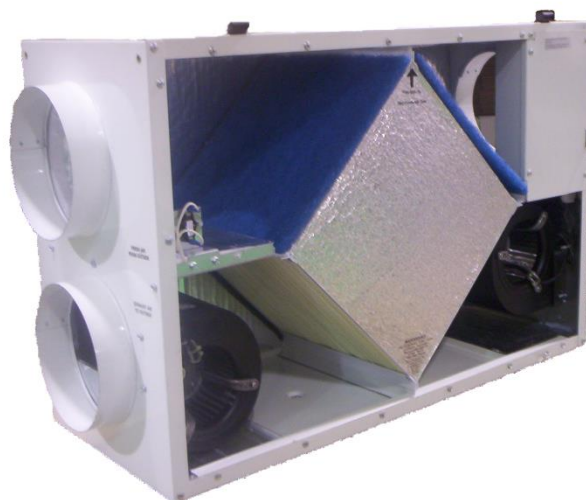
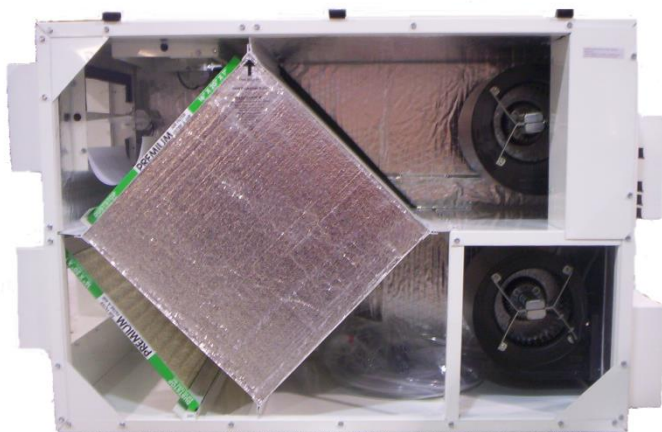




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## ***OPERATING, MAINTAINING & INSTALLING YOUR LIGHT COMMERCIAL HEAT RECOVERY VENTILATOR***

### **IMPORTANT – READ AND SAVE THESE INSTRUCTIONS**

**\* LEAVE THIS DOCUMENT WITH THE BUILDING OWNER**

Specifications, dimensions and ratings may change without notice  
due to ongoing product development and improvements.

***For products using controller NU-HRV Rev F manufactured April 2013 or later***

**NU0103, NU0305, NU0406, NU0508, NU0912, NU1316**

**NU305, NU500, NU600, NU800, NU1200, NU1600**

**INSTALLATION AND WIRING MUST BE IN ACCORDANCE WITH CEC, NEC AND  
LOCAL ELECTRICAL CODES.**

# IMPORTANT

PLEASE READ THIS MANUAL BEFORE YOU INSTALL OR SERVICE UNIT

## NOTE

Prior to integrating this unit with any other piece of mechanical equipment, i.e. furnace, air handler, combustion heating appliance, careful consideration must be given to system design and integration to ensure compatibility and proper operation of both appliances. **Do not** connect the duct system of your H/ERV to any clothes dryer or kitchen exhaust fan duct system.

Whether installing this unit as part of an independent system or to integrate it with a central heating/cooling system, use the procedure in this manual to ensure that the air flows of the H/ERV are balanced. Only a properly balanced H/ERV will deliver maximum performance and energy efficiency.

Although this document contains guidelines for proper HRV sizing and installation, your ventilation system should be installed in conformance to the appropriate provincial or state building regulations or National Building Code and/or ASHRAE “Good Engineering Practices”.

## AVOID RISK OF INJURY, ELECTRIC SHOCK AND FIRE HAZARD

**DO NOT** install this product in an unconditioned space—15° C/59° F ambient temperature is recommended—or in a space/manner where maintenance and service might pose a risk of personal injury or damage to this product.

For indoor installations only.

If your H/ERV is equipped with a 3-prong plug which will fit an A/C electrical outlet in just one orientation. Do not alter this plug or its cord in any way. Grip the plug firmly when removing it from an electrical outlet—**NEVER** unplug this product by pulling or twisting its power cord.

**ALWAYS** unplug an H/ERV before you open or remove its cover (door) to clean the inside of the unit or for any other servicing or repairs.

The **cover to this H/ERV** is removable to ensure ease of access to internal components during cleaning and servicing. **USE CAUTION** when opening or removing the cover of this H/ERV to avoid risk of personal injury or damage to the cover.

**NEVER** attempt to clean the interior of this H/ERV or its components while the unit is plugged in or running.

**ONLY qualified persons** should attempt repair or service of any electrical/internal component of this product.

**NEVER** attempt to repair or service any internal component of this H/ERV while the unit is plugged in or running.

**DO NOT** use your ventilation system to exhaust flammable fumes or gasses.

**ALWAYS** contact your Nu-Air representative if you have any questions or comments about the operation or maintenance of your Nu-Air H/ERV—we are here to help you!

## Contents

1	How the NU-AIR System Works .....	4
2	Features and Operation .....	4
3	Installation Instructions .....	4
3.1	Installer's Responsibilities .....	4
3.2	Installation Basics .....	4
3.3	Ductwork .....	5
3.4	Weather Hoods .....	6
3.5	Port Configurations .....	7
3.6	Mounting and Noise Control .....	8
3.7	Drain Connections .....	10
4	Connecting to Other Equipment .....	10
5	External Connections .....	10
6	Unit Controls: Operation and Wiring .....	11
6.1	ES Series Controls (12 VDC) .....	11
6.1.1	ES Control Wiring – applicable to all ES series controls .....	13
6.2	Winsor Series & Other 24 VAC Control Options .....	13
6.2.1	Terminal Designation/Function .....	13
6.2.2	Building Automation and Control Systems .....	13
6.2.3	Standard Dehumidistat (Part # DSTAT-1) & 2-wire switches .....	14
6.2.4	Windsor Control (Part # WIN-1) .....	14
6.2.5	Windsor Timer (WIN-20) .....	14
7	Control Board Status LEDs .....	16
8	Selectable Furnace/Air Handler Interlock .....	16
8.1	Furnace/Air Handler Interlock Wiring .....	17
9	Defrost Operation .....	18
10	Balancing the System .....	19
10.1	Balancing Procedure: NU0103/NU305, NU0305/NU500, NU0406/NU600 .....	20
10.2	Balancing Procedure: NU0508/NU800, NU0912/NU1200, NU1316/NU1600 .....	21
11	Maintenance .....	21
12	Troubleshooting .....	23
13	Electrical Schematics .....	24
14	Warranty .....	38

## 1 How the NU-AIR System Works

This heat recovery ventilator (HRV) provides fresh air to a conditioned space while exhausting an equal amount of stale air. Heat energy is transferred from one air stream to the other within a non-contact cross flow heat exchanger.

Two forward curve blowers work to bring fresh air into the space and exhaust an equal amount of stale air.

Incoming fresh air is filtered before flowing through the heat exchange core.

Stale, humid air flows through the cross-flow heat exchanger and transfers the heat to the incoming fresh air.

Warm fresh air is distributed through an independent ductwork system or an existing air distribution system.

## 2 Features and Operation

These models use microprocessor based control technology.

The standard control configurations of these HRV's consist of two speed settings selectable from a remote control. Connection between the HRV and control is achieved through low voltage wiring.

Features include:

- Powerful transformer
- Intelligent defrost.
- Self-resetting fuse to protect the board against mis-wiring.
- Motor speed control (NU0103, NU0305, NU0406 only) – Motors can be independently adjusted in HRV high and low speeds. Optional setting for 220V/50Hz geographic areas.
- Fan interlock

## 3 Installation Instructions

### 3.1 Installer's Responsibilities

Installers are responsible for the performance of the ventilation system and for ensuring that all codes and standards are met.

Do not mount the fresh air supply near a source of contaminated air such as automotive exhaust, gas or propane exhaust or oil tanks.

Combustion appliances such as furnaces and hot water heaters must not draw combustion air directly from an H/ERV.

### 3.2 Installation Basics

Before installing a **Nu-Air** Light Commercial H/ERV for the first time, please read these instructions.

## 1. Standard Issue Items

The HRV comes equipped with:

Filters

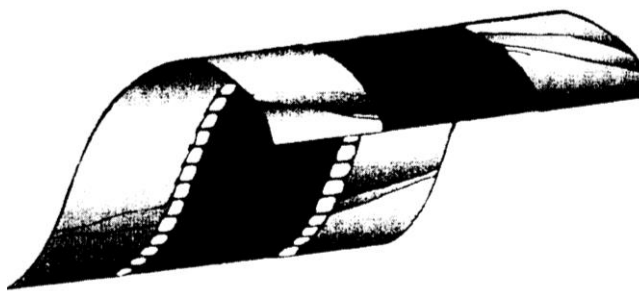
Heat/Energy Recovery Core

Drain Kit

Anti-Vibration straps (NU0103, NU0305)

Anti-vibration Springs, chain & hanging brackets (NU0406)

## Flexible Duct Connector



## 2. Other Basic Needs

Control Package	Galvanized Duct	Flexible Duct Connector
Outside Hoods (2)	Duct Fittings	Duct Sealer or Tape
Screws	Diffusers	Duct Hanger
Balancing dampers	Air flow measuring device for balancing	

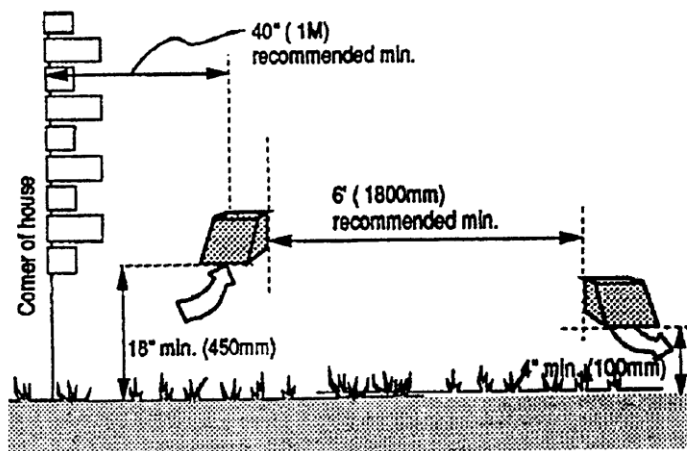
### 3.3 Ductwork

Ductwork

Duct runs should be straight with minimum bends and elbows. Joints should be tight fitting and sealed with high velocity, fiber reinforced duct sealant or good quality duct tape.

**RECOMMENDATION:** *An engineer or other qualified person should design the duct system*

Ducting must be supported according to the designers' specified hanger system and intervals.



HRAI-recommended hood location for residential applications.

### Ducting from the Weather Hoods

Between the weather hoods and the H/ERV it is recommended to use rigid rectangular ducting equal to or larger than the collar size of the machine. These ducts should be wrapped with an insulating duct wrap. The minimum RSI value of insulation should equal that of the local building codes.

### 3.4 Weather Hoods

#### Locating the Weather Hoods (Commercial Installations)

Designers should try to locate the hoods in such a way that there is easy access for cleaning purposes. The H/ERV should be located close to the outside wall(s) containing the hoods, the resulting short duct lines will minimize airflow losses.

There should be maximum separation between the fresh air and exhaust hoods. Supply hoods should be a minimum of 36" (inches) above the ground level. Exhaust hoods should be at least 12" (inches) above the ground level. Fresh air hoods must be min. 10' away from any other appliance exhaust vent or furnace vent.

In addition ASHRAE Standard 62-99 recommends the following:

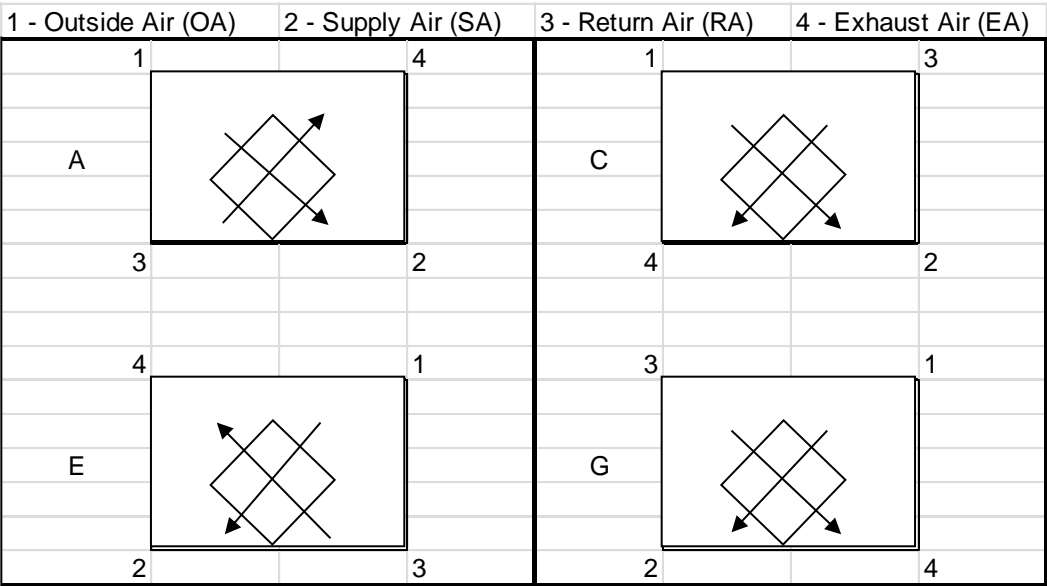
Ventilation systems should be designed to prevent re-entrainment of exhaust contaminants, condensation or freeze-ups and growth of microorganisms. Make-up air inlets and exhaust air outlets shall be located to avoid contamination of the makeup air. Contaminants from sources such as cooling towers, sanitary vents, vehicular exhaust, and street traffic should be avoided.

#### Locating the Weather Hoods (Residential Installations)

There should be a minimum of 6' (feet) of separation between the fresh air and exhaust hoods. Supply hoods should be a minimum of 18 "(inches) above the ground level. Exhaust hoods should be at least 4 "(inches) above the ground level. Holes through the wall should be 1" larger than the collar on the hood. Fresh air hoods must be 3' away from any other appliance exhaust vent or furnace vent.

NOTE: Refer to local code requirements.

### 3.5 Port Configurations



1 - FROM OUTSIDE      2 - TO SPACE      3 - FROM SPACE    4 - TO OUTSIDE

1 & 4 Insulated                      2 & 3 Non-Insulated  
 C or G for NU0103, NU0305, NU0608, NU0912, NU1316 (NU305, NU500, NU800, NU1200, NU1600)  
 A or E for NU0406 (NU600)

Collar Sizes (inches)	
NU0103/NU305	8 DIA
NU0305/NU500	10X6
NU0406/NU600	14X8
NU0608/NU800	14X8
NU0912/NU1200	14X8
NU1316/NU1600	20X10

### 3.6 Mounting and Noise Control

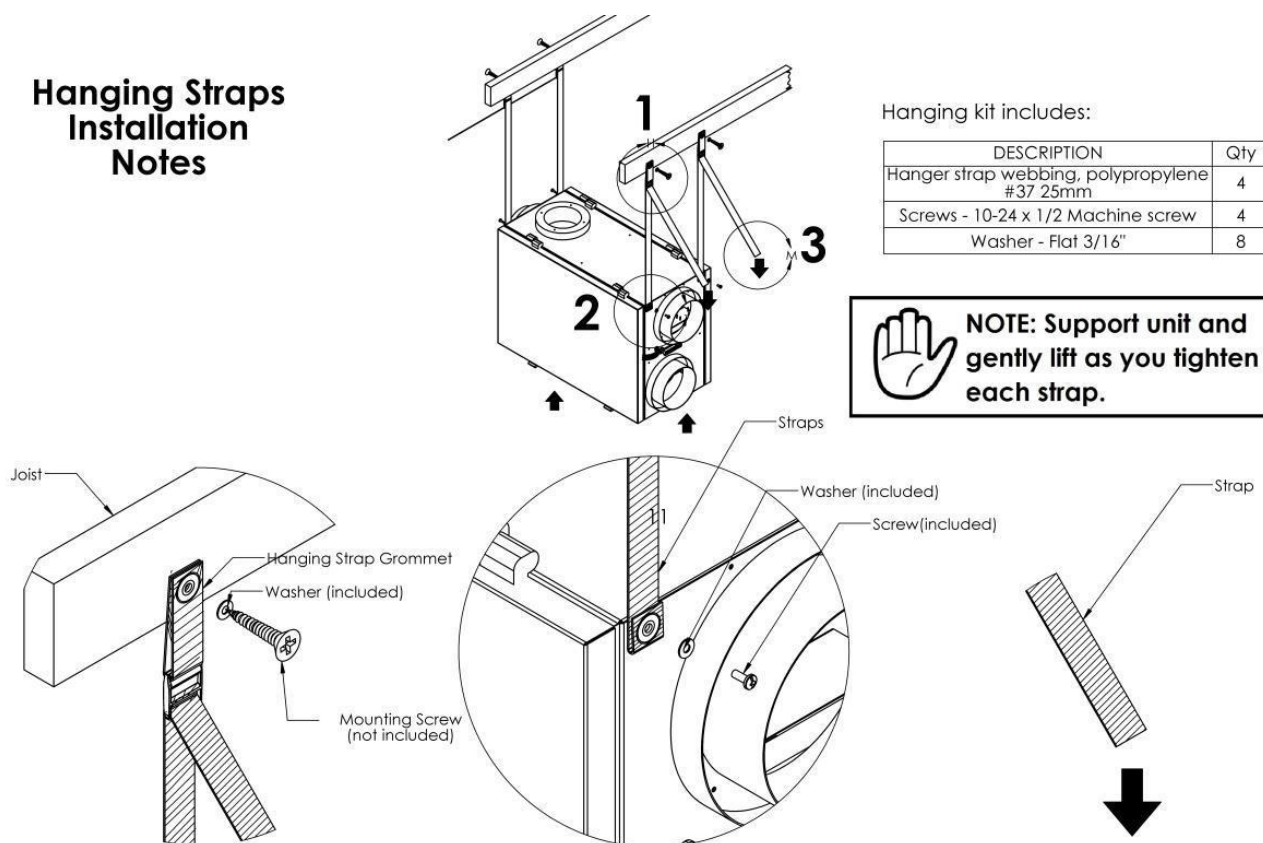
#### NU0103/NU305, NU0305/NU500:

For maximum efficiency, the H/ERV should be installed in a heated area. The HRV is designed to be hung from the ceiling by way of the anti-vibration straps supplied. Attach rubberized anti-vibration straps with machine screws provided to the threaded brass insert in the top corners of the cabinet. Avoid hanging the HRV directly below a bedroom or other quiet area.

#### Nu-Air EZ System Features: EZ Level, EZ Balance

Included in orders shipped after November 1, 2016

#### Hanging Straps Installation Notes





NU0406 – NU1316 & NU600-NU1600:

The H/ERV is designed to be hung from the ceiling by way of the anti-vibration springs and chain supplied. You will also need bolt cutters or snips and self-tapping screws. The following items are included with the H/ERV:

- Galvanized suspension bracket (4)
- #10-24 x 1/2" machine screw, Robertson socket drive (16)
- Suspension Springs (4)
- Double loop suspension chain (20')

Securely fasten the bracket to the HRV with the machine screws supplied. (A)

Cut the suspension chain into four equal lengths (5' max).

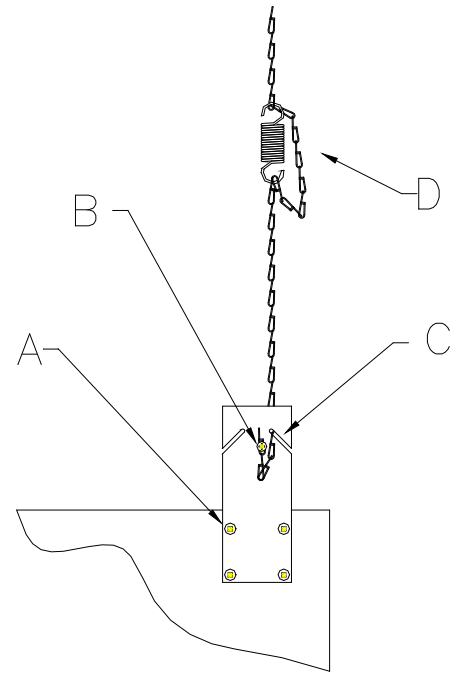
Use a self-tapping screw to fasten the first complete link of chain to the pre-drilled hole in the bracket. (B)

Hook the chain into the grab slot of the bracket. Note that the tension of the chain must pull toward the middle of the bracket.

Use the appropriate slot for this effect. ( C )

Attach the free end of the chain to a structurally sound member overhead. This will vary from site to site.

Form a 5" loop in the chain and hook the vibration isolation spring between the slack. (D)



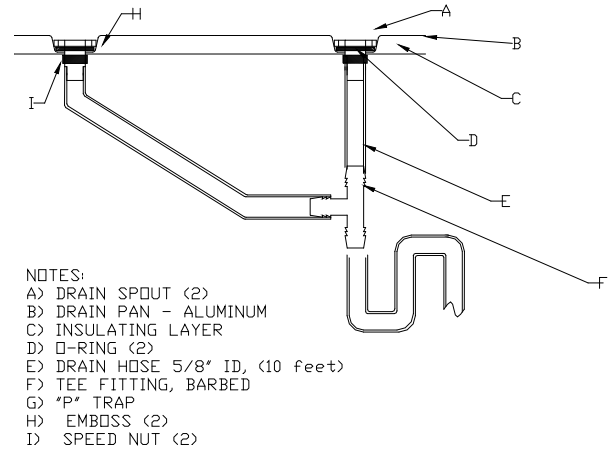
**IMPORTANT:** **A.** Do not rely on the spring to hold up the HRV without chain back up. **B.** Flexible duct connector (PRO flex or other) should be used at all four collars of the H/ERV to isolate vibration.

### 3.7 Drain Connections

Access to a drain is required to handle the HRV condensate. Care should be taken to run the condensate tube where it will not freeze.

For best results, **Nu-Air** recommends the following steps be followed when installing drain kits.

1. Apply the O-ring supplied to the flange of each drain spout. (A)
2. Insert the drain spouts through the holes in the drain pan. (B)
3. Use the speed nut to tightly secure the drain spout.
4. Cut two lengths of drain hose long enough to avoid kinking. (E)
5. Attach the hose to the drain spout by sliding it over the spout until it is tight to the bottom of the speed nut.
6. Secure the hose to the spout with the plastic tie wraps. (D)
7. Install the tee fitting as shown in the drawing below. (F)
8. Attach the free end of the hose to the left fitting. Repeat for the other side.
9. Use the remaining hose to form a "P" trap and terminate at the top of the tee.
10. Pour water into the drain assembly to form an air seal. This prevents gasses from being drawn into the HRV.



## 4 Connecting to Other Equipment

In general the H/ERV is not intended to be connected to other equipment or appliances. Connection with a forced air furnace or air handler is common practice but additional controls must be in place.

If the H/ERV is used upstream of an air handler or similar equipment (e.g. fresh air into economizer section), **the start-up sequence must be H/ERV first followed by the air handler.** Starting the air handler first, will rotate the H/ERV's fresh air fan backward. If the motor is unable to overcome the extra load an over amp situation will result.

## 5 External Connections

For electrical hook-up, the H/ERV should be connected to its own circuit using electrical wire and conduit in accordance with code requirements.

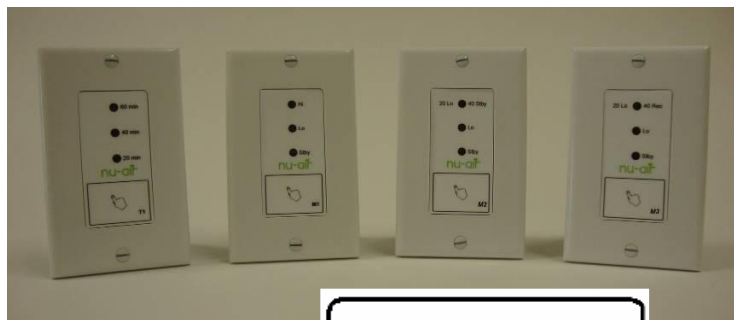
Nu-Air H/ERVs are equipped for remote controls. Options include occupancy, humidity and gas sensors, timers, off/on/intermittent-on, and low-high switching.

## 6 Unit Controls: Operation and Wiring

Your unit is equipped with 12 VDC and 24 VAC removable terminal blocks. The control logic of the unit circuit board is such that the most recently used remote control will control the unit. If desired, 12 VDC and 24 VAC controls may be used in the same installation. Use a 3 mm flat-head screwdriver to connect wires to the terminal blocks.

### 6.1 ES Series Controls (12 VDC)

All ES type controls (sold separately) connect to the 12V (4-wire) removable terminal block.



ES Series Mx and Tx controls are equipped with a touch pad and 3 LED's. The touch pad is used to select mode of operation or turn the appliance off. The LED's indicate the operating mode of the HRV/ERV.

→ES controls can be used in any combination and in virtually any number, and can be wired in **series or in parallel**. The user may toggle through and select any function, even if this interrupts a current mode or cycle.



Selecting operation with ES Controls is easy: Just tap the touch-pad!

#### ES-T1 – 20/40/60 Minute Timer

This timer is used to make the unit operate in high speed for 20, 40 or 60 minutes and is typically installed in bathrooms, kitchens and workspaces. You may toggle between functions or even cancel a high speed run by tapping the touch pad.

#### ES-M1 Control

This basic control allows you to select from standby mode, low speed, or high speed. The ES-M1 is ideal for installations where basic ventilation functions are required.

Functions:

No LED: HRV/ERV is OFF

Standby: Unit is in standby, ready for a control signal.

Lo: Unit operates in low speed continuously with high speed override from timers or sensors.

Hi: Unit operates in high speed continuously.

#### ES-M2 Control

While featuring the convenience of standby and low speed modes, the ES-M2 offers automatic ventilation with 20 minutes low speed ventilation followed by 40 minutes in standby. Use the 20/40 cycle during times of low occupancy.

Functions:

No LED: HRV/ERV is OFF

Standby: Unit is in standby, ready for a command

Lo: Unit operates in low speed continuously

20 Lo/40 Standby: Unit cycles between 20 minutes continuous low and 40 minutes standby.

### ES-M3

ES Series units are equipped with a recirculation system that will not recycle bathroom air. The re-circulation function of the ES-M3 enables you to re-circulate air for 40 minutes of every hour. In addition to ventilating, this control can be used to cycle air when there is no forced air system to alleviate stratification and dead zones.

Functions:

No LED: HRV/ERV is OFF

Standby: Unit is in standby, ready for a command

Lo: Unit operates in low speed continuously

20 Lo/40 Rec.: Unit cycles between 20 minutes continuous low and 40 minutes recirculation.

Low and circulation cycles are overridden by a high speed signal from another control.

### ES-M4

The ES-M4 control offers the simplicity of the ES-M1, with the added convenience of full-time recirculation mode.

Functions:

No LED: HRV/ERV is OFF

Standby: Unit is in standby, ready for a command

Lo: Unit operates in low speed continuously

Rec.: Unit operates in full-time recirculation with no outdoor air exchange.4

Low and circulation cycles are overridden by a high speed signal from another control.

*M4 can only be used with HRV equipped with recirculation capability: NU0103, NU0305, NU0406, NU0508, NU0912, NU1316 with circulation defrost.*

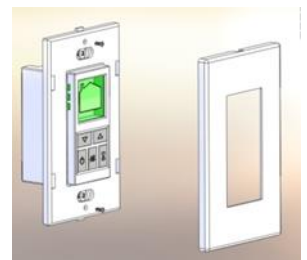
## Lumnia ES multi-function digital Wall Control with Dehumidistat

### Mounting

MOUNT IN A CENTRAL LOCATION WITHIN THE BUILDING.

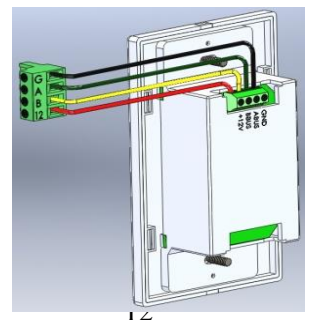
FITS A STANDARD 2X3" (NOMINAL) ELECTRICAL WALL BOX (NOT INCLUDED). WHILE YOUR LUMINA WALL CONTROL COMES WITH A SCREWLESS WALL PLATE, YOU CAN SUBSTITUTE THE FACTORY SUPPLIED WALL PLATE TO MATCH ANY DÉCOR BY USING A FLAT SCREWDRIVER TO PRY OFF THE ORIGINAL FACE PLATE AND BY REMOVING THE 5 MM SCREWS SECURING FACEPLATE BASE.

DRYWALL ANCHORS MAY BE USED WHERE A WALL BOX IS NOT AVAILABLE.



### Wiring

USING A 2 MM FLAT SCREWDRIVER AND 4-CONDUCTOR WIRE, CONNECT THE H/ERV 12 VDC TERMINAL BLOCK TO THE CORRESPONDING TERMINALS LUMINA WALL CONTROL.



See “Lumina Wall Control and Installation Guide” for details.

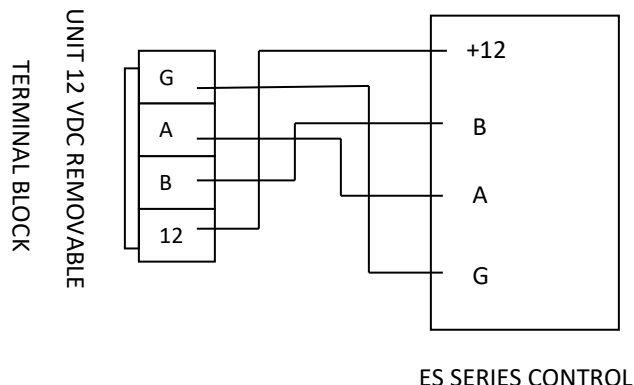
### 6.1.1 ES Control Wiring – applicable to all ES series controls



**Crossing the +12V/12 and ground (G) wires might short-circuit and destroy the ES wall control processor.**

**Note:** If you are using **ONLY** an **ES-T1** to control your unit, you must connect a jumper wire between R and SB on the 24V (10-wire) removable terminal block. In this situation you can add continuous low speed operation by connecting a jumper wire between R and LO.

Consult local building code in case a centrally located control with an on/off switch is required.



## 6.2 Winsor Series & Other 24 VAC Control Options

Windsor Series and other 24VAC controls (sold separately) connect to the 24V (10-wire) removable terminal block.

### 6.2.1 Terminal Designation/Function

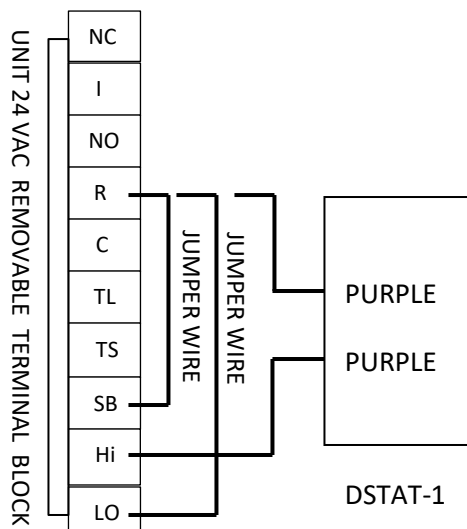
NC	Normally closed – a dry relay contact paired with I that opens when the HRV is running
I	I – interlock – a common relay terminal used with NC or NO. See Sec. 8
NO	Normally open - a dry relay contact paired with I that closes when the HRV is running
R	24 VAC output
C	24 VAC common return
TL	Timer Light – used only with WIN-20
TS	Timer Switch – used only with WIN-20
SB	Stand By – a closed switch across SB- R makes HRV dampers active, fans are off.
Hi	High – a closed switch across Hi-R makes HRV run in high speed
LO	Low – a closed switch across Lo-R makes HRV run in low speed.

### 6.2.2 Building Automation and Control Systems

The HRV does not communicate with BMS. Dry relay contacts from the BMS can be used to enable 3 modes of operation. R-SB, R-Lo, R-Hi. If 2 or more are called simultaneously, the highest fan speed results.

### 6.2.3 Standard Dehumidistat (Part # DSTAT-1) & 2-wire switches

The dehumidistat switches the HRV to high speed when the relative humidity of the air around it exceeds its set point until indoor humidity falls below the set point.



For intermittent high speed operation, connect Nu-Air PN DSTAT-1, dedicated (RNC) wall switch, CO<sub>2</sub> sensor, etc. to R and Hi terminals.

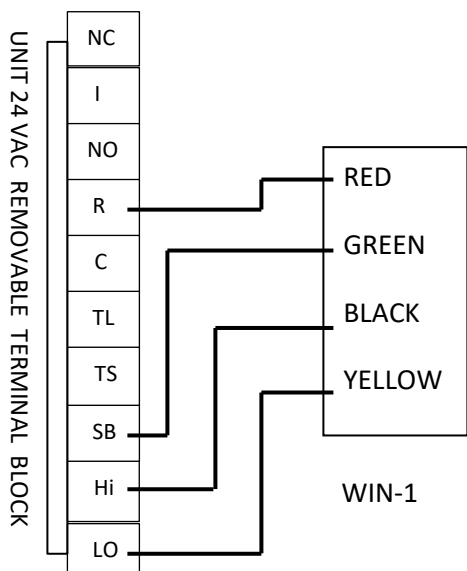
For continuous low speed, connect jumper wire to R and LO terminals.

Where required, C terminal may be used for controls requiring external 24 VAC power source.

For two-wire switching, and where local building regulations permit, Nu-Air recommends a jumper wire between R and SB to engage the unit in standby mode.

### 6.2.4 Windsor Control (Part # WIN-1)

The Windsor Dehumidistat Control provides the same humidity control as the Standard Dehumidistat, with the added functionality of a 3-position switch from which the operator can select three operating modes. The Constant switch can be engaged for full-time high speed.

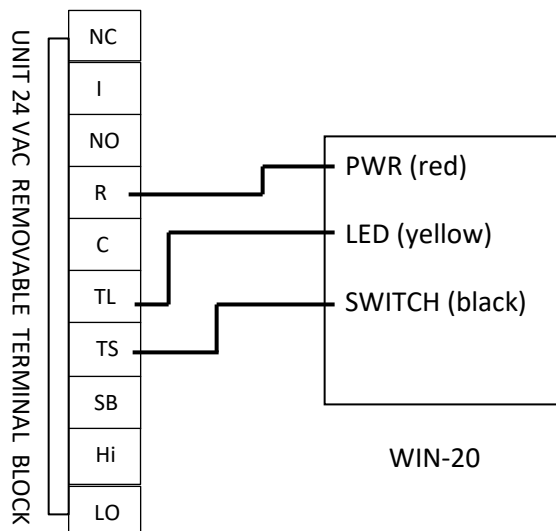


Choose from the following operating modes:

1. Off
2. Standby
3. Continuous low speed
4. Intermittent high speed
5. Continuous high speed

### 6.2.5 Windsor Timer (WIN-20)

Install in bathrooms, kitchens, workstations or other locations where high-speed ventilation control is needed. The machine will run at high speed for twenty (20) minutes and then return to its previous operating condition. Timers can be connected in series or parallel.



### Win-20 Timer

Up to 6 Win-20 timers may run off of one system.

If using only the Win-20 timer as a means of remote control, connect jumper wire between R and SB.

## 7 Control Board Status LEDs

The control board is equipped with LEDs which indicate the unit's current state of operation.

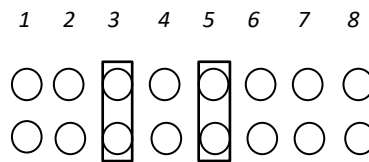
CONDITION	LED AND STATUS
NO LED	UNIT/TRANSFORMER IS NOT POWERED
UNIT OFF	Red is off, Green is blinking slow, every 1 s. Also indicates processor is programmed and running.
STANDBY	Green is OFF. Red led is blinking slow, every 1 s.
EXHCHANGE LOW SPEED	Green ON. Red blinking slow, every 1 s.
EXCHANGE HIGH SPEED	Green ON. Red blinking fast.
DEFROST	Green ON, Red ON. (Appears Yellow)
RECIRCULATION LOW SPEED*	Red led ON, Yellow blinking slow, every 1s.
RECIRCULATION HIGH SPEED*	Red led ON, Green led blinking fast.

## 8 Selectable Furnace/Air Handler Interlock

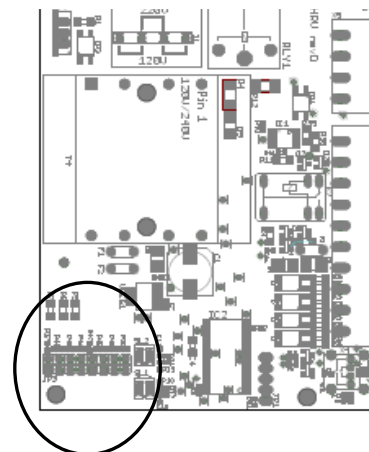
You may choose on the unit control board to interlock whenever the HRV/ERV is operating at any speed, or just high speed. Position 5: interlock at any HRV speed; Position 6: interlock at HRV high speed only.

One jumper must be present in jumper range 1-4 and in jumper range 5-8.

Do not alter jumper set 3.

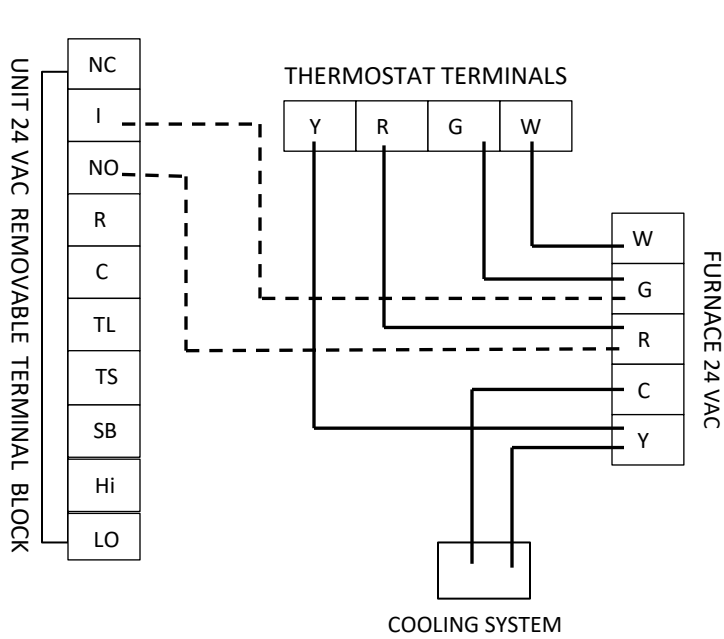


(factory setting shown)

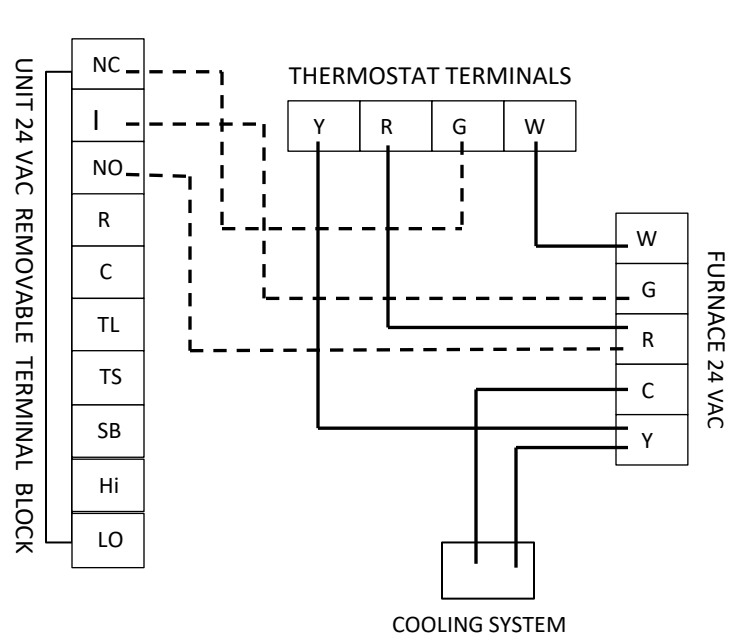




## 8.1 Furnace/Air Handler Interlock Wiring



STANDARD FURNACE INTERLOCK



ALTERNATE FURNACE INTERLOCK

If the standard interlocking method has the unwanted effect of bringing on the AC, i.e. thermostats that do not isolate "G" from "Y", use the alternate method shown above.

## 9 Defrost Operation

### Proportional Defrost Cycles

Your unit will adjust defrost frequency and duration, based on outdoor temperature: -5° C (23° F) -15° C (5° F), -20° C (-4° F) and -27° C (-17° F).

### Circulation Defrost:

When outdoor temperature is below -5° C (23° F), a defrost cycle is initiated for a fixed duration. The fresh air motor will run and the exhaust air motor will shut down. A damper will shut off the cold supply port, directing ambient air through the core for defrosting. The unit will resume normal operation for a fixed duration, then the processor will read outdoor temperature and initiate defrost as necessary. Defrost times and intervals will vary according to temperature below -5° C (23° F).

### Timed Fan Shut-Down Defrost:

The outside air before the core is monitored. When below freezing, a timed defrost cycle is activated. The supply fan shuts down while the exhaust fan continues to move warm air through the core. After a predefined temperature based time cycle, the HRV reverts to exchange mode.

NOTE: In circulation defrost mode, this unit will not induce indoor negative pressure nor recycle exhaust air; rather it will redistribute ambient room air.

## 10 Balancing the System

Once the H/ERV system is installed, do the following:

1. Close all windows and doors.
2. Turn off any exhaust only systems.
3. To balance the H/ERV, set the machine on high speed.
4. Make a small hole in the supply duct at least 2 feet down stream of the motor. Insert a Pitot tube in the cross sectional center of the duct.
5. Measure the velocity pressure with a digital manometer or magnehelic gauge.
6. Record the value and repeat the procedure for the exhaust air stream.
7. Use the motor speed control buttons on the side of the unit to reduce airflow until the velocity pressure equals that of the opposite air stream.

To balance the H/ERV, you will need a device to measure air flow. It is recommended to use either a magnehelic gauge or a pitot tube air meter (discussed here). Depending on the device you are using, follow one of the two procedures below:



Digital Manometer & Pitot Tube (Supplied by Others)

### **Magnehelic Gauge: (Part # 2000-00 – not shown)**

1. Disengage one end of the exhaust flexible duct connector in the main duct before any branch ducts and push the duct back into itself. Insert the flow grid and tape the joint between the flow grid and ductwork.
2. Set the HRV on high speed. Mount the magnehelic gauge level and plumb. Join the hoses from the flow grid to the magnehelic gauge. The needle of the magnehelic gauge should read positively. Switch hose connections if the needle falls below zero.
3. Record reading from gauge. Repeat the procedure for the supply duct.
4. Go back to the duct with the higher reading and adjust the motor speed until the supply air is equal to the exhaust air reading.

**460 Air Meter:** (Nu-Air Part #100460).

1. Drill a 1/4" hole in both the supply and exhaust ducts on the warm-side of the machine at least 12" away from the HRV and any elbows, tees, etc.
2. Set the H/ERV on high speed.
3. Take a pressure reading in each duct and record the results.
4. Go back to the duct having the higher reading, and using the motor speed control buttons reduce the airflow down until the pressure reads to within 10% of the other air flow.
5. Use tape to reseal the holes.
6. To convert pressure readings to airflow (cfm or L/s) refer to the instructions and table included with the air meter.

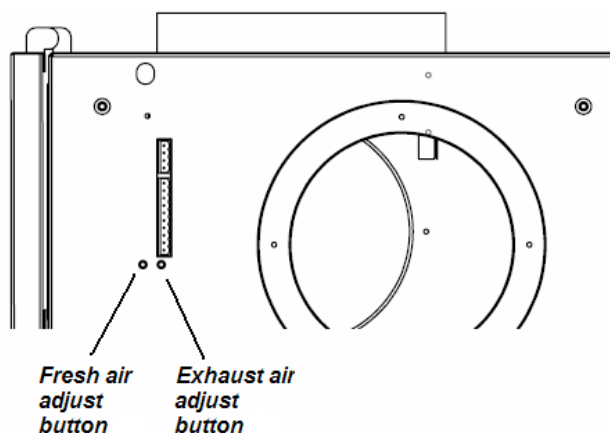


**10.1 Balancing Procedure: NU0103/NU305, NU0305/NU500, NU0406/NU600**

Balanced air flow between the supply and exhaust air streams is essential to the performance of an HRV or ERV. Changing motor speeds or balancing is quick and simple with two buttons recessed slightly into the unit's cabinet. **NO BALANCING DAMPERS ARE REQUIRED.** Be sure to close windows and doors, and turn off all exhaust fans/appliances during the balancing procedure.

High-Speed Adjustment/Balancing:

1. Use any means to initiate high speed (e.g. ES-M1 control, R—H jumper wire, or 24V R—H control) may be used. **Remove the jumper wires after balancing.**
2. Press and hold either the FRESH air or EXHAUST air pushbuttons (not both) for 3 Seconds. Releasing the push-button places the unit in SPEED ADJUST MODE.
3. Now press the corresponding pushbutton to adjust the fresh air fan or the exhaust fan, thereby changing the air flow. Each press will reduce motor speed until the default minimum is reached, at which point the motor will return to its peak speed. Allowing a brief pause between presses (about 0.5 seconds), you will press the adjust button about 70 times before reaching minimum speed. During the balancing procedure, you can switch between adjusting the fresh air motor or exhaust air motor.
4. To exit balancing/speed adjust mode, stop pressing buttons for 10 seconds. This will place the unit back in operating mode with the new speeds saved to the circuit board's memory.



### Low-Speed Adjustment/Balancing.

If low speed adjustment is desired, follow the same process to adjust high speed, but use a jumper wire or remote control to put the unit into **low speed** to make low speed adjustments

## **10.2 Balancing Procedure: NU0508/NU800, NU0912/NU1200, NU1316/NU1600**

For units with the larger, fractional horsepower motors, electronic speed adjustment using the method described above has been disabled. Instead use mechanical dampers to reduce the airflow to the desired flow rate.

## **11 Maintenance**

**Note:** The following are minimal service guidelines. More frequent maintenance will be required depending on service application and conditions. **CAUTION: Disconnect power before servicing.**

### Filters

Dirty filters can reduce ventilation efficiency, result in unbalanced airflow and damage or shorten the life of the motors. Clean at least every three months. Polyester filters should be vacuumed, not washed, and replaced annually. Filters remove easily by opening the front cover.

### Fans

When cleaning the filters, take the opportunity to vacuum any interior surfaces including the fan blades.

### Condensate Drain

Twice per year wipe clean the condensate drain pan. Check the condensate drain and tubing to ensure they are free flowing. The tubing must have an "S" or loop that traps a quantity of water to prevent air from entering the HRV via this tubing.

### Core

The core (heat/energy exchanger) should be removed and cleaned at least once a year. Use a non-corrosive enzyme detergent in cold water (i.e. Arctic Power). To remove the cover of the machine, unlatch and slide the door to the right to release from the hinges. Slide the core forward to remove it from the HRV.

### Exterior Hoods

Regularly check the outside vents and clean any obstructions such as grass, leaves or other debris. Do not replace the screen with mesh smaller than 1/4" as this will restrict airflow. During winter operation, ensure snow and frost does not build up and restrict or block openings.

### Diffusers and Ductwork

Clean the diffusers with soap and water when they are dusty or otherwise noticeably dirty. Exhaust diffusers require more frequent cleaning than supply diffusers.

### ANNUAL SERVICING

Your H/ERV should undergo annual general servicing by an accredited contractor. This servicing should include the following:

The six maintenance items above.

- A general check for proper operation. Controls and electrical connections should be inspected.
- Verification that intake and exhaust airflows are properly balanced.
- Re-balancing as necessary.

## 12 Troubleshooting

SYMPTOM	EXPLANATION	ANSWER
Frosting up of HRV and/or Duct(s).	HRV air flows incorrectly balanced. HRV defrost system is not working.	Balance HRV. Install dampers. Check defrost system. Note minimal frost build up is expected on cores before unit initiates defrost cycle function.
Supply air feels cool.	HRV air flows incorrectly balanced. Improper location of supply grills. Velocity of air is too high. Extremely cold outside temperatures. Heating coil is not working.	Balance HRV. Locate grills high on walls or in ceiling. Adjust diffusers, resize duct. Add a duct heater. Call your service contractor.
Outside duct has ice build-up or condensation.	Improperly installed vapour barrier around insulated duct.	Tape all joints. Ensure the vapour barrier is completely sealed and insulated.
Water in the bottom of HRV.	Drain pans are plugged. Incorrect connections of HRV drain lines. HRV is not level. Drain lines plugged. HRV heat exchange core improperly installed.	Look for kinks in the line. Check water drain connections. Ensure that water drains from pan.
Poor air flow(s).	HRV incorrectly balanced. Filters need to be cleaned. Hoods needs to be cleaned. Grills are closed. Inline dampers are closed. Low power supply. Wrong size ducting. Under-sized HRV. HRV is not working.	Tape all joints. Use proper airflow measuring equipment. Open grills. Remove obstructions in duct(s), hoods(s), and grill(s). Balance airflow. Clean filter. Have a professional look at the system.
Humidity levels too low.	HRV air flows incorrectly balanced. Dehumidistat control set too low.	Balance Air Flow(s). Increase Dehumidistat. Humidifiers may need to be added.
Humidity levels too high.	HRV air flows incorrectly balanced. HRV undersized. High humidity areas not ventilated properly. Dehumidistat is not working.	Balance airflow. Set dehumidistat.
Dehumidistat is not working.	Incorrect connection of outside low voltage wiring between HRV and Dehumidistat.	Check outside wiring for short. Check wall switch for correct connection. Check wires are connected to proper terminals at the HRV.

## **13 Electrical Schematics**

There are a number of configurations and options available for these products. The schematic specific to your unit was supplied with the equipment. The following pages illustrate typical, generic, schematics. Your equipment may vary.

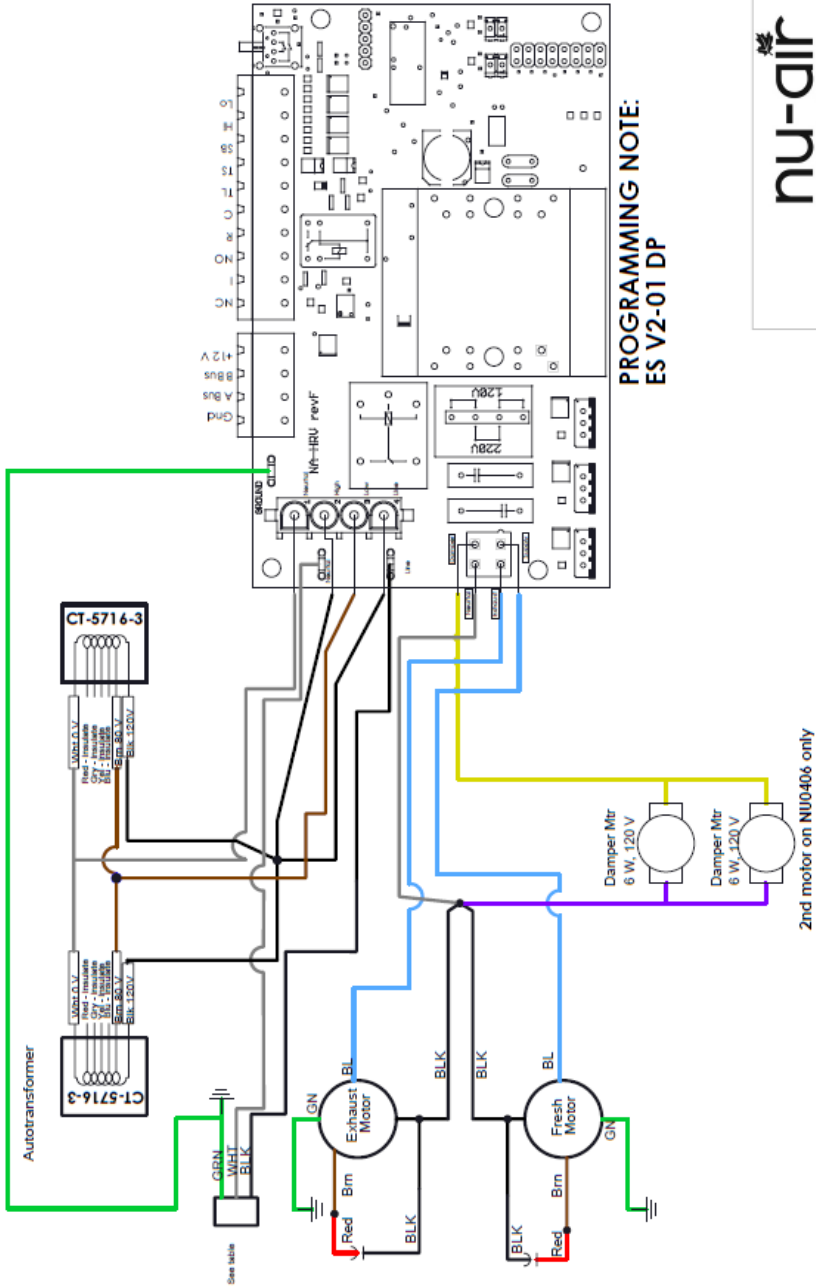




Revision Notes
AB Remove Door Switch

12g
14g
18g
22g

Grey = White



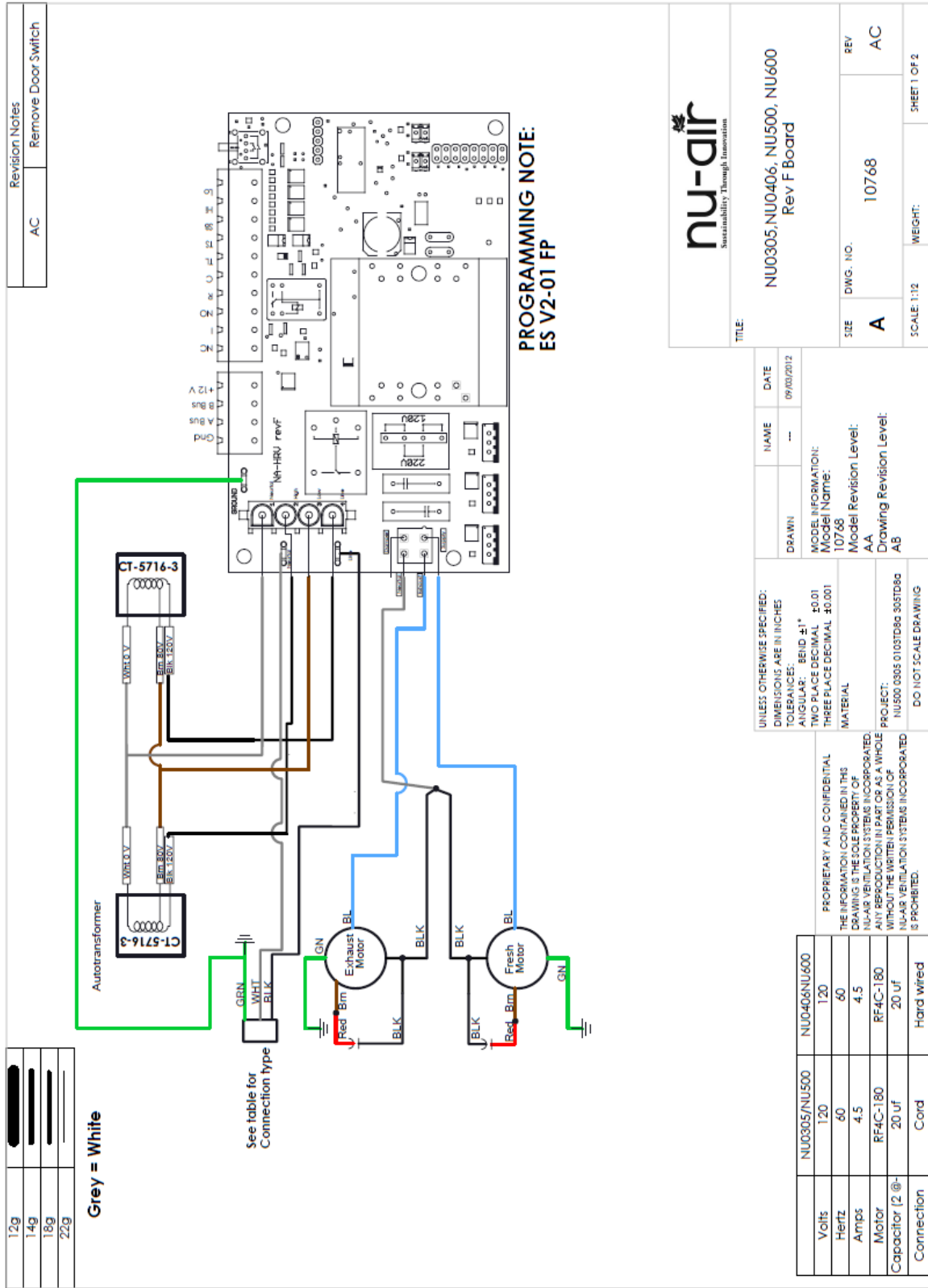
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ES V2-01 DP

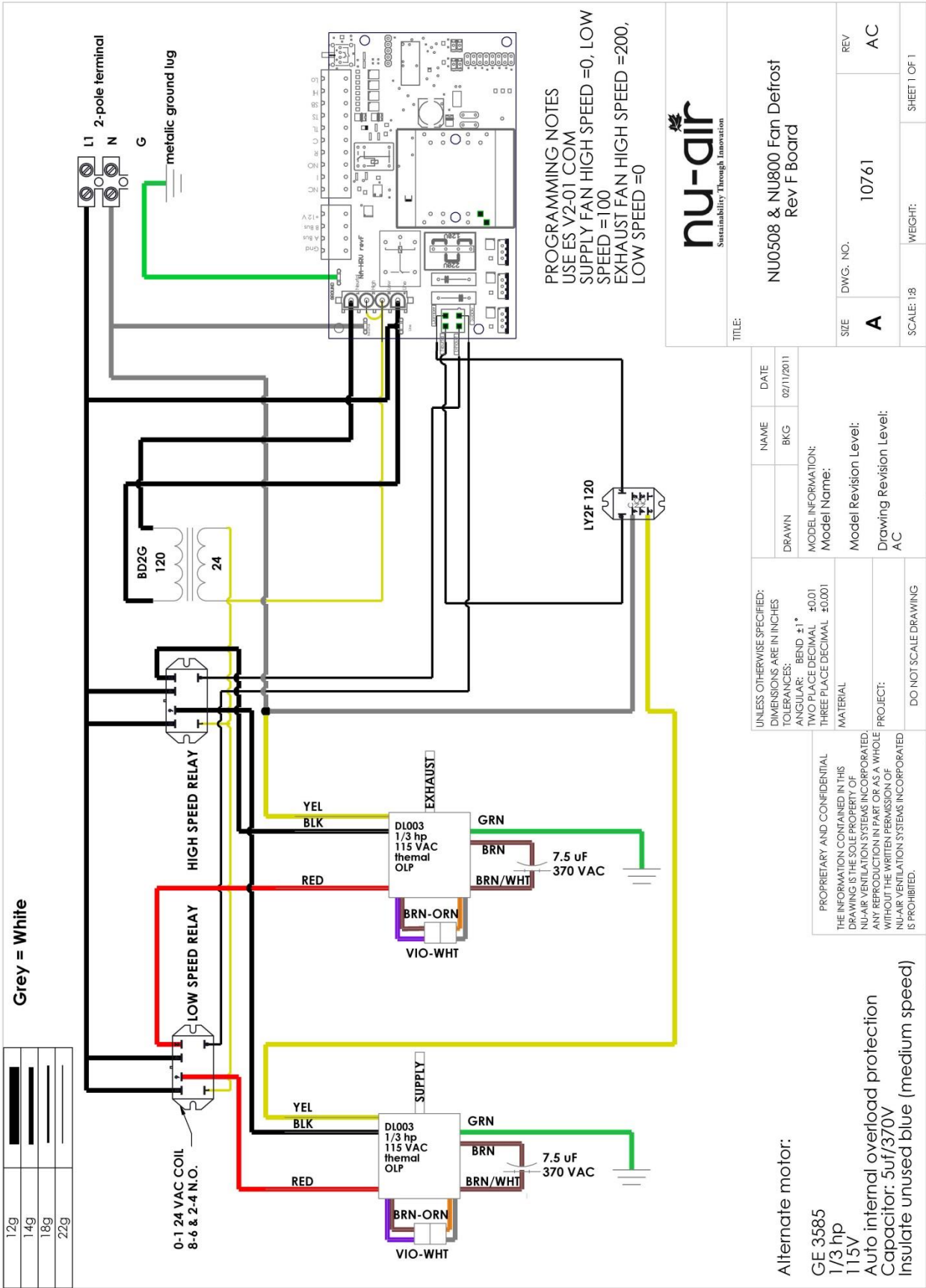
Wire Table	
Mains:	18 Ga
Power:	18 Ga
Control:	22 Ga

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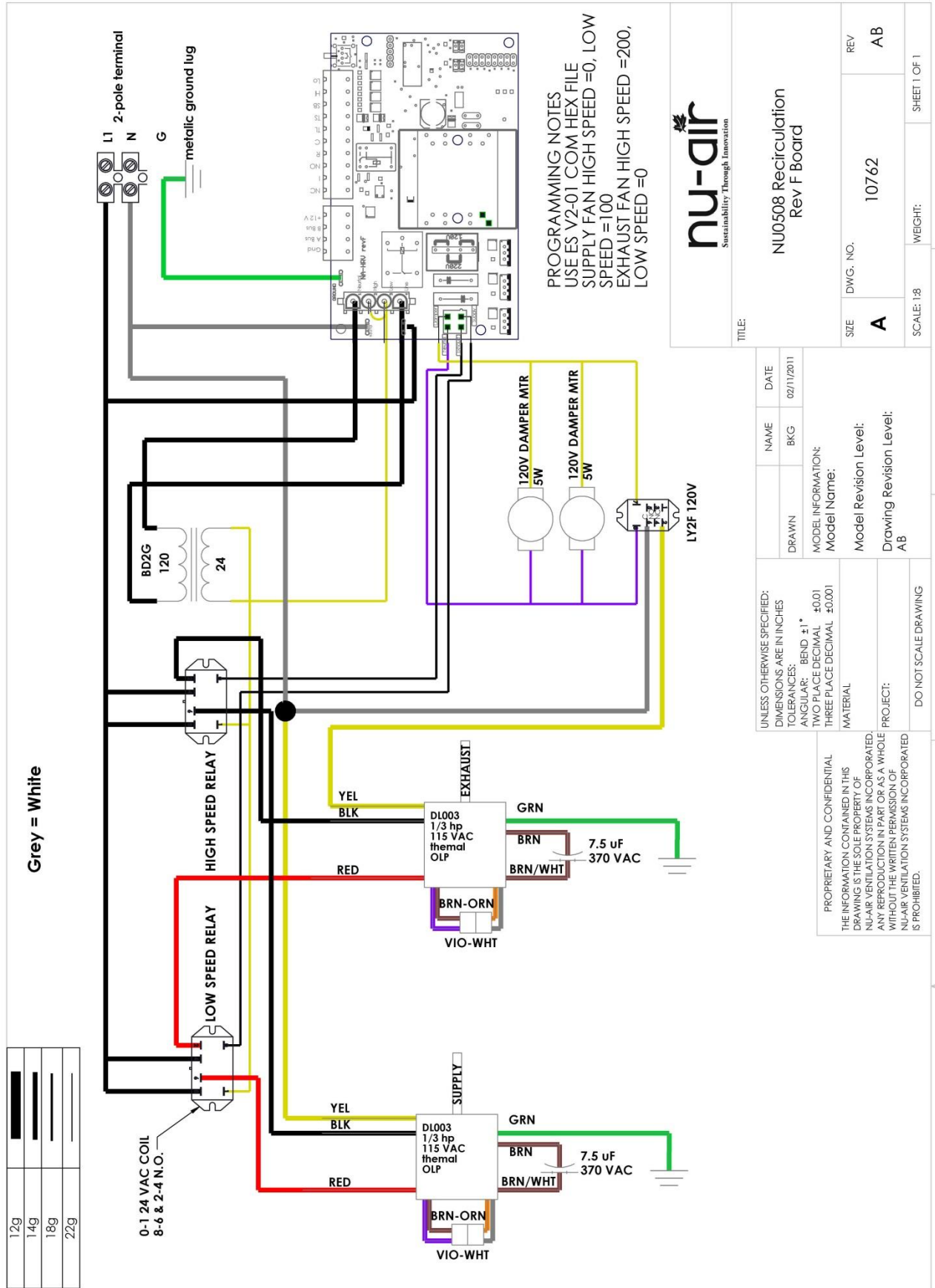
TITLE:		NU0305, NU500, NU0406, NU600 Damper Recirculation Rev F Board		SIZE		DWG. NO.		REV	
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: ANGULAR: BEND ±1° TWO PLACE DECIMAL ±0.01 THREE PLACE DECIMAL ±0.001 MATERIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE PROPERTY OF NU-AIR VENTILATION SYSTEMS INCORPORATED ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF NU-AIR VENTILATION SYSTEMS INCORPORATED IS PROHIBITED.		DRAWN		NAME		DATE		SCALE	
PROJECT: NU500 0305 0103TD8a 30STD8a DO NOT SCALE DRAWING		MODEL INFORMATION: Model Name: 10755 Model Revision Level: AA Drawing Revision Level: AA		27/06/2016		1:12		SHEET 1 OF 2	
NU0305/NU500		NU0406/NU600		Volts		120		Hertz	
60		Amps		4.5		Motor		RF4C180	
20 uf		Capacitor (2 @)		20 uf		Connection Type		Hard wired	



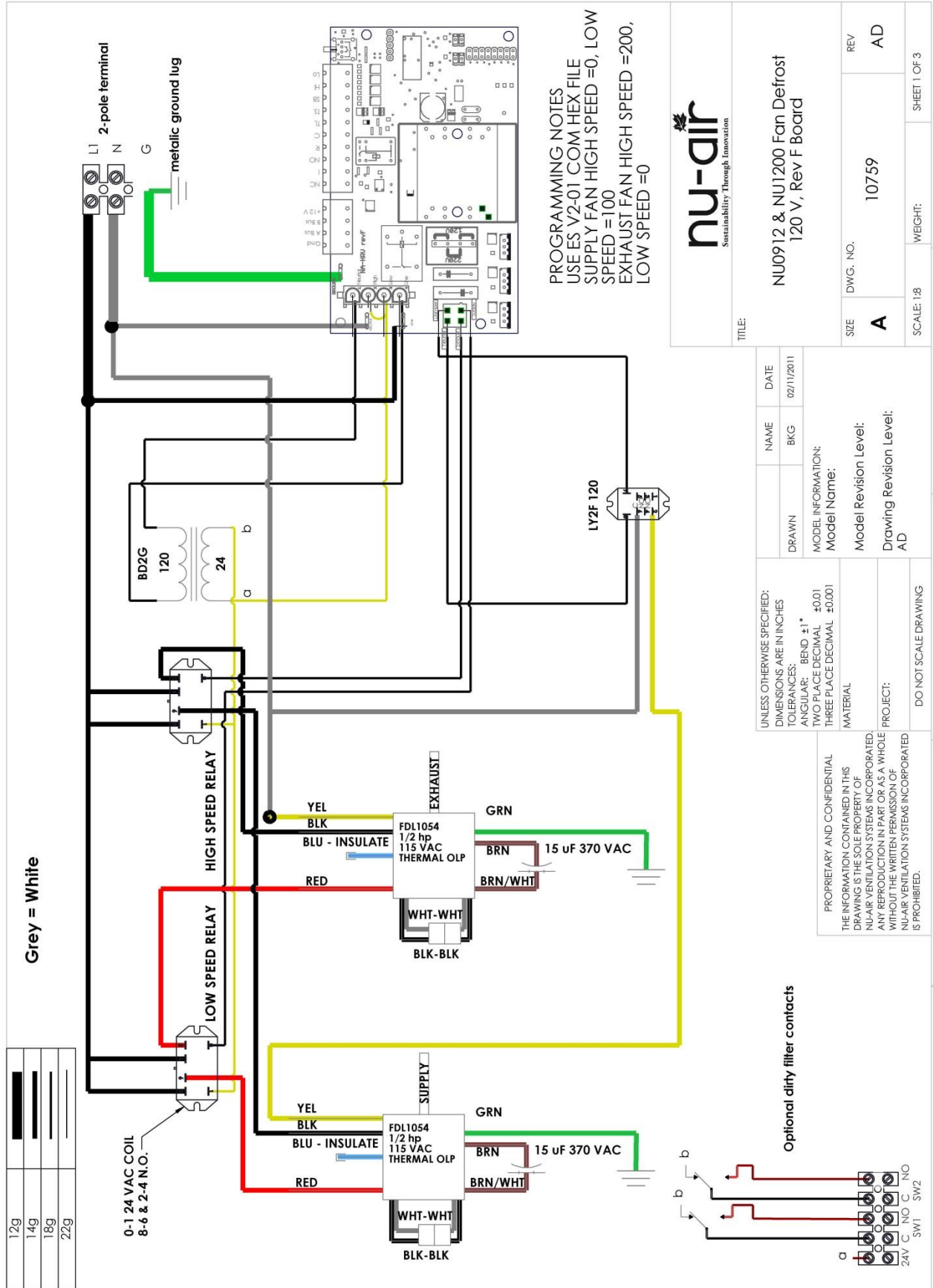




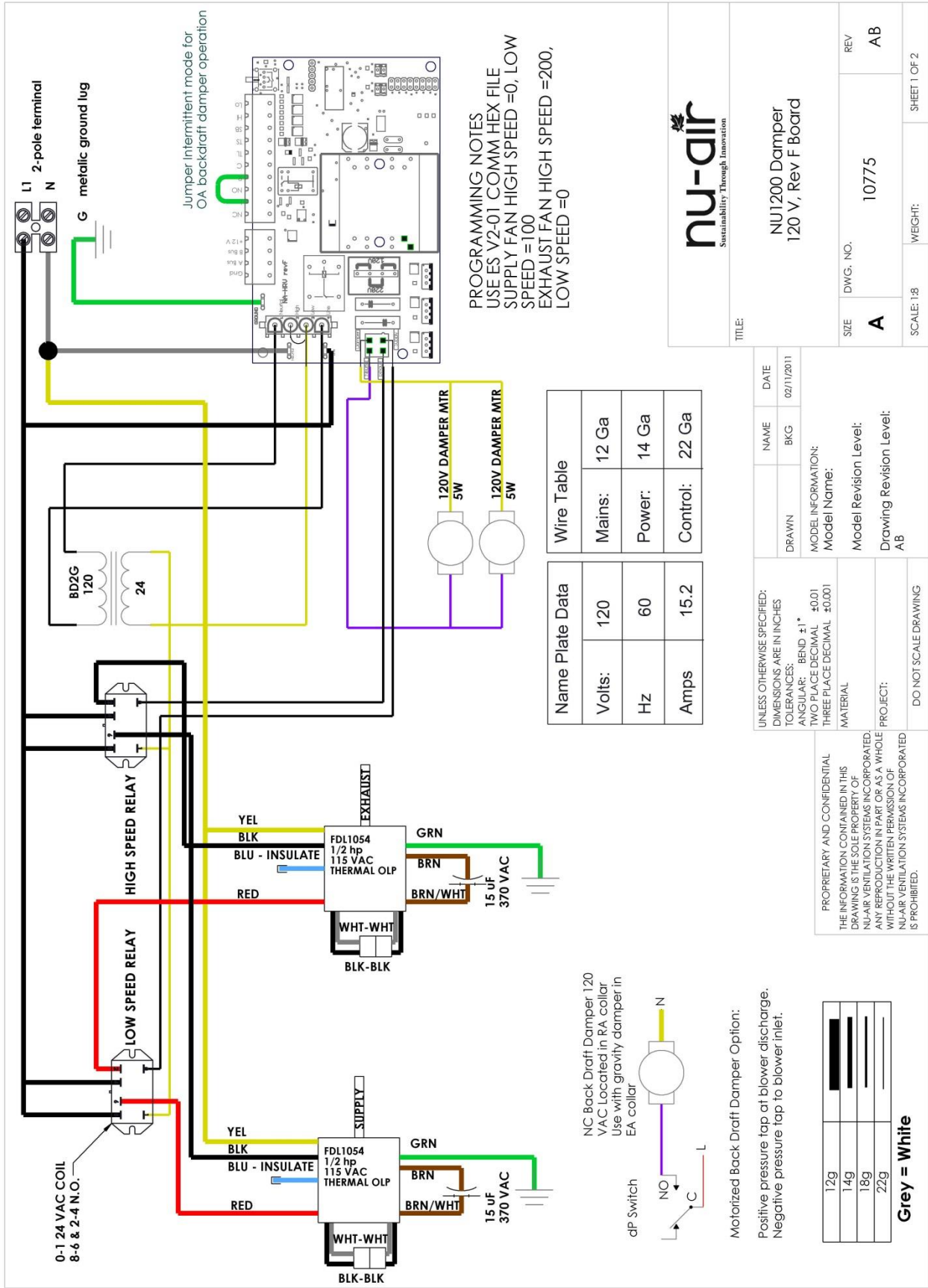


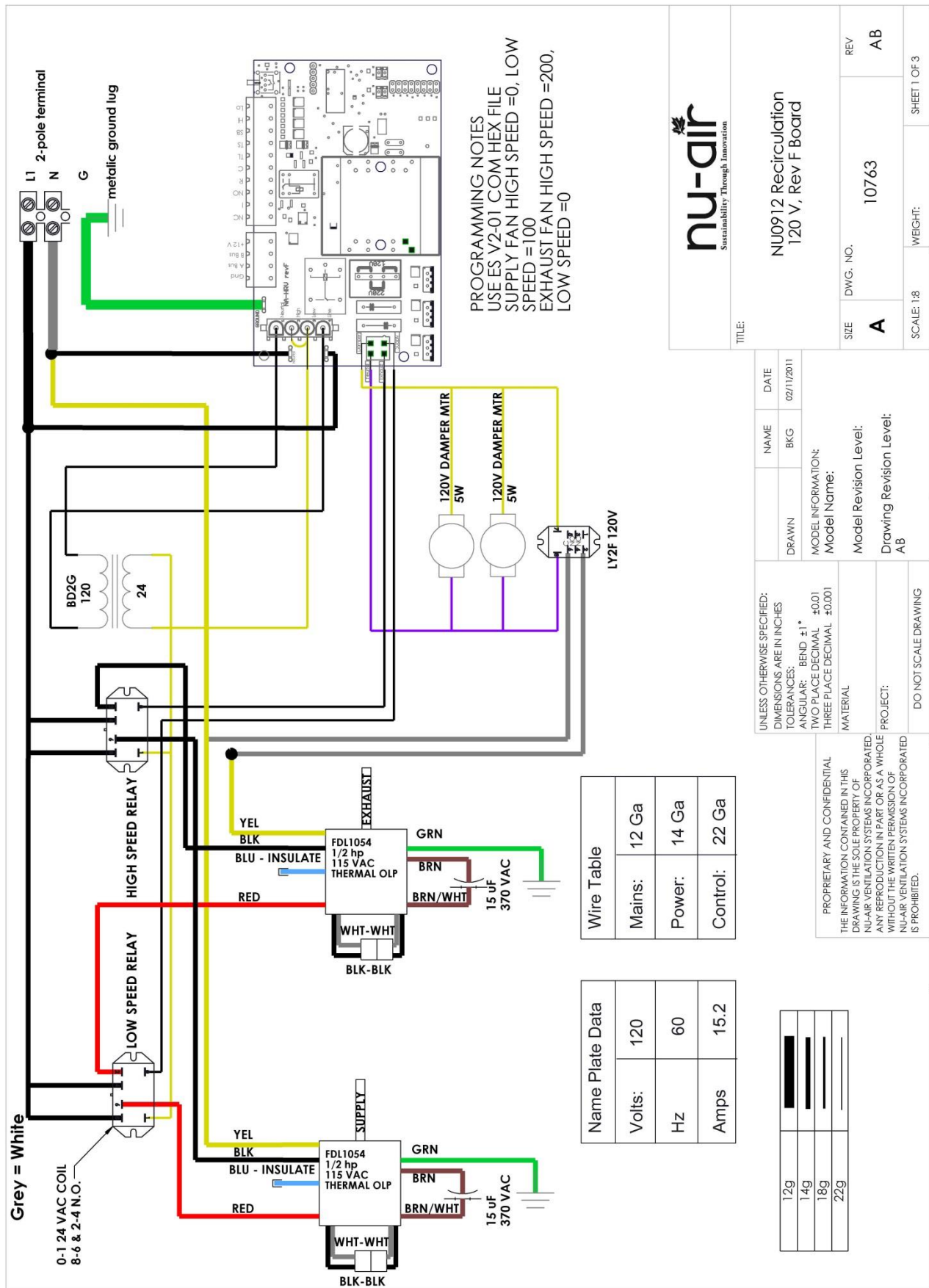


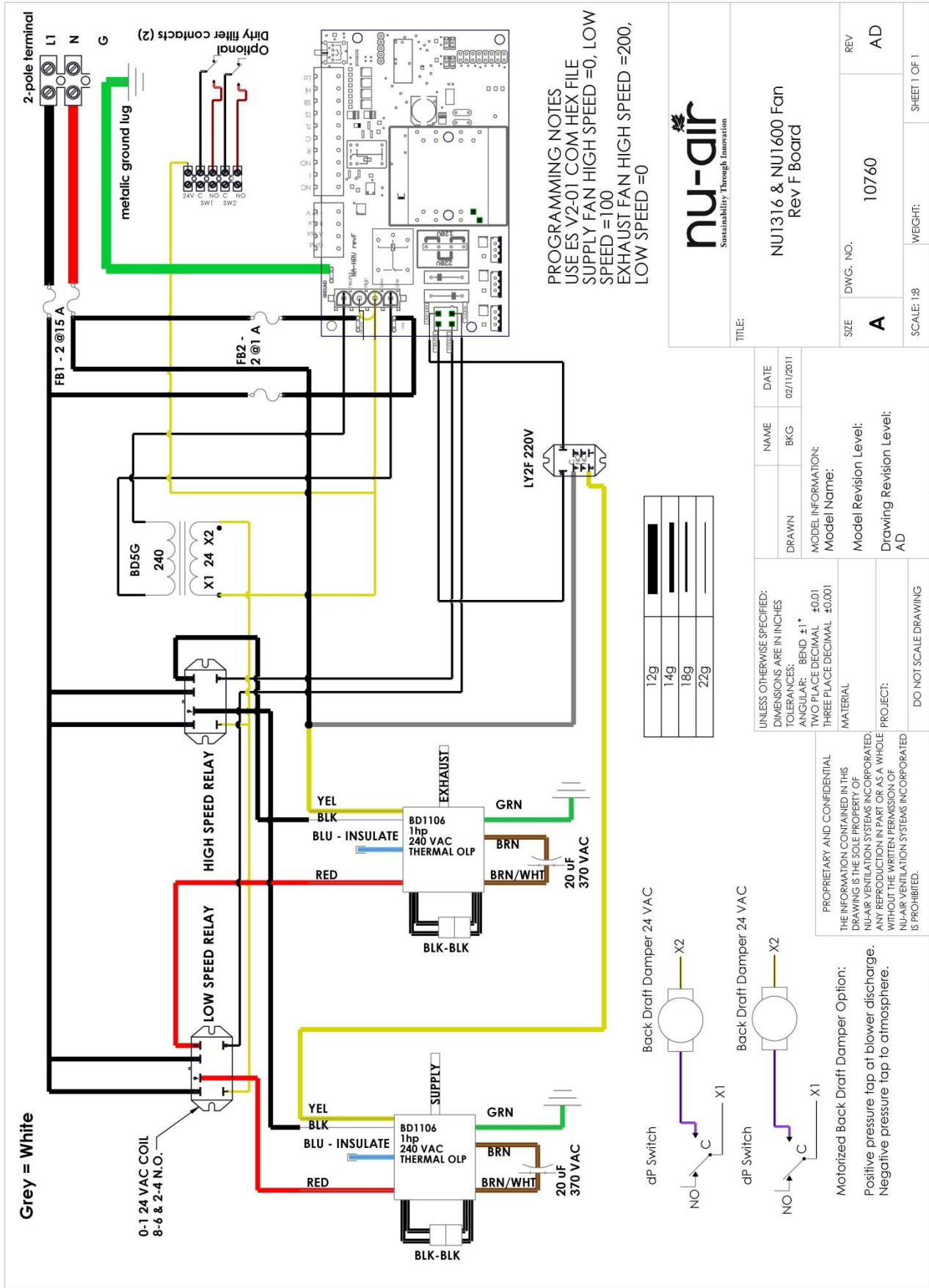




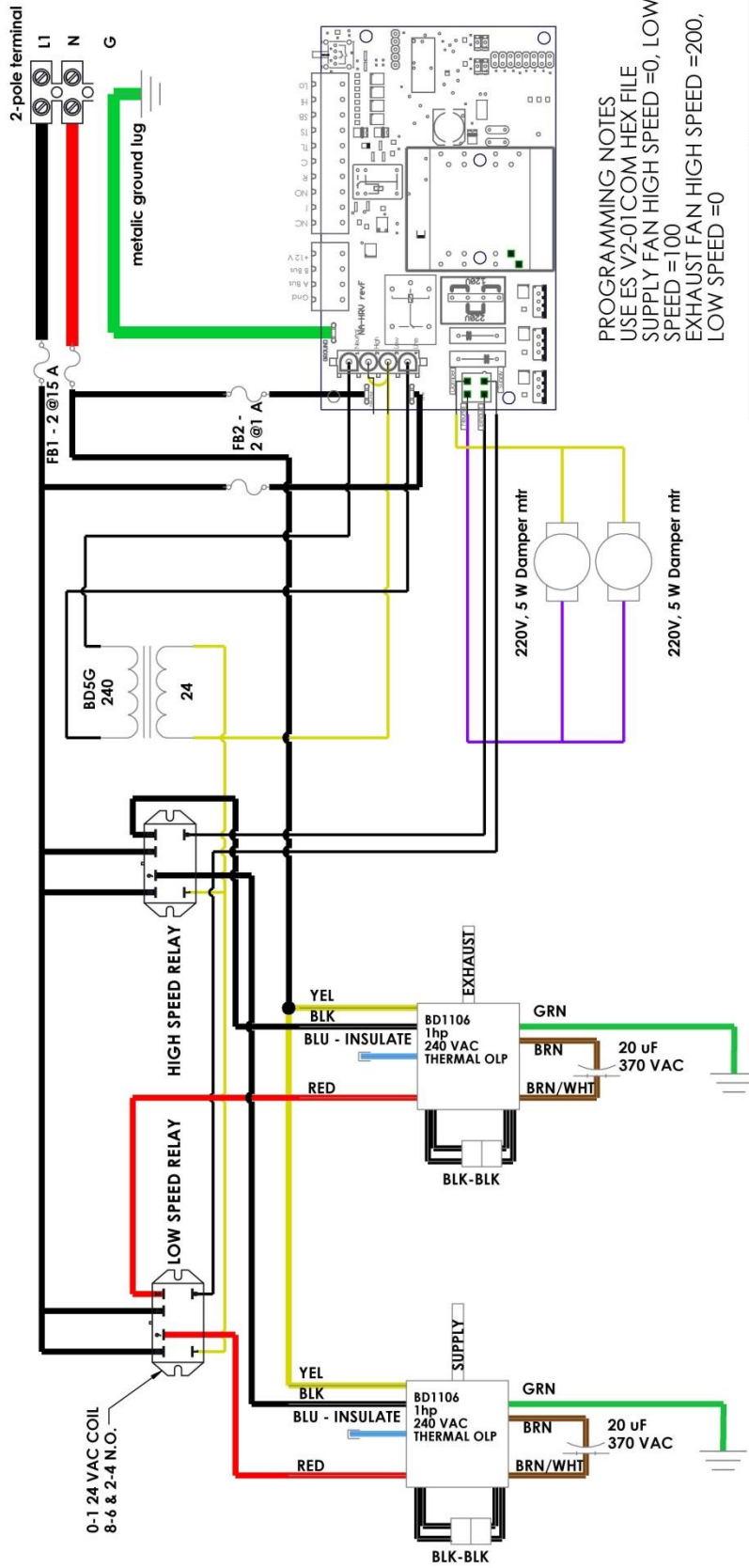








Grey = White



PROGRAMMING NOTES  
 USE ES V2-01 COM HEX FILE  
 SUPPLY FAN HIGH SPEED = 0, LOW  
 SPEED = 100  
 EXHAUST FAN HIGH SPEED = 200,  
 LOW SPEED = 0

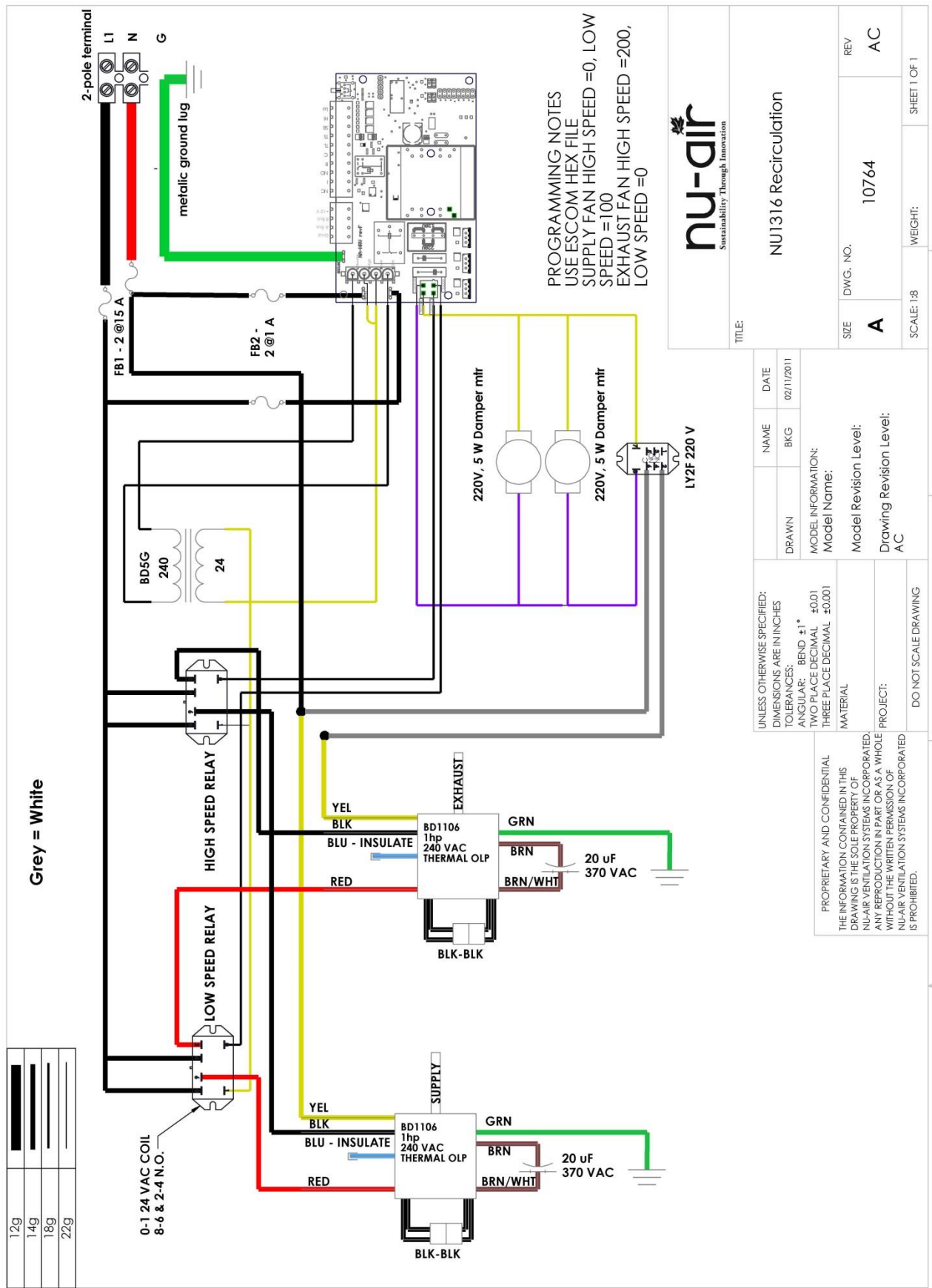
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TITLE:

NU1600 Damper  
 Rev F Board

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: ANGULAR: BEND ±1° TWO PLACE DECIMAL ±0.01 THREE PLACE DECIMAL ±0.001	DRAWN	NAME BKG	DATE 02/11/2011
PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF NU-AIR VENTILATION SYSTEMS INCORPORATED. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF NU-AIR VENTILATION SYSTEMS INCORPORATED IS PROHIBITED.	MODEL INFORMATION: Model Name: Model Revision Level: Drawing Revision Level: AB		
DO NOT SCALE DRAWING	SCALE: 1/8		

12g	14g	18g	22g
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## 14 Warranty

### *NU-AIR* COMMERCIAL HRV's & ERV's

**Models: NU305, NU500, NU600, NU800, NU1200, NU1600, NU0103, NU0305, NU0406, NU0508, NU0912, NU1316**

Nu-Air warrants its Light Commercial Series HRV's and ERV's to be free from defects on all components including motors, circuit boards, transformers, and switches when subject to normal and proper use for a period of two (2) years from the date of purchase. Nu-Air warrants its Compliant Series HRV core to be free from defects for a period of 15 years. Nu-Air warrants its Compliant Series ERV core to be free from defects for a period of 5 years.

Should a manufacturing defect occur during the warranty period, Nu-Air will supply replacement parts FOB our plant at no charge. Labour costs to remove and reinstall these parts are not covered under this warranty.

This warranty is expressly in lieu of all other warranties or obligations and in no event shall Nu-Air be liable for consequential or incidental damages of any kind, including damage to the building, its contents or any person therein.

This warranty does not cover damage to the unit due to the following: 1) improper installation or unreasonable use of unit; 2) failure to provide reasonable and necessary maintenance.



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