

# ESi Decades System Refrigerant Charge

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#### 1. How to enter AUTO charge mode?

Turn on the system, set 5° F lower than indoor temperature in cooling mode at thermostat to complete this AUTO charge mode.

Charging method	Outdoor Ambient Temperature	System operation mode when charging
Auto charge mode by refrigerant coefficient	50° F < T < 115° F	Cooling only
Sub-cooling		
Weigh-in	-3°F < T < 122°F	-

Press and hold BS4 for five (5) seconds until SEG1 displays blinking 7, Then wait for 1 minute to enter AUTO charge mode.

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



EODA18H-2436



EODA18H-4860



	Compressor speed (RPS)			
Capacity <sup>*1</sup>	AUTO charge mode OR Pump Down <sup>*2</sup> in cooling	Pump Down <sup>*2</sup> in heating		
2Ton	56	66		
3Ton	66	80		
4Ton	56	58		
5Ton	66	70		

#### Remarks:

- 1. Select the required capacity by dip the 2<sup>nd</sup> switch of SW1 on main control board (MCB).
- 2. Show low pressure on 7 segment display (LED).

### 2. Charging by refrigerant coefficient

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

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



**Refrigerant coefficient** is used to evaluate the refrigerant level in the ecoer systems.

	Undercharged		Proper		Overcharged	
0		0.4		0.6		1.0

- Run the system for 15 to 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. 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, remove som refrigerant; 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 to 0.6 is acceptable if 7° F ≤ SH ≤ 20° F.)</p>

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

[How to end AUTO charge mode]		Model	Designed sub-cooling degree (SC)
•	Press BS4 once	2Ton	8°F (±2°F)
•	Automatically exit in 2 hours Turn off the system at thermostat	3Ton	10°F (±2°F)
•		4Ton-5Ton	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.

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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. Check it in the app for each AC/HP Details > Diagnosis >Refrigerant Level Judgement in Heating on ESS Pro App.

Query live data by BS3 button to calculate DSH or check SC and DSH via ESS Pro App.

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

Model	Factory charge	Air Handler	Charge amount for air handler	Charge multiplier for liquid line length *2
2436	See nameplate	24K	0	
		36K	14oz *1	
4860		36K	0	0.6 oz/ft
		48K	<b>11</b> oz *1	
		60K	25 oz *1	

- Every condensing unit is factory charged for the smallest rated indoor coil combinations. An additional amount of refrigerant adjustment is required for a large indoor coil. It's invalid for system with electric heat or other third-party heat source whose capacity is 1.2 times of heat pump nominal capacity.
- 2. The charging guideline is calculated in 25 ft of standard size line set. A refrigerant adjustment may be necessary if the line set length is over the per-charged 25 ft (adding 0.6oz/ft on 3/8 liquid line respectively).



 $25 \sim 50$ 

DSH

## TIPS: How to adjust indoor TXV opening

To keep the best performance and reliability of Ecoer Smart Inverter (ESI) system, be sure liquid line sub-cooling (SC) and compressor suction superheat (SSH) 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 SSH  $\ge$  7° F.

•In case that the cooling performance is abnormal due to improper superheat (i.e. SH >20° F). Proceed as follows to complete the field adjustment.

- 1. Activate AUTO charge mode from outdoor condensing unit to fix compressor frequency (RPS) by press BS4 for 5 seconds on PCB, **add refrigerant until the LED of outdoor LED displays 0.6.**
- Open the front panel of the indoor unit, then use a wrench to counterclockwise the TXV until SH ≤ 20° F. This will make more refrigerant flow into indoor coil for better cooling performance.

**NOTE:** <u>Maintain a minimum operation of 15 minutes</u> after every refrigerant amount or TXV opening adjustment(the TXV adjustment should be done at ¼ turn each time), then check live SC and SH on Ecoer Smart Service Pro App.



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