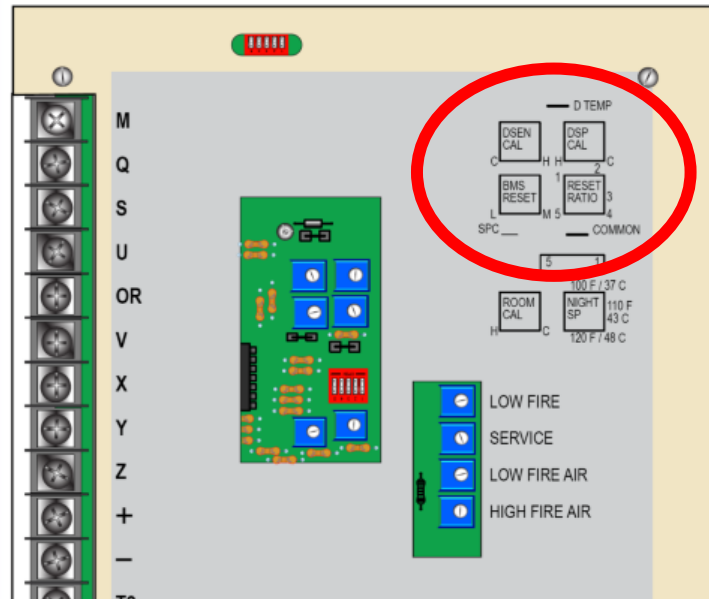
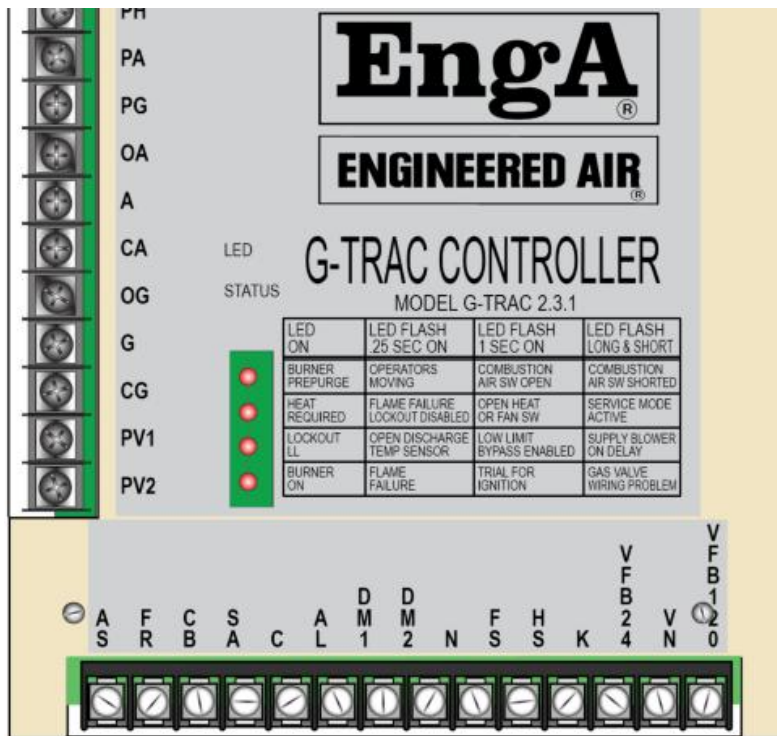
Blower operation night mode. (Modulating room stat)



Burner side operation.



Basic burner operation.

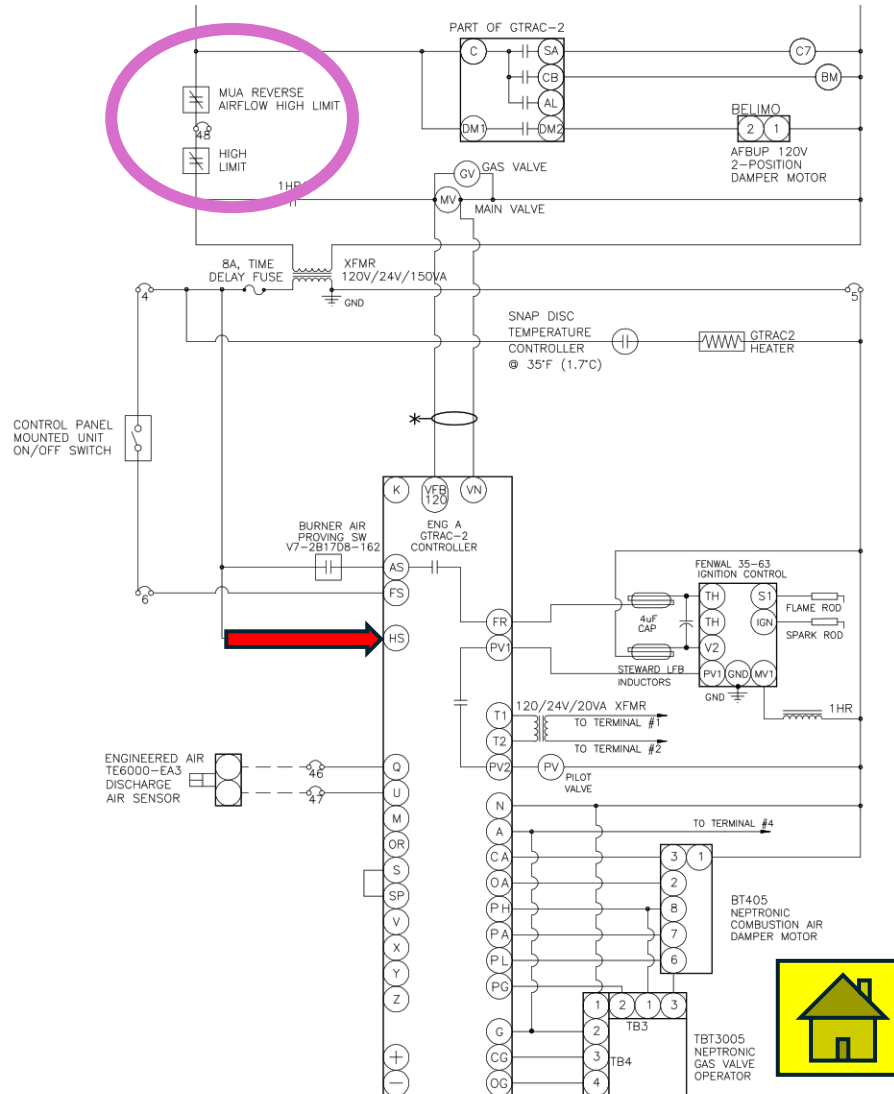


Basic burner operation.

1. All safeties are closed.
2. Terminal HS powered by 24vac input.
3. Discharge temperature must be lower than the discharge air setpoint.
4. Burner sequence starts.



Burner sequence.

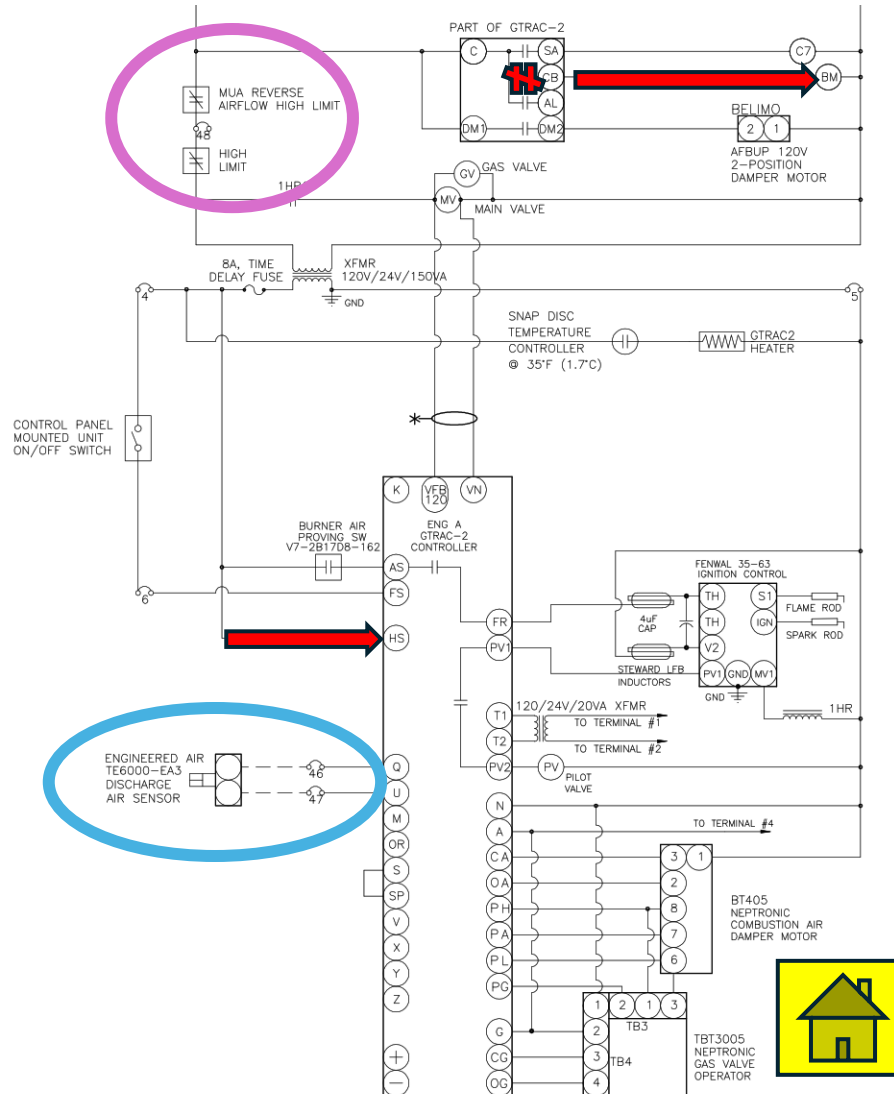


Basic burner operation.

1. All safeties are closed.
2. Terminal HS powered by 24vac input.



Burner sequence.

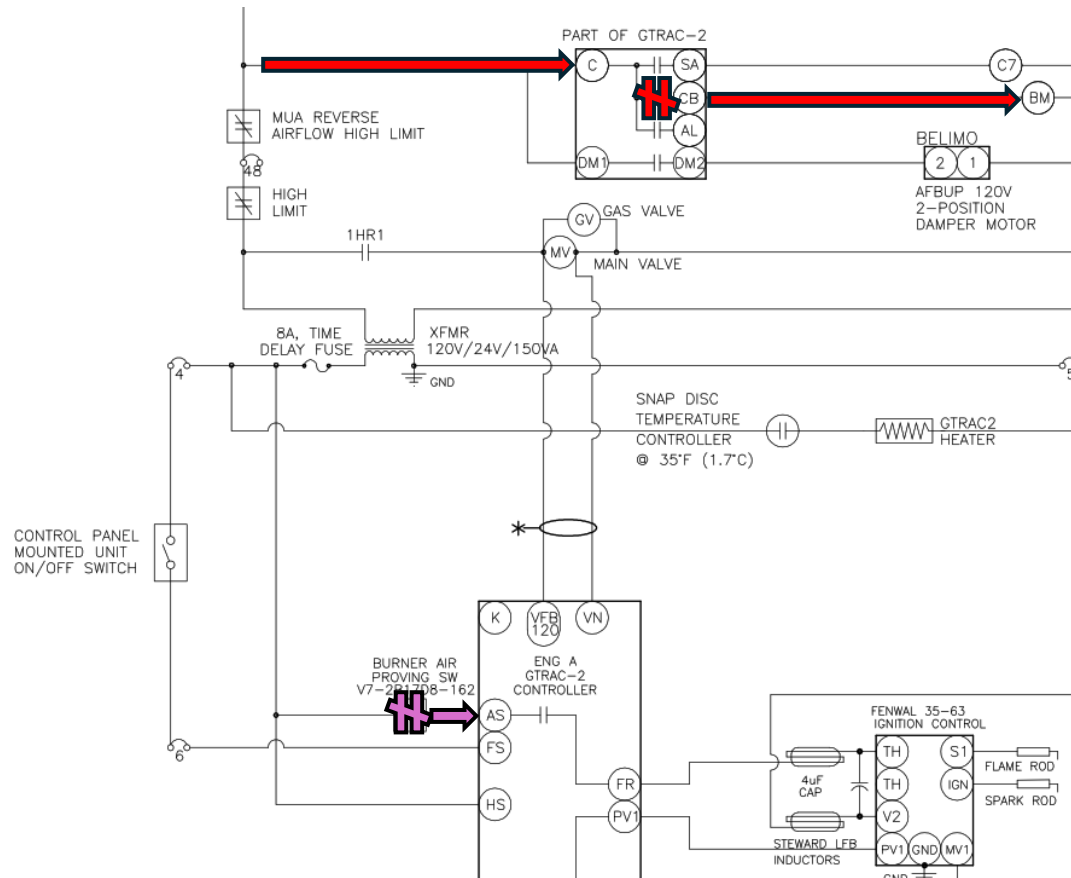


Basic burner operation.

1. All safeties are closed.
2. Terminal HS powered by 24vac input.
3. Discharge temperature must be lower than the discharge air setpoint.
4. Burner sequence starts.



Ignition sequence.

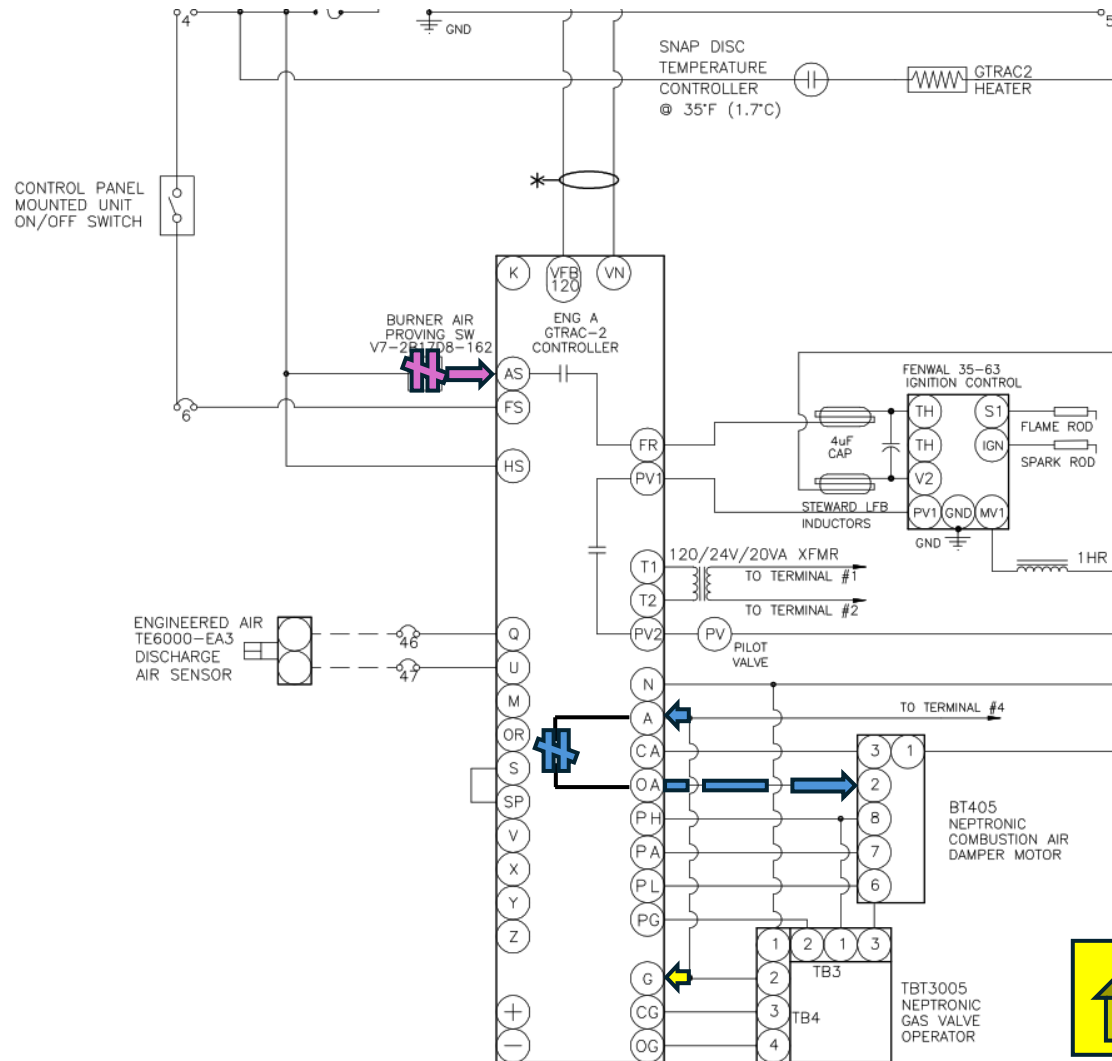


Ignition sequence.

1. The burner motor is on.
2. The burner air proving switch closes. 24vac powers terminal AS.



Ignition sequence.

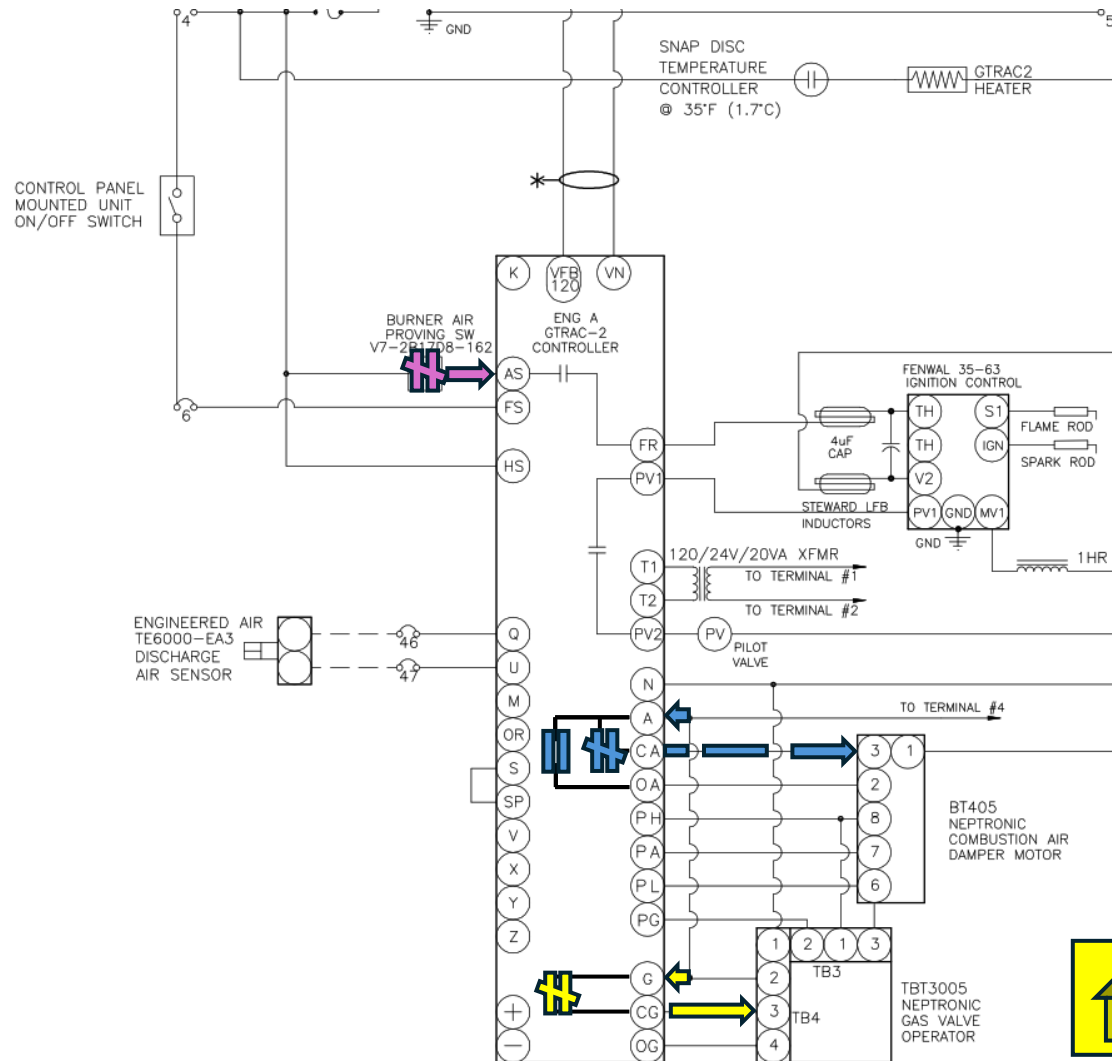


Ignition sequence.

1. With 24vac at terminals A and G, the G-TRAC2 will drive the air actuator to its pre-purge position by closing the internal contacts between terminal A and OA. The gas actuator will stay steady in its last position.



Ignition sequence.

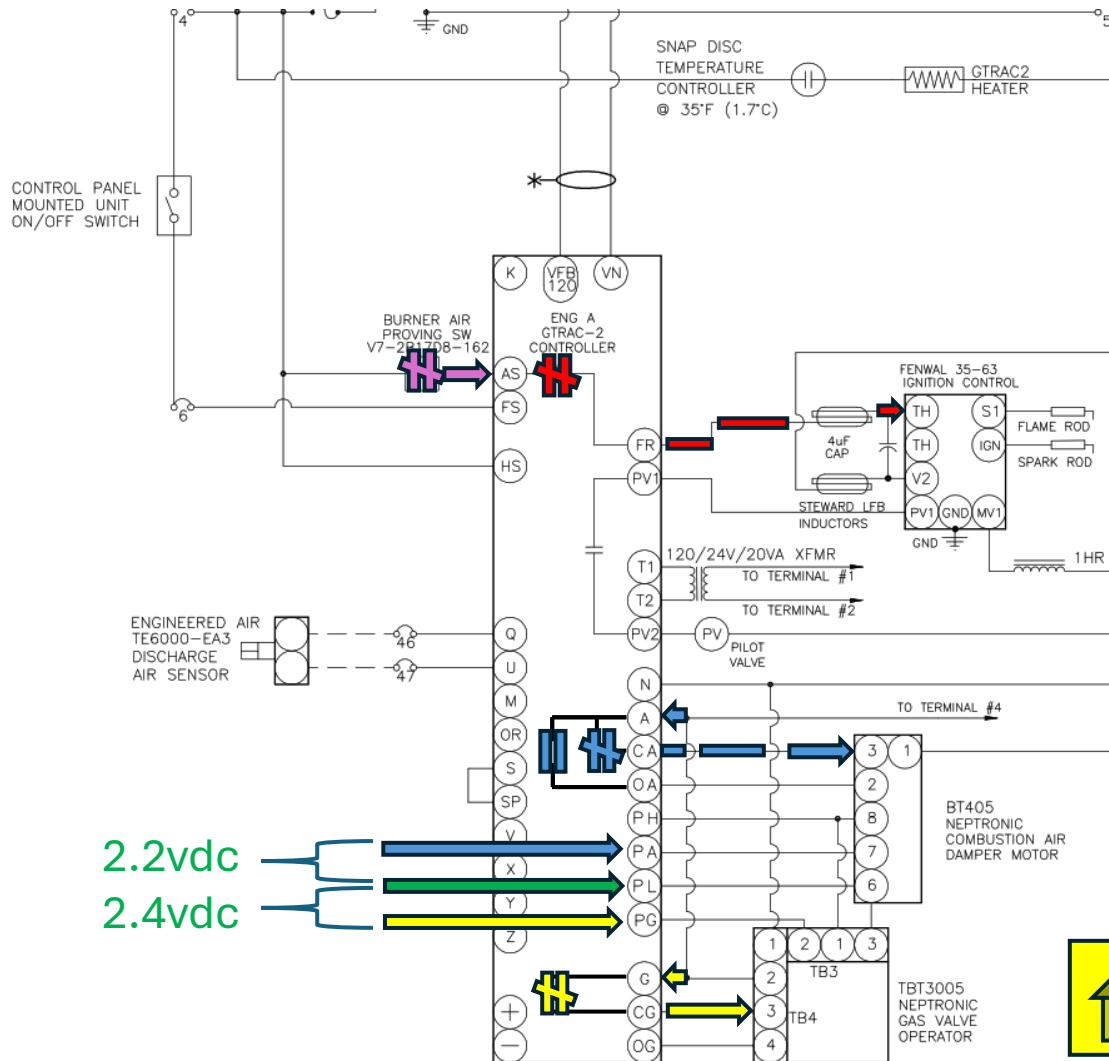


Ignition sequence.

1. Once the 75 second pre-purge is complete, the air and gas actuators will drive to their light off positions.
2. The contact between terminal A and OA will open and the contact between terminal A and CA will close, driving the air actuator closed.
3. At the same time, the internal contact between terminal G and CG will close, driving the gas actuator closed.



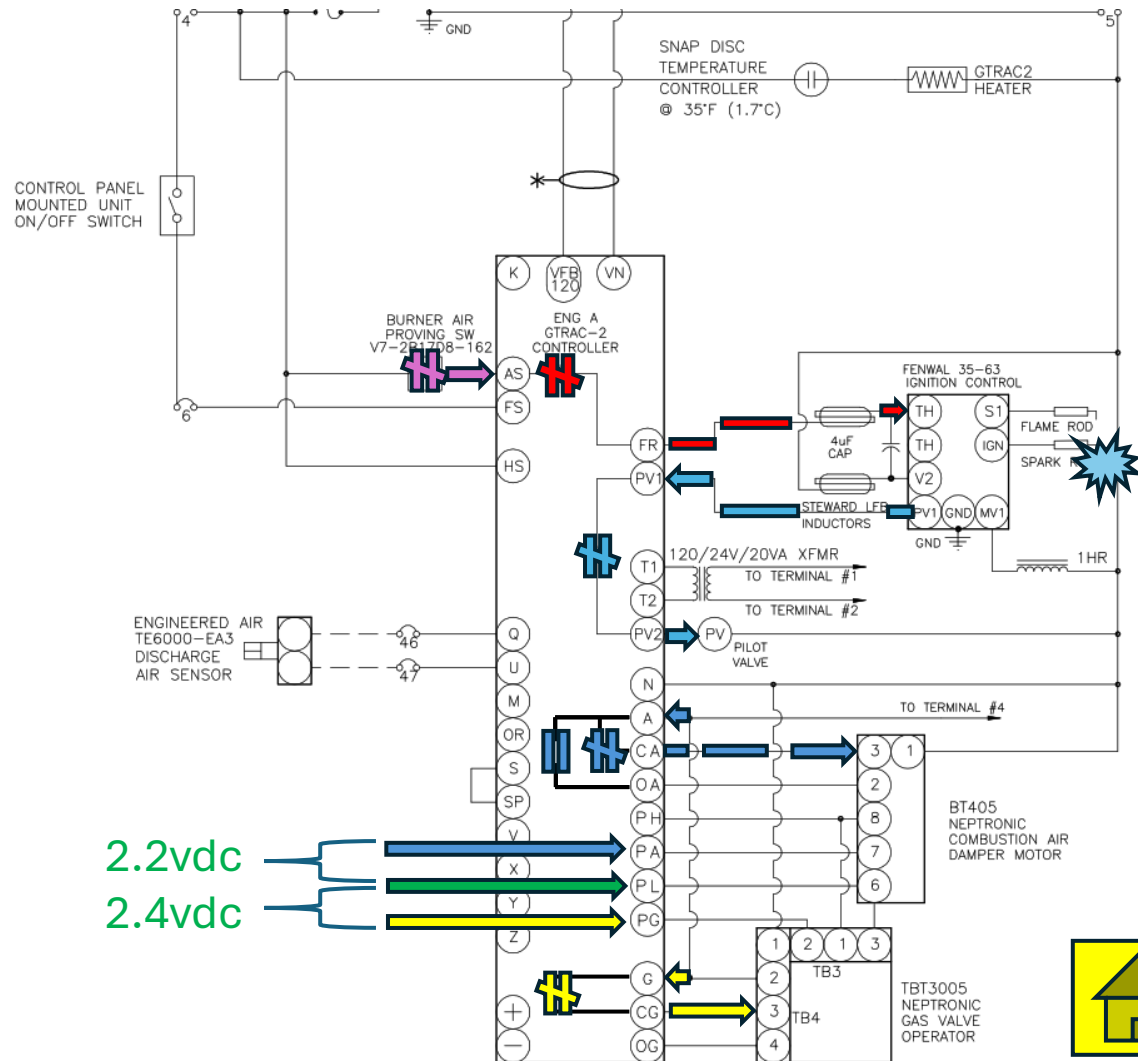
Ignition sequence.



Ignition sequence.

1. Once the actuator feedback is at the correct voltage, approximately 2.2vdc from PL to PA and approximately 2.4vdc from PL to PG.
2. The contacts between terminals AS and FR will close.
3. Terminal FR will then power terminal TH on the ignition controller.

Ignition sequence.

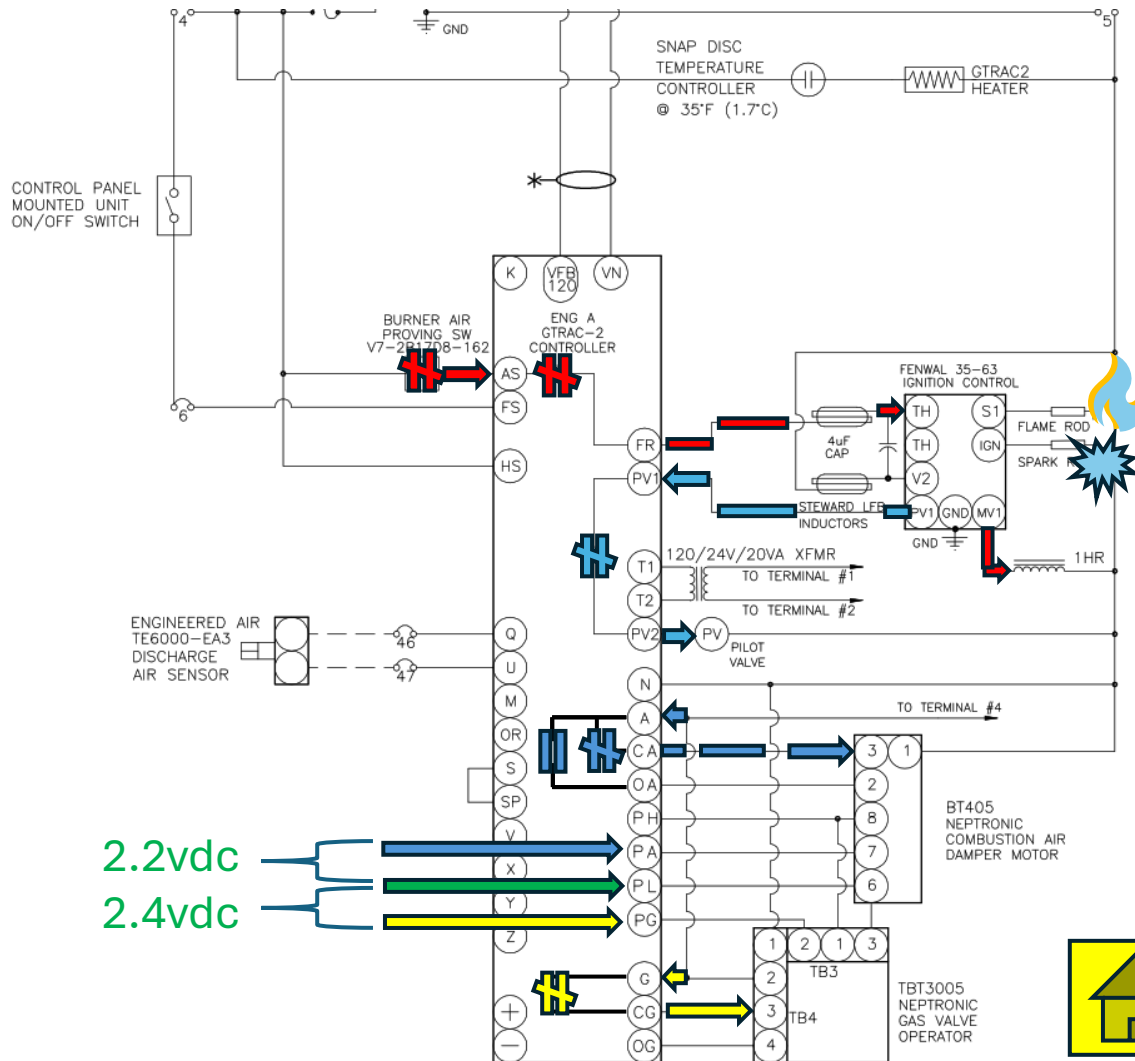


Ignition sequence.

1. The ignition controller will then produce a spark at terminal IGN, at the same time terminal PV1 on the ignition controller powers terminal PV1 on the G-TRAC2, the G-TRAC2 then closes the internal contacts to terminal PV2, PV2 then powers the pilot valve which will open and allow the flow of gas to the pilot box where the ignition spark is present.



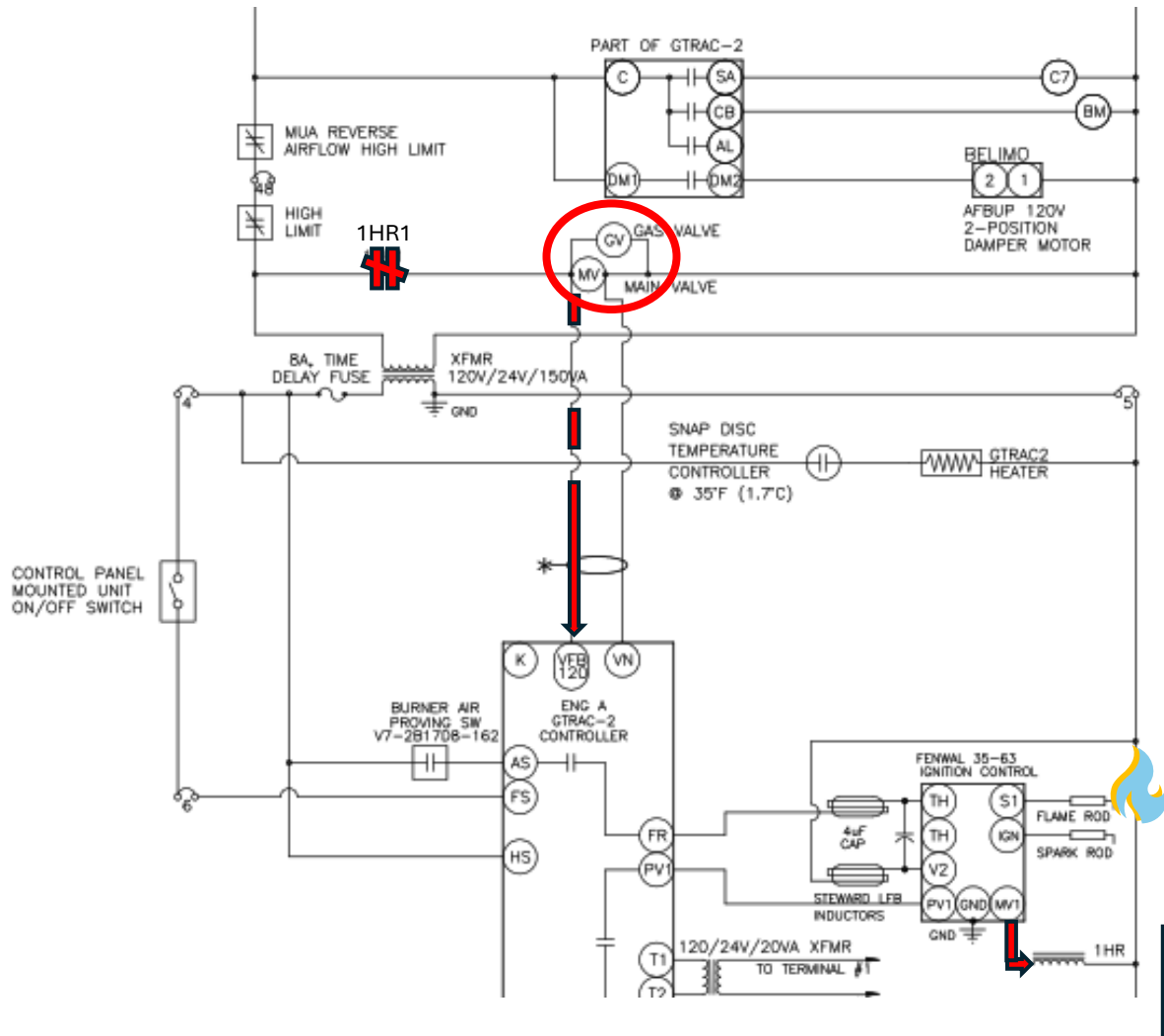
Ignition sequence.



Ignition sequence.

1. Once the ignition controller senses pilot flame on terminal S1 (0.7vdc and higher) the ignition controller will close its internal contacts and send power from terminal MV1 on the ignition controller to the 1HR relay.

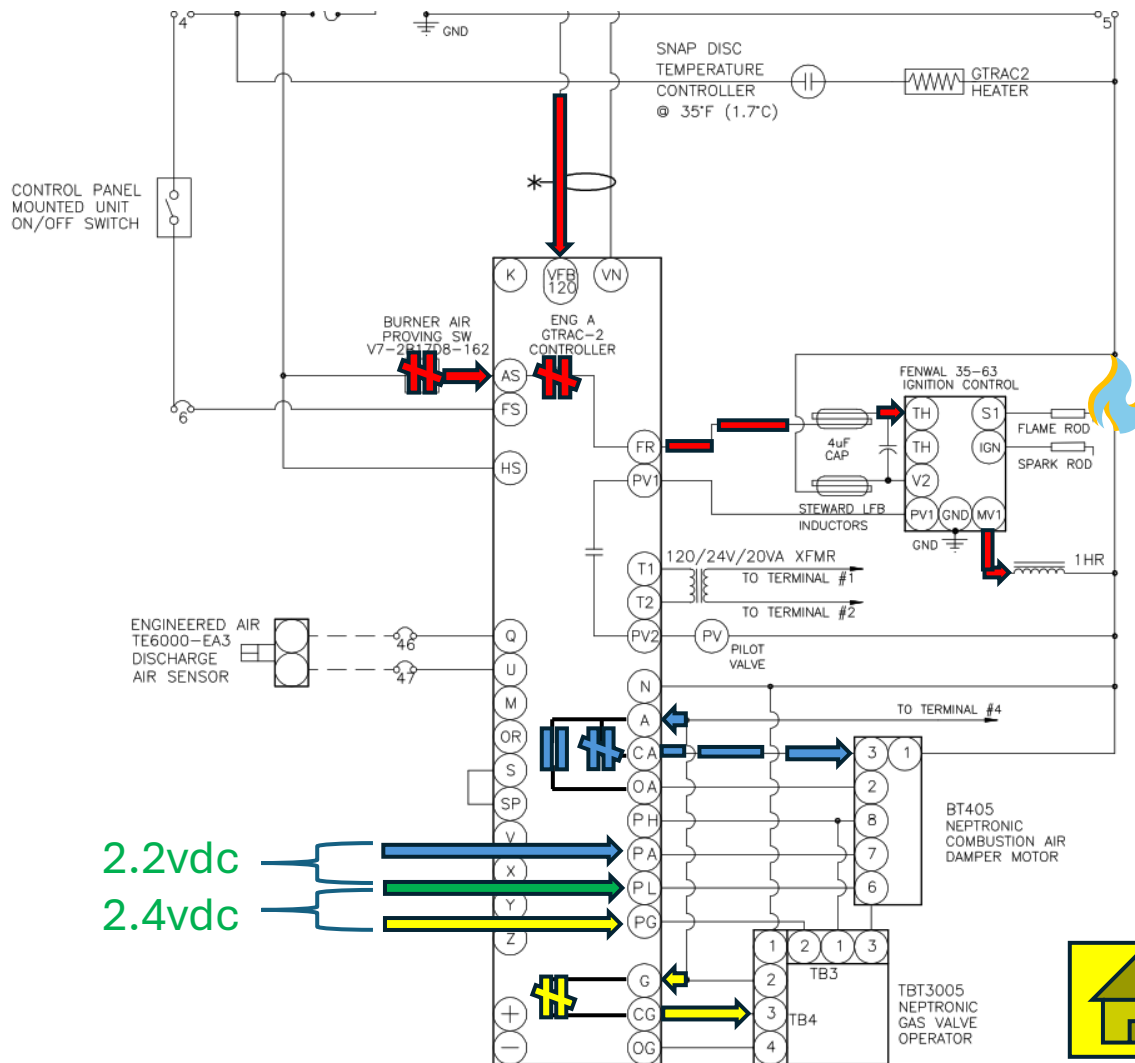
Ignition sequence.



Ignition sequence.

1. 1HR1 relay contacts close; the main gas valves open and the main burner lights.
2. Now that the ignition controller is sensing main flame, the spark stops and PV1 is deenergized and the pilot valve closes.

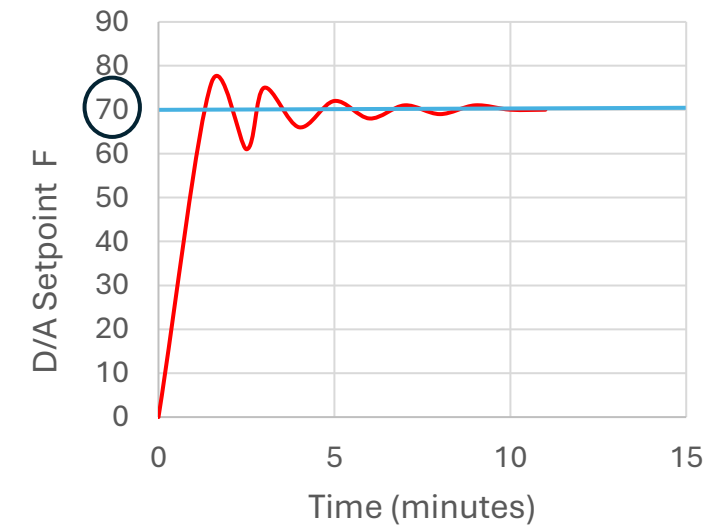
Burner operation.



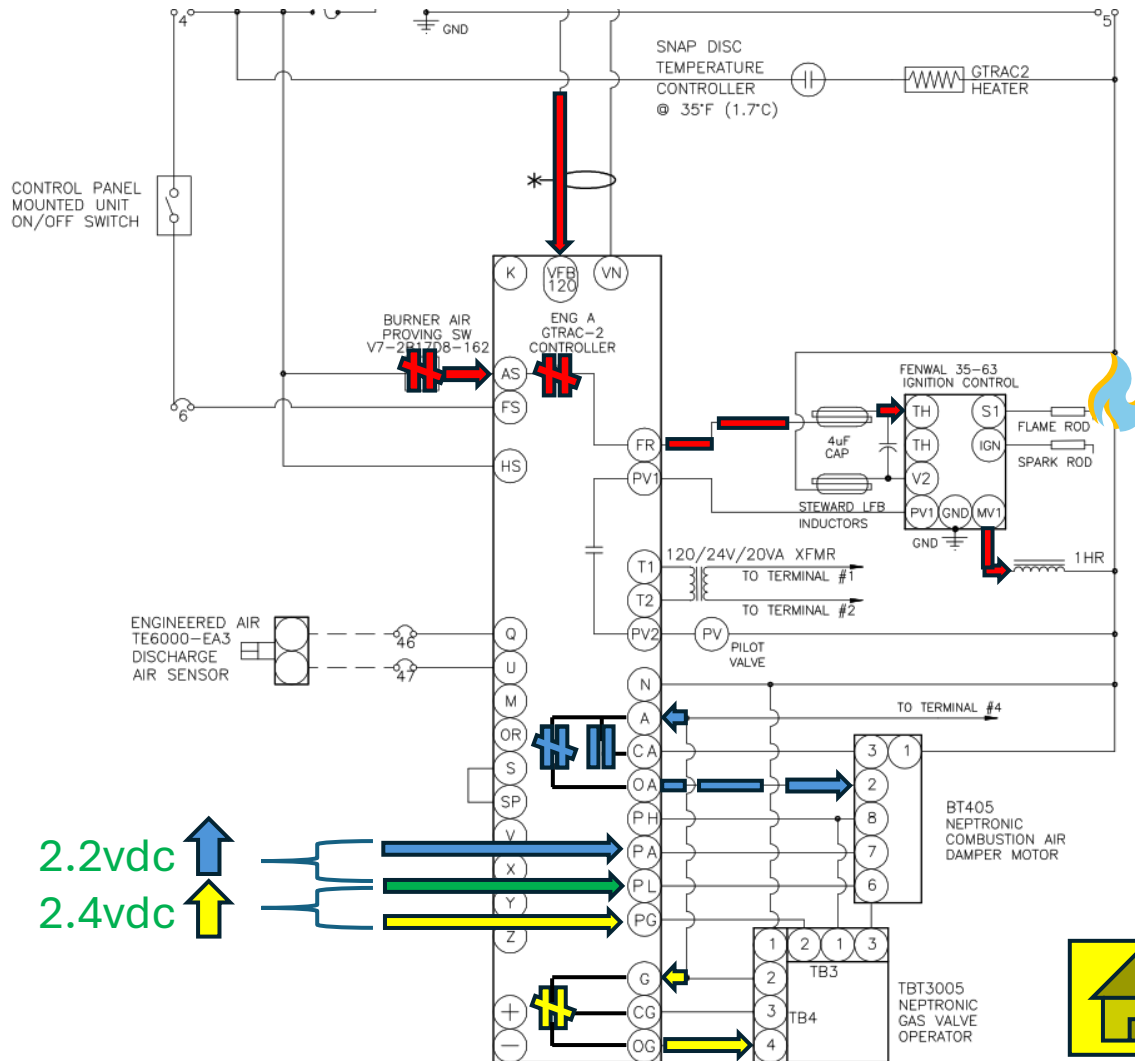
Ignition sequence.

1. The G-TRAC2 logic now takes over to control the temperature. (P.I. control)

P.I. Control



Burner operation.



Ignition sequence.

1. The air and gas actuators will start to drive open via the 24vac from terminals OA and OG.
2. As the actuators drive open; the feedback signal on PL and PA and PL and PG increases.
3. Based on how far the discharge temperature is away from the discharge setpoint; the G-TRAC2 will modulate the air damper and gas valve to maintain the required discharge temperature.

Indication and diagnostic lights.



Burner pre-purge.

Cause.

- The pre-purge timer is active, and the heat exchanger is pre-purging.

LED STATUS				
G-TRAC CONTROLLER				
MODEL G-TRAC 2.3.1				
LED ON	LED FLASH .25 SEC ON	LED FLASH 1 SEC ON	LED FLASH LONG & SHORT	
BURNER PREPURGE	OPERATORS MOVING	COMBUSTION AIR SW OPEN	COMBUSTION AIR SW SHORTED	
HEAT REQUIRED	FLAME FAILURE LOCKOUT DISABLED	OPEN HEAT OR FAN SW	SERVICE MODE ACTIVE	
LOCKOUT LL	OPEN DISCHARGE TEMP SENSOR	LOW LIMIT BYPASS ENABLED	SUPPLY BLOWER ON DELAY	
BURNER ON	FLAME FAILURE	TRIAL FOR IGNITION	GAS VALVE WIRING PROBLEM	



Operators moving.

Cause.

- The actuators controlling the air and gas are not in the correct position for pre-purge or ignition. The GTRAC2 is attempting to reposition the motors. 3 minutes maximum travel time.

LED STATUS				
G-TRAC CONTROLLER				
MODEL G-TRAC 2.3.1				
LED ON	LED FLASH .25 SEC ON	LED FLASH 1 SEC ON	LED FLASH LONG & SHORT	
BURNER PREPURGE	OPERATORS MOVING	COMBUSTION AIR SW OPEN	COMBUSTION AIR SW SHORTED	
HEAT REQUIRED	FLAME FAILURE LOCKOUT DISABLED	OPEN HEAT OR FAN SW	SERVICE MODE ACTIVE	
LOCKOUT LL	OPEN DISCHARGE TEMP SENSOR	LOW LIMIT BYPASS ENABLED	SUPPLY BLOWER ON DELAY	
BURNER ON	FLAME FAILURE	TRIAL FOR IGNITION	GAS VALVE WIRING PROBLEM	



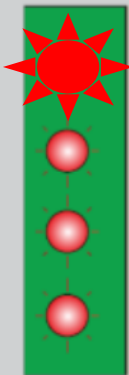
Combustion air switch open.

Cause.

- The combustion blower is on and the pre-purge position, but the combustion air proving switch is open.

LED STATUS

G-TRAC CONTROLLER
MODEL G-TRAC 2.3.1



LED ON	LED FLASH .25 SEC ON	LED FLASH 1 SEC ON	LED FLASH LONG & SHORT
BURNER PREPURGE	OPERATORS MOVING	COMBUSTION AIR SW OPEN	COMBUSTION AIR SW SHORTED
HEAT REQUIRED	FLAME FAILURE LOCKOUT DISABLED	OPEN HEAT OR FAN SW	SERVICE MODE ACTIVE
LOCKOUT LL	OPEN DISCHARGE TEMP SENSOR	LOW LIMIT BYPASS ENABLED	SUPPLY BLOWER ON DELAY
BURNER ON	FLAME FAILURE	TRIAL FOR IGNITION	GAS VALVE WIRING PROBLEM



Combustion air switch shorted.

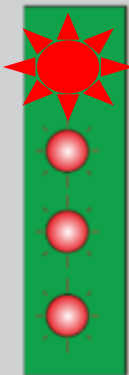
Cause.

- The combustion blower is off but the combustion air proving switch is closed or shorted.

LED STATUS

G-TRAC CONTROLLER
MODEL G-TRAC 2.3.1

LED ON	LED FLASH .25 SEC ON	LED FLASH 1 SEC ON	LED FLASH LONG & SHORT
BURNER PREPURGE	OPERATORS MOVING	COMBUSTION AIR SW OPEN	COMBUSTION AIR SW SHORTED
HEAT REQUIRED	FLAME FAILURE LOCKOUT DISABLED	OPEN HEAT OR FAN SW	SERVICE MODE ACTIVE
LOCKOUT LL	OPEN DISCHARGE TEMP SENSOR	LOW LIMIT BYPASS ENABLED	SUPPLY BLOWER ON DELAY
BURNER ON	FLAME FAILURE	TRIAL FOR IGNITION	GAS VALVE WIRING PROBLEM



Heat required.

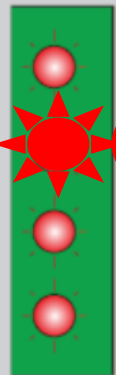
Cause.

- There is a valid heat call, and the system is functioning normally.

LED STATUS

G-TRAC CONTROLLER
MODEL G-TRAC 2.3.1

LED ON	LED FLASH .25 SEC ON	LED FLASH 1 SEC ON	LED FLASH LONG & SHORT
BURNER PREPURGE	OPERATORS MOVING	COMBUSTION AIR SW OPEN	COMBUSTION AIR SW SHORTED
HEAT REQUIRED	FLAME FAILURE LOCKOUT DISABLED	OPEN HEAT OR FAN SW	SERVICE MODE ACTIVE
LOCKOUT LL	OPEN DISCHARGE TEMP SENSOR	LOW LIMIT BYPASS ENABLED	SUPPLY BLOWER ON DELAY
BURNER ON	FLAME FAILURE	TRIAL FOR IGNITION	GAS VALVE WIRING PROBLEM



Flame failure lockout disabled.

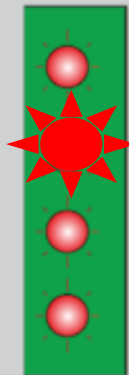
Cause.

- There is a flame failure, but the logic is allowing the blower to operate. The unit is allowed to trip on low limit if the discharge falls below 40F(4.4C). This option is only active if dipswitch A-4 is on, and the low limit function was activated. (Airflow priority program)

LED STATUS

G-TRAC CONTROLLER
MODEL G-TRAC 2.3.1

LED ON	LED FLASH .25 SEC ON	LED FLASH 1 SEC ON	LED FLASH LONG & SHORT
BURNER PREPURGE	OPERATORS MOVING	COMBUSTION AIR SW OPEN	COMBUSTION AIR SW SHORTED
HEAT REQUIRED	FLAME FAILURE LOCKOUT DISABLED	OPEN HEAT OR FAN SW	SERVICE MODE ACTIVE
LOCKOUT LL	OPEN DISCHARGE TEMP SENSOR	LOW LIMIT BYPASS ENABLED	SUPPLY BLOWER ON DELAY
BURNER ON	FLAME FAILURE	TRIAL FOR IGNITION	GAS VALVE WIRING PROBLEM



Open heat switch or fan switch.

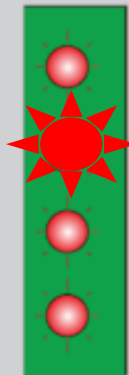
Cause.

- There is a heat call, but an open switch is keeping the burner and possibly the whole unit off. (Heat switch or Fan switch-day)

LED STATUS

G-TRAC CONTROLLER
MODEL G-TRAC 2.3.1

LED ON	LED FLASH .25 SEC ON	LED FLASH 1 SEC ON	LED FLASH LONG & SHORT
BURNER PREPURGE	OPERATORS MOVING	COMBUSTION AIR SW OPEN	COMBUSTION AIR SW SHORTED
HEAT REQUIRED	FLAME FAILURE LOCKOUT DISABLED	OPEN HEAT OR FAN SW	SERVICE MODE ACTIVE
LOCKOUT LL	OPEN DISCHARGE TEMP SENSOR	LOW LIMIT BYPASS ENABLED	SUPPLY BLOWER ON DELAY
BURNER ON	FLAME FAILURE	TRIAL FOR IGNITION	GAS VALVE WIRING PROBLEM



Service mode active.

Cause.

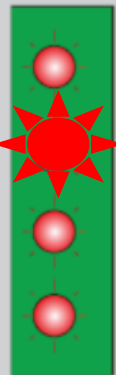
- Dip switch A-5 is in the service position (ON) and the fan switch is on.

LED STATUS

G-TRAC CONTROLLER

MODEL G-TRAC 2.3.1

LED ON	LED FLASH .25 SEC ON	LED FLASH 1 SEC ON	LED FLASH LONG & SHORT
BURNER PREPURGE	OPERATORS MOVING	COMBUSTION AIR SW OPEN	COMBUSTION AIR SW SHORTED
HEAT REQUIRED	FLAME FAILURE LOCKOUT DISABLED	OPEN HEAT OR FAN SW	SERVICE MODE ACTIVE
LOCKOUT LL	OPEN DISCHARGE TEMP SENSOR	LOW LIMIT BYPASS ENABLED	SUPPLY BLOWER ON DELAY
BURNER ON	FLAME FAILURE	TRIAL FOR IGNITION	GAS VALVE WIRING PROBLEM



Lockout LL (low limit).

Cause.

- Low limit failure, flame failure lockout, or open sensor.

LED STATUS

G-TRAC CONTROLLER
MODEL G-TRAC 2.3.1

LED ON	LED FLASH .25 SEC ON	LED FLASH 1 SEC ON	LED FLASH LONG & SHORT
BURNER PREPURGE	OPERATORS MOVING	COMBUSTION AIR SW OPEN	COMBUSTION AIR SW SHORTED
HEAT REQUIRED	FLAME FAILURE LOCKOUT DISABLED	OPEN HEAT OR FAN SW	SERVICE MODE ACTIVE
LOCKOUT LL	OPEN DISCHARGE TEMP SENSOR	LOW LIMIT BYPASS ENABLED	SUPPLY BLOWER ON DELAY
BURNER ON	FLAME FAILURE	TRIAL FOR IGNITION	GAS VALVE WIRING PROBLEM



Open discharge temp sensor.

Cause.

- The discharge sensor resistance is greater than 4000 ohms or is open circuit.

LED STATUS

G-TRAC CONTROLLER
MODEL G-TRAC 2.3.1

LED ON	LED FLASH .25 SEC ON	LED FLASH 1 SEC ON	LED FLASH LONG & SHORT
BURNER PREPURGE	OPERATORS MOVING	COMBUSTION AIR SW OPEN	COMBUSTION AIR SW SHORTED
HEAT REQUIRED	FLAME FAILURE LOCKOUT DISABLED	OPEN HEAT OR FAN SW	SERVICE MODE ACTIVE
LOCKOUT LL	OPEN DISCHARGE TEMP SENSOR	LOW LIMIT BYPASS ENABLED	SUPPLY BLOWER ON DELAY
BURNER ON	FLAME FAILURE	TRIAL FOR IGNITION	GAS VALVE WIRING PROBLEM



Low limit bypass enabled.

Cause.

- Discharge temperature is below 40F(4.4C), but the low limit bypass timer is still operating.

LED STATUS

G-TRAC CONTROLLER
MODEL G-TRAC 2.3.1

LED ON	LED FLASH .25 SEC ON	LED FLASH 1 SEC ON	LED FLASH LONG & SHORT
BURNER PREPURGE	OPERATORS MOVING	COMBUSTION AIR SW OPEN	COMBUSTION AIR SW SHORTED
HEAT REQUIRED	FLAME FAILURE LOCKOUT DISABLED	OPEN HEAT OR FAN SW	SERVICE MODE ACTIVE
LOCKOUT LL	OPEN DISCHARGE TEMP SENSOR	LOW LIMIT BYPASS ENABLED	SUPPLY BLOWER ON DELAY
BURNER ON	FLAME FAILURE	TRIAL FOR IGNITION	GAS VALVE WIRING PROBLEM



Supply blower on delay.

Cause.

- The supply blower is being delayed. The supply fan will start once the dampers open delay and or the heat exchanger warm up delay is complete. Also indicates heat exchanger cool down timer active.

LED STATUS

G-TRAC CONTROLLER
MODEL G-TRAC 2.3.1

LED ON	LED FLASH .25 SEC ON	LED FLASH 1 SEC ON	LED FLASH LONG & SHORT
BURNER PREPURGE	OPERATORS MOVING	COMBUSTION AIR SW OPEN	COMBUSTION AIR SW SHORTED
HEAT REQUIRED	FLAME FAILURE LOCKOUT DISABLED	OPEN HEAT OR FAN SW	SERVICE MODE ACTIVE
LOCKOUT LL	OPEN DISCHARGE TEMP SENSOR	LOW LIMIT BYPASS ENABLED	SUPPLY BLOWER ON DELAY
BURNER ON	FLAME FAILURE	TRIAL FOR IGNITION	GAS VALVE WIRING PROBLEM



Burner on.

Cause.

- The flame relay or ignition control device is energized. The ignition control device now has the responsibility to light the pilot flame, prove pilot flame and then energize the main valve.

LED STATUS				
G-TRAC CONTROLLER				
MODEL G-TRAC 2.3.1				
LED ON	LED FLASH .25 SEC ON	LED FLASH 1 SEC ON	LED FLASH LONG & SHORT	
BURNER PREPURGE	OPERATORS MOVING	COMBUSTION AIR SW OPEN	COMBUSTION AIR SW SHORTED	
HEAT REQUIRED	FLAME FAILURE LOCKOUT DISABLED	OPEN HEAT OR FAN SW	SERVICE MODE ACTIVE	
LOCKOUT LL	OPEN DISCHARGE TEMP SENSOR	LOW LIMIT BYPASS ENABLED	SUPPLY BLOWER ON DELAY	
BURNER ON	FLAME FAILURE	TRIAL FOR IGNITION	GAS VALVE WIRING PROBLEM	



Flame failure.

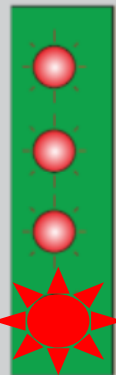
Cause.

- Flame failure. Burner ignition was unsuccessful. The G-TRAC2 did not receive a main gas valve (SSOV) feedback signal to terminals VN and VFB120.
- A false flame failure code may occur if the externally wired high limit control is not wired to interrupt the power terminal HS as well as the valve.
- A false flame failure code may occur with a loss of power to terminal AS while the burner is on.

LED STATUS

G-TRAC CONTROLLER
MODEL G-TRAC 2.3.1

LED ON	LED FLASH .25 SEC ON	LED FLASH 1 SEC ON	LED FLASH LONG & SHORT
BURNER PREPURGE	OPERATORS MOVING	COMBUSTION AIR SW OPEN	COMBUSTION AIR SW SHORTED
HEAT REQUIRED	FLAME FAILURE LOCKOUT DISABLED	OPEN HEAT OR FAN SW	SERVICE MODE ACTIVE
LOCKOUT LL	OPEN DISCHARGE TEMP SENSOR	LOW LIMIT BYPASS ENABLED	SUPPLY BLOWER ON DELAY
BURNER ON	FLAME FAILURE	TRIAL FOR IGNITION	GAS VALVE WIRING PROBLEM



Trail for ignition.

Cause.

- Trial for ignition. The flame relay has been energized, but the main flame has not been proven.

LED STATUS				
G-TRAC CONTROLLER				
MODEL G-TRAC 2.3.1				
LED ON	LED FLASH .25 SEC ON	LED FLASH 1 SEC ON	LED FLASH LONG & SHORT	
BURNER PREPURGE	OPERATORS MOVING	COMBUSTION AIR SW OPEN	COMBUSTION AIR SW SHORTED	
HEAT REQUIRED	FLAME FAILURE LOCKOUT DISABLED	OPEN HEAT OR FAN SW	SERVICE MODE ACTIVE	
LOCKOUT LL	OPEN DISCHARGE TEMP SENSOR	LOW LIMIT BYPASS ENABLED	SUPPLY BLOWER ON DELAY	
BURNER ON	FLAME FAILURE	TRIAL FOR IGNITION	GAS VALVE WIRING PROBLEM	



Gas valve wiring problem.

Cause.

- The G-TRAC2 is detecting the gas valve is open when it has not energized the flame relay. The combustion blower will operate at full capacity if this wiring check safety problem is detected.

LED STATUS

G-TRAC CONTROLLER
MODEL G-TRAC 2.3.1

LED ON	LED FLASH .25 SEC ON	LED FLASH 1 SEC ON	LED FLASH LONG & SHORT
BURNER PREPURGE	OPERATORS MOVING	COMBUSTION AIR SW OPEN	COMBUSTION AIR SW SHORTED
HEAT REQUIRED	FLAME FAILURE LOCKOUT DISABLED	OPEN HEAT OR FAN SW	SERVICE MODE ACTIVE
LOCKOUT LL	OPEN DISCHARGE TEMP SENSOR	LOW LIMIT BYPASS ENABLED	SUPPLY BLOWER ON DELAY
BURNER ON	FLAME FAILURE	TRIAL FOR IGNITION	GAS VALVE WIRING PROBLEM

