



Installation Technical Notes

Cummins **Onan**

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Energy Command 20
Energy Command 30

ENERGY COMMAND INSTALATION TECHNICAL NOTES

This document is to provide technical information for selected topics and solutions for connecting the different air conditioning products. Further questions or clarification can be made by contacting Onan Service Department or Onan Application Engineering.

Topics addressed:

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1. Energy Command Compatibility

Energy Command 20
Energy Command 30

Part Number: #018-02020
Part Number: #018-02030

QUIET DIESELS

MODEL	KW	PRODUCT	EC-20/30 GEN TYPE	Service IN Hours	Connection Figure	Onan IN Cable No.
HDCAx	10/12	Quiet Diesel	QD 10/12	250	5	044-00076
HDKCx	10/12	Quiet Diesel	QD 10/12	250	5	044-00076
HDKAx	6/8	Quiet Diesel	QD 7.5/8	150	5	044-00076
HDKBx	5.5	Quiet Diesel	QD 5.5	150	5	044-00076
HDKBx	5.0	Quiet Diesel	QD 5.5	150	5	044-00076

GASOLINE/LIQUID PETROLEUM (LP) (with Status Light)

MODEL	KW	PRODUCT	EC-20/30 GEN TYPE	Service IN Hours	Connection Figure	Onan IN Cable No.
HGJAx	7.0	Marquis Platinum	GAS/LP	150	6	044-00075
HGJAx	5.5	Marquis Gold	GAS/LP	150	6	044-00075
KY	4.0/3.6	MicroQuiet	GAS/LP	150	6	044-00075
KYD	4.0/3.6	CampPower	GAS/LP	150	6	044-00075

GASOLINE/LIQUID PETROLEUM (LP) (without Status Light)

Note 1: This genset model does not support diagnostic fault codes.

MODEL	KW	PRODUCT	EC-20/30 GEN TYPE	Service IN Hours	Connection Figure	Onan IN Cable No.
KVD	2.8/2.5	CampPower (Note 1)	GAS/LP	150	7	044-00074
KV	2.8/2.5	MicroLite (Note 1)	GAS/LP	150	7	044-00074

25 foot cables available through Onan IN. Cables have mating connectors for EC20/30 and genset, flying leads for other connections.

Also available is an, without the genset connector that mates to the EC20/30.

Other ONAN IN Part Numbers:

EC mating connector
Pins
18" pigtail

Part Number: #018-01052
Part Number #018-01074
Part Number #044-00077 (connector for EC20/30)

2. Battery Estimated State-of-Charge (ESOC) E ■ ■ ■ F

The following table is a rough estimate of the way the Estimated State-Of-Charge operates (ESOC). The ESOC uses different states and voltage averages to determine the charge level of the battery. Once the EC20 or EC30 is in a state the conditions of the neighboring states must be met before a change in state occurs.

STATE	TO DECREMENT Batt Volt Averages		TO INCREMENT Battery Voltage Averages		COMMENTS (Auto Genset Control)
	1 minute	1 hour	1 minute	1 hour	
FULL E ■ ■ ■ F			1) Stable for 2 minutes 2) 1 minute average <= 1 hour average	>= 13.1 (>=26.2)	AUTO/QUIET ON: Full Batt Stop Requires the voltage 1) 1 min average stable for 2 minutes 2) 1 minute average < 1 hour average 3) 1 hour average >= 13.1
MED E ■ ■ F	<12.5 (<25.0)	<12.5 (<25.0)	Has been > 12.5 (>25.0)	>13.4 (>26.8)	QUIET ON: If in Quiet ON Start for Quiet Time Battery Pre-fill.
LOW E ■ F	<11.8 (<23.6)	<12.1 (<22.2)	> 12.5 (> 25.0)		AUTO/QUIET ON: Low Batt Start
EMPTY E F	<10.5 (<21.0)	<10.5 (<21.0)			

3. Automatic Genset Operations (EC30)

The EC30 automatically starts the genset when in AUTO mode or QUIET ON mode when it is not quiet time for low battery and HVAC start requests. All signals are at 12VDC unless otherwise specified. The following parameters are stored in nonvolatile memory.

PARAMETER	DESCRIPTION	USER SETTABLE	DEFAULT
HVAC Request Delay	The length of time that the EC30 must see the auxiliary/HVAC DCV request before it starts the genset.	No	60 sec
Crank Retries	Number of times the EC30 goes through the start sequence.	No	3
Crank Wait Time	Time between start retries, if the genset fails to start.	No	30 sec
Max Run Time	The time EC30 will run the genset before it stops the genset when servicing a low battery start request. There is no time limit for servicing a HVAC start request	No	12 hrs
Min Run Time	The minimal length of time the EC30 runs the genset.	No	10–15 min

4. AC Shore Power Present (AC Present)

AC present request is an isolated input that can be connected to a UL and CUL approved contact closure or ac/dc power supply (wall cube). This input can be wired to the AC Shore Input or to the Coach AC distribution and must be present for approximately 2 seconds to be considered valid. When AC is present start requests are ignored. If AC becomes present after 3 minutes of the genset running, the EC30 stops the genset allow the AC source to supply the loads. If AC is present, then HVAC start requests are ignored.

4.1 Transformer/Power Supplies

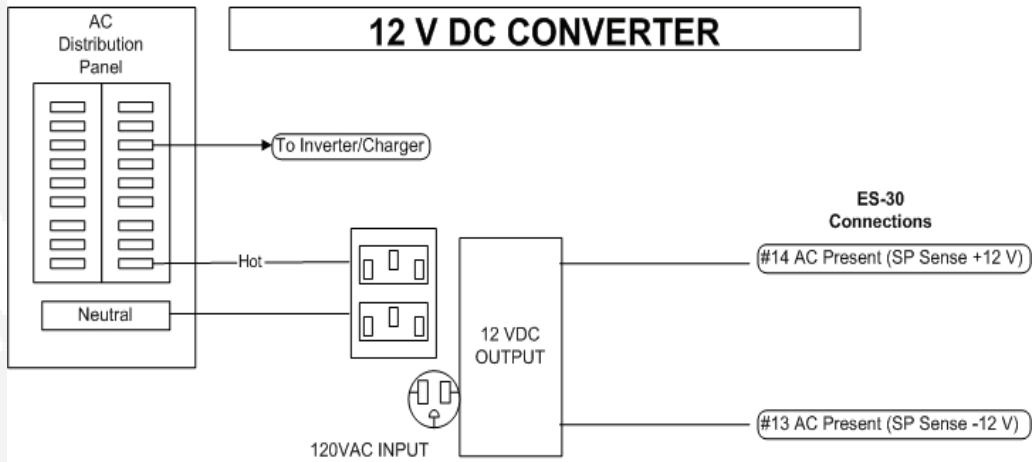
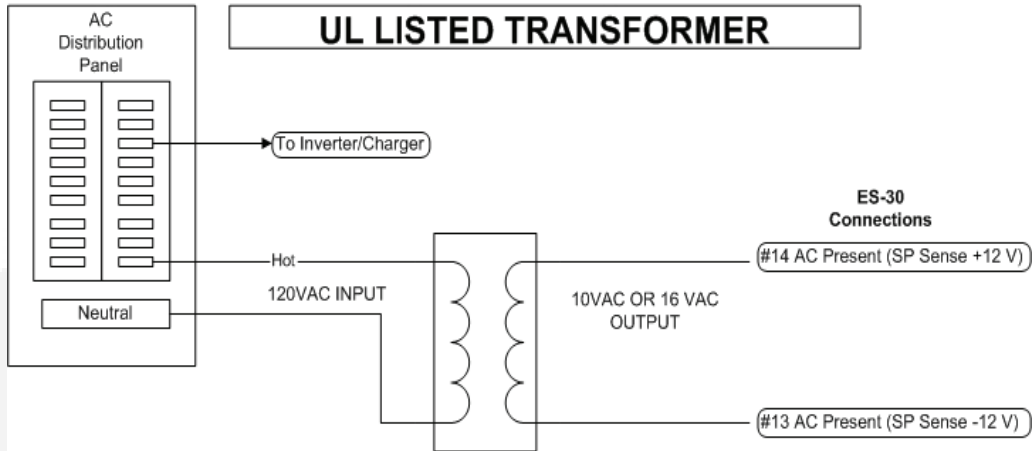
The following table contains possible sources for transformers and AC/DC power supplies. Other suppliers can also be used.

PACKAGING	MANUFACTURER (MFG)	MFG PN	INPUT	OUTPUT	AGENCY	COMMENTS
Hardwire Locknut mounting to (junction) box	DESA,LLC www.desaint.com	122C	120VAC 60Hz	16VAC 10VA	UL/CSA	
	DESA,LLC www.desaint.com	121AC		16VAC 50VA		
Hardwire Mounting clamp to (junction) box	DESA,LLC www.desaint.com	107C	120VAC 60Hz	10VAC 5VA	UL/CSA	
	Broan	C905	120VAC 60Hz	16VAC 10VA	UL	Commonly found at Home Depot or Lowes, ~\$8.00 each
	Air King	AK 16	120VAC 60Hz	16VAC 10VA	UL	Commonly found at Home Depot or Lowes, ~\$4.50 each
		AK 10		10VAC 5VA		Commonly found at Home Depot or Lowes, ~\$4.00 each
Hardwire	Hammond Manufacturing	HM54X series	115VAC 60Hz	Varies	UL	
Plug in wall mount power supplies	Tamura MT71XX series www.digikey.com	MT7125	120VAC 60Hz	20VAC 75mA	UL	Output receptacle: 2.1mmID x 5.5mm OD x 12.5mm Barrel
		MT7145		12VDC 100mA		

4.2 AC Present Sense Connections

The following 2 schematics shows connections the AC Presence Sense can be made.

AC PRESENT SENSE



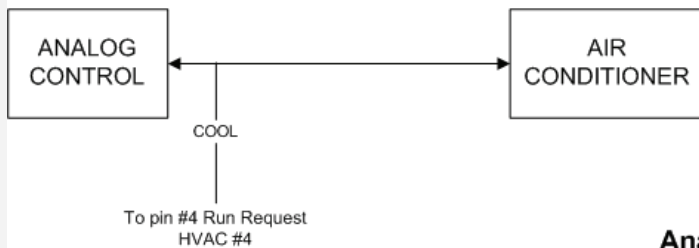
5. Air Conditioner Connections

Each Air Conditioner manufacture has different models. Each model or family of models requires a different connection scheme to the EC-30. The following schematics and directions have been created to represent the majority of the Air Conditioners be used in the RV industry. This *is not* an all inclusive list.

5.1 Dometic Analog

DOMETIC AIR CONDITIONERS

USING ANALOG CONTROL
EC-30 HVAC CONNECTIONS



Analog Control

The "COOL" control signal is normal high. When HVAC is required this signal goes low.

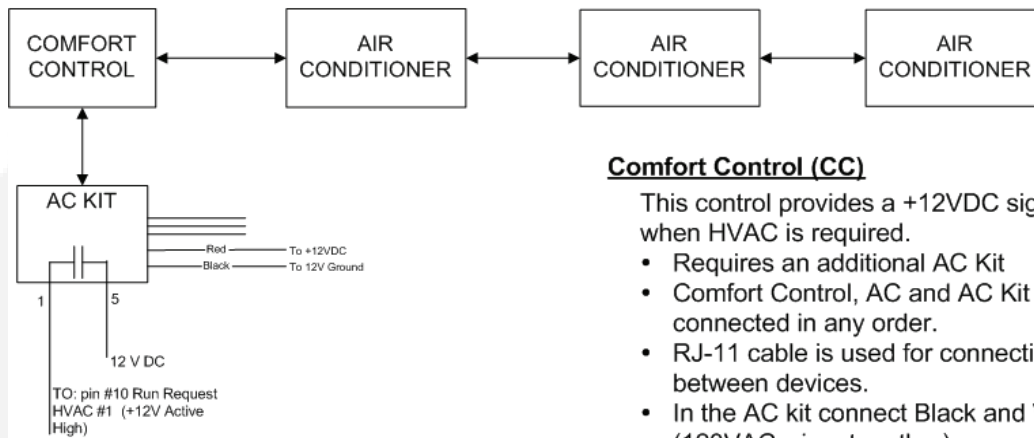
- Verify the Analog Control provides an Active Low Signal.
- Connect "COOL" signal to EC-30 pin #4 Run Request HVAC #4 (-Ground/ active Low)



5.2 Dometic Comfort Control

DOMETIC AIR CONDITIONERS

USING COMFORT CONTROL
EC-30 HVAC CONNECTIONS



Comfort Control (CC)

This control provides a +12VDC signal when HVAC is required.

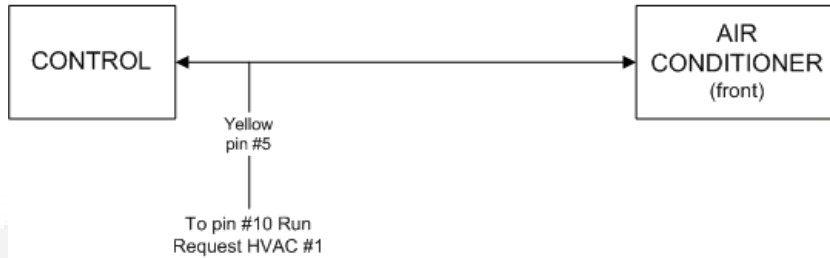
- Requires an additional AC Kit
- Comfort Control, AC and AC Kit can be connected in any order.
- RJ-11 cable is used for connections between devices.
- In the AC kit connect Black and White (120VAC wires together).
- Set the AGS dip-switch to ON.
- Flying leads on AC Kit;
 - Connect Red to +12VDC
 - Connect Black to Ground
- AMP connector Pin 5 to +12VDC
- AMP connector Pin 1 to HVAC #1 (pin 10).
- CC must have AGS mode "ON" to provide signal to EC-30.



5.3 RVP Stand Alone

RVP - AIR CONDITIONERS

STAND ALONE ROOF
EC-30 HVAC CONNECTIONS



RVC Thermostat

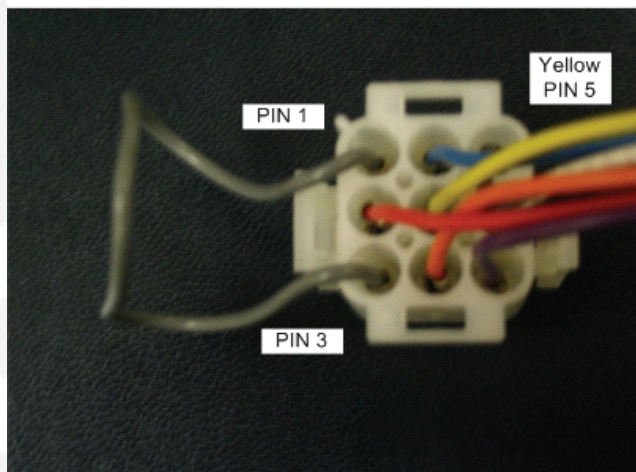
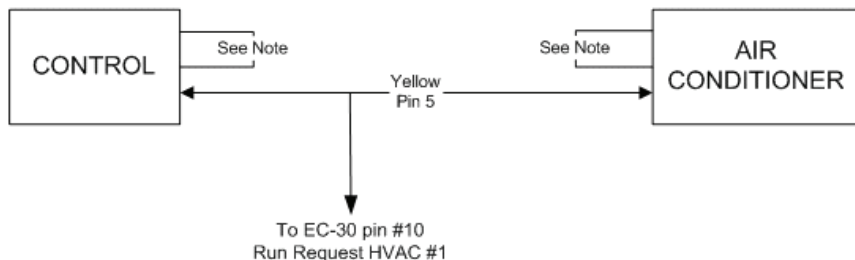
This control provides a +12VDC signal when HVAC is required.

- Tap into yellow wire for the AC signal.
- Connect +12VDC to Pin 1 to HVAC #1 (pin 10).
- Connection can be made at AC or Thermostat.



5.4 RVP Basement

RVP - AIR CONDITIONERS BASEMENT MOUNTED EC-30 HVAC CONNECTIONS



RVC Thermostat

This control provides a +12VDC signal when HVAC is required.

- *Tap into yellow wire for the AC signal (Pin 5).
- *Connect Pin 5 to EC-30 HVAC #1 (pin 10).

NOTE:

Wires running from Thermostat to the Basement Unit must be connected as follows.

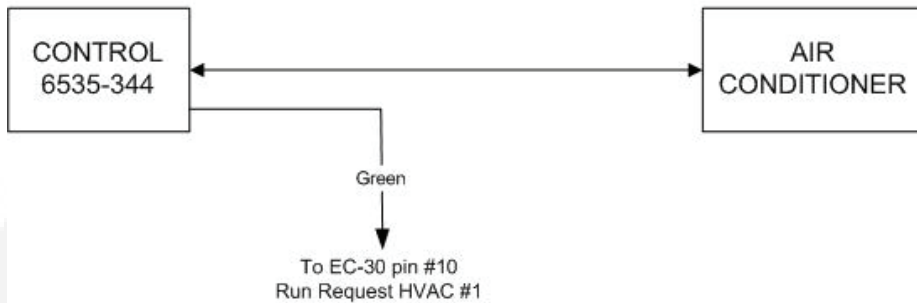
- *At the Thermostat jumper pin 1 and pin 3 together.
- *At the Basement unit jumper pin 1 and pin 3 together.
- *No changes to other wires.



5.5 RVP Thermostat PN 6535-344

RVP - AIR CONDITIONERS

True Air Thermostat PN 6535-344
BASEMENT MOUNTED
EC-30 HVAC CONNECTIONS

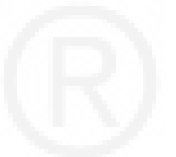


RVC Thermostat - PN 6535-344

This control provides a +12VDC signal when HVAC is required.

*Connect Green wire Pin 3 to EC-30 HVAC #1 (pin 10).





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