






# **EW 40**

## **Wireless Fan Control**

USA

CAN



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Job Name: \_\_\_\_\_

Installer: \_\_\_\_\_

Installation Date: \_\_\_\_\_

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**Symbol Legend:**

The following terms are used throughout this manual to bring attention to the presence of potential hazards or to important information concerning the product.



**Danger:** Indicates an imminent hazardous situation which, if not avoided, will result in death, serious injury or substantial property damage.



**Caution:** Indicates an imminent hazardous situation which, if not avoided, may result in personal injury or property damage.



**TO REDUCE THE RISK OF FIRE, ELECTRICAL SHOCK OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:**

1. Use this unit in the manner intended by the manufacturer. If you have questions, contact the manufacturer at the address or telephone number listed on the front of the manual.
2. Before servicing or cleaning the unit, switch off at service panel and lock service panel to prevent power from being switched on accidentally.
3. Installation work and electrical wiring must be done by a qualified person(s) in accordance with applicable codes and standards.
4. Follow the appliance manufacturer's guidelines and safety standards such as those published by the National Fire Protection Association (NFPA), the American Society for Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), and the local code authorities.
5. This unit must be grounded.

**How to use this manual**

This installation manual does not contain any system design documentation. System design documentation is available from any authorized EXHAUSTO representative.

Accessories, fans and variable frequency drives are not covered by this manual. Please refer to these component's individual manuals.





## 1. Product Information

### 1.1 Function

#### Use

The EW 40 is a wireless control that can be used to operate and control an EXHAUSTO chimney fan or power venter. It is designed for use with fireplaces and stoves. The use is not restricted to any type of fuel.

The unit allows the user to stop, start and control the speed of a chimney fan from a wireless Control Unit. It can be installed with or without a temperature sensor. For gas-fired appliances, a safety system in the form of a Proven Draft Switch (PDS) must be installed.

**ON/OFF Function.** The user can switch the chimney fan on when necessary. Similarly, the user can switch it off when it is not needed.

**Increase/Decrease Speed.** This function is used to regulate the speed of the chimney fan and thus the mechanical draft generated by it. When adding wood logs to a fire the control panel allows the user to regulate the fan speed and draft, which prevents smoke from entering the room and eases the combustion.

When the temperature sensor is installed, the following additional functions are available:

**Start-up Function.** Extra draft is needed when lighting a fire in a cold fireplace or stove. The Power Unit will make the chimney fan go into a "boost mode" (max. speed) for a set period (default is 7 minutes) when the ON/OFF switch is activated. After this period, the control automatically adjusts the speed to a lower level. When the temperature registered by the sensor exceeds the programmed start temperature, an asterisk (\*) appears on the display indicating it is now possible to reduce the fan speed.

**Automatic Start.** If the user forgets to switch on the chimney fan before lighting the fire, the fan will start automatically when the chimney warms up. The factory setting for this function is 25 degrees C.

**Refiring Function.** The display on the Control Unit indicates when adding new fuel is required. The display will read "REFIRING" and a low audio signal (beep) will sound five times while the asterisk (\*) flashes. When adding new fuel, press the ON/OFF switch before doing so. This will make the chimney fan run at max. speed for 3 minutes.

**Automatic Stop.** After the last refiring, the temperature in the chimney will gradually decrease. The control ensures that the fan will operate for another 45 minutes to evacuate any remaining products of combustion.

**Risk of a Chimney Fire Warning.** The display on the control will flash and an alarm tone will sound if the temperature in the chimney becomes abnormally high. Pressing any of the buttons on the control will turn off the warning signal.

#### Listings

EXHAUSTO's EW 40 is in compliance with Part 15 of the Federal Communication Commission (FCC) regulations. The standards met are US Stds - CFR title 47, Ch.1, Part 15 subpart B and Can Stds ICES-003, Issue 3, 1997.

### 1.2 Shipping

The EW 40 contains the following:

- Control Unit
- Power Unit
- 2 ea. 1.5V C Batteries
- Temperature Sensor
- Mounting screws
- User manual

Optional Equipment:

- Repeater Unit
- Proven Draft Switch

### 1.3 Warranty

Complete warranty conditions are available from EXHAUSTO, Inc.



## Section 1.4 FCC Notifications and Requirements

### Notice:

#### FCC Part 15

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

### Notice:

#### FCC Part 15- Class B Digital Device or Peripheral

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**NOTE:** The label below appears on the EW 40 Power Unit.

**FCC ID: UL5-EW40US**

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept and interference received, including interference that may cause undesired operation.

## 1.5 EW 40 Control Components and Locations

The EW 40 Control is made up of a Control Unit, Power Unit and an optional Repeater Unit (see Figure 1). The Control Unit serves as the user interface for the system. It transmits a wireless signal to the Power Unit to initiate fan functions. In some cases, it may be necessary to install a Repeater Unit to obtain sufficient communication in the system. The Repeater Unit is used for intermediate communication between the Power Unit and Control Unit. Functional wireless communication in the EW 40 depends on the following criteria.

### Location of the Power Unit Relative to the Control Unit

Figure 2 shows the percentage and direction of the signal transmitted between the Control Unit and Power Unit. Notice that the signal is only transmitted at 30% of its full strength from the side of the units. It is recommended that the user does not install the system so that communication signals are transmitted through the sides of the units.

### Obstructions Between the Power and Control Units

Because the location of the Control Unit may affect the signal strength and operation of the EW 40, it is recommended that the units be placed in a location where minimal signal transmission through walls, ducts, and other obstructions is required. If unavoidable obstructions exist between the Control and Power Units, one or more Repeater Units may be installed in between.

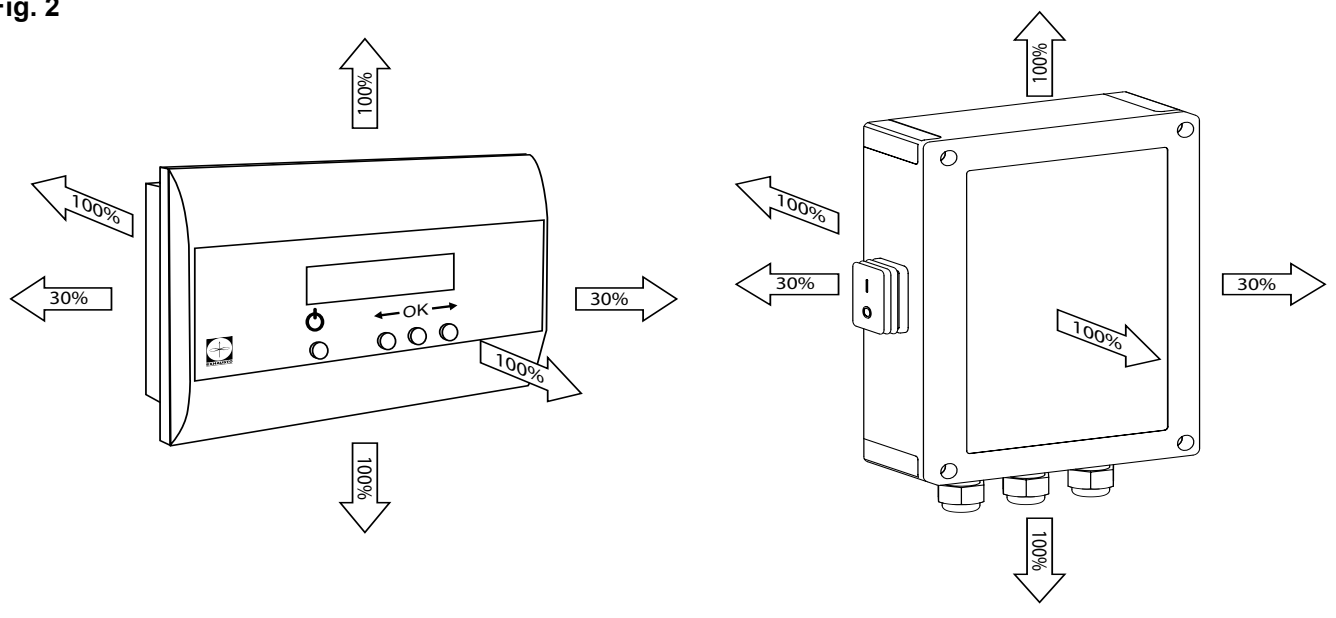
### Distance Between the Power Unit and Control Unit

The range of communication is affected by the resistance met by the signal. In the open air, the range extends over 450 feet however; this is reduced to 40 feet when the signal must travel through walls, buildings or other obstructions. If there is too much resistance between the Control and Power Units, one or more Repeater Units may be installed in between. One Repeater Unit will add approximately 40 feet of communication range.

### Signal Interference

The Control Unit should also be placed as far away from other electrical devices as possible to reduce the possibility of signal interference. The display on the Control Unit will read "Service" when the signal is strong enough for operation.

**Fig. 2**

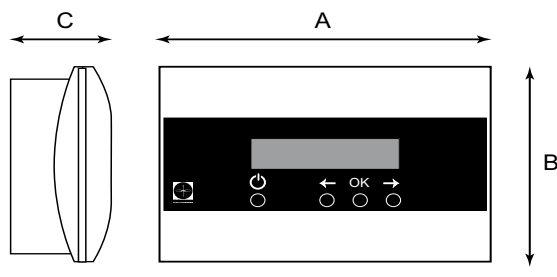


## 2. Specifications

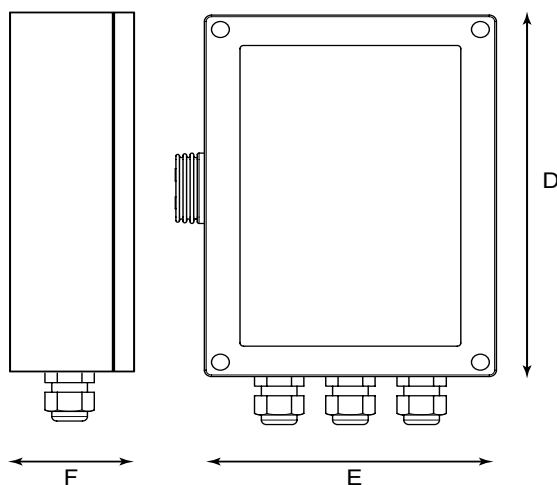
### 2.1 Dimensions & Capacities

EW 40 Control Unit		
Power Supply		2 x 1.5V C-batteries
Battery Life		Approx. 1 year
Operating Temperature	°F/°C	32 to 104 / 0 to 40
Material		ABS Plastic
Dimensions	A in/mm	5.94 / 151
	B in/mm	3.98 / 101
	C in/mm	1.73 / 44
Weight	lbs / kgs	0.9 / 0.41
EW 40 Power Unit		
Power Supply	V	120V +/- 10%, 60 Hz
Power Output	A	2.0
Standby Consumption	W	1
Fuse	A	T2.0
Operating Temperature	°F/°C	- 4 to 140 / - 20 to 60
Material		ABS
Frequency	MHz	868
Protocol		Z-wave
Range	Outdoors ft / m	450+ / 150+
	Indoors ft / m	30 / 10
Protection Class		NEMA 4
Tolerance	inWC/Pa	0.01/3 +/-10%
Dimensions	D in/mm	4.84 / 123
	E in/mm	4.73 / 120
	F in/mm	2.28 / 58
Weight	lbs / kg	1.6 / 0.73
EW 40 Repeater Unit		
Power Supply	V	120V +/- 10%, 60 Hz
Standby Consumption	W	0.75
Operating Temperature	°F/°C	- 4 to 140 / -20 to 60
Material		ABS
Protection Class		NEMA 4
Dimension	G in/mm	3.15 / 80
	H in/mm	4.72 / 120
	I in/mm	2.28 / 58
Weight	lbs / kg	1.1 / 0.5
Temperature Sensor		
Material		Glass/ Stainless Steel
Type		PT 1000
Operating Temperature	Sensor °F/°C	- 58 to 842 / -50 to 450
	Cable °F/°C	- 58 to 257 / -50 to 125
Dimensions	J in/mm	4.25 / 108
	K (OD) in/mm	3.50 / 89
	L in/mm	72 / 1829
Weight	lbs / kg	0.2 / 0.1

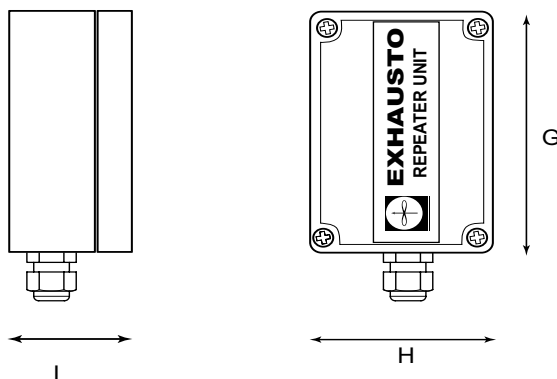
Control Unit



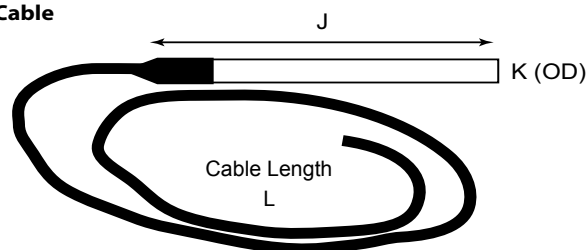
Power Unit



Repeater Unit



Cable



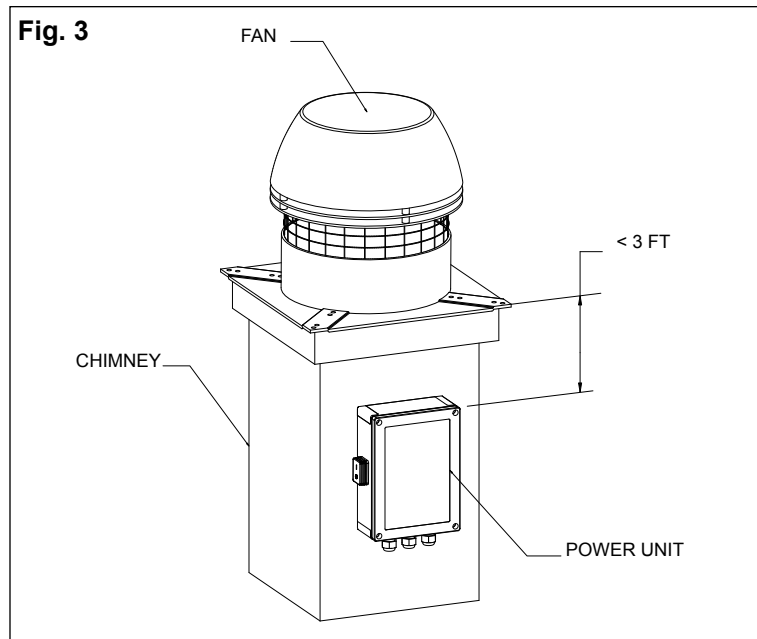


### 3. Installation

#### 3.1 Installing the Power Unit

The Power Unit can be mounted outdoors and should be mounted onto or near the chimney where the chimney fan is mounted and no more than 3 feet (1 meter) from the fan. Proceed as follows:

- Remove the cover from the unit
- Make sure the Power Unit is pointing towards the desired location of the control unit (see Fig. 1 and 2)
- Place the unit so the electric fittings are pointing down (see Fig. 3).



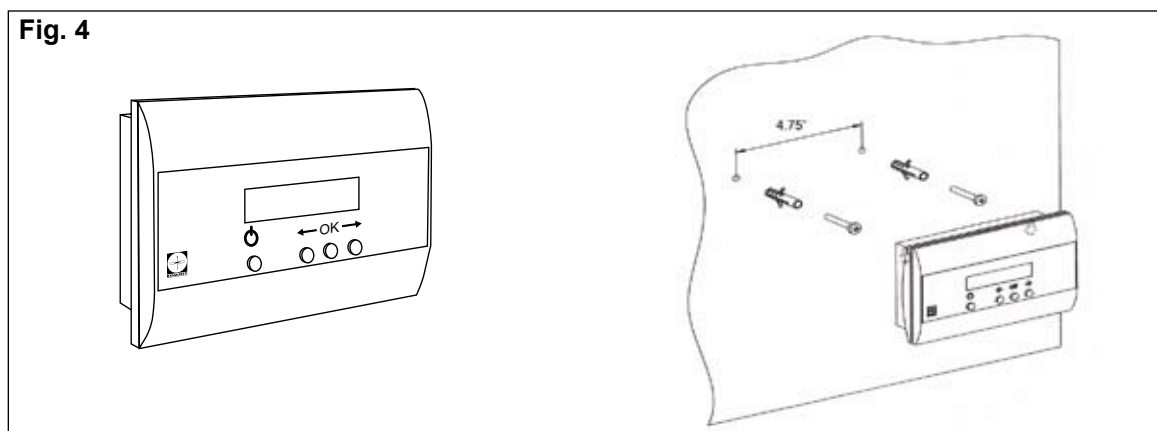
**NOTE:**

For buildings with a steel roof, it may be necessary to install the Power Unit indoors to prevent the radio signal from reflecting off the roof.

#### 3.2 Installing the Control Unit

The Control Unit does not require installation if operated by batteries. It should be located indoors in the room where the heating appliance is located.

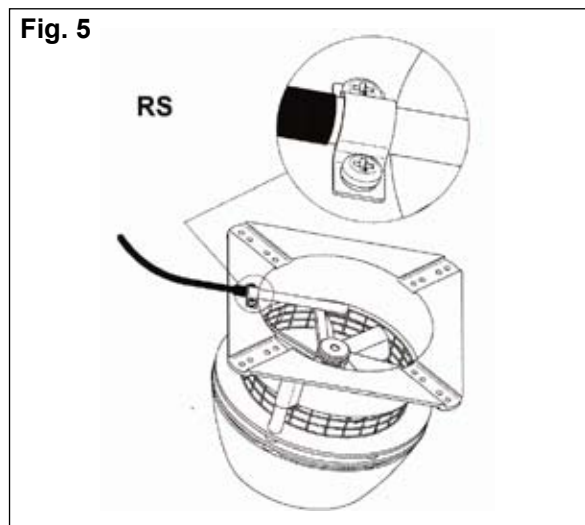
Optionally, the control can be mounted directly on a wall. Location is important. Please review Section 1.4 for further information.



### 3.3 Installing the Temperature Sensor

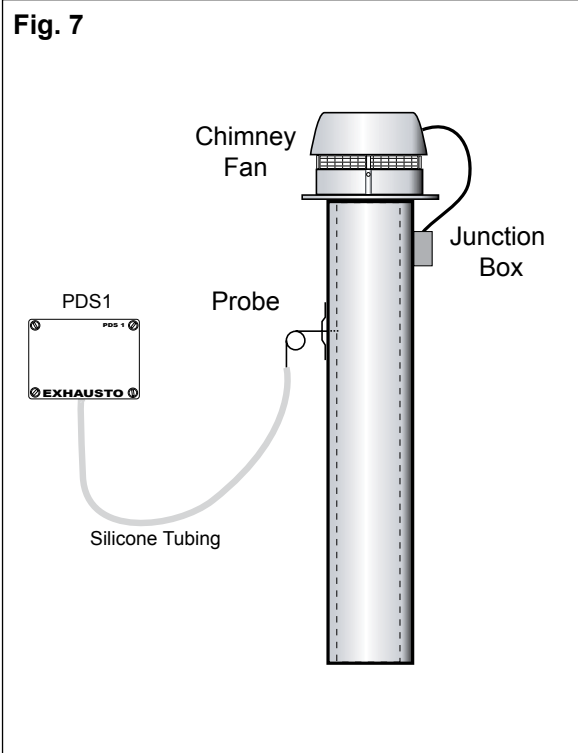
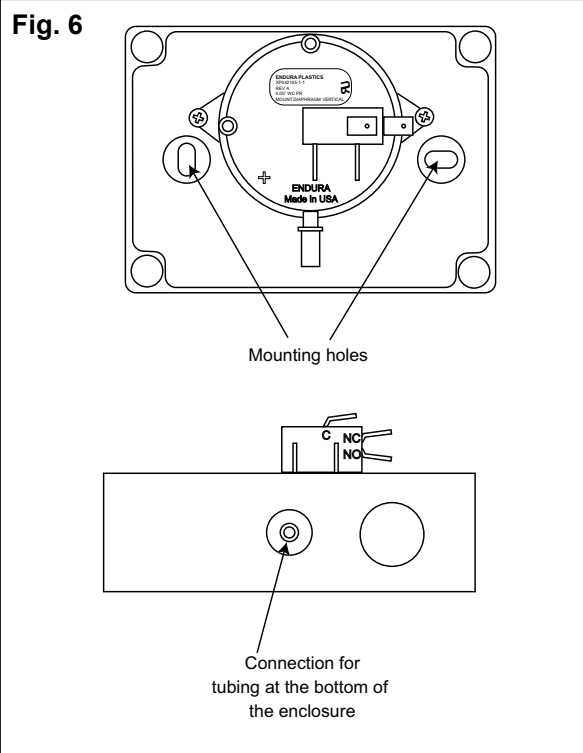
Secure the temperature probe as shown in Fig. 5 below:

1. Turn the fan over, to provide access to the base plate.
2. Place u-bracket in the desired location. Mark the holes and use a 1/6" drill bit to drill the two holes.
3. Position the sensor so the tip reaches the center of the fan inlet.
4. Secure the sensor bracket with the two sheet metal screws provided.



### 3.4 Installing the Proven Draft Switch (if applicable)

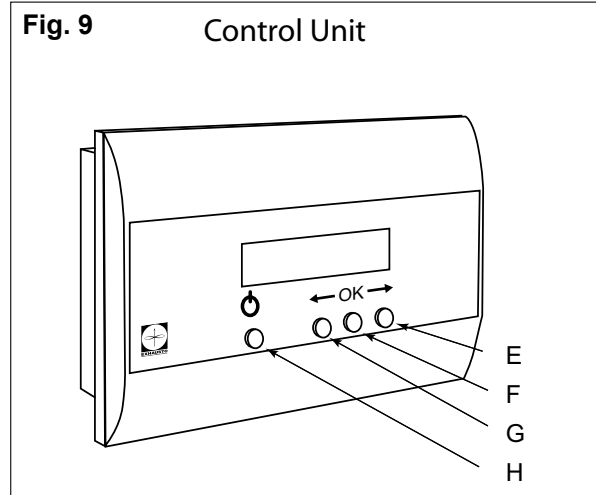
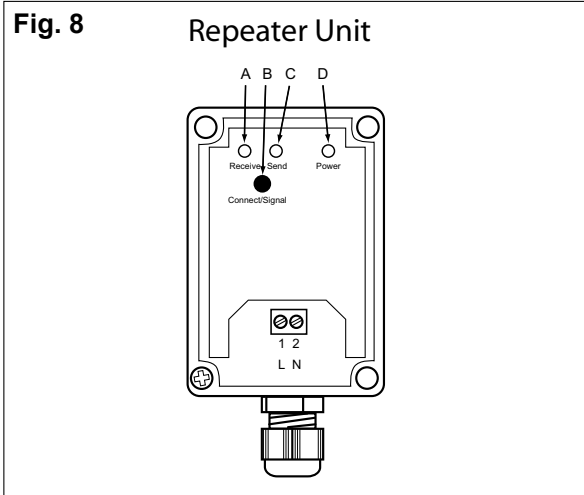
If the EW 40 is used to control a gas-fired heating appliance, a Proven Draft Switch (not included) must be installed. A PDS-1 is available from EXHAUSTO and is installed as shown below. For wiring details see Figure 10. Please consult the PDS-1 product manual for in depth installation instructions.





### 3.5 Installing the Repeater Unit (if applicable)

A Repeater Unit is typically used in installations that require the Control Unit to be placed far away from the Power Unit and in those where the communication signal is transmitted through multiple obstructions



Follow these steps to set up and install the Repeater Unit.

1. Connect the enclosed cord with plug to the Repeater Unit's terminals 1 and 2. See Fig. 8 below. Plug it into a receptacle and turn the power on. Remove the cover.
2. On the Control Unit (Fig. 9), press the "OK" button and hold it down for at least 3 seconds to display the set-up menu. Use the scroll buttons (E & G) to go to menu 5 (Network) and press "OK" (F) on the Control Unit. Use arrows to go to menu 51 "Add Node" and press "OK". The display reads "Press button on Node". Press button "E" to change the display to "YES" and press "OK".
3. On the Repeater (Fig. 8) press the connect button (B) and hold it down for at least 3 seconds. The display now reads "Node included". Press "OK".
4. On the Control Unit, go to menu 5 (Network), use arrows to go to menu 53 (Signal Test) and press "OK". The display now shows flashing dotted lines.
5. Place the Repeater Unit in the desired location (do not permanently attach until steps 6-8 are completed). It must be installed somewhere between the Control Unit and Power Unit.
6. On the Repeater Unit press the Connect button (B) to check the signal strength. The send and receive LED's (A and C) will light up if the communication signal is acceptable. The "Receive" LED indicates that the Repeater has communicated with the Control Unit and the "Send" LED indicates that the Repeater has communicated with the Power Unit.
7. If necessary, move the Repeater Unit around until communication has been established between all three units (both LEDs must be illuminated at the completion of the test).
8. When both LED's are illuminated at the end of the test, press "OK". The display will show a running dot indicating that the network is now being checked. If the display reads "OK" the unit has passed the installation test. If not, the test has failed and it must be repeated.
9. Permanently install the Repeater Unit. If desired, the Repeater Unit can be hard-wired instead of using a plug and a receptacle.

**NOTE:**

1. No more than three (3) Repeater Units can be used in a single installation.
2. The Repeater Unit must be installed indoors.
3. When a Repeater Unit is installed, the communication may be delayed up to one (1) second because of the additional communication activity required.

## ⚡ 4. Electrical Installation

### 4.1 General



**Danger:** Turn off electrical power before servicing. Contact with live electric components can cause shock or death.

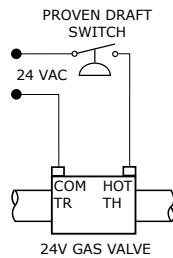


**EW 40 is designed for 1x120VAC power supply only.**

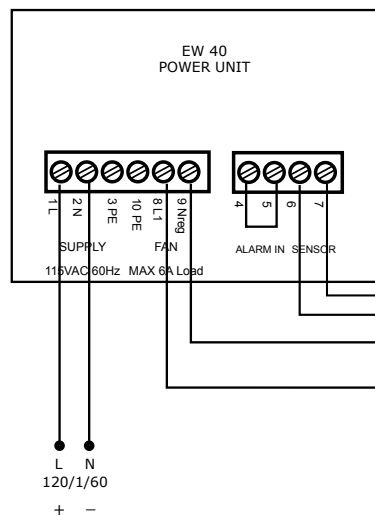
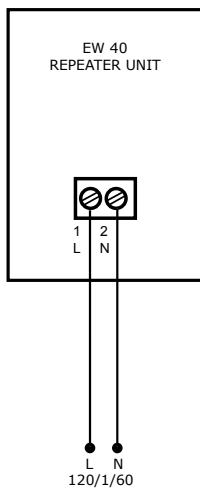
The terminals are connected as shown below in Fig. 10:

**Fig. 10**

THIS DIAGRAM FOR THE WIRING OF A PROVEN DRAFT SWITCH IS ONLY USED WHEN THE EW 40 IS USED WITH GAS-FIRED APPLIANCES



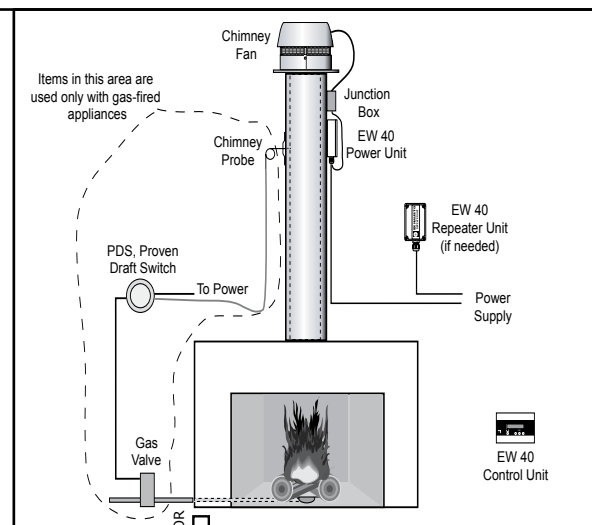
IF INSTALLED



NOTES:  
THE DISCONNECT MEANS AND CIRCUIT PROTECTION ARE TO BE PROVIDED BY THE INSTALLER OF THIS DEVICE

LEGEND:

— 120 VAC

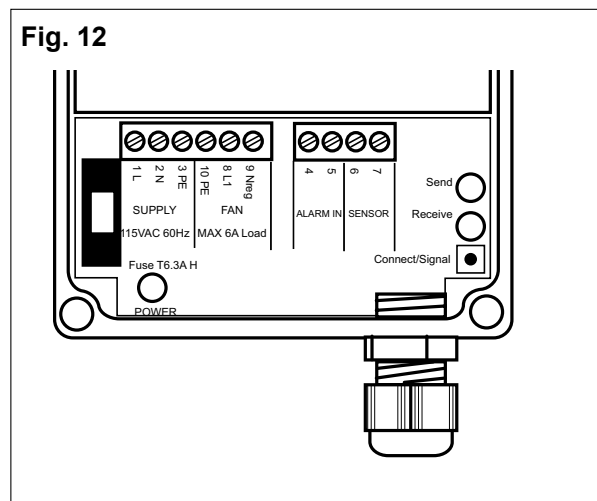
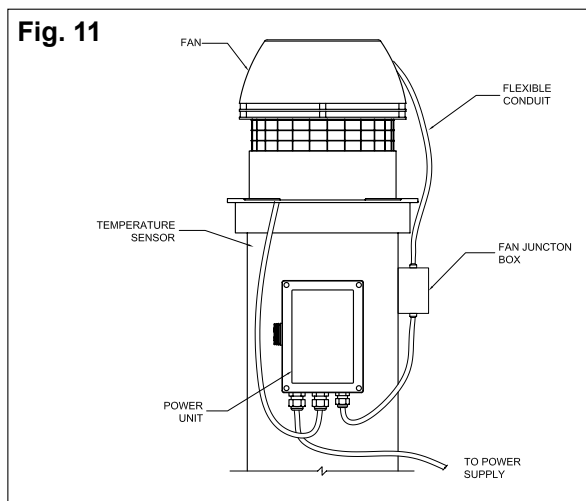


## 4.2 Wiring of EW 40

To ease wiring of the control, please follow these step-by-step instructions:

### Wiring of the Power Unit/chimney fan:

1. Run wires through 1/2" weathertight conduit from the junction box supplied with the chimney fan to the Power Unit.
2. Connect the wires from the fan junction box to terminals 8, 9 and 10 shown on the diagram below.
3. Connect the temperature sensor to terminals 6 and 7 as shown in the diagram below.
4. Connect power supply to the Power Unit terminals 1, 2 and 3 shown in the diagram below.
5. A jumper wire should be connected to terminals 4 & 5.
6. Turn the power on and verify power indicator LED is lit.



### Communication Test:

1. Insert the two (2) size C-batteries in the Control Unit. The Power and Control Units are now connected.
2. Press the ON/OFF button to activate the control panel. (if the message "NO SIGNAL" appears on the display, there is no connection between the two units. Try moving the Control Unit around in the room until the "NO SIGNAL" text disappears and is replaced by an operational display.
3. If you are unable to establish a signal between the Power Unit and the Control Unit, you will need to install a Repeater Unit. Please go to Section 3.5.

### NOTE:

For the greatest range, ensure that the units are positioned correctly in relation to each other and make sure there are as few obstructions between them as possible (See Section 1.4). The arrows in Fig. 2 show the transmission strength of the units in various directions. Materials that can prevent a good connection between the transmitter and receiver include sheet metal (i.e. ducts) and multiple walls.

It may be necessary to adjust the positions of the units in relation to each other inside buildings with poor transmission or reception conditions (adjustments of as little as 1 foot can influence the signal due to possible reflections in the room).



## 5. Startup and Configuration

### 5.1 Control Unit Settings

#### Accessing the Set-Up Menu.

To access this menu, press the “OK” button (B) and hold it down for at least 3 seconds. To exit the menu, press the ON/OFF button (D). Use the arrow buttons (A and C) to scroll back and forth between the various menu items. The menu setting are show in the table.

Main Menu	Sub-Menus	Description	Factory Setting
1 EXIT		Exit from Main Menu top operational display	
2 SENSOR	20 EXIT	Exit to Main Menu	
	21 SENSOR MODE	If ON is selected: the control unit is now set to operate with a temperature sensor. If OFF is selected: the control functions only as a speed regulator	OFF
	22 START TEMP	Temperature limit for control to start automatically. Setting: 5-100 C.	25°C / 77°F
	23 STOP TEMP	Temperature limit for control to stop automatically. Setting: 0-95 C	20°C / 68°F
	24 ALARM TEMP	Temperature limit for the control to trigger a chimney fire alarm. Setting: 100-400 C.	330°C / 626°F
3 TIMER	30 EXIT	Exit to Main Menu	
	31 BOOST TIME	Timer for setting boost time where the chimney fan delivers maximum speed and draft when heating appliance is cold. Setting: 1-15 minutes	7 minutes
	32 STOP TIME	Timer for setting post purge where the chimney fan is removing residual products of combustion after the fire is out. Setting: 1-45 minutes.	45 minutes
4 ALARM	40 EXIT	Exit to Main Menu	
	41 LOG	Displays the last five errors or alarms	
	42 RESET LOG	Deletes all non-active errors or alarms in the memory.	
5 NETWORK	50 EXIT	Exit to Main Menu	
	51 ADD NODE	Menu used when connecting a Unit (like Repeater Unit) to the network	
	52 DELETE NODE	Menu used when disconnecting a unit from the network.	
	53 SIGNAL TEST	Menu that keeps the Control Unit active and allows communication checks to be run on Power and/or Repeater Units.	
	54 RECEIVE REPLICATION	Not used	
	55 SEND REPLICATION	Not used	
	56 RESET CONTROLLER	Resets the Control Unit to Neutral so the entire system has to be reinstalled. NB. All Nodes (Power Unit/Repeater Unit) must be deleted (menu 52) before a network can be set up again (menu 51)	
6 SERVICE	60 EXIT	Exit to Main Menu.	
	61 VERSION	Display software version number	
	62 FACTORY SETTING	Re-established Factory Setting	
	63 LANGUAGE	To select language: English, Danish, German)	ENGLISH
	64 MIN SPEED	Setting of minimum fan speed. Settings: 40-60V	50V
7 SETTING	70 EXIT	Exit to Main Menu	
	71 CONTRAST	Setting the display Contrast	70
	72 BACKLIGHT	Switch backlight ON and OFF	
	73 SPEAKER	ON: Signal emitted when refiring (more fuel) is required OFF: No signals	



## 5.2 Recommended Settings

EXHAUSTO recommends the following temperature settings for the EW 40 wireless control.

Parameter	Wood Burning Stove w/ Steel Chimney	Wood Burning Stove w/ Uninsulated Brick Chimney	Open Fireplace
Start Temp	40°C / 104°F	25°F / 77°F	25°C / 77°F
Stop Temp	33°C / 95°F	20°C / 68°F	20°F / 68°F



## 6. Maintenance and Troubleshooting

No maintenance is required on the controls components except for the Control Unit. If this is operating on the batteries, they need to be replaced on a regular basis that depends on the use.

In case technical problems occurs, check the list below for possible solutions. This list does not necessarily include all possible problem, so if the list below does not cover your problem, call EXHAUSTO at the number listed on the back of the manual:

Event	Possible solutions
Display not activated	Check that the batteries have been inserted correctly. You may install new batteries.
The display shows "BATTERY LOW"	Replace the batteries within 1-2 weeks
The display shows "SERVICE"	The repair switch (E) drawing 6 is switched off
The display shows "NO SIGNAL"	No communication between the units - check the power supply to the units. Excessive distance between the units (see Communication Test)
Alarm A1 "CHIMNEY FIRE"	The temperature is higher than the alarm limit set in menu 24. Check if the chimney is on fire Check the temperature sensor for damage
Alarm A2 "SENSOR ERROR"	The temperature sensor is disconnected or has short-circuited Check the connections/electrical connections
Alarm 3 "EXTERNAL ALARM"	Check that the jumper between terminals 4 and 5 is in place.
No draft in the chimney	Check the fuse in the Power Unit (F) Figure. Check that the chimney or chimney fan is not blocked.