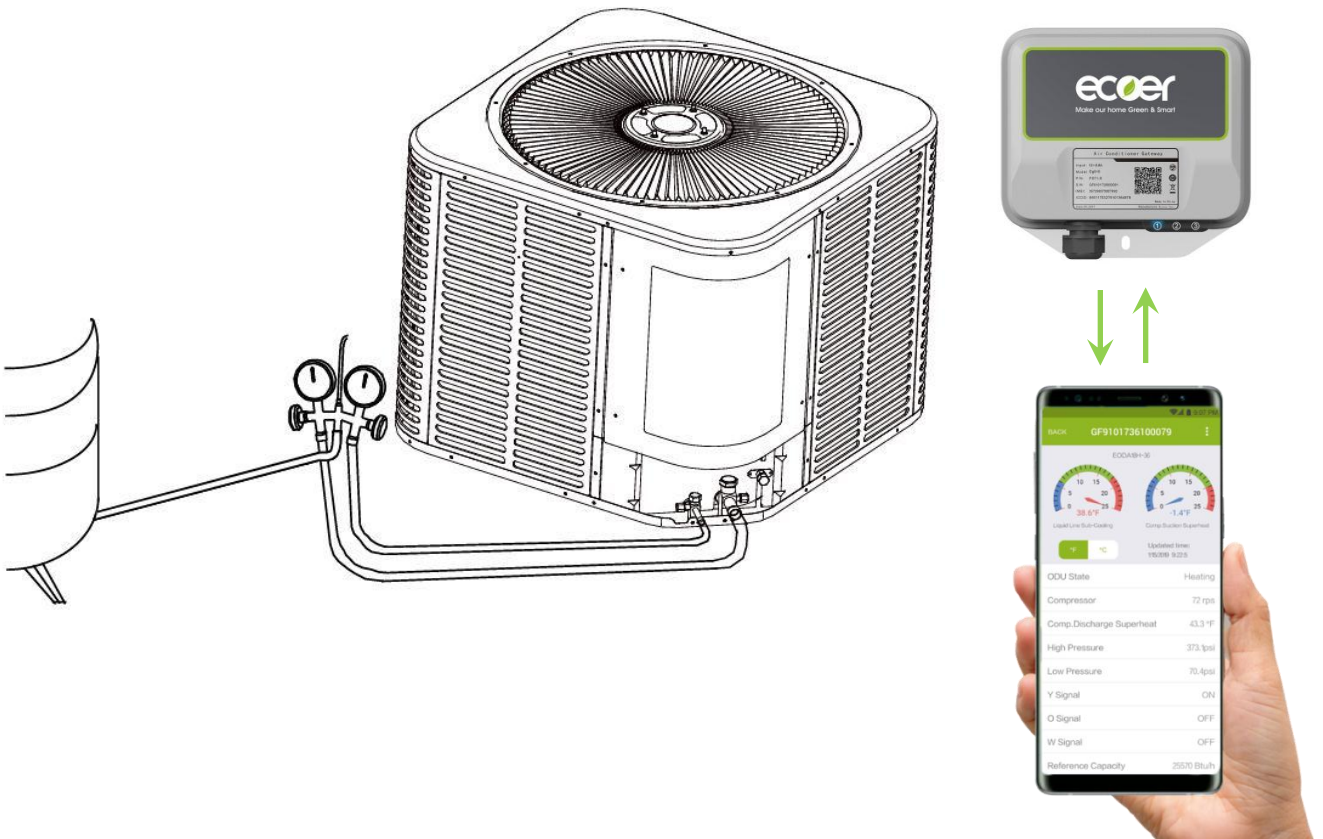




## ESI Unitary System Refrigerant Charge

1. How to set the board to enter AUTO charge mode?
2. Charging by refrigerant coefficient
3. Charging by weigh-in method

Appendix: How to adjust indoor TXV opening?



# 1. How to set the board to enter AUTO charge mode?

Turn on the system, **set 5° F lower than room temperature in cooling mode** from the thermostat to complete AUTO charge mode.

Charging method	Outdoor Ambient Temperature	System operation mode when charging
Auto charge mode by refrigerant coefficient	50° F<T<120° F	Cooling only
Sub-cooling		
Weigh-in	-3° F<T<122° F	-

**Press and hold BS4 for 5 seconds** until SEG1 displays blinking 7, then wait one minute to enter AUTO charge mode.

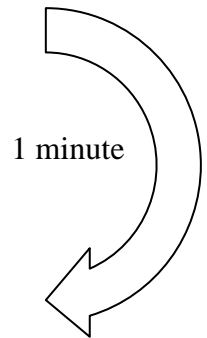
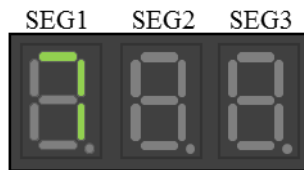
**Note:** Start-up control is enforced to complete prior to activate the AUTO charge mode. It may take 4 to 10 minutes to exit start-up control procedure and fix the compressor frequency (RPS) as the following table.



EODA18H-2436



EODA18H-4860



Model	Capacity <sup>*1</sup>	Compressor frequency (RPS)	
		AUTO charge mode in cooling	Pump down <sup>*2</sup> in heating
EODA18H-2436	2Ton	56	66
EODA18H-2436	3Ton	66	80
EODA18H-4860	4Ton	56	58
EODA18H-4860	5Ton	66	70

**Remarks:**

1. Select the required capacity by dip switch SW1-2.
2. Pump down function is used to transfer refrigerant to indoor coil and connected refrigerant lines.

## 2. Charging by refrigerant coefficient

Apply charging and refrigerant adjustment in **cooling mode**.

For outdoor ambient temperature is below 50° F, use weigh-in charge method only.



### [Refrigerant coefficient]

The refrigerant coefficient is used to evaluate the refrigerant level in the system.



- I. Run the system for 15~20 minutes and check the coefficient number (here short for “X”,  $0 < X < 1$ ) from the LED display. A perfect charging should be displayed 0.5. **But if the LED displays “--” for more than 20 minutes, stop charging and adjust the TXV opening to ensure required compressor suction superheat (SH).**
- II. If  $X > 0.6$ , call back; or  $X < 0.4$ , add more refrigerant. Then wait for 5 minutes to allow system pressure balanced. Check the new coefficient number to make sure you get 0.5. (0.4-0.6 is acceptable if SH is no greater than 20° F.)

**Note:** Maintain a minimum of 5 minutes’ operation after every refrigerant charge or TXV opening adjustment. Technically, gauges are not required in this charging method. **Ecoer App will provide live system pressure and temperature data.** (In order to make data available on your smart phone, register the system in Ecoer Smart Service App before charging. )

### [How to end AUTO charge mode]

- Press **BS4** once
- Automatically exit charging mode in 2 hours running
- Turn off the system from thermostat

Model	2436	4860
Designed sub-cooling degree	10 F (±2 F)	8 F (±2 F)

### 3. Charging by weigh-in method

Weigh-in method can be used for the initial installation, or anytime a system charge needs to be replaced.

Weigh-in method can also be used when power is not available on job site or ambient temperature is improper to use refrigerant coefficient and sub-cooling charge method.

**When use weigh-in method in heating mode, make sure the compressor discharge superheat (DSH=TD-SC-TL-1.8 F) meets the target value.**

**Basically, the liquid line sub-cooling (SC) shall not be over 30 F.** Query live data by BS3 button to calculate DSH or check SC/DSH from ESS Pro App.



Use the **gauge port** connected to compressor suction side to charge the system in heating mode.



Model	Factory charge	Indoor AHU	Charge amount for indoor coil	Charge multiplier for liquid line length <sup>*2</sup>
EODA18H-2436	The data on nameplate	24K	0	0.6 oz/ft
		36K	14oz <sup>*1</sup>	
36K		0		
48K		0		
EODA18H-4860		60K	14oz <sup>*1</sup>	

- Invalid for system with electric heaters or other third-party heaters whose capacity is 1.2 times of heat pump nominal heating capacity.**

For example:

3 Ton system equips with a 15KW indoor electric heater.

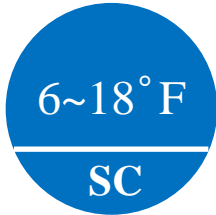
$$15 / (3 * 3.516) = 1.42 > 1.2$$

*Note: 1Ton=3.516KW*

- Only take pipe length over 25ft into consideration.**

## Appendix: How to adjust indoor TXV opening

To keep the best Ecoer Smart Inverter (ESI) systems' performance and reliability, be sure liquid line sub-cooling (SC) and compressor suction superheat (SH) meet our requirements.

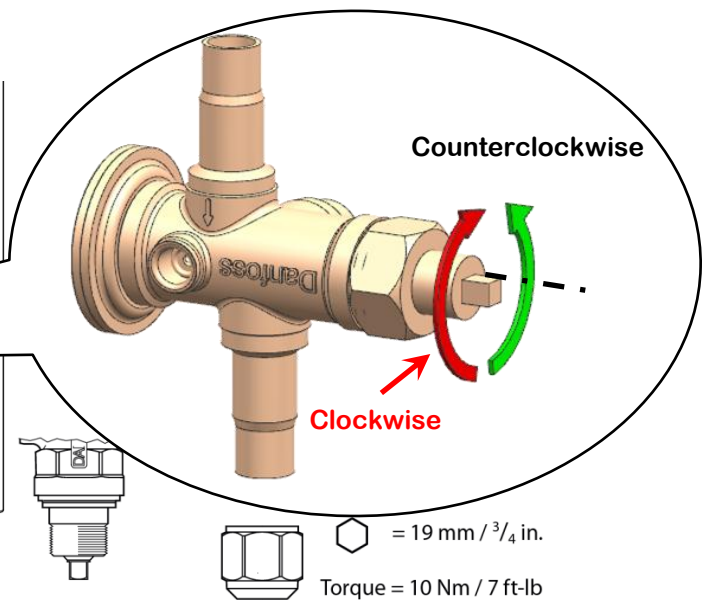
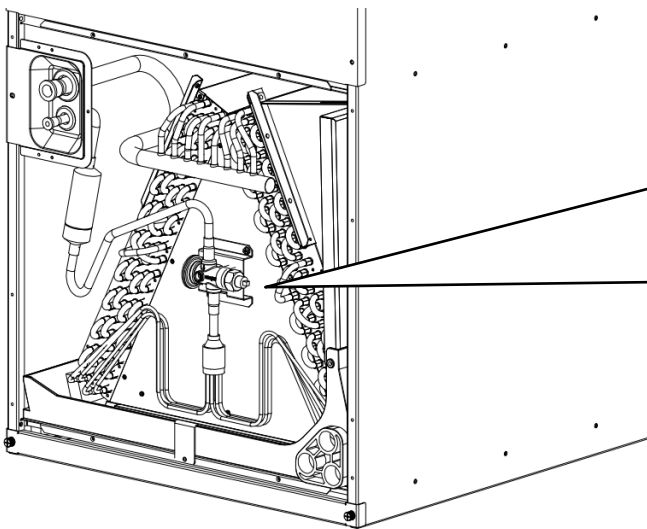


**Target values  
in cooling mode**

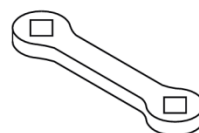


- If the LED displays "--" in AUTO charge mode for more than 20 minutes, stop charging and use a wrench to **clockwise** the TXV to ensure  $SH \geq 7^\circ F$ .
- In case that the cooling performance is abnormal due to improper superheat (i.e.  $SH > 20^\circ F$ ). Adjust the system according to
  1. Activate AUTO charge mode from outdoor condensing unit to fix compressor frequency (RPS) by press BS4 for 5 seconds on PCB. Run the system for 15~20 minutes and check refrigerant coefficient number from LED display or ESS Pro App, **add refrigerant until you get 0.6**.
  2. **Adjust TXV opening to allow more refrigerant flow into indoor coil if SH is still larger than 20°F.** Open the front panel of the indoor unit, then remove the TXV nut and use a wrench to **counterclockwise** the TXV until  $SH \leq 20^\circ F$ .

**NOTE: Maintain a minimum of 5 minutes' operation** after every refrigerant charge or TXV opening adjustment, then check live SC and SH from Ecoer Smart Service Pro Mobile App.



**Remember:**  
Put back the panel after TXV adjusted.



⊕ ⊖  
 $\Delta SH / 1 \text{ turn} / 360^\circ \approx$   
R410A: 0.6°C / 1.1°F

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