

**VIESSMANN**

climate of innovation

**Viessmann Airflow*PLUS***

# Viessmann AriflowPLUS

Hydronic forced air handler

- **New** Viessmann product launched in Canada in July 2015
- High quality hydronic air handler loaded with *many unique features*
- Perfect match with Viessmann condensing boilers
- 3 sizes available up to 115 MBH output



# Viessmann AriflowPLUS

A new member of the Viessmann Family!



- Condensing boilers
- System controls



Solar systems



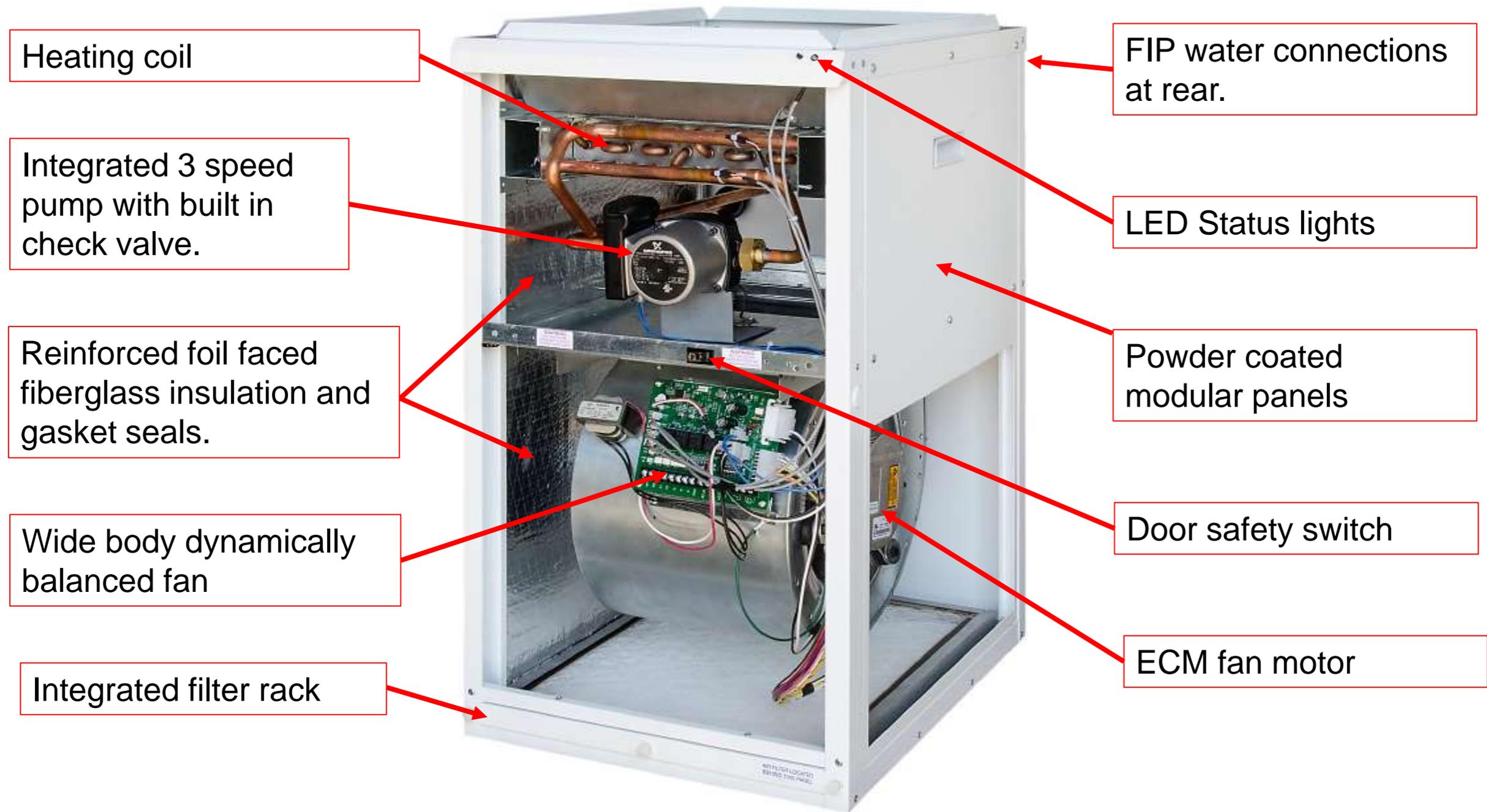
DHW tanks



Hydronic  
Air Handler

# Viessmann AirflowPLUS

## Construction



# Viessmann AirflowPLUS

## High Efficiency Heating Coil and Pump

- **High efficiency 3-pass hydronic heating coil:**
  - Ensures maximum heat transfer at low boiler water temperatures
  - Copper tubing with no-lead solder, high density aluminum fins, galvanized steel support frame
- **3-speed circulating pump:**
  - Integrated check valve
  - Composite body
  - Control logic includes a pump exercise feature (once/day)
  - Pumps *into* the coil to aid air elimination

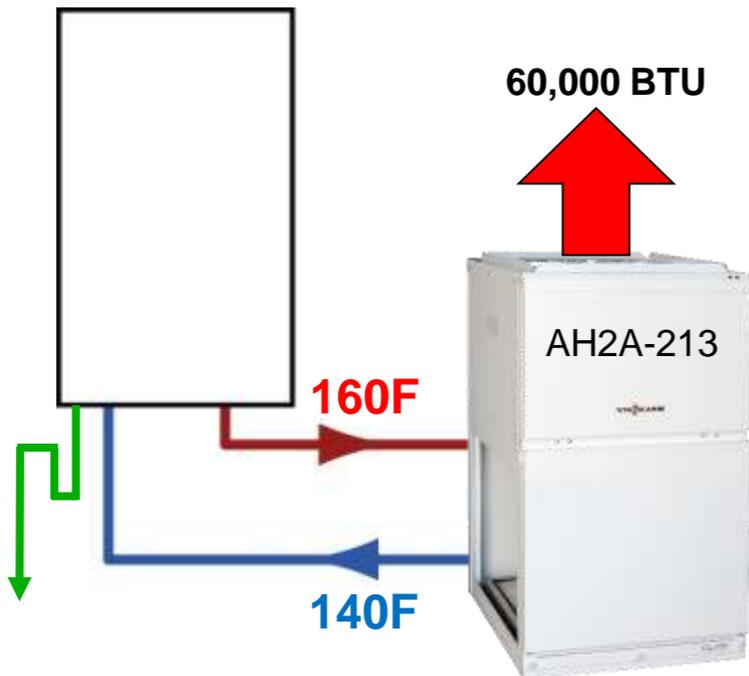
The hydronic coil and pump assembly is mounted on rails for easy slide-out servicing.



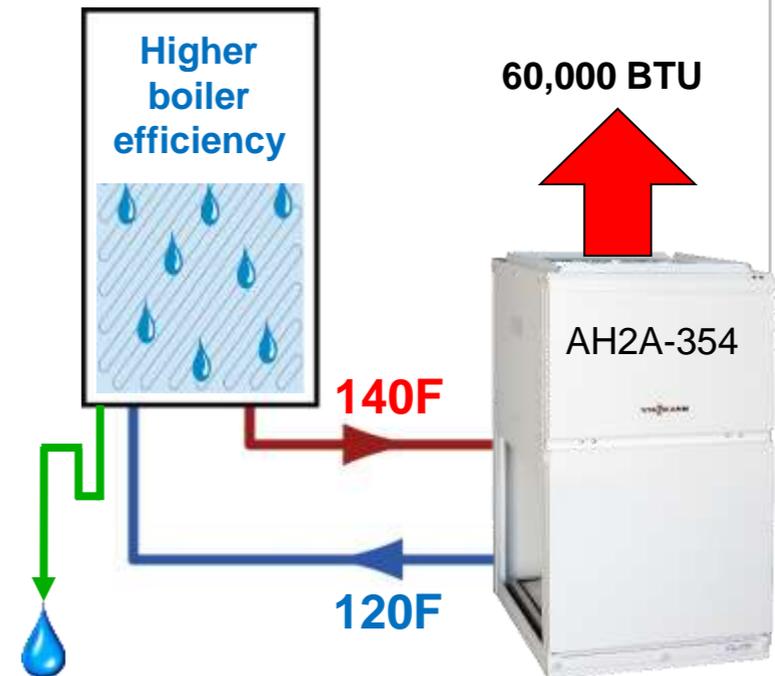
# Viessmann AirflowPLUS

## Specifications

Heating Capacity		AH2A-213	AH2A-354	AH2A-385
BTUH	120°F (48°C) Supply Water Temp	28,000	44,000	51,000
	140°F (60°C) Supply Water Temp	46,000	61,000	74,000
	160°F (71°C) Supply Water Temp	62,000	83,000	90,000
	180°F (82°C) Supply Water Temp	72,000	98,000	115,000
Water Flow rate	USGPM	3	5	5



Boiler return water temperature determines condensing boiler efficiency



# Viessmann AirflowPLUS

## Cooling Coil Ready

- **Easy integration of 3<sup>rd</sup> party one or two stage cooling equipment.**
  - You choose your preferred air conditioning equipment.
  - Cooling coil can be located in supply or return ducts.
  - Pre-wired for A/C control. Fan coil control can be customized to suit the cooling operation.
  - With two stage cooling operation, the 1<sup>st</sup> stage fan operates at approximately 65% of 2<sup>nd</sup> stage fan speed.



Cooling Capacity	AH2A-213	AH2A-354	AH2A-385
Tons	1.5 to 3.0	2.50 to 4.0	3.5 to 5.0

# Viessmann AirflowPLUS

## Sturdy and Tough Construction

- Internal skeleton frame provides overall stability
- Heavy 20 gauge steel cabinet for durability
- The cabinet interior is fully insulated and sealed ensuring whisper quiet operation.
- Powder coated exterior for an extremely durable and corrosion resistant textured finish.
- All components slide out on rails for easy service
- A built in filter rack and filter

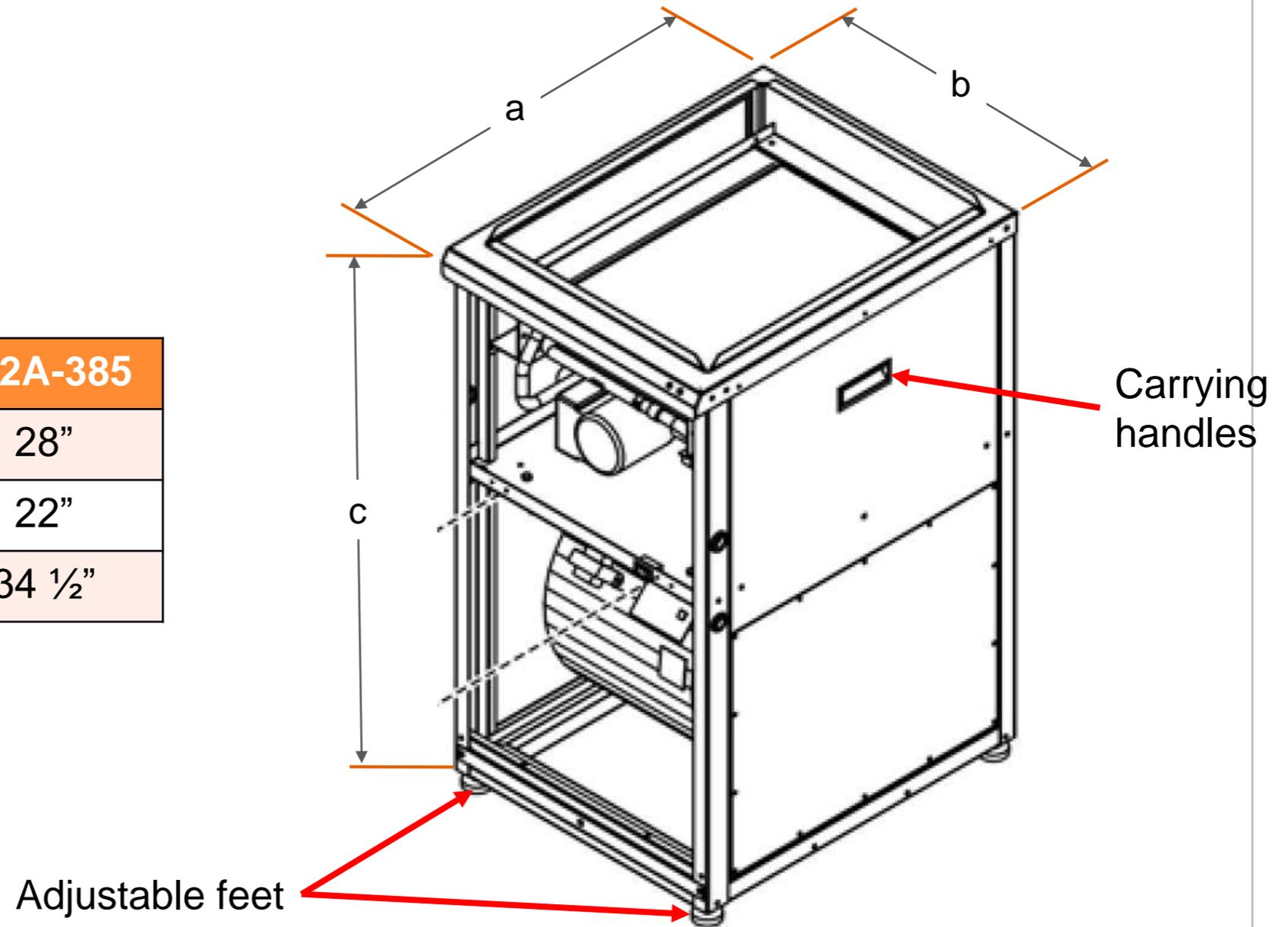


# Viessmann AirflowPLUS

## Easy To Work With

- Low profile design
- Compact footprint
- Carrying handles for easy lifting
- Adjustable feet for levelling

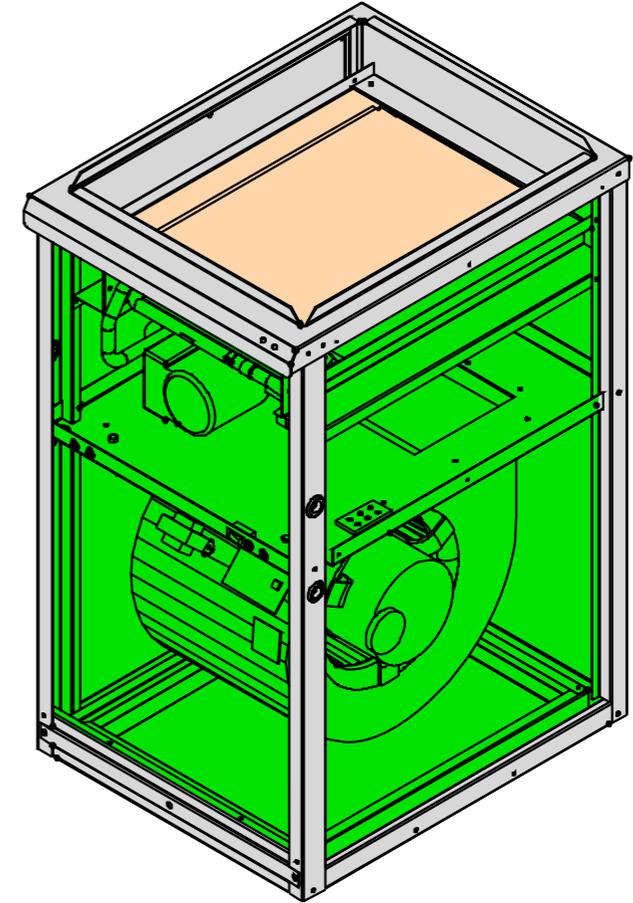
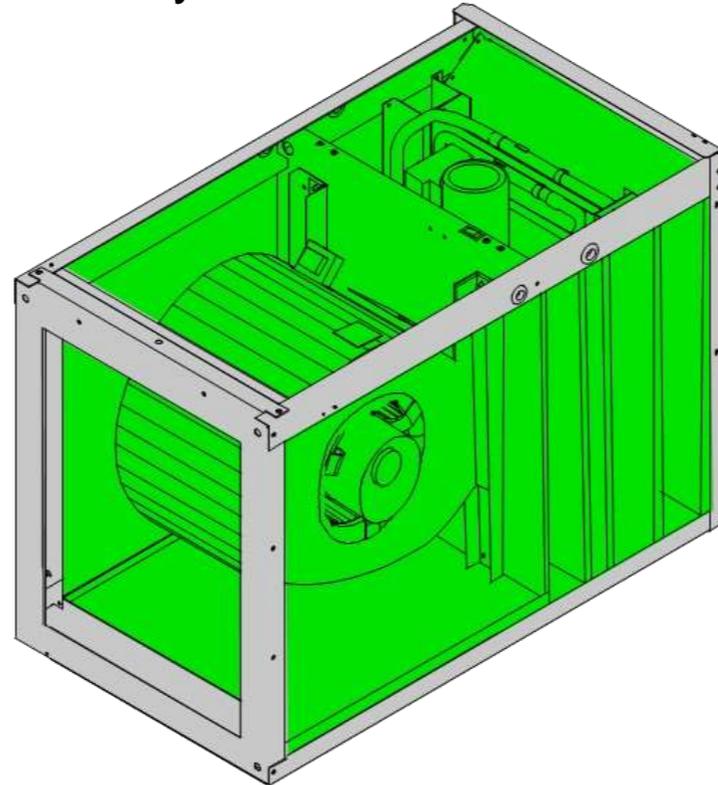
	AH2A-213	AH2A-345	AH2A-385
a	22 3/4"	23"	28"
b	18"	22"	22"
c	32 1/2"	34 1/2"	34 1/2"



# Viessmann AirflowPLUS

## Skeleton Design

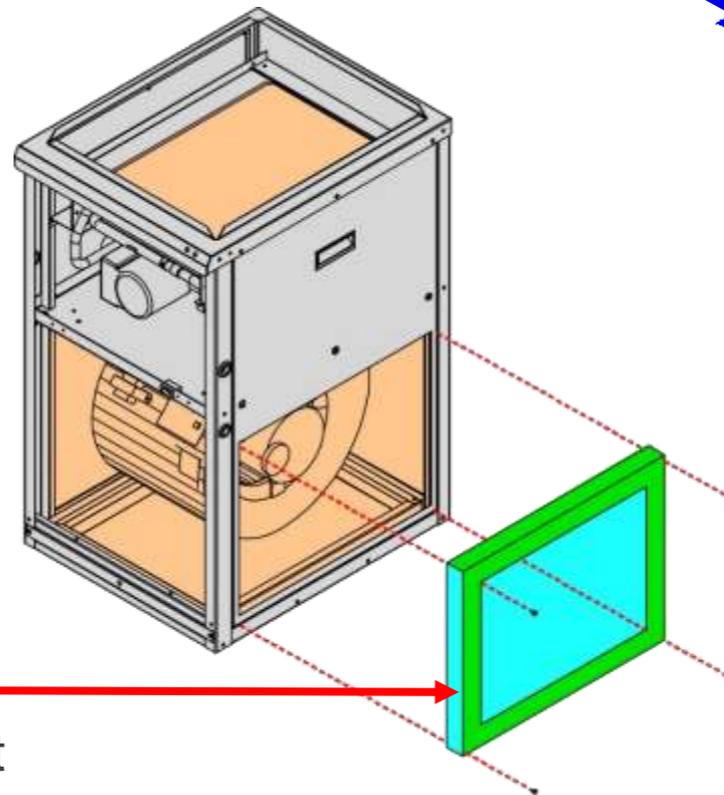
- Bottom, front and both side panels can be easily removed with screwdriver.
- Allows for multiple duct configuration and orientation capabilities **without cutting any panels.**
- Makes service and maintenance access very easy.



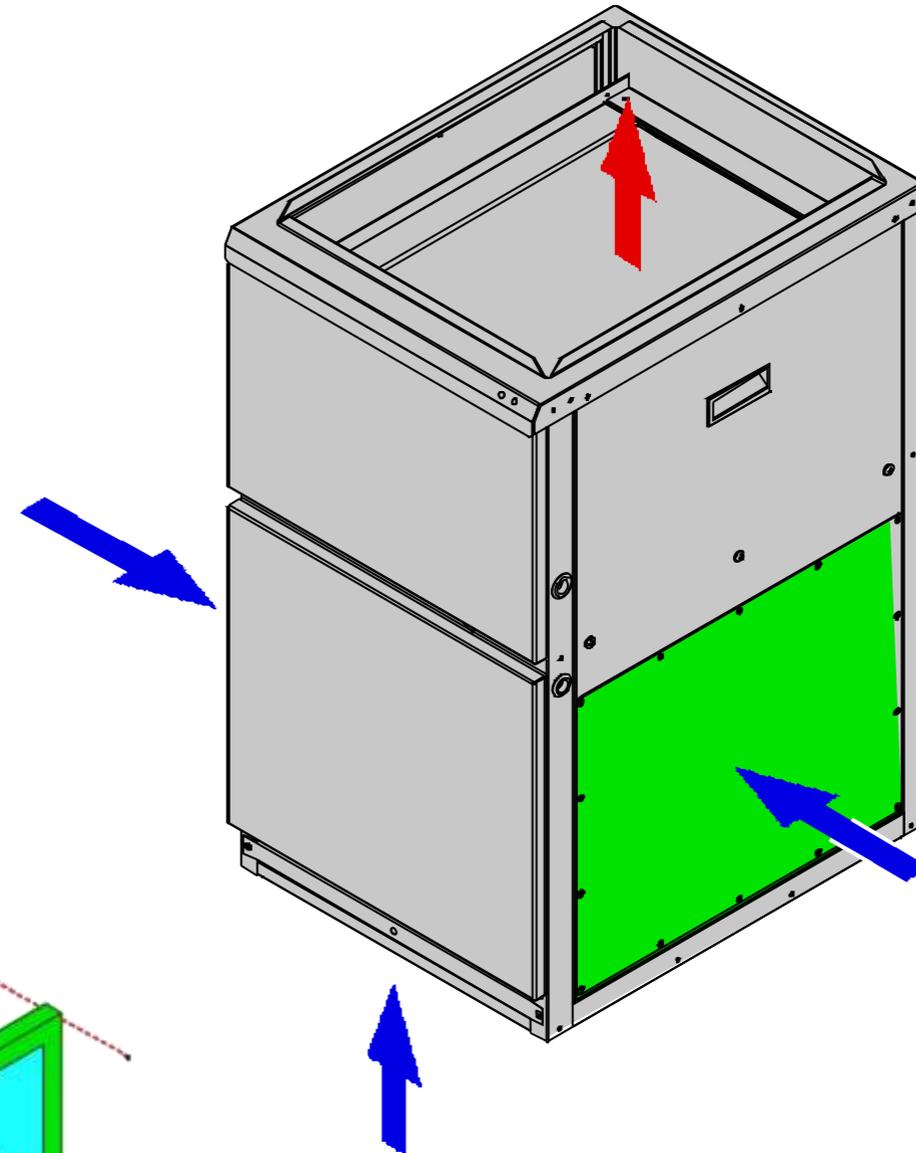
# Viessmann AriflowPLUS

## Return Air flexibility

- The Viessmann AriflowPLUS can be configured for different return air configurations.
  - Left side (as shipped).
  - Right side.
  - Bottom.
- Uses standard disposable 16"x20"x1", 20"x20"x1", 20"x25"x1" filters (size depends on unit)



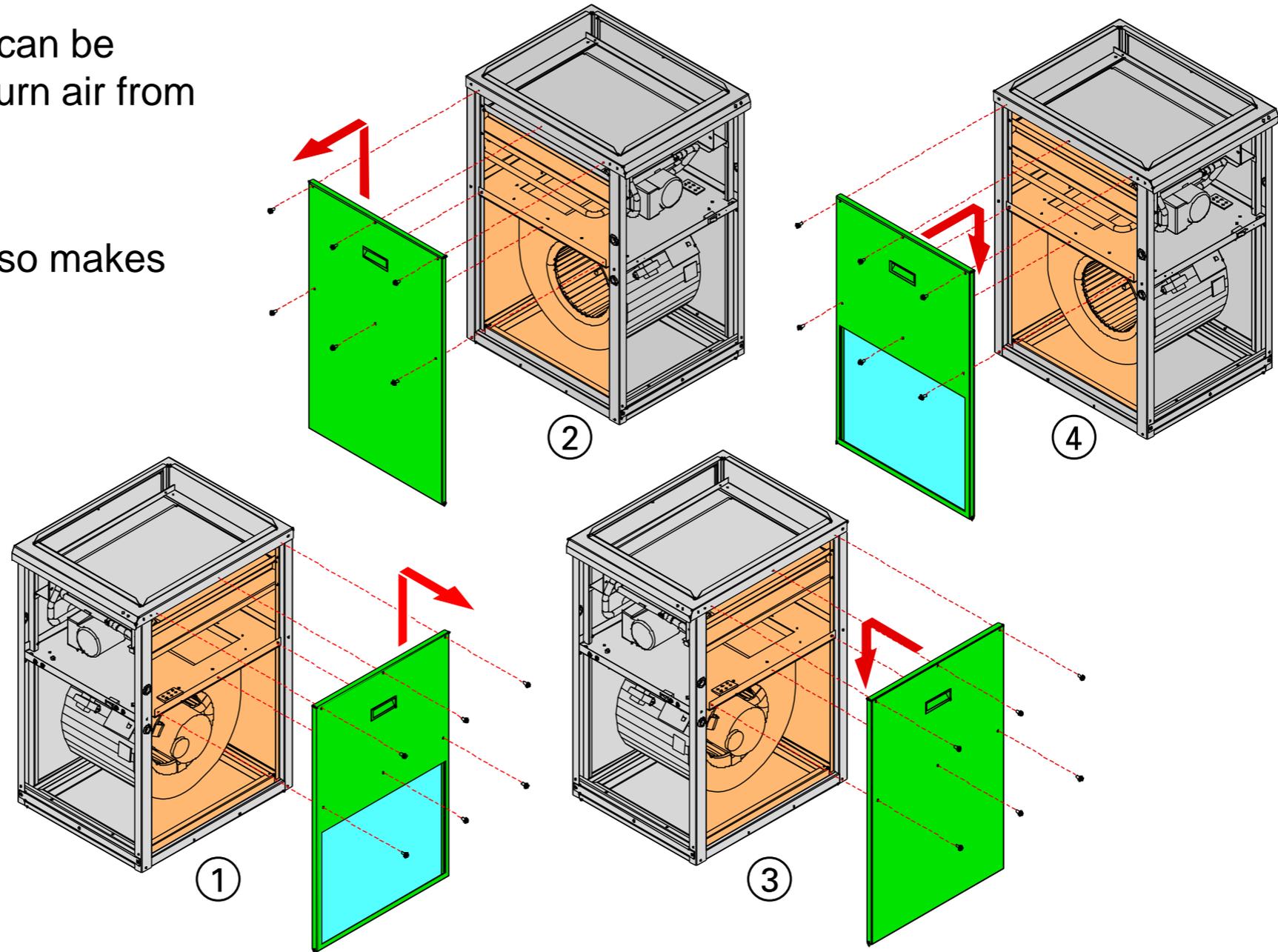
For side return air configurations a filter rack is supplied with unit



# Viessmann AirflowPLUS

## Moving Panels To Accommodate Return Air Design Flexibility

- Left and right side panels can be reconfigured to enable return air from left or right.
- **No cutting** is required.
- Removable side panels also makes easy access for service.

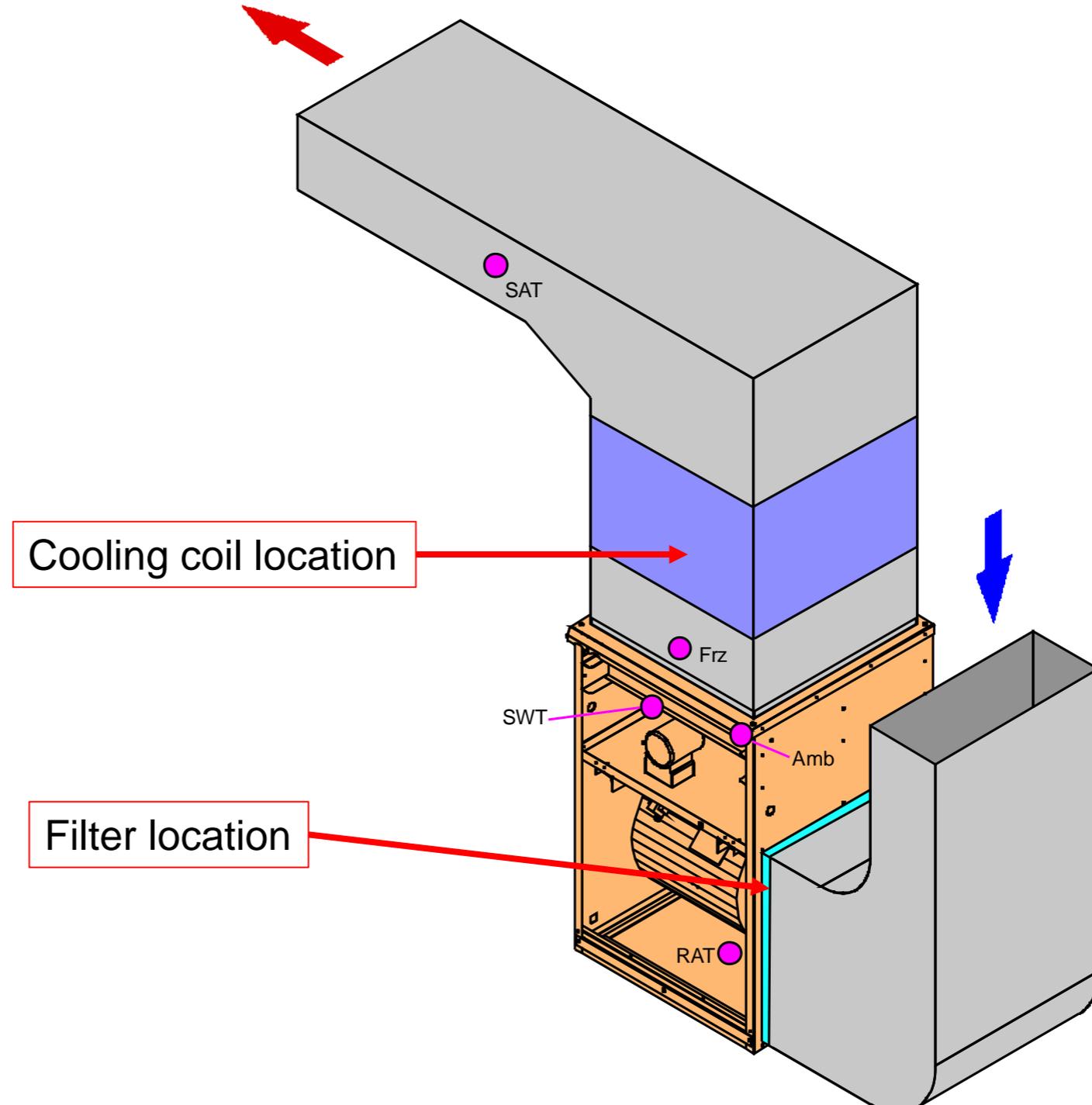


# Viessmann AriflowPLUS

## Multi-Position Installation

### Vertical Discharge Installation

- Cooling in supply plenum
- Left or right side return air connection.
- Using supplied side mount filter rack.

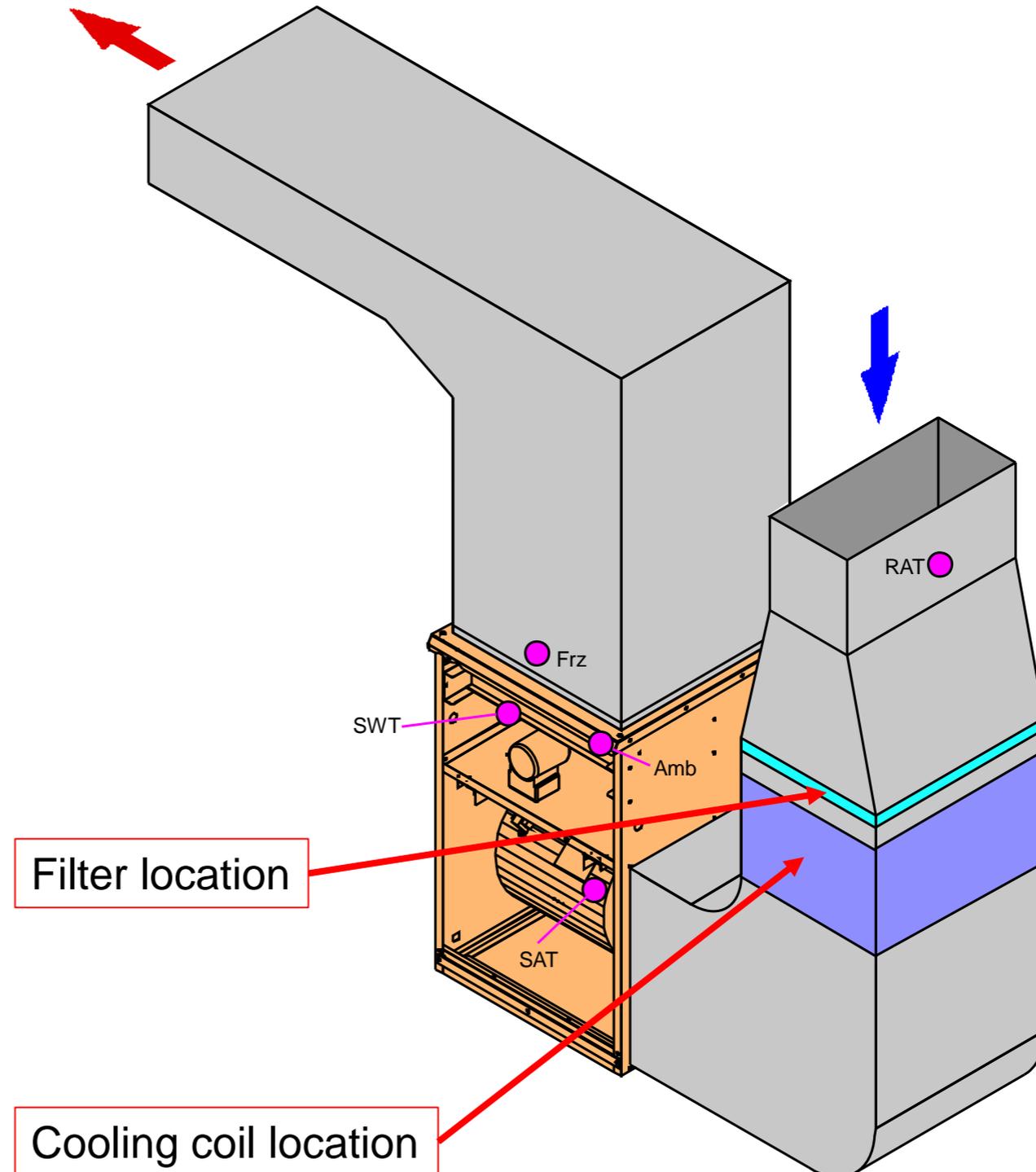


# Viessmann AriflowPLUS

## Multi-Position Installation

### Vertical Discharge Installation

- Cooling in return plenum
- Left or right side return air connection.
- Filter rack must be installed upstream of the cooling coil location.
- Relocate return air sensor.
- Relocate supply air (A/C) sensor



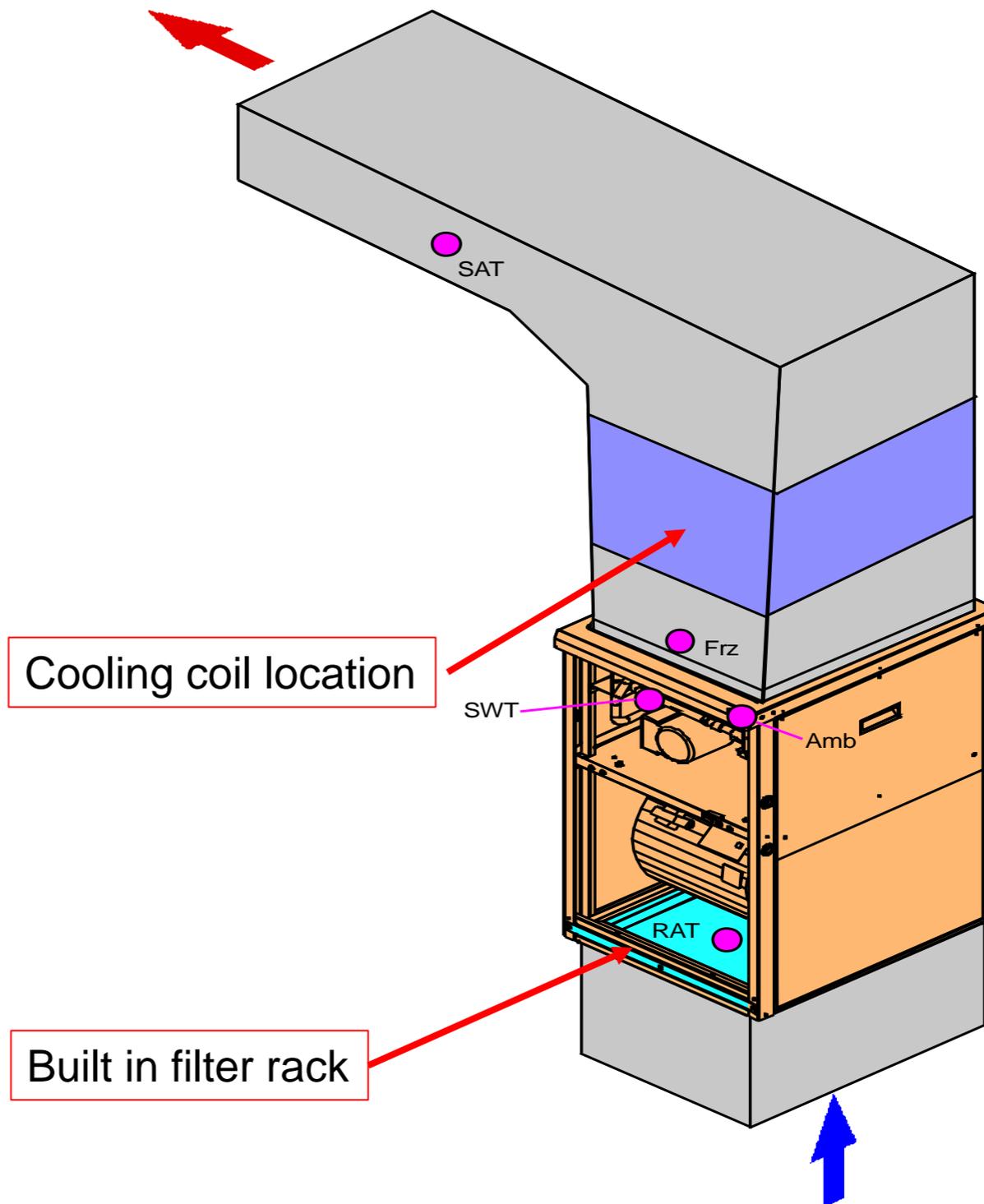
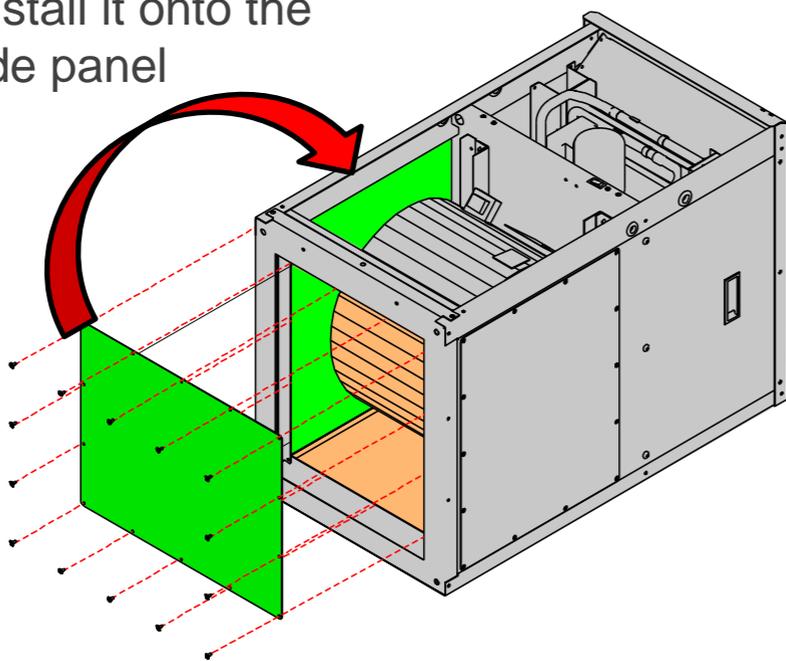
# Viessmann AirflowPLUS

## Multi-Position Installation

### Vertical Discharge Installation

- Bottom return air connection
- Cooling in supply plenum.
- Filter rack is integrated into the return air connection at the bottom of the air handler.

Remove the cover on the bottom of the air handler and reinstall it onto the open side panel

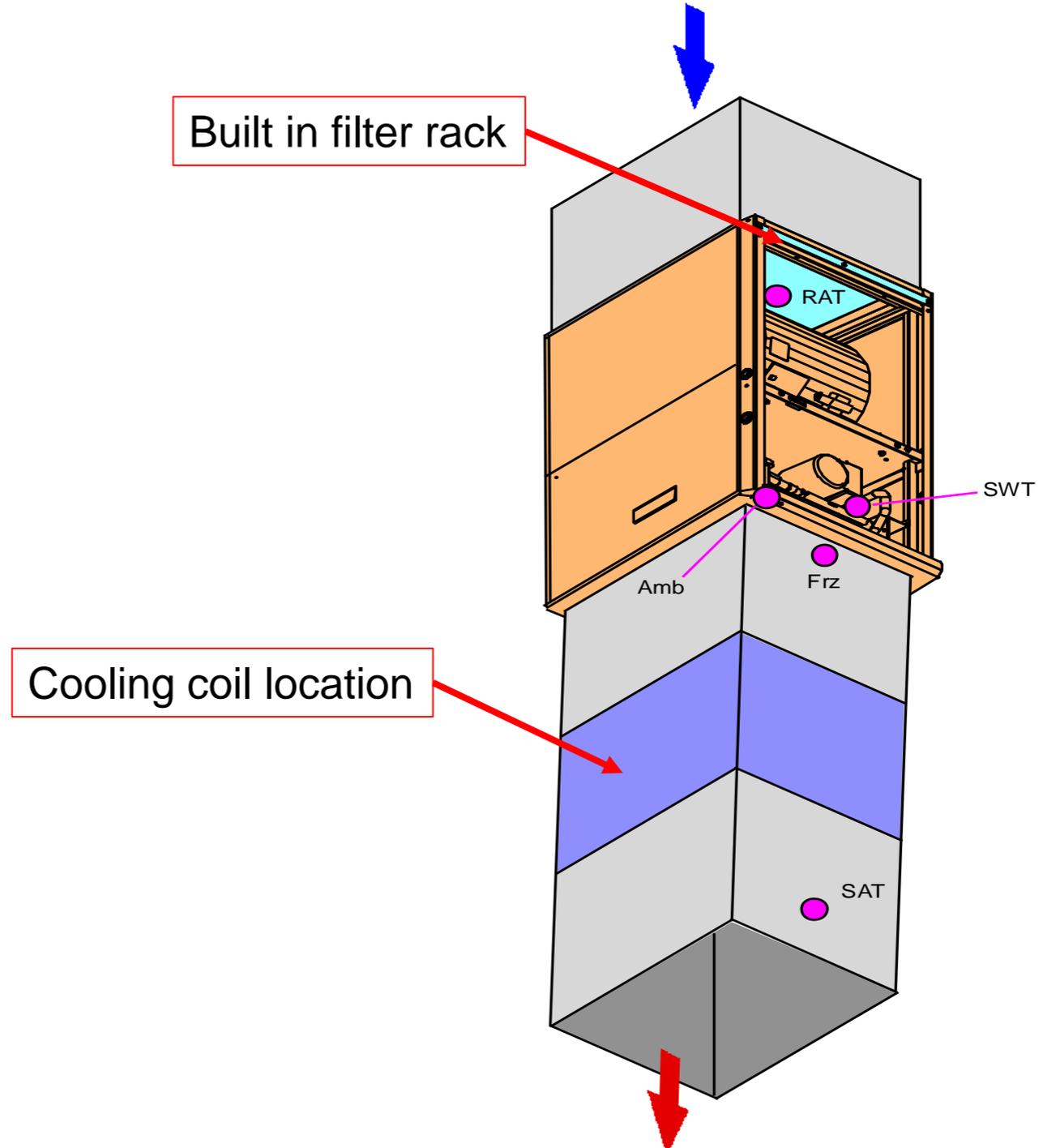


# Viessmann AriflowPLUS

## Multi-Position Installation

### Vertical Discharge Installation

- Counter flow
- Cooling in supply plenum.
- Filter rack is integrated into the return air connection.

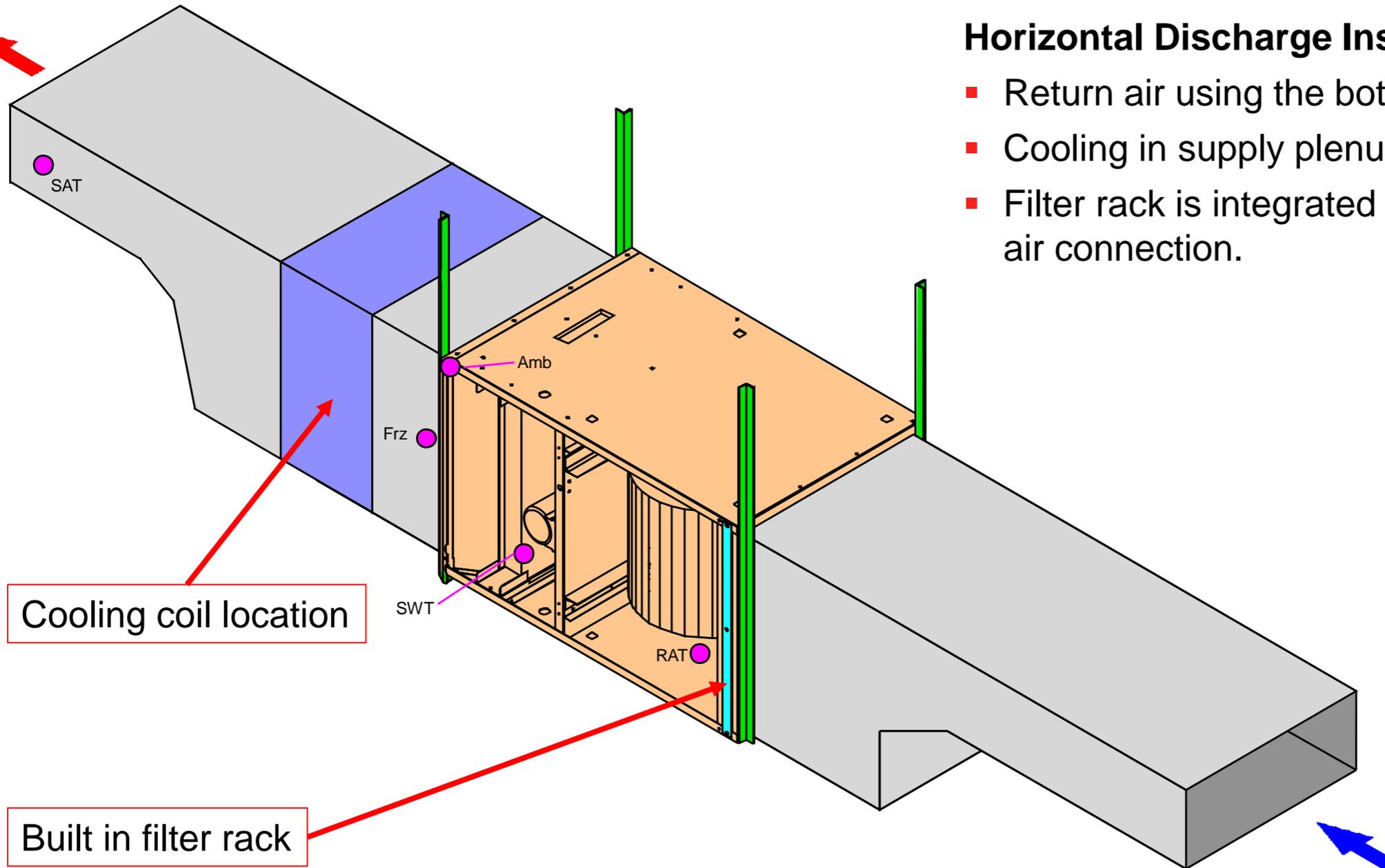


# Viessmann AriflowPLUS

## Multi-Position Installation

### Horizontal Discharge Installation

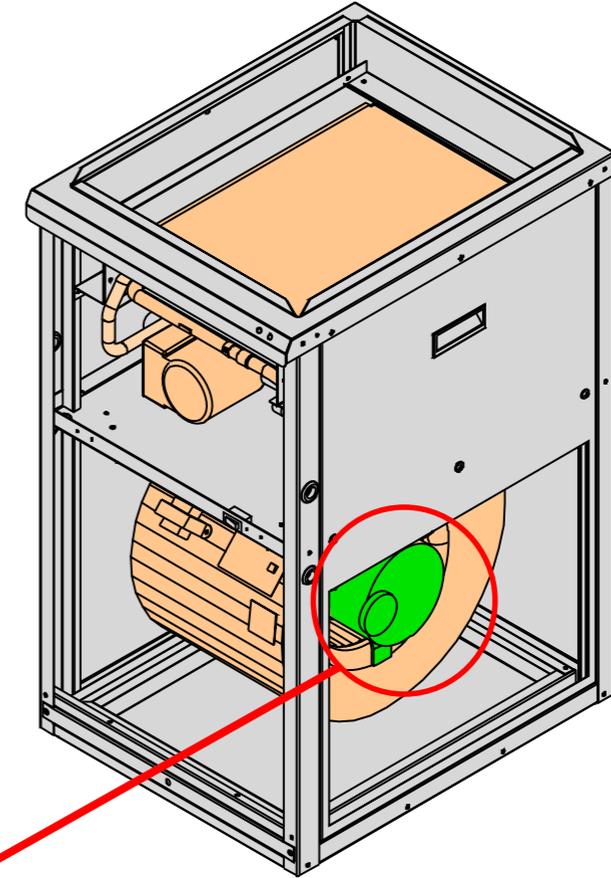
- Return air using the bottom connection.
- Cooling in supply plenum.
- Filter rack is integrated into the return air connection.



# Viessmann AirflowPLUS

## ECM Variable Speed Fan

- Electronically Commutated DC Motor.
- Provides constant CFM under varying static air loads.
- Wide body dynamically balanced fan for quiet operation.
- Multi-directional sleeve bearing motors allow mounting in any direction.
- Fan assembly is mounted on rails for easy service.

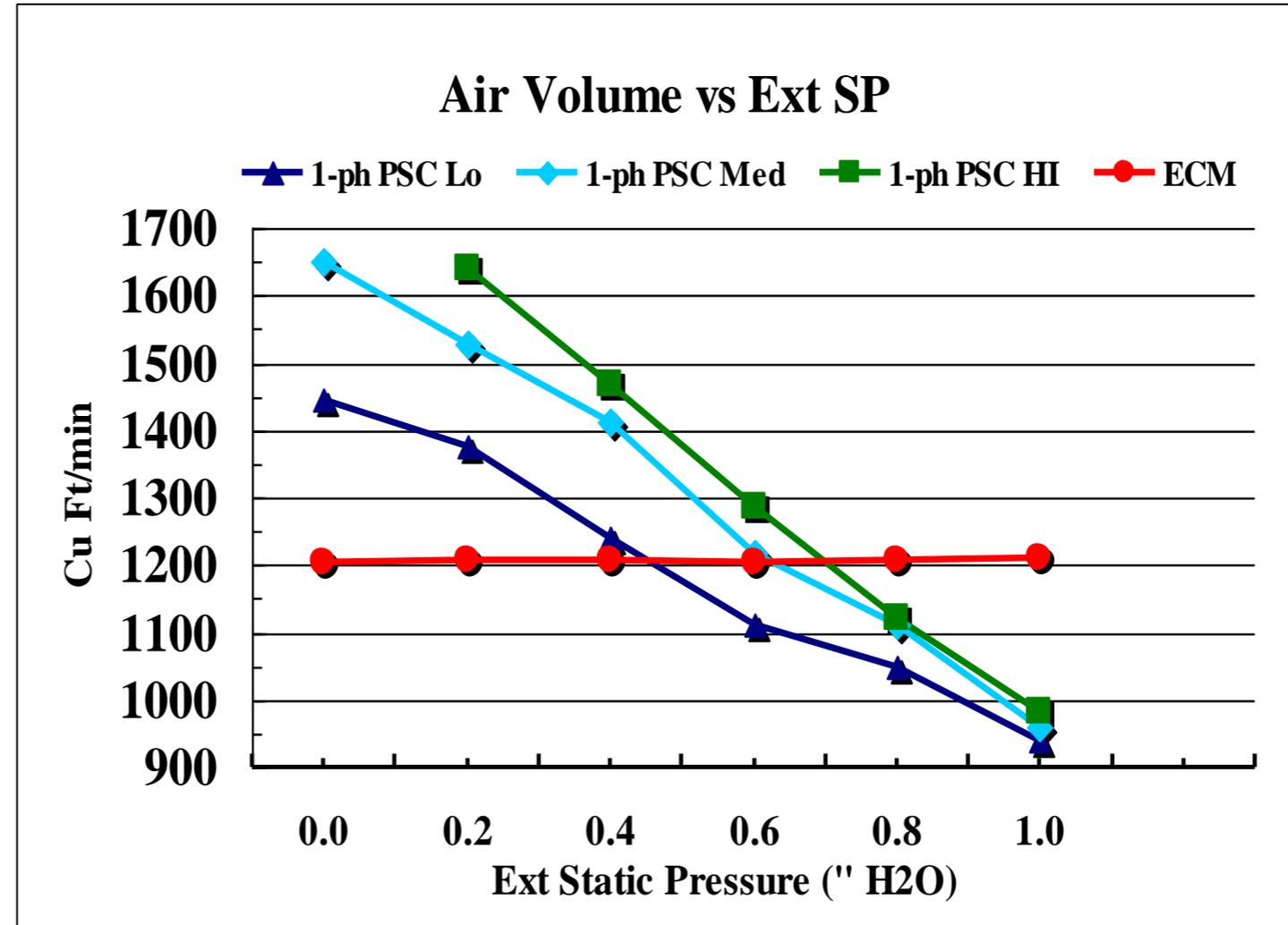


# Viessmann AirflowPLUS

## ECM Variable Speed Fan

### ■ Why ECM?

- Programmable CFM for different operating conditions
- Maintains constant CFM with increase in static pressure.
- Efficient operation.
- High comfort levels.
- Quiet smooth operation.



# Viessmann AirflowPLUS

## Fan and Plenum Specifications

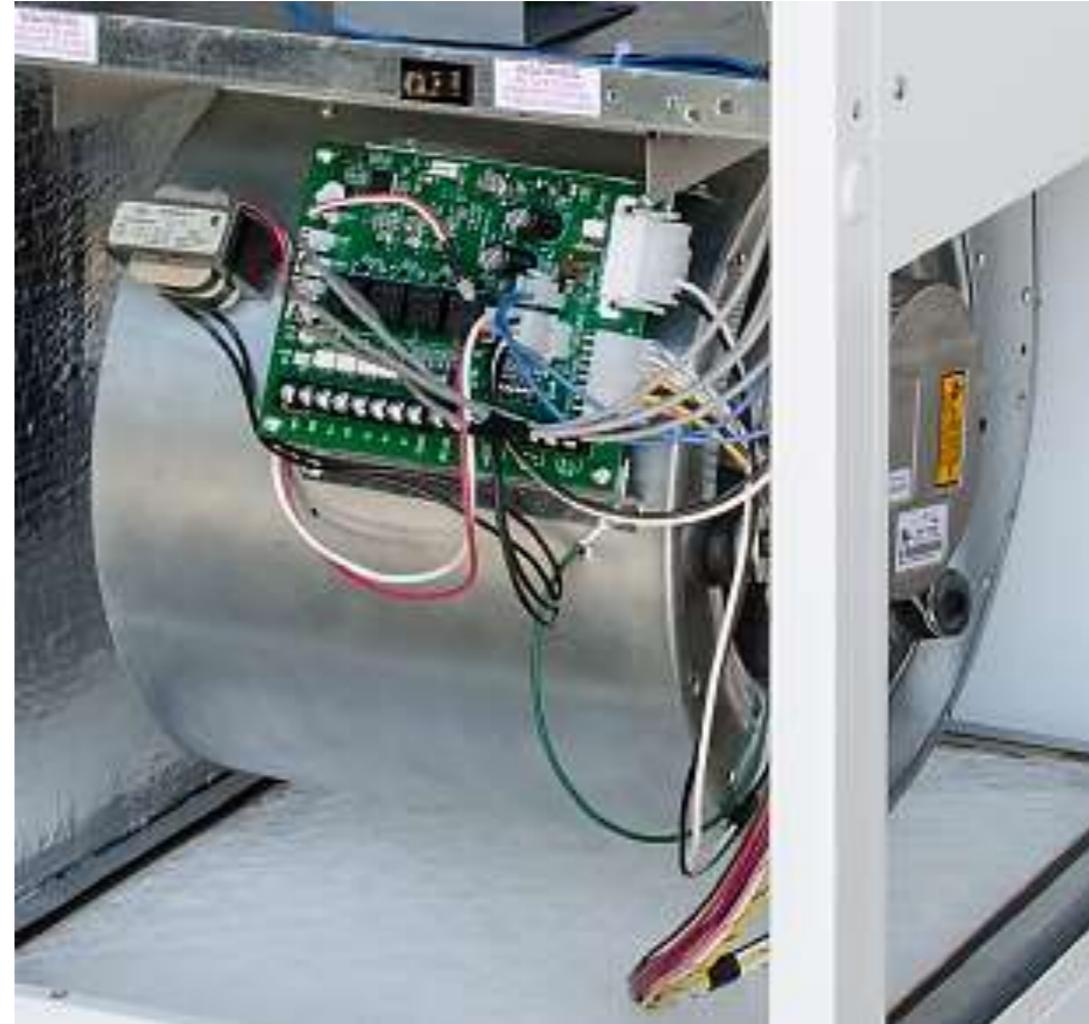
Fan		AH2A-213	AH2A-354	AH2A-385
Electrical	120 VAC / 1 / 60	1/3hp ECM	1/2hp ECM	3/4hp ECM
Nominal CFM	Heating 0.5" e.s.p.	600	1,200	1,600
	Cooling 0.5" e.s.p.	700	1,400	1,800
	Heating 0.2" e.s.p.	1,100	1,300	1,900
	Cooling 0.2" e.s.p.	1,200	1,600	2,100

Plenum Size	AH2A-213	AH2A-354	AH2A-385
Supply duct	16" x 20"	20" x 20"	20" x 25"
Return air opening	14" x 18"	18" x 18"	18" x 23"
Return Filter size	16" x 20"	20" x 20"	20" x 25"

# Viessmann AirflowPLUS

## Micro Processor Controlled Logic

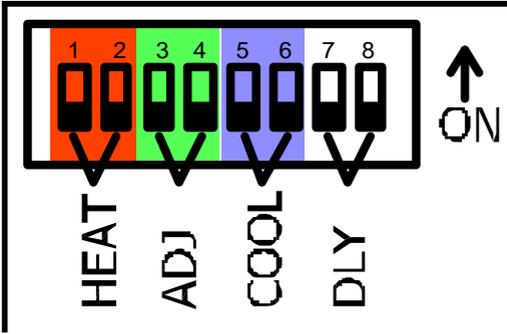
- The Air Handler Controller provides intelligent control logic for maximum **comfort**, **efficiency** and **safety**.
- **ECM variable speed fan can be customized** for specific applications.
  - Field selectable air flow rates.
  - Field selectable cooling fan profiles
  - Optimized heating fan profile prevents blowing cold air during a heating call.
- **Constantly Monitors** ambient and air flow temperature parameters to prevents freeze up conditions in the unit, or in the house.
- **Alerts** of any sensor or system malfunction.



# Viessmann AirflowPLUS

Field Selectable Flowrates

## S2 Dip Switch Settings **Model AH2A-213**



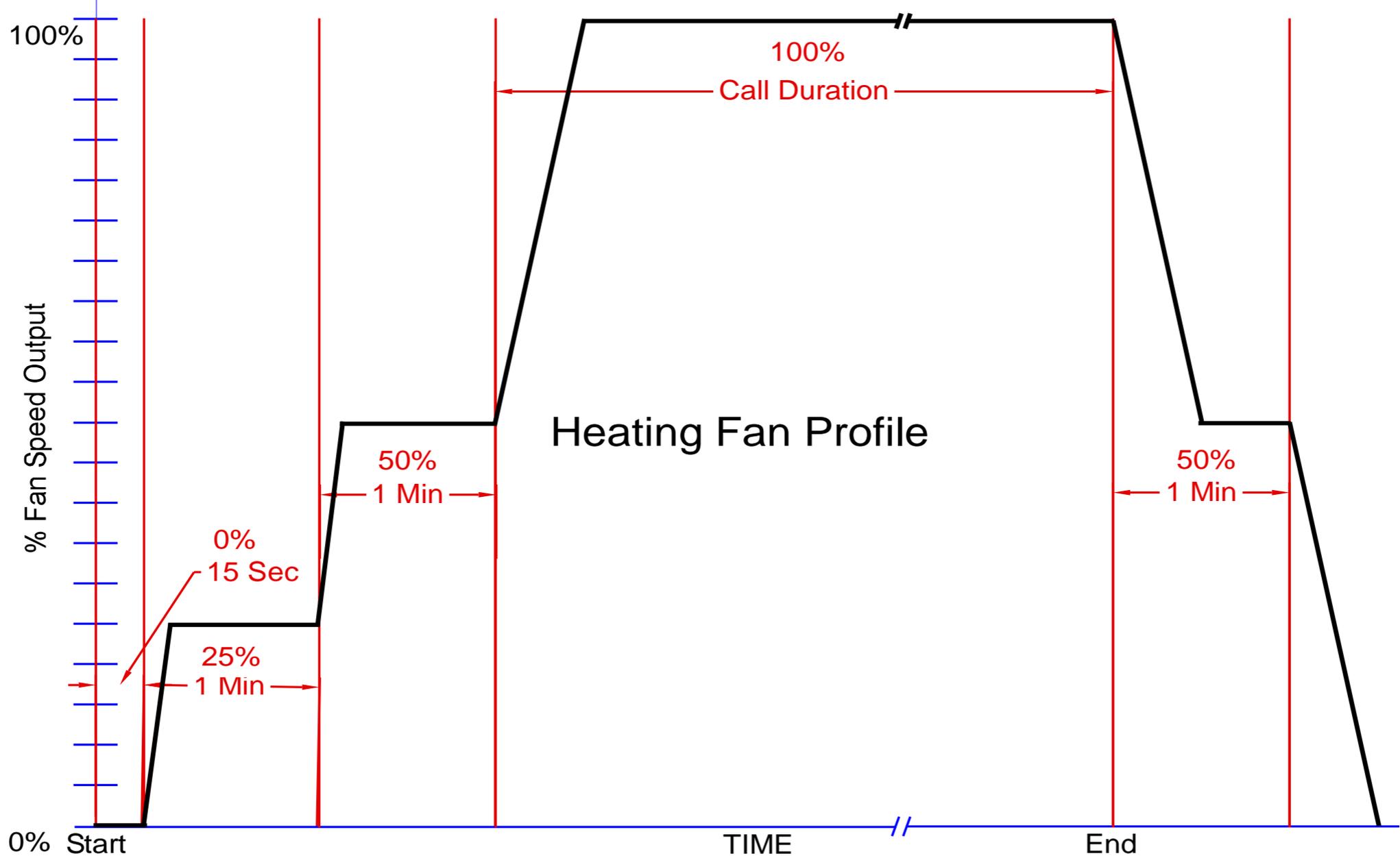
Fan Speed Adjustment DipSw, (3 & 4)	DipSw, (1 & 2) <b>Heating</b> Fan Speed Nominal				DipSw, (5 & 6) <b>Cooling</b> Fan Speed Nominal			
	1050 CFM	<b>* 825 CFM</b>	675 CFM	550 CFM	1175 CFM	<b>* 925 CFM</b>	750 CFM	600 CFM
	1155 CFM	910 CFM	740 CFM	605 CFM	1290 CFM	1010 CFM	825 CFM	660 CFM
	924 CFM	726 CFM	594 CFM	484 CFM	1034 CFM	814 CFM	660 CFM	528 CFM

\* Factory default setting

**Power to the air handler must be turned off before changing dip switch settings**

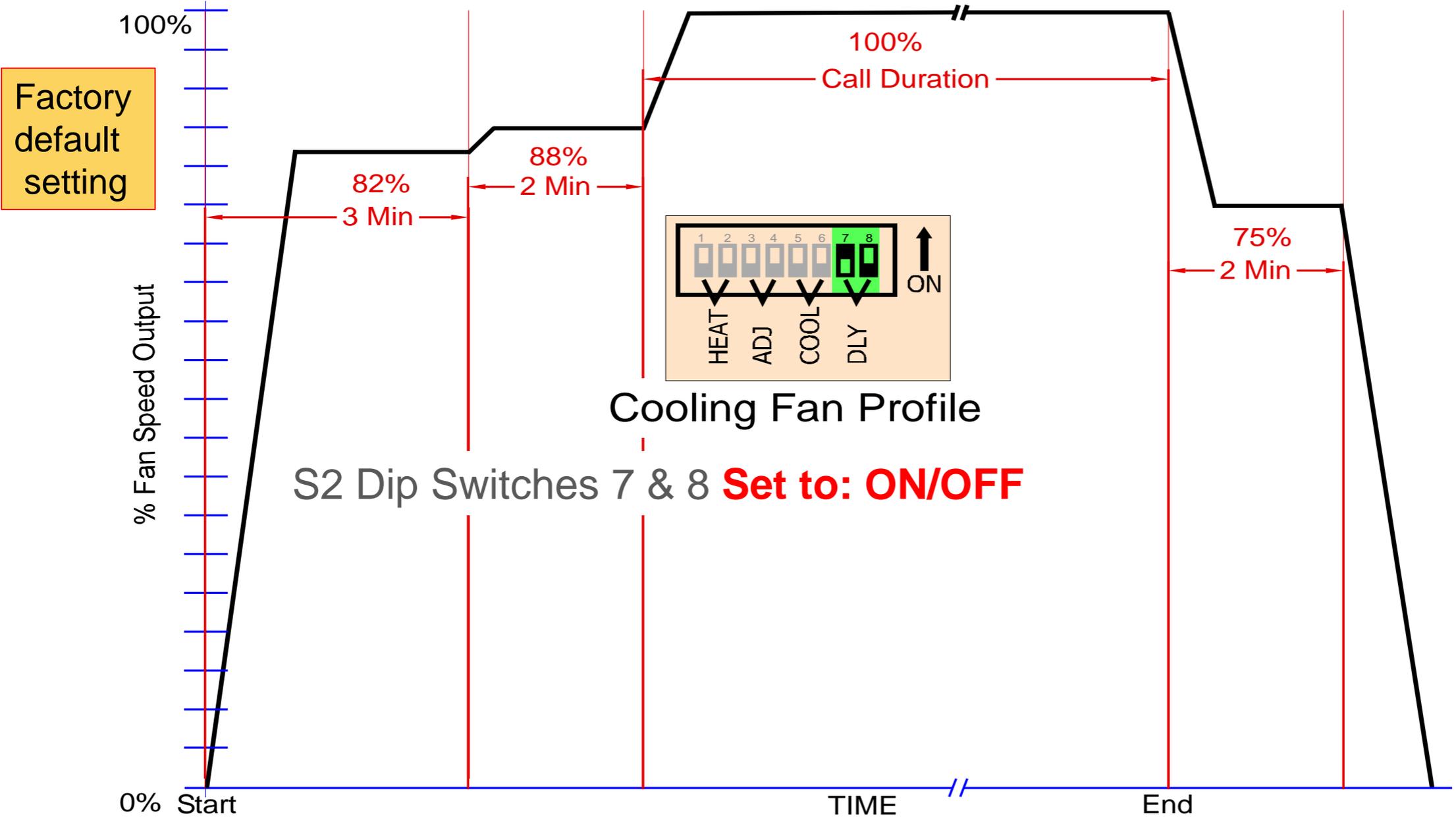
# Viessmann AirflowPLUS

## ECM Fan Heating Fan Profile Setting



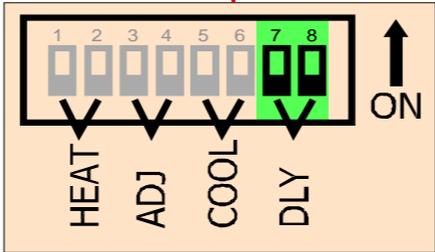
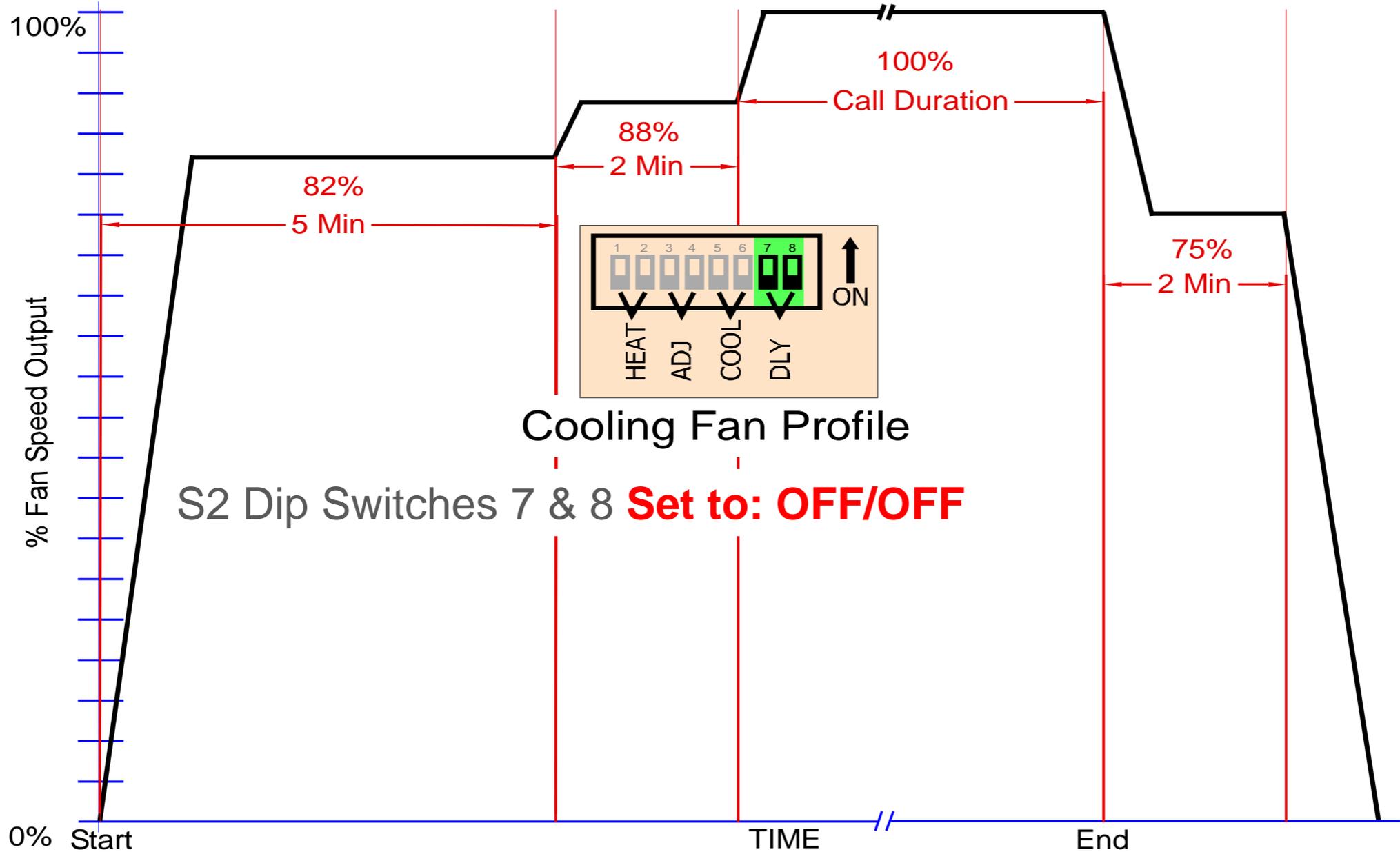
# Viessmann AirflowPLUS

## ECM Fan Cooling Fan Profile Settings



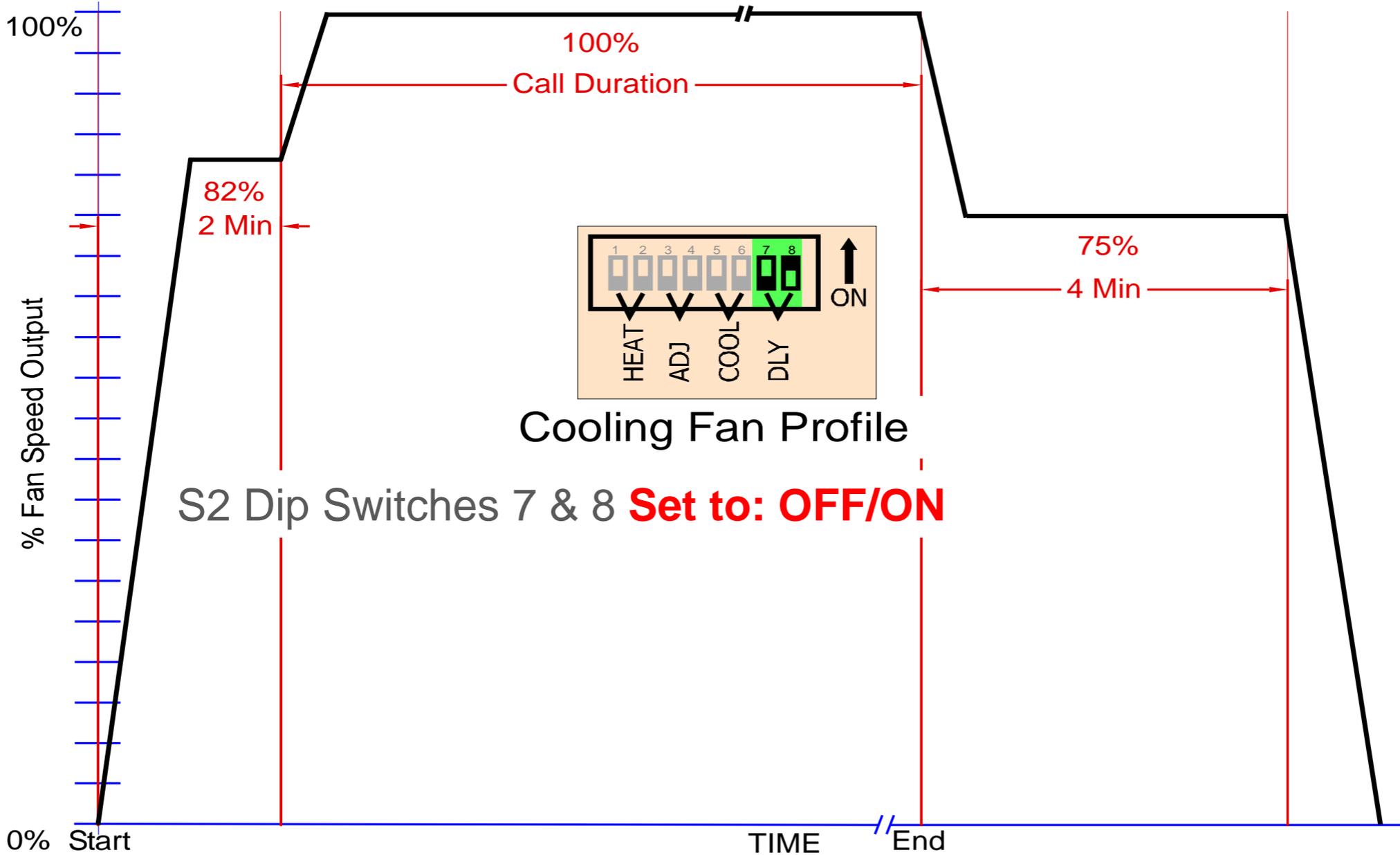
# Viessmann AirflowPLUS

## ECM Fan Cooling Fan Profile Settings



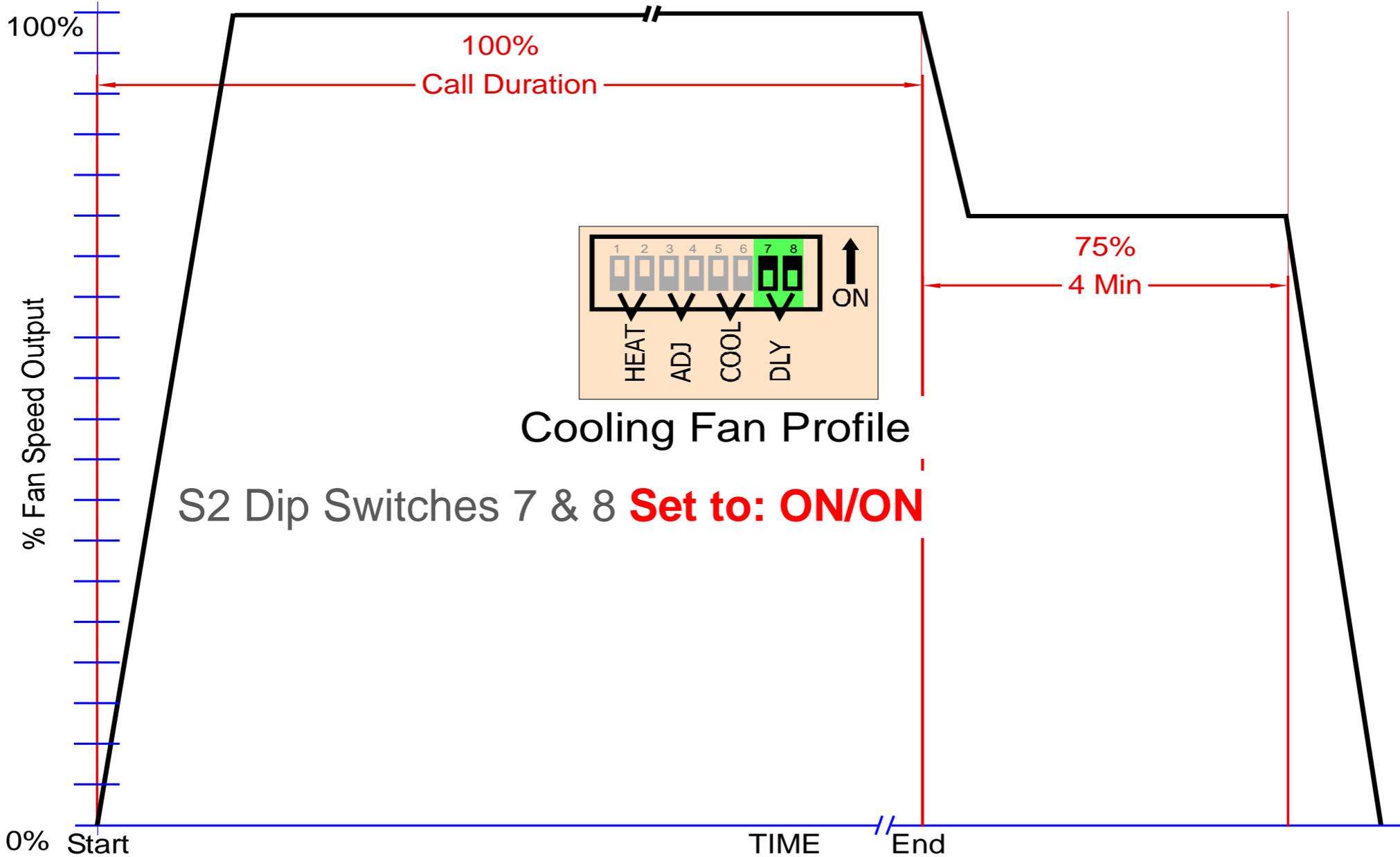
# Viessmann AirflowPLUS

## ECM Fan Cooling Fan Profile Settings



# Viessmann AirflowPLUS

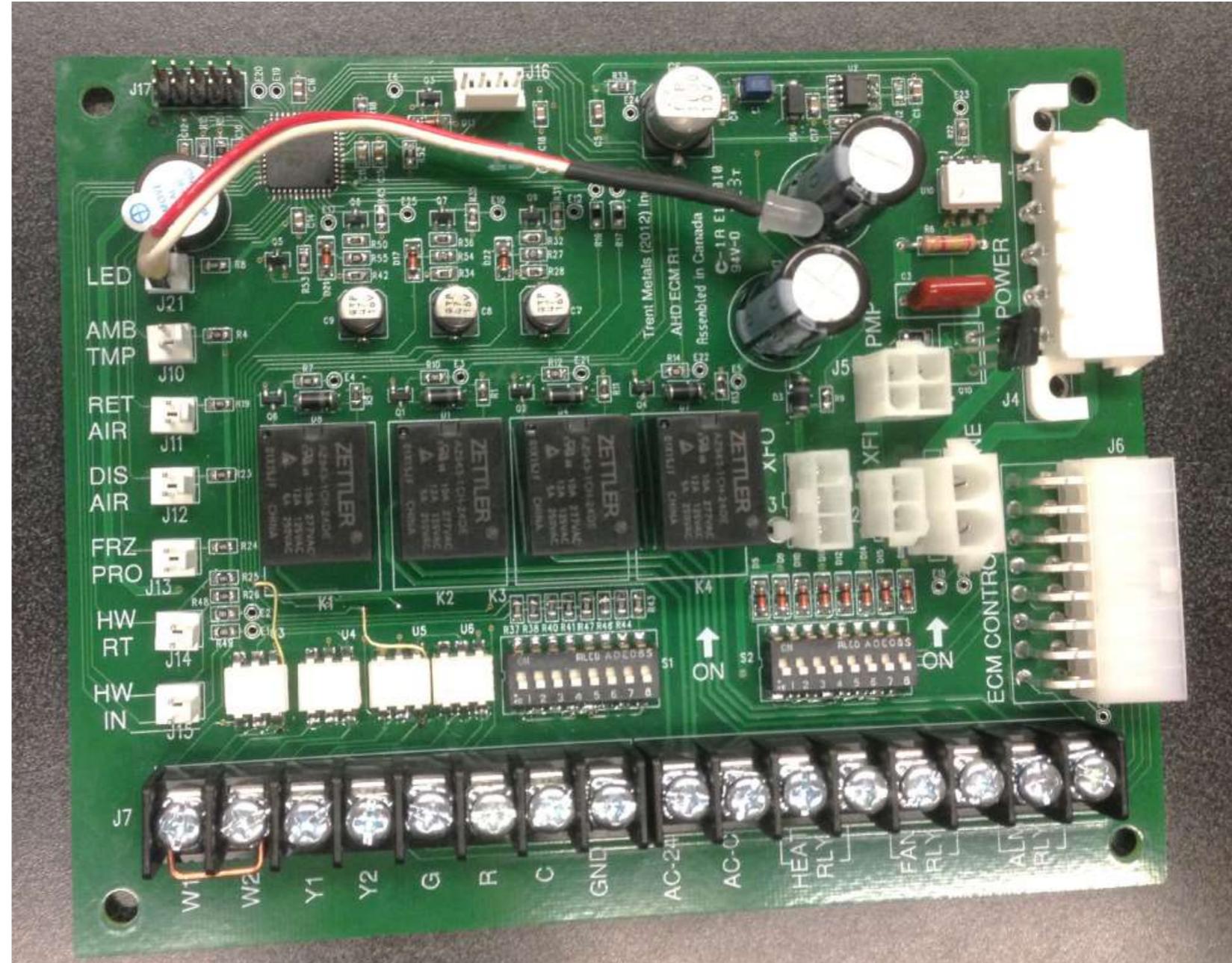
## ECM Fan Cooling Fan Profile Settings



# Viessmann AirflowPLUS

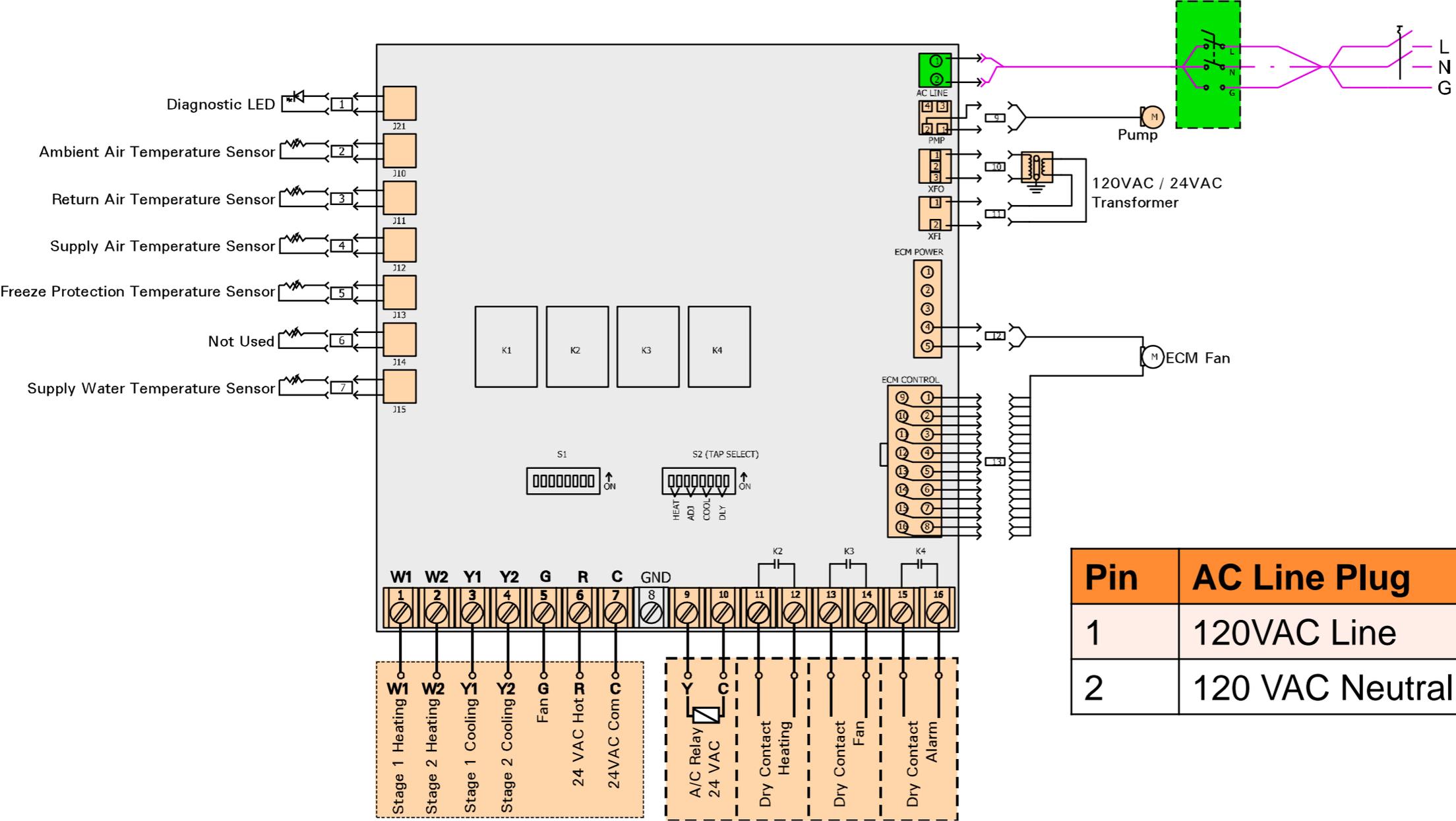
## Main Control board

- Manages all the **operational and safety** functions
- Provides output for boiler and cooling equipment, as well as auxiliary devices such as air cleaners, HRVs, Humidifiers etc.
- Real time diagnostic information on sensors and alarms.



# Viessmann AirflowPLUS

## 120 VAC Main Power Input

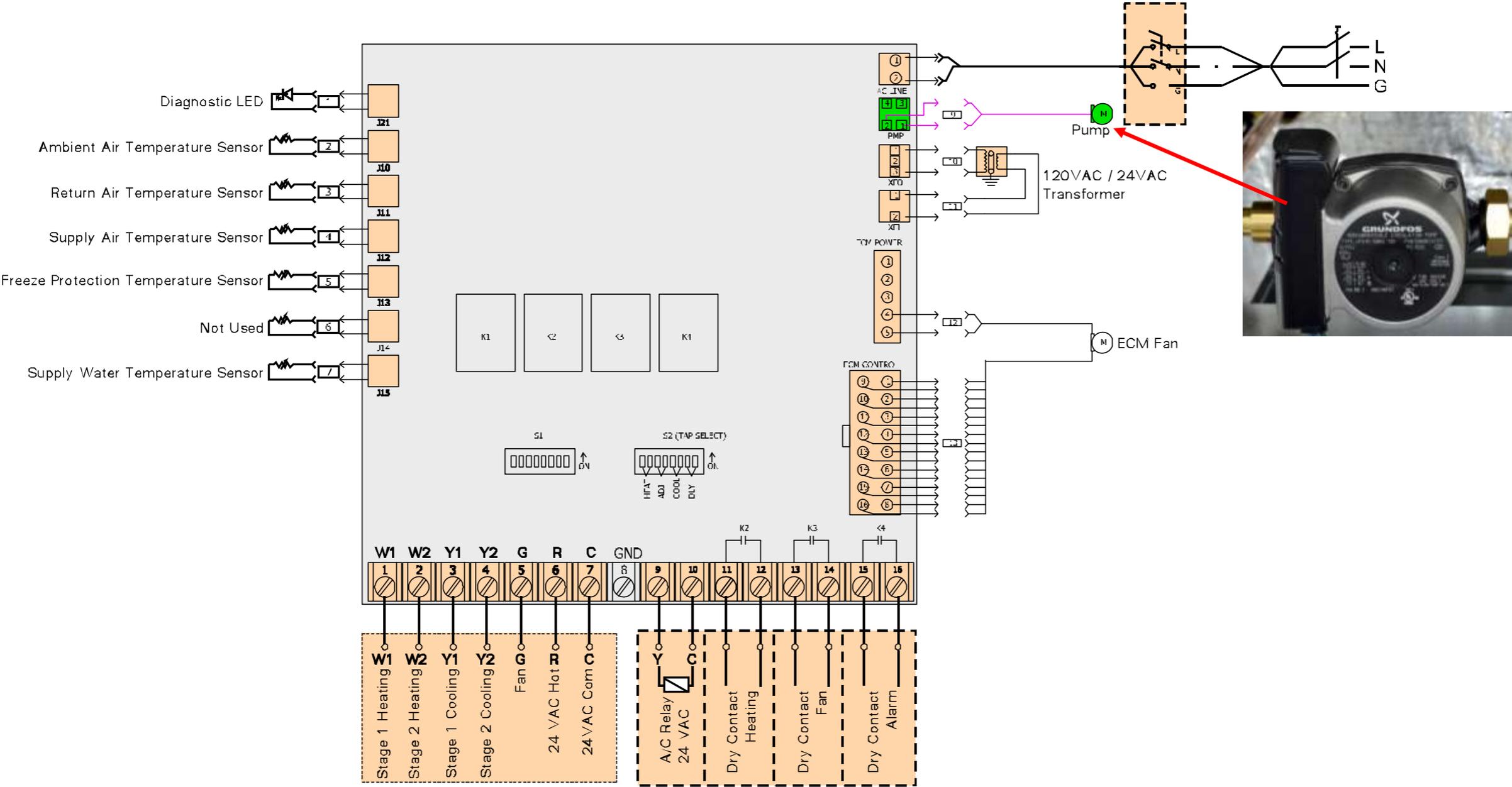


Pin	AC Line Plug
1	120VAC Line
2	120 VAC Neutral



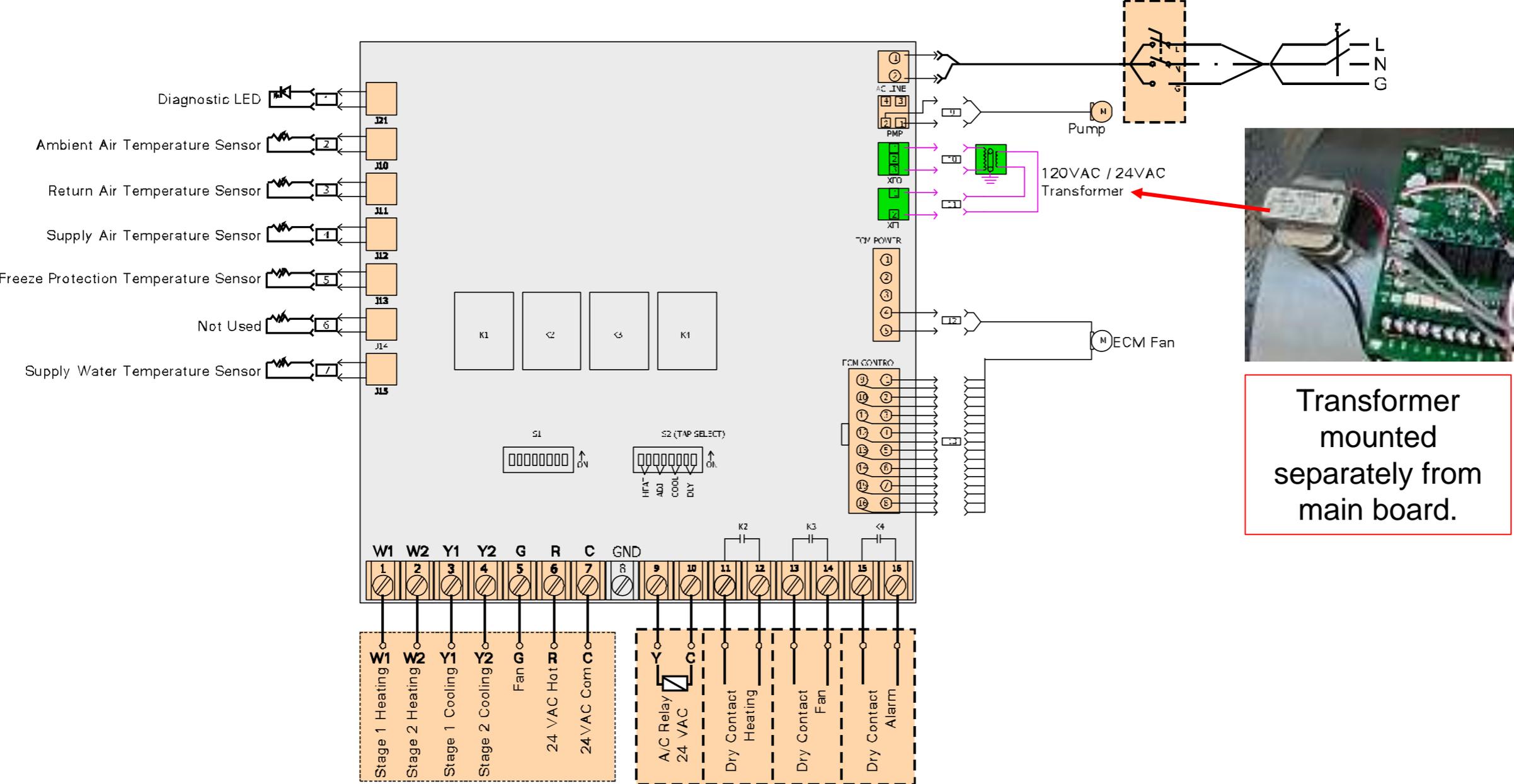
# Viessmann AirflowPLUS

## Hot Water Circulator Pump Connections



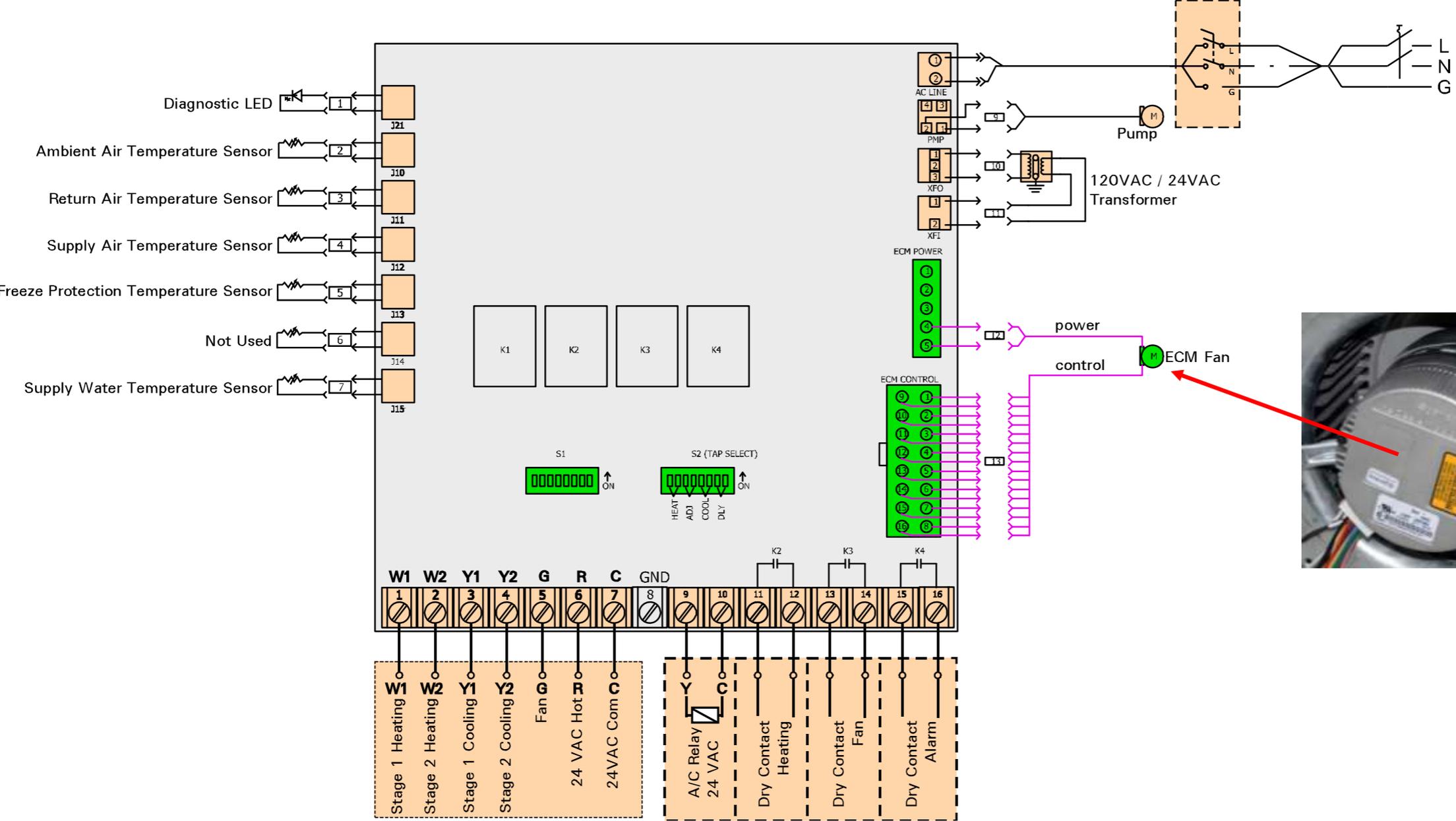
# Viessmann AirflowPLUS

## 120 VAC To 24 VAC Transformer Connections



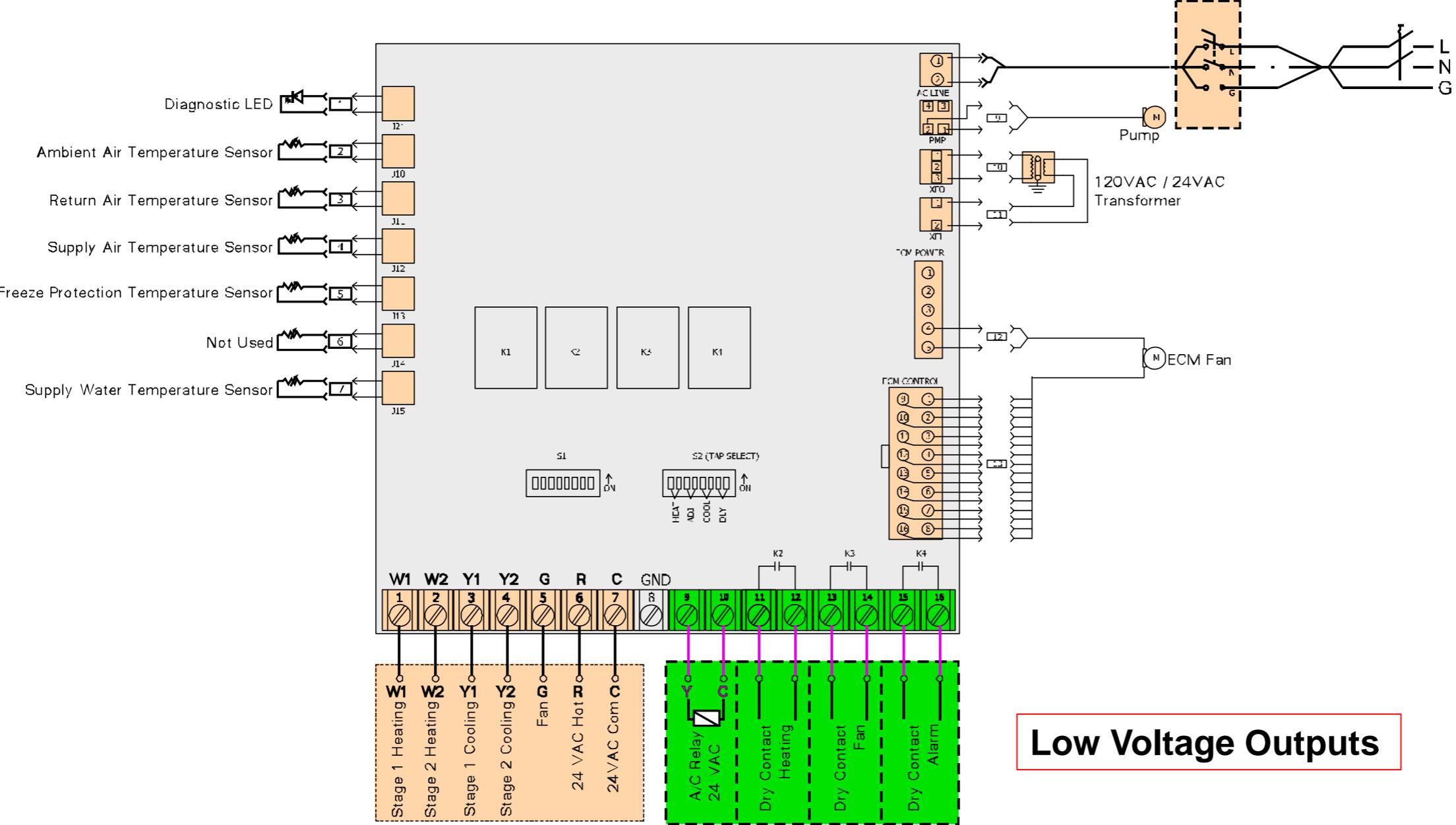
# Viessmann AriflowPLUS

## ECM Fan Connections



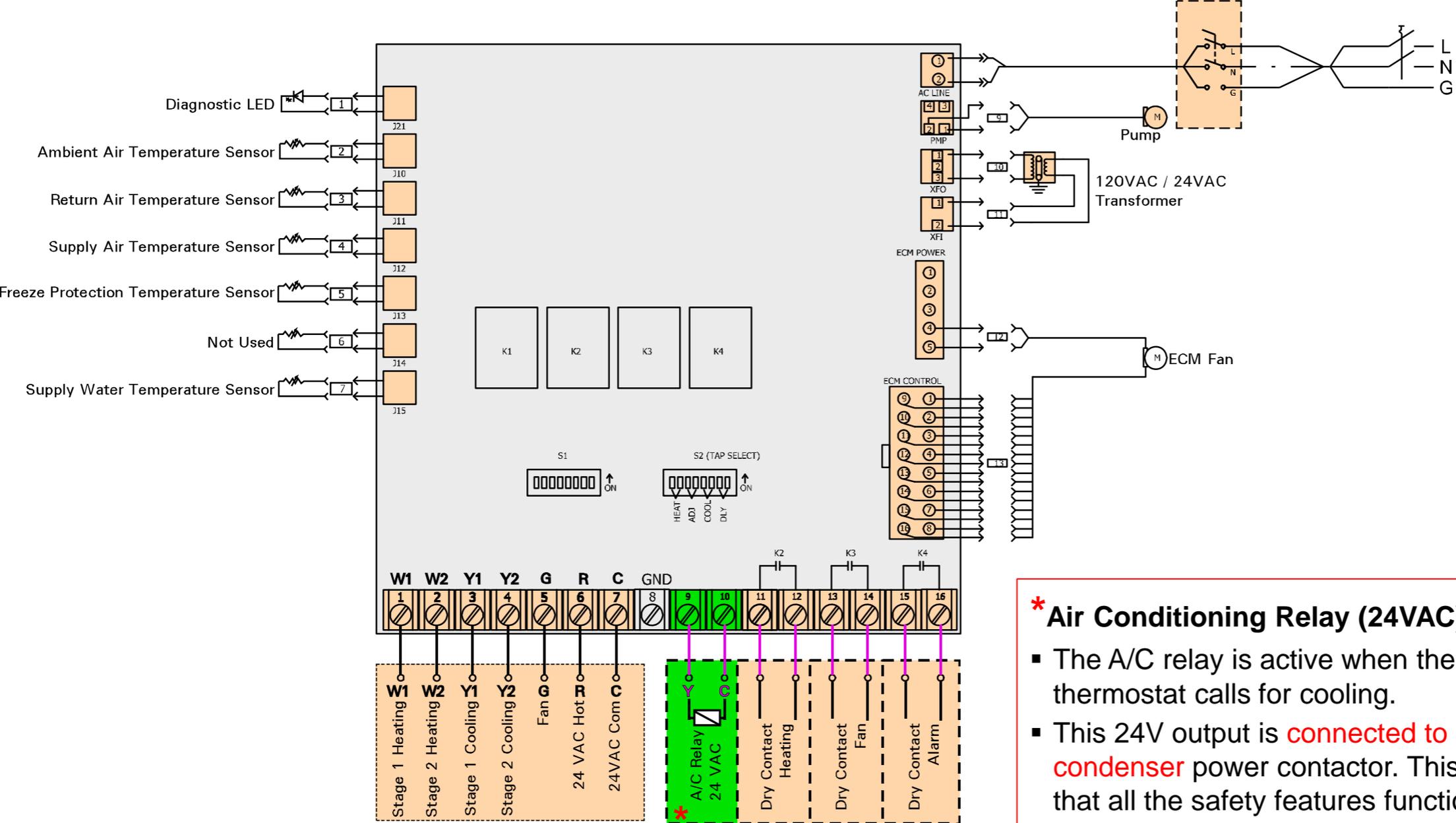
# Viessmann AirflowPLUS

## Dry Contact Output Connections



# Viessmann AirflowPLUS

## Dry Contact Output Connections

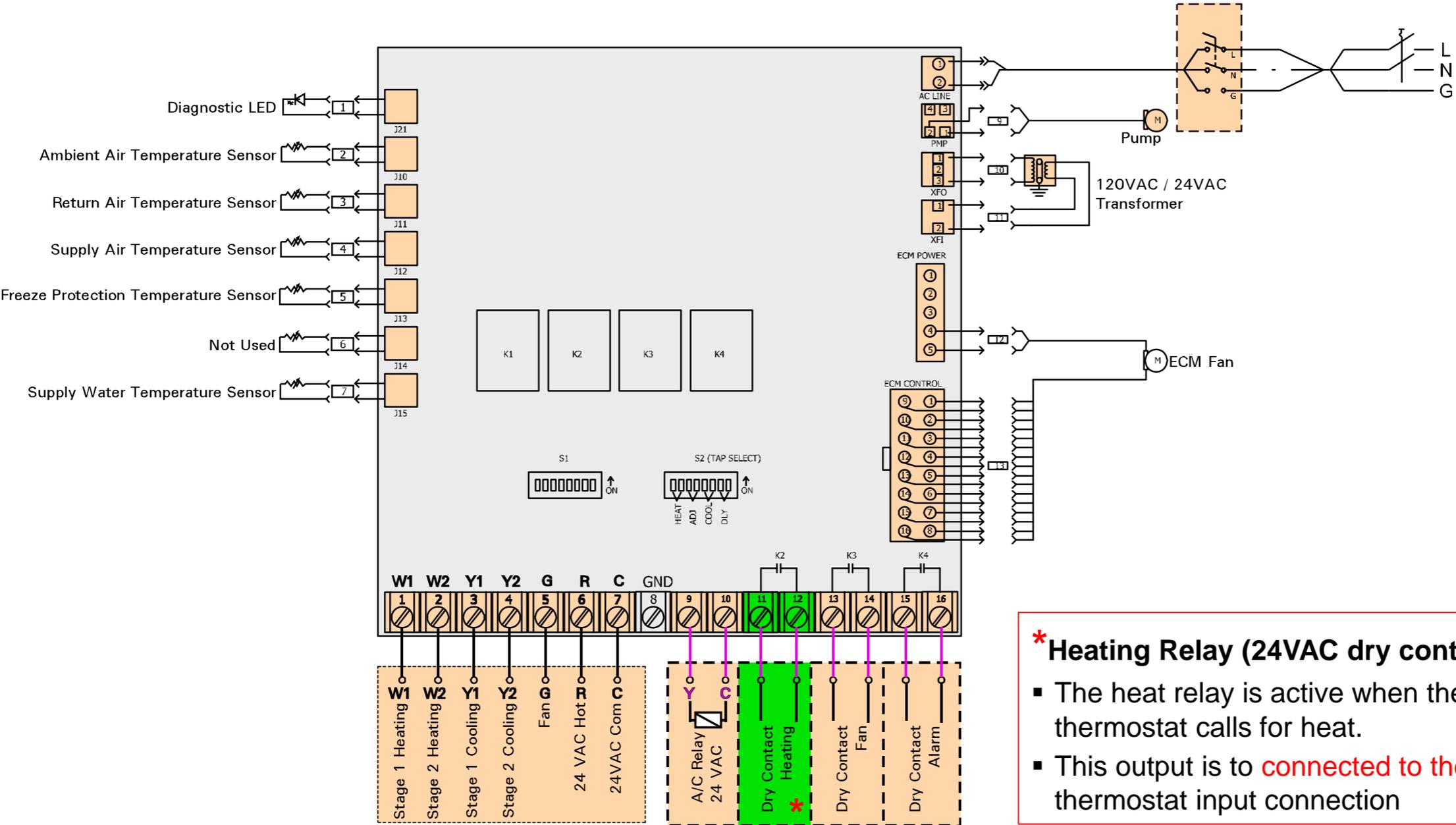


**\* Air Conditioning Relay (24VAC)**

- The A/C relay is active when the cooling thermostat calls for cooling.
- This 24V output is **connected to outside condenser** power contactor. This ensures that all the safety features function properly

# Viessmann AirflowPLUS

## Dry Contact Output Connections



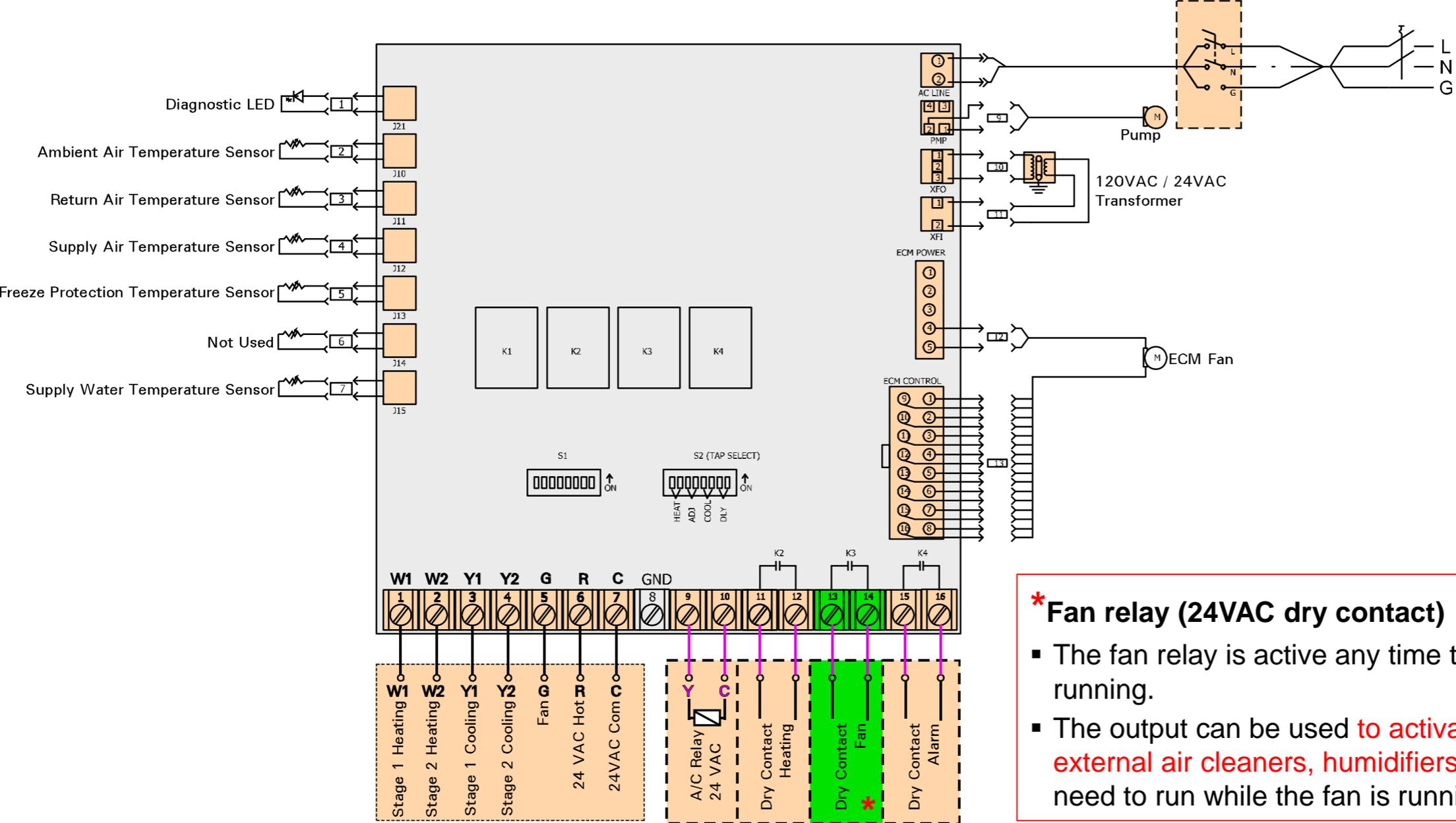
**\* Heating Relay (24VAC dry contact)**

- The heat relay is active when the heating thermostat calls for heat.
- This output is to **connected to the boiler** thermostat input connection



# Viessmann AirflowPLUS

## Dry Contact Output Connections



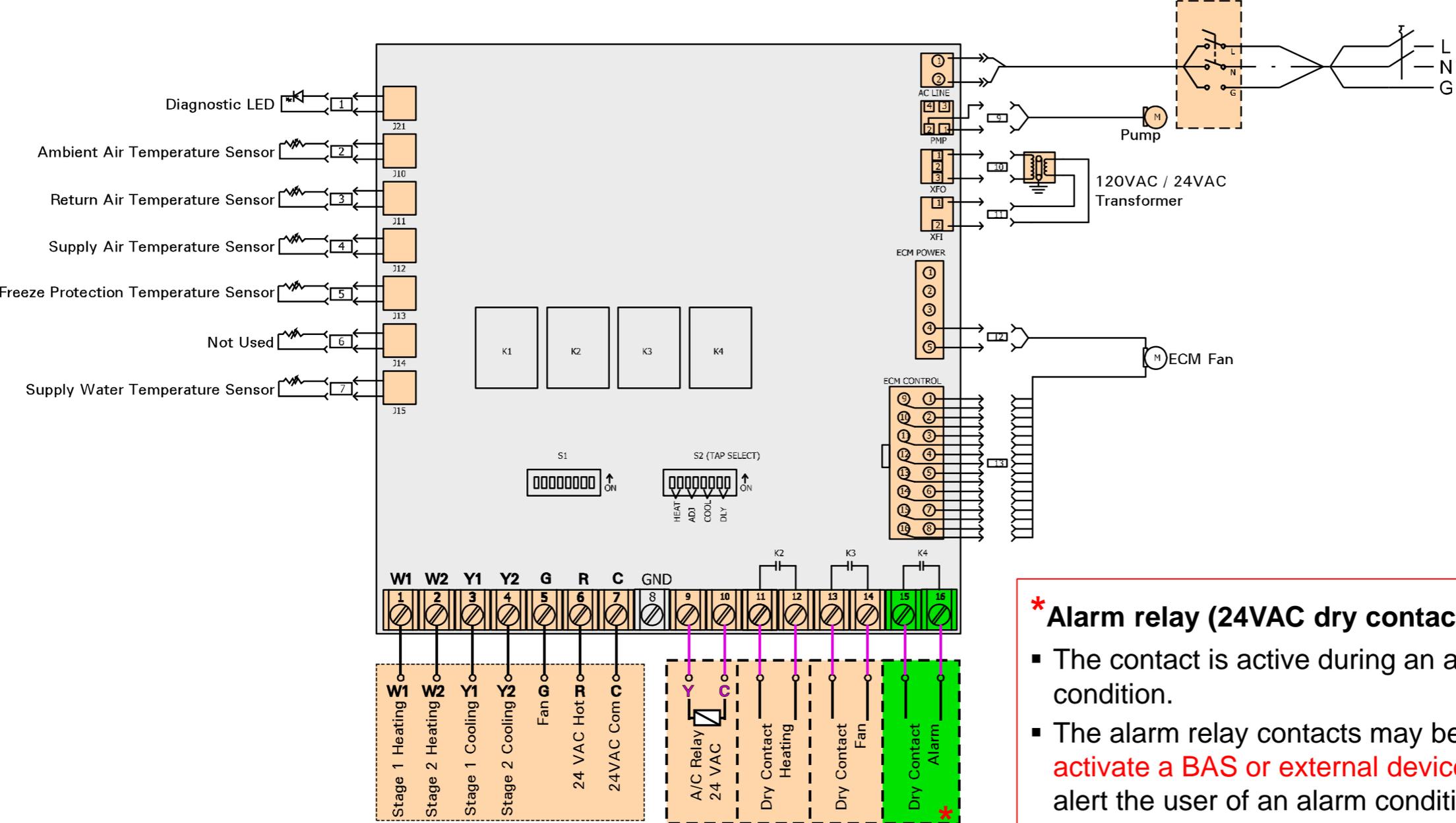
**\* Fan relay (24VAC dry contact)**

- The fan relay is active any time the fan is running.
- The output can be used to activate external air cleaners, humidifiers, etc that need to run while the fan is running.



# Viessmann AirflowPLUS

## Dry Contact Output Connections

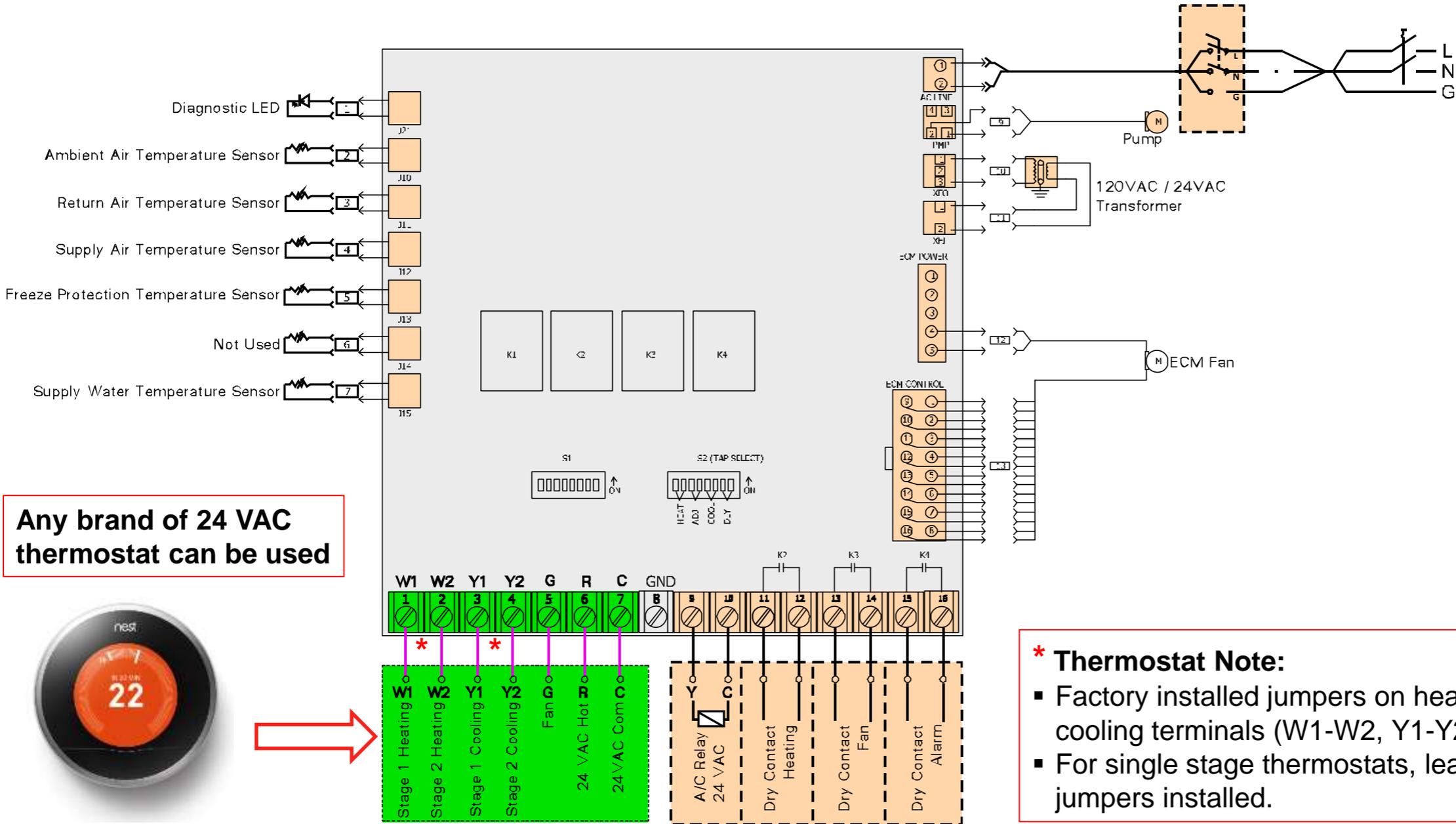


**\* Alarm relay (24VAC dry contact)**

- The contact is active during an alarm condition.
- The alarm relay contacts may be used to activate a BAS or external device, to alert the user of an alarm condition.

# Viessmann AirflowPLUS

## Heat / Cool Thermostat Connections



Any brand of 24 VAC thermostat can be used

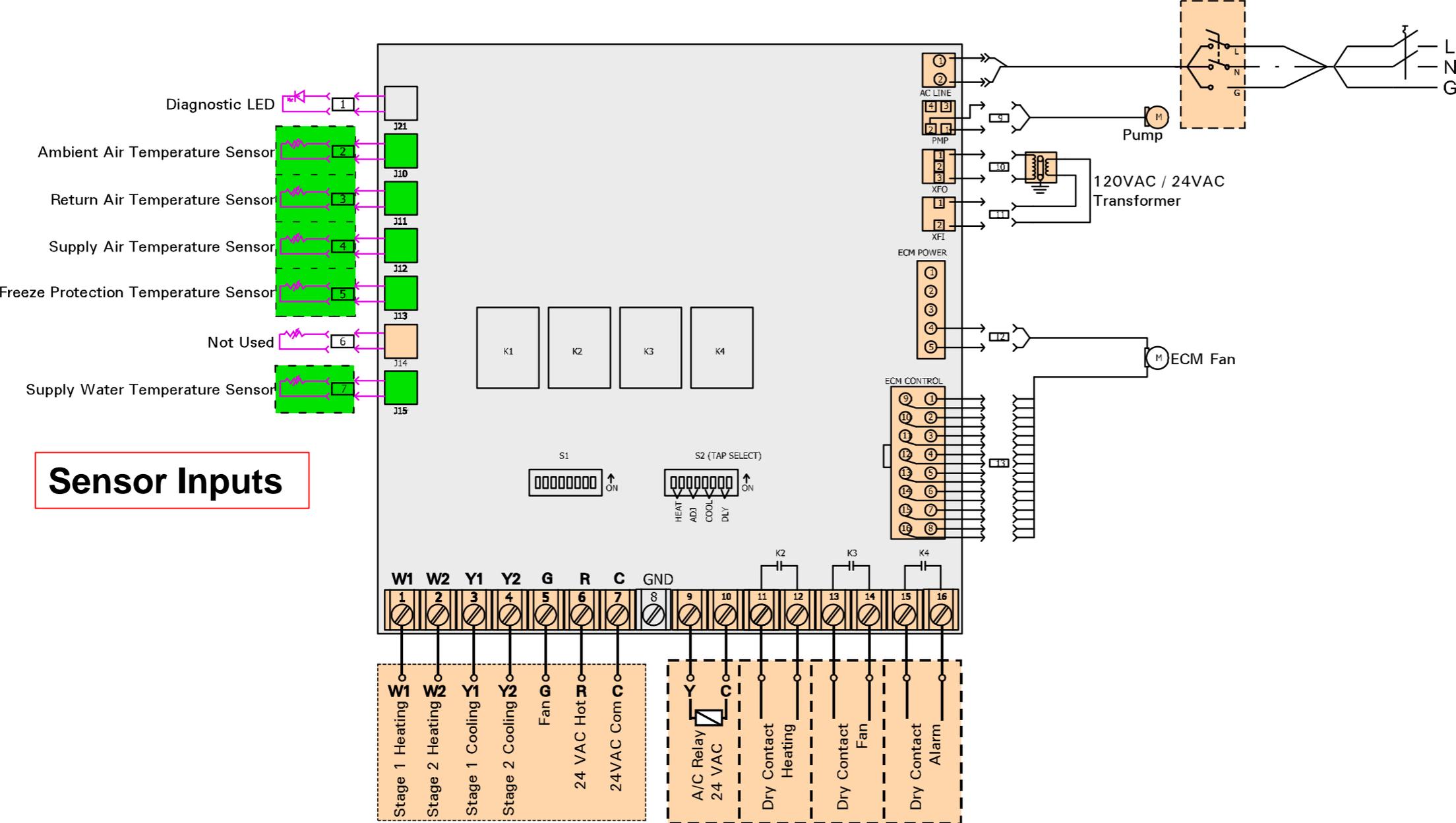


**\* Thermostat Note:**

- Factory installed jumpers on heating and cooling terminals (W1-W2, Y1-Y2)
- For single stage thermostats, leave factory jumpers installed.

# Viessmann AriflowPLUS

## Temperature Sensor Connections

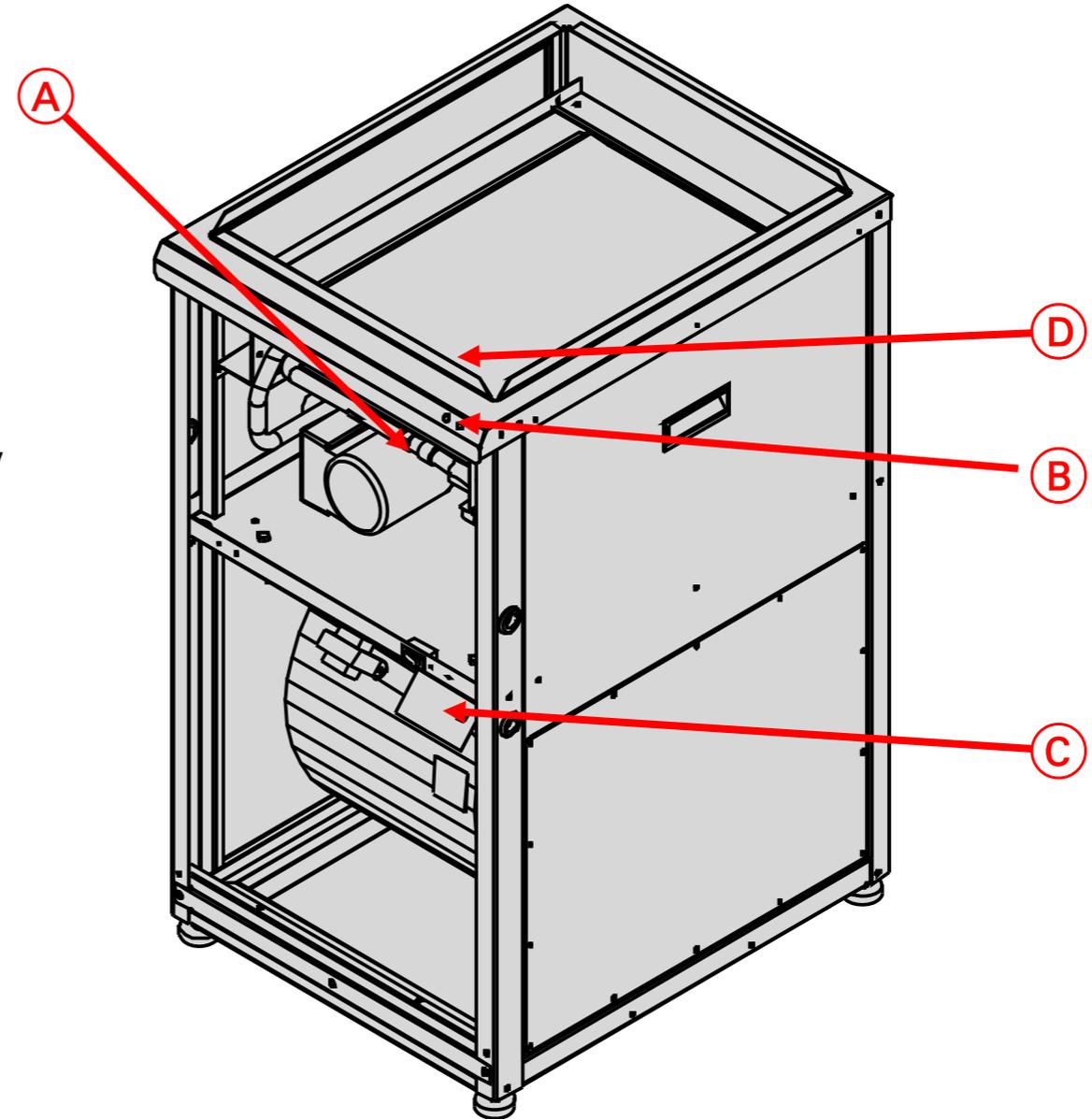
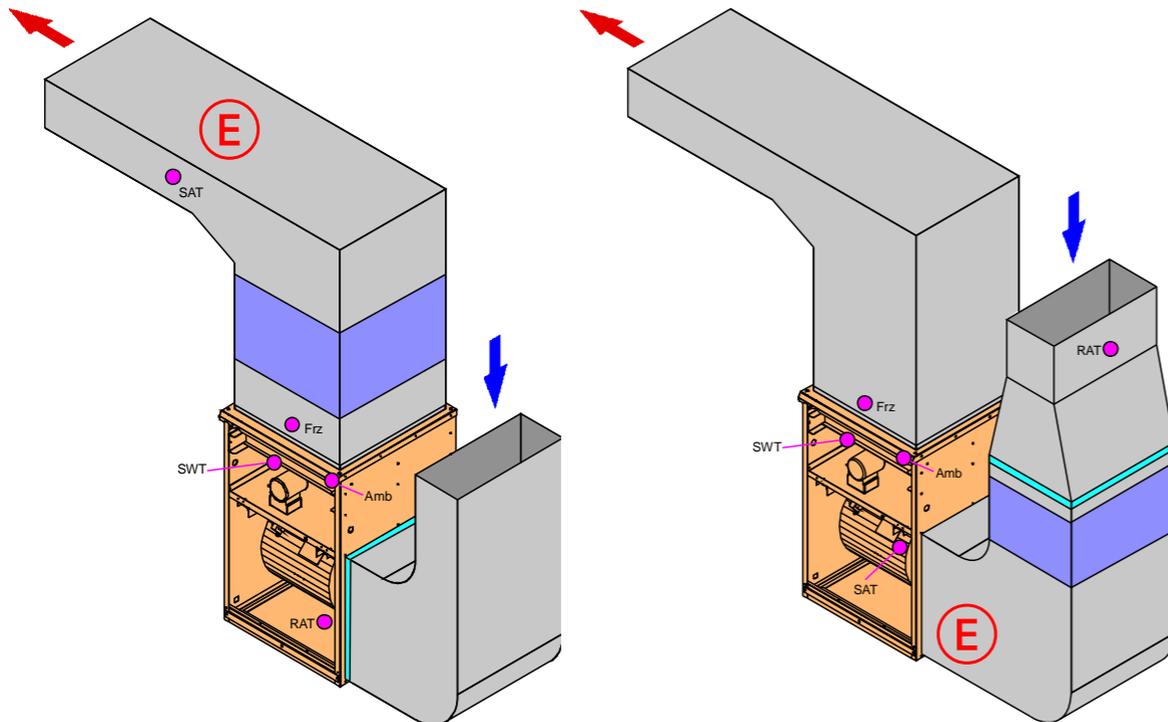


**Sensor Inputs**

# Viessmann AirflowPLUS

## Temperature Sensor Locations

- Ⓐ Supply Water Temperature Sensor.
- Ⓑ Ambient temperature Sensor.
- Ⓒ Return Air Temperature Sensor (normal location).
- Ⓓ Heating Freeze Protection Temperature Sensor.
- Ⓔ Remote (A/C) Supply Air Temperature Sensor.
  - Located ~15" after A/C coil either in the supply or return air stream.

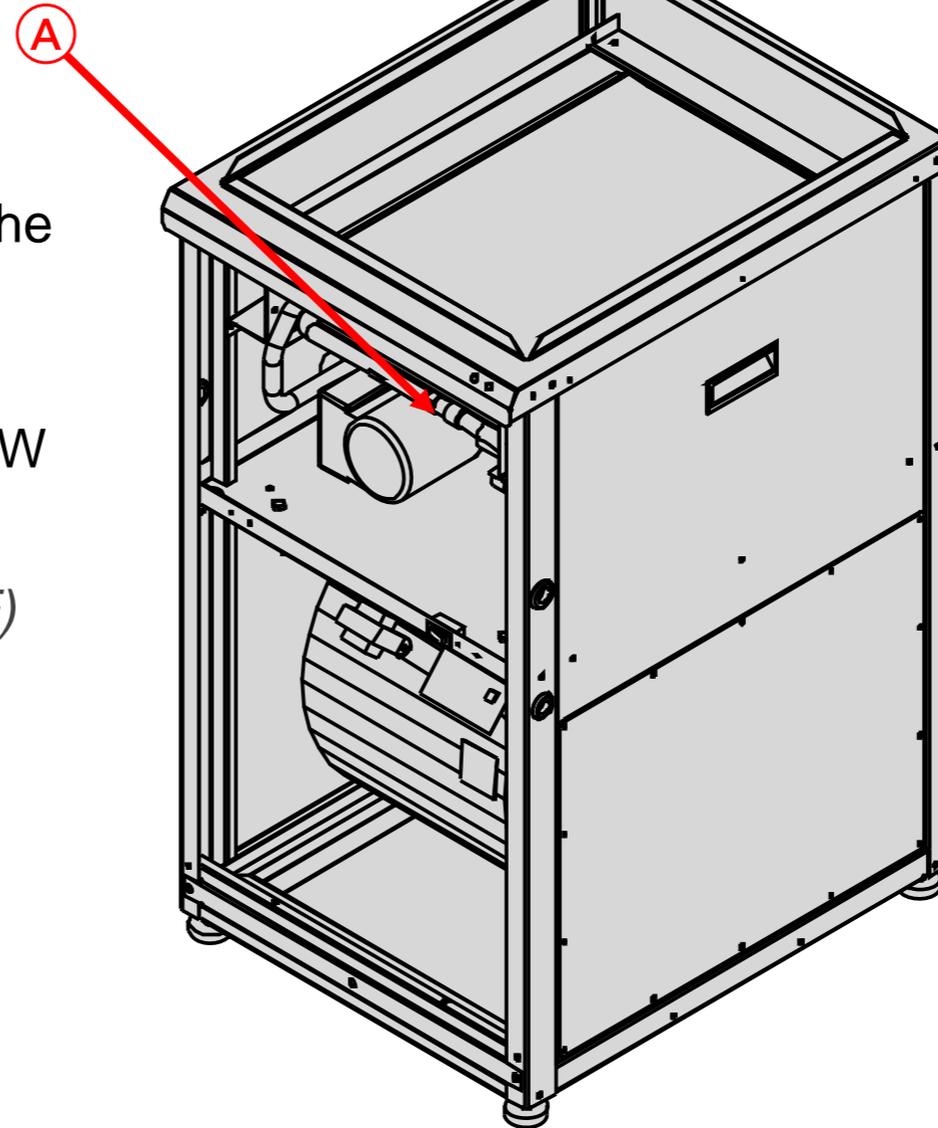
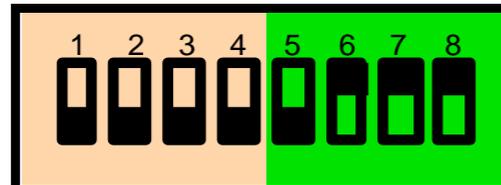


# Viessmann AriflowPLUS

## Low Supply Water Temperature Function

### Ⓐ Supply Water Temperature Sensor.

- Mounted at the inlet of the hot water coil
- It is used to **shut off the fan during a heating call** if the supply water temperature drops below the required temperature.
- Prevents cold air from blowing in house (during DHW priority or long pipe runs)
  - *Factory default temperature setting: 43°C (110°F)*
  - Adjustable temperature: 30°C (85°F)
  - Adjust by changing dip switches 5-8

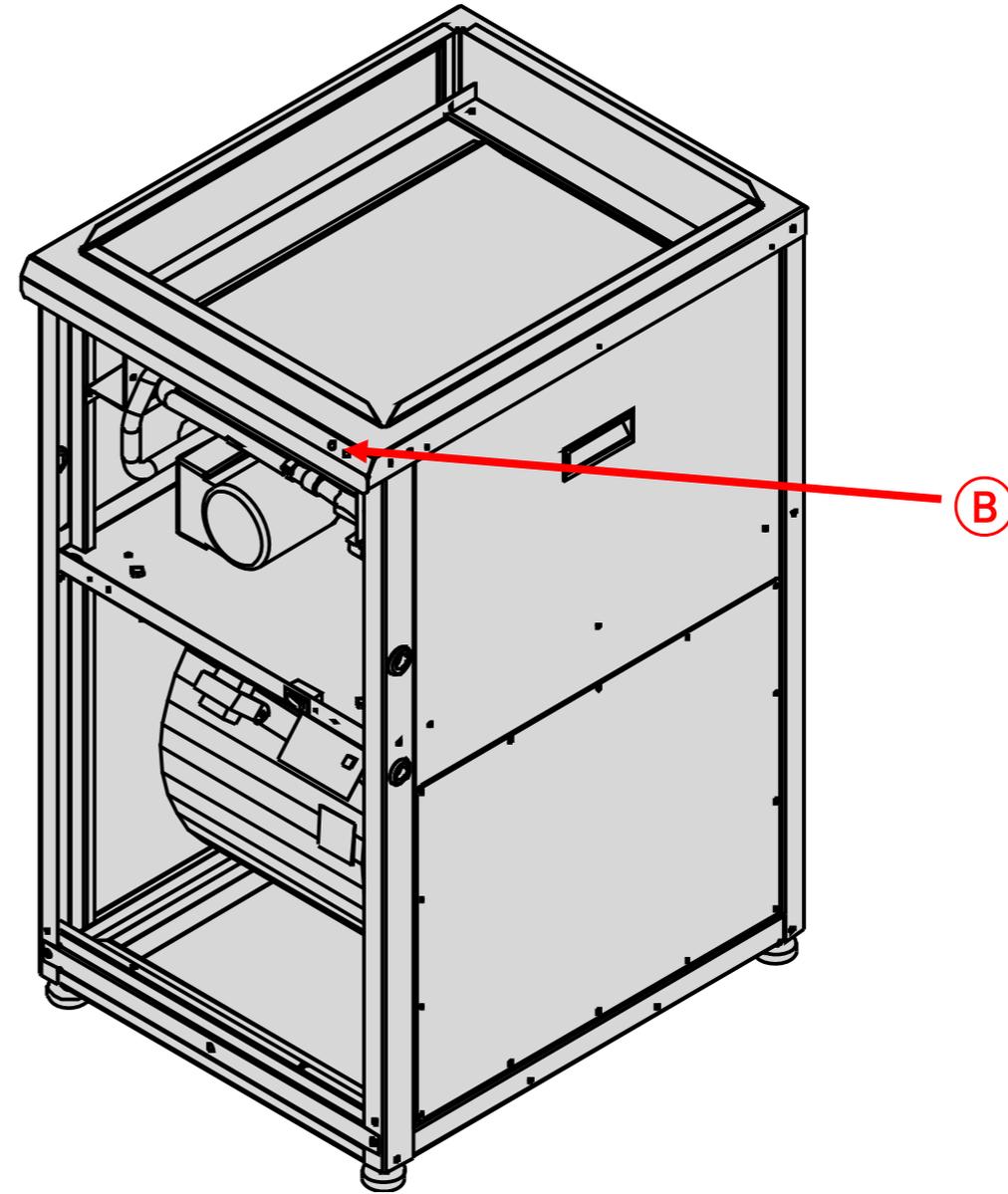


# Viessmann AirflowPLUS

## House Freeze Protection Function

### **B** Ambient Air Temperature Sensor.

- The freeze protection function is enabled when the ambient air temperature is  $< 4^{\circ}\text{C}$  ( $40^{\circ}\text{F}$ )
- Provides a call for heat from the AirflowPLUS (pump, fan and boiler enabled)
- Protects house from defective room thermostat or accidental turn-off
- **Note:** *This may not prevent water line freezing in all situations where the ambient temperatures gets too low.*

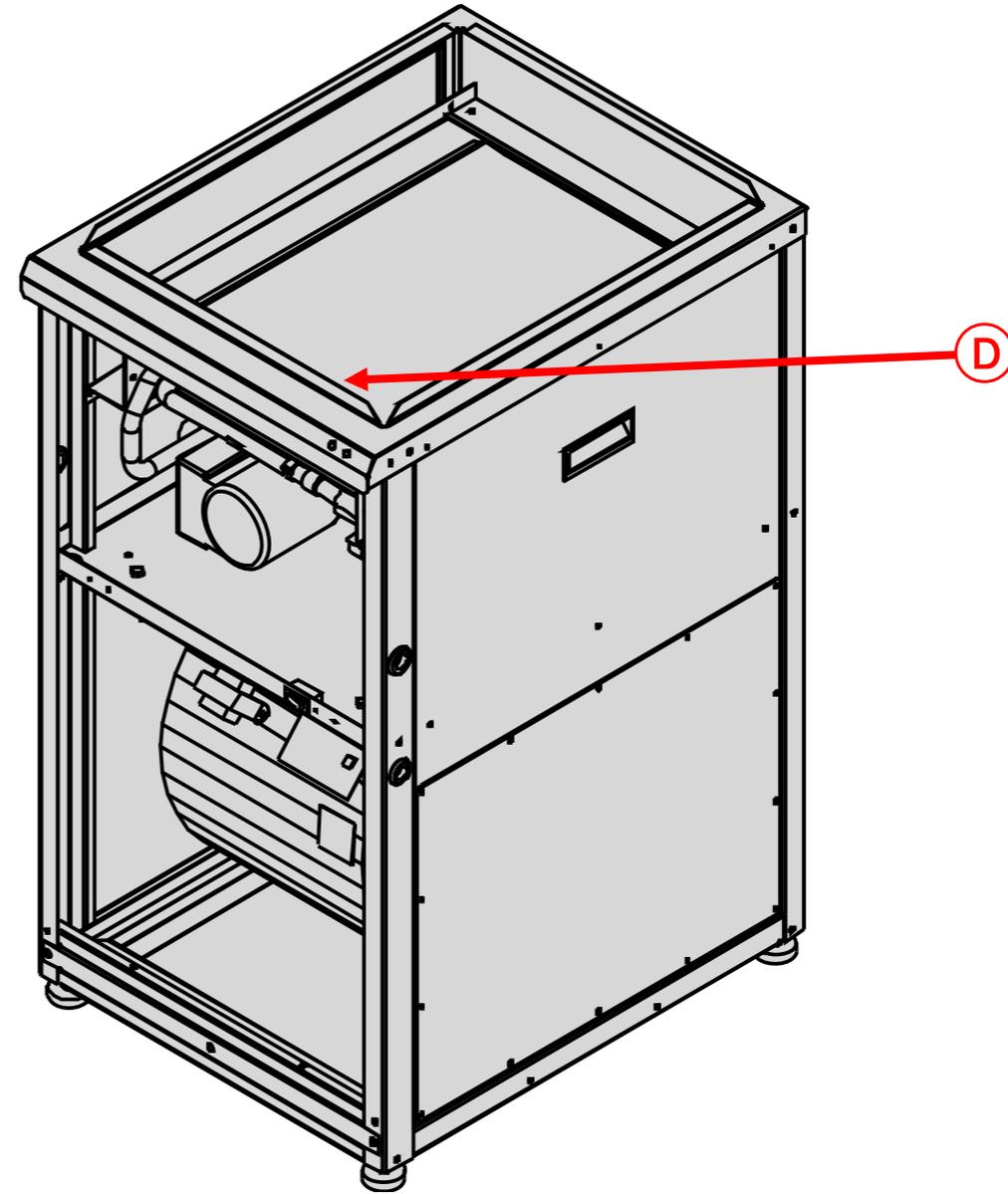


# Viessmann AirflowPLUS

## Heating Coil Freeze Protection Function

### ⓓ Heating Coil Freeze Protection Sensor.

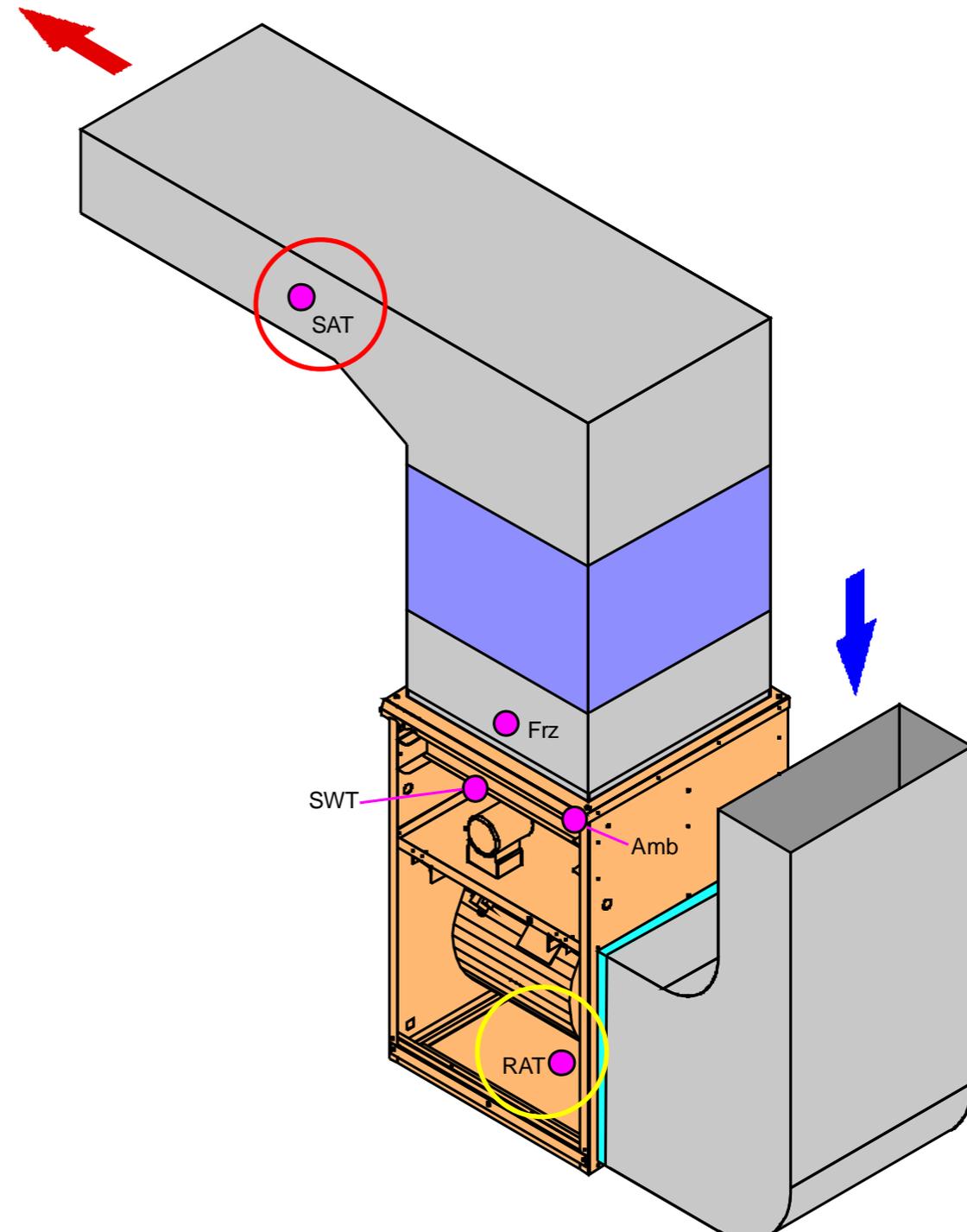
- Heating coil freeze protection **is initiated if:**
  - Temperature is  $<14^{\circ}\text{C}$  for systems with evaporator in the supply air stream, or...
  - Temperature is  $<6^{\circ}\text{C}$  for systems with evaporator in the return air stream, or...
  - A/C supply air temperature is  $<5^{\circ}\text{C}$
- Heating coil freeze protection:
  - The **A/C relay is turned off for 5 minutes.**
  - The pump runs and the fan operates at high speed.
  - The alarm relay will be activated.



# Viessmann AirflowPLUS

## Cooling Coil Freeze Protection Function

- Cooling coil freeze protection **is initiated if:**
  - During a cooling cycle the return air temperature is below 16°C **and...**
  - The Delta-T between the return air (RAT) and the A/C supply air (SAT) is greater than 13°C
- Cooling coil freeze protection:
  - The **A/C relay is turned off for 5 minutes**
- **Cooling Lockout**
  - If a freeze protect cycle is initiated **3 times** within a single cooling cycle, the system goes into **cooling lockout mode**.
  - The cooling cycle is stopped and new cooling cycles are blocked.
  - The alarm relay and blinking LED are enabled.

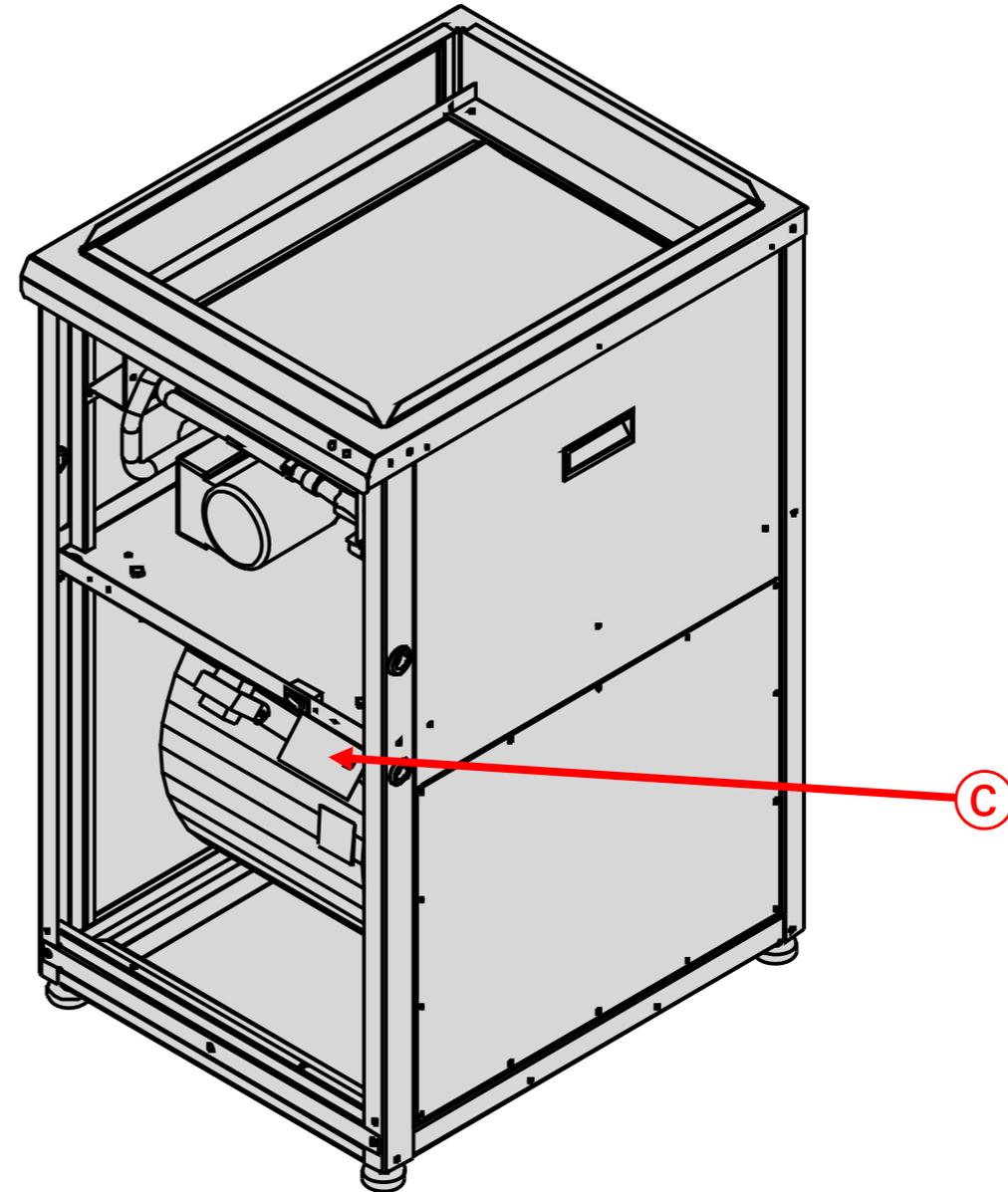
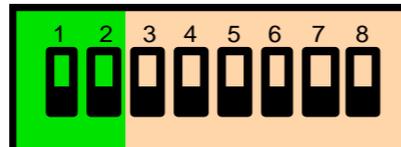


# Viessmann AriflowPLUS

## Maximum Heating Limit Function

### Ⓒ Return Air Temperature Sensor.

- Sometimes referred to as the “landlord setting”, **any heating call will be terminated** if the return air exceeds the setting.
- Saves energy and prevents overheating the space.
  - *Factory default temperature setting: 32°C (90°F)*
  - Adjustable temperatures: 29.5°, 26°, 24°C (85, 80, 75°F)
  - Adjust by changing dip switch's 1 & 2

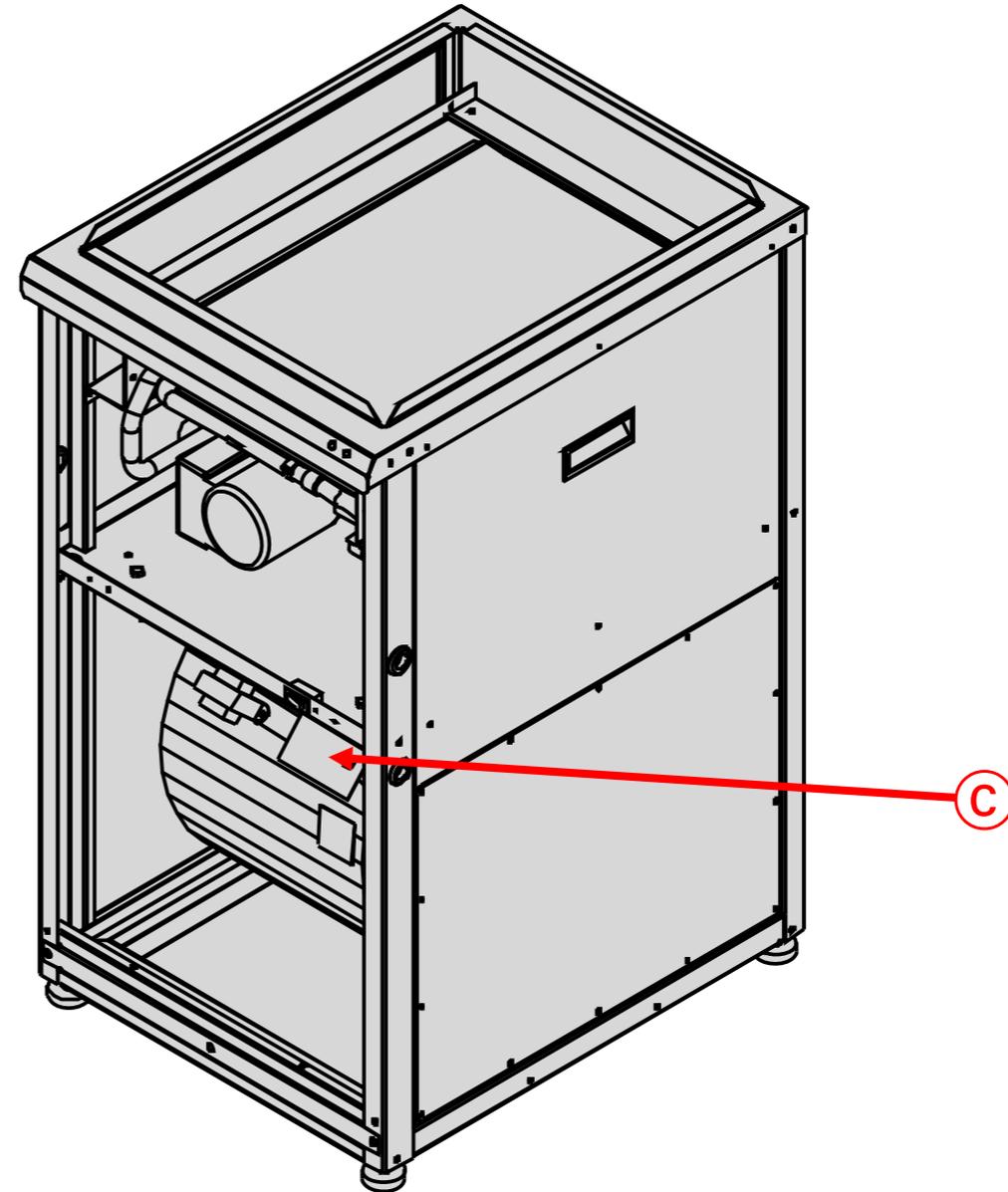
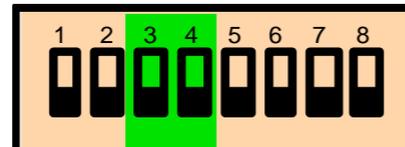


# Viessmann AirflowPLUS

## Minimum Cooling Limit Function

### Ⓒ Return Air Temperature Sensor.

- Sometimes referred to as the “landlord setting” any cooling call will be terminated if the return air falls below the setting.
- Saves energy and prevents overcooling the space.
  - *Factory default temperature setting: 15.5°C (65°F)*
  - Adjustable temperatures: 20°, 21°, 22°C (68, 70, 72°F)
  - Adjust by changing dip switch's 3 & 4



# Viessmann AirflowPLUS

## Front Panel Indicator And Temperature Sensor



- Ⓐ Ambient temperature sensor
- Ⓑ Bicolour LED Indicator

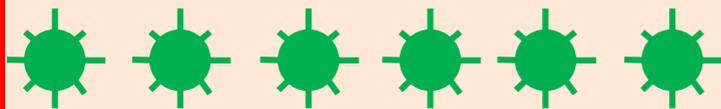
# Viessmann AriflowPLUS

## Front Panel Indicator Operation



Ⓑ Bicolour LED: **Function for temperatures.**

*e.g. Sensor T1 reads 36°C*



*Followed by the next sensor*    *Etc.*

# Viessmann AriflowPLUS

## Front Panel Indicator Operation



Ⓑ Bicolour LED: **Function for alarms.**  
**Failed Sensors**

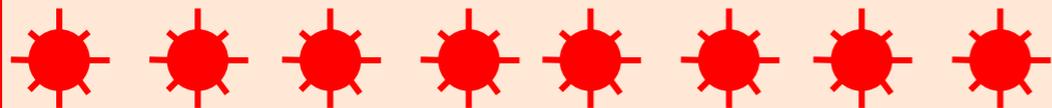
*Bad sensor reading or defective sensor.*

 X8 pause  X8 = bad reading  
or defective sensor\*

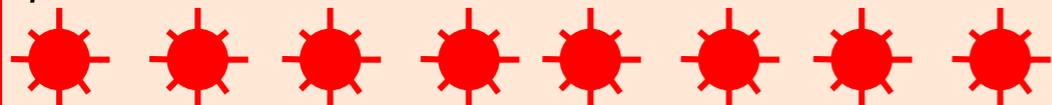
*\*If a defective sensor is detected an audible alarm will also be present.*

**e.g. sensor T1 bad reading or defective:**

 pause



pause



# Viessmann AriflowPLUS

## Front Panel Indicator Operation



Ⓑ Bicolour LED: **Function for alarms.**  
**LED alarm flash codes**

Low Ambient Temperature LED code



High A/C Coil Delta code



A/C Delta Exceeded 3 Times code



Freeze Protection Cycle In Progress



Cooling Lockout



# Viessmann AirflowPLUS

## Front Panel Indicator Associated Audible Alarms



Certain error conditions enable a **beep code output**.

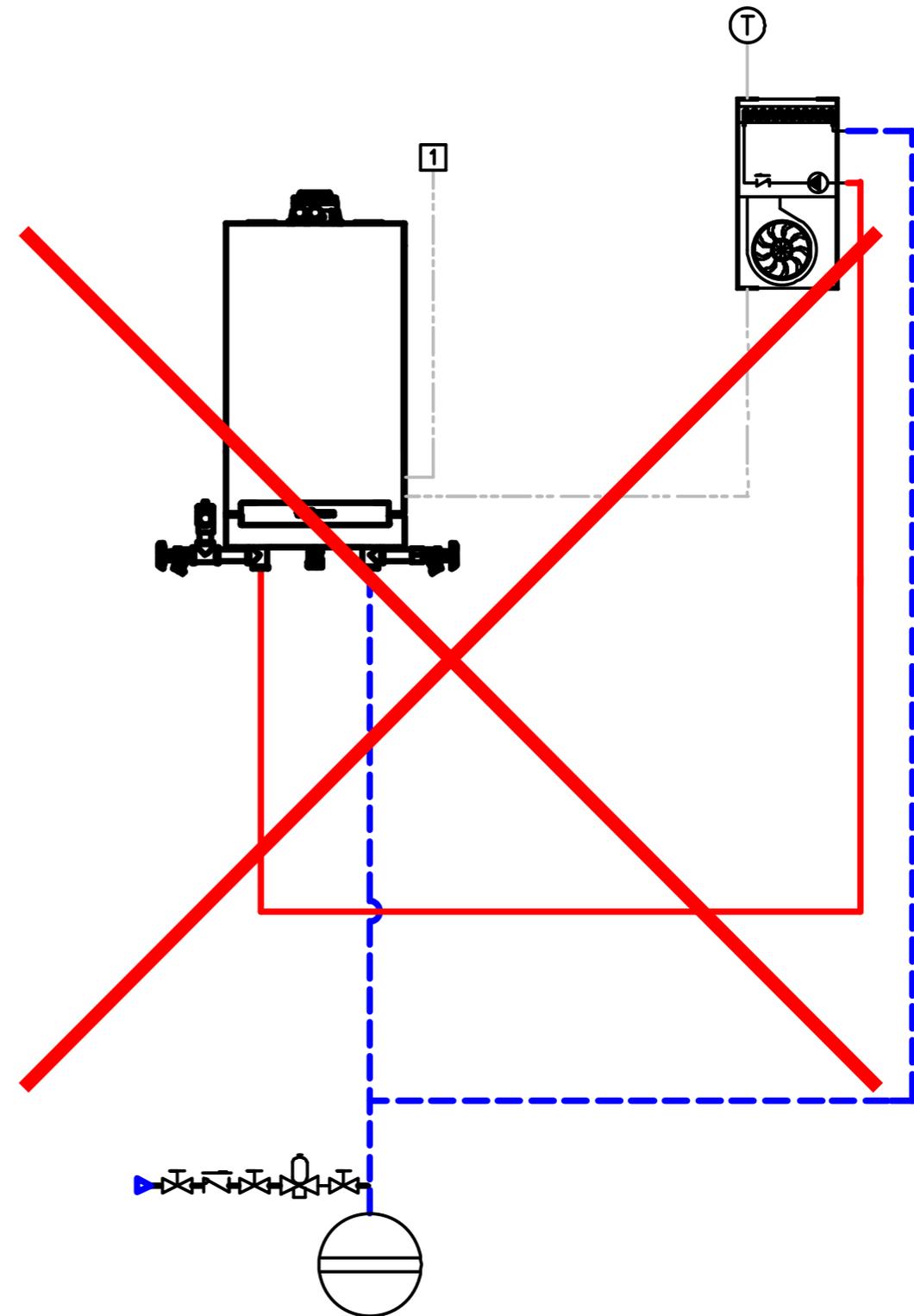
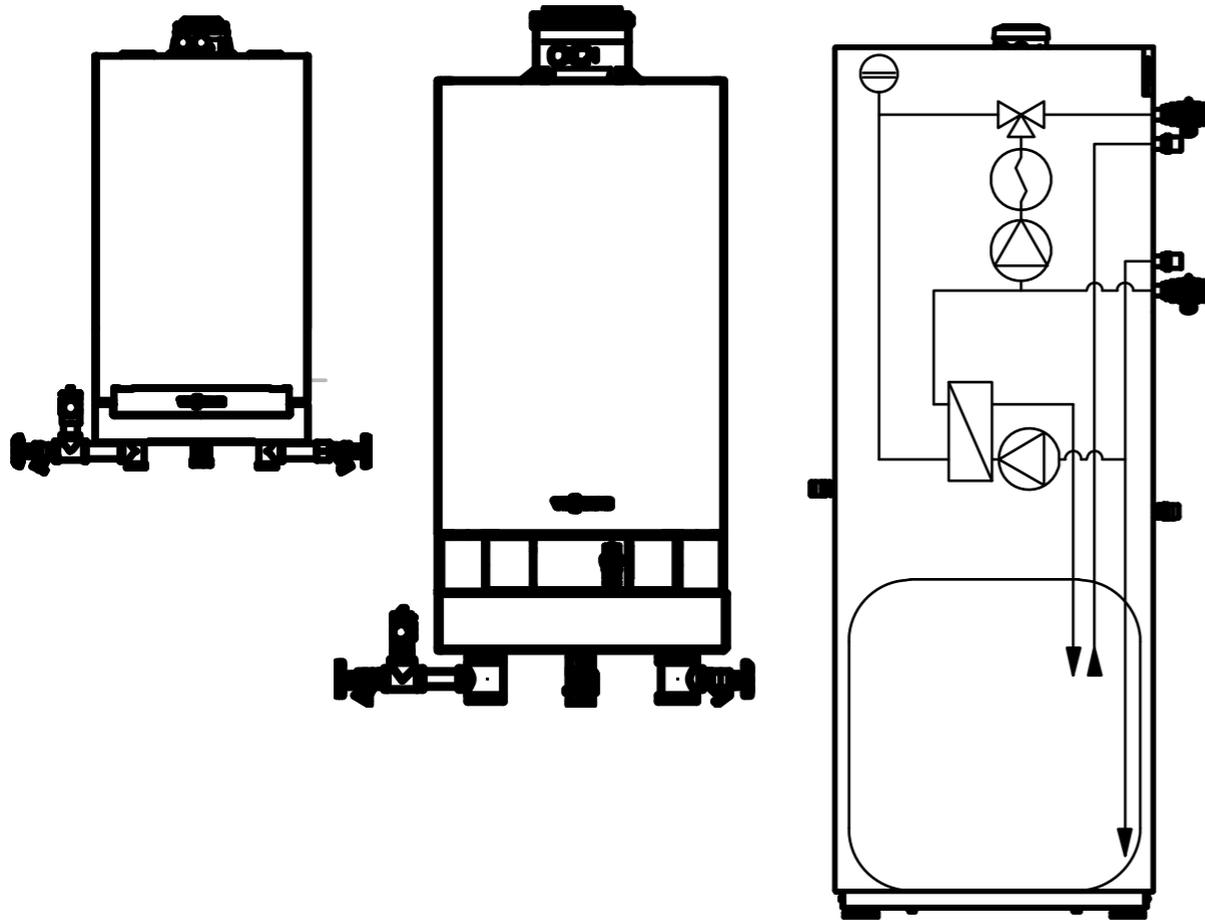
### Audible Alarms Associated With Faults (Errors)

Enabled	Sound	Error /Fault
Immediately	4 beeps	A/C locked out after three successive freeze protect cycles
After 24 hours	2 beeps	One or more bad temperature sensors
After 10 minutes	1 beep	low ambient temperature

# Viessmann AirflowPLUS

## System Layouts Vitodens Boiler

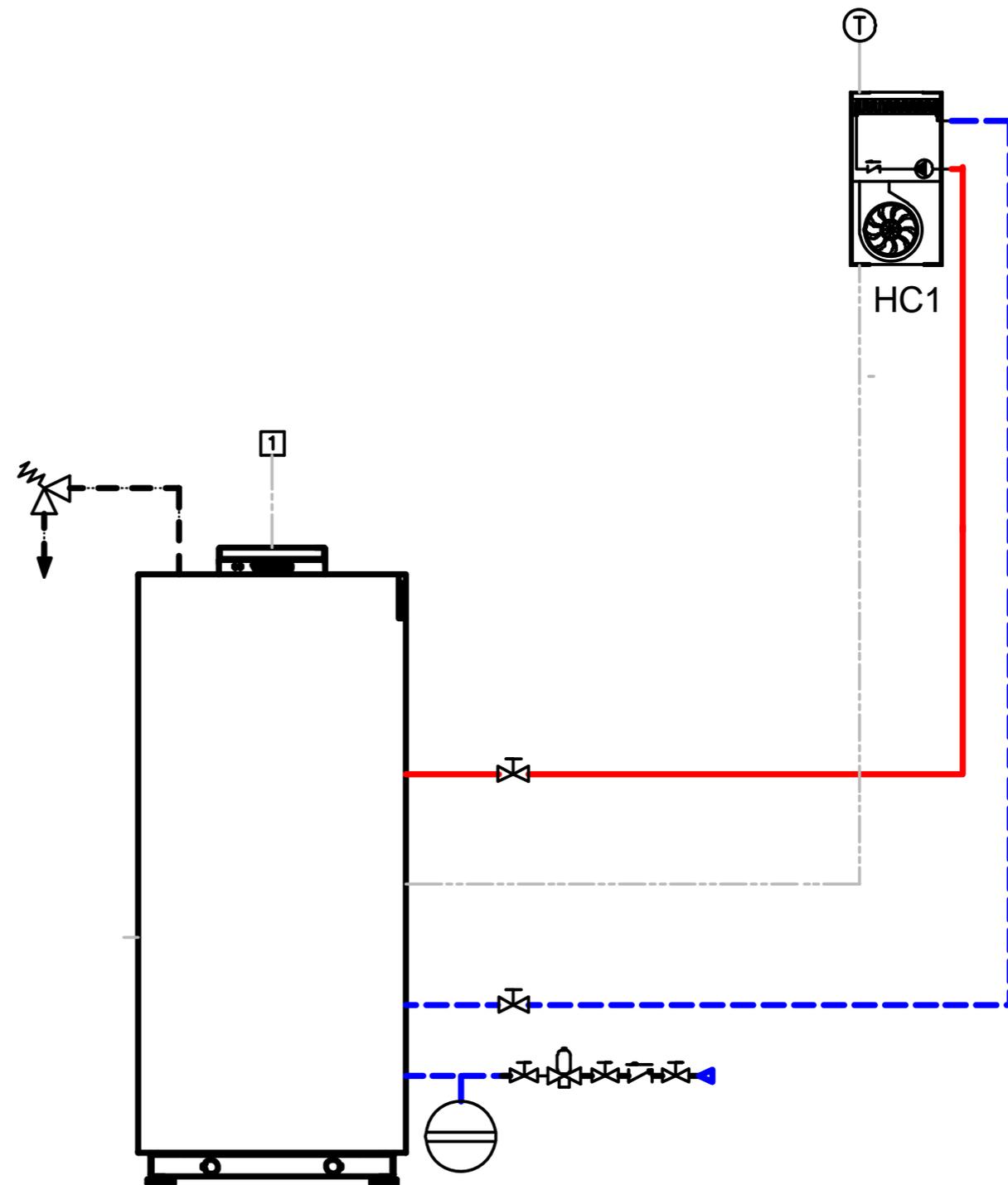
- This configuration is **not possible** with any Vitodens 100, 200 or 222 series boilers due to the inability of the fan coil pump to supply adequate flow and head through the air coil *and* the boiler's heat exchanger.



# Viessmann AriflowPLUS

## System Layouts Vitocrossal 300 CU3A

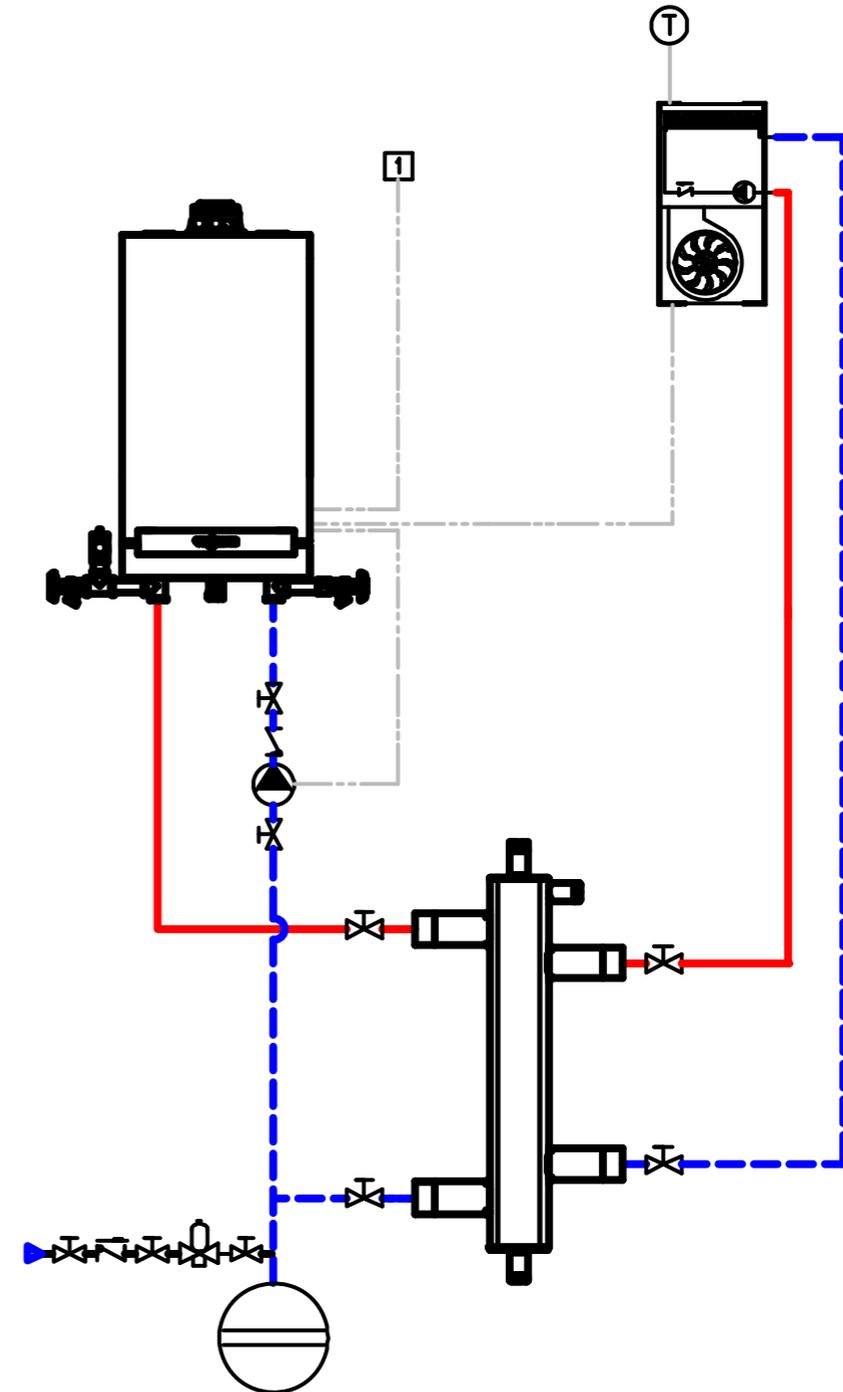
- This configuration is **only possible with the CU3A** boiler because the pressure drop in the boiler is so low.



# Viessmann AirflowPLUS

## System Layouts Vitodens 100 WB1B Boiler

- Low mass boiler.
- Single heating zone with primary secondary
- Fan coil connected at RT boiler input.
- Fan coil can follow a reset curve with the OA sensor installed, or fixed temperature without the OA sensor in boiler.

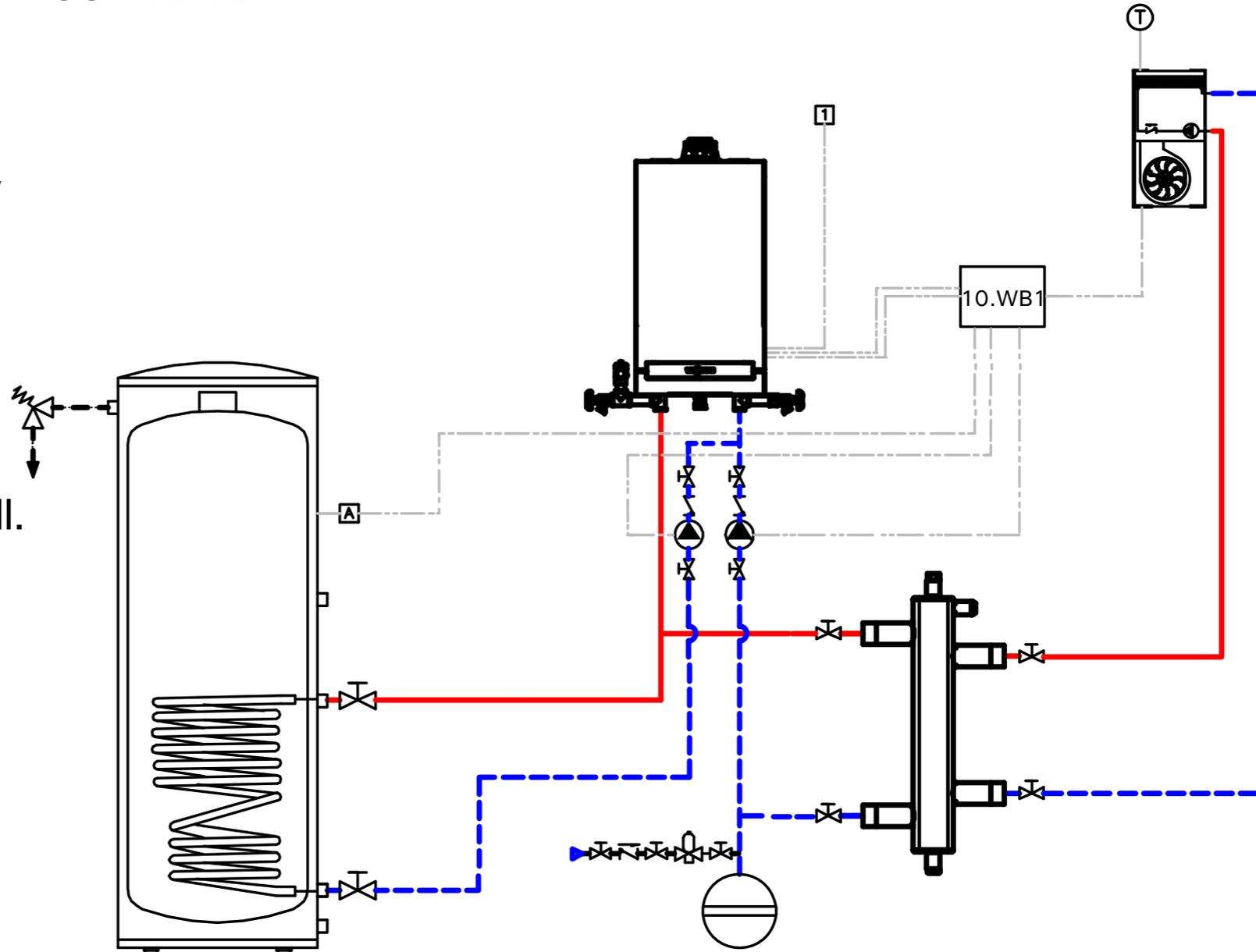




# Viessmann AriflowPLUS

## System Layouts With Vitodens 100 WB1B

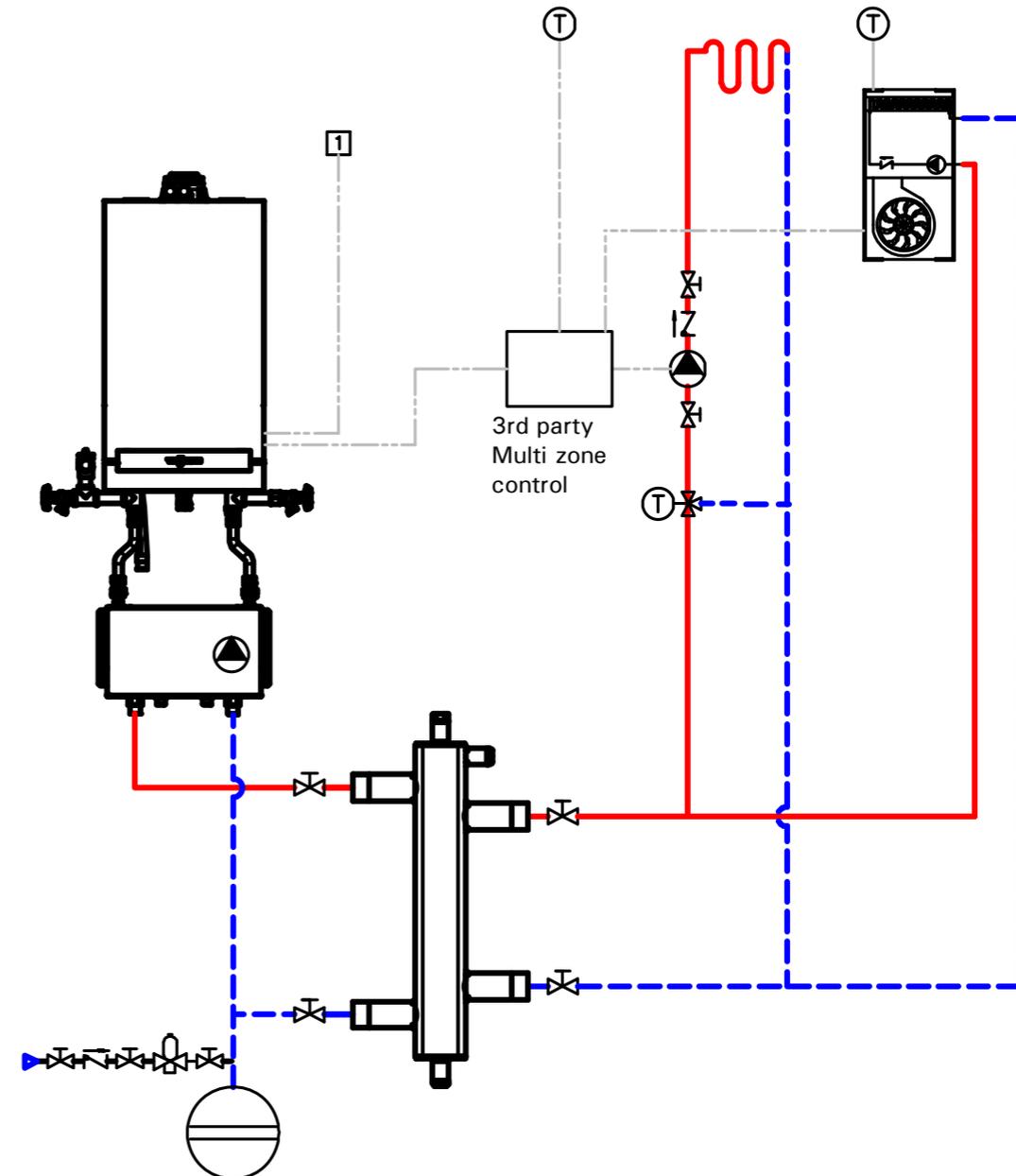
- Low mass boiler.
- One heating zone with primary secondary, DHW tank on primary loop.
- DHW is priority in boiler's control logic.
- Fan coil control logic is not affected by DHW priority but will not get hot water during DHW call.



# Viessmann AriflowPLUS

## System Layouts With Vitodens 100 WB1B C/W CombiPLUS DHW

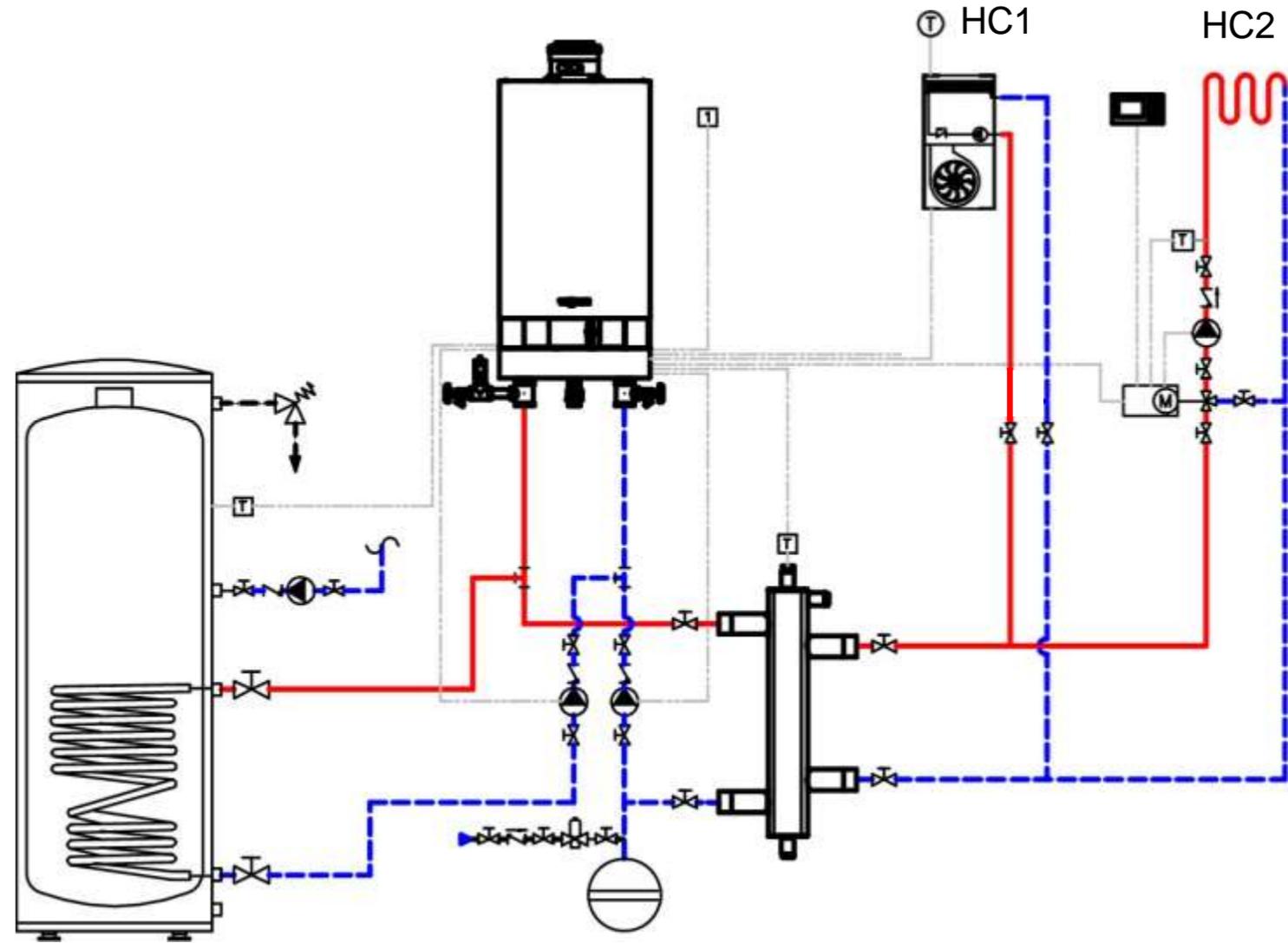
- Low mass boiler.
- Two heating zones with primary secondary and DHW via CombiPLUS.
- Single reset curve for both heating zones.
- 3<sup>rd</sup> party multi-zone control.
- DHW is priority.
- Heating loop pumps still operate, but will not get hot water during DHW call.



# Viessmann AirflowPLUS

## System Layouts With Vitodens 200 B2HB Series

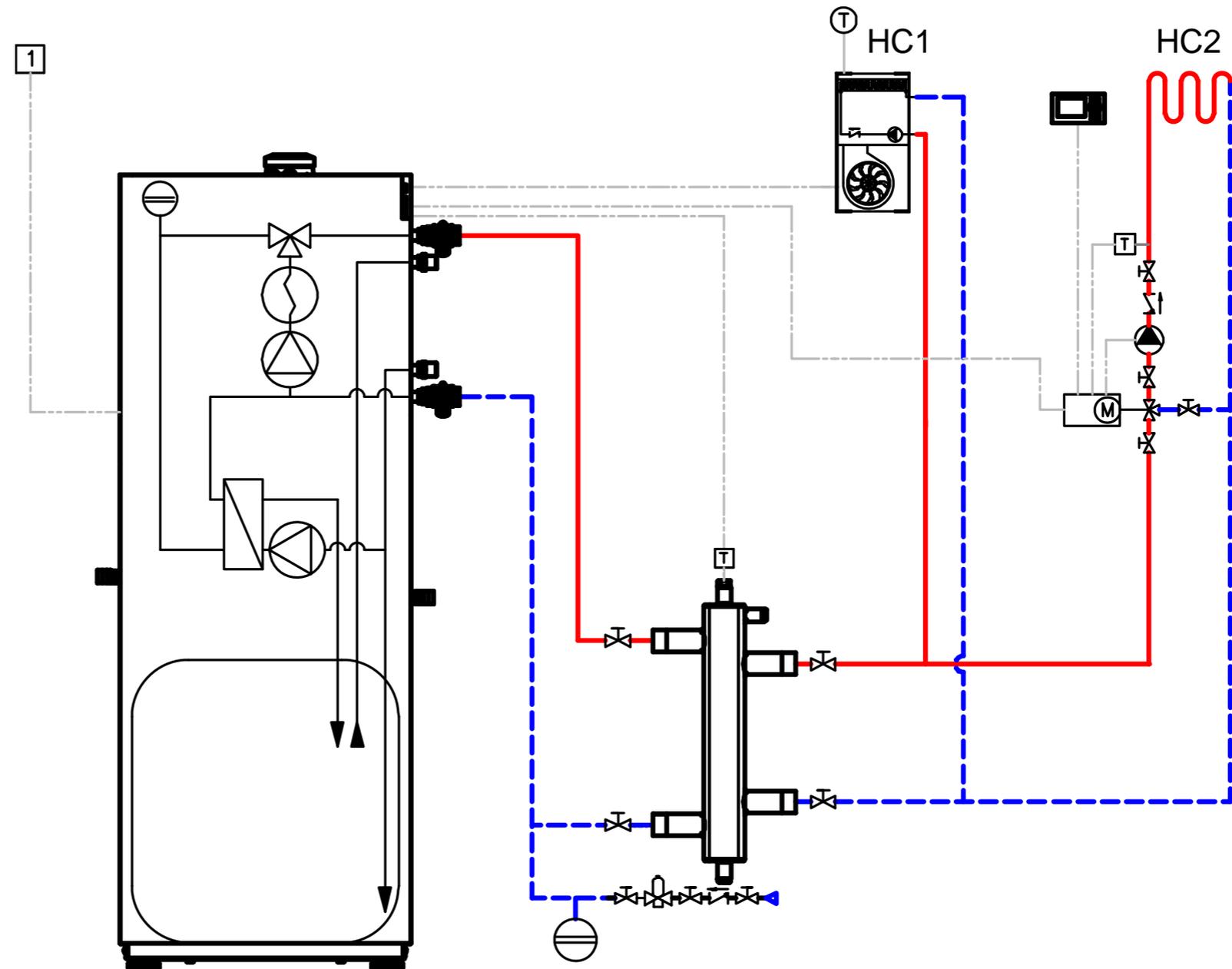
- Low mass boiler.
- Heating zones with primary secondary piping
- **Vitotronic** multi-temperature heating and DHW control system
- Fan coils are operated as external demand input with fixed water temp, **or** follow HC1 OA reset curve.
- Fan coil control logic is not affected by DHW priority but it will not get hot water during DHW



# Viessmann AriflowPLUS

## System Layouts Vitodens 222F B2TB

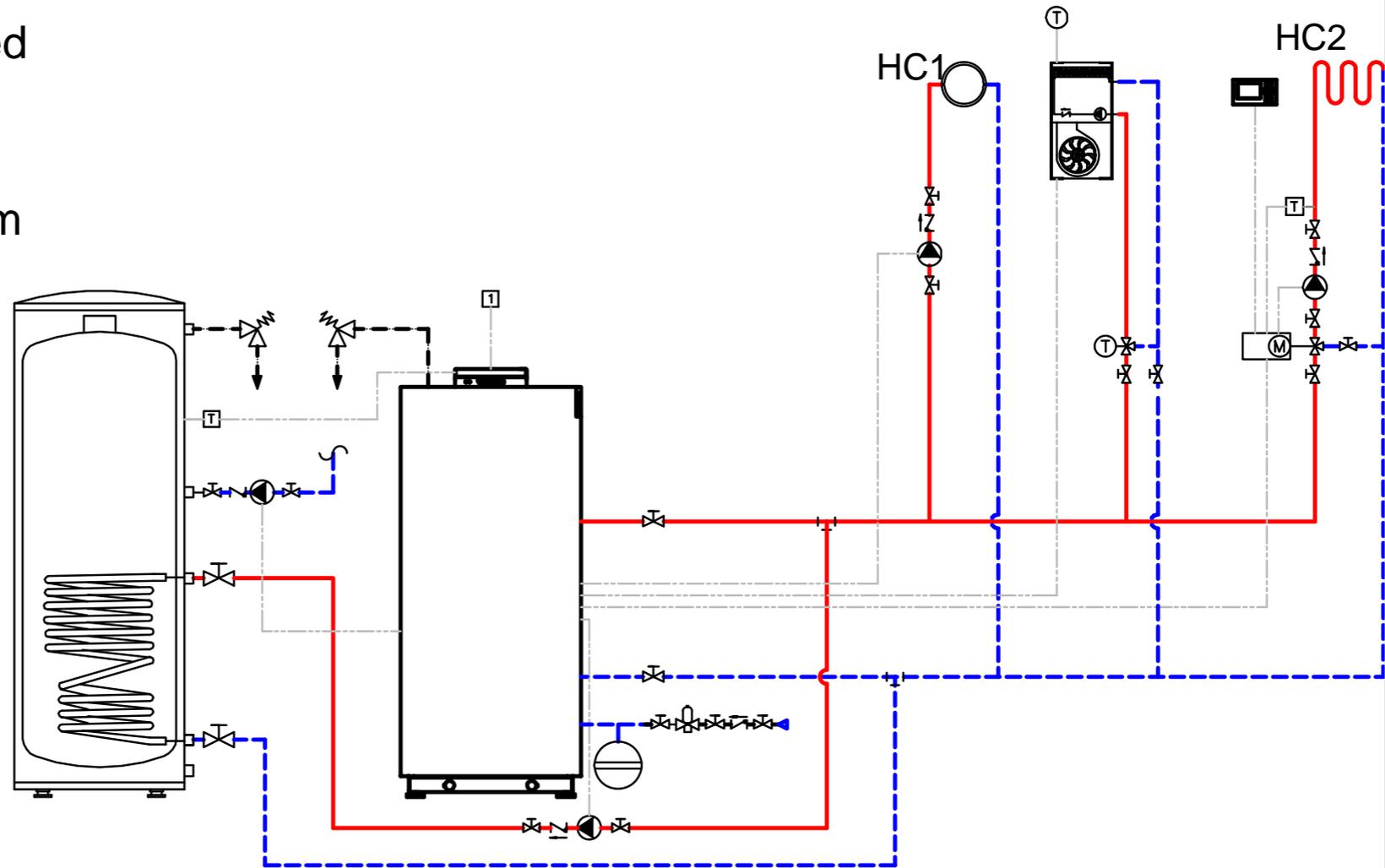
- Combi low mass boiler with integrated DHW tank and diverting valve
- Heating zones with primary secondary piping
- **Vitotronic** multi-temperature heating and DHW control
- Fan coil is external demand **or** operates at HC1 settings.
- Fan coil control logic is not affected by DHW priority but it will not get hot water from the boiler during DHW.



# Viessmann AriflowPLUS

## System Layouts Vitocrossal 300 CU3A

- Hi Mass Boiler.
- Heating zones directly connected to boiler
- **Vitotronic** multi-temperature heating and DHW control system
- Fan coil is external demand **or** operates at HC1 settings.
- Fan coil is not affected by DHW priority settings
- With simultaneous fan coil & DHW call for heat they will share the boiler's capacity.



# Viessmann AirflowPLUS

## Benefits at Glance:

- Comfortable, consistent air delivery
- Whisper quiet
- Dependable components
- Multi-position mounting
- No cutting of panels required
- Easy to handle and install
- Ease of service
- Built-in safety and protection features
- Pre-wired for heating, cooling and air cleaning
- The perfect complement to a Viessmann boiler system



**VIESSMANN**

climate of innovation

**Viessmann Airflow*PLUS***