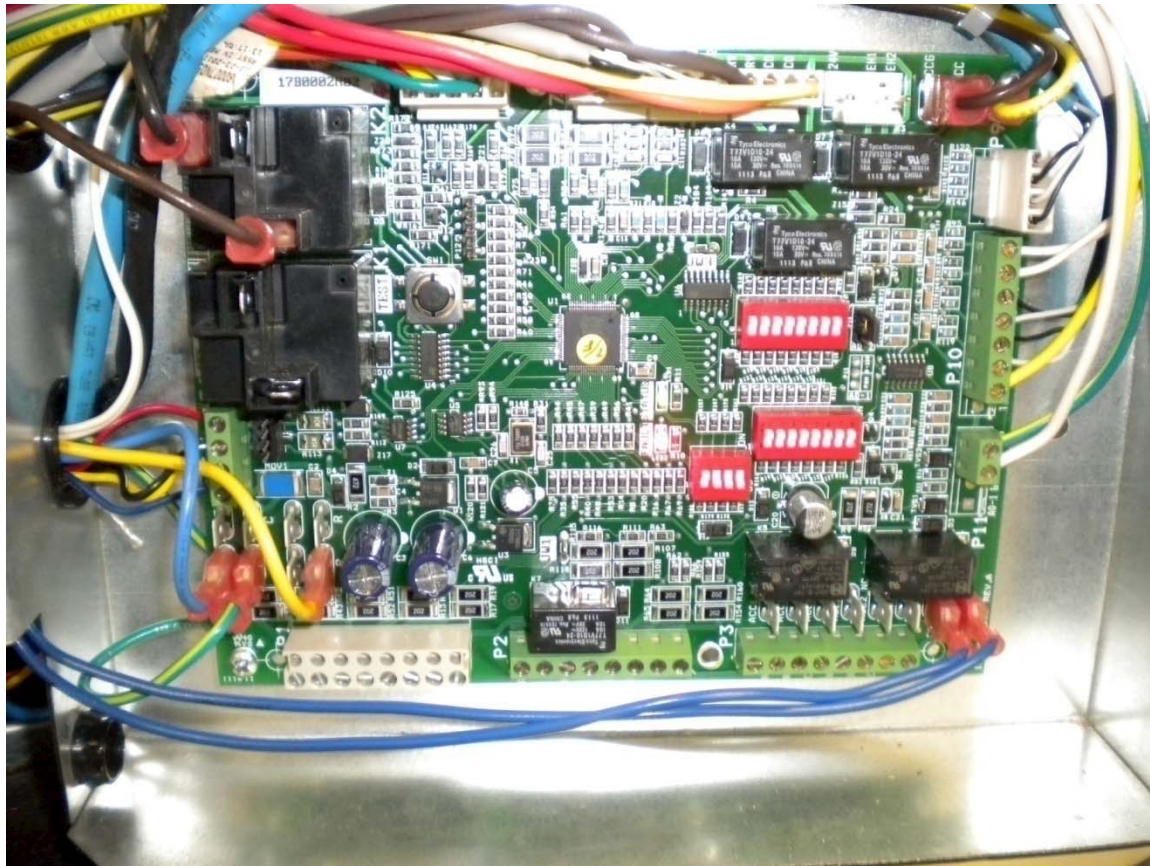




DXM2 Controls & Plug and Play

New DXM2 Controls



DXM2 Controls

BEFORE

DXM2



Blower motor

16 Wires



Blower motor

4 Wires
No board



9 Wires

“old” CXM / ECM control



“old” non-communicating thermostat



“New” DXM2 control

4 Wires



“New” communicating thermostat

DXM2 Control Features

- **5 minute Anti-short cycle protection**
- **High Pressure cutout safety(600psi)**
- **Loss of Charge monitoring(35psi)**
- **Accurate thermistor sensing for water and air coil freeze protection (LT1 & LT2)**
- **Over/Under Voltage Sensing (18-31)**
- **Thirty second fault recognition**
- **HWG control built in able to produce up to 150 degree water (Factory setting 125)**

New

DXM2 Features

- 120 second Low Temp (LT1 & LT2), LOC bypass at startup
- Intelligent reset - Fault retry twice before locking out (5 Min. between retries)
- Impedance sensing condensate sensor
- **Test mode** via test Button, stat, or service tool. {disables after 20 min.}
- Auxiliary Electric heat outputs{ two stage }
- Controls ECM motor 4 wire communicating.

New

New

DXM2 Features

New

- 4 wire communicating Stat (Non shielded)

New

- EWT and LWT sensors.

New

- LAT sensor

New

- On Plug And Play models controls variable speed pump 3 wires.

New

- Stores the last 5 faults in the board.

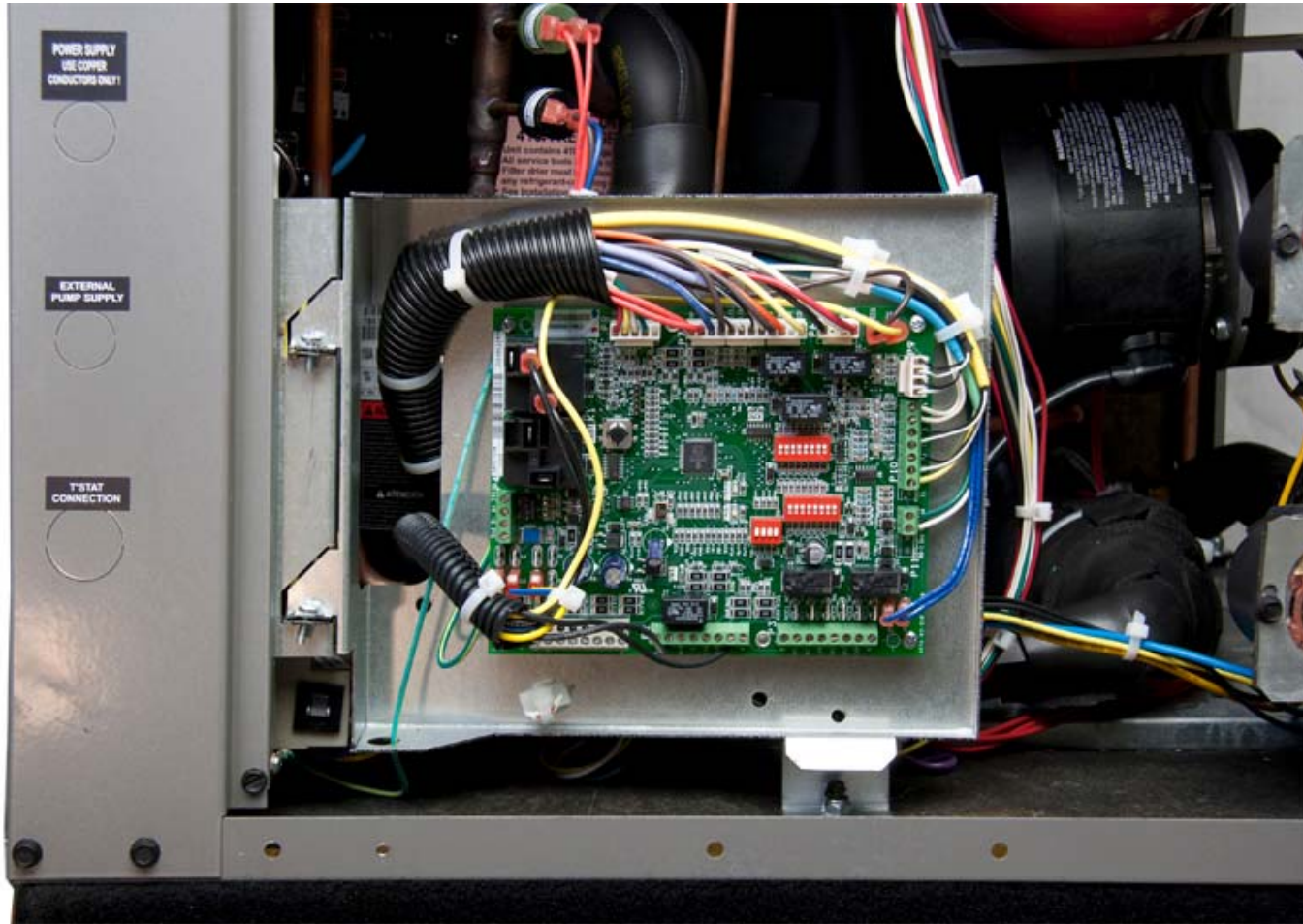
New

- Controls two stage rectifier for Y2 call.

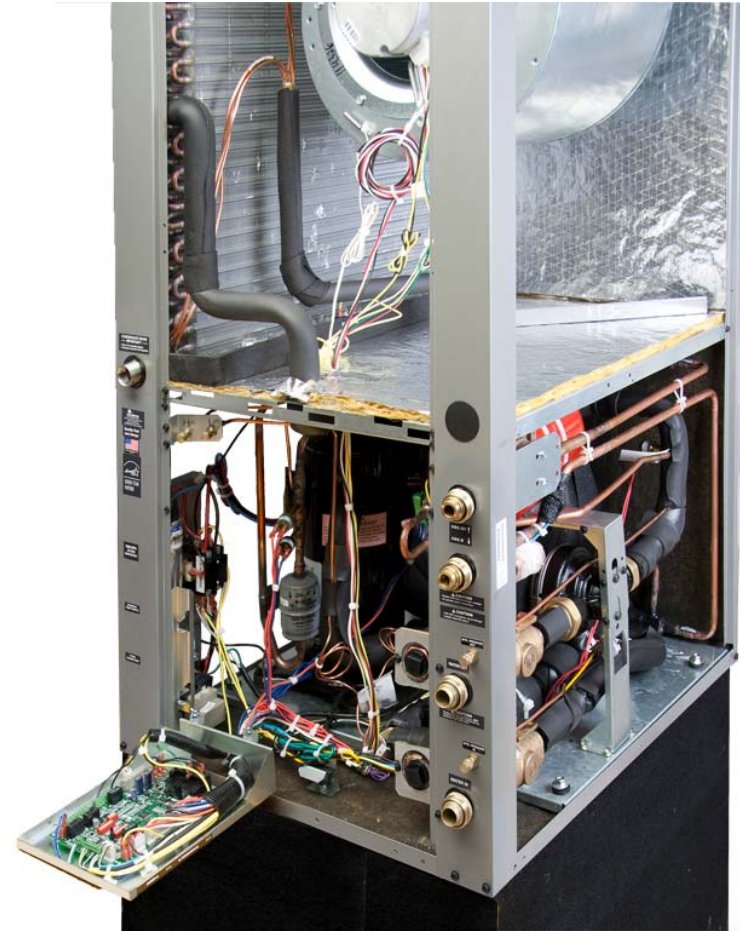
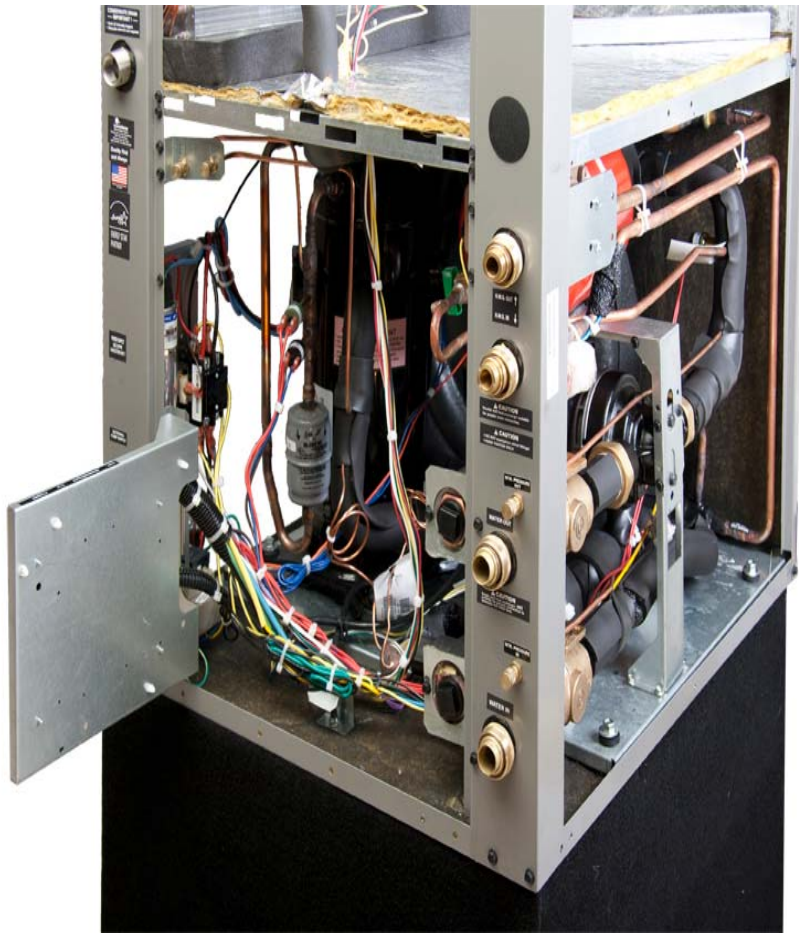
New

- Accessory terminals

DXM2 Digital Control



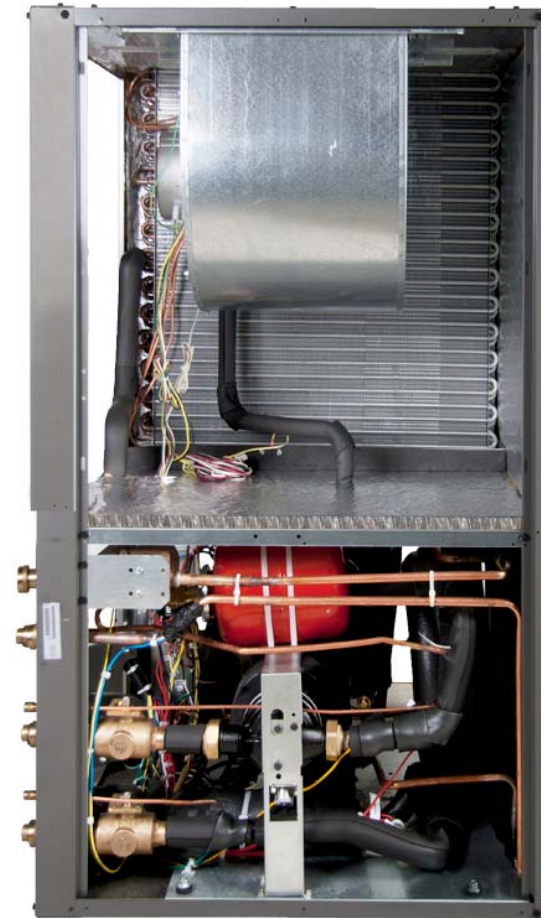
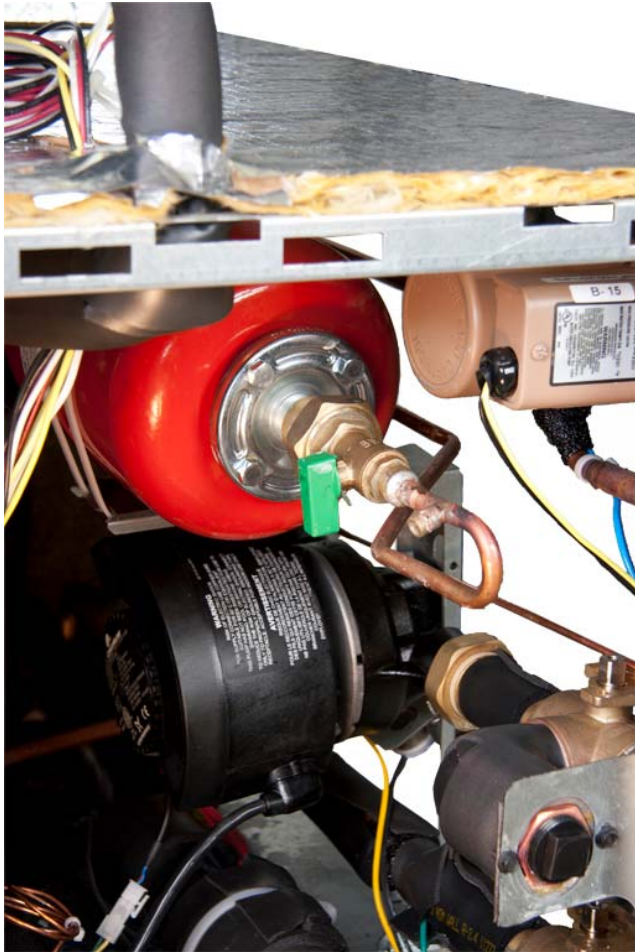
Swing-Out Control Box



High Voltage side of control box



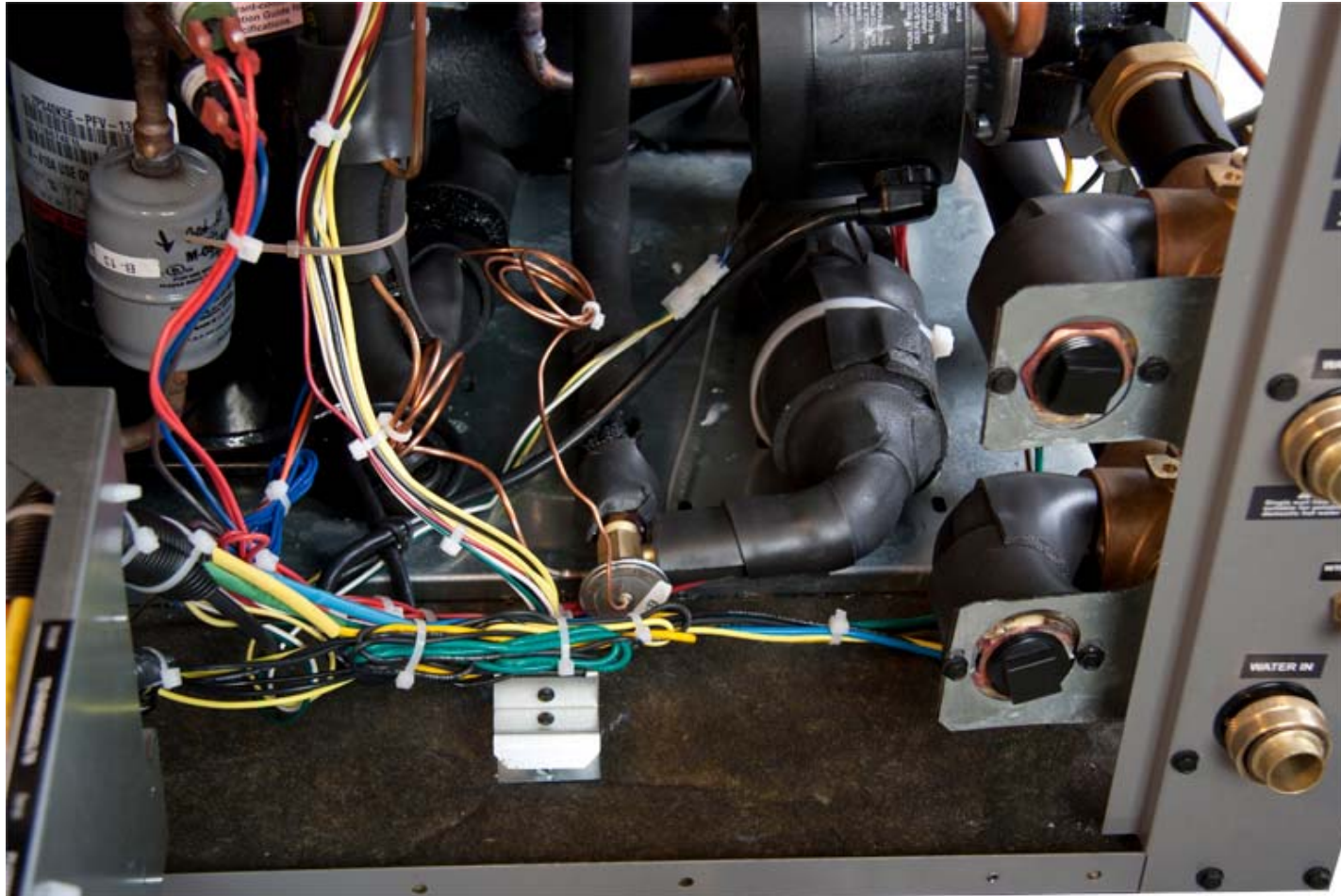
Expansion Tank part of Plug & Play



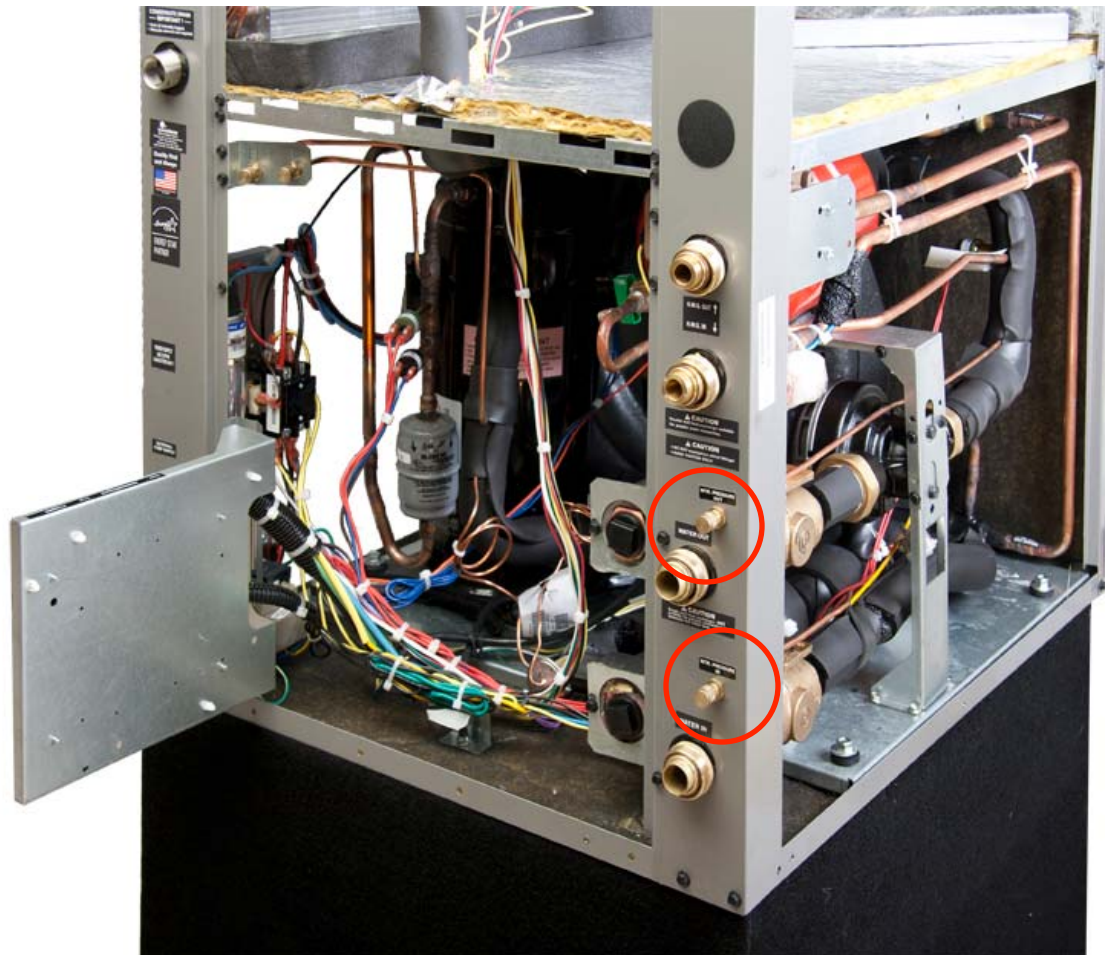
3 Way Full Port Flush Valve



Flush Port Connections



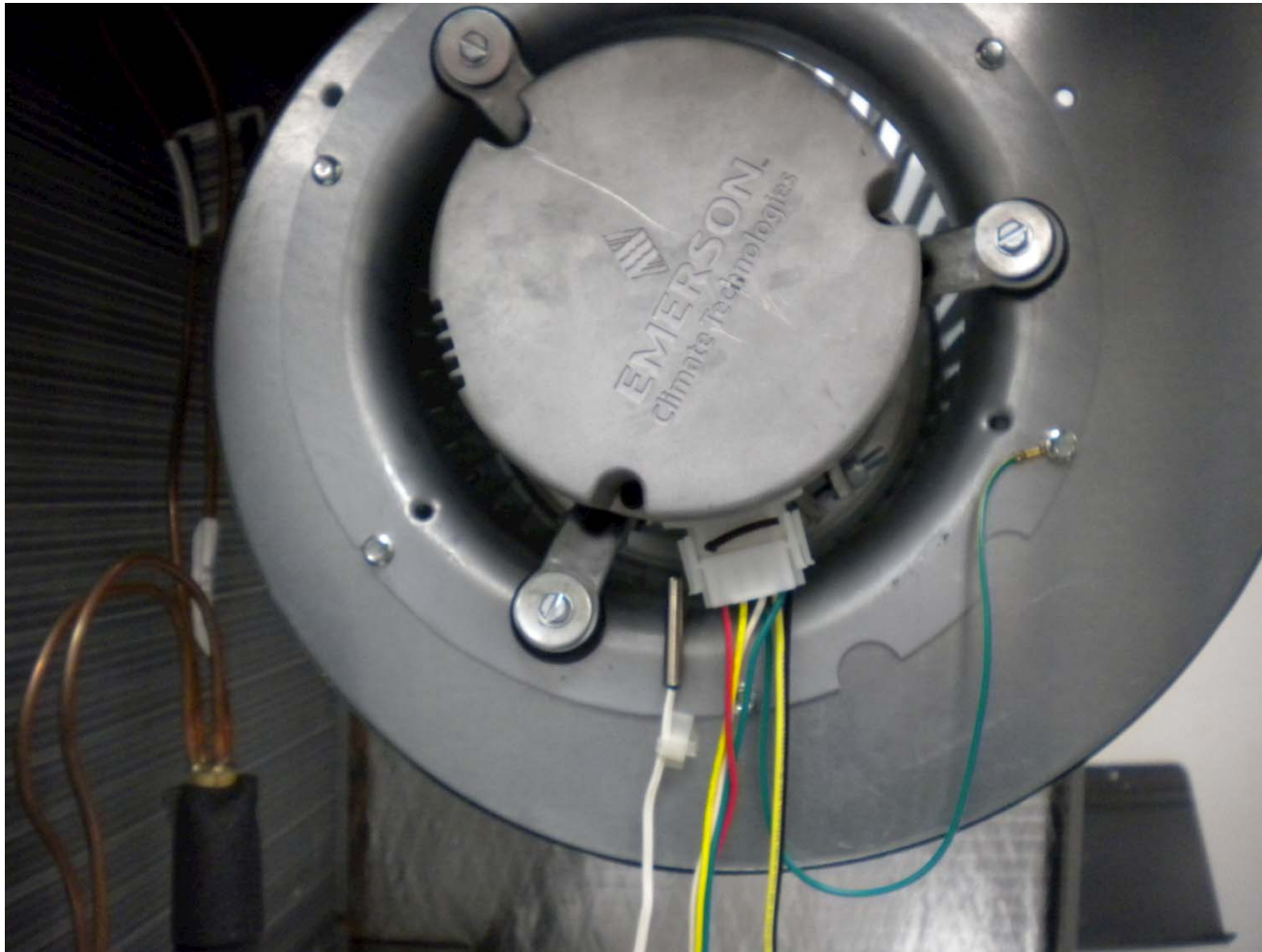
Pressure ports for measuring pressure drop.



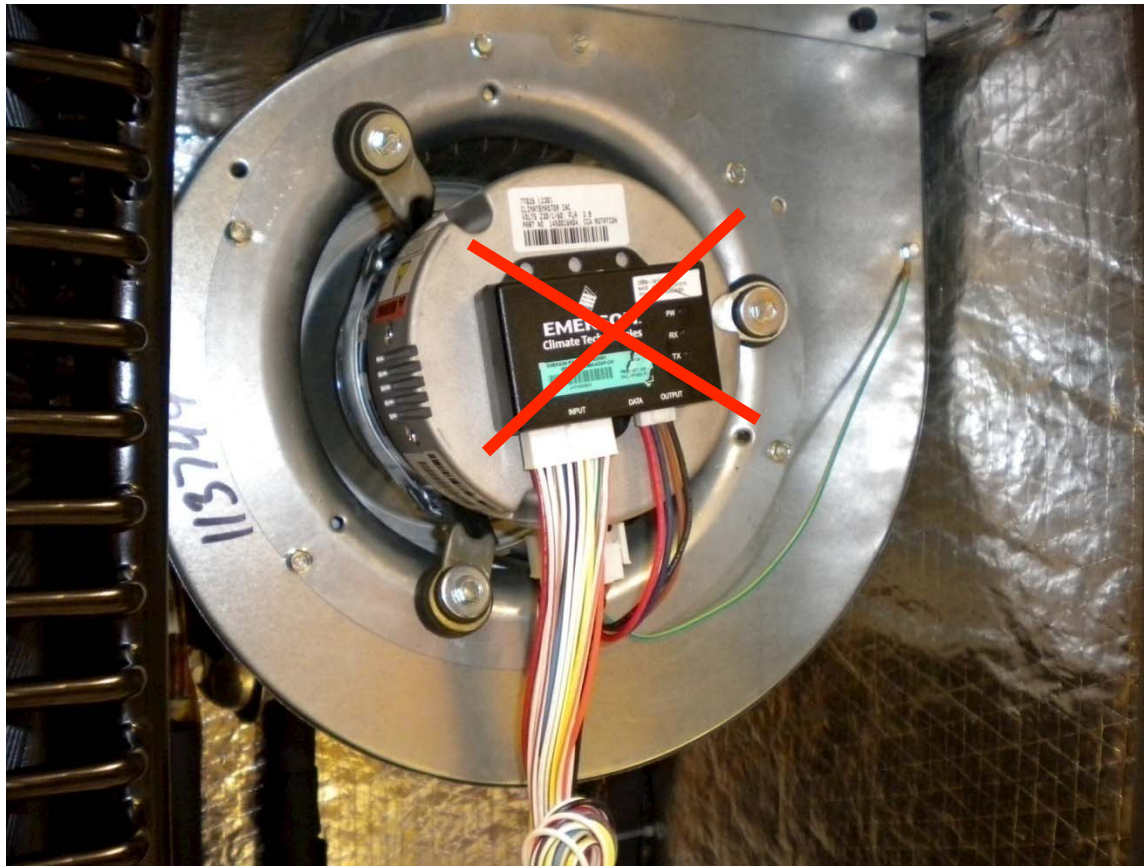
Pressure Ports

- To measure pressure drop across the Coax you have to use these ports. With an internal pump if you use PT ports you will get a pressure rise.
- The ports are a Schrader connection

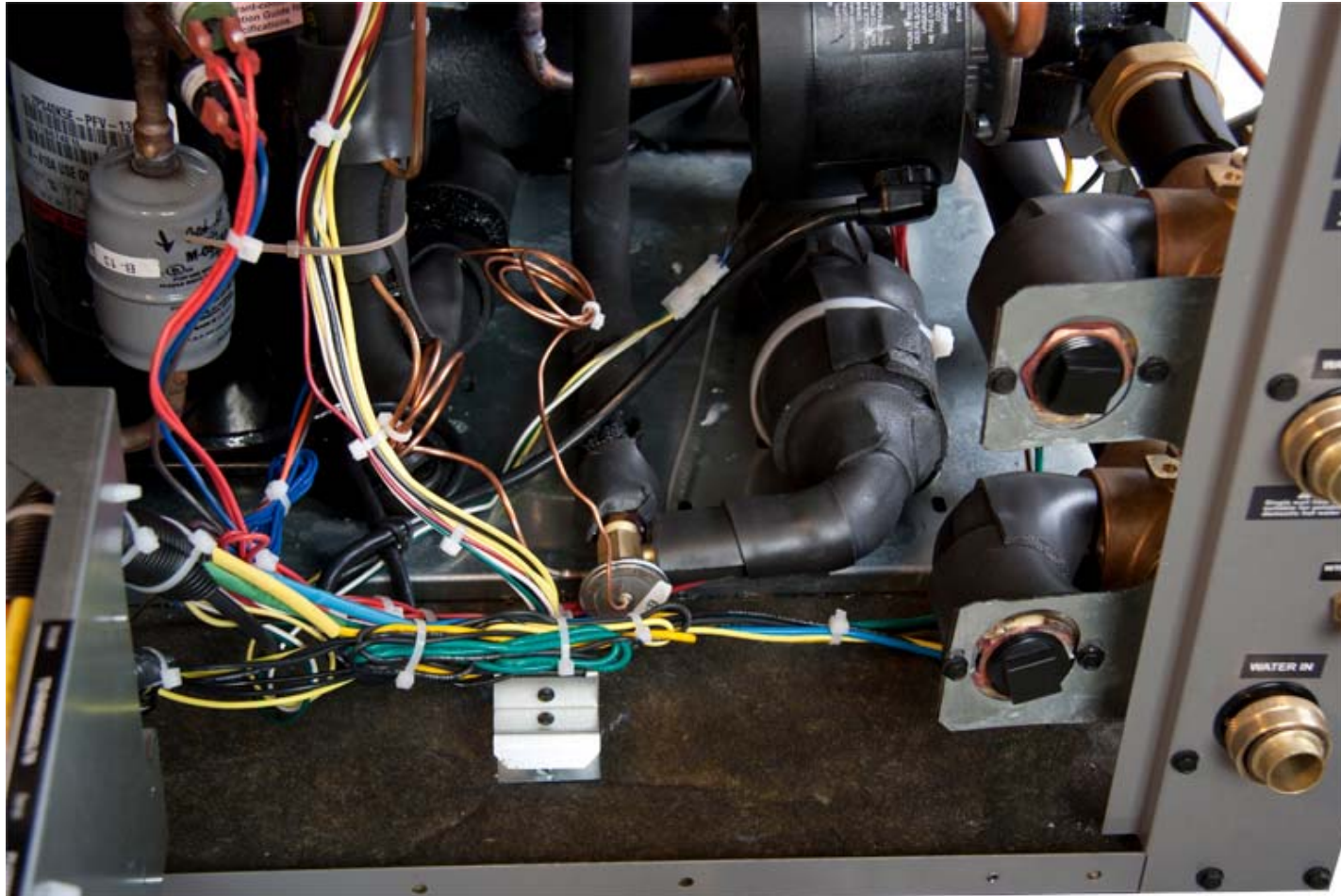
Communicating ECM Blower Motor



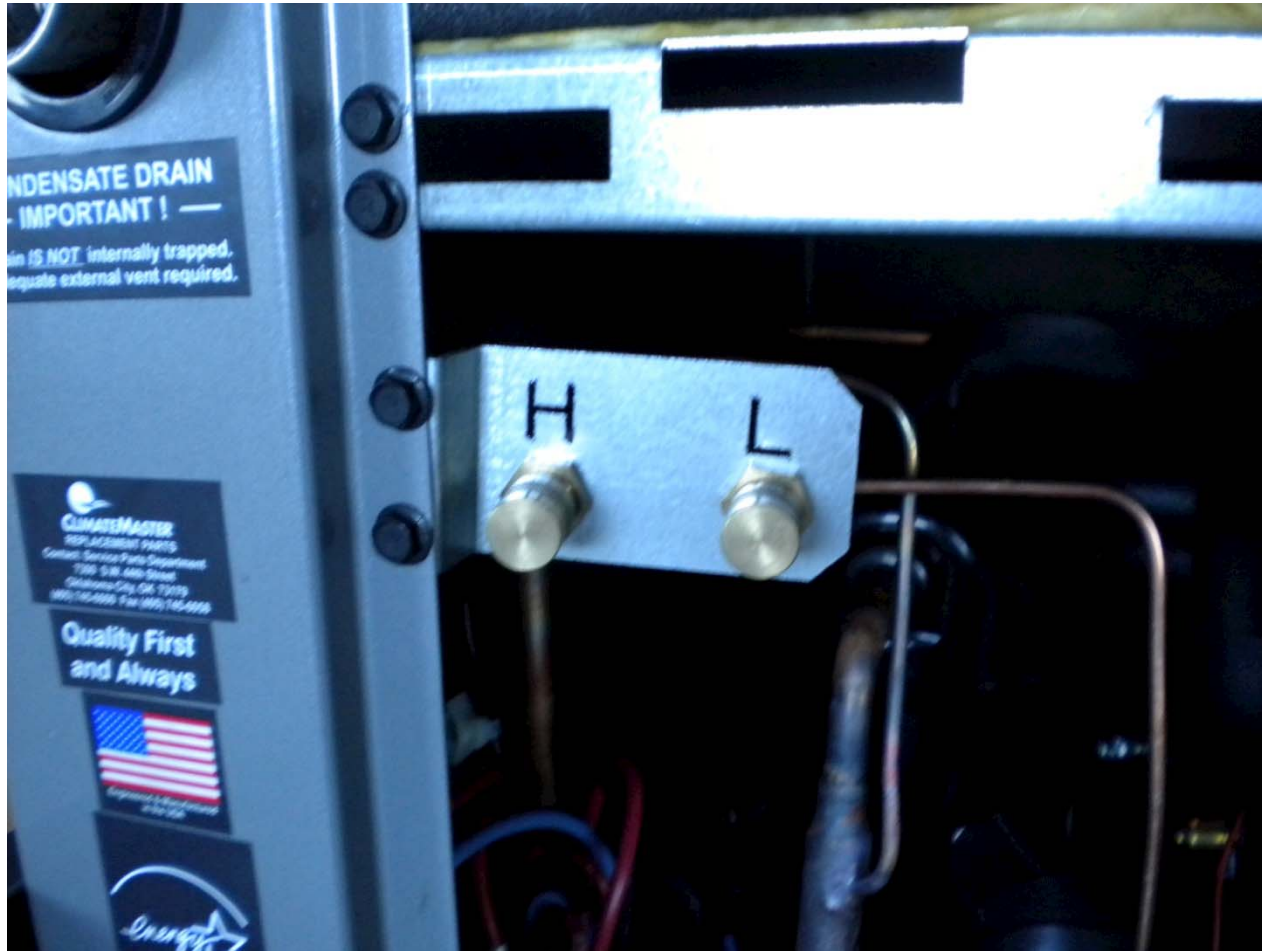
No Black box program is in the DXM2 Control



TXV in Front for easy access.



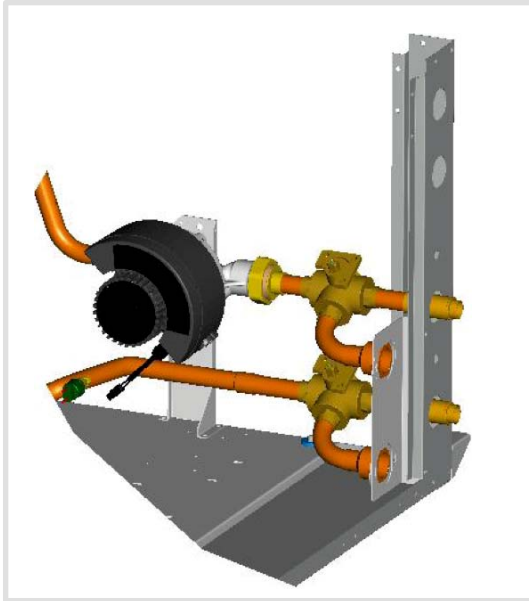
HP and LP service ports



High Pressure and Loss of Charge



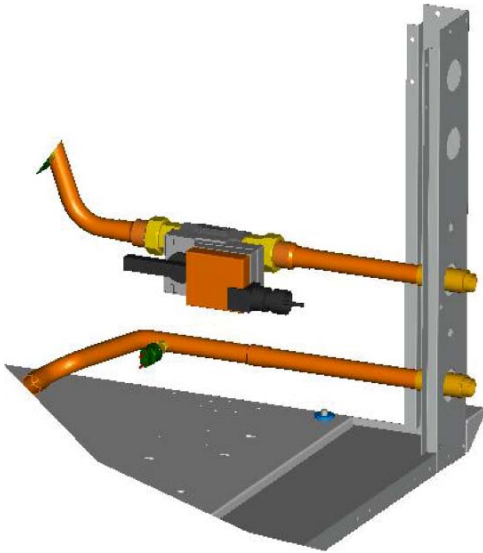
Internal Flow Controller



- Variable Speed ECM pump
- Configure by loop ΔT
- Geo source pump speed, watts, and GPM displayed at thermostat*

* - when using communicating thermostat

Modulating Water Valve

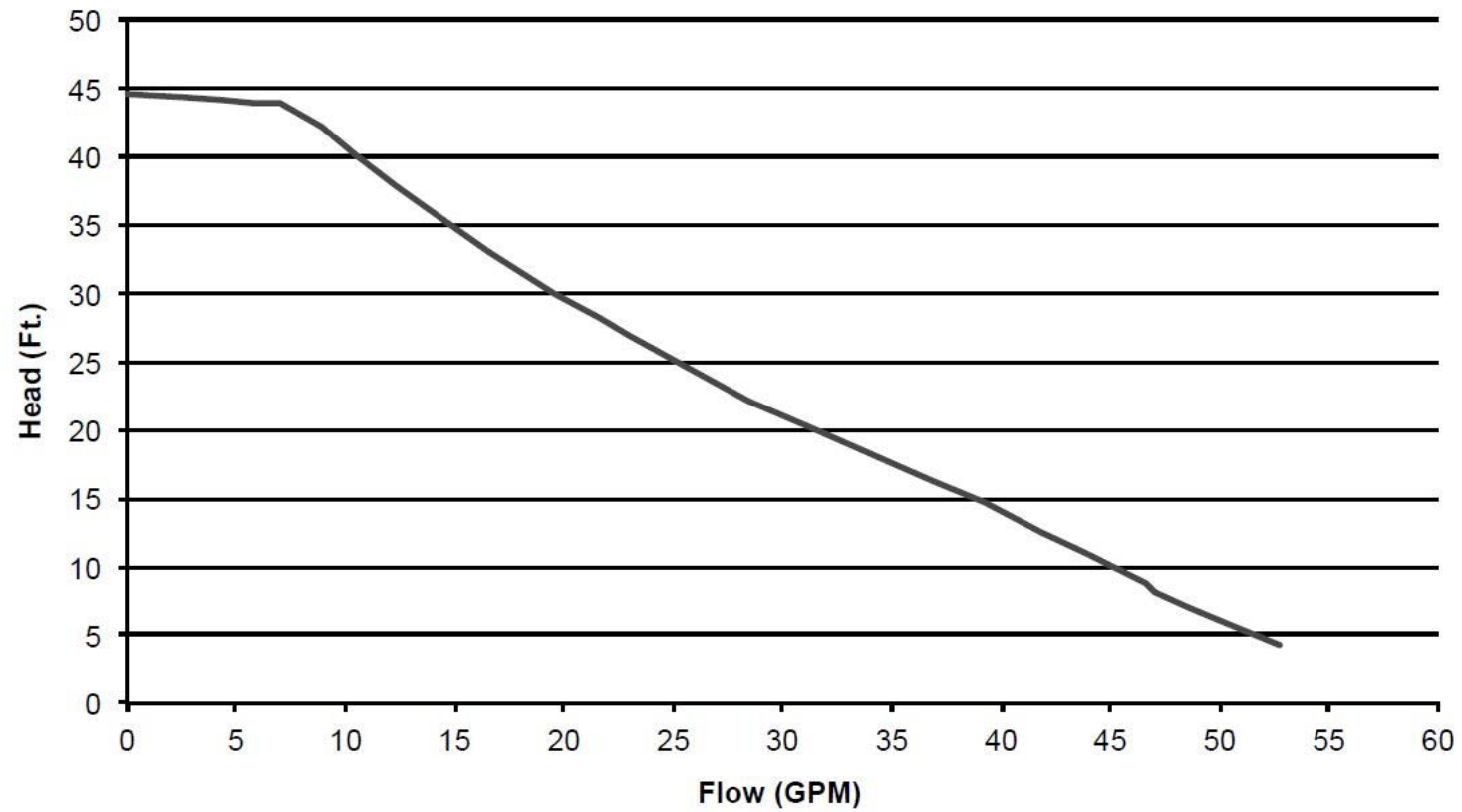


- Also functions as shutoff valve
- Configure by source/loop ΔT
- Available for Multiple Unit Closed Loop (Central pumping) or Open Loop Applications

Grundfos 25-140 Variable Speed pump



Variable Speed Max Pump Curve

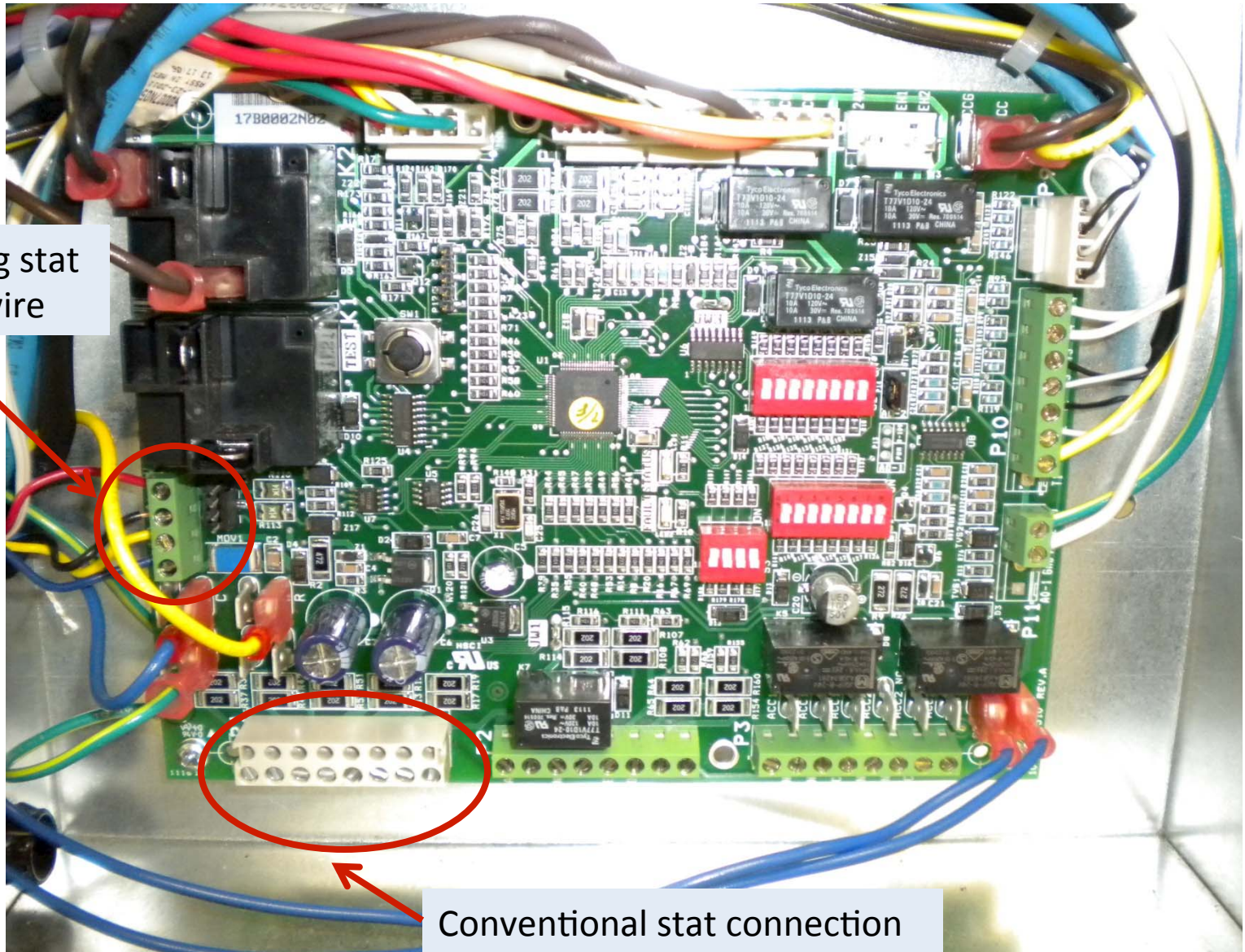


Cabinet Temperature Sensor

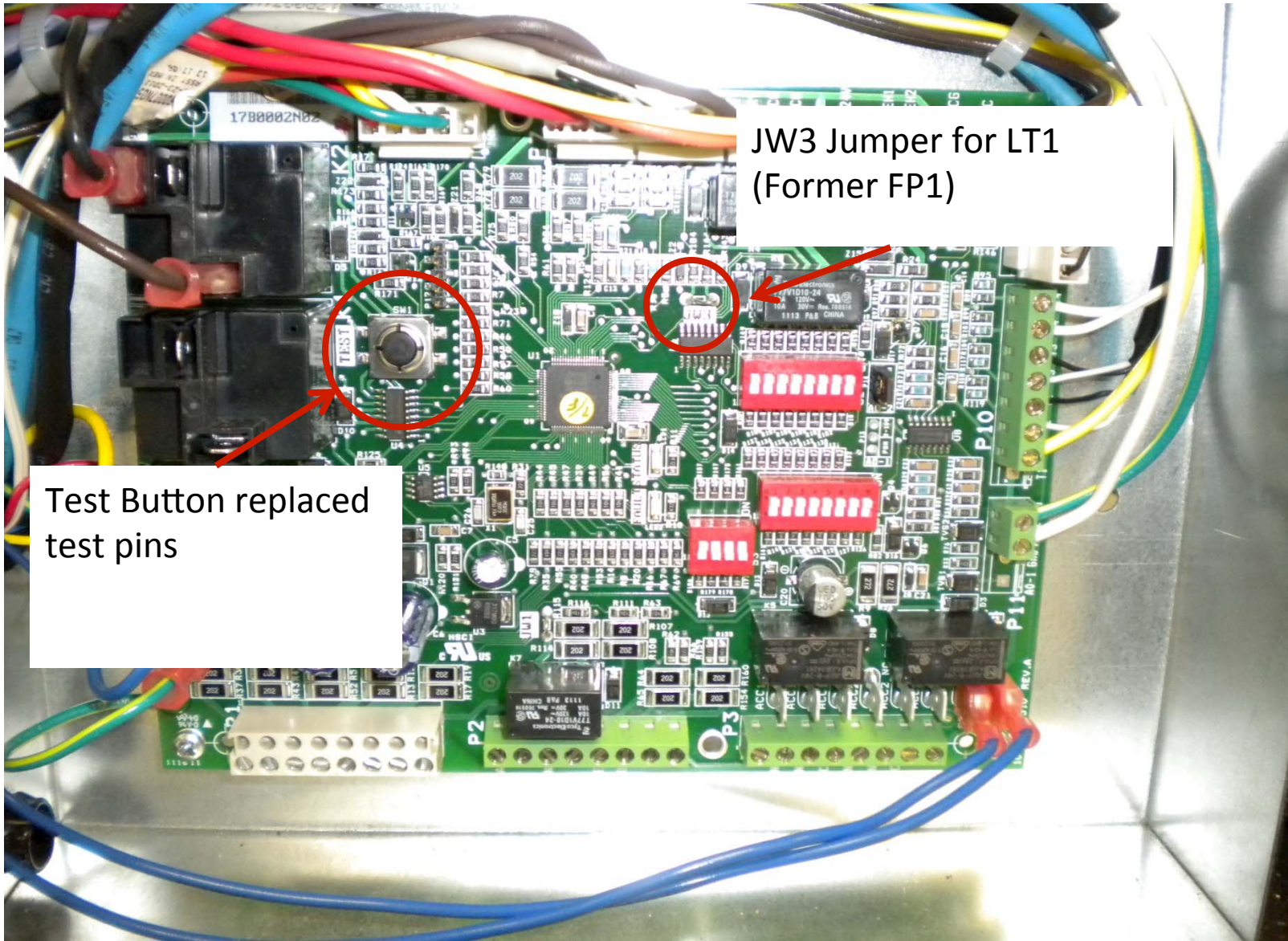
At 125 degrees inside the cabinet the pump speed will be slowed down. Once the cabinet temperature goes down to 115 degrees the pump can speed up to what every it needs.

Caution: Will need to pay attention to this with units installed in attics.

Communicating stat
connection 4 wire



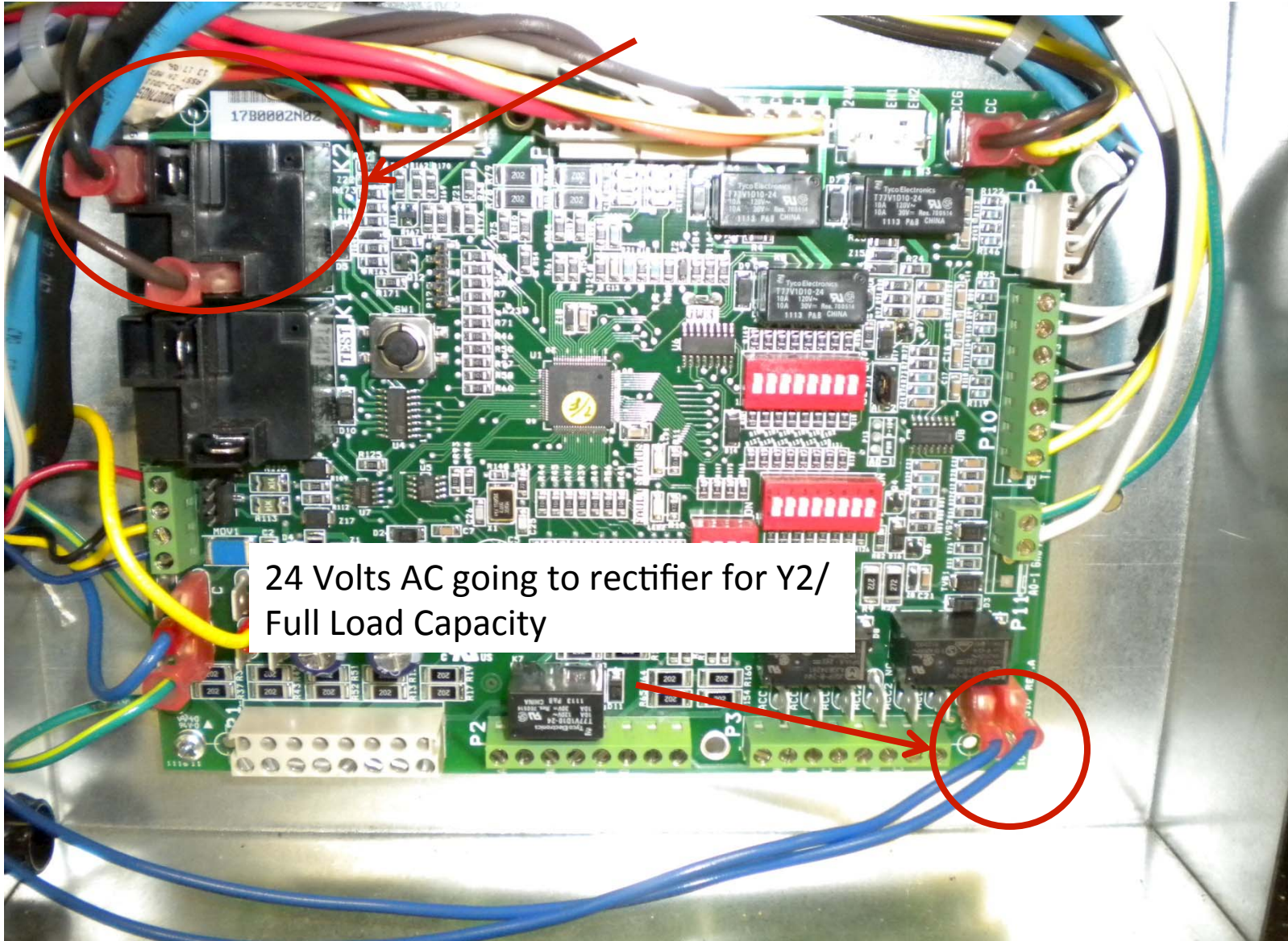
Conventional stat connection



JW3 Jumper for LT1
(Former FP1)

Test Button replaced
test pins

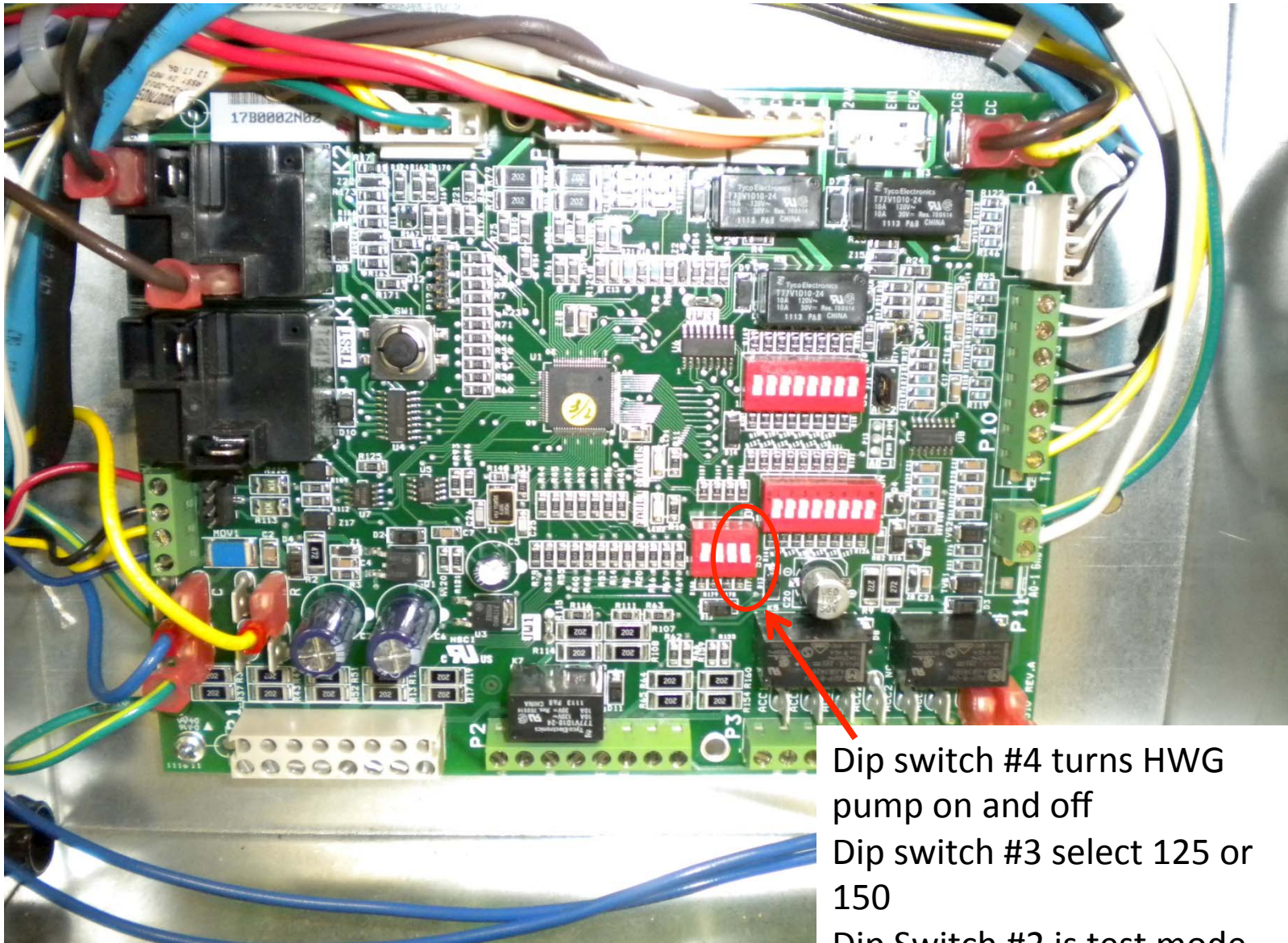
HWG relay for pump 230V



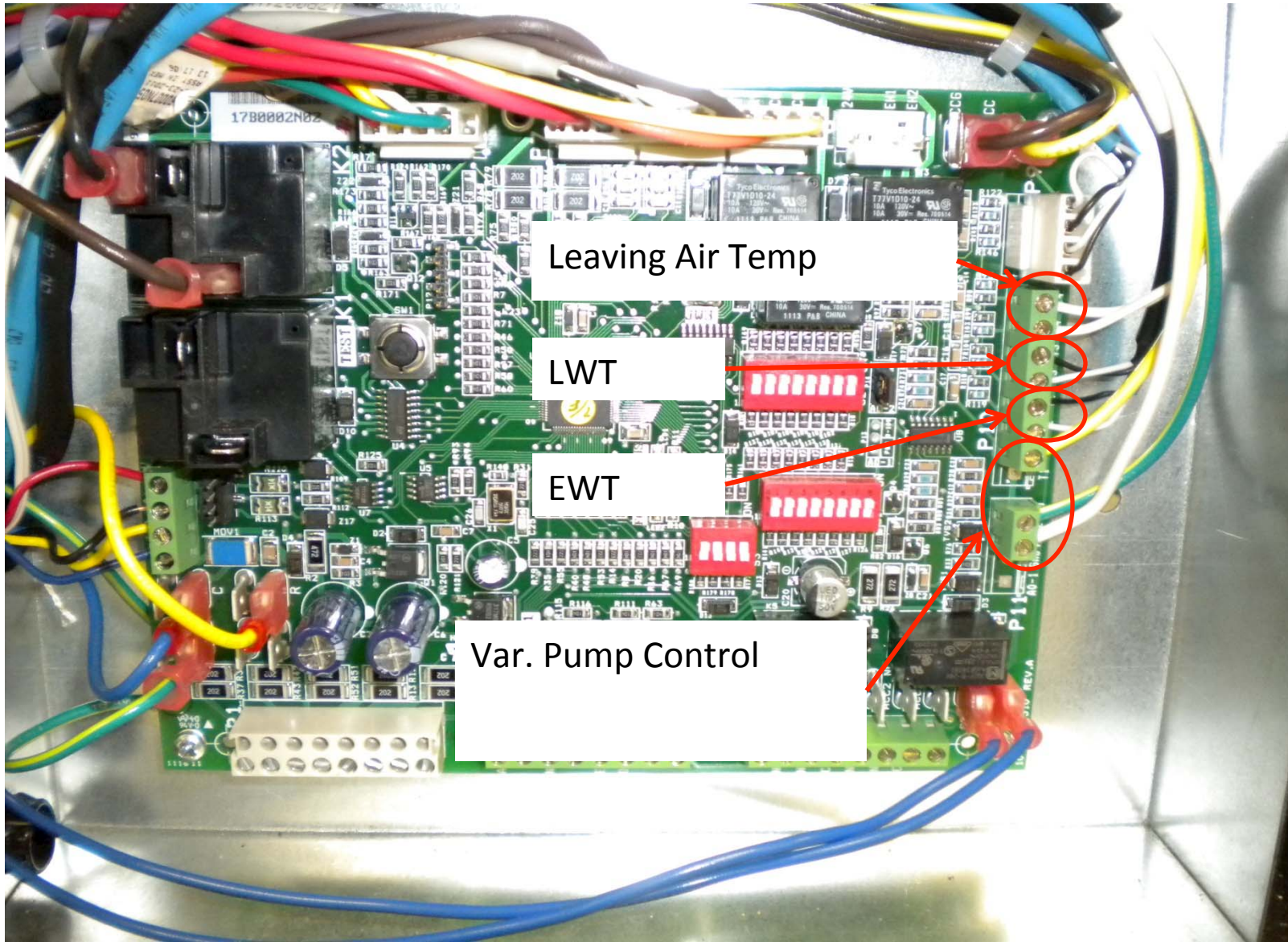
24 Volts AC going to rectifier for Y2/
Full Load Capacity

Y2 Rectifier on side of Next Generation UltraTech Scroll





Dip switch #4 turns HWG pump on and off
Dip switch #3 select 125 or 150
Dip Switch #2 is test mode for pump.

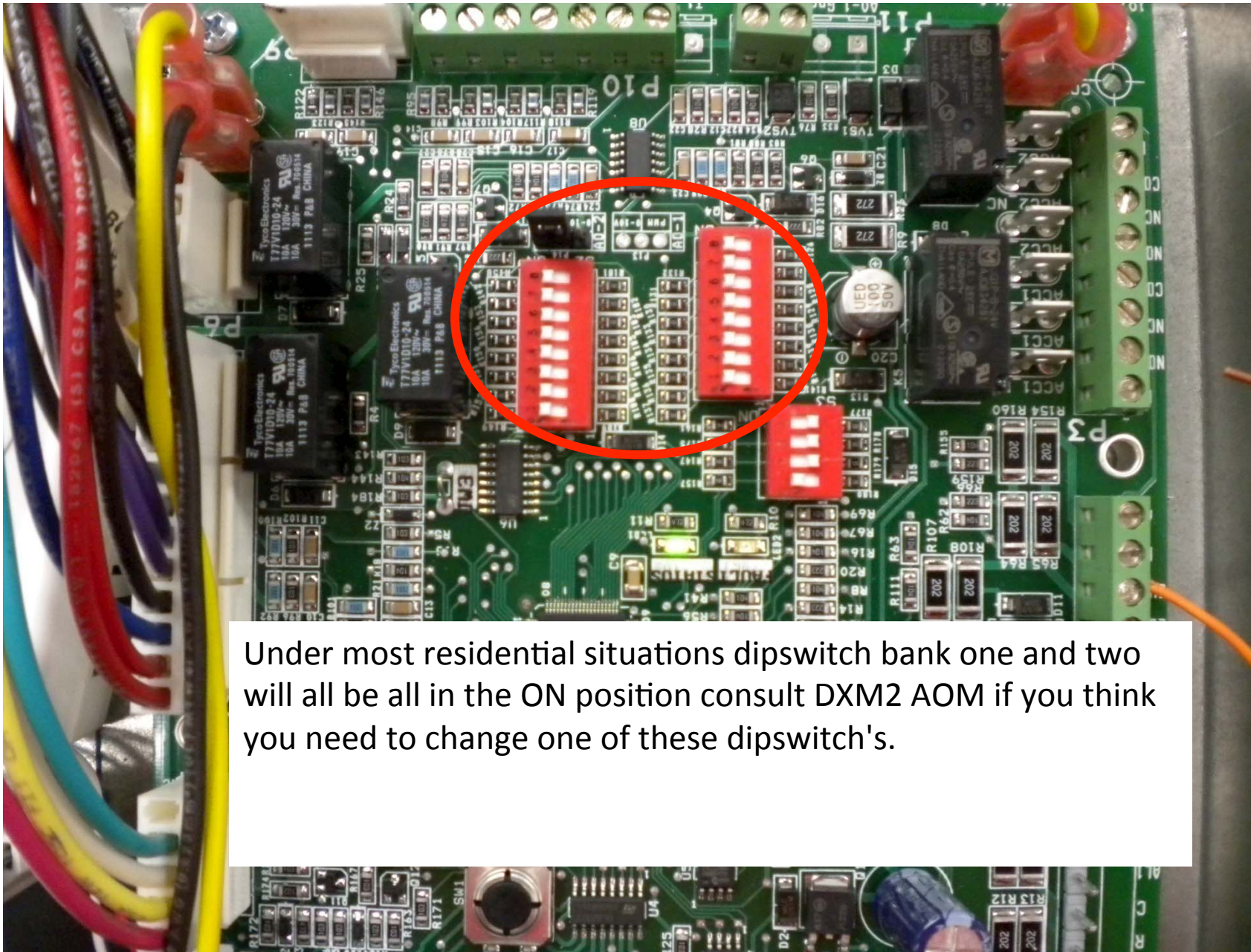


Leaving Air Temp

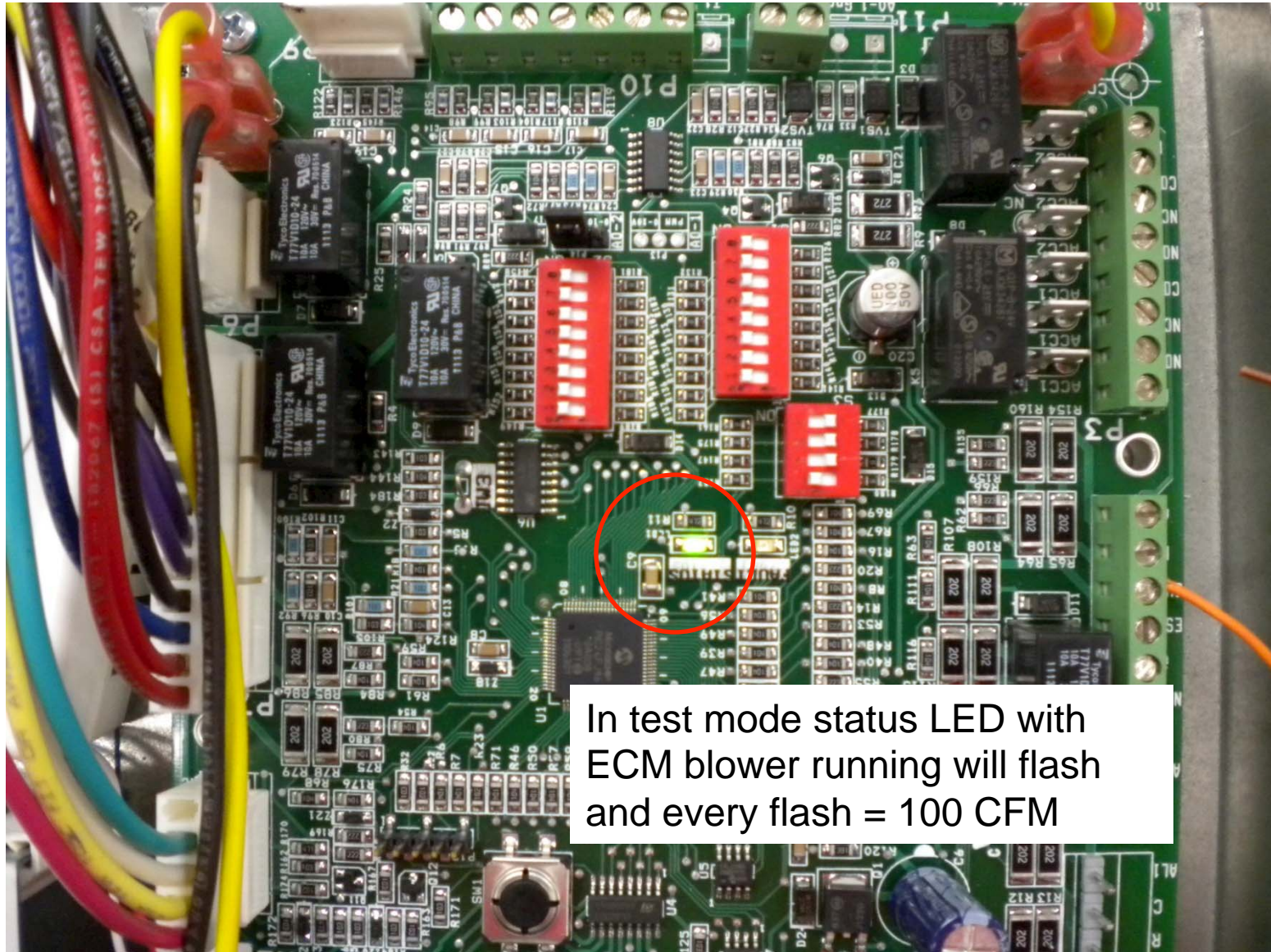
LWT

EWT

Var. Pump Control

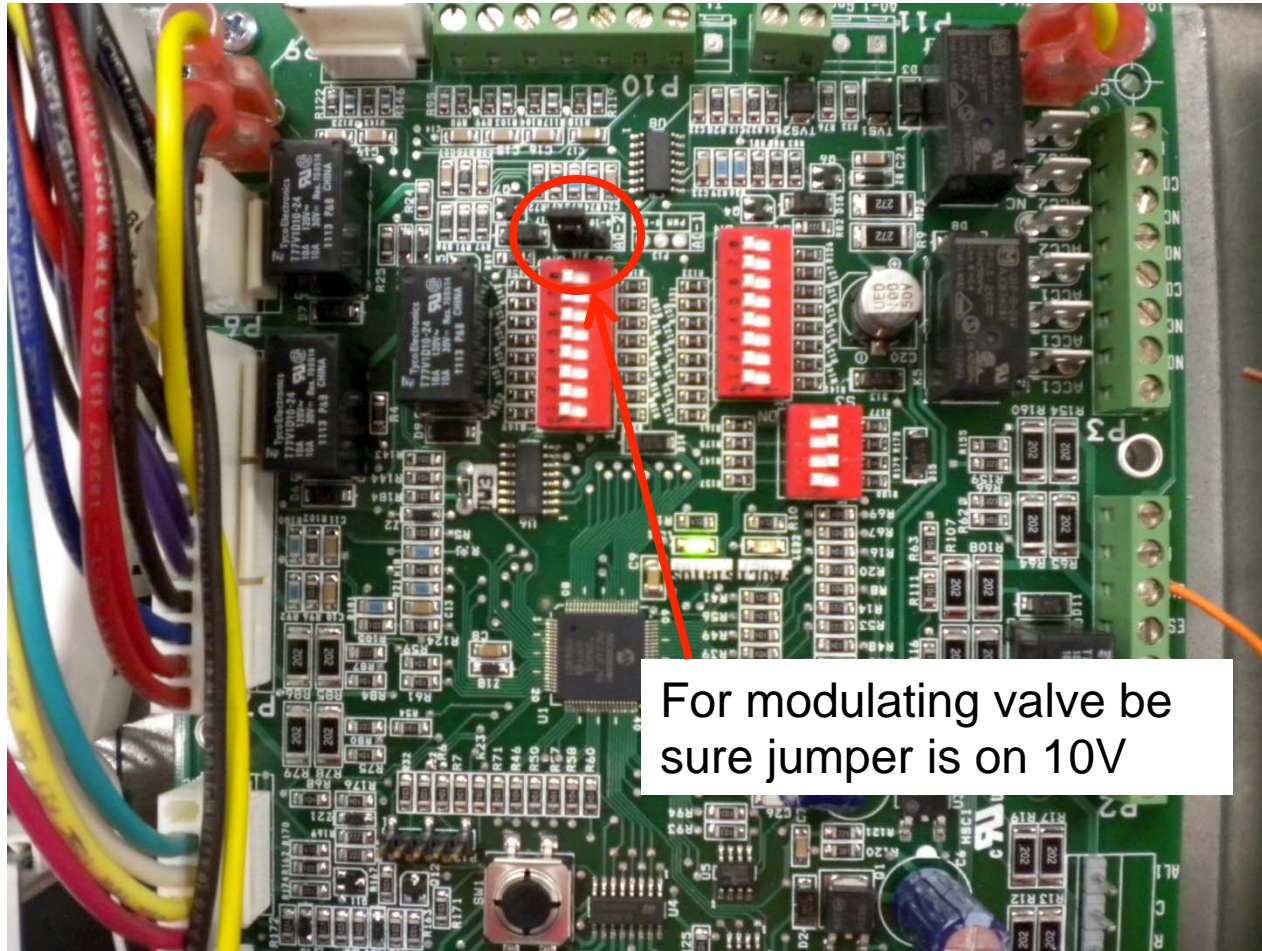


Under most residential situations dipswitch bank one and two will all be all in the ON position consult DXM2 AOM if you think you need to change one of these dipswitch's.

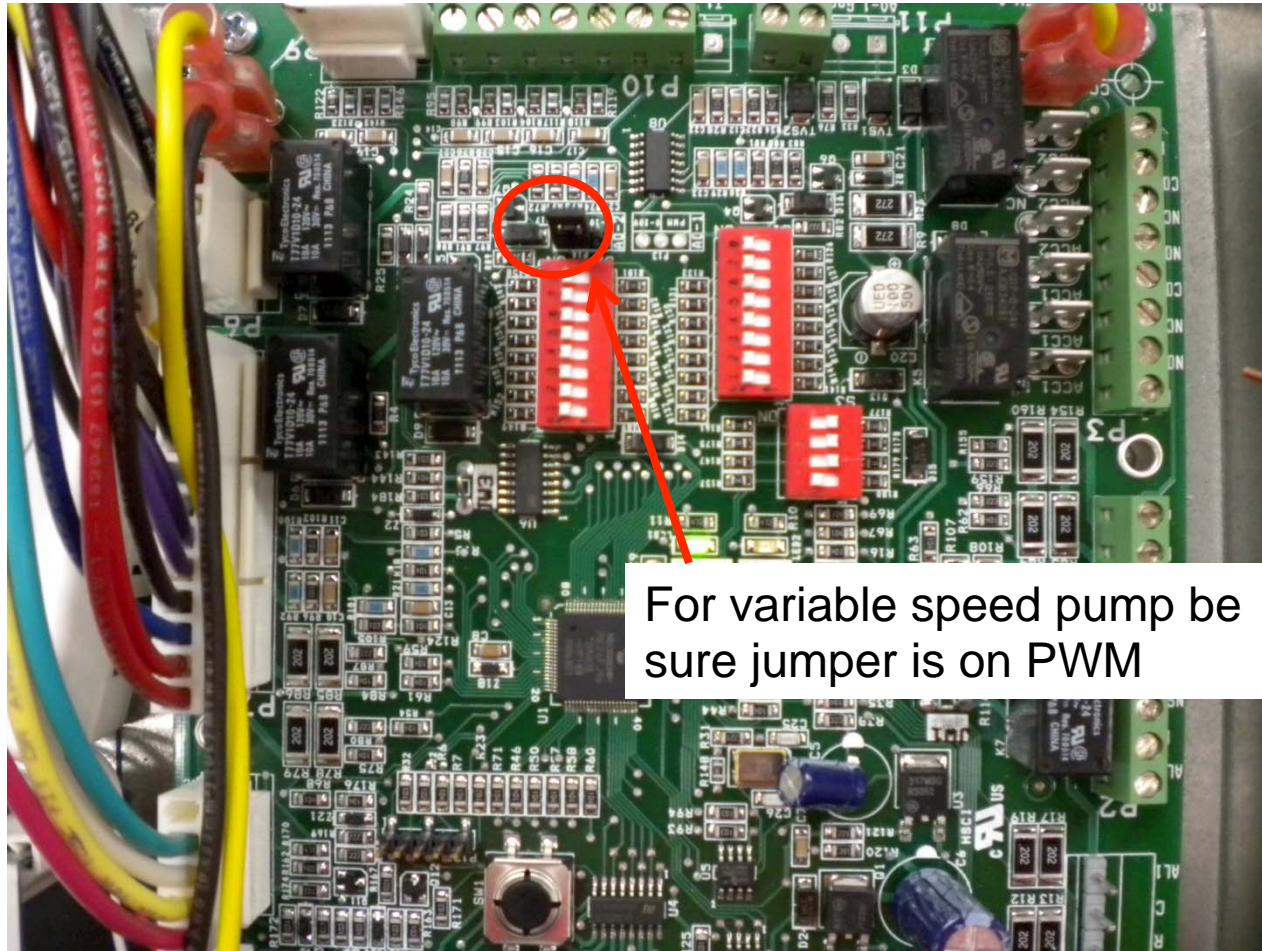


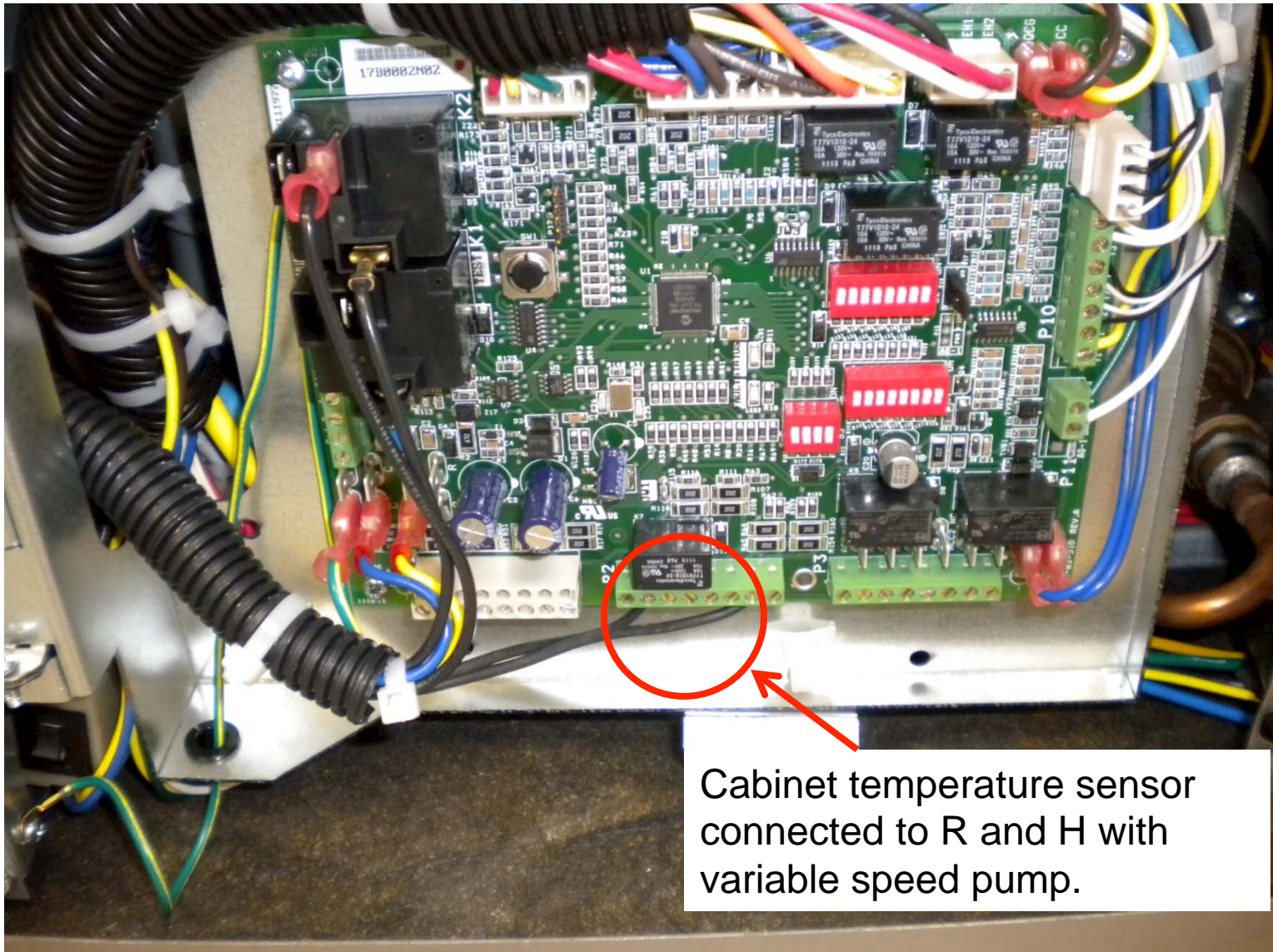
In test mode status LED with ECM blower running will flash and every flash = 100 CFM

AO-2 Jumper

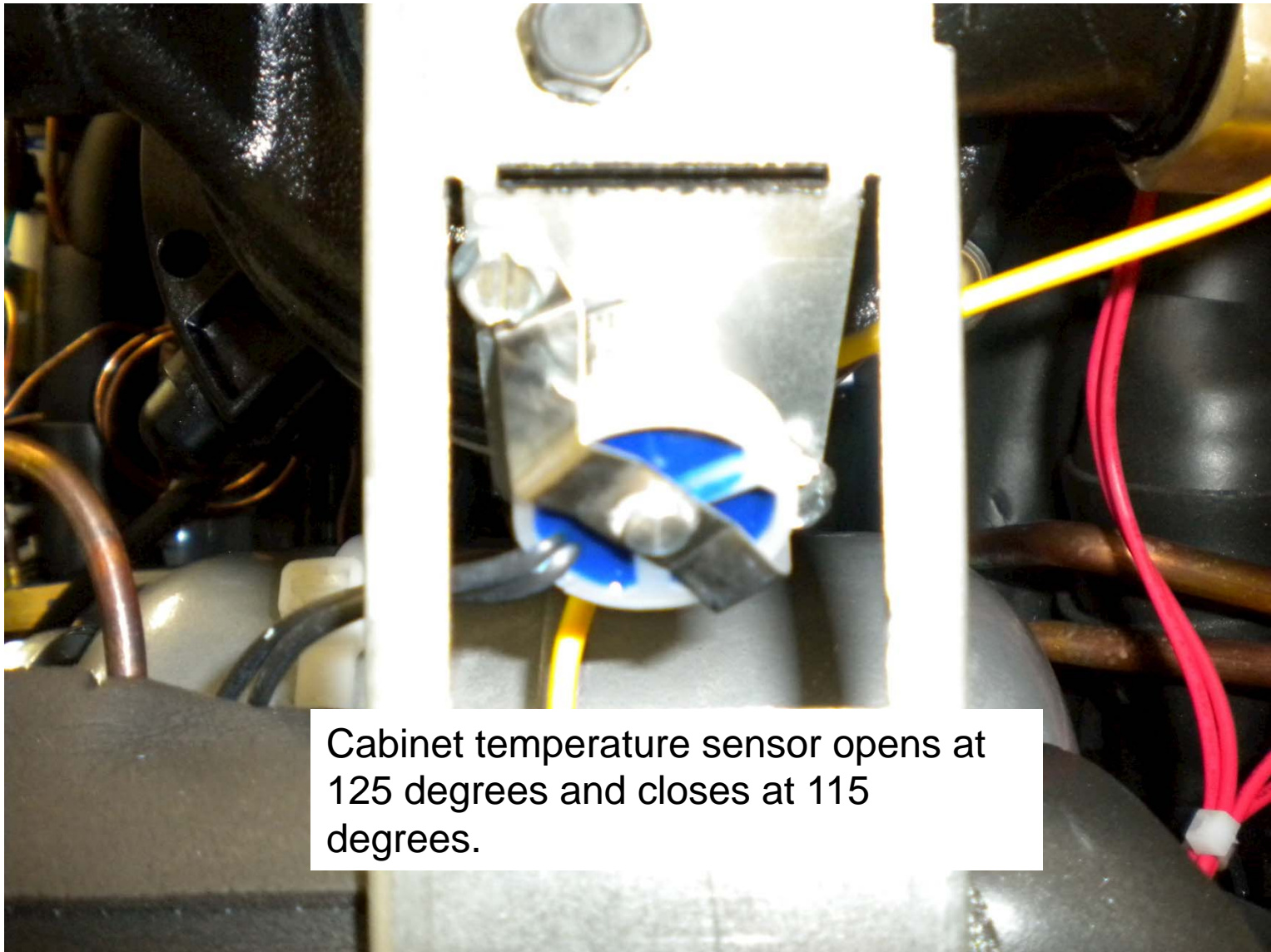


AO-2 Jumper





Cabinet temperature sensor connected to R and H with variable speed pump.



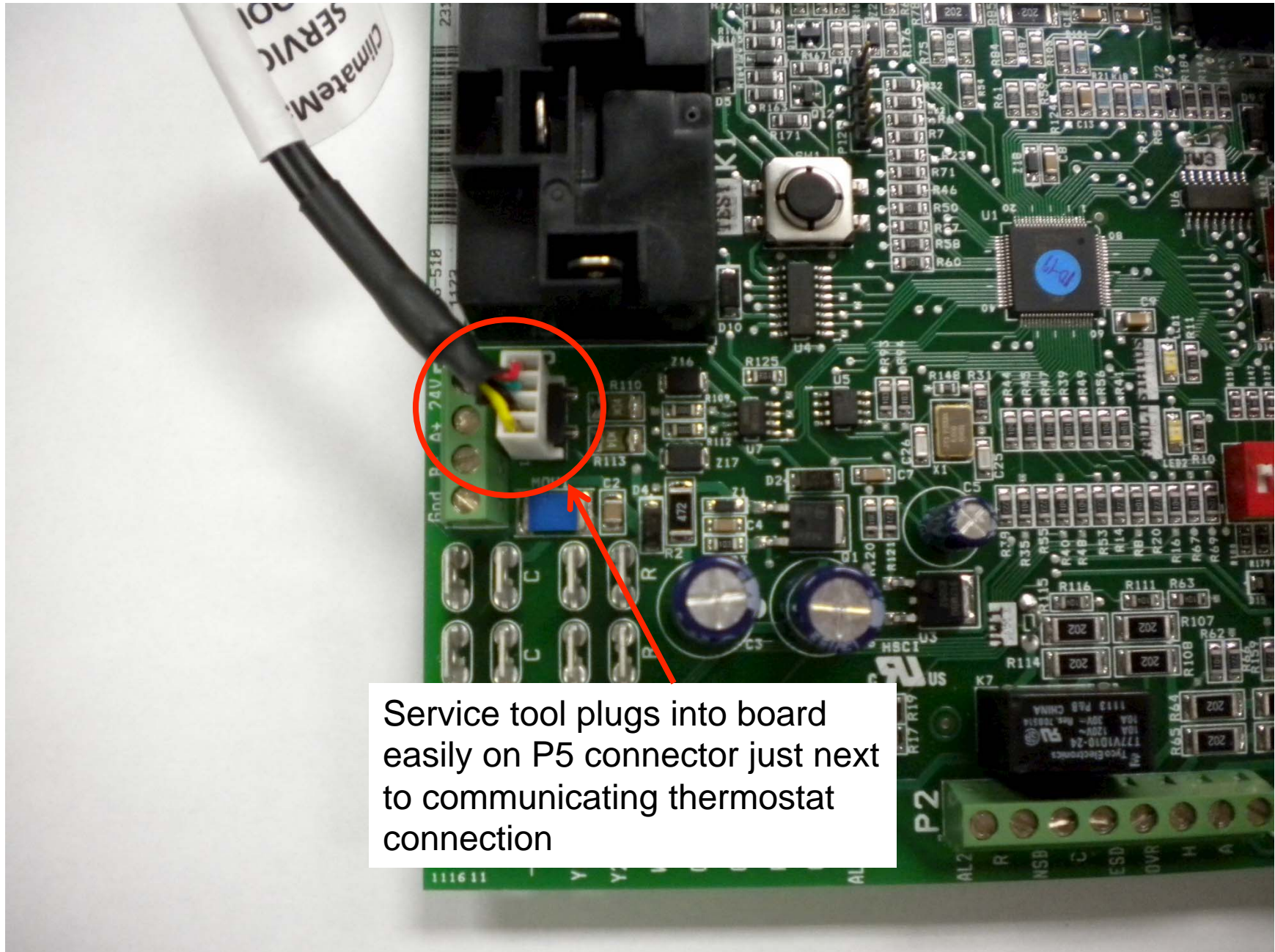
Cabinet temperature sensor opens at 125 degrees and closes at 115 degrees.

Service Tool



Wire connector for service tool





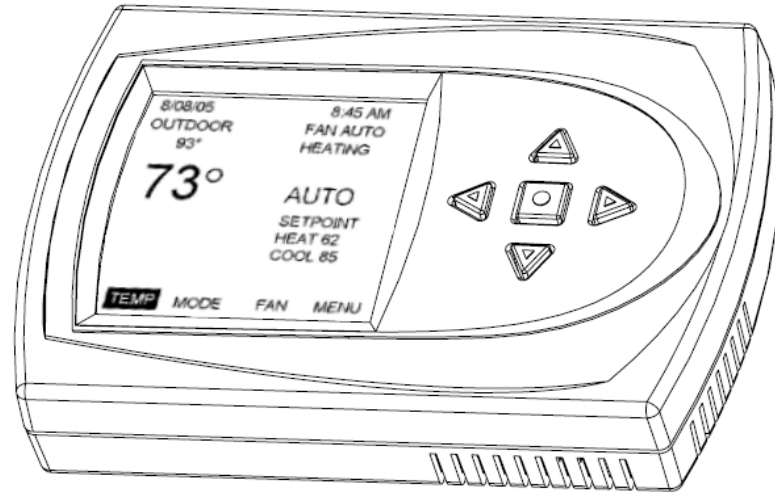
Service tool plugs into board easily on P5 connector just next to communicating thermostat connection

Service Tool

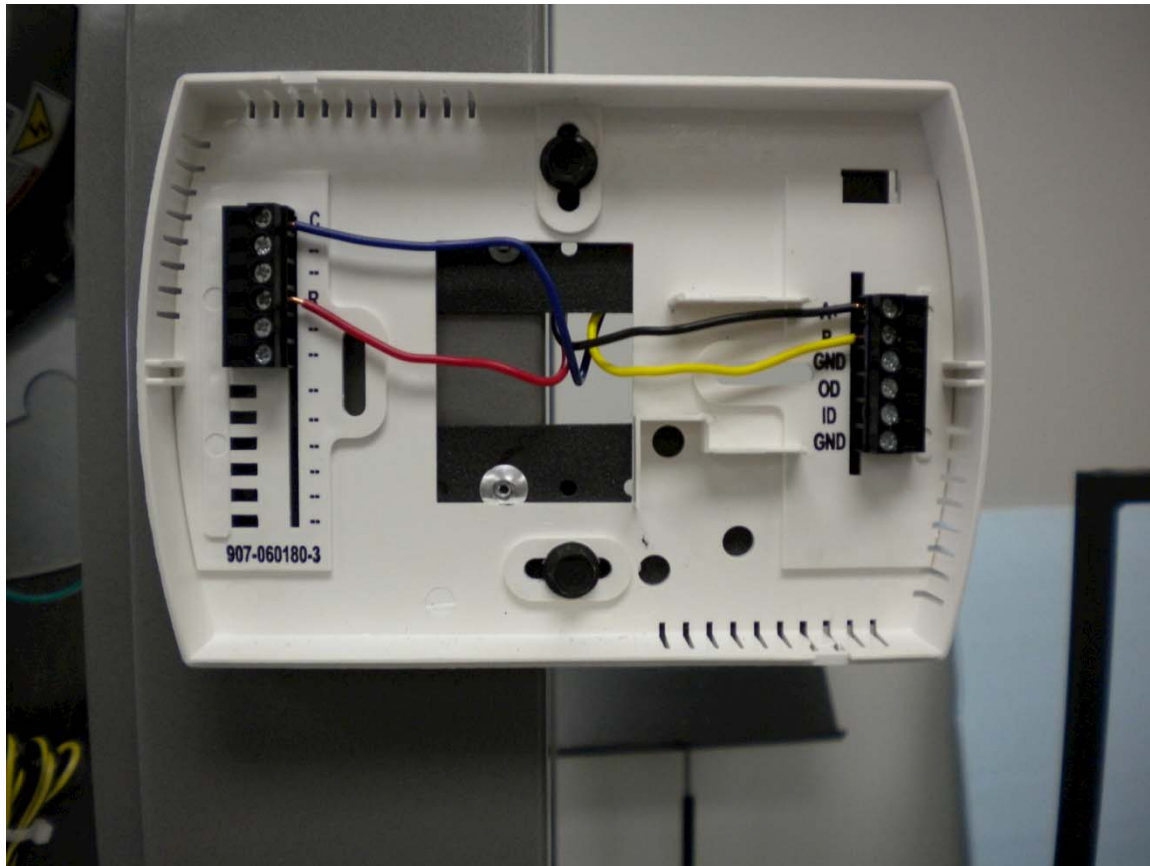
- Allows to change installer setup.
- Allows to view control diagnostics.
- Allows the unit to run under control diagnostics in the manual mode.

ATC32U01

Communicating Thermostat

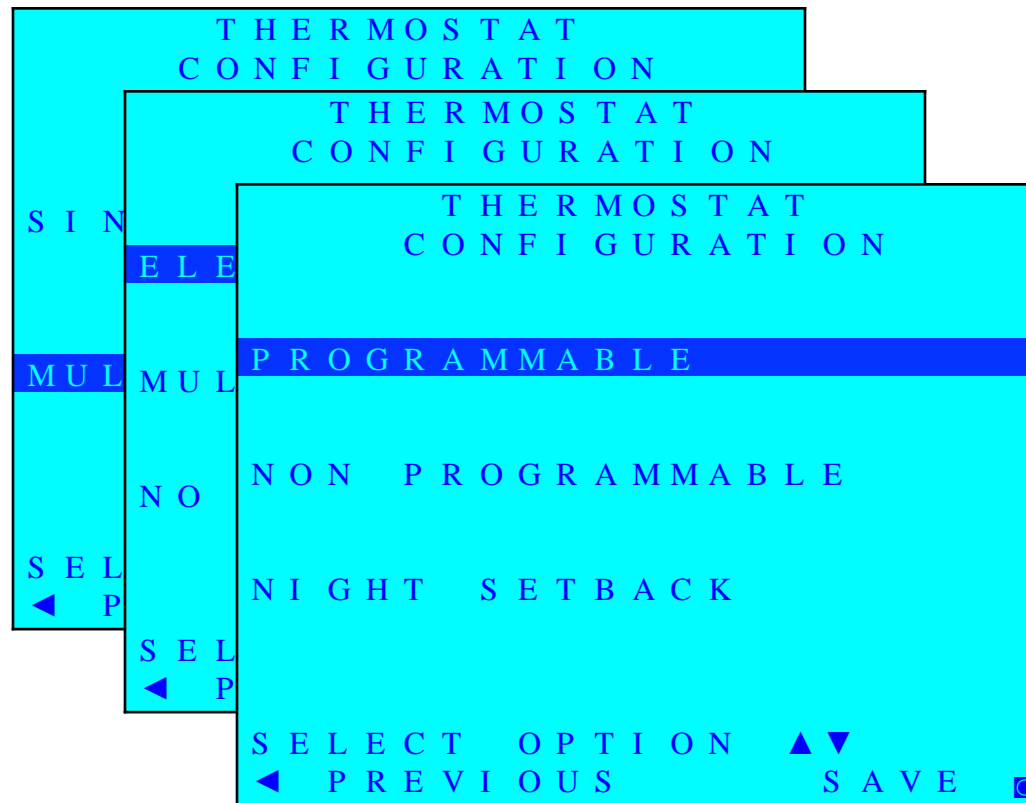


4 Wire communicating Stat



Initial Power-Up

- Thermostat will need to be configured



Installer Menu

```
INSTALLER SETTINGS
THERMOSTAT CONFIG
SYSTEM CONFIG
ACCESSORY CONFIG
INPUT DEALER INFO
HUMIDITY CONFIG
TEMPERATURE ALGORITHM
DEMAND REDUCTION CNFG
SERVICE MODE
RESTORE DEFAULTS

ATC32U01
SELECT OPTION ▲▼
◀ PREVIOUS
```

System Configuration Menu

```
S Y S T E M   C O N F I G U R A T I O N
A I R F L O W   S E L E C T I O N
O P T I O N   S E L E C T I O N
U N I T   C O N F I G           T T 0 2 6
P U M P   C O N F I G U R A T I O N

S E L E C T   O P T I O N   ▲ ▼
◀ P R E V I O U S           S E L E C T   ◻
```


System Configuration

Airflow Selection

- Configure each stage of airflow

AIRFLOW SELECTION			
			CFM
HEAT	STAGE	1	600
HEAT	STAGE	2	750
AUXILIARY	HEAT		850
EMERGENCY	HEAT		850
COOL	STAGE	1	525
COOL	STAGE	2	700
COOL	DEHUM	1	425
COOL	DEHUM	2	550
CONTINUOUS	FAN		350
HEAT	OFF	DELAY	60
COOL	OFF	DELAY	30
◀	PREVIOUS	NEXT	▶

Option Selection

- Configure heat pump options

OPTION SELECTION			
MOTORIZED	VALVE		OFF
COMPRESSOR	ASCD		5
LT2	SETPOINT		WATER
◀	PREVIOUS	SELECT	▶

Air Flow Selection

- Can only be changed with a communicating thermostat or a service tool.
- Can adjust CFM in 25 CFM increments within a range for that model for all modes of operation.

LT2 Adjustment

- Is not a physical jumper on the board.
- Shows up on the thermostat only when the unit is a TMW (water to water product)
- Options are WATER or ANTIFREEZE

System Configuration

Unit Configuration

- Configure the heat pump (replacement part)

```
UNIT CONFIGURATION
CURRENT CONFIG   TT026
HEAT PUMP FAMILY TT
HEAT PUMP SIZE   026
BLOWER TYPE     ECM
LOOP CONFIG     VS PUMP
SELECT OPTION   ▲▼
◀ PREVIOUS     SELECT
```

Pump/Valve Configuration

- Configure temperature settings for loop

```
VARIABLE SPD INTERNAL
PUMP CONFIGURATION      DEG
HEATING DELTA T        8
COOLING DELTA T        15
MINIMUM HEAT LWT       10
MAXIMUM HEAT LWT       80
MINIMUM COOL LWT       40
MAXIMUM COOL LWT       110
◀ PREVIOUS             SELECT
```

System Configuration

- Units will be configured at the factory.
- If you need to make a change you can for instance TZ036 you can change the capacity to a TZ048 or even family of product to a TT038.
- This is also where you configure for an internal pump or proportional valve.

System Configuration

- This is also where you can choose between ECM blower motor or a PSC or none in case of a split.

Setting Up Delta T

- For the Pump or the valve
- Heating delta T will be 4-12 degrees default will be 7 degrees.
- Cooling delta T will be 9-20degrees default will be 10 degrees.

Things To Think About

- With some loops to maintain turbulent flow it will be necessary to lower the heating delta T to increase GPM flow through the loop. Some things that will drive this more than one circuit per ton or the use of propylene glycol.

More on the operation of the pump

- **Automatic Delta T Offsets** –For high and low loop temperatures, the target Delta T is automatically adjusted from the nominal value.

For Heating

- For heating operation, if the EWT $< 40^{\circ}\text{F}$, the target Delta T is reduced by 2°F . If the EWT $> 60^{\circ}\text{F}$, the target Delta T is increased by 2°F .

For Cooling

- For cooling operation, if the EWT $< 70^{\circ}\text{F}$, the target Delta T is increased by 1°F . If the EWT $> 90^{\circ}\text{F}$, the target Delta T is reduced by 1°F .

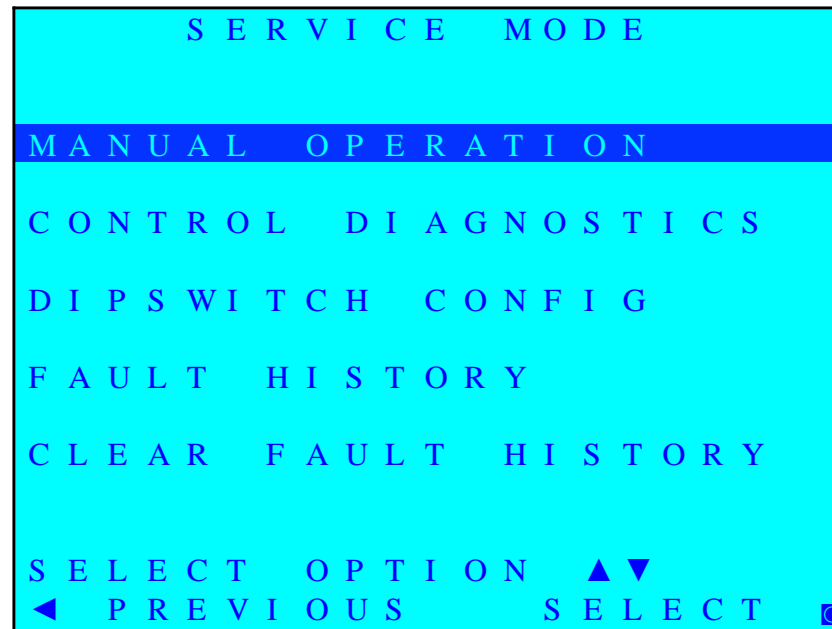
Pump at start up

- **Pump Starting Speeds** –When the pump is activated for heating or cooling operation, it will initially be set to the last operating speed of the current operating mode. If the pump has not operated in the current operating mode since power up, the pump will be activated at full speed.

Pump control

- The pump will stay at the same speed for 90 seconds and then adjust based on Delta T every 15 seconds. The minimum speed is based at 15%.

Service Mode Menu



Service Mode

Manual Operation

- Direct manual control of all system outputs

MANUAL OPERATING MODE			
Y1	COMM	OUTPUT	OFF
Y2	COMM	OUTPUT	OFF
W	COMM	OUTPUT	OFF
O	COMM	OUTPUT	OFF
G	COMM	OUTPUT	OFF
H	COMM	OUTPUT	OFF
DH	COMM	OUTPUT	OFF
ECM	AIRFLOW		0
PUMP	SPEED		0 %
TEST	MODE		OFF

SELECT OPTION ▲▼
◀ PREVIOUS SELECT

Control Diagnostics

- Displays the status of inputs, outputs, and temperatures

CONTROL STATUS			
PUMP OPERATION			
PUMP	SPEED		60 %
PUMP	WATTS		140
FLOW	RATE	GPM	7.4

◀ PREVIOUS

Service Mode

Dipswitch Configuration

- Displays the control dipswitch settings

```
CONTROL CONFIGURATION
      DIPSWITCH S3
1   ON  FACTORY SETTING
2   OFF HWG TEST OFF
3   OFF HWG SP 125
4   OFF HWG DISABLED
JW3 LT1 SETTING WELL
◀ PREVIOUS
```

Fault History

- Displays a detailed fault history for the control

```
TT038 SN - - - - 0123
      LAST 5 FAULTS
LT1 LOW WATER TEMP
NO FAULT
NO FAULT
NO FAULT
NO FAULT
◀ PREVIOUS NEXT ▶
      SELECT
```

Fault Condition Menu

```
FAULT CONDITION MENU
LT1 LOW WATER TEMP
COOL 1 11:11AM 12/25
FAULT TEMP CONDITIONS
FAULT FLOW CONDITIONS
FAULT I/O CONDITIONS
FAULT CONFIG COND
FAULT POSSIBLE CAUSES
◀ PREVIOUS SELECT
```


Fault Conditions

Temperature Conditions

- Control temperature conditions when the fault occurred

FAULT TEMP CONDITIONS				
LT1	LOW	WATER	TEMP	
COOL	1		11:11 AM	12 / 25
LT1	TEMP			28 . 1
LT2	TEMP			79 . 9
HOT	WATER	EWT		121 . 5
COMP	DISCHARGE			157 . 7
LEAVING	AIR			75 . 1
LEAVING	WATER			73 . 3
ENTERING	WATER			78 . 5
CONTROL	VOLTAGE			26 . 4
◀ PREVIOUS				

Flow Conditions

- Control flow conditions when fault occurred

FAULT FLOW CONDITIONS			
LT1	LOW	WATER	TEMP
COOL	1		11:11 AM 12 / 25
ECM	TARGET	CFM	800
ECM	BLOWER	RPM	550
FLOW	RATE	GPM	6 . 5
PUMP	SPEED		60 %
VALVE	POSITION		0 %
◀ PREVIOUS			

Fault Conditions

Input/Output Conditions

- Control inputs/ outputs when the fault occurred

FAULT I / O CONDITIONS			
LT1	LOW	WATER	TEMP
COOL	1	11:11AM	12 / 25
TSTAT		SAFTY	OUTPT
CONV	COMM	HPS	CC
Y1	Y1	LOC	CCH
Y2	Y2	CO	RV
W	W		ACC1
O	O	OUTPT	ACC2
G	G	FAN	AL1
H	H	HWG	EH1
OVR	DH	PUMP	EH2
NSB			
◀ PREVIOUS			

Configuration Conditions

- Control configuration when the fault occurred

FAULT CONFGCONDITIONS					
LT1	LOW	WATER	TEMP		
COOL	1	11:11AM	12 / 25		
S1		S2		S3	
1	ON	1	ON	1	ON
2	ON	2	ON	2	OFF
3	ON	3	ON	3	OFF
4	ON	4	ON	4	OFF
5	ON	5	ON		
6	ON	6	ON	LT1	WELL
7	ON	7	ON	LT2	WELL
8	ON	8	ON		
◀ PREVIOUS					

Fault Conditions

Possible Causes

- Possible causes as to why the fault occurred

```
POSSIBLE FAULT CAUSES
LOW WATER COIL TEMP
LOW WATER TEMP - HTG
LOW WATER FLOW - HTG
LOW REFRIG CHARGE - HTG
INCORRECT LT1 SETTING
BAD LT1 THERMISTOR
◀ PREVIOUS
```

Settings Menu

```
SETTINGS MENU
SCREEN SETTINGS
OFFSETS
CYCLES PER HOUR
AUTO CHANGEOVER TIME
PROGRAM SETTINGS
INTERMITTENT FAN
SERVICE INFORMATION
SETPOINT LIMITS
DEMAND REDUCTION

SELECT OPTION ▲▼
◀ PREVIOUS
```

Normal Operating Screen



Under Menu You Can Get Into Service Information



Service Information Menu

```
S E R V I C E   I N F O R M A T I O N
FAULT STATUS
TEMPERATURE STATUS
CLEAR FAULT HISTORY
SYSTEM STATUS

S E L E C T   O P T I O N   ▲ ▼
◀ P R E V I O U S
```

Service Information

Fault Status

- Active and stored faults for all controls in system

FAULT STATUS	
ACTIVE FAULT	
NO FAULT	
LAST 5 FAULTS	
L T 1	LOW WATER TEMP
NO FAULT	
NO FAULT	
NO FAULT	
NO FAULT	
◀	PREVIOUS
	SELECT

Temperature Status

- Current temperature readings

TEMPERATURE STATUS	
ROOM TEMP	7.4
REMOTE TEMP	7.4
OUTDOOR TEMP	2.7
◀	PREVIOUS

Service Information

System Status

- Operating status of control temperatures, blower, and pump

SYSTEM STATUS			
LT1	TEMP		38.1
LT2	TEMP		79.9
COMP	DISCHARGE		157.7
HOT	WATER	EWT	121.5
LEAVING	AIR		75.1
LEAVING	WATER		73.3
ENTERING	WATER		78.5
ECM	BLOWER	RPM	550
ECM	TARGET	CFM	800
ECM	BLWR	STATIC	0.5
PUMP	WATTS		140
FLOW	RATE	GPM	7.4
PUMP	SPEED		60%
◀	PREVIOUS		



Time For Questions!