User's manual

V4 SERIES DEMAND CONTROL KITCHEN VENTILATION SYSTEM

ecoAzur®

intellinox

SAFETY INSTRUCTIONS AND NOTES

Warnings caution you about conditions which can result in serious injury or death and/or damage to the equipment. They also tell you how to avoid the danger.

The warning symbols are used as follows:

ELECTRICITY WARNING warns of hazards from electricity which can cause serious injury and/or damage to the equipment.

GENERAL WARNING warns about conditions, other than those caused by electricity, which can result in physical injury and/or damage to the equipment.

WARNING! The ECOAZUR® system and related equipment should ONLY be installed by qualified personnel. Electrical wiring and connections should be done by a qualified electrician.

WARNING! The ECOAZUR® system and related equipment should be properly grounded. Improper grounding can result in a risk of electric shock.

WARNING! More than one circuit disconnect switch may be required to de-energize the equipment before servicing. Dangerous voltage is present when input power is connected to the ECOAZUR® processor panel.

WARNING! Lockout electrical power supply to all equipment (ECOAZUR® processor panel, hood lights, VFDs, motors, etc.) before hood and duct cleaning procedures.

WARNING! Do not expose control panels to any water.

WARNING! Dangerous voltage is present when input power is connected to VFDs. After disconnecting the supply, wait at least 5 minutes (to let the intermediate circuit capacitors discharge) before removing the cover.

WARNING! Legal regulations and regulations issued by authorities must be observed during installation.

WARNING! Never pressure wash the ECOAZUR® components, including the optic sensors.

WARNING! Ensure that all electrical switches and system components (including access doors) are returned to an operable state after the cleaning procedure.

WARNING! The ECOAZUR® system will start up automatically after an input voltage interruption. Dampers and exhaust fans may automatically be energized.

WARNING! The ECOAZUR® devices may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user. Never attempt to repair a malfunctioning ECOAZUR® part, including any other related equipment such as VFDs (Variable Frequency Drives), dampers, motors, fans, etc.; contact your local Authorized Service Center for repair or replacement.

WARNING! Do not stare at the ECOAZUR® optic sensor light.

WARNING! In case of occurrence of any problem, contact your local Authorized Service Center.

For more information concerning your ECOAZUR® DCKV control system, contact your Authorized Service Center.

Read and understand instructions provided with any other equipment related to the ECOAZUR® DCKV control system.

Preventive Maintenance Program

The ECOAZUR® system requires a yearly inspection and preventive maintenance program to ensure safety and optimal performance. Contact your Authorized Service Center.

Product Disposal (W.E.E.E. Directive)

At the end of their useful life the packaging and product should be disposed of via a suitable recycling center. Do not dispose of with household waste. Do not burn. All locally valid regulations and requirements must be observed.

TABLE OF CONTENTS

OVERVIEW

The purpose of this User's Manual is to provide the basic knowledge required for operating the ECOAZUR® DCKV (Demand Control Kitchen Ventilation) system in the context of a commercial or institutional kitchen. This document also provides instruction for the end user concerning maintenance and troubleshooting of the ECOAZUR® control system.

Should additional information be required, the following documents may be referenced:

- ECOAZUR® Product Specifications (E4PS-EN) - Product design characteristics
- ECOAZUR® Installation Manual (E4IM-EN) - Mechanical installation
- ECOAZUR® Programming Manual (E4PM-EN) - Parameter setup, advanced troubleshooting
- ECOAZUR® Electrical Diagrams - Project specific wiring instruction

The ECOAZUR® control system interfaces with third-party devices such as VFDs (Variable Frequency Drive), fans and other equipment. Refer to manufacturer's specific documentation and instructions for safety and for proper operation and maintenance of these equipment.

Only qualified professionals should install, program and service the ECOAZUR® system. Legal regulations and regulations issued by authorities shall be observed, notably in the USA:

NFPA 96	Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations
NFPA 70	National Electric Code (NEC)

The ECOAZUR® DCKV system usage is limited to the following application:

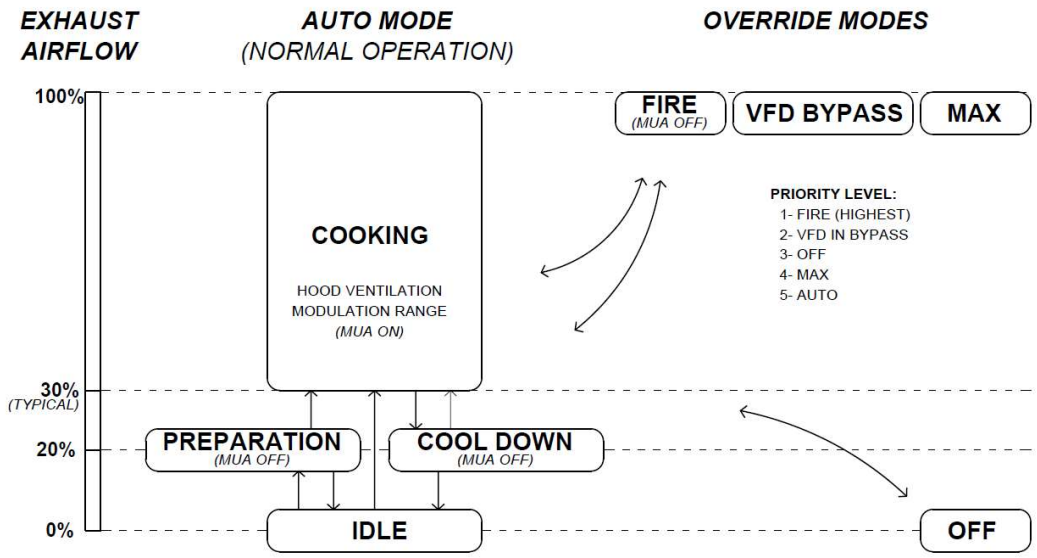
- Commercial cooking ventilation, including Type 1 and Type 2 hoods (grease hoods / condensate hoods), with or without modulating dampers.
- ECOAZUR® modulating dampers are not fire dampers and should solely be used as an airflow control device with an ECOAZUR® system.

SEQUENCE OF OPERATION

The ECOAZUR® system is designed to control commercial kitchen hood ventilation based on detected cooking activity. Airflows are adjusted using ECMs (Electrically Commutated Motor) or VFDs (Variable Frequency Drive), and, in some cases, exhaust modulating dampers (ECOAZUR® PLUS) are added to increase potential savings.

A combination of temperature and optic sensors allow for a wider range of airflow modulation (typically 30-100% or 50-100%), thus increasing potential savings. During non-cooking periods, exhaust fans automatically reduce their speed to the COOL DOWN pre-set speed and will ultimately come to a stop in IDLE mode, after the pre-set time has elapsed. In IDLE, the system continues to detect any cooking activity and, if necessary, will automatically switch to PREPARATION and COOKING modes, thus fulfilling the requirements of the NFPA 96[1] and of the International Mechanical Code[2].

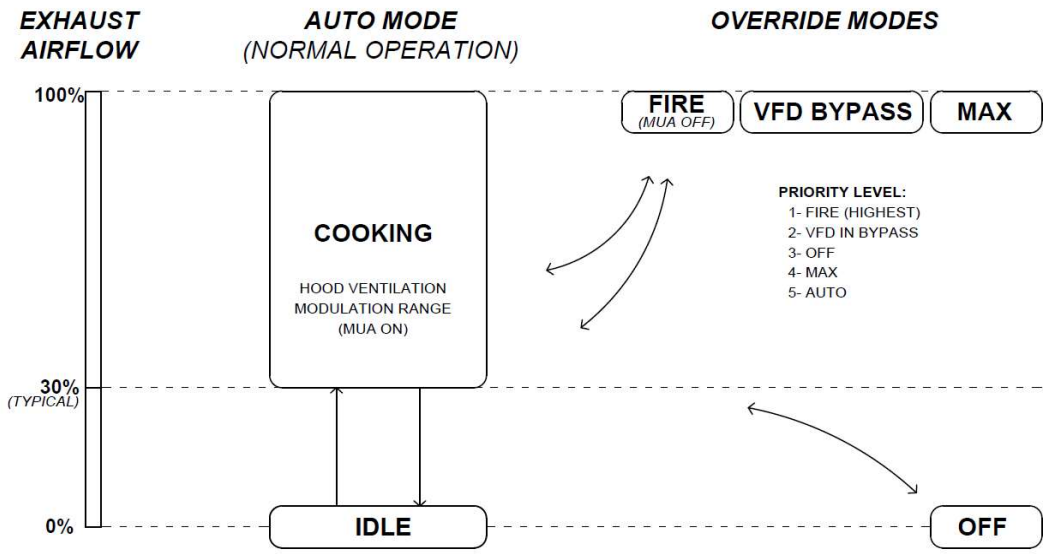
The following is a graphical representation of the ECOAZUR® sequence of operation:



When exhaust dampers are used in combination with an exhaust fan, they are forced to operate according to their corresponding exhaust fan operating mode. This ensures that the exhaust duct air velocity, under cooking conditions, is above 500 ft/min as prescribed by NFPA 96[3].

[1] NFPA 96-2021, 8.2.3.3
[2] IMC-2021, 507.1.1
[3] NFPA 96 2021, 8.2.1.1

PREPARATION and COOL DOWN modes may be disabled when not required, leading to a simplified sequence of operation:



NORMAL OPERATION MODES

PREPARATION

Typically, an exhaust fan in PREPARATION mode operates at 20% airflow (approximately), while its related make-up air unit remains off. The intent is to prevent a make-up air unit from starting until an actual cooking load is detected.

When in IDLE mode, the following conditions will start an exhaust fan in PREPARATION mode:

- A related hood temperature sensor reads a temperature rise above PREP/COOL TEMP threshold (typically 27°C / 80.6°F).
- The BAS (Building Automation System) sends a request to the ECOAZUR® processor to operate the exhaust fan at least at PREPARATION pre-set speed (digital or analog signal).

NOTE: PREPARATION / COOL DOWN modes are disabled in the default parameter setup.

COOKING

Typically, an exhaust fan in COOKING mode may be set to modulate from 30% to 100% (18-60 Hz or 15-50Hz) or 50% to 100% (30-60 Hz or 25-50Hz) depending on the cooking equipment as well as the hood and duct design. When no exhaust dampers are used, the exhaust fan speed corresponds to the highest demand among all related hood sensors (temperature, optics, etc.).

When exhaust dampers are used, each exhaust damper airflow setpoint is determined by the highest demand among all its related hood sensors. The ECOAZUR® system will control the exhaust fan speed to maintain the proper exhaust static pressure in the main exhaust duct. In order to maintain sufficient air velocity in the exhaust duct system during cooking operations, all dampers linked to the same exhaust fan will be forced to enter COOKING mode simultaneously as soon as a cooking condition is detected. This provides means for ensuring that the exhaust duct air velocity remains above 500 ft/min as prescribed by NFPA 96[4].

In all cases, make-up air units are controlled as a function of their related exhaust fans. A desired exhaust to make-up air ratio may be programed in the ECOAZUR® system.

The following conditions will switch an exhaust fan to COOKING mode:

- The **AUTO** key on the ECOAZUR® keypad is pressed. All the exhaust fans controlled by the keypad display run in COOKING mode.
- A related hood temperature sensor reads a temperature above the cooking temperature (COOKING TEMP) threshold (typically 30°C / 86°F).
- A related optic sensor detects cooking activity, such as the presence of smoke or vapor generated by the cooking equipment.
- The BAS sends a request to the ECOAZUR® processor to force the exhaust fan to operate in COOKING mode (digital or analog signal).

[4] NFPA 96-2017, 8.2.1.1

COOL DOWN

An exhaust fan in COOL DOWN mode will run at 20% airflow (approximately). The make-up air unit will be turned off and the cooking appliances will cool down before the exhaust fan reaches IDLE mode.

The following conditions will switch an exhaust fan to COOL DOWN mode:

- When sensors have stopped reading cooking activity (COOKING state) for longer than 30 minutes (typical COOKING OFF DELAY setting), the exhaust fan speed automatically decrease to the COOL DOWN pre-set speed. NOTE: Temperature sensors are required to read below PREP/COOL TEMP to leave COOKING mode (typically 27°C / 80.6°F).
- The **STOP** key on the ECOAZUR® keypad is pressed, which will bypass the COOKING OFF DELAY and COOL DOWN OFF DELAY of all exhaust fans linked to the keypad. All exhaust fans sensing no cooking activity will switch to COOL DOWN mode, and if possible, to IDLE mode immediately.

NOTE: PREPARATION / COOL DOWN modes are disabled in the default parameter setup.

IDLE

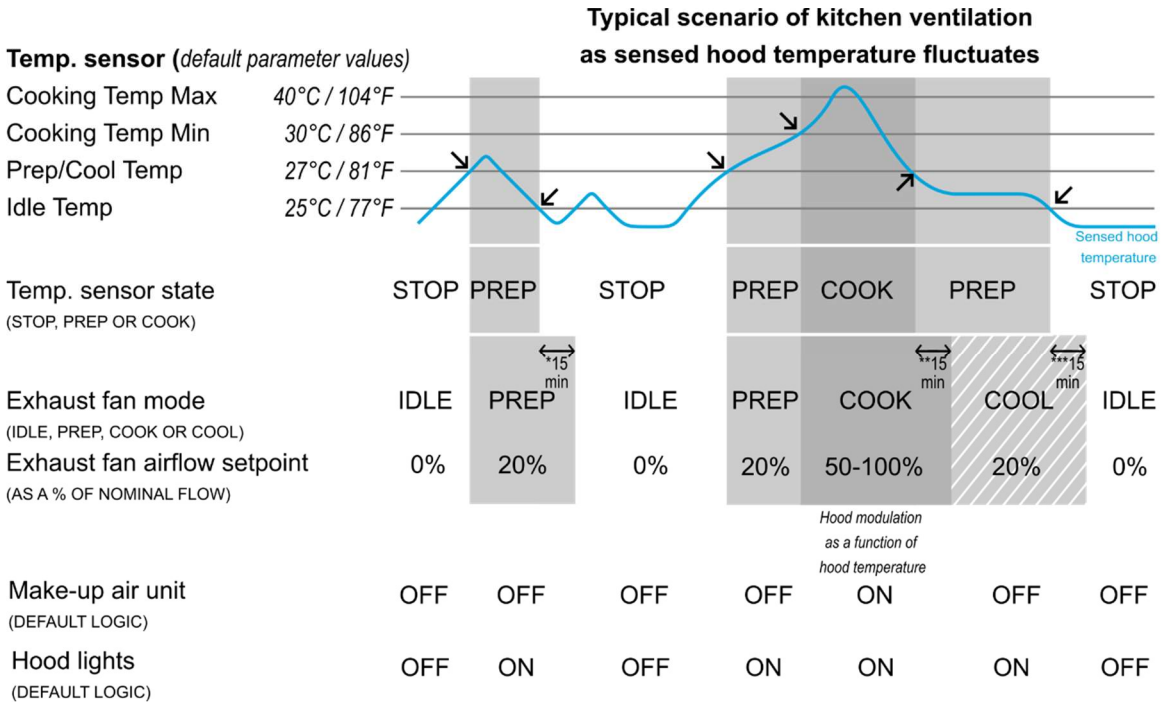
An exhaust fan in IDLE mode is typically programmed to stop. Related sensors remain ready to detect any cooking activity and trigger PREPARATION or COOKING mode.

The following conditions will switch a given exhaust fan to IDLE mode:

- When all sensors have stopped reading PREPARATION / COOL DOWN conditions for longer than 15 mins (typical PREP OFF DELAY, COOL DOWN OFF DELAY settings). NOTE: Temperature sensors must read below the IDLE TEMP threshold for the exhaust fan to switch to IDLE (typically 25°C / 77°F).
- The **STOP** key on the ECOAZUR® keypad is pressed, which will bypass the COOL DOWN OFF DELAY of all exhaust fans linked to the keypad. All exhaust fans sensing no activity will switch to IDLE mode immediately.

TYPICAL OPERATION SCENARIO

Given the sequence of operations previously described, the following is an example of how ECOAZUR® would operate the kitchen ventilation based on the fluctuation of a hood temperature sensor:



**Prep off-delay parameter*
***Cooking off-delay parameter*
****Cooldown off-delay parameter*

Optic sensors also provide hood modulation based on smoke and vapor density. When an *IRIS BLUE®* optic pair detects any cooking activity, the related exhaust damper or exhaust fan is immediately forced to COOKING mode and airflow increases according to the sensor demand.

The ECOAZUR® processor continuously retains the highest sensor demand among all related sensors for a given exhaust damper or exhaust fan.

ECOAZUR OVERRIDE MODES

The override modes of ECOAZUR® are presented below, in decreasing order of priority:

1. FIRE OVERRIDE
2. VFD BYPASS OVERRIDE
3. OFF OVERRIDE
4. MAX OVERRIDE

FIRE OVERRIDE

FIRE OVERRIDE has the highest priority among all other operation modes. The ECOAZUR® control system continuously monitors the hood fire suppression system (dedicated normally closed (NC) micro-switch). In the event of a fire, the ECOAZUR® keypad displays « FIRE ALARM », the make-up air units are turned off and the exhaust fans are forced to a 100% speed. Electrical circuits powering the exhaust dampers are also de-energized, thus forcing all dampers to a fully open position within 4 seconds.

VFD BYPASS OVERRIDE

An ECOAZUR® processor digital input may be programmed to VFD BYPASS to force the entire kitchen ventilation to 100% when a VFD is operating in bypass mode. The intent of this override is to maintain a neutral static pressure for the kitchen while a VFD is on bypass. Additionally, VFD BYPASS ensures that all exhaust dampers are fully open by de-energizing their electrical circuits, just like the FIRE override.

OFF OVERRIDE

OFF OVERRIDE forces the kitchen ventilation to stop, regardless of any ECOAZUR® sensor detection, and keeps the ventilation system from starting when cooking conditions occur. The OFF OVERRIDE can be used during automatic hood cleaning cycles (short periods) or when a building fire signal requires kitchen ventilation to be OFF.

WARNING: Several local/national codes and regulations prohibit overriding the system in OFF OVERRIDE as a means of operation (OFF OVERRIDE is disabled by default). A ventilation start / stop operation should be automatic for safety and energy efficiency reasons.

The following conditions switch the kitchen ventilation to OFF OVERRIDE (if enabled):

- The **STOP** key on ECOAZUR® keypad may be customized to STOP OVERRIDE. All ventilation appliances related to the given keypad will be switched to STOP OVERRIDE when **STOP** key is pressed. The user must press **AUTO** or **MAX** in order to leave the STOP OVERRIDE mode.
- An ECOAZUR® processor digital input programmed to OFF is activated by the BAS or another third-party system. The system is forced to STOP regardless of ECOAZUR® keypad commands.
- An ECOAZUR® processor digital input programmed to a schedule function (SCHEDULE 1 to 4) can be deactivated by the BAS or a third-party system. However, ECOAZUR® keypad allows user to restart ventilation for predetermined amount of time.

MAX OVERRIDE

If the hood ventilation appears to be insufficient at any moment, ventilation may be overridden to full speed for a predetermined amount of time. The make-up air units will adjust automatically to the required make-up airflow.

The following conditions will switch the kitchen ventilation to MAX OVERRIDE:

- Pressing the **MAX** key on the ECOAZUR® keypad will switch the related exhaust fans to MAX OVERRIDE. The exhaust fan will automatically return to normal operations after a predetermined amount of time (15 min, 60 min, 6 hr, 24 hr or an unlimited time duration).
- An ECOAZUR® processor digital input programmed to MAX is activated by the BAS or another third-party system.
- When an ECOAZUR® PLUS series processor panel is used, a BYPASS – NORMAL selector is available in the processor panel and allows the user to force the kitchen ventilation system to 100% speed (BYPASS position), while forcing all exhaust dampers to a fully open fail-safe position.

USER INTERFACE

ECOAZUR DISPLAY

The ECOAZUR® keypad displays a customizable set of ventilation appliances such as exhaust fans, make-up air units, and dampers. If a keypad is assigned to more than four appliances, the screen will cycle through all appliances, displaying them four at a time.

Each line represents a ventilation equipment, with the following information (left to right): **Appliance ID**, **Name**, and equipment **Airflow** modulation:

- **Appliance ID**: Unique combination comprising 1 letter and 1 number.
  - Dampers start with letter D (ranging from D1 to D20)
  - Exhaust fans with letter E (ranging from E1 to E8)
  - Make-up air units with M (ranging from M1 to M4)

- **Name**: User defined name.
  - Names are defined from a list of predetermined appliance equipment inside the ECOAZUR® system.
  - When applicable, WARNING! blinks to indicate that maintenance may be required to keep the system operating at maximum efficiency. **NOTE:** most warning messages will force a particular equipment to 100% ventilation.

- **Airflow**: In normal operation, the airflow calculated by ECOAZUR® is indicated as a percentage of the specified maximum airflow (0 - 100%). When an override mode is active, the ECOAZUR® keypad indicates the name of the active mode (FIRE, BYPASS, OFF, or MAX).

KEYPAD COMMANDS

An ECOAZUR® keypad will only control ventilation appliances linked to a given keypad. By default, keys are configured to function as mentioned in the previously described sequence of operations. The following is a summary of keypad commands (default settings):

Key	Default Function
▲ **MAX**	Forces the ventilation to MAX mode for a predetermined amount of time (pressed once: 15 min, pressed twice: 60 min). The key may be customized to other required times.
▶ **AUTO**	Sets the ventilation to COOKING mode. Any active override mode (FIRE, BYPASS, OFF, or MAX) have priority over this function.
▼ **STOP**	Attempts to force the ventilation to IDLE mode. This key has no effect when cooking conditions are detected. However, this command allows system to go to COOL DOWN or IDLE mode if time delay is the only condition that have equipment on COOKING or COOL DOWN mode. The key may be customized or disabled.
◀ **FN/LIGHT**	Toggles the hood light (default function). The key may also be customized.

KITCHEN PERSONNEL OPERATION INSTRUCTIONS

BEGINNING OF KITCHEN OPERATION

At the beginning of the operation period:

- Press the **AUTO** key to start ventilation in COOKING mode. The hood lights will turn on automatically.
- Turn on the cooking appliances. ECOAZUR® will automatically adjust the kitchen ventilation according to the sensed cooking activity.

NOTE: Should the user forget to start the ventilation using the **AUTO** key, ECOAZUR® will automatically start the ventilation as soon as cooking activity is sensed. Lights will also turn on automatically.

DURING KITCHEN OPERATION

During the kitchen operation period:

- The hood exhaust systems will automatically adjust to the sensed cooking load (temperature, vapor and smoke) by varying fan speeds and damper positions (if applicable).
- The make-up air units will adjust the supply airflow to the kitchen based on their related exhaust fan airflow.

NOTE: The user may press the **MAX** key at any moment to override the hood ventilation to 100% (MAX OVERRIDE). The system will automatically return to normal operations after a predetermined amount of time (typically 15 min or 60 min).

END OF KITCHEN OPERATION

When kitchen operation is over:

- The kitchen ventilation will automatically switch from COOKING to COOL DOWN, and ultimately to IDLE when sensor activity and timers allow.
- Lights will automatically turn off when all exhaust fans have reached IDLE mode.

NOTE: The user may bypass off-delays by pressing the stop key when sensed cooking activity allows.

MAINTENANCE

TEMPERATURE SENSORS

Temperature sensors may be located in the hood collar as well as in the hood canopy. Temperature probes rarely require cleaning. Should grease or other contaminants build up, clean the temperature probes using cloth and soap. A good practice is to ensure that the hood cleaning procedures include cleaning the temperature probes.

OPTIC SENSORS

Optic sensors are typically at both ends of a hood or a hood section. An optic sensor rarely requires cleaning since it can accommodate an accumulation of grease on its lenses. A good practice is to clean the optic lenses using light duty soap and a cloth once a month.

No deterioration of system performance will occur due to dirty optic sensors unless an optic sensor is blinking (warning indication on the ECOAZUR® keypad). Refer to the Troubleshooting section for more information on the procedure to follow when an optic sensor is blinking.

KEYPAD DISPLAY

The ECOAZUR® keypad display may be cleaned using cloth and light duty soap when necessary.

EXHAUST DAMPERS AND PRESSURE TRANSMITTERS

Proper maintenance includes cleaning the damper blades and the exhaust duct pressure transmitter ports as part of the hood and exhaust duct cleaning procedure. Prior to this cleaning operation, make sure to lock out power to the ECOAZUR® processor panel as well as to the exhaust and supply fans. This will ensure the dampers remain in the open fail-safe position during cleaning.

NOTE: In the event a damper does not fully open during cleaning procedures, call a qualified professional to verify the V4MD damper actuator.

PREVENTIVE MAINTENANCE PROGRAM

The ECOAZUR® system requires a yearly inspection and preventive maintenance program to ensure safety and optimal performance. Contact your Authorized Service Center.

TROUBLESHOOTING

Should the ECOAZUR® processor detect any problematic condition, a WARNING message will be issued on the keypad display. A “WARNING!” will blink to indicate that warning must be addressed to keep the system operating at maximum efficiency.

A warning description may also appear on the keypad display:

Depending on the nature of the error, ECOAZUR® may force ventilation to 100% speed, in order to ensure proper ventilation. The ECOAZUR® processor may also be programmed to trigger a digital output based on the ECOAZUR® error status to notify the BAS (Building Automation System).

In most cases, WARNING messages require contacting an Authorized Service Center to service the ECOAZUR® system. Systems connected to the ECOAZUR® Cloud service benefit from a fast diagnostic through an internet remote access (not available in all countries).

However, some warnings are related to end-user maintenance and may be addressed by the kitchen personnel.

PROBLEM	CAUSE	SOLUTION
Optic sensor misaligned (IB MISALIGNED)	A very large amount of vapor is produced, blocking the light beam of the optic pair. The system will issue a momentary WARNING message.	The WARNING message will disappear automatically as soon as the cooking conditions return to normal.
	Optic sensors are misaligned.	Call a qualified professional to ensure the blinking optic sensor pair is aligned and the compression seal is correctly tightened.
	An object is blocking the optic sensor's light beam and is preventing the pair from seeing one another.	Remove the object. If a component of the fire suppression system is blocking the optic light beam, call a qualified professional to ensure the fire suppression system is correctly fastened to hood. Call a qualified professional to relocate optic sensors if necessary.
	Optic sensors lenses are dirty.	Use a soft moist cloth to clean optic sensor lenses.
	If none of the previous situations apply.	Call an ECOAZUR® Authorized Service Center to service the system.

PROBLEM	CAUSE	SOLUTION
CONFIGURATION CHANGE COMPONENT DISCONNECTED	Sensor is defective.	Call an ECOAZUR® Authorized Service Center to replace the sensor.
	Sensor cable is damaged or unplugged.	Call a qualified professional to check that the sensors cables are connected.
		Call an ECOAZUR® Authorized Service Center to replace the cable.
Keypad display is blank	Power supply is turned off.	Check for tripped breaker that feeds the ECOAZUR® system Call a qualified professional to check for the following: - Tripped breaker inside the ECOAZUR® processor panel. - Keypad cable connection.
	Keypad is defective.	Call an ECOAZUR® Authorized Service Center to replace the keypad.
Exhaust fan is not running	Power supply to the exhaust fan is turned off.	Call a qualified professional to check for the following: - Tripped exhaust fan breaker - Exhaust fan VFD operating mode (should be in automatic). - Exhaust fan VFD alarm or trip. - Exhaust fan VFD disconnect. - Exhaust fan motor disconnect.
	Exhaust fan belt is loose or broken.	Call a qualified professional to check for a loose or broken exhaust fan belt.

PROBLEM	CAUSE	SOLUTION
	No cooking activity is detected.	Press **MAX** key to see if exhaust fan activates. If the ECOAZUR® system does not detect cooking activity, call an ECOAZUR® Authorized Service Center to service the system.
Make-up air is not running	Make-up air unit is not in Automatic or Heating Mode.	Check if the Make-up air unit selector switch is in Automatic or Heating position (if applicable).
	The make-up air unit is turned off.	Call a qualified professional to check for the following: - Tripped make-up air unit breaker. - Make-up air unit VFD alarm or trip. - Make-up air unit VFD operating mode (should be in automatic). - Make-up air unit VFD disconnect. - Make-up air unit motor disconnect.
	Make-up air unit is in fault.	Call a qualified professional to service make-up air unit and check for the following: - Make-up air unit alarm or trip - Make-up air unit VFD alarm or trip. - Loose or broken make-up air unit belt.

PROBLEM	CAUSE	SOLUTION
Exhaust fan is running, but exhaust air is lacking (too hot or hood spill)	A very large amount of vapor is produced for a short period.	Press **MAX** key to override the hood ventilation to 100% (MAX OVERRIDE). The system will automatically return to normal operations after a predetermined amount of time (typically 15 min or 60 min).
	The hood filters are clogged and required cleaning.	Have the filters cleaned.
	The exhaust fan belt is loose.	Call a qualified professional to check for a loose fan belt exhaust fan.
	The modulating damper has failed or is requiring configuration.	Call a qualified professional to check the modulating damper actuator and blade.
	Supply air temperature setpoint too high or supply air system overloaded.	Call a qualified professional to check the supply air system.
	ECOAZUR® system display indicates a low airflow setpoint.	Call an ECOAZUR® Authorized Service Center to service the system.
Unstable or noisy ventilation	The exhaust system pressure port is clogged, or the pressure transmitter is defective. The static pressure loop in the exhaust fan VFD is requiring configuration.	Call an ECOAZUR® Authorized Service Center to service the system.

PROBLEM	CAUSE	SOLUTION
Ventilation system remains on after cooking operations	Cooking equipment has remained ON.	Ensure the kitchen staff closes all the cooking equipment.
	The ECOAZUR® system is in alarm.	Check if there is an alarm ECOAZUR® keypad. Call an ECOAZUR® Authorized Service Center to service the system.
	ECOAZUR® system temperature thresholds require adjustment.	Call an ECOAZUR® Authorized Service Center to service the system.
	The BAS system is sending a command (schedule, 0-10V, etc.).	Call a qualified professional to check the BAS system.
	A VFD is in HAND mode or bypass mode.	Call a qualified professional to check the VFD.
	The bypass selector is the ECOAZUR® system processor panel is ON.	Call a qualified professional to check the bypass selector.

ENVIRONMENTAL SPECIFICATIONS

ATTRIBUTE	VALUE
Temperature (operating)	Components specific Refer to ECOAZUR® Product Specifications (E4PS-EN)
Temperature (Storage & Transportation)	-40 to 60°C (-40 to 140°F)
Relative humidity	10% to 90% (non-condensing)
Shock	Not allowed.
Free fall	Not allowed.
Emissions	EN 61000-6-3
Electrostatic Discharge Immunity	IEC 61000-4-2: Contact: 4 kV Air: 8 kV
Radiated Electromagnetic Field Immunity	IEC 61000-4-3: 80 to 1000 MHz: 3V/m 1.4GHz to 2 GHz: 3V/m 2GHz to 2.7 GHz: 1V/m
Electric Fast Transient Immunity	IEC 61000-4-4: Power: ±0.5 kV @ 5 kHz I/O Ports: ±0.5 kV @ 5 kHz Communication Ports: ±0.5 kV @ 5 kHz
Surge immunity	IEC 61000-4-5: Power: ±0.5 kV L-PE / ±0.5 kV L-L I/O Ports: N/A Communication Ports: N/A
Conducted Immunity	IEC 61000-4-6: Power: 3V I/O Ports: 3V Communication Ports: 3V
Power Frequency Magnetic Field Immunity	IEC 61000-4-8: Continuous Field: 3 A/m 50 Hz & 60 Hz

CODE COMPLIANCE

The ECOAZUR® system conforms to the following standards:

- UL 710 - Exhaust Hoods for Commercial Cooking Equipment
- UL 1978 - Grease Ducts
- UL 2017 - General-Purpose Signaling Devices and Systems
- UL 508A - Industrial Control Panels
- NSF 2 - Food Service Equipment

- C22.2 No. 205 - Signal Equipment
- C22.2 No. 286 - Industrial Control Panels
- ULC S646 - Exhaust Hoods and Related Controls for Commercial and Institutional Cooking Equipment

- CE Directive 2006/42/EC – Machinery
- CE Directive 2014/30/EU - Electromagnetic compatibility
- CE Directive 2011/65/EU - RoHS

- EN 60204-1 - Electrical equipment of machines, Part 1: General requirements
- EN 61000-6-2 (2005) - Immunity for Industrial Environments
- EN 61000-6-4 (2007) A1 (2011) - Standard for Industrial Environments
- FCC part 15 subpart B

NOTE: Some certifications are component-specific. Refer to ECOAZUR® Product Specifications (E4PS-EN) for more information.

C ETL LISTED US
Intertek
4002114

CE

FC

WARRANTY

Refer to **INTELLINOX TECHNOLOGIES INC. – TERMS AND CONDITIONS OF SALE AND WARRANTY**.

If you have any questions concerning your ECOAZUR® system, please contact your local distributor. The technical data, information and specifications are valid at the time of printing. The manufacturer reserves the right to modifications without prior notice.