



FC-515
NOVEMBER, 1999



**Sure
Spark**

FIREYE® CC515 MICRO-CONTROLLER BASED OIL BURNER PRIMARY CONTROL



Year 2000 Compliant in accordance with BSI document DISC PD2000-I:1998

DESCRIPTION

The Fireeye® CC515 Series is a micro-controller based, oil burner primary control. The CC515 is capable of a wide variety of features previously unavailable on residential controls.

FEATURES

Interrupted Duty	Recycle type operation
Latch-up Feature	After 3 consecutive lockouts
Service Only Resettable Latch-up	Can only be reset via special procedure
Amber LED & Red LED	Indicates latch-up
Self Diagnostic Test	On each call for heat
Pre Ignition	One second
Trial For Ignition	Fifteen second
Solid Red LED	Lockout indicator
Blinking Red LED	Recycle indicator
Alarm Contacts	Close during lockout and latch-up
Power Vantor Compatible	No need for an isolation relay
Thermostatic or Aquastatic Control	For convenient direct wiring into furnace, boiler or water heater applications
Dual High Temperature Motor Contacts	Have provided over 3 years and 100,000 units of weld free operation
Safety Monitoring Circuit	Provides lockout in the unlikely event of a welded motor relay

SPECIFICATIONS

- Power Input (black and white leads):** 120VAC, 60Hz, 10VA
- Motor Output (orange lead):** Full load = 10A, Locked Rotor = 60 A
- Ignitor Output (blue lead):** 120VAC, 60Hz, 500VA
- Alarm Contacts:** Dry contact, rated for 24V AC or DC at 2A (max).

Note: Alarm contacts are located on the low volt terminal strip. They provide switch closure on lock-out and latch-up. Power must be supplied from an external source. The contacts do not supply voltage or current.

- Ambient Operating Temperature:** +32°F to +140°F
- Storage Temperature:** -40°F to +185°F



Anticipator Current: 200mA AC

CAD Resistance (required after TFI): $R < 1500 \Omega$

Agency Approvals: Underwriters Laboratories (UL) Recognized

– Components Guide MCCZ2, File MP1537

Canadian Standards Association (CSA) Certified

– Class 2642-01 (Oil), File LR703303

INSTALLATION

Read instructions carefully prior to beginning installation.

MOUNTING

The CC515 controls may be mounted on a 4"x 4" junction box in any convenient location on the burner, furnace or wall. The location chosen must not exceed the ambient temperature rating of the control (140° F)

When wiring is completed, mount the CC515 control to the junction box and secure with two mounting screws.

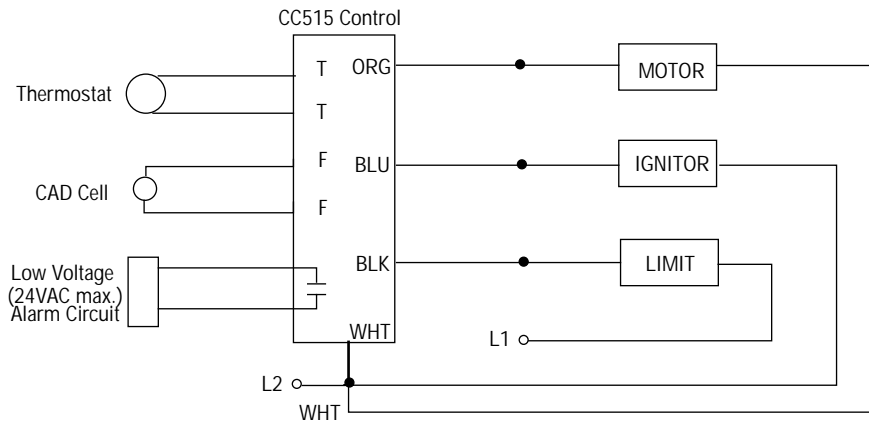


CAUTION: Disconnect power source before wiring to avoid electrical shock or damage to control. All wiring must comply with applicable codes and local ordinances.

WIRING



CAUTION: Thermostat controls provide AC anticipator current to the thermostat. This is a limited current source. Under no conditions should an external power source be wired to these terminals. Alarm terminals are intended for use in a 24V home security/fire alarm system. (Refer to specifications)



START-UP PROCEDURE



CAUTION: Insure that the combustion chamber is free of oil or vapor before starting system.

1. Push in and hold reset button for 1 second, then release. This will reset the control at any time during its operation.
2. Set the thermostat to call for heat.
3. Open all hand operated oil line valves.
4. Close the line switch, a 3 - 4 second self-test will take place indicated by a "solid on" amber LED. After the self-test, the ignition will turn on, followed one second later by the motor. This preignition compensates for sluggish turn on, common to some AC transformers.



Note: If the CAD cell senses flame during the self test, the control will not turn on. The amber LED will blink every 3-4 seconds and a new self test will occur. This will continue until the CAD cell senses no flame.

5. If flame is not established within 15 seconds (TFI), a safety lockout (everything off) will occur. Lockout is indicated by a solid on red LED and closure of the Alarm Contacts. To reset the control, see step one.
Latch-up will occur if the control locks-out and is reset 3 times during a call for heat. This is indicated by red and amber LED's solid on.
To reset unit from latch-up: Push in and hold the reset button for 10 seconds until the amber and red LED's blink on and off alternately. Continue holding the reset button in for 20 seconds until the LED's turn off. Release the reset button and the unit will restart. **Note:** Releasing the reset button at any time during the transition period will cause the unit to remain in latch-up.
6. If flame is established during TFI, the ignition will remain on for an additional 10 seconds after TFI (flame stability, sparkout).
7. When the thermostat opens, the motor turns off within 1.2 seconds.
8. If flame is lost during a normal run (after TFI), the motor turns off after 1.2 seconds. A 65 second recycle period begins which is indicated by a "blinking red" LED. The control will restart after recycle (step 4 to step 8).
9. Power loss during a normal run will cause the burner to safely shut down and begin a normal TFI when power is restored.

FIELD CHECK

Note: Only a trained service technician should complete the following safety checkout.

Flame Failure Check

To simulate flame failure, shut off the oil supply hand valve after flame is established following TFI. This will cause the events described in Start-up procedure, step 8, to take place.

Power Failure Check

After flame is established, turn the power off to the control/burner. This will cause the events described in Start-up procedure, step 9 to take place.

If the control does not operate as described, check the wiring.

SERVICE

If no spark is present during TFI (motor comes on and control locks out after TFI).

1. Turn off the power and the fuel supply.
 - Check all wiring connections.
 - Ensure that the spring terminals are making contact with the burner electrodes.
 - Check for the correct electrode gap setting (Burner manufacture's specification).
2. Check the power to the transformer during TFI. There should be 120VAC going to the transformer.



CAUTION: Do not replace the control until assured that an external problem does not exist.

If the control does not turn on (motor and ignition remain off during call for heat):

1. Check the red LED for lockout condition or red and amber LED's for latch-up condition. Reset or service as necessary. Make sure the thermostat is calling for heat. Check thermostat operation by measuring low resistance across T - T.
 - Turn off power and the fuel supply.



- Check all connections including line, CAD cell and thermostat.
- Check for proper line voltage to the control ($V > 95\text{VAC}$).
- Check CAD cell operation by unplugging and measuring the resistance across its pins: dark resistance $> 50\text{K } \Omega$; room light resistance $< 10\text{K } \Omega$. Replace if necessary.
- If the CAD cell functions properly, reinstall the cell and close the transformer onto the burner housing. Check for stray light by measuring the CAD cell resistance looking into the inactive combustion chamber, it should read $> 50\text{K } \Omega$.
- If the CAD cell functions properly, replace the control

TROUBLE SHOOTING TIPS

- 1. Burner control will not come on:**
 - No power to control.
 - Control is in lockout. Press reset button for on second.
 - CAD is seeing light.
 - CAD assembly is defective.
 - Control motor relay is stuck closed (see note below).
- 2. Burner control will light and then shut down after a short time then restart after 1 minute.**
 - CAD cell is defective.
 - Air leaking into oil line causing flame out.
 - Defective nozzle causing flame to be erratic.
 - Excessive air flow or draft causing flame to leave burner head.
 - Excessive back pressure causing flame to be erratic.
- 3. Control locks out after TFI.**
 - No oil to burner.
 - Shorted electrodes.
 - Nozzle clogged.
 - Airflow too high.
 - Ignitor module defective.
 - CAD cell defective.
 - Oil valve stuck open or closed.

Note: The Safety Monitoring Circuit (SMC) is designed to provide lockout in the event of a stuck or welded motor relay.

NOTICE

When Fireeye products are combined with equipment manufactured by others and/or integrated into systems designed or manufactured by others, the Fireeye warranty, as stated in its General Terms and Conditions of Sale, pertains only to the Fireeye products and not to any other equipment or to the combined system or its overall performance.

WARRANTIES

FIREYE guarantees for *one year from the date of installation or 18 months from date of manufacture* of its products to replace, or, at its option, to repair any product or part thereof (except lamps, electronic tubes and photo-cells) which is found defective in material or workmanship or which otherwise fails to conform to the description of the product on the face of its sales order. **THE FOREGOING IS IN LIEU OF ALL OTHER WARRANTIES AND FIREYE MAKES NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED.** Except as specifically stated in these general terms and conditions of sale, remedies with respect to any product or part number manufactured or sold by Fireeye shall be limited exclusively to the right to replacement or repair as above provided. In no event shall Fireeye be liable for consequential or special damages of any nature that may arise in connection with such product or part.



FIREYE®
3 Manchester Road
Derry, New Hampshire 03038 USA
www.fireeye.com

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