EBC31

READ AND SAVE THESE INSTRUCTIONS!

Job name: _____

Installer: _____

Installation date: _____

exodraft

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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's distributor 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), and 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 ENERVEX.

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

exodraft

1. Product information

1.1 Function

Use The **exodraft** EBC31 is a true PID-based fan speed control used to maintain a constant pressure or draft in a venting system. It can be used with RSV, RSIF, RSIB, IPVB, BESF, BESB and SFTA models to control single phase, 120 V AC, motors directly and three-phase, 208-460 V AC, motors indirectly via a VFD (variable frequency drive) that adjusts the motor speed.

The intended use of the control includes, but is not limited to controlling the:
• combustion air supply system
• draft in mechanical draft system serving individual or multiple heating appliance systems
• damper position in a modulating over-draft system to ensure proper draft is maintained in individual or multiple heating appliance systems
• duct pressure in dryer venting systems
• duct pressure in ventilation systems.
Use of the control is not restricted to any type of fuel or type of heating appliance, dryer or venting application.

The EBC31 can simultaneously control an exhaust fan, an intake fan or a draft damper. Any two of these can be controlled simultaneously or they can be controlled individually. Adding an optional MODS damper Board provides the possibility to control an exhaust fan, an intake fan and a draft damper simultaneously.

The unit features "plug-and-play" to automatically monitor all terminals and register components attached to the control during initial start-up. It comes pre-programmed from the factory, but can be further programmed in the field, if needed. The control will allow continuous or intermittent operation of a mechanical draft fan.

The EBC31 can be configured either by using the LCD dot display and buttons, or by using the ethernet interface and a webbrowser on a computer. RS485 #1 port can be used to interface a BACnet network using MSTP (Requires version 3.07 software or higher). The BACnet functionality has been tested and approved at the BTL-BACnet testing laboratory.
The control has an integrated safety system to assure the heating appliance will shut down in case of fan failure or control failure. A unique priority operation function will probe the operating conditions and allow as many appliances as possible to operate without fan assistance, provided the operation is considered safe by the integrated safety system. The EBC31 has six (6) heating appliance interlock circuits as standard but can be expanded in multiples of four (4) with the use of an additional relay board or the ES12, relay control.

The control can be operated with a manual reset function (reset button) or an automatic reset function. A self- diagnostic panel with LED's monitors all connection terminals for easy service and troubleshooting. Provided the integrated safety system is satisfied, interlocked heating appliances are allowed to operate. A bearing cycle activation function rotates the fan motor(s) once every 24 hours in case the fan has not been operating during the previous 24 hour period.

Listings EBC31 is tested and listed to the Standard for Industrial Control Equipment, UL Standard 60947 and CSA C22.2 No. 14-10 as well as UL378, Standard for Draft Equipment.

1.2 Shipping

The EBC31 contains the following:
EBC31 control unit, pressure transducer (Ashcroft XTP), relay board (optional), triac board (optional),
 MODS damper board (Optional) silicone tubing, stack probe and user manual.1.3 Warranty
Complete warranty conditions are available from ENERVEX

1.4 EBC31 control components

The EBC31 control is built up around a main board that controls all basic functions. The main board controls draft/exhaust and air supply/ intake functions. It can provide 0-10 V DC signals for Variable Frequency Drives (VFDs), an actuator or other devices accepting a 0-10 V DC control signal. It also allows interlock of up to 6 appliances for control circuit voltages between 12 V AC and 240 V AC/12 V DC and 240 V DC, and has an integrated Proven Draft Switch (PDS) function. An external PDS is therefore not required.

The main board layout is shown below in fig. 1:

1. Mainboard	7. Operating status indicators
2. Relay Board or TRIAC Board (optional)	8. Ethernet port
3. Terminals	9. RS485 port
4. Fuse protection for mainboard	10. Expansion board (optional)
5. Quick-connect socket to keypad and display	11. BACnet (RS485 MS/TP)
6. Quick-connect socket to add-on board	12. Termination jumper

Fig. 1
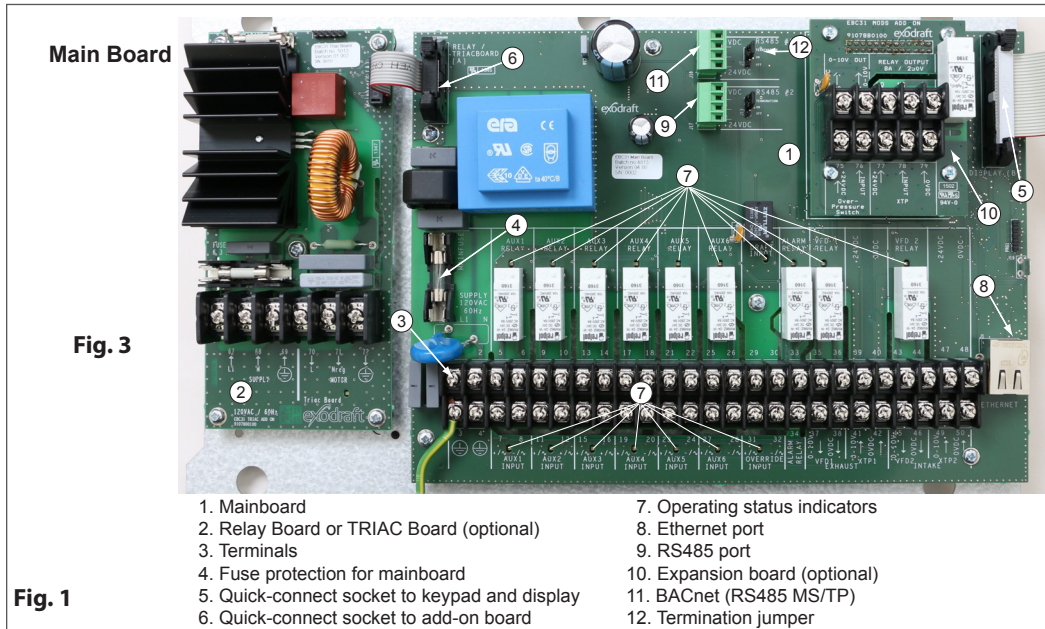
Three add-on boards are available. A TRIAC board is available so the control can operate a 1 x 120 V fan or ventilator without the need for an external drive. A Relay Board is available for applications with more than 6 appliances. The control can only accept a single add-on board at a time. If there is a need for using the TRIAC board as well as the Relay board, install the TRIAC in the EBC31 and use an ES12, Relay Box in lieu of the Relay Board.

Board layouts for the TRIAC and the Relay Boards are shown below in fig. 2:

1. Terminals	4. Quick-connect plug
2. Fuse protection	5. Operating status indicators
3. Spare fuse	

Fig. 2

exodraft
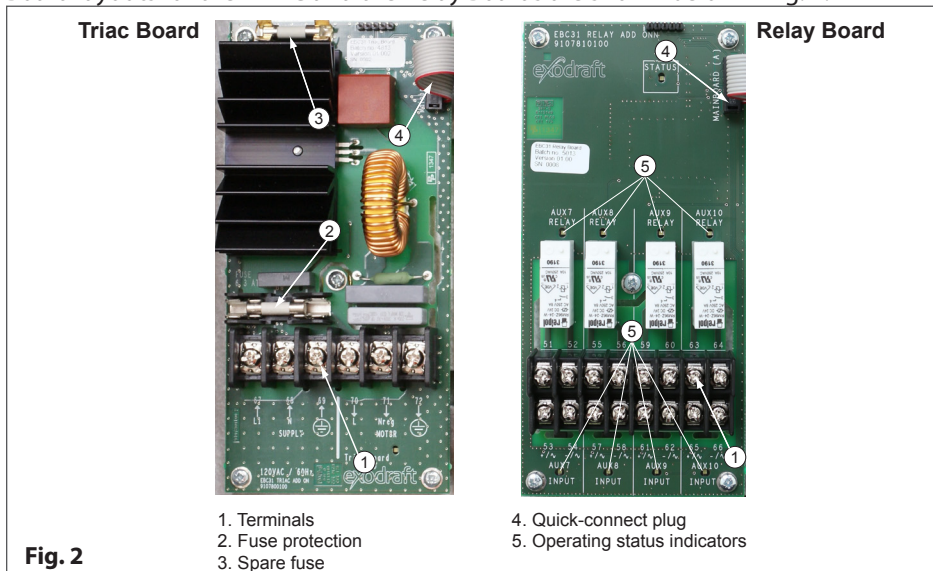
A MODS add on board can be used to control a damper in a CASV + MODS /MODS system. It provides a 0-10V signal out, and can also be used to monitor pressure using the MODS XTP input. During start-up the EBC31 will detect the board if installed.

MODS Board

1. OPS Terminals   3. 0-10V Output
2. XTP Input Terminals   4. C-NO-NC Relay Output
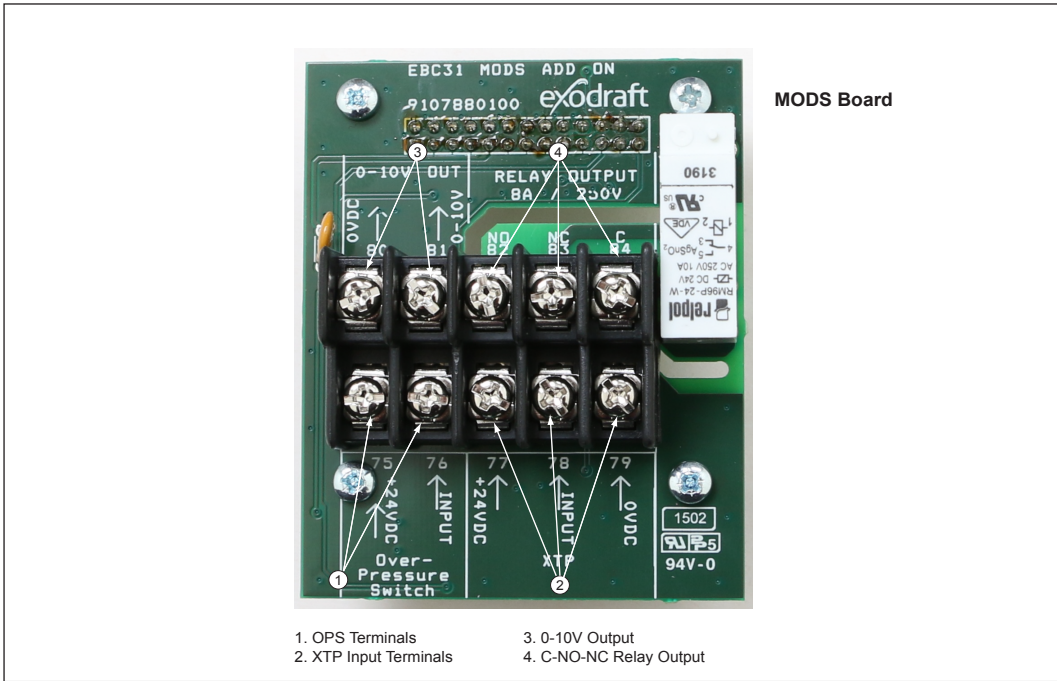
2. Specifications

2.1 Dimensions and capacities

exodraft EBC31 control		
Power supply	V	1 x 120 V AC
Max. Amperage (without TRIAC board)	A	1.6
Max. Amperage (with TRIAC board)	A	7.9
Frequency	Hz	60
Operating temperature	°F/°C	-4 to 122/-20 to 50
Range of operation	inWC/Pa	0-0.6/0-150
Tolerance	inWC/Pa	0.01/3 +/-10 %
Control signal	mA	max. 10
Control relay		Max. 250 V AC/8 A
Relay rated load:		AC1 - 8 A/250 V AC AC3 - 370 W AC15 - 3 A / 120 V AC15 - 1.5 A / 240 V DC1 - 8 A/24 V DC
Output (With TRIAC board)	V AC	10-120
	V DC	0-10
Fuse rating mainboard	A	1.6T
Fuse rating TRIAC board	A	6.3T
Terminal block wire cross section (solid or multicore)	AWG	14 to18
Number of wires per terminal		2
Dimensions	A in/mm	14.65/372
	B in/mm	11.03/280
	C in/mm	4.22/107
Weight	lbs/kg	8.9/4.0
EMC standard	Emission	EN 50 081-1
	Immunity	EN 50 082-2
Ashcroft XTP sensor		
Power supply	V DC	14-36
Amperage	mA	6
Output	V DC	0-10
Operating temperature	°F/°C	0-160/-17 - 70
Tolerance	inWC/Pa	+/- 0.8 %
Dimensions	D in/mm	2.2/55
	E in/mm	4.6/118
	F in/mm	4.1/104
	G in/mm	4.5/115
Weight	lbs/kg	.5/.2
Chimney probe		
Dimensions	H in/mm	4.25/108
	I in/mm	3.50/89
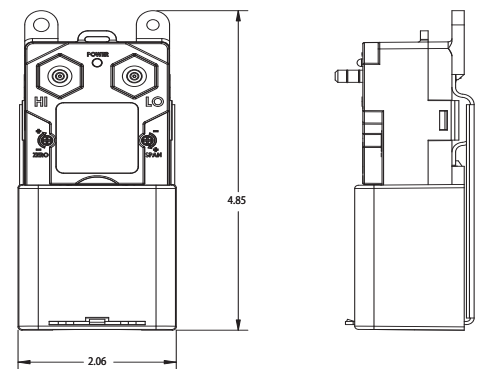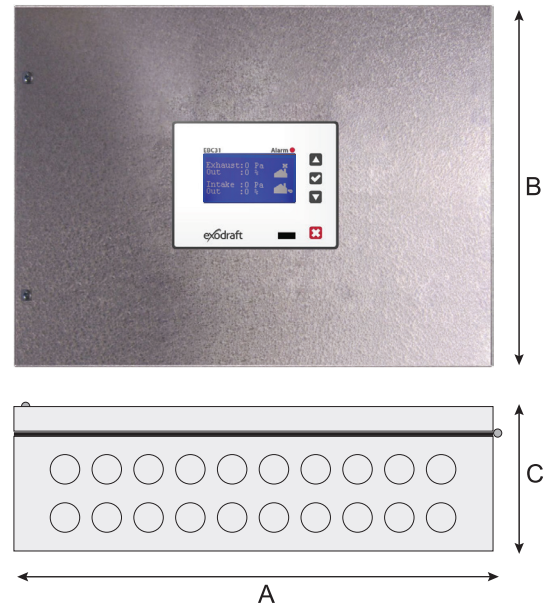
⚙ 3. Mechanical installation

3.1 Location

The control and the transducer must be installed inside, preferably in the mechanical room (boiler room).
The control does not need to be installed in an enclosure. Fig. 3 shows how the components are connected.

⚠ **The transducer cannot be mounted inside an airtight enclosure.**
It uses the boiler room pressure as reference pressure.
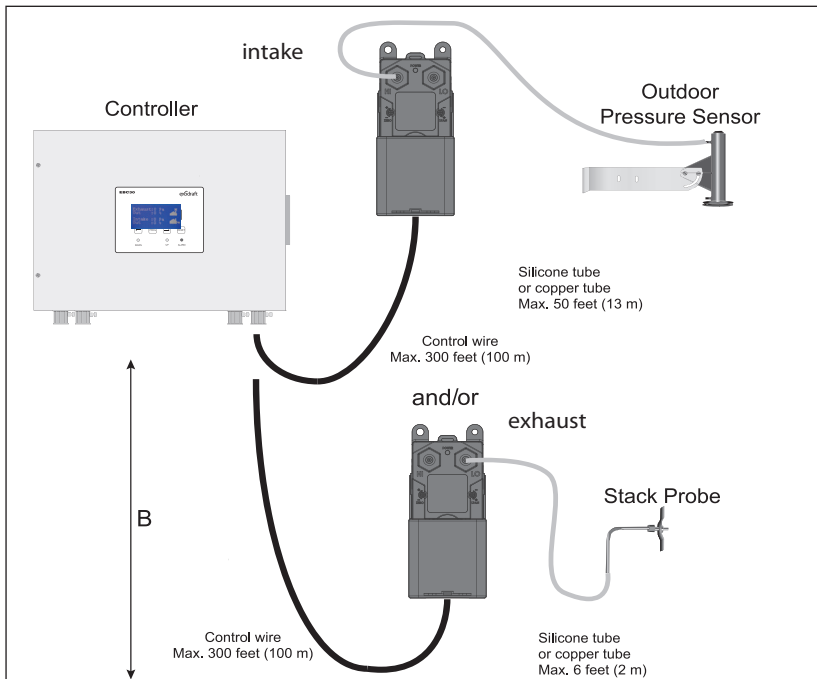
Fig. 3

3.2 Mounting of control

The control can be mounted directly on a wall or similar. The mounting holes are located inside the control as shown in Fig. 4. The distance between the control and the transducer should not exceed three hundred (300) feet.
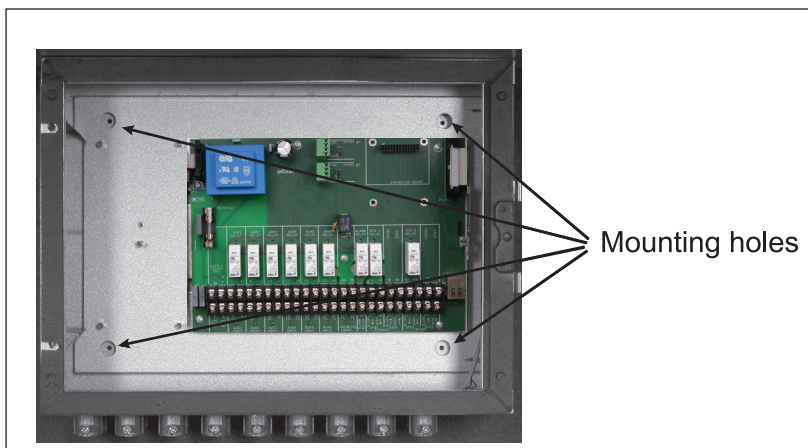
Fig. 4

3.3 Mounting of transducer

Attention must be paid to the position and location of the transducer. Fig. 5 shows the required position. Failure to follow this instruction may result in an inoperable system.

- An Ashcroft XTP-sensor used for sensing draft should be mounted within six (6) feet of the stack probe.

- An Ashcroft XTP-sensor used for sensing room pressure should be mounted within fifty (50) feet of the Outdoor Pressure Probe.
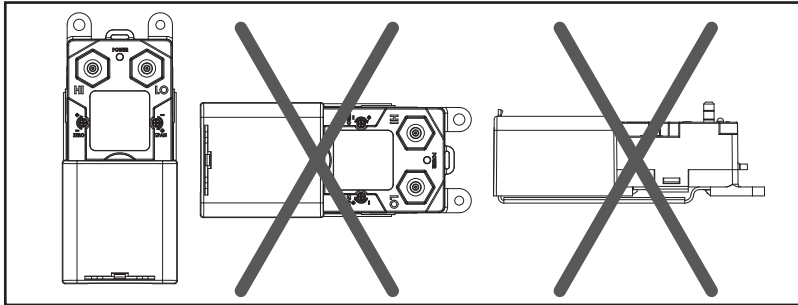
Fig. 5

3.4 Installation of stack probe (if applicable)

The probe (page 6) is inserted into the chimney or stack at the point where the draft should be kept constant. This could be at the appliance outlet, in the vent or similar. Use a 1/4" drill bit to drill a hole in the side of the chimney for the probe. Acceptable positions are shown below.

If possible, the distance "A" should be equal to 3 times the diameter of the chimney. This will improve accuracy.
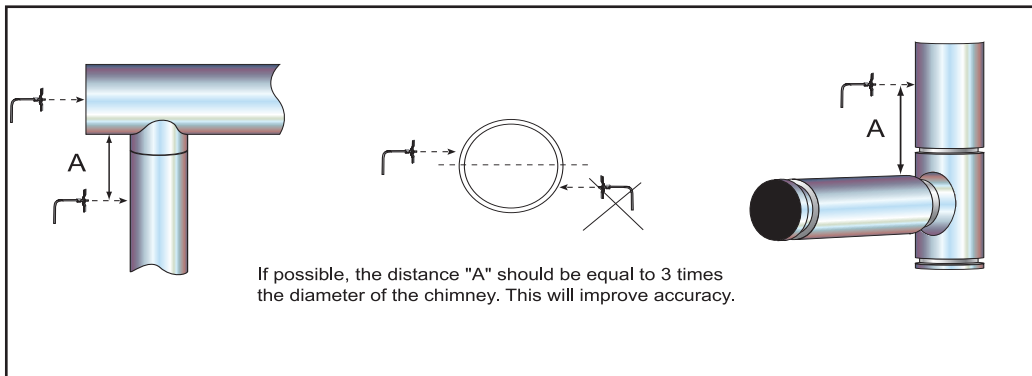
Fig. 6

Connect the stack probe to the transducer using the silicone tube. Make sure the tube is connected to the proper transducer port as show in Fig. 7.

XTP Sensor
Exhaust

Stack Probe

Fitting (LO)
Connect tubing for
stack probe here

Fitting (HI)
Leave open for
room pressure
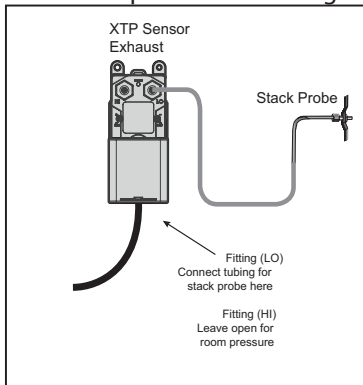
Fig. 7

3.5 Installation of outdoor pressure probe (if applicable)

The outdoor pressure probe should be mounted in a location as free as possible from rooftop obstructions. The choice of location should also consider routing of silicone tubing into the building to minimize tubing run on the roof.
Install the probe on an existing structure like a pole, radio or TV antenna mast. Alternately, the **L** shaped bracket can be attached directly to any wall or rooftop.

It is recommended that the full length of tubing (50 feet) be used. Excess tubing should be coiled at some convenient location rather than be cut off. Longer lengths are available.

⚠️ **Obstructions such as trees, chimneys, signs and buildings can cause turbulence, which result in abnormal and thus inaccurate static pressure. Position the probe as far from the sources of**

The Ashcroft XTP sensor is connected to the outdoor pressure probe as shown below in Fig. 8.

XTP Sensor
Intake

Outdoor
Pressure Sensor

Fitting (HI)
Connect tubing for
outdoor pressure
sensor here

Fitting (LO)
Leave open for
room pressure
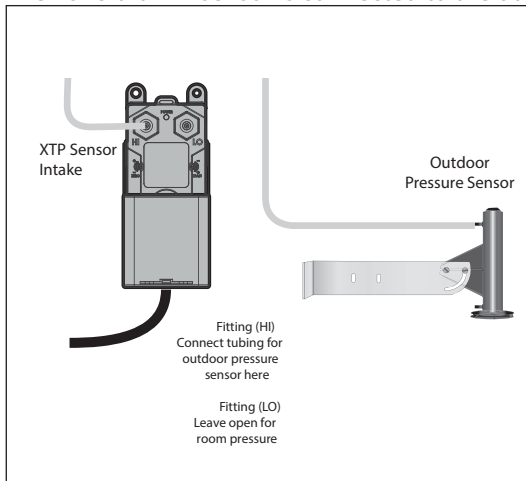
Fig. 8

⚡ 4. Electrical installation

4.1 General

🚫 **DANGER**

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

⚠️ **NOTE**

EBC31 is designed for 1 x 120 V AC power supply only. Fan output is regulating on the neutral side and cannot be connected to other circuits.

The terminals are connected as shown (for additional information go to chapter 5.1):

Terminal	Use
1	Power Supply-L1 (Phase)
2	Power Supply-N (Neutral)
3, 4	Ground
5, 6	AUX1 Dry Contact (Normally Open) Output to Appliance 1 (0-250 V, 8 A)
7	AUX1 Input - Boiler 1 Thermostat Input 10-250 V AC/DC (Load, Pos.)
8	AUX1 Input - Boiler 1 Thermostat Input (Common, Neg.)
9, 10	AUX2 Dry Contact (Normally Open) Output to Appliance 2 (0-250 V, 8 A)
11	AUX2 Input - Boiler 2 Thermostat Input 10-250 V AC/DC (Load, Pos.)
12	AUX2 Input - Boiler 2 Thermostat Input (Common, Neg.)
13, 14	AUX3 Dry Contact (Normally Open) Output to Appliance 3 (0-250 V, 8 A)
15	AUX3 input - Boiler 3 Thermostat Input 10-250 V AC/DC (Load, Pos.)
16	AUX3 Input - Boiler 3 Thermostat Input (Common, Neg.)
17, 18	AUX4 Dry Contact (Normally Open) Output to Appliance 4 (0-250 V, 8 A)
19	AUX4 Input - Boiler 4 Thermostat Input 10-250 V AC/DC (Load, Pos.)
20	AUX4 Input - Boiler 4 Thermostat Input (Common, Neg.)
21, 22	AUX5 Dry Contact (Normally Open) Output to Appliance 5 (0-250 V, 8 A)
23	AUX5 Input - Boiler 5 Thermostat Input 10-250 V AC/DC (Load, Pos.)
24	AUX5 Input - Boiler 5 Thermostat Input (Common, Neg.)
25,26	AUX6 Dry Contact (Normally Open) Output to Appliance 6 (0-250 V, 8 A)
27	AUX6 Input - Boiler 6 Thermostat Input 10-250 V AC/DC (Load, Pos.)
28	AUX6 Input - Boiler 6 Thermostat Input (Common, Neg.)
29	Draft Input - Supply to EXTERN AL switch (24 V DC)
30	Draft Input - Return from EXTERN AL switch (24 V DC)
31	Override Input - (positive) - 0-250 V AC/DC
32	Override Input - (common)
33, 34	Alarm Relay - Dry Contact (Normally Open) Close on Alarm Condition, (0-250 V AC, 8 A)
35, 36	VFD1 Relay - Dry Contact (Normally Open) for Exhaust (0-250 V)
37	Output to Exhaust VFD1 - (positive) 0-10 V
38	Output to Exhaust VFD1 - (common)
39	Power Supply to Exhaust Transducer (positive) - 24 V DC
40, 42	Output to Exhaust Transducer - (common)
41	Input from Exhaust Transducer - (positive) 0-10 V
43, 44	VFD2 Relay - Dry Contact (Normally Open) for Intake (0-250 V)
45	Output to Intake VFD - (positive) 0-10 V
46	Output to Intake VFD - (common)
47	Power Supply to Intake Transducer (positive) - 24 V DC
48, 50	Output to Intake Transducer - (common)
49	Output to Intake Transducer - (positive) 0-10 V
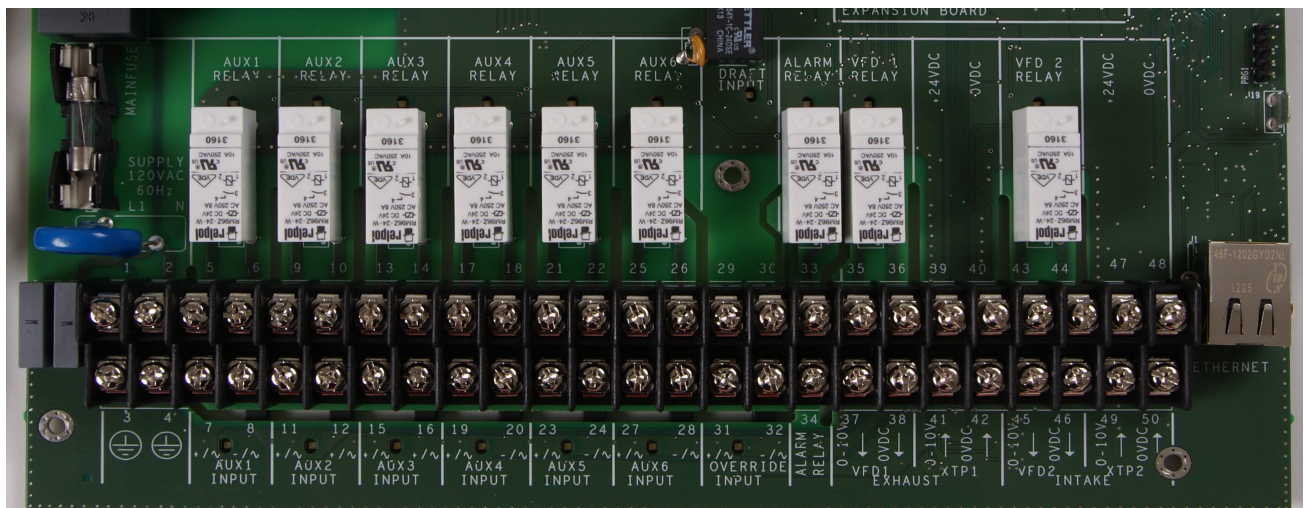
Fig. 9

⚠️ **Fan output "Nreg MOTOR" is regulating on the neutral side and cannot be connected to other circuits.**

4.2 Relay board connections

If the optional Relay Board is used, the control can handle up to 10 appliances.
Connect the connector from the add-on board to the main board as show below in Fig. 10.
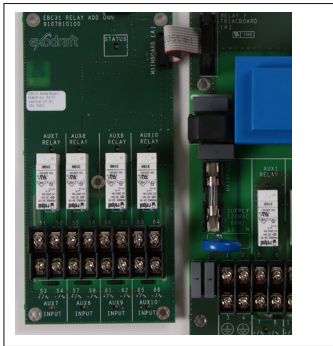
Fig. 10

Connect the terminals as needed. The terminal layout is shown in Fig. 11:

Terminal	Use
51, 52	AUX7 Dry Contact (Normally Open) Output to Appliance 7 (0-250V, 8A)
53	AUX7 input - Boiler 7 Thermostat Input 10-250 V AC/DC (Load, Pos.)
54	AUX7 input - Boiler 7 Thermostat Input (Common, Neg.)
55, 56	AUX8 Dry Contact (Normally Open) Output to Appliance 8 (0-250V, 8A)
57	AUX8 input - Boiler 8 Thermostat Input 10-250 V AC/DC (Load, Pos.)
58	AUX8 input - Boiler 8 Thermostat Input (Common, Neg.)
59, 60	AUX9 Dry Contact (Normally Open) Output to Appliance 9 (0-250V, 8A)
61	AUX9 input - Boiler 9 Thermostat input 10-250 V AC/DC (Load, Pos.)
62	AUX9 input - Boiler 9 Thermostat Input (Common, Neg.)

Terminal	Use
63, 64	AUX1 Dry Contact (Normally Open) Output to Appliance 10 (0-250V, 8A)
65	AUX10 input - Boiler 10 Thermostat Input 10-250 V AC/DC (Load, Pos.)
66	AUX10 input - Boiler 10 Thermostat Input (Common, Neg.)
67	Power Supply - L1 (Phase) - 120 V AC
68	Power Supply - N (Neutral)
69	PE (Ground)
70	Fan Motor Supply - L1 (Phase)
71	Fan Motor Supply - Nreg (Neutral)
72	PE (Ground)

Fig. 11

4.3 TRIAC board connections

If the optional TRIAC board add-on is used, the control can control fans operating at 1x120 V AC.

IMPORTANT
If both exhaust and intake functions are used, the triac board defaults to intake, but the control can be programmed to operate the TRIAC board for the exhaust function as well.
Connect the multi plug from the add-on board to the mainboard as shown in Fig. 10.
Connect the terminals as needed. The terminal layout is shown in Fig. 12.
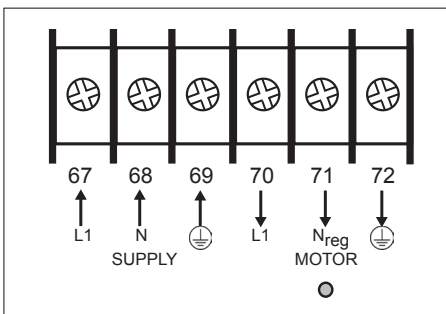
Fig. 12

4.4 Wiring of Ashcroft XTP sensor

The Ashcroft XTP sensor is wired as shown below. The wiring to the Ashcroft XTP sensor is always the same, while the wiring on the EBC31 control depends on whether it is to be wired for exhaust or intake operation:

Ashcroft XTP sensor

40 41 39

Exhaust

48 49 47

Intake
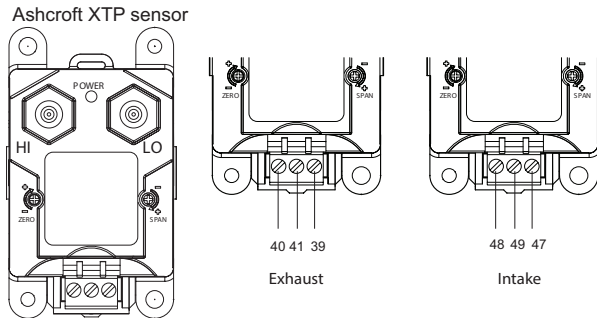
Fig. 13

4.5 Wiring of the control for priority operation

The control features priority operation, which is used only in case of a power failure or mechanical failure at the fan location. The feature will automatically evaluate if one or more appliance(s) can operate safely without mechanical draft. This function is constantly monitored by the PDS function and only if the min. draft point is satisfied, will operation be allowed. On a call for heat, the control will first probe the appliance connected to the AUX1 input/AUX1 relay terminals, secondly the appliance connected to the AUX2 input/AUX2 relay terminals and so on. Consider the operating priority of the appliances when wiring to the control.

List appliance priority here:

Priority	Appliance type or number	Connects to terminals
1		AUX1 - input/relay
2		AUX2 - input/relay
3		AUX3 - input/relay
4		AUX4 - input/relay
5		AUX5 - input/relay
6		AUX6 - input/relay

In case the highest priority appliance is not operating and a low priority appliance calls for heat, the control will allow the low priority appliance to operate.

exodraft

☞ 5. Startup and configuration

5.1 Sequence of operation

The **exodraft** EBC31 initializes when 120 V AC power is supplied. It checks for the presence of integrated components such as add-on boards and pressure sensors. The control does not detect variable frequency drives or damper actuators.

- The software version is displayed on the LED screen

- The control checks for intake and exhaust application by sensing current drawn by an intake or exhaust XTP properly connected.

- It then displays Found or Not Found for Exhaust and Intake modes

- The control checks for any add-on modules and displays Relay Found, Triac Found, or Nothing Found.

- The EBC31 system application is displayed as *intake only, exhaust only*, or *intake* and *exhaust*.

- The differential pressure reading will be (+) or (-) in reference to the type of pressure being maintained. The pressure reading will be displayed to the hundredths decimal place. The display reads 'NOT USED' when an XTP sensor is not connected.

Intermittent operation

In intermittent operation, both AUX INPUT and AUX RELAY connections are made between each appliance and the EBC31. This allows the control to start and stop the fan when an appliance is attempting to fire, and to prevent the appliances from operating if proper draft is not met.

- The EBC31 initiates pressure control when a voltage signal from any of the six appliances is sensed at the AUX INPUT terminals. No electrical path connects the AUX INPUT terminals so no current passes between them. The LED between the AUX INPUT terminals lights when a call for heat voltage is sensed.

- The Control sends a 100 % output to the controlled fans in the system via the fan control module for 120 V AC fans or the VFD1 (exhaust) or VFD2 (intake) 0-10 V DC outputs for 3 phase fans controlled by Variable Frequency Drives.

- The Ashcroft XTP pressure transducers sense the draft between the exhaust stack and the room or between the outside air and the room and send a 0-10 V DC signal back to the XTP1 (exhaust) or XTP2 (intake) terminals.

- The current pressure reading is displayed on the EBC31. It displays INT or EXH then the pressure reading or both if the application is Intake and Exhaust.

- The DRAFT INPUT terminals must be closed by an external Proven Draft Switch or by a manually installed jumper before any appliances are allowed to operate.

- The AUX RELAY contacts will close only for the appliances that are calling for heat when draft set point pressure is met and DRAFT INPUT is closed. When the AUX RELAY closes, the LED between the terminals will light and the appliance will be permitted to operate normally.

- The EBC31 will individually close the AUX RELAY contacts for other appliances as they call for heat via their AUX INPUT connections while proper draft is maintained.

- The AUX RELAY contacts will open for individual appliances if their AUX INPUT voltage is lost, or open all AUX RELAYS if the draft is not met or no appliance calls for heat.

The EBC31 modulates draft pressures by increasing or decreasing the fan speed in response to changing pressure signals. The pressure shown on the display is always in inches of water column of relative vacuum draft.
The exhaust fan increases speed to increase the draft felt by the appliances. The intake fan increases speed to decrease the draft read on intake only systems. Fan speed is controlled by the 0 to 10 V DC output signals at VFD1 & VFD2 terminals where 10 V DC is maximum speed.

The Fan Control Module sends 0 to 120 V AC to control single phase fans when they are used. The FCM defaults to control the Intake fan when both Intake and Exhaust applications are used. If the EBC31 draft reading is out of acceptable range (64 % deviation) for 15 seconds, the control will go into Alarm status and open all of the AUX RELAY contacts that shut down the appliances. When draft is met again, it will function as stated above.

Continuous operation
For continuous operation, change the parameter in menu 12 and 22 to continuous and make sure that Priority mode is set to "off" in menu 451. AUX INPUT connections are not used since the Control always attempts to maintain the pressure set point regardless of appliance status. The AUX INPUT LEDs remain lit in Continuous operation and all other EBC31 functions remain the same as in Intermittent Operation.

5.2 Pre-operation inspection

After mounting and wiring has been completed, check the control for the following items before applying power:
 • check for wiring errors
 • verify that there are no wiring chips, screws, etc. remaining inside the controller
 • check that all screws and terminal connections are tight
 • verify that no exposed wire ends are touching other terminals.

5.3 Key panel identification and operation

When AC power is applied to the control, the keypad panel display will show the following:

Fig. 14

The keypad part names and functions are:

▲　　UP KEY. Used to move the cursor up or increase the value of a parameter.

✔　　CONFIRM KEY. Used to select a parameter or confirm a different setting

▼　　DOWN KEY. Used to move the cursor down or increase the value of a parameter.

✖　　ABORT KEY. Used to exit a parameter or to manually reset an alarm

●
ALARM　　ALARM INDICATOR. When red light is lit, it indicates an error that must be corrected.

5.4 Initiation of control

When power is supplied to the control it will go through a start-up procedure to detect and check all components and appliances installed. During this procedure the display will show the following if a XTP-sensor is connected on both Intake and Exhaust input:

```
EBC31
SOFTWARE VERSION 2.XX
```
|
```
EXHAUST SENSOR
```
|
```
INTAKE SENSOR
```
|
```
ADD ON - EXT TRIAC FOUND
```
|
```
APPLICATION
EXHAUST & INTAKE
```
|
```
EXHAUST ON or OFF
INTAKE ON or OFF
```
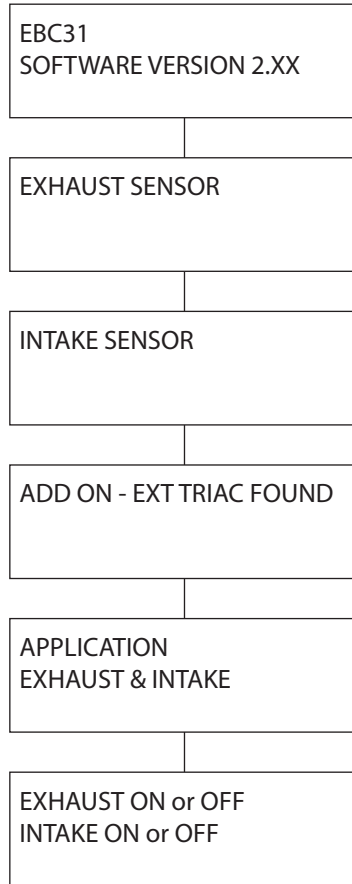
The control is ready.

5.5 Basic control set-up

Once power is turned ON the control can be programmed. Most parameters are programmed at the factory and do not need to be changed. The most common parameters are shown below.
To enter the setup menu, press the "✓" key for more than 5 seconds. The password 3142 must be entered using the up and down buttons, and after that press the "✓" key.

Menu 11: SET EXHAUST

For setting the draft or exhaust pressure. Although the value, when measured in the field, is negative pressure it shows up as a positive value on the display. The lowest possible value is 0.012 inWC. Most applications require a setting in the range of 0.012 inWC to 0.100 inWC. Atmospheric appliances (Category I) are always in the low range, while all other appliances can be anywhere.
The %-value indicates the relative setting of the total range of the sensor. (The [inWC] units can be changed to [Pa] in the menu 512.)
There is no need to set this value, if the control is used to control the supply of combustion air.

Menu 12: EXHAUST OPERATING MODE

The control can operate the fan(s) in either *'continuous'* or *'intermittent'* mode. The mode can be changed via the displa in menu 12 and 22.

Note! Continuous mode only works if Priority mode is "off" (menu 451)

In *'continuous'* mode the fan operates continuously. During times when the heating appliance(s) is not operating, the fan will still operate although at its lowest capacity. Some exhaust will be pulled through the appliance. The chimney is always primed and there is no real need for pre- and post-purge functions. The energy consumption in this mode is minimal.
In *'intermittent'* mode the fan only operates if at least one appliance is operating. When no appliance(s) is operating the fan shuts down. In this mode, pre- and post-purge functions are very important and must be set. This mode offers the lowest energy consumption.
If a heating system operates constantly, or the time between cycles is very short (less than 5-10 minutes), *'continuous'* mode should be considered. Otherwise, *'intermittent'* mode should be selected.
There is no need to set this value, if the control is used to control the supply of combustion air.
If used with a damper actuator, set for 'continuous' operation.

Menu 13: SET EXHAUST PRE-PURGE

When operating in *'intermittent'* mode it is important to set the pre-purge. Pre-purge is the period from when there is a call for heat until the control allows the appliance to start assuming the fan is operating at the proper capacity. The setting can be anywhere from 0 to 1800 seconds.
There is no need to set this value, if the control is used to control the supply of combustion air.

Menu 14: SET EXHAUST POST-PURGE

When operating in *'intermittent'* mode it is important to set the post-purge. Post-purge is the period from when the appliance shuts down until the control allows the fan to shut down assuming there are no more products of combustion in the chimney system. The setting can be anywhere from 0 to 1800 seconds.
There is no need to set this value, if the control is used to control the supply of combustion air.

Menu 21: SET INTAKE

For setting the room pressure. The lowest possible value is 0.012 inWC. Most applications require a setting of 0.012 inWC. The %-value indicates the relative setting of the total range of the sensor. (The [inWC] units can be changed to [Pa] in the menu 512.)
There is no need to set this value, if the control is used to control the draft or exhaust pressure.

Menu 22: INTAKE OPERATING MODE

The control can operate the fan(s) in either *'continuous'* or *'intermittent'* mode. The display only shows the chosen mode.
In *'continuous'* mode the supply fan operates continuously. During times when the heating appliance(s) is not operating, the supply fan will still operate although at its lowest capacity. Some pressurization of the mechanical room may occur. The room is always primed and there is no real need for pre- and post-purge functions. The energy consumption in this mode is minimal.

Note! Continuous mode only works if Priority mode is "off" (menu 451)

In *'intermittent'* mode the supply fan only operates if at least one appliance is operating. When no appliance(s) is operating the supply fan shuts down. In this mode, pre- and post-purge functions are very important and must be set. This mode offers the lowest energy consumption.
If a heating system operates constantly, or the time between cycles is very short (less than 5-10 minutes), *'continuous'* mode should be considered. Otherwise, *'intermittent'* mode should be selected.
There is no need to set this value, if the control is used to control the draft or exhaust pressure.

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Menu 23: SET INTAKE PRE-PURGE

When operating in '*intermittent*' mode it is important to set the pre-purge. Pre-purge is the period from when there is a call for heat until the control allows the appliance to start assuming the supply fan is operating at the proper capacity. The setting can be anywhere from 0 to 1800 seconds.
There is no need to set this value, if the control is used to control the draft or exhaust pressure.

Menu 24: SET INTAKE POST-PURGE

When operating in '*intermittent*' mode it is important to set the post-purge. Post-purge is the period from when the appliance shuts down until the control allows the fan to shut down assuming there are no more products of combustion in the chimney system. The setting can be anywhere from 0 to 1800 seconds.
There is no need to set this value, if the control is used to control the draft or exhaust pressure.

5.6 Detailed control programming

Menu 492: USB logging

The EBC31 can be set to log on a USB-momory stick if the menu 492 is set to "USB" If this is done, two files will be created: one with the alarm log and one with the values of the XTP sensors and 0-10V. The files are .CSV files.
 The output format is:
[Unix time], [Exhaust XTP 0-1024], [Intake XTP 0-1024], [Exhaust VFD 0-1024], [Intake VFD 0-1024], [Damper Out 0-1024], [MODS XTP 0-1024]. The value between 0-1024 is a fraction of 10V, meaning that a value of 423 equals 4.13 V.

Menu 495: Firmware upgrade

The EBC31 can be firmware upgraded using a USB-memory stick. (Can also be done using the web-interface on a PC - see page 24) Insert the USB-memory stick with the firmware in the USB connector on the front of the control. Go
to the 492 menu, and select the correct file to be programmed. Press the ✔ button to start the update. The update takes approx. two minutes.
Note! If the programming fails, power off the control. Press the x button and power up the control again. Doing this will reupload the latest working firmware.

The EBC31 control has a detailed sub-menu for individual parameter settings. *See page 28* for more details on parameters and programming.

5.7 BACnet Interface

The EBC31 has a BACnet MS/TP interface, which can be used to monitor the EBC31 including potential alarms. The RS485 port #1 is used for this purpose.

Port pinout:	
0VDC	0V terminal
B	Inverting negative terminal (-)
A	Non-inverting positive terminal (+)
+24VDC	+24 VDC terminal

The BACnet objects of the EBC31 can be seen below.

Fig. 15

	Obj. Type	Inst.-Nc	Present Value	Object Name	Description
	DEV	850013		EBC31_Boiler_Control_1	exodraft EBC31
	BV	0	[0,]	AUX1_Relay	AUX1_Relay
	BV	1	[0,]	AUX2_Relay	AUX2_Relay
	BV	2	[1,]	AUX3_Relay	AUX3_Relay
	BV	3	[1,]	AUX4_Relay	AUX4_Relay
	BV	4	[0,]	AUX5_Relay	AUX5_Relay
	BV	5	[0,]	AUX6_Relay	AUX6_Relay
	BV	6	[0,]	AUX7_Relay	AUX7_Relay
	BV	7	[0,]	AUX8_Relay	AUX8_Relay
	BV	8	[0,]	AUX9_Relay	AUX9_Relay
	BV	9	[0,]	AUX10_Relay	AUX10_Relay
	AV	0	100,0	EXHAUST Fan Speed	EXHAUST Fan Speed
	AV	1	15,0	INTAKE Fan Speed	INTAKE Fan Speed
	AV	2	52,5	Exhaust Setpoint	Exhaust Setpoint
	AV	3	22,5	Intake Setpoint	Intake Setpoint
	AV	4	100,0	DAMPER position	DAMPER position
	AI	0	44,3	EXHAUST_XTP	EXHAUST_XTP
	AI	1	0,0	INTAKE_XTP	INTAKE_XTP
	AI	2	29,8	AUX_XTP	AUX_XTP
	BI	0	[0,]	AUX1_IN	AUX1_IN
	BI	1	[0,]	AUX2_IN	AUX2_IN
	BI	2	[1,]	AUX3_IN	AUX3_IN
	BI	3	[1,]	AUX4_IN	AUX4_IN
	BI	4	[0,]	AUX5_IN	AUX5_IN
	BI	5	[0,]	AUX6_IN	AUX6_IN
	BI	6	[0,]	AUX7_IN	AUX7_IN
	BI	7	[0,]	AUX8_IN	AUX8_IN
	BI	8	[0,]	AUX9_IN	AUX9_IN
	BI	9	[0,]	AUX10_IN	AUX10_IN
	MI	0	NO ALARMS	Alarm type	Alarm type
	MI	1	On	System status	System status

BI0 to BI9 is the state of the boiler inputs from 1-10. BV0 to BV9 is the state of the boiler output relays 1-10

The units of Exhaust/Intake Fan speed, AUX_XTP and Damper Position is %. The units of Exhaust/Intake setpoint and Exhaust/Intake XTP is in Pa. For further information request the EBC31 BACnet PICS document.

Use menu or the web interface of the EBC31 to configure the BACnet interface

5.8 Webinterface

To enter the web server on the EBC31, the controller must be connected to a ethernet network or directly to a PC. The controller has DHCP enabled as factory setting. In menu 485 the current IP address is shown, and this address must be entered in the web browser to access the EBC31. The username is **"admin"** and the password is **"exodraft"**

⚠ **NOTE**
The EBC31 shall be protected behind a firewall if connected to the Internet.

The webinterface can be used to monitor the operation of the EBC31, changing the configuration, upgrading the firmware, uploading/download configuration files etc.

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5.7.1 Network configuration

The Network Configuration page lets the user change the different BACnet and Ethernet network parameters as well as the username/password. (The password only applies to the webinterface)

5.7.2 I/O Status

The I/O status page lets the user monitor all the I/O of the EBC31, including XTP sensor readings in Volt (0-10V)

Network Configuration   I/O Status   Pressure Curves and Log   Configuration   Upload Firmware

exodraft EBC31

Status

I/O view

Burner I/O	AUX OUT 000010	AUX IN 000010
Relay board	RELAY OUT 0000	RELAY IN 0000
Exhaust I/O	EXHAUST XTP 4.2V On	EXHAUST VFD 10.0V On
Intake I/O	INTAKE XTP 1.0V On	INTAKE VFD 1.5V On
Triac board	TRIAC BOARD Not Found	
Damper	XTP 4.3V OPS On	DAMPER OUT 8.0V Off
Draft input On	Override in Off	Alarm output Off

Software version

Version: 2.50

Build date: Oct 27 2015 11:53:49

USB

USB Status: Not present

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5.7.3 Pressure Curves and Log

The Pressure Curves and Log page lets the user monitor the values of the XTP sensors and the VFD outputs in real time.

Furthermore the Alarm Log can read on this page.

5.7.4 Configuration

The Configuration page lets the user change all the parameters of the EBC31, as well as down/uploading configuration files to the controller.

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CHIMNEY DRAFT TECHNOLOGY

| Network Configuration | I/O Status | Pressure Curves and Log | Configuration | Upload Firmware |

exodraft EBC31

System Configuration

This page allows the configuration of the system settings.

Save Configuration

Exhaust		**Intake**	
Set exhaust (%):	17	Set intake (%):	3
Setpoint range: 2 to 95%			
Current Setpoint, absolute:		Current Setpoint, absolute:	
	0.102 inWC		0.018 inWC
Exhaust mode:	Intermittent	Intake mode:	Intermittent

Pre purge | | **Pre purge** | |

| Time (s): | 0 | Time (s): | 0 |
| Speed mode: | Fix 100 | Speed mode: | Variable |

Post purge | | **Post purge** | |

| Time (s): | 0 | Time (s): | 0 |
| Speed mode: | Variable | Speed mode: | Variable |

Purge times range: 0 to 1800s

Sensor | | **Sensor** | |

| Range min. (Pa): | 0 | Range min. (Pa): | 0 |

Range min. limits: -500 to 500Pa

| Range max. (Pa): | 150 | Range max. (Pa): | 150 |

Range max. limits: 0 to 1000Pa

Properties | | **Properties** | |

| Alarm limit:
(100% = Setpoint) | 64 | Alarm limit:
(100% = Setpoint) | 144 |

Alarm limit range:
50 to 80% of setpoint for Exhaust in Negative mode and Intake in Positive mode
100 to 300% of setpoint for Exhaust in Positive mode and Intake in Negative mode

| Alarm delay (s): | 15 | Alarm delay (s): | 15 |

Alarm delay range: 0 to 120s

| Speed min. (%): | 15 | Speed min (%): | 15 |
| Speed max. (%): | 100 | Speed max (%): | 100 |

Speed min./max. ranges: 0-100%

| Exhaust Xp: | 15 | Intake Xp: | 15 |
| Exhaust Ti: | 8 | Intake Ti: | 8 |

Xp/Ti range: 0 to 30

| Pressure mode: | Negative | Pressure mode: | Negative |

Will be continued on the next page....

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5.7.4 Configuration

MODS Damper

Alarm limit: (100% = Setpoint)	144
Alarm delay (s):	15
Output min. (%):	15
Output max. (%):	80
Damper Xp:	15
Damper Ti:	8
Hysteresis:	0
Reaction Delay:	0
OPS Delay:	0

Service

Service mode:	User
Triac board:	Intake

Override

Exhaust:	Max
Intake:	Max
Damper:	Off
Alarm mode:	On

Option

Priority:	On
Bearing cycle:	On
Prime (s):	0

Manual mode

Exhaust VFD1 (%):	0
Intake VFD2 (%):	0
Damper OUT (%):	0
Triac board (%):	0

USB

Data log USB:	Internal

User interface

Language:	ENG
Units:	Pa
LCD backlight:	ON
LCD contrast:	50%

Alarm

Reset:	Automatic

Save Configuration

Up- and Download of Configuration file

Upload settings

File: Browse... No file selected.   Upload Settings

Current settings

Remember to right-click and choose "Save destination as ..."
Link: Download Config file

Reset to factory data: Factory Reset

5.7.5 Upload Firmware

The Upload Firmware page lets the user upgrade the firmware using the Ethernet connection. Further more the "Reboot" button can be used if the user wishes to reboot the controller remotely.

🔧 6. Settings and troubleshooting

6.1 Troubleshooting

Most terminal connections are monitored for proper operation. LED lights indicate operating status. If a light is lit, it indicates everything is functioning properly while a light out indicates a problem on the circuit it monitors. In addition, fault codes are shown on the display.

The fault codes are:

Display	Explanation
A1 Draft Exhaust	Insufficient draft pressure. Can be caused by: 1. Chimney fan does not have enough capacity 2. Mechanical or electrical fan failure 3. Blocked chimney 4. Introduction of excessive dilution air 5. XTP sensor not responding correctly
A2 Draft Intake	Insufficient intake air supply. Can be caused by: 1. Supply fan does not have enough capacity 2. Mechanical or electrical fan failure 3. Blocked air inlet our louver 4. Excessive exhaust from exhaust fans located in mechanical room
A3 Power Fault	Indicates there has been a power fault
A4 XTP-Exhaust	Indicates a disconnected signal from the XTP-Sensor on the exhaust side to the control Can be caused by: 1. Loose connections 2. Faulty XTP-sensor 3. Faulty controller
A5 XTP-Intake	Indicates a disconnected signal from the XTP-sensor on the intake side to the control. Can be caused by: 4. Loose connections 5. Faulty XTP-Sensor 6. Faulty controller
A6 Error Start	Indicates that the control has not been able to release the heating appliance(s) within 15 minutes.
A7 Alarm Override	Indicates alarm has been ignored
A8 Draft Input	Missing signal from PDS-function. Indicates a faulty function.
A9 RS485 error	No communication between EBC31 and BACnet network
A10 Hardware error	No communication between mainbord and relay board/MODS board
A11 Priority	The draft has been insufficient and therefore the control has gone into Priority mode
A12 Exhaust Overdraft Alarm	When using a MODS board with connected damper, this error occurs when the XTP-sensor for Exhaust measures overdraft.
Other fault possibilities are shown below:	
Red alarm diode flashes	Indicates the control operates the appliances in prioritized mode.

6.2 Settings

Menu	Sub-menu			function	Display	Description	Range	Default
1				**Exhaust**	**EXHAUST**			
	11			Draft set point	SET EXHAUST	Adjustment of exhaust setpoint.	2%-95% af sensor	17%
	12			Operation mode	EXHAUST MODE	Continuous or intermittent operation. In intermittent mode the exhaust fan runs only if one or more boiler inputs are active.	Continuous/Intermittent	Intermittent
	13			**Pre-purge**	**PRE-PURGE**	**Pre-purge settings.**		
		131		Time	TIME	Pre-purge time in seconds	0-1800	0
		132		Operation mode	SPEED MODE	Select variable if the pre-purge should be controlled by the XTP-sensor or have a fixed speed.	Variable / FIX 20-100%	FIX 100%
	14			**Post-purge**	**POST-PURGE**			
		141		Time	TIME	Post-purge settings.	0-1800	0
		142		Operation mode	SPEED MODE	Select variable if the post-purge should be controlled by the XTP-sensor or have a fixed speed.	Variable / FIX 20-100%	Variable
	15			**Sensor**	**SENSOR**			
		151		Min. pressure	RANGE MIN	XTP minimum pressure in Pa.	-500 – 500 Pa	0
		152		Max. pressure	RANGE MAX	XTP Maximum pressure in Pa.	0 – 1000 Pa	150 Pa
	16			**Parameters**	**PROPERTIES**			
		161		Alarm limit draft	ALARM LIMIT	Select the alarm limit of the draft. The value is in % of the set point.	If 167 = "Negative" ->50 - 80 %. If 167 = "Positive" -> 150 - 300 %"	64 % (167 = "Negative") 144 % (167 = "Positive")
		162		Alarmdelay	ALARM DELAY	Select a alarm delay from 0-120 seconds.	0 – 120 s	15
		163		Min. voltage	SPEED MIN	Mimimum speed of the fan	0 – MENU 164	15 %
		164		Max. voltage	SPEED MAX	Maksimum speed of the fan.	MENU 163-100%	100
		165		Xp	EXHAUST Xp	Proportional gain.	0-30	15
		166		Ti	EXHAUST Ti	Integral gain.	0-30	8
		167		Pressure type	PRESSURE MODE	Positive or negative pressure in the stack.	Positive or Negative	Negative
2				**Intake**	**INTAKE**			
	21			Intake set point	SET INTAKE	Adjustment of exhaust setpoint.	2%-95% af sensor	3 %
	22			Operation mode	INTAKE MODE	Continuous or intermittent operation. In intermittent mode the exhaust fan runs only if one or more boiler inputs are active.	continuous/intermittent	intermittent
	23			**Pre-purge**	**PREPURGE**	**Pre-purge settings.**		
		231		Time	TIME	Pre-purge time in seconds.	0-1800	0
		232		Operation mode	SPEED MODE	Variable or fixed speed		Varible
	24			**Post-purge**	**POST PURGE**	**Post-purge settings.**		
		241		Time	TIME	Post-purge time in seconds.	0-1800	0
		242		Operation mode	SPEED MODE	Select variable if the post-purge should be controlled by the XTP-sensor or have a fixed speed.	Variable / FIX 20 – 100%	Varible
	25			**Sensor**	**SENSOR**			
		251		Min. pressure	RANGE MIN	XTP minimum pressure in Pa.	-500 – 500 Pa	0 Pa
		252		Max. pressure	RANGE MAX	XTP Maximum pressure in Pa.	0-1000Pa	150Pa
	26			**Parameters**	**PROPERTIES**			
		261		Alarm limit draft	ALARM LIMIT	Select the alarm limit of the draft. The value is in % of the set point.	If 267 = "Negative" ->50 - 80 % If 267 = "Positive" -> 150 - 300 %	64 % (267 = "Negative") 300 % (267 = "Positive")
		262		Alarmdelay	ALARM DELAY	Select an alarm delay from 0-120 seconds.	0–120 s	15 s
		263		Min. voltage	SPEED MIN	Mimimum speed of the fan.	0 – MENU264	10%
		264		Max. voltage	SPEED MAX	Maksimum speed of the fan.	MENU263-100%	100%
		265		Xp	INTAKE Xp	Proportional gain.	0-30	15
		266		Ti	INTAKE Ti	Integral gain.	0-30	8
		267		Pressure type	PRESSURE MODE	Positive or negative pressure in the stack.	Positive or Negative	Negative
3				**ALARM**				
		31		Alarm Status	ERROR	The error is shown here		
		32		Alarm log	ERROR LOG	The last 10 alarms will be saved in the menu.		
		33		**Reset**	**RESET**	**Selecting "AUTO" will automatic reset the alarm after 15 seconds. If "MAN" is selected, the "∨" has to be pressed.**	**MAN / AUTO**	**AUTO**
4				**Service**	**SERVICE**			
	41			Version no.	VERSION	Software version is showed.		
	42			I/O	I/O-VIEW			

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Menu	Sub-menu	function	Display	Description	Range	Default
		421	BURNER I/O	AUX OUT XXX XXX AUX IN XXX XXX	In this menu the status of the boiler I/O is shown. By pressing ✔ the AUX OUT relays can be activated by pressing up and down. Multiple activations of the ✔ button will move from relay 1 to 6		
		422	RELAY BOARD	RELAY OUT XXXX RELAY IN XXXX	If a Relay board is present, the I/O status is shown. Otherwise "Relay board not found" is displayed. By pressing ✔ the AUX OUT relays can be activated by pressing up and down. Multiple activations of the ✔ button will move from relay 1 to 6		
		423	EXHAUST I/O	EXH XTP x.xV OFF EXH VFD x.xV OFF	XTP, VFD and VFD relay status for Exhaust.		
		424	INTAKE I/O	INT XTP x.xV OFF INT VFD x.xV OFF	XTP, VFD and VFD relay status for Intake.		
		425	TRIAC BOARD	TRIAC BOARD xxxV OFF	TRIAC board voltage status. If no TRIAC board is present, "TRIAC board not found" is displayed.		
		426	MODS BOARD	AUX XTP input x.x V	AUX XTP sensor input voltage		
		427	Draft input	DRAFT INPUT ON/OFF	Draft Input I/O status.		
		428	Override input	OVERRIDE INPUT ON/OFF	Override input I/O status.		
		429	Alarm relay	ALARM OUTPUT ON/OFF	Alarm relay output status.		
		430	Application	APPLICATION EXHAUST & INTAKE	During start-up the presentence of XTP-sensors and MODS board sets the application. Possible systems: 1 INTAKE 2 EXHAUST 3 EXHAUST & INTAKE 4 EXHAUST & INTAKE & DAMPER		
	43		Triac board	TRIAC BOARD * CONNECTED TO EXHAUST	TRIAC board configuration. If only one XTP sensor is connected, the Exhaust application will be selected. If both XTP sensors is present, the TRIAC board will be tied to Intake.	INTAKE / EXHAUST	
	44		Override	OVERRIDE			
		441	Draft mode	EXHAUST	If the Override input is active, three different modes can be selected.	OFF / NORMAL / MAX	MAX
		442	Intake mode	INTAKE	If the Override input is active, three different modes can be selected.	OFF/ NORMAL/ MAX	Normal
		443	Alarm mode	ALARM MODE	Select "ON" if alarm state should be activated if "OVERRIDE" is selcted.	ON/OFF	OFF
	45		Options	OPTION			
		451	Prioritized duty	PRIORITY	If there has been a draft alarm, the controller will activate the first active boiler. After 1 minute the next boiler will be activated etc. A maximum of [n-1] boilers will be activated. (If 5 boilers were active, maximum 4 will be active) The function will stop if all boilers are inactive or after 2 hours.	ON/OFF	ON
		452	Bearing activation	BEARING CYCLE	Selecting "YES" will enable a bearing cycle on present fans, if the boilers has not been active for 24 hours.	ON/OFF	ON
		453	Allow prime		Selecting a number from 0-250 will enable the prime function. This allows the boilers to be activated even though no sufficient draft is present.	0-250 s / off	Off
		453	MODS OPS Delay	MODS OPS DELAY	Selecting a number between will enable the OPS switch input on the MODS board. When enabled the boiler relays will be i off state after 1-20 sec. if the input is off.	0-20 sec	0
		454	Sampling rate	SAMPLING RATE	The PID controller sampling rate can be adjusted from 2-10 ms. The sampling rate is applied to Exhaust, Intake and MODS loops	2-10 ms	10 ms
	46		**Factory reset**	**FACTORY**	**If "YES" is selected, a factory reset will be performed.**	**YES/NO**	**NO**
	47		Manuel mode	MANUEL MODE	Manual mode gives the user a tool to check if the fans works correctly or not. The function will stop after 6 hours or by pressing the "x" button. No boilers will be activated if the draft is not sufficient.		

Menu	Sub-menu		function	Display	Description	Range	Default
		471	VFD1 manual service	EXHAUST VFD1	Manual service of the VFD1. The function is time limited, and therefore it has no min/max limits. Selecting other than "0" will enable the function.	0-100% 0 = OFF	
		472	VFD2 manual service	INTAKE VFD2	Manual service of the VFD2 board. The function is time limited, and therefore it has no min/max limits. Selecting other than "0" will enable the function.	0-100% 0 = OFF	
		473	Triac manual service	TRIAC BOARD	Manual service of the TRIAC board. The function is time limited, and therefore it has no min/max limits. Selecting other than "0" will enable the function.	0-100% 0 = OFF	
	48		**Network**	**NETWORK**			
		481	DHCP	DHCP	Selecting "YES" sets the controller to DHCP	YES / NO	YES
		482	IP	MANUAL IP	If DHCP is set to "NO", a IP address can be inserted manually		
		483	TCP port	TCP PORT	Select either TCP port 80 or 8080	80 / 8080	80
		484	WEB	WEB SURVEILLANCE	Not implemented	YES / NO	NO
		485	Current settings	CURRENT SETTINGS	Shows the Current IP address and subnet mask		
		486	Subnet Mask	Subnet Mask	Subnet Mask of the network with DHCP Off		
		487	Gateway	Gateway	Gateway of the network with DHCP Off		
	49		USB configuration	USB CONFIG			
		491	format USB	FORMAT USB	Selecting "YES" will format the USB flash drive. Notice! All data will erased!	YES / NO	NO
		492	Data Log	DATA LOG USB / INTERNAL	Selecting "USB" will store the alarm log on the USB flash drive, "INT" will store the log in the internal memory.	USB / INT	INT
		493	Upload config. file	UPLOAD CONFIG FILE	Slecting "YES" provides the possibility to select configurationfiles stored on the USB flash drive.	YES / NO	NO
		494	Download config. file	DOWNLOAD CONFIG FILE	Selecting "YES" will download the current configuration to the USB flash drive.	YES / NO	NO
		495	Upgrade firmware	UPGRADE FIRM-WARE	This function provides the possibility to upgrade the firmware by means of a USB Stick		
5			**User Interface**	**USER INTERFACE**			
	51		Display	DISPLAY			
		511	Language	LANGUAGE	Language.	ENG / FRA / ESP	ENG
		512	Pressure units	UNITS	Pa or inWC units.	Pa / inWC	inWC
		513	LCD backlight	LCD BACKLIGHT	LCD backlight turned on or not. The USE parameter will cause the backligt to be turned on if a button is pressed.	ON / OFF / USE	ON
		516	LCD contrast	LCD CONTRAST		10 – 100 %	50
6			**Add on**				
	61		BACnet Interface	BACNET MODULE	Only applicable with future version 3.xx software		
		611	RS485 Settings				
		6111	MAC Adress	MAC ADRESS	BACnet MAC address	1-127	1
		6112	BAUDRATE	BAUDRATE	RS485 port BAUDRATE	9600, 19200, 38400,57600,78400, 115200	38400
		612	BACnet parameters				
		6121	Device Name	DEVICE NAME	The name of the EBC31 controller. EBC31_Boiler_Control_X where X is changeable	1-20	1
		6122	Device description	DEVICE DESCRIP-TION	Allows the administrator of the BACnet to enter text		
		6123	Device Location	DEVICE LOCATION	Allows the administrator of the BACnet to enter the location of the device		
		6124	Device ID	DEVICE ID	The device ID can be set between 1-4194302	1-4194302	
	62		MODS menu	MODS MENU			
		621	Alarm limit	ALARM LIMIT	If the damper cannot reduce the draft, there will be an alarm	0-500 %	144 %
		622	MODS Alarm delay	ALARM DELAY		0-300 sec	15 sec
		623	Min. damper opening	SPEED MIN	Minimum opening of the damper	0-Menu 624	15 %
		624	Max damper opening	SPEED MAX	Maximum opening of the damper	Menu 623 - 100 %	100 %
		625	Xp	MODS Xp	Proportional gain.	0-30	15
		626	Ti	MODS Ti	Integral gain.	0-30	8
		627	Hysteresis	HYSTERESIS	MODS hysteresis	0-20 %	0
		628	Reaction delay	REACTION DELAY	MODS reaction delay	0-20 s	0
	63		Economizer module	ECONONOMIZER	Future release		

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User Settings

Please record and keep the following information. It will ease servicing the control after installation.

Q1 EXHAUST setting	_____ "WC
Q2 EXHAUST Operating Mode	Continuous/Intermittent (*circle one*)
Q3 EXHAUST Pre-purge	_____ seconds
Q4 EXHAUST Post-purge	_____ seconds
Q5 INTAKE setting	_____ "WC
Q6 INTAKE Operating Mode	Continuous/Intermittent (*circle one*)
Q7 INTAKE Pre-purge	_____ seconds
Q8 INTAKE Post-purge	_____ seconds
Q9 ROTATION CHECK	Yes No (*circle one*)

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