



BASIC INSTALLATION AND OPERATION MANUAL

EM-DI0515 * Size
H = 8W x 10D
L = 8W x 16D

INTENDED USE – This product is approved and label certified for water source heat pumps or air handlers at the blower discharge.

Drawings **EX501**

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ELECTRO INDUSTRIES, INC.
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DESCRIPTION

Generic forced air electric resistance heater designed for air handler, heat pump, or blower cabinet **outlet** duct installation.

Basically the minimum airflow through the element rack is 100 CFM per KW (assumes 100°F inlet from heat pump). All air volume which passes around or outside of the element rack insert must be discounted or added to the 500 CFM required by this model.

This unit is activated with a thermostat signal connected to the “W” terminal (“C” must be control system common).

This unit also provides a blower interlock contact closure. This contact closure is available on the screw terminal block marked “blower”.

Note: The maximum inlet air temperature is 100°F. For inlet temperatures greater than 100°, contact the factory for special assistance.

For information, all units are rated at 240 volts AC. When operating at lower source voltage, the output may be reduced.

Example: 4.8KW unit, assuming normal element tolerances

220 volt source - 4KW
208 volt source - 3.6KW

Notice to Homeowner and Installer

Hi-limit cycling two to ten minutes after initial turn on usually means improper deflector, baffle installation, or insufficient airflow - carefully study and follow mechanical installations.

Installation Requirements

1. All installation work must be performed by trained, qualified contractors or technicians. Electro Industries, Inc., sponsors installation and service schools to assist the installer.
2. All electrical wiring must be in accordance with national electric codes and local electric codes, ordinances, and regulations.
3. Observe electric polarity and wiring colors. Failure to observe could cause electric shock and/or damage to the equipment.
4. This unit can only be used for its intended design as described in this manual. Any internal wiring changes, modifications to the circuit board, modifications or bypass of any controls, or installation practices not according to the details of this manual will void the product warranty, the ARL certification label, and manufacturer product liability. Electro Industries, Inc., cannot be held responsible for field modifications, incorrect installation, and conditions which may bypass or compromise the built-in safety features and controls.

FUNCTIONAL DESCRIPTION

Refer to drawing EW5Ø1.

The application of 24 volts control voltage on “W” and “C” terminal screws activates the electric element.

If there is a need to control the blower from this unit or if there is a desire to provide a parallel control to the blower, the terminal block screws marked “blower” represent a contact closure whenever the electric element is on.

Hi-Limit - This model contains dual temperature sensing hi-limit. The lower temperature setting is in the control relay circuit and the second level hi-limit is in the current carrying leg of the element circuit. Also this second level Hi-Limit is actually a dual function device, combination automatic reset internal limit and an internal fuse link function.

MECHANICAL INSTALLATION

Install within the warm air plenum or duct by cutting a 2” x 8” slot.

Electric element must be positioned in the plenum to receive the necessary minimum air flow through the element, 500 CFM.

Screw the control box to the sheet metal plenum.

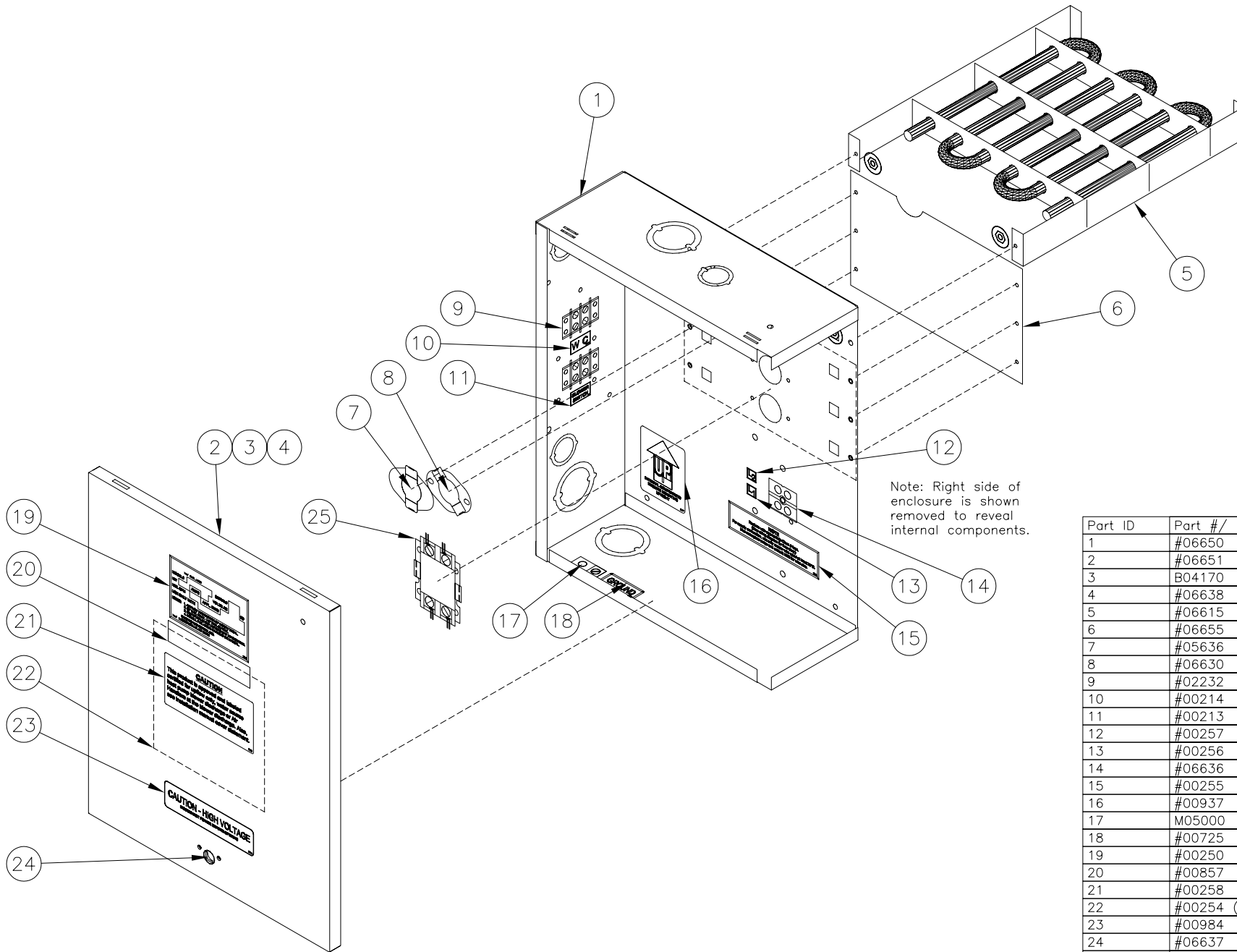
ELECTRICAL HOOKUP

1. **240 VOLT SOURCE** – As specified on the nameplate, the continuous rating for this model is 20 amp single phase. According to local codes, building type, wiring run distance, etc., use the appropriate electric conductor size to bring over the 240 volt source power. Connect to the input terminal block screws.
2. **GROUNDING** - Route and install the appropriate size ground conductor between the ground lug labeled "GROUND" and building service entrance panel ground buss. This must be a conductor sized according to the total amp rating of the appropriate model. Conduit is not an adequate ground conductor.
3. **THERMOSTAT CONTROL** - The external 24 volt control voltage is applied to terminal block mark “W” and “C”.
4. **BLOWER INTERLOCK** – A relay contact closure is available on the two terminal screws “blower”.

CFM CALCULATIONS

By measuring the temperature rise across this Electro-Duct (at a point high enough for proper air mixing) the actual CFM can be quite easily determined. If you are having difficulties sustaining hi-limit operation (clicking noise/top red LED) it may be a good idea to calculate the CFM according to the formula shown at the top of the next page. To arrive at a stable outlet temperature, you can turn off the source power and remove the smallest fuse. This will allow you to verify or calculate the CFM without reaching the hi-limit cycling. The full amount of elements are not required to use this formula. The accuracy of this formula will depend upon the ability to measure the outlet air at a properly mixed and uniform spot and the accuracy of both the clamp on amp meter (AC voltmeter).

$$\text{CFM} = \frac{\text{Volts} \times \text{Amps} \times 3.4}{\text{Temp. Rise} \times 1.1}$$



Note: Right side of enclosure is shown removed to reveal internal components.

Part ID	Part #/ Description	Qty
1	#06650	1
2	#06651	1
3	B04170	2
4	#06638	2
5	#06615	1
6	#06655	1
7	#05636	1
8	#06630	1
9	#02232	1
10	#00214	1
11	#00213	1
12	#00257	1
13	#00256	1
14	#06636	1
15	#00255	1
16	#00937	1
17	M05000	1
18	#00725	1
19	#00250	1
20	#00857	1
21	#00258	1
22	#00254 (Inside)	1
23	#00984	1
24	#06637	1
25	#05126	1

Notes:

- Model EM-DI0515H shown, for model:
 EM-DI0515L: Change (3) #06615 to (3) #06617
 EM-DI0515C: Change (3) #06615 to (3) #06617, Add: #06679 starter plenum and #06681.

- Ground wire (#24) is installed between top of cabinet and cover to bond unit.

Electro Industries Inc. Monticello, MN 55362		Description	
Model(s) Shown EM-DI0515*		EM-DI0515* Assembly Diagram	
Reference Drawing EP501	Drawn MEF	Drawing Date 09-04-97	Ell Part Number ---
Drawing Type Assembly	Approved	Scale ---	Page 1/1
		Drawing Number EX501	

Electro Industries, Inc.

Limited Product Warranty

Effective February 5, 2009

Electro Industries, Inc. warrants to the original owner, at the original installation site, for a period of two (2) years from date of installation, that the product and product parts manufactured by Electro Industries are free from manufacturing defects in materials and workmanship, when used under normal conditions and when such product has not been modified or changed in any manner after leaving the plant of Electro Industries. If any product or product parts manufactured by Electro Industries are found to have manufacturing defects in materials or workmanship, such will be repaired or replaced by Electro Industries. Electro Industries shall have the opportunity to directly, or through its authorized representative, examine and inspect the alleged defective product or product parts. Electro Industries may request that the materials be returned to Electro Industries at the owner's expense for factory inspection. The determination as to whether product or product parts shall be repaired, or in the alternative replaced, shall be made by Electro Industries or its authorized representative. Electro Industries will cover reasonable labor costs to repair defective product or product parts for ninety (90) days after installation.

TWENTY YEAR (20) LIMITED WARRANTY ON BOILER ELEMENTS AND VESSELS

Electro Industries, Inc. warrants that the boiler elements and vessels of its products are free from defects in materials and workmanship through the twentieth year following date of installation. If any boiler elements or vessels are found to have a manufacturing defect in materials or workmanship, Electro Industries will replace them.

TWENTY YEAR (20) LIMITED WARRANTY ON SPIN FIN ELEMENTS

Electro Industries, Inc. warrants that the spin fin elements of its products are free from defects in materials and workmanship through the twentieth year following date of installation. If any spin fin elements are found to have a manufacturing defect in materials or workmanship, Electro Industries will replace them.

FIVE YEAR (5) LIMITED WARRANTY ON OPEN WIRE ELEMENTS

Electro Industries, Inc. warrants that the open wire elements of its products are free from defects in materials and workmanship through the fifth year following date of installation. If any open wire elements are found to have a manufacturing defect in materials or workmanship, Electro Industries will replace them.



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THESE WARRANTIES DO NOT COVER:

1. Costs for labor for removal and reinstallation of an alleged defective product or product parts, transportation to Electro Industries, and any other materials necessary to perform the exchange, except as stated in this warranty. Replacement material will be invoiced to the distributor in the usual manner and will be subject to adjustment upon verification of defect.
2. Any product that has been damaged as a result of being improperly serviced or operated, including, but not limited to, the following: operated with insufficient water or airflow, allowed to freeze, subjected to flood conditions, subjected to improper voltages or power supplies, operated with airflow or water conditions and/or fuels or additives which cause unusual deposits or corrosion in or on the product, chemical or galvanic erosion, improper maintenance or subject to any other abuse or negligence.
3. Any product that has been damaged as a result of natural disasters, including, but not limited to, the following: lightning, fire, earthquake, hurricanes, tornadoes or floods.
4. Any product that has been damaged as a result of shipment or handling by the freight carrier. It is the receiver's responsibility to claim and process freight damage with the carrier.
5. Any product that has been defaced, abused, or suffered unusual wear and tear as determined by Electro Industries or its authorized representative.
6. Workmanship of any installer of the product. This warranty does not assume any liability of any nature for unsatisfactory performance caused by improper installation.
7. Transportation charges for any replacement part or component, service calls, normal maintenance; replacement of fuses, filters, refrigerant, etc.

CONDITIONS AND LIMITATIONS:

1. If at the time of a request for service the original owner cannot provide an original sales receipt or a warranty card registration then the warranty period for the product will have deemed to begin thirty (30) days after the date of manufacture and **NOT** the date of installation.
2. The product must have been sold and installed by a licensed electrical contractor, a licensed plumbing contractor, or a licensed heating contractor.
3. The application and installation of the product must be in compliance with Electro Industries' specifications as stated in the installation and instruction manual, and all state and federal codes and statutes. If not, the warranty will be null and void.
4. The purchaser shall have maintained the product in accordance with the manual that accompanies the unit. Annually, a qualified and licensed contractor must inspect the product to assure it is in proper working condition.
5. All related heating components must be maintained in good operating condition.
6. All lines must be checked to confirm that all condensation drains properly from the unit.
7. Replacement of a product or product part under this limited warranty does not extend the warranty term or period.
8. Replacement product parts are warranted to be free from defects in material and workmanship for ninety (90) days from the date of installation. All exclusions, conditions, and limitations expressed in this warranty apply.
9. Before warranty claims will be honored, Electro Industries shall have the opportunity to directly, or through its authorized representative, examine and inspect the alleged defective product or product parts. Remedies under this warranty are limited to repairing or replacing alleged defective product or product parts. The decision whether to repair or, in the alternative replace, products or product parts shall be made by Electro Industries or its authorized representative.

THESE WARRANTIES DO NOT EXTEND TO ANYONE EXCEPT THE ORIGINAL PURCHASER AT RETAIL AND ONLY WHEN THE PRODUCT IS IN THE ORIGINAL INSTALLATION SITE. THE REMEDIES SET FORTH HEREIN ARE EXCLUSIVE.

ALL IMPLIED WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY DISCLAIMED WITH RESPECT TO ALL PURCHASERS OR OWNERS. ELECTRO INDUSTRIES, INC. IS NOT BOUND BY PROMISES MADE BY OTHERS BEYOND THE TERMS OF THESE WARRANTIES. FAILURE TO RETURN THE WARRANTY CARD SHALL HAVE NO EFFECT ON THE DISCLAIMER OF THESE IMPLIED WARRANTIES.

ALL EXPRESS WARRANTIES SHALL BE LIMITED TO THE DURATION OF THIS EXPRESS LIMITED WARRANTIES SET FORTH HEREIN AND EXCLUDE ANY LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES RESULTING FROM THE BREACH THEREOF. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY. PRODUCTS OR PARTS OF OTHER MANUFACTURERS ATTACHED ARE SPECIFICALLY EXCLUDED FROM THE WARRANTY.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY HAVE OTHER RIGHTS WHICH VARY UNDER THE LAWS OF EACH STATE. IF ANY PROVISION OF THIS WARRANTY IS PROHIBITED OR INVALID UNDER APPLICABLE STATE LAW, THAT PROVISION SHALL BE INEFFECTIVE TO THE EXTENT OF THE PROHIBITION OR INVALIDITY WITHOUT INVALIDATING THE REMAINDER OF THE AFFECTED PROVISION OR THE OTHER PROVISIONS OF THIS WARRANTY.