



FC-445
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**Sure
Spark**

FIREYE® CC445M CONSTANT DUTY OIL BURNER PRIMARY CONTROL



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

DESCRIPTION

The Fireeye® CC445M oil burner primary control is a constant duty controller providing continuous duty operation for use with Fireeye constant duty ignitor (P/N SS20120-1) or most standard 10,000 volt transformers.

The model CC445M is designed to mount directly onto a standard 4" x 4" electrical junction box.

FEATURES

- 24 VAC thermostatic control
- 45 second safety switch timing with externally mounted manual reset button
- Can be used with Fireeye cadmium sulfide flame detector (P/N CC-K22) or other equivalent cadmium sulfide cells
- Provides external low voltage terminal strip with screw terminals for ease of installation
- Safety monitor circuit will shut down burner in the event the motor relay contacts stick.
- Bright red LED lamp indicates lockout condition

SPECIFICATIONS

Power Consumption:	120VAC, 60Hz, 10VA
Maximum Current Rating:	
Motor Output:	Full load = 7A, Locked Rotor = 42 A
Ignition:	350VA
Ignition Sequence:	Constant Duty
Safety Switch Timing:	45 Seconds
Ambient Operating Temp:	+32°F to +125°F
Thermostat Head	
Anticipator Setting:	0.2A
Recommended CAD	
Resistance (burner running):	R <1500 Ω
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 CC445M controller may be mounted on a 4"x 4" junction box in any convenient location on the burner, furnace or wall. The location chosen should not have an ambient temperature exceeding 125°F.

When wiring is completed, mount the CC445M controller to the junction box and secure with two mounting screws.

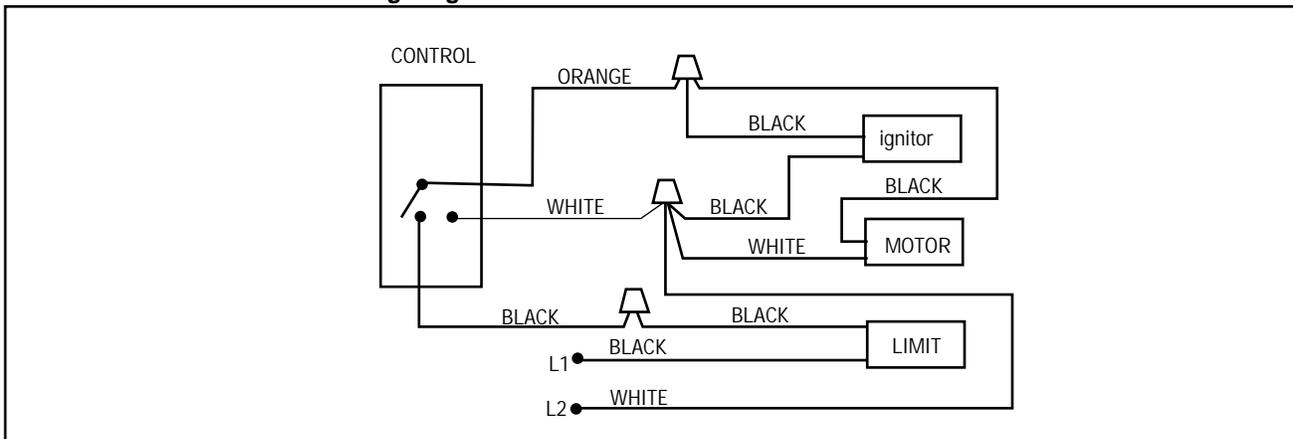
WIRING



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

1. **Line Wiring:** Connect the orange, black and white wires, refer to fig.1
2. **CAD Cell:** The CAD cell leads should be routed into the junction box and out through the appropriate hole on the controller base plate. The leads should then be connected to the "F1", "F2" terminals on the low voltage strip.
3. **Thermostat:** Wires should be directly connected to low voltage terminals marked "T1", "T2". For most electronic Set Back Thermostats, connect the red low voltage wire to "T1" (for White Rogers model 1F 90-51, connect white lead to "T1" and the red lead to "T2").

FIGURE 1. CC445M Wiring Diagram



WARNING: Do not connect an external voltage to the thermostat terminals "T1" and "T2". This will damage the control and may result in an unsafe operating condition. Before attaching the thermostat wires to terminals "T1" and "T2", connect an AC voltmeter across the unconnected thermostat wires. The maximum voltage measured should be no more than 5 volts AC. If it is higher than 5 volts AC, check for a 24 volt transformer that is not isolated from the thermostat wires. Examples of accessories that may require a 24 volt transformer are: air conditioner, humidifier or electronic air cleaner. If a 24 volt transformer is found that is not isolated from the "T1" and "T2" terminals, an isolation relay must be added.



START-UP PROCEDURE



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

1. Push in and hold reset button for 3 seconds, then release to reset the control.
2. Set the thermostat to call for heat.
3. Open all oil line valves.
4. Close the line switch; ignitor and motor should start immediately.
5. Safety lockout will occur if flame is not established during the start-up 45 second “trial for ignition” period; to restart, the safety switch must be manually reset.
6. Restart burner. If flame is established within 45 second “trial for ignition” period. Motor and ignitor will continue running.
7. Burner will turn off when call for heat is satisfied.
8. If flame failure occurs during a run, a new “trial for ignition” period will period will begin. If flame is not established within 45 seconds, the control will lock-out and the burner will immediately shut down. The reset button will need to be manually reset before a new “trial for ignition” period can begin.
9. Power loss during a normal run will cause the burner to safely shut down and begin a normal “trial for ignition” 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 (50 seconds). Immediately after the flame goes out, the motor and ignitor will continue to run for 45 seconds. After 45 seconds the control will go into lockout, shutting down the ignitor and motor. RED LED fully on indicates lockout (approx. 20 sec. after motor and ignitor turn off). If power is interrupted to the control while approaching the RED LED fully on, the control will reset. Turn on the oil supply and depress the red reset button for 3 seconds to restore flame.

Power Failure Check

After flame is established, turn off the power, the burner will immediately stop. Restore power and the burner should begin normal start-up within 10 seconds of power being restored.

If the control does not operate as described, check the wiring and installation. If problem persists, perform a system component checkout as outlined in the following service section.

SERVICE

Note: The CC445M primary controller is preset at the factory and requires no field adjustment.

If no spark is present at start-up ignition period (motor comes on and control locks out after 45 seconds):

1. Turn off the power and the fuel supply.
2. Check all wiring connections including line, CAD cell and thermostat.
3. Check that the spring terminals are making contact with burner electrodes. Check for proper gap setting of electrodes (per burner manufacturer’s specifications).

If no fault is found in steps 1 through 3 above:

1. Disconnect ignition transformer from control.



2. Connect a new transformer to the control, turn on power, leaving fuel supply off and thermostat set to call for heat. If ignition is present for 45 seconds when power is restored, the original transformer required replacement.

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

1. Check the red reset lamp for lockout condition. Reset, if necessary. Check that the thermostat is calling for heat. Check thermostat operation by measuring low resistance across TT.
2. Turn off all power and fuel supply.
3. Check all connections including line, CAD cell and thermostat.
4. Check control power supply for sufficient voltage.
5. Check CAD cell operation by unplugging and measuring the resistance across its pins: dark resistance > 50K Ω ; room light resistance < 10K Ω . Replace if necessary.
6. If the CAD cell functions properly, reinstall the cell and close the transformer on the burner housing. Check for stray light by measuring the CAD cell resistance looking into the inactive combustion chamber, it should read >50K Ω .
If the CAD cell functions properly, replace the control.

TROUBLE SHOOTING TIPS

1. **Burner control will not come on:**
No power to control.
Red lamp on, indicating control is in lockout. Press reset button for a minimum of 4 seconds.
CAD cell is seeing light.
CAD assembly is defective.
Control motor relay is stuck closed (see note below).
2. **Control locks out after 45 seconds.**
No oil to burner.
Shorted electrodes.
Nozzle clogged.
Airflow too high.
Ignitor module defective.
CAD cell defective.

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

FIREEYE 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 photocells) 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 FIREEYE 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.



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