ecoer

Making your home Green & Smart

Up to 20 SEER
Inverter Ducted Split System

Quick Start-up Guide

Ecoer Smart Inverter (ESI) Ducted Split System and IoT Device

The Ecoer smart inverter (ESI) heat pump is one of the industry's most innovative and efficient systems, with ratings up to 20 SEER and 10 HSPF per AHRI standard 210/240-2017. With Ecoer's patented technology, the ESI heat pump automatically adjusts itself while maintaining constant and consistent speeds to avoid temperature swings.

Compared with fixed speed systems, Ecoer inverters have a much wider capacity range which helps to achieve faster heating and cooling. With more than 30 variable stage settings, Ecoer inverters provide more accurate and efficient temperature control while using less energy.

With the IoT device, Ecoer provides an easy way for dealers to help their customers complete registration via Ecoer Smart Service Pro App in just minutes. Then dealers can monitor the units' live data and perform remote field settings for the condensing unit. Working alongside the Ecoer Service Team, the dealer can guarantee installation and servicing quality.

Features

- Up to 20.0 SEER and 10.0 HSPF
- Inverter Compressor (25%-110% speed)
- 24/7 monitoring and diagnostic service with IoT technology
- 9 Speed ECM outdoor unit blower
- 2-Stage ECM indoor unit blower control for enhanced dehumidification
- Easy to install – compatible with most traditional 24VAC thermostats
- AUTO charge mode to make accurate refrigerant coefficient for the system
- Back-up running for up to 2 sensors
- 10-year Residential Limited Parts Warranty

Outdoor Unit Model	Part Number	Description
EG910L	G941000001	IoT Gateway
EODA18H-2436	F522900000	36 kBTU/hr (3Ton), Condensing Unit
EODA18H-4860	F523100000	60 kBTU/hr (5Ton), Condensing Unit
EAHATN-24	F447700000	24 kBTU/hr (2 Ton), Air Handler Unit
EAHATN-36	F447800000	36 kBTU/hr (3 Ton), Air Handler Unit
EAHATN-48	F448000000	48 kBTU/hr (4 Ton), Air Handler Unit
EAHATN-60	F448000000	60 kBTU/hr (5 Ton), Air Handler Unit

Outdoor Unit	Indoor Air Handlers	Cooling Performance			Heating Performance			CFM
		Total	EER (2)	SEER (1)	High	HSPF (3)	Low	
EODA18H-2436	EAHATN-24	23400	13.0	20.0	24000	10.0	15200	800
EODA18H-2436	EAHATN-36	34200	11.2	18.0	36000	10.0	24000	1130
EODA18H-4860	EAHATN-36	36000	13.0	20.0	36000	10.0	24000	1130
EODA18H-4860	EAHATN-48	45000	12.0	17.0	47000	9.5	32000	1500
EODA18H-4860	EAHATN-60	54000	10.0	17.0	54000	9.5	35600	1590

Outdoor Unit	Cased Coils	Cooling Performance			Heating Performance			CFM
		Total	EER (2)	SEER (1)	High	HSPF (3)	Low	
EODA18H-2436	GNC2430APT	22800	11.0	16.0	22800	9.5	15000	750
EODA18H-2436	GNC2430BPT	22800	11.0	16.0	22800	9.5	15000	780
EODA18H-2436	GNC3036BPT	31000	10.0	16.0	33000	9.5	21000	1000
EODA18H-4860	GNC4248CPT	41000	10.5	16.0	43000	9.5	30000	1280
EODA18H-4860	GNC4860CPT	51000	10.0	16.0	51000	9.5	30600	1280
EODA18H-4860	GNC4860DPT	51000	10.0	16.0	51000	9.5	30600	1500

Outdoor Unit	Cased Coils	Paring Furnaces	Cooling Performance			Heating Performance			CFM
			Total	EER (2)	SEER (1)	High	HSPF (3)	Low	
EODA18H-2436	GNC2430APT	MGH96M080B3*	23200	12.5	17.0	23200	9.5	15600	800/580
EODA18H-2436	GNC2430BPT	MGH96M060B3*	23200	12.5	17.0	23200	9.5	15600	860/680
EODA18H-2436	GNC2430BPT	MGH96M080B3*	23200	12.5	17.0	23200	9.5	15600	840/630
EODA18H-2436	GNC3036BPT	MGH96M060B3*	31000	10.5	16.5	33000	9.5	22000	1100/850
EODA18H-2436	GNC3036BPT	MGH96M080B3*	31000	10.5	16.5	33000	9.5	22000	1070/850
EODA18H-4860	GNC3036BTP	MGH96M060B3*	33200	12.5	18.0	34000	9.5	23000	1100/850
EODA18H-4860	GNC3036BTP	MGH96M080B3*	33200	12.5	18.0	34000	9.5	23000	1070/850
EODA18H-4860	GNC4248CPT	MGH96M100C5*	44000	11.0	17.0	45000	9.5	30000	1450/1150
EODA18H-4860	GNC4860CPT	MGH96M100C5*	51000	10.0	16.5	52000	9.5	35000	1450/1150
EODA18H-4860	GNC4860DPT	MGH96M120D5*	51000	10.0	16.5	52000	9.5	35000	1500/1200

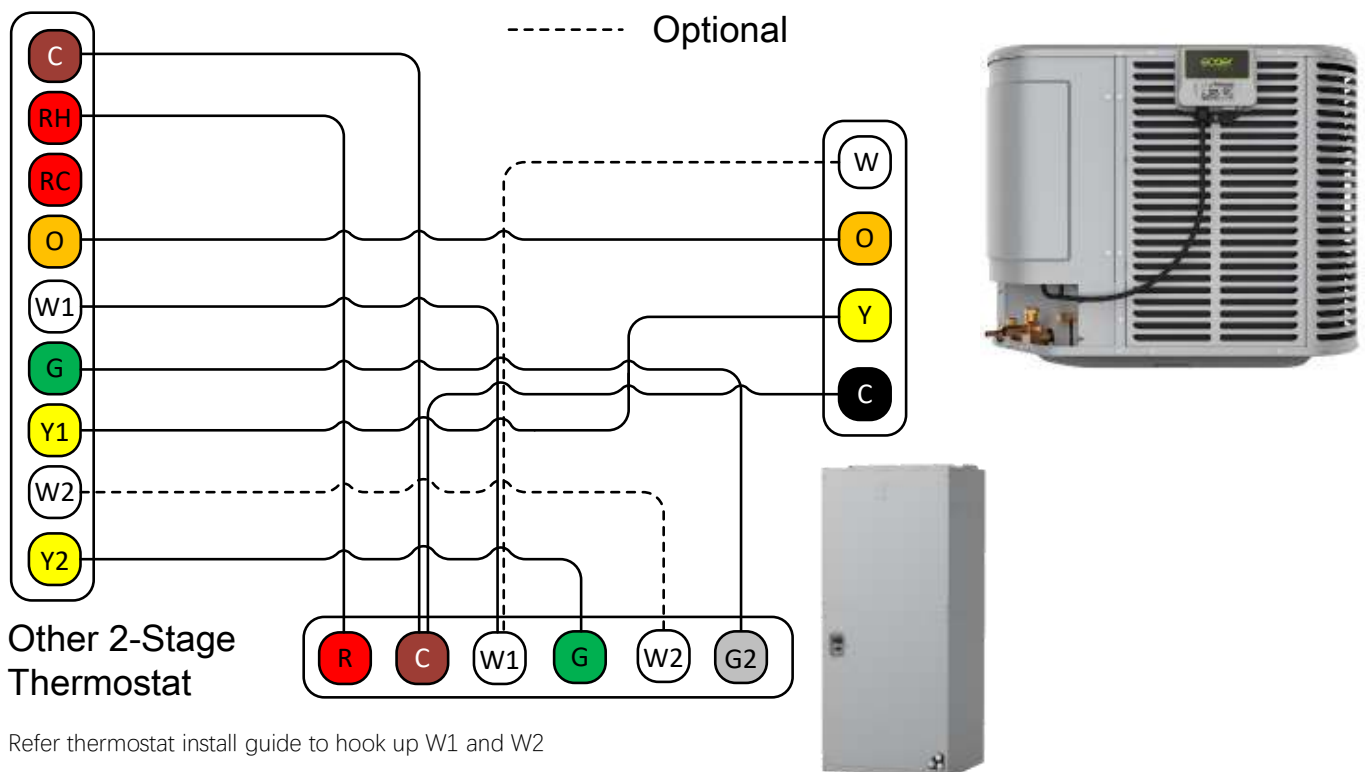* Certified per AHRI 210/240-2017
(1) Seasonal Energy Efficiency Ratio; (2) Energy Efficiency Ratio @ Afull; (3) Heating Seasonal Performance Factor
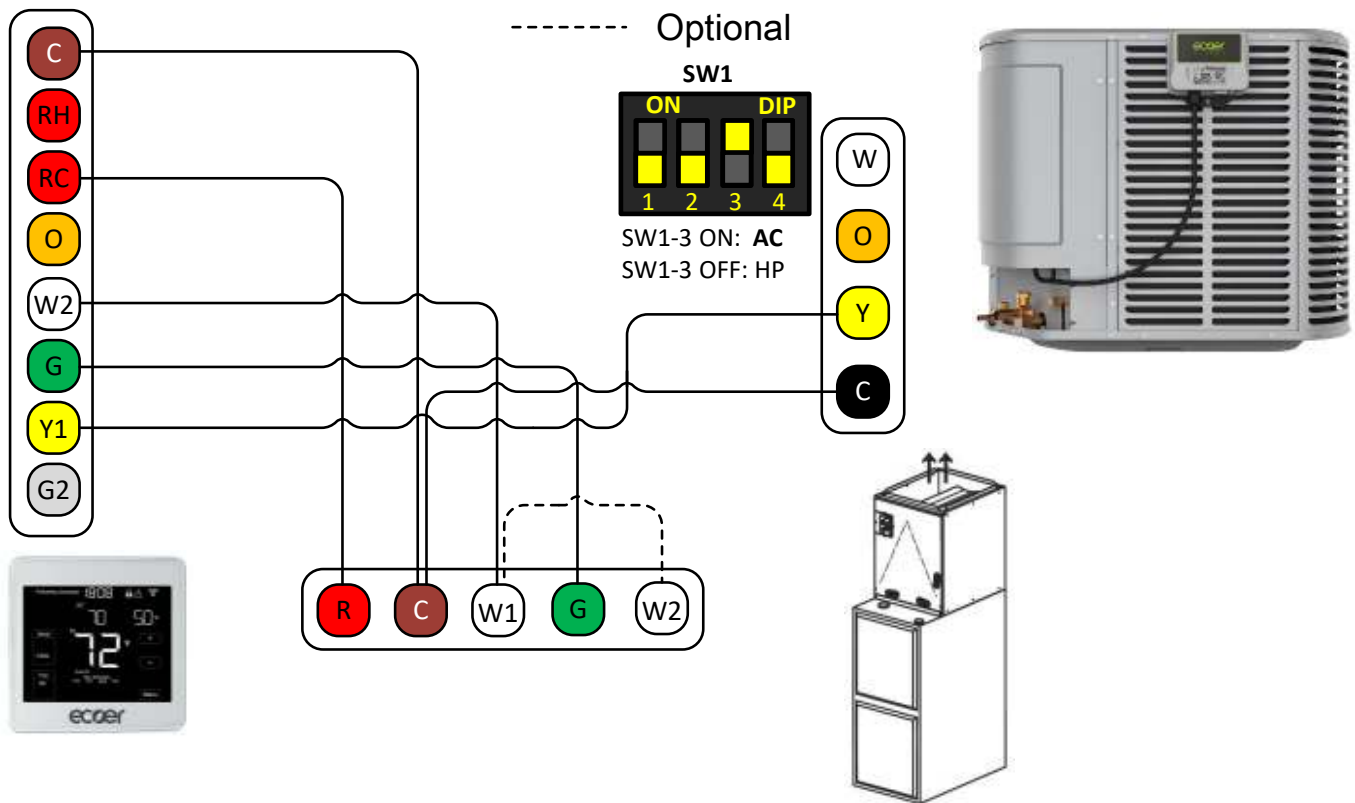
Wiring Diagrams

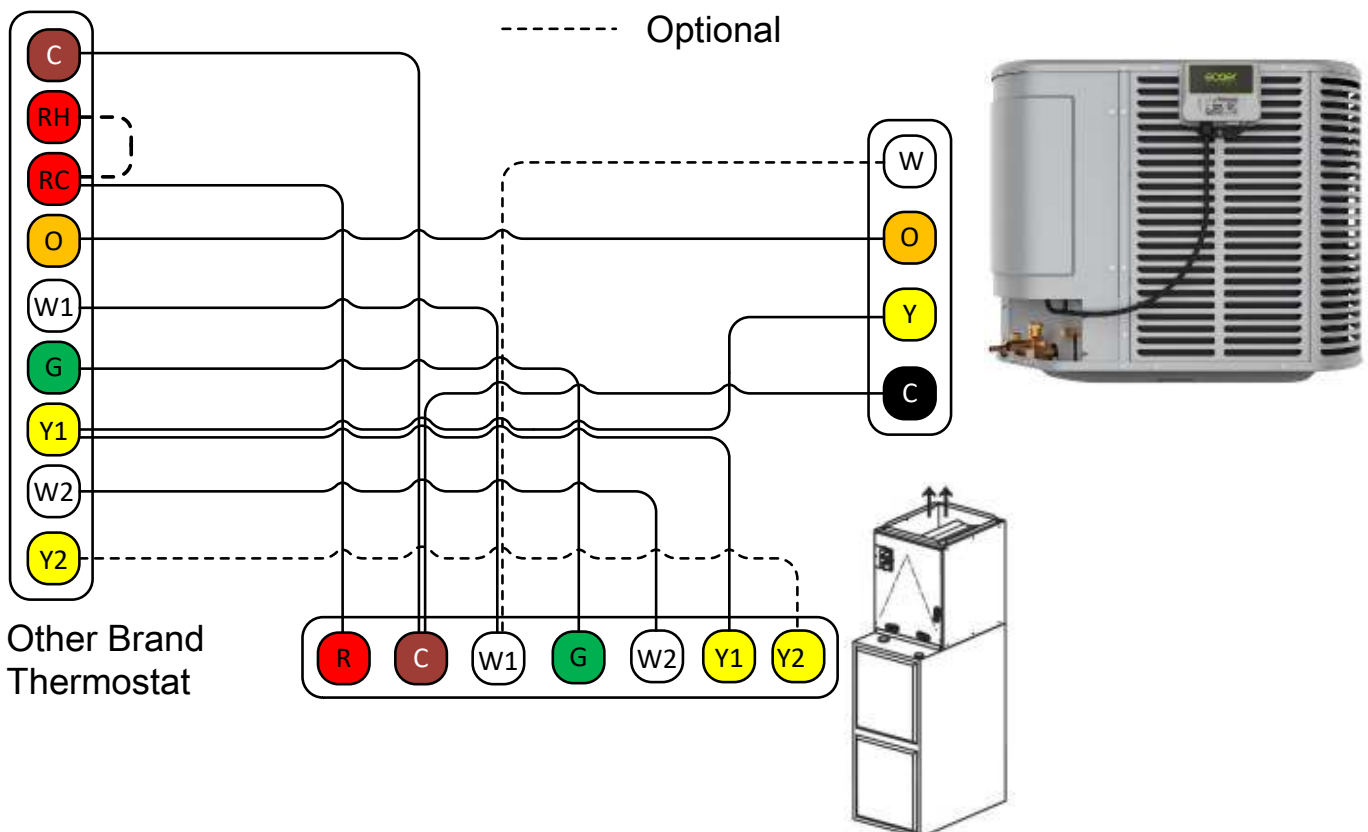## ESI with Electric Heat Back-up + EST01 (Type 9)
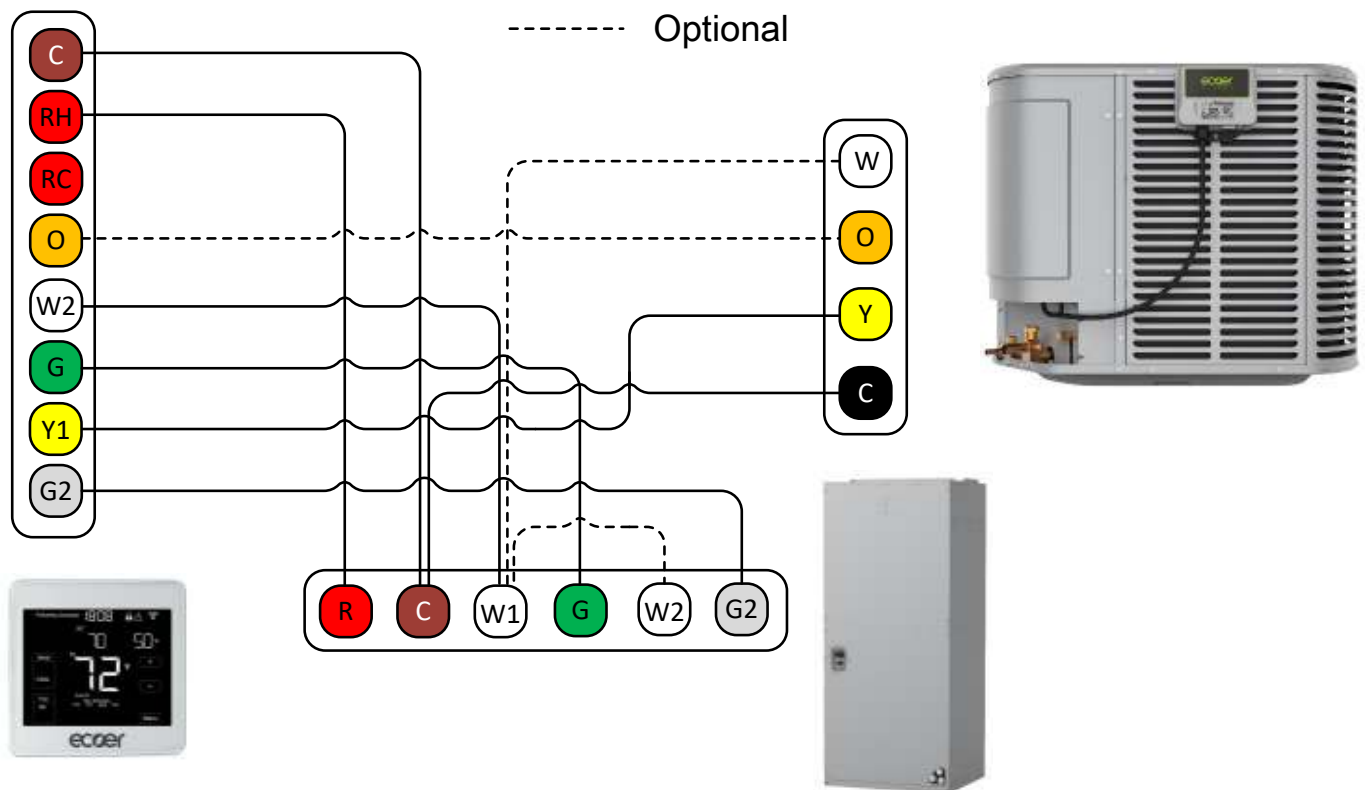
ESI with Electric Heat Back-up + Other Brand Thermostat

Other 2-Stage Thermostat

Refer thermostat install guide to hook up W1 and W2

ESI AC + Cased Coil + GNVF96 + EST01 (Type 2)

Optional

SW1

ON   DIP

1 2 3 4

SW1-3 ON: **AC**
SW1-3 OFF: HP

Thermostat terminals: C, RH, RC, O, W2, G, Y1, G2

Air handler terminals: R, C, W1, G, W2

Condenser terminals: W, O, Y, C

ESI + Cased Coil + GNVF96 + Other Brand Thermostat

Optional

Other Brand Thermostat

Thermostat terminals: C, RH, RC, O, W1, G, Y1, W2, Y2

Air handler terminals: R, C, W1, G, W2, Y1, Y2

Condenser terminals: W, O, Y, C

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Line Sets and Charging

The Ecoer EODA condensing unit is factory pre-charged for 25ft of standard size line set and for the smallest rated indoor coil combinations. Up to 100ft of line set is allowed with a maximum of 50ft lift (see below).

Capacity Model	Liquid Line	Suction Line	Total Equivalent Length (FT)			
			25	50	75	100
	Dimensions in inches		Maximum Elevation Difference (FT)			
2Ton	3/8 Std.	3/4 Std.	25	50	45	40
	1/4 Opt.	5/8 Opt.	25	50	40	30
3Ton	3/8 Std.	3/4 Std.	25	50	50	50
	1/4 Opt.	5/8 Opt.	25	50	45	40
4Ton	3/8	7/8 Std.	25	50	50	40
		3/4 Opt.	25	50	50	40
5Ton	3/8	7/8 Std.	25	50	50	40
		3/4 Opt.	25	50	50	40
		1-1/8 Opt.	25	40	N/A	N/A

* Standard line set is recommended, N/A: Not allowed

Refrigerant charge is suggested to be done by the following methods:

(1) Charge by Weigh-In

Can be used for the initial installation, or anytime a system charge needs to be replaced. This method can be used when power is not available on the job site or the ambient temperature is improper to use refrigerant coefficient and sub-cooling. A refrigerant adjustment may be necessary if the line set length is over or under the pre-charged 25ft (adding or removing 0.6 oz/ft on 3/8 liquid line respectively). An additional amount of refrigerant adjustment may be required for a large indoor coil.

(2) Charge by Refrigerant Coefficient

Ambient temperature must be between 50ºF and 120ºF and indoor temperature must be kept between 70ºF and 80ºF.

After starting the system in cooling mode, **Press and hold BS4 button for five seconds** until SEG1 displays **blinking 7**, and operate the system for a minimum of 20 minutes.

Check refrigerant coefficient number (here short for "X", 0<X<1) on the display. If X>0.6, remove refrigerant; or X<0.4, add more refrigerant. Then wait for 5 minutes to allow pressure balanced. Check the new coefficient number to make sure you get 0.5. Basically, 0.4 to 0.6 is acceptable if SH≤20 ℉.

When the LED displays "--" for more than 20 minutes, adjust the TXV opening to ensure required compressor suction superheat (SH>7 ℉).

EODA18H-2436   **EODA18H-4860**

Undercharged	Proper	Overcharged
0 0.4	0.6	1.0

Exit Charge Mode: **Press BS4 once** or **After 2 hours running** or **Turn off the system at thermostat**

Control Board Settings

In most scenarios, it is recommended to keep all outdoor unit board dip switch positions in their manufacturer default positions. There are some specific scenarios when it makes sense to change dip switch settings.
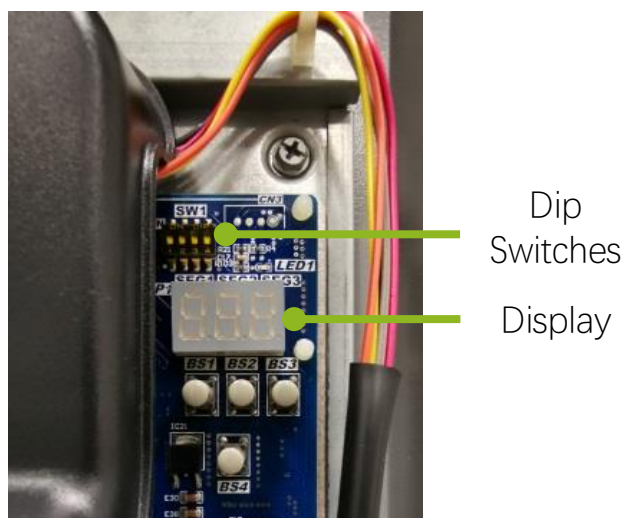
Dip Switch SW1

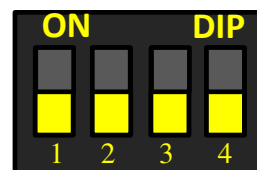SW1-1 sets the Snow Sensor Control mode.

SW1-2 selects Tonnage of the condensing unit.

SW1-3 sets Air Conditioner or Heat Pump

SW1-4 is suggested to remain in the factory default position (OFF). IoT command responses such as remote field setting, troubleshooting, software programming etc. only work when this switch remains in the OFF position.


Dip Switches

Display

SW1

Use minor straight screwdriver to dial.

Must power off the unit for at least two (2) minute to activate your dial of switches.

SW1 Dip switch		Description	
NO .	Setting item	Status	Content
1	Snow Sensor Control *a	ON	Disable
		OFF (factory)	Enable
2	Capacity selection	ON	2 or 4 Ton
		OFF (factory)	3 or 5 Ton
3	AC only / Heat pump	ON	AC only
		OFF (factory)	Heat pump
4	Command response for IoT	ON	No
		OFF (factory)	Yes

a. ver203 or above support this function.

SEG1   SEG2   SEG3
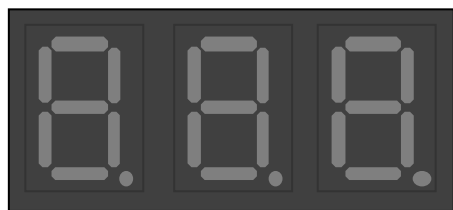
Display

SEG1: Normally blank

SEG1	Description
0	Software is updating via IoT device
1	High pressure sensor (HP) backup running
2	Low pressure sensor (LP) backup running
3	Compressor discharge temperature sensor (TD) backup running
4	IPM module temperature sensor (TF) backup running
5	Ambient temperature sensor (TA) backup running
6	Defrost sensor (TH) backup running
7	Compressor suction temperature sensor (TS) backup running
8	Liquid line temperature sensor (TL) backup running
9	IoT command response

SEG2: Normally blank

SEG2	Description
0	Running under high pressure limit
1	Running under low pressure limit
2	Running under discharge temperature limit
3	Running under IPM module temperature limit
4	Running under compressor current limit

SEG3: Normally shows operation mode

SEG3	Description
0	Stop (No Y signal)
1	Ready to start-up
2	Cooling
3	Heating
4	Oil return
5	Defrost
6	Manual defrost
7	AUTO charge mode in cooling
8	Pump down in heating

SEG2 and SEG3: Show following codes when system is in fault

| Code	Description
P1	High pressure protection
E1	System locks up when P1 has occurred six times in 3 hrs.
P2	Low pressure protection in cooling mode
E2	System locks up when P2 has occurred six times in 3 hrs
P3	Compressor discharge temperature (TD) protection
E3	System locks up when P3 has occurred six times in 3 hrs
P4	Compressor discharge temperature (TD) sensor error
P5	Inverter module temperature (TF) protection
E5	System locks up when P5 has occurred six times in 3 hrs
P6	Compressor over-current protection
E6	System locks up when P6 has occurred six times in 3 hrs
P7	Liquid slugging protection
E7	System locks up when P7 has occurred three times in 5 hrs
P8	Low compressor voltage protection
E8	System locks up when P8 has occurred three times in 1 hr
P9	Incorrect compressor line sequence
PA	DC fan motor over-load protection
F1	Ambient temperature (TA) sensor fault
F2	Compressor suction temperature (TS) sensor fault
F3	Liquid line temperature (TL) sensor fault
F4	Defrost temperature (TH) sensor fault
F5	Compressor discharge temperature (TD) sensor fault
F6	Inverter module temperature (TF) sensor fault
F7	High pressure (HP) sensor fault
F8	Low pressure (LP) sensor fault
E4	Communication fault between main chip and INV drive chip
H1	Ambient temperature limit operation in cooling
H2	Ambient temperature limit operation in heating
H3	Abnormal switch alarm for reversing valve
H4	Defrost temperature (TH) sensor error
H5	EEPROM fault
H6	Low voltage alarm
HF	Abnormal function control
C0-CC	Compressor INV module protection
E0	System locks up when C0~CA has occurred three times in 1 hr

Troubleshoot based on service manual, or via Ecoer Smart Service Pro App.

BS1   **BS2**   **BS3**

BS4
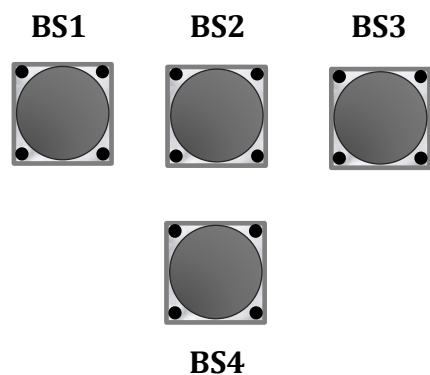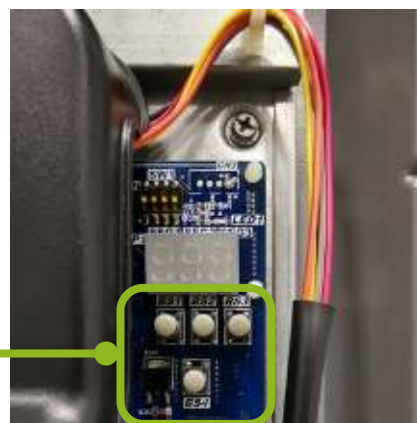
Buttons

BS1 Button – "Menu" or "Back" button

<u>Shortly press "BS1"</u> to query settings

n00: Mode choice (Energy Saving, Dry, High Capacity)
n01: Prohibited heat pump running temperature
n02: Turn ON/OFF W output
n03: W output settings
n04: Defrost Mode (Heavy/light snow, standard)
n05: Silent Mode (level 1 or 2, night silent level 1 or 2)
n06: Night Silent Start Hour
n07: Night Silent End Hour
n08: Manual Defrost

<u>Press and hold "BS1" for 5 seconds</u> to set above functions (n01 to n08). Refer to install or service manual for details. You can change these settings besides n08 via Ecoer Smart Service Pro App.

BS2 Button – "UP" button

BS3 Button – "Spot check" and "Confirm" button

1. After first pressing on the "BS3" button, it will display the sequence, and after 1 second it will display the value of the parameter.
2. After 20 seconds on same parameter, display will revert back to normal status.

Key parameters can be remotely monitored via Ecoer Smart Service Pro App.

BS4 Button

<u>Press and hold "BS4" for 5 seconds</u> to enter AUTO charge mode by coefficient number in cooling or pump down in heating.

No.	Spot check content via BS3
Default	Refer to default display instructions
01-	Outdoor unit type and capacity
02-	Liquid line sub-cooling
03-	Compressor suction superheat
04-	Compressor speed
05-	Electronic expansion valve opening
06-	Step of fan
07-	Low pressure (LP sensor)
08-	High pressure (HP sensor)
09-	Outdoor ambient temp. (TA)
10-	Compressor suction temp. (TS)
11-	Compressor discharge temp. (TD)
12-	Defrost sensor temp. (TH)
13-	Liquid line temp. (TL)
14-	Inverter module temp. (TF)
15-	Target evaporating temp. (Tes)
16-	Current evaporating temp. (Te)
17-	Target condensing temp. (Tcs)
18-	Current condensing temp. (Tc)
19-	Compressor DC current
20-	Undercharged refrigerant signal
21-	Main software version
22-	Inverter software version
23-	Current fault
24-	The last fault
25-	Fault before the last fault

IoT Connection and Registration

Hang the IoT device on the condensing unit, tighten it with the included screw and belts. Unscrew the cable locker cap and fasten the waterproof joint based on the IoT install guide.

Plug the male blue terminal of IoT device into CN11 (IoT) connector on main control board of condensing unit. **Power ON the condensing unit and check if the IoT device is working properly.** The normal working state of IoT device should be the blue LED (No.1) is blinking with other LEDs light OFF.

No.	Color	Indications	Description	
1	Blue	IoT Device status	**Always OFF** / **Always ON** / Blinking	Power off / Booting / Running
2	Red	LTE Status	**Always OFF** / **Always ON** / Blinking	LTE connected / Booting / LTE disconnected
3	Green	Connection to PCB	**Always OFF** / **Always ON** / Blinking	Local link connected / Booting / Local link disconnected

LEDs

Get the Ecoer Smart Service Pro App

Download or update the Ecoer Smart Service Pro App free on the App Store or Google Play.

Steps of warranty registration

1. Create an ecoer account
2. Add Unit (Register a new AC/HP)

   • Sign an agreement with homeowner
   • Scan/Input serial numbers to submit

Notes

About Ecoer

Ecoer Inc. was established in 2016. We are a US company focusing on offering the best ducted Residential Air Conditioner and Heat Pump systems using Inverter and "Smart" IoT Technology.

Ecoer has grown to multiple locations in 4 countries: the United States, Cancada, Japan and China. The United States houses Ecoer's headquarters, technical support center and distribution centers. Ecoer's software development facility is in Japan, and manufacturing, systems engineering and quality control are based in China. Ecoer both designs it's equipment and owns all rights to its technology.

Ecoer's goal is to simplify the inverter install process and connect the dealer to the homeowner and their system. By doing this, we hope to see more inverters used in the US residential market, making it easier and faster to install for the dealer and help with quicker and more accurate response times for the homeowner.

Ecoer's Mission Statement is:
Make your home Green and Smart".

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