ecoflow
Control System

FUELED BY COPRECI

POWERED BY SKYTECH PRODUCTS GROUP

A traditional solution for a modern problem.

The right ignition system offers a balance of features and benefits. By pairing Copreci's patented valve and thermocouple technology with Skytech's uniquely innovative electronics and devoted customer service, the Ecoflow modular platform meets all your product specification and production needs.

Designed specifically for the hearth market, the Ecoflow control system combines tried-and-true thermocouple technology with reliable electronics. Most intermittent pilot ignition (IPI) systems use electrode and rectification flame-sensing technology, leading to various failures and nuisance issues. But Ecoflow's innovative design uses quick-response thermocouple technology to sense the pilot flame – making it resistant to typical issues like moisture, contamination, drafting and unstable pilots.

Ecoflow is ideal for advanced manufacturing, with a modular platform that supports efficient inventory management. Because it utilizes one valve for a complete product line, Ecoflow cuts your costs by reducing SKUs and increasing inventory turns. Ecoflow also simplifies your product knowledge, training and literature – for better customer service and satisfaction.

Components

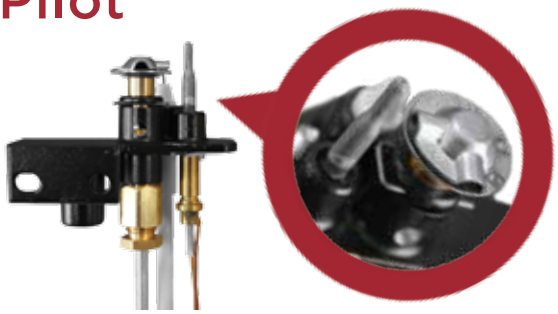
Certifications

ANSI Z21.20-2005 Automatic Gas Ignition Systems and Components and Components

Gas Valve: CSA International Certificate Number: 1476022 (112328)

Electronics: CSA International Certificate Number: 2595440

Pilot



THERMOCOUPLE FLAME SENSE

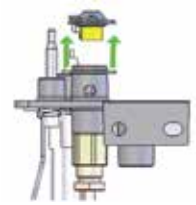
Ecoflow's innovative design uses quick-response THERMOCOUPLE FLAME SENSE TECHNOLGY to sense pilot flame, making it the most reliable control system available and therefore overcomes typical fireplace issues such as moisture, contamination, down-drafts and unstable pilots.

GAS CONVERSION

Vented Pilot assemblies are convertible from Natural Gas to Liquid Propane Gas.

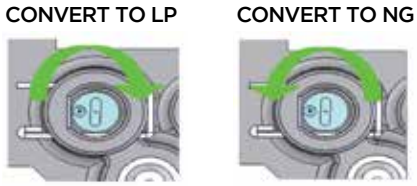
Step 1

Remove hood by lifting straight up.



Step 2: Gas Conversion

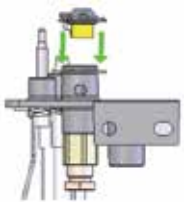
To convert to LP, tighten the screw fully clockwise. To convert to NG, tighten the screw fully counter-clockwise.



TOP DOWN VIEW

Step 3

Align and replace the hood on the pilot assembly.



Gas Valve [fueled by Copreci]

Flow based valve with proven stepper motor provides a durable and reliable valve. The non-regulated valve allows our customers to utilize one SKU for all applications (One valve for all your products = reduction of SKU's).

Key Features

- 80,000 btu's total (variable flow / High – Meduim - Low)
- 20,000 btu's max for 2nd outlet (fixed)
- 32°f – 176°f
- Inlet & Outlet: 3/8" x 18npt
- Pilot Outlet: 3/8" X 24unf
- Multipoise
- Pressure Test Ports (PTP)
- Die cast aluminum body
- Valve wire harness: 15.7" & 31.5

Components

Control Module [powered by Skytech]

The electronics are modular thus allowing you to customize your applications.

Key Features

- Separate Extension Module for Fan, Light, AUX & 2nd burner modulation
- Ability to learn 3 RF Transmitters (Transmitter, Wall Switch or Wall Timer)
- Operating Power: 7.5VDC, 1A, Switching Type AC Adapter
- Temperature Limit: 170-deg. F.

Name	Model	Integral RF Reciever	Compatible with Extension Module (Fan Light AUX)	Vented Applications	Vent Free Applications	Dual Fuel Capable
Builder	VCS-ECOMODBLD	✗	✗	✓	✗	✓
Base	VCS-ECOMOD	✓	✓	✓	✗	✓
Base Power Vent	VCS-ECOMODPVI	✓	✓	✓	✗	✓
Base ODS	VCS-ECOMODODS	✓	✓	✗	✓	✓

Remotes

VCS-ECOTSS01

- Handheld touchscreen programmable thermostat
- Flame, Fan, Light, and Auxillary control
- Wall mount docking station included
- 4 - AAA batteries required

SP1001H-LTX

- Hand Held
- On/Off, Hi/Med/Low
- Continuous Pilot control
- 1 - 12V battery required

SP1001H-LTH3

- Hand Held
- On/Off, Hi/Med/Low
- Thermostat control and display
- Continuous Pilot control
- 2 - AAA batteries required

1322-WT

- Wall Mount
- On/Off, Hi/Med/Low Control
- 2 - 3V batteries required

See page 10 for more options.

Extension Module

Specifications

Operating Power: 120VAC, 60Hz

Fuse Protection: 3A internal fuse (non-serviceable).

Temperature Limit: 170-deg. F.

Secondary/Rear Flame Modulation:

- For use with the 3838MOT block
- Settings: 3 settings (High, Medium, Low) plus OFF

Fan Control

- Maximum power rating: 70 Watts
- Number of settings: 6 plus OFF

Light Control

- Maximum power rating: 70 Watts
- Number of settings: 6 plus OFF

AUX Control

- Maximum power rating: 135 Watts
- ON/OFF function, 120VAC

Fan Control

The fan will turn ON and OFF based on the status of the Main Flame. The fan output will be energized 5-minutes after the main flame is turned on and will be turned off 12-minutes after the main flame is turned off.

The fan speed may be adjusted from the VCS-ECOTSS01 Transmitter. The setting/voltage values are as follows:

Fan Voltage	
SETTING	VOLTAGE VALUES
6 (high)	100%
5	97%
4	92%
3 (default)	89%
2	86%
1 (low)	77%
Off	0%

Light Control

The lighting levels may be adjusted from the VCS-ECOTSS01 Transmitter. The setting/voltage values are as follows:

Light Control	
SETTING	VOLTAGE VALUES
6 (high)	100%
5	90%
4	80%
3 (default)	70%
2	60%
1 (low)	50%
Off	0%

AUX Control

The AUX output may be turned ON and OFF from the VCS-ECOTSS01 Transmitter.

Auxillary Control	
SETTING	VOLTAGE VALUES
ON	100%
OFF	0%

Remote Control Programming

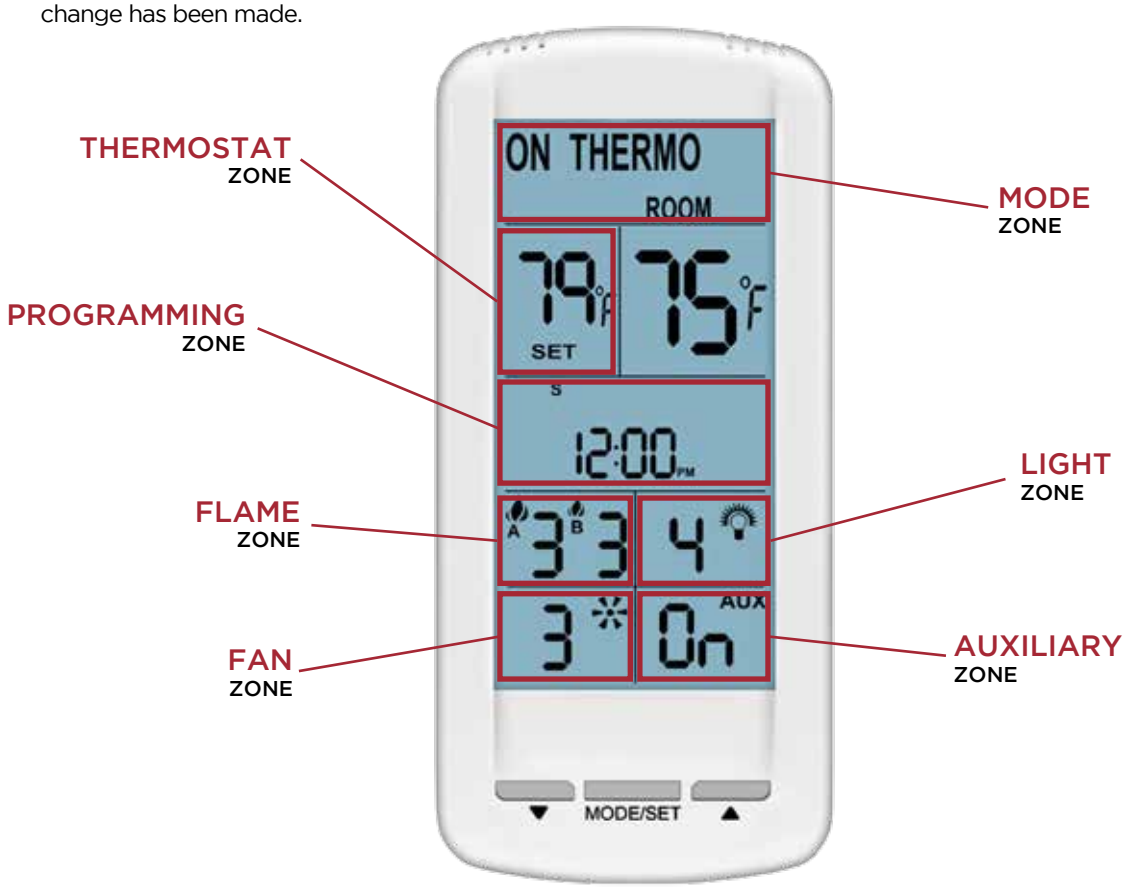
How to Learn your Remote

1. Turn on and off the learn switch to open the LEARN window, the module will beep indicating the module is ready to accept a transmitter security code.
2. Press a transmitter button to send any command, the module will generate a series of beeps indicating a signal was received.

- The LEARN window will remain open for 60-seconds.
- The control will learn up to 3 different transmitter security codes.
- Security codes will be retained in EEPROM memory indefinitely if power is removed.
- Turn on learn switch for 6-seconds, then release / turn off to clear all transmitter security codes retained in memory. A series of 3 long beeps will indicate that the security codes were cleared.

How to Disable Zone Function

- All Zone Functions (Programming, Thermostat, Lights, Fan, Auxiliary and Flame B) may be disabled for applications where a particular function is not allowed or desired.
- Touch the screen to activate the screen.
- To disable or re-enable a zone, the transmitter must be in MANUAL OFF Mode, then press and hold the Zone to be disabled and the DOWN Button simultaneously for 10-seconds. The LCD screen will go blank except either the Zone Description and OFF or Zone Description and ON will flash 3-times (0.5-seconds OFF, 0.5-seconds ON) to indicate the change has been made.



Control Module Audible Alerts

One beep every one-second

Ignition Safety (Protection for Ignition system) 

Description of Fault	Pilot is not successfully ignited within the trial period.
Action	The control will operate the step motor in the gas valve to the OFF position.
How to Clear	Cycle ON/OFF switch to OFF position.

Two beeps every one-second

Recycle Safety: (Protection for Unstable Pilot) 

Description of Fault	• Automatic Recycle - Pilot is proven and lost 3-times within 2-minutes without multiple ON/OFF commands. • Automatic Recycle (VCS-ECOMODODS) - Pilot is established, then lost. • Manual Recycle – Ignition sequence is initiated 6-times within 2-minutes.
Action	The control will operate the step motor in the gas valve to the OFF position.
How to Clear	• After 5-minutes has elapsed (5-minute internal timer expires), the module must see the mode/switch in the OFF position after that time. • Once the module see's the mode/switch in the OFF position after the 5-minutes has elapsed, it will stop beeping. • Once the beeping has stopped, it will accept normal operation including another ON command from the user.

4 beeps every one-second (constant beeping)

Sensor Safety (Protection for Flame sensor) 

Description of Fault	Pilot flame sensor voltage is too high (>flame false threshold) when ignition sequence is initiated.
Action	The control will operate the step motor in the gas valve to the OFF position.
How to Clear	Cycle the ON/OFF switch to the OFF position.

4 beeps every two-seconds

Thermal Safety (Overheat Protection) 

Description of Fault	Internal temperature has exceeded 170 deg. F.
Action	The module will operate the step motor in the gas valve to the OFF position.
How to Clear	Module's internal temperature must cool to below 160 deg. F and cycle the ON/OFF switch to the OFF position.

Diagnosis Tips

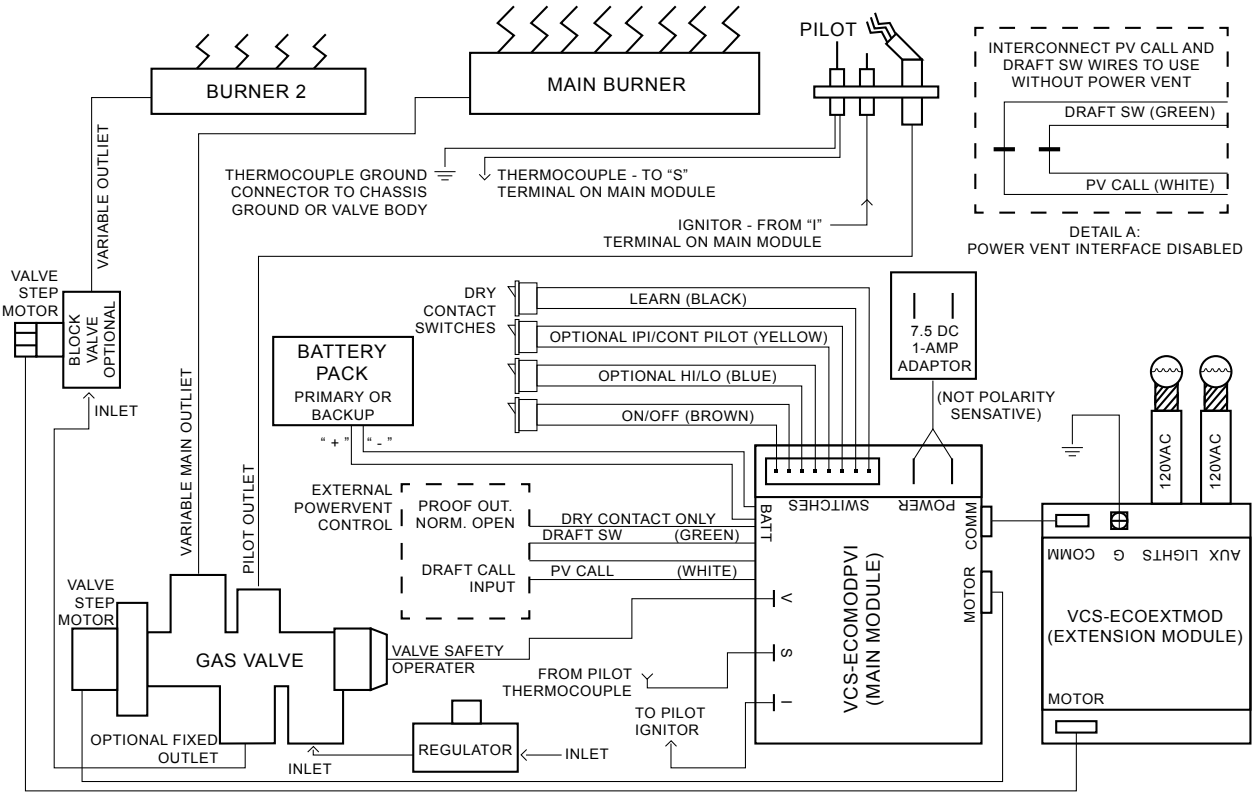
Minimum Milli-Volt Thresholds		
MODEL	FLAME SENSING	CONTINUOUS OPERATION
Builder (VCS-ECOMODBLD)	10mV	18mV
Base (VCS-ECOMOD)	10mV	18mV
Base Power Vent (VCS-ECOMODPVI)	10mV	18mV
Base ODS (VCS-ECOMODODS)	6mV	11mV

Use a multimeter to measure the millivolts. Connect the (+) positive to the chassis ground and connect the (-) negative to the S terminal (TC wire).

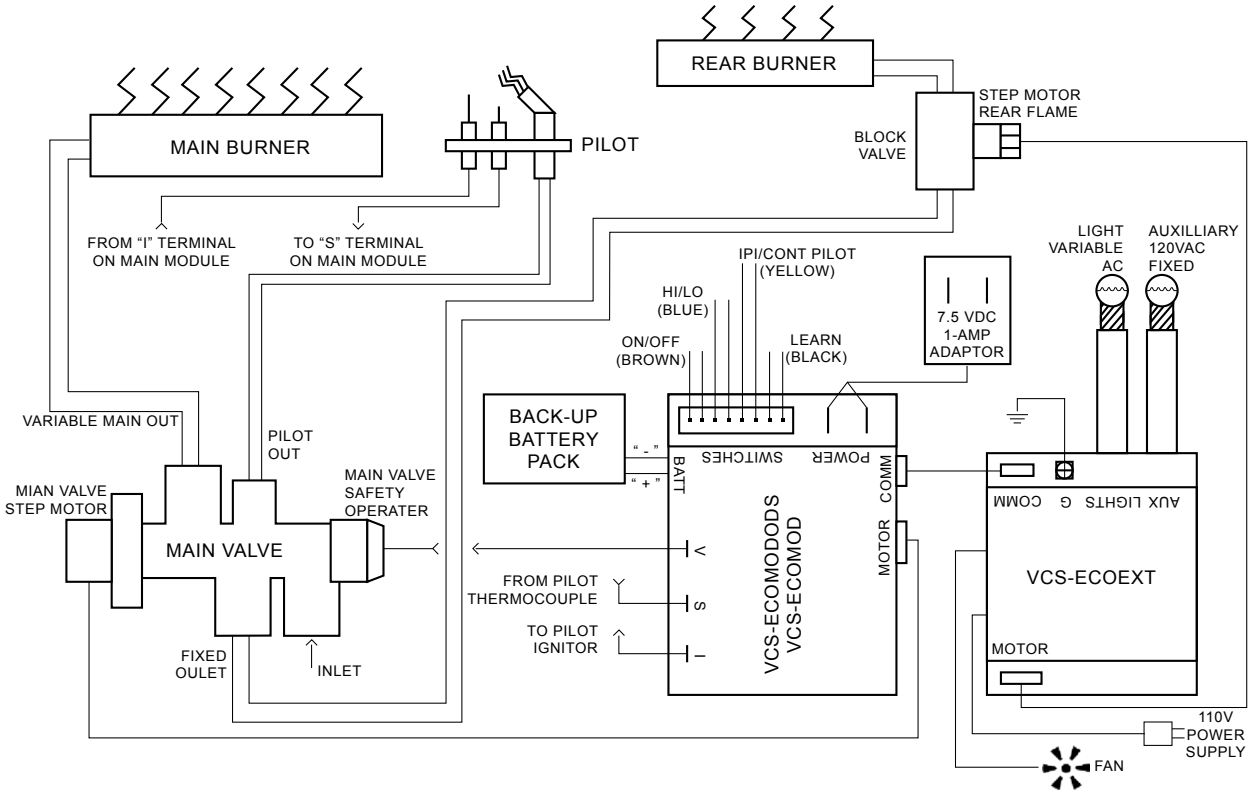
Do not disconnect then reconnect power (AC Adaptor and / or Battery Pack) when the Thermocouple is HOT. If the module is powered when the Thermocouple is HOT it will change the milli-volt threshold calibration. If the module is powered with a HOT thermocouple you need to allow the module to remain OFF for 3 minutes to reset.

Wiring Diagrams

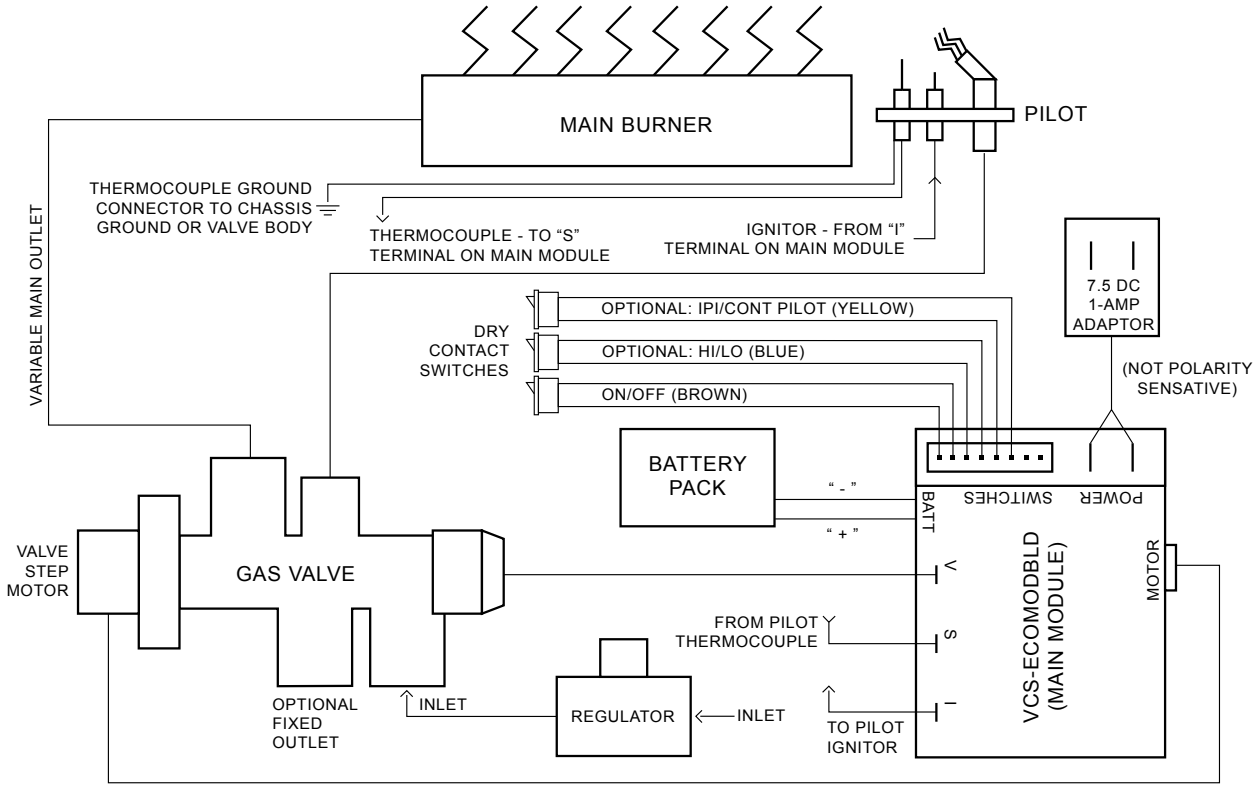
Power Vent Interface



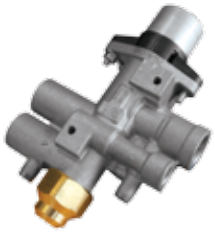
Base



Builder



Product Matrix



Gas Valve	
PART NUMBER	DESCRIPTION
JFM-22600-155	1-Outlet no cable
JFM-22600-156	2-Outlets no cable
08931702	15” valve harness (removable)
08931409	31” valve harness (removable)
3838MOT	Block valve with step motor for independent operation of a secondary burner

Modules	
PART NUMBER	DESCRIPTION
VCS-ECOMODBLD	Without integrated remote receiver
VCS-ECOMOD	With integrated remote receiver
VCS-ECOMODPVI	With integrated remote receiver and power vent function
VCS-ECOMODODS	With integrated remote receiver and thresholds to work with Copreci ODS
VCS-ECOEXTMOD	Extension Module for Fan, Light, AUX & 2nd Burner

Pilot Assemblies: Includes: 4mm Tube 3/8”x24UNF-2A, Thermocouple, Convertible Hood with integral NG and LPG injectors	
PART NUMBER	DESCRIPTION
23300/151	24” Flat Bracket 2-Flame Hood 200’c
23300/153	24” Flat Bracket 3-Flame Hood 200’c
23300/152	31” Flat Bracket 2-Flame Hood 200’c
23300/154	31” Flat Bracket 3-Flame Hood 200’c
23300/150	24” Side Mount Bracket 2-Flame Hood 200’c
23300/155	24” Side Mount Bracket 3-Flame Hood 200’c
23300/156	31” Side Mount Bracket 2-Flame Hood 200’c
23300/157	31” Side Mount Bracket 3-Flame Hood 200’c
ODS-21500/281	ODS-21500/281 24” long thermocouple
ODS-21500/282	ODS-21500/282 24” long thermocouple
08600739	24” ODS Spark Wire 2.8 X 0.8 push on connector
08600757	36” ODS Spark Wire 2.8 X 0.8 push on connector

Extension Module	
PART NUMBER	DESCRIPTION
VCS-ECOEXTMOD	For control of Fan, Light, Auxiliary and independent operation of a secondary burner when used with the 3838MOT

Wire Harnesses

PART NUMBER	DESCRIPTION
VCS-ECO8P4W24WH	24” Wire harness for On/Off, IPI/Cont. Pilot, 1/4 female quick connectors (VCS-ECOMODBLD)
VCS-ECO8P6W24WHB	24” Wire harness for On/Off, Hi/Lo, IPI/Cont. Pilot, 1/4” female quick connectors with black sheathing (VCS-ECOMODBLD)
VCS-ECO8P6W24WH	24” Wire harness for On/Off, Hi/Lo, IPI/Cont. Pilot, 1/4” female quick connectors (VCS-ECOMODBLD)
VCS-ECO8P6W180WBA	15” Wire harness for On/Off, Hi/Lo, IPI/Cont. Pilot, 1/4” female quick connectors (VCS-ECOMODBLD) for use with wall switch
VCS-ECO8P8W24WHB	24” Wire harness for On/Off, Hi/Lo, IPI/Cont. Pilot, 1/4” female quick connectors with black sheathing (VCS-ECOMOD, VCS-ECOMODODS & VCS-ECOMODPVI)
VCS-ECO8P8W6WH	24” Wire harness for On/Off, Hi/Lo, IPI/Cont. Pilot, 1/4” female quick connectors (VCS-ECOMOD, VCS-ECOMODODS & VCS-ECOMODPVI)
AF-4000COMM6WH	6” Communication wire harness for use with VCS-ECOEXTMOD
AF-4000COMM12WH	12” Communication wire harness for use with VCS-ECOEXTMOD
AF-4000COMM36WH	36” Communication wire harness for use with VCS-ECOEXTMOD
AF-4000COMM96	96” Communication wire harness for use with VCS-ECOEXTMOD
VSC-ECOBBUEXT32	32” Extension wire harness for VCS-ECOBBU & VCS-ECOBBUC
685-13	Switches (On/Off) for Ecoflow main wire harnesses
SW-LEARN	Momentary contact switch for learn function

V-Wire

PART NUMBER	DESCRIPTION
08600338	24” V-Wire, valve to module connection
08600329	36” V-Wire, valve to module connection

Remote Controls

PART NUMBER	DESCRIPTION
VCS-ECOTSS01	Touchscreen programmable thermostat remote control with ability to disable functions
SP1001H-LTH-3	On/Off, Hi/Med/Lo, Cont. Pilot thermostat remote control
SP1001H-LTX	On/Off, Hi/Med/Lo, Cont. Pilot remote control
1322-WT	Wireless wall mount On/Off, Hi/Med/Lo remote control
TMR-AF1 TX	Wireless wall mount 30-60-120 timer remote control
TS-R-AF1 TX	Wireless wall mount thermostat remote control
1001D-AF1 TX	Wireless wall switch On/Off remote control

Power Supply

PART NUMBER	DESCRIPTION
AF-4000ADP24(80)	7.5vdc Switching AC Adaptor, 90° angle, high temp. 80°c

Battery Packs

PART NUMBER	DESCRIPTION
VCS-ECOBBU	4-AA Battery Pack, Fully Enclosed
VCS-ECOBBUC	4-C Battery Pack for battery only applications

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