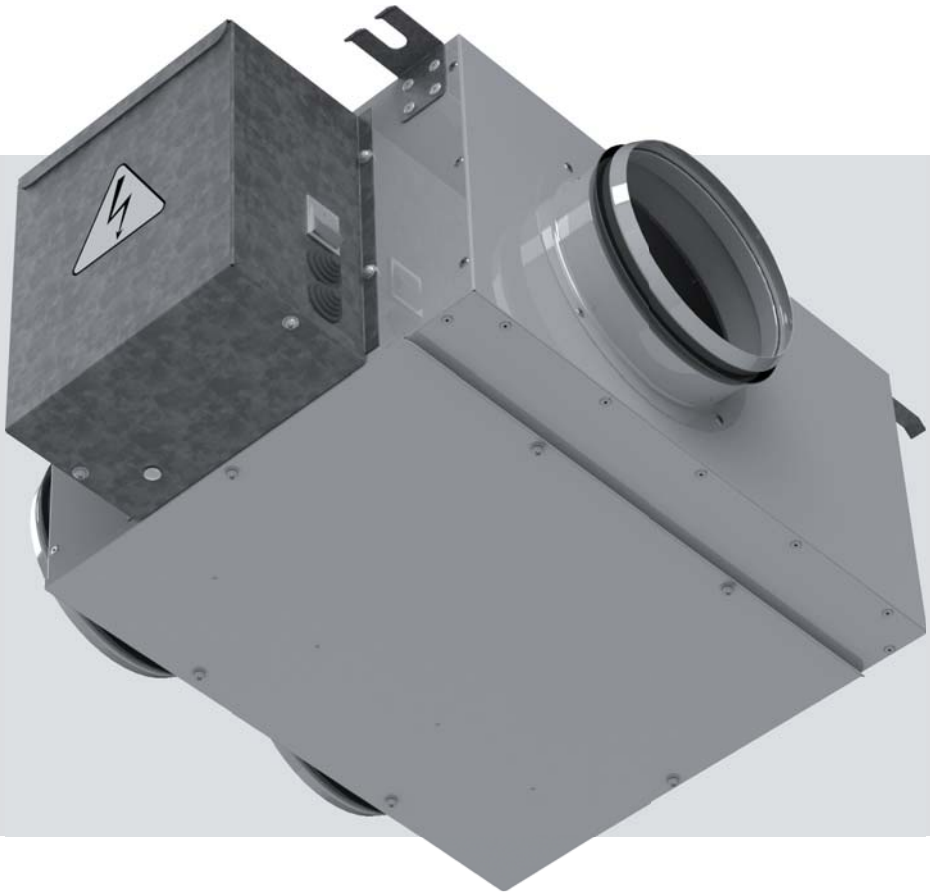
# USER MANUAL

**IRF-150**



## Duct Reversible Fan

fortt

fresh air reversible transfer fans

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This manual will provide you with installation, operation, service instructions as well as technical data for the duct reversible fan IRF, hereinafter the device.

- Read the user manual carefully prior to installing and operating the unit.
- Fulfill the user manual requirements as well as the provisions of all the applicable local and national construction, electrical and technical norms and standards.
- The warnings contained in the user manual must be considered most seriously since they contain vital personal safety information.
- Failure to follow the rules and safety precautions noted in this user manual may result in an injury or unit damage.
- After a careful reading of the manual, keep it for the entire service life of the unit.
- While transferring the unit control the user manual must be turned over to the receiving operator.

Symbol legend:

**WARNING!**

**DO NOT!**

## SAFETY REQUIREMENTS

READ AND SAVE THESE INSTRUCTIONS

**WARNING!**
TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK AND PERSONAL INJURY, READ AND UNDERSTAND THE INSTRUCTIONS CAREFULLY.
1. Use the device only in the manner intended by the manufacturer. If you have questions, contact the manufacturer.
2. Before servicing or cleaning the device, switch off the power at the main service panel and lock it to prevent the power from accidentally being turned on. If the panel cannot be locked securely, fasten a prominent warning device, such as tag, to it. If the device is not hard-wired but rather plugged into a 120 Volt outlet, unplug the cord from the receptacle.
3. Installation works and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction codes and standards.
4. Sufficient air is needed for proper combustion and exhaust of gases through the flue (chimney) of fuel burning equipment to prevent back drafting. Follow the heating equipment manufacturer's guidelines and safety standards such as those published by the National Fire Protection Association (NFPA), and the American Society for Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), and the local code authorities.
5. When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.
6. The exhaust fans must always be vented to outdoors.
7. The device may have sharp edges. Use caution to avoid being cut when installing and cleaning.
8. The device must be grounded.
9. Discharge air is to be directed to the building exterior.

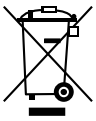
**WARNING!**
1. For general ventilation use only. Not for use in fire rated installations. Do not use the device to exhaust hazardous or explosive materials and vapors.
2. For interior use only. Mount with the lowest moving parts at least 8 feet (2.5 meters) above the floor or grade level.
3. To avoid damage to the motor and noise and/or unbalanced impeller, keep drywall spray, construction dust, etc. off the device.

4. Prior to installation operations make sure there is no visible damage to the impeller and housing. Also make sure there are no foreign objects in the fan housing.
5. Please read specification label on the device for further information and requirements.
6. To be installed by qualified personnel.
7. Connect the device through the breaker box.
8. Both the inlet and outlet must have no obstructions for the device to work properly and be covered by the warranty.
9. When storing the device keep it in a dry, weather-protected environment in the original packaging. If the device has been stored or set in a cold environment, wait 2 hours before connecting it to the power source.

**WARNING!**
TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:
a) Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction.
b) Sufficient air is needed for proper combustion and exhausting of gases through the flue (chimney) of fuel burning equipment to prevent back drafting. Follow the heating equipment manufacturer's guideline and safety standards such as those published by the National Fire Protection Association (NFPA), and the American Society for Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), and the local code authorities.
c) When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.
d) Ducted fans must always be vented to the outdoors.

**WARNING!**
To Reduce The Risk Of Personal Injury, Do Not Bend The Blade Brackets.
When Installing The Brackets, Balancing The Blades, Or Cleaning The Fan.
Do Not Insert Foreign Objects In Between Rotating Fan Blades.

All screws must be checked, and retightened where necessary, before installation.



**THE PRODUCT MUST BE COLLECTED SEPARATELY AT THE END OF SERVICE LIFE.**

**DO NOT DISPOSE OF AS UNSORTED MUNICIPAL WASTE.**

## INCLUDED IN THE BOX

One fan
One user manual
One packing box

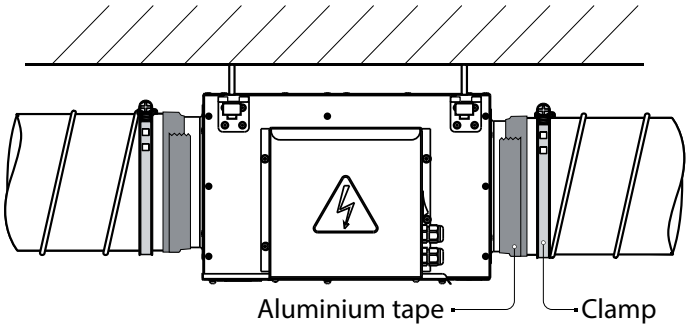
## USE

IRF-150 is designed for supply and exhaust ventilation. The exhaust function is specifically applied for humid premises, i.e. bathrooms. During supply ventilation mode fresh air is supplied to the Air Handling Unit or directly to the room. IRF-150 is compatible with the air ducts with 6" diameter. The fans are constructed for wall and ceiling installation.

**THE DEVICE MAY NOT BE USED BY CHILDREN OR PERSONS WHO ARE UNABLE TO FULFILL THE SAFETY REQUIREMENTS DESCRIBED HEREIN.**
**ALL THE OPERATIONS MUST BE PERFORMED BY DULY TRAINED PROFESSIONALS!**
**INSTALLATION PLACE OF THE DEVICE MUST BE OUT OF REACH OF CHILDREN.**

IRF-150 is rated for continuous operation in exhaust mode.
The fan is designed for general ventilation only and is not rated for fire-fighting application. The fan may not be used for transportation of explosive substances and vapors and may not be installed in cooking areas.

To ensure quiet operation of ENERGY STAR qualified in-line fans, each fan shall be installed using sound attenuation techniques appropriate for the installation. Insulated flexible type duct work will result in quieter operation. 6" duct diameter is recommended. Flexible duct should be connected to the fan with hose clamps, aluminum foil tape or both. All connections should be as airtight as possible to maximize system perfor mance and eliminate air leakage.

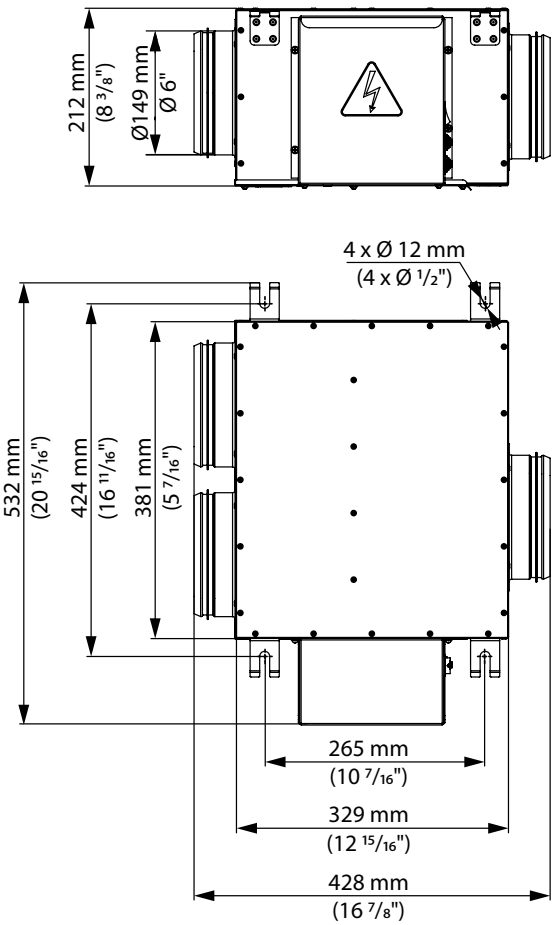


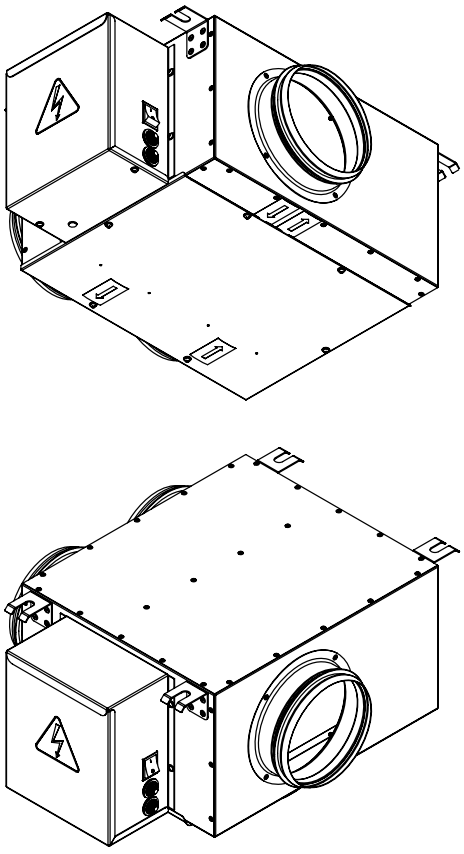

When using flexible type duct work, duct should be as tight and straight as possible. In case you intend to use non-flexible ducts we recommend to install flexible conectors which are designed to exclude the vibration transmission from fans to air duct. Remove any insulation from the area where you will be mounting the fan. Insulation should never be installed over any part of an exhaust fan. Keep the insulation at least 3" away from the fan casing.

The ducting from this fan to the outside of the building has a strong effect on the air flow, noise and energy use of the fan. Use the shortest, straightest duct routing possible for best performance, and avoid instaling the fan with smaller ducts than recommended. Insulation around the ducts can reduce energy loss and inhibit mold growth. Fan installed with existing ducts may not achive their rated airflow.

## TECHNICAL DATA

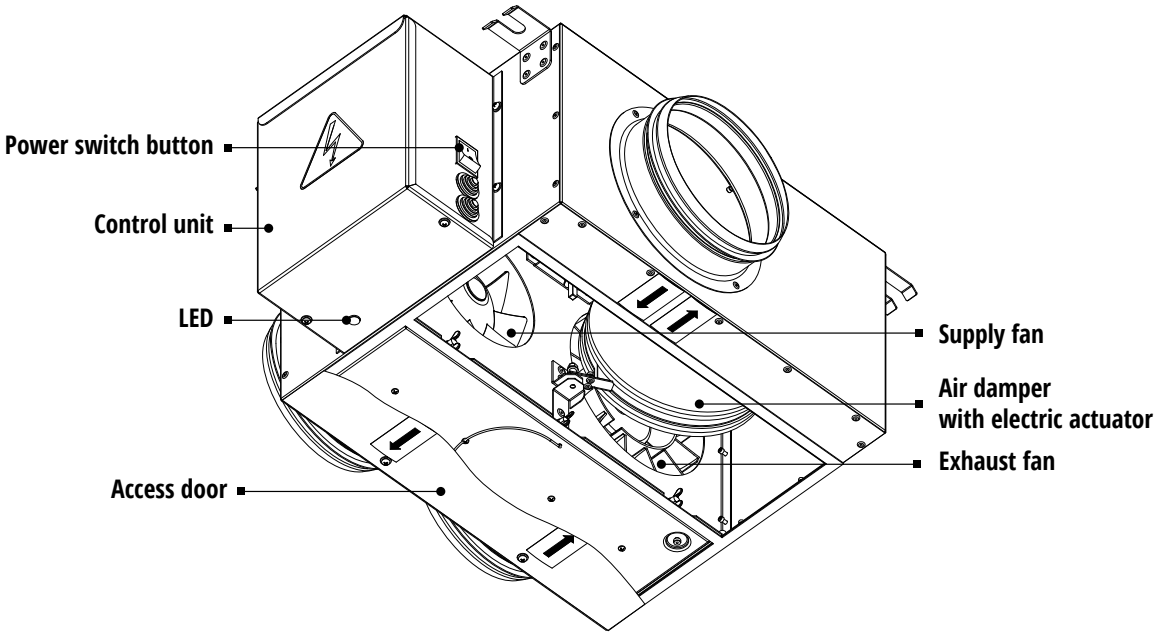
IRF-150 is designed for indoor application and is rated for connection to 120 V / 60 Hz power supply source.
The product undergoes regular improvement, so some models can slightly differ from those ones described herein.



## UNIT DESIGN AND OPERATION

The metal housing includes two fans and an air damper with an electric actuator. The air damper closes the supply or exhaust air duct depending on the selected operation mode. The fan operates in the supply or exhaust mode. The air damper and the fans are operated through the controller. The terminal box is located on the side wall of the housing and is used for connection of power supply and other control devices. The IRF-150 unit features LED indication: green light indicates unit operation, red light indicates unit alarm status. The LED is located on the control unit. The bottom panel of the housing is equipped with an access door for maintenance operations. The housing is supplied with four mounting brackets.

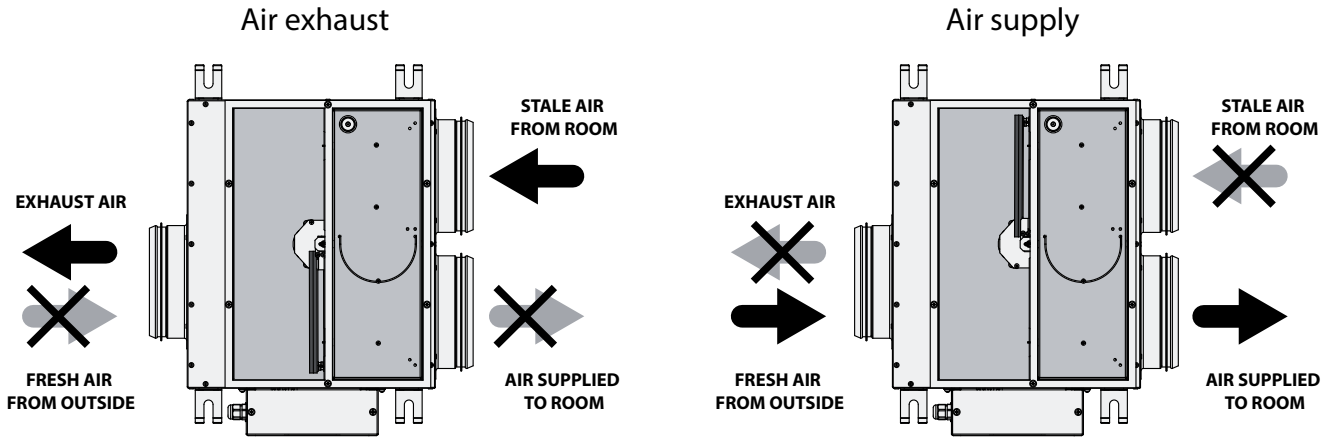



IRF reversible fan supplies fresh air to the room and extracts stale air from the room.

Fresh air is supplied to the room in the supply mode. Fresh air from outside is moved with the supply fan to the room. The exhaust fan is in standstill and the exhaust air fan outlet is closed with the air damper. In the exhaust mode the indoor humidity is within the set limits.

IRF-150 keeps indoor humidity at a set point on feedback from the humidity sensor (available as a specially ordered accessory). When the actual humidity reaches the maximum point, IRF-150 changes to the exhaust mode. The exhaust fan operates, the supply fan is in standstill and the supply air fan outlet is closed with the air damper.

As the indoor humidity drops down below the set point, IRF-150 reverts to operation in the supply mode.



## MOUNTING AND SET-UP

**READ THE USER MANUAL PRIOR TO STARTING MOUNTING.**

**THIS MANUAL IS INTENDED FOR PROFESSIONAL INSTALLERS ONLY. ALL THE OPERATIONS DESCRIBED HEREIN MUST BE PERFORMED BY DULY QUALIFIED EXPERTS SPECIFICALLY TRAINED FOR INSTALLATION, MOUNTING AND MAINTENANCE OF VENTILATION PRODUCTS.**

**DO NOT TRY TO INSTALL THE DEVICE YOURSELF AS IT REQUIRES SPECIAL QUALIFICATION. OTHERWISE IT MAY BE DANGEROUS FOR YOU.**

IRF150 is designed for mounting to the ceiling with any housing angle. Four fixed brackets on the housing to be used for surface mounting connection.

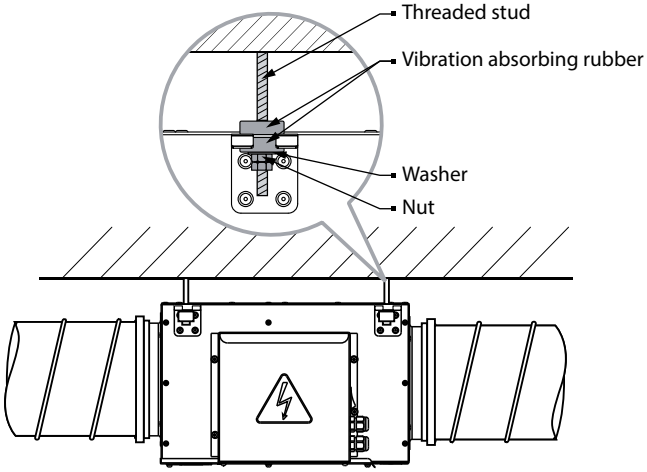
Fix IRF-150 to the ceiling using the threaded studs, nuts and vibration absorbing rubber. The fasteners for mounting of IRF-150 are not included in the delivery set and are available on separate order. Select the fastener type in consideration of mounting surface material and the fan weight. The fasteners must be selected by a professional serviced provider!

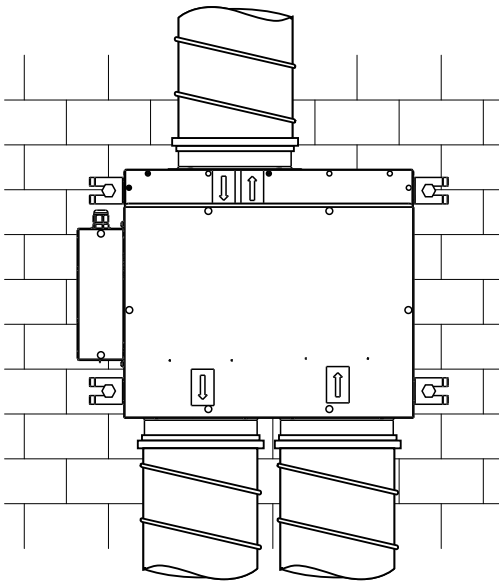
Make sure the housing contains no foreign objects such as foil or paper. Provide sufficient service access to the fan during mounting operations.

To ensure the most efficient air flow and reduce turbulence-induced aerodynamic losses, connect a straight air duct to the fan collars on both sides of IRF-150.

Minimum straight air duct length is 1 x diameter on the intake side and 3 x diameters on the exhaust side.

If the air ducts are not connected or the connected air ducts are too short, protect the inner parts of IRF-150 against entry of foreign objects into the fans.  Cover the collars with a grille or another protecting device with max. mesh width 1/2 inch.



## CONNECTION TO POWER SUPPLY AND UNIT CONTROL

**DISCONNECT THE DEVICE FROM POWER SUPPLY PRIOR TO ANY ELECTRIC INSTALLATION OPERATIONS.**

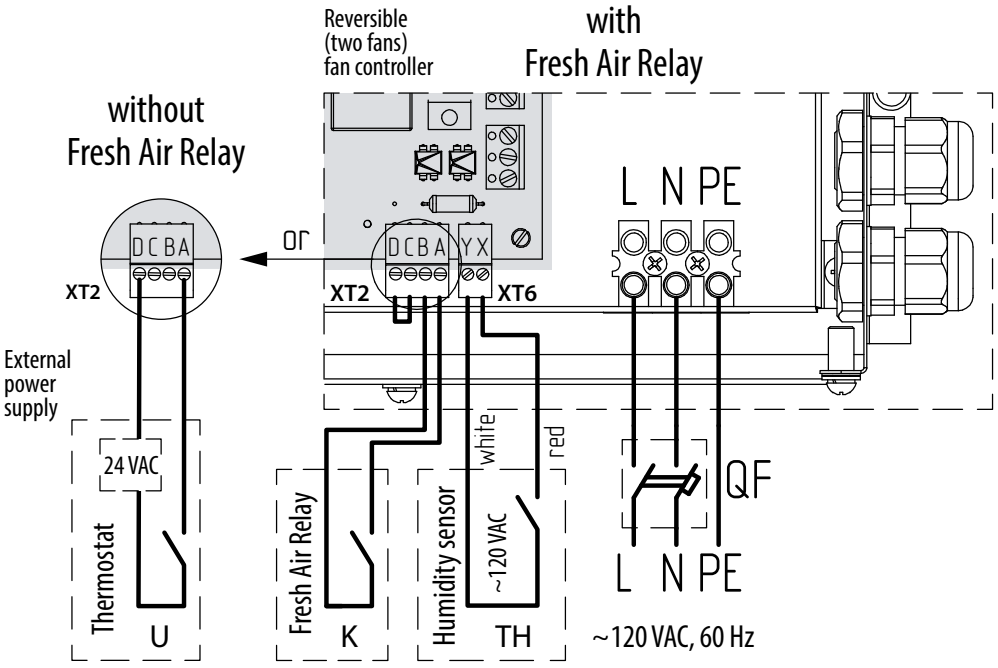
**INSTALLATION SHALL ONLY BE PERFORMED BY A PROFESSIONAL ELECTRICIAN QUALIFIED FOR UNASSISTED OPERATIONS WITH ELECTRICAL INSTALLATIONS UP TO 1000 V AFTER CAREFUL STUDY OF THE PRESENT USER MANUAL.**

**THE RATED ELECTRICAL PARAMETERS ARE STATED ON THE RATING PLATE. ANY TAMPERING WITH THE INTERNAL CONNECTIONS IS PROHIBITED AND WILL VOID THE WARRANTY.**

IRF-150 is rated for connection to single-phase ac 120 V/60 Hz power. For electric installations use insulated, durable and heat-resistant electric leads (cables, conductors) with the minimum cross section 18 AWG.

Connect the unit to power supply through a circuit breaker with magnetic trip integrated into the fixed wiring system. The circuit breaker installation place must be easily acessible for quick emergency shutdown of the device. The trip current of the circuit breaker must be in compliance with the consumption current of the fan.

Wiring diagram

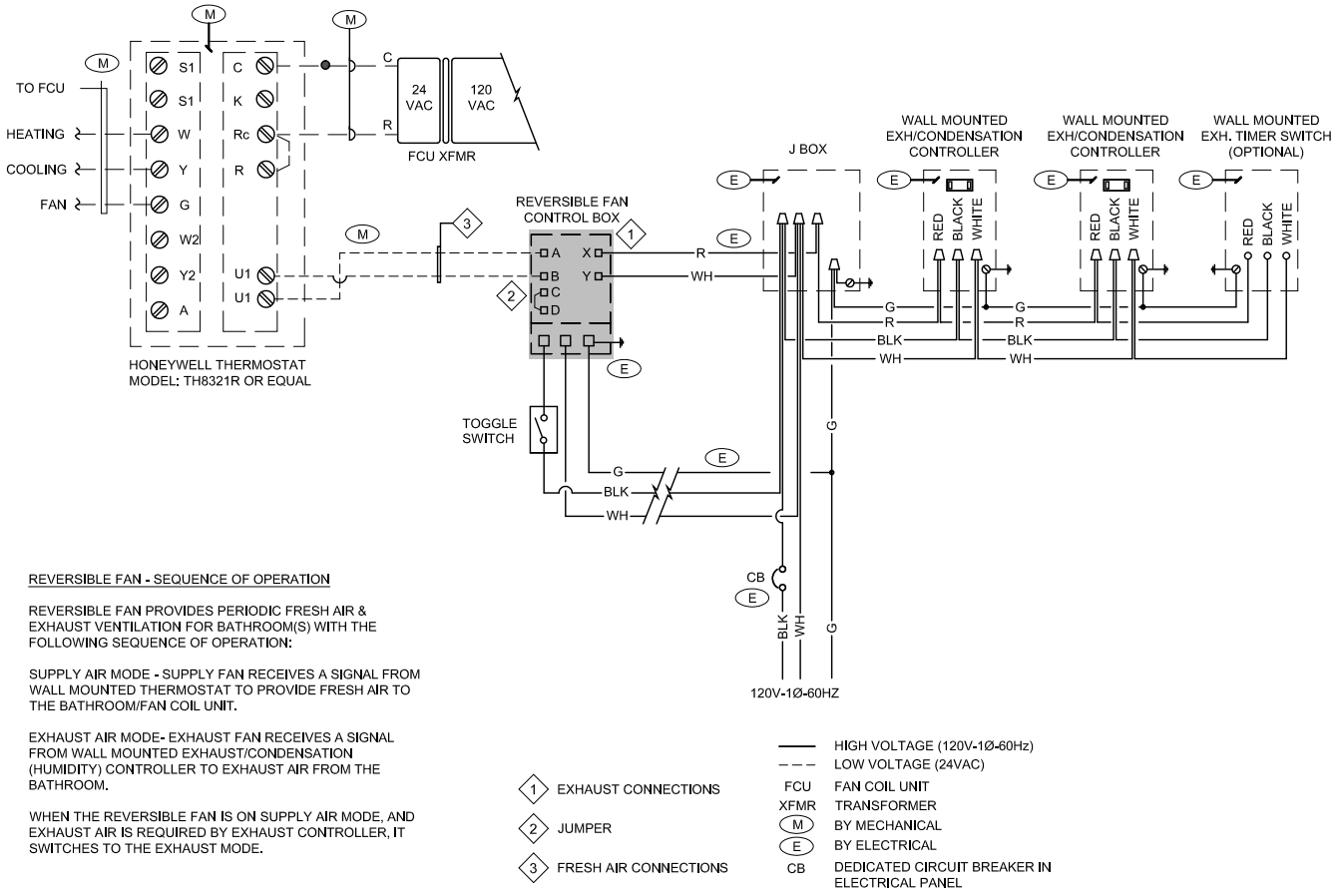



Activation of the supply mode without relay is enabled by closing the thermostat contact U and 24 V voltage supply to A and D terminals.

Activation of the supply mode with relay is enabled by closing the relay contact K and voltage supply to A and B terminals. The terminals C and D are jumped in this case.

Activation of the exhaust mode is enabled by closing the humidity sensor contact TH and 120V voltage supply to the terminals X and Y.

## Reversible Fan with Thermostat Wiring Diagram




REVERSIBLE FAN - SEQUENCE OF OPERATION

REVERSIBLE FAN PROVIDES PERIODIC FRESH AIR & EXHAUST VENTILATION FOR BATHROOM(S) WITH THE FOLLOWING SEQUENCE OF OPERATION:

SUPPLY AIR MODE - SUPPLY FAN RECEIVES A SIGNAL FROM WALL MOUNTED THERMOSTAT TO PROVIDE FRESH AIR TO THE BATHROOM/FAN COIL UNIT.

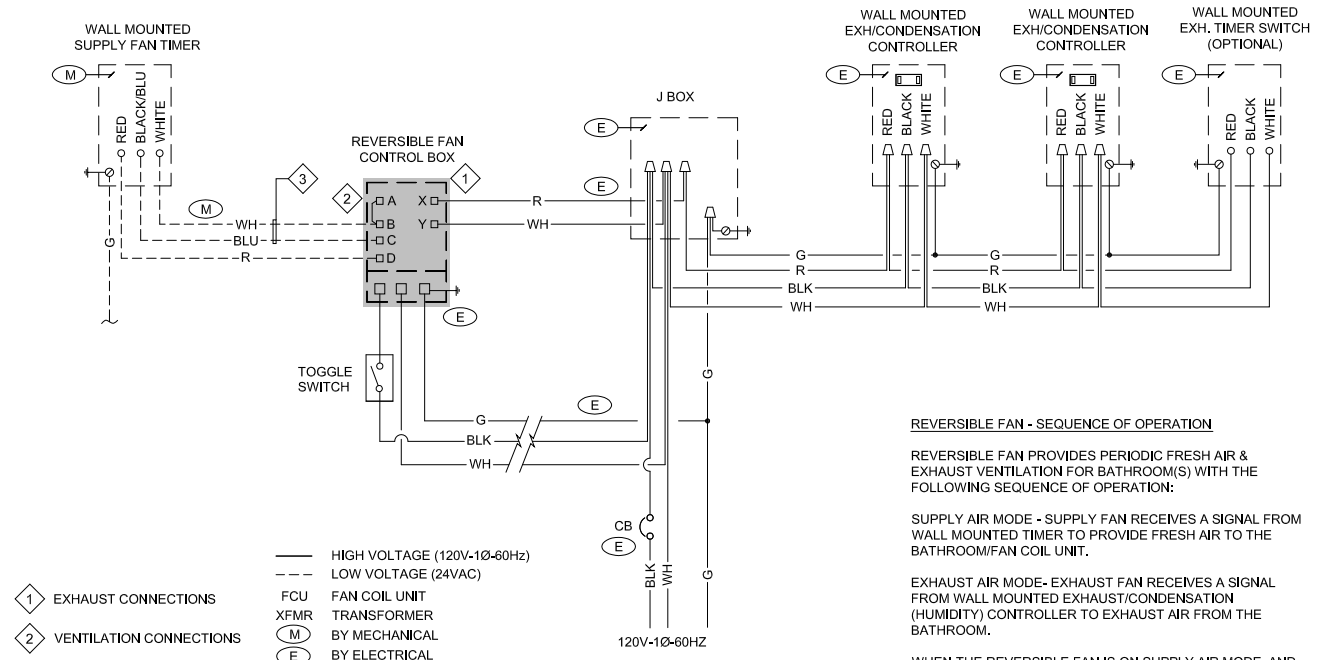
EXHAUST AIR MODE- EXHAUST FAN RECEIVES A SIGNAL FROM WALL MOUNTED EXHAUST/CONDENSATION (HUMIDITY) CONTROLLER TO EXHAUST AIR FROM THE BATHROOM.

WHEN THE REVERSIBLE FAN IS ON SUPPLY AIR MODE, AND EXHAUST AIR IS REQUIRED BY EXHAUST CONTROLLER, IT SWITCHES TO THE EXHAUST MODE.

| | |
|---|---|
| 1 | EXHAUST CONNECTIONS |
| 2 | JUMPER |
| 3 | FRESH AIR CONNECTIONS |

| | |
|---|---|
| —— | HIGH VOLTAGE (120V-1Ø-60Hz) |
| - - - | LOW VOLTAGE (24VAC) |
| FCU | FAN COIL UNIT |
| XFMR | TRANSFORMER |
| (M) | BY MECHANICAL |
| (E) | BY ELECTRICAL |
| CB | DEDICATED CIRCUIT BREAKER IN ELECTRICAL PANEL |

## Reversible Fan with Timer Wiring Diagram




| | |
|---|---|
| 1 | EXHAUST CONNECTIONS |
| 2 | VENTILATION CONNECTIONS |
| 3 | LOW VOLTAGE POWER (24VAC) FROM REVERSIBLE FAN. |

| | |
|---|---|
| —— | HIGH VOLTAGE (120V-1Ø-60Hz) |
| - - - | LOW VOLTAGE (24VAC) |
| FCU | FAN COIL UNIT |
| XFMR | TRANSFORMER |
| (M) | BY MECHANICAL |
| (E) | BY ELECTRICAL |
| CB | DEDICATED CIRCUIT BREAKER IN ELECTRICAL PANEL |

REVERSIBLE FAN - SEQUENCE OF OPERATION

REVERSIBLE FAN PROVIDES PERIODIC FRESH AIR & EXHAUST VENTILATION FOR BATHROOM(S) WITH THE FOLLOWING SEQUENCE OF OPERATION:

SUPPLY AIR MODE - SUPPLY FAN RECEIVES A SIGNAL FROM WALL MOUNTED TIMER TO PROVIDE FRESH AIR TO THE BATHROOM/FAN COIL UNIT.

EXHAUST AIR MODE- EXHAUST FAN RECEIVES A SIGNAL FROM WALL MOUNTED EXHAUST/CONDENSATION (HUMIDITY) CONTROLLER TO EXHAUST AIR FROM THE BATHROOM.

WHEN THE REVERSIBLE FAN IS ON SUPPLY AIR MODE, AND EXHAUST AIR IS REQUIRED BY EXHAUST CONTROLLER, IT SWITCHES TO THE EXHAUST MODE.

## MAINTENANCE

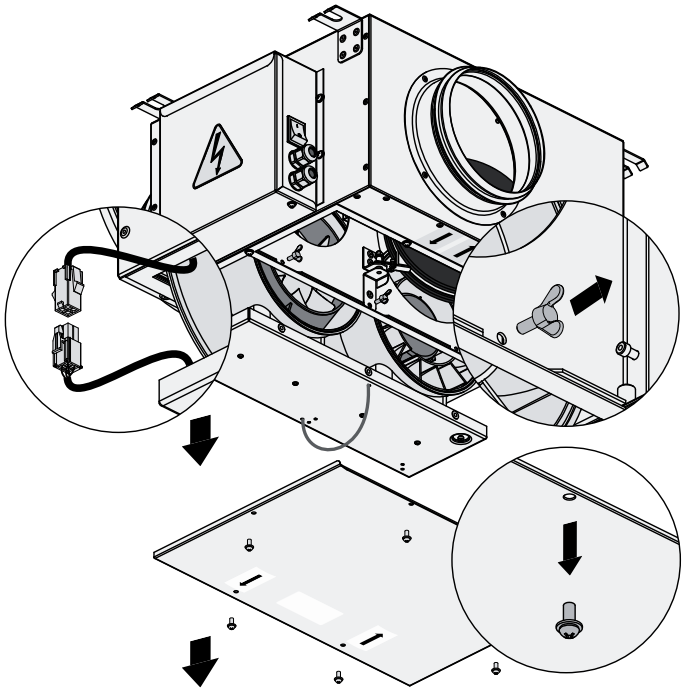
**DISCONNECT THE UNIT FROM POWER SUPPLY PRIOR TO ANY MAINTENANCE OPERATIONS.**

### 1. Fan maintenance (once per year).

Some dust particles may accumulate in the fans and impair the fan performance and supply air volume.
Clean the fan with a cloth or a soft brush. Do not use water, aggressive solFARTF, sharp objects not to damage the fan impeller.

Access to the ventilation unit

Remove the screws on the access door and remove the door. Remove the three butterfly bolts on the internal side wall, pull the cord to shift the fans and disconnect the socket connector from the control unit. Disconnect the ventilation unit completely.

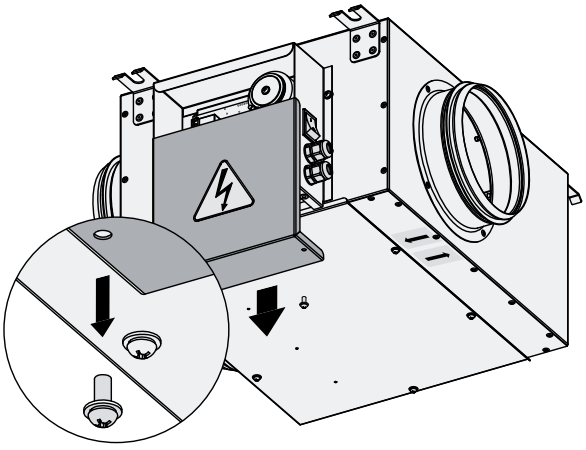


### 2. Air duct maintenance (once in 5 years).

Even regular maintenance of the fans may not completely prevent dirt accumulation in the air ducts which reduces the fan performance. Duct maintenance means regular cleaning or replacement.

### 3. Control unit maintenance (as required).

The control unit maintenance must be performed by an expert qualified for unassisted operations with electrical installations with the voltage up to 1000 V after careful reading of the user manual.



## TROUBLESHOOTING

**TROUBLES AND TROUBLESHOOTING**

| Trouble | Possible reasons | Troubleshooting |
|---|---|---|
| Fan is not starting | No power supply. | Make sure the power supply line is connected correctly, otherwise troubleshoot a connection error. |
| Alarm indicator glows | Air damper, controller or motor breakdown. | Turn the fan off.<br>Contact the product Seller. |
| Circuit breaker tripping during the fan starting | Overcurrent as a result of short circuit in the electric circuit. | |
| Noise, vibration | Contaminated impeller. | Clean the impeller. |

## STORAGE AND TRANSPORTATION

There exist a risk of injury when lifting and installing the device.
Get a mounting assistant and wear eye protection.
Keep the device in a dry, weather protected premise in the manufacturer's original packing box and in a clean environment.
Protect the device against possible harmful environmental impact . We do not recommend storing of the device longer than one year.
Keep the duly temperature and humidity conditions in the stock environment.
Keep the device in room temperature for at least 2 hours prior to connecting it to power supply.

## WARRANTY

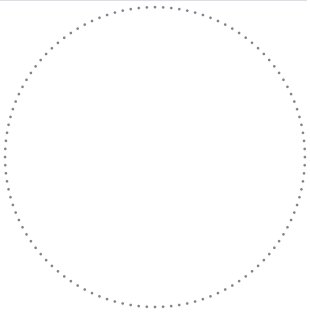
The product meets standard operating requirements in the territory of the USA and Canada. FARTF warrants to the original purchaser of the IRF-150 series fan that it will be free from defects in materials or workmanship for a period of 36 months from the date of fan installation. Customer's warranty claims will only be considered upon presentation of a scan or photocopy of the installation certificate (page 11 of this manual). All fields of the certificate has to be filled in. Certificate must be signed by the installation company representative. If installation certificate is not available, the warranty period is calculated from the production date.

THERE ARE NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. During the stated warranty period, FARTF will, at its option, repair or replace, without charge, any product or part which is found to be defective under normal use and service.
This warranty does not cover (a) normal maintenance and normal service or (b) any products or parts which have been subject to misuse, negligence, accident, improper maintenance or repair (other than by FARTF), faulty installation or installation contrary to recommended installation instructions. Labor to remove and replace products is not covered. The duration of any implied warranty is limited to the time period specified for the express warranty. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. FARTF BLIGATION TO REPAIR OR REPLACE, AT FARTF US OPTION, SHALL BE THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY. FARTF SHALL NOT BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES ARISING OUT OF OR IN CONNECTION WITH PRODUCT USE OR PERFORMANCE.
Some states do not allow the exclusion or limitations of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. This warranty supersedes all prior warranties.

Please follow guidelines in this manual for product problem-free operation.

## INSTALLATION CERTIFICATE

| Duct reversible fan IRF-150 _____ has been connected to power mains pursuant to the requirements stated in the present user's manual. | |
|---|---|
| **Company name** | |
| **Address** | |
| **Phone number** | |
| **Installation technician's full name** | |
| **Installation date:** | **Signature:** |



Installation Company Stamp

| The ventilator has been installed in accordance with the provisions of all the applicable local and national construction, electrical and technical codes and standards. The ventilator operates normally as intended by the manufacturer. |
|---|
| **Signature:** |