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ecoAZUR®

DEMAND-CONTROLLED KITCHEN VENTILATION

PROGRAMMING GUIDE

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Index

1 - Introduction

1.1 - FOREWORD

Thank you for choosing the award-winning* **ecoAZUR®** DCKV (Demand-Controlled Kitchen Ventilation) system.

ENERGY STAR 2015
Emerging Technology Award

When properly setup, the **ecoAZUR®** DCKV system is a powerful tool that will help you get the lowest energy bill possible while maintaining comfort in the kitchen.

The present guide is intended as a reference document containing information about the **ecoAZUR®** extended capabilities. It is written for the v4.0.X firmware family.

- For a quick overview of how to operate the system, please refer to the “ecoAZUR® User Guide”.
- For step-by-step instructions on how to clear a fault or a malfunction, please refer to the “ecoAZUR® Troubleshooting Guide”.
- For technical information about individual componentsplease refer to the “ecoAZUR® Specs Sheet”.

Please keep in mind at all time that electrical maintenance must always be done by qualified technicians only. *Intellinox Technologies* will not be held accountable for problems due to failure to comply to the present guide, or to any applicable national or local codes and laws (ie: NEC, NFPA70 and NFPA96 for North America).

The **ecoAZUR®** system conforms to ANSI/UL Std. 1978, 710, 2017 and ULC S646, and is certified to CAN/CSA Standard C22.2 No. 205. It is compliant with FCC 15 part B, NSF-2, and CE certified.

Finally, the specifications included in this document apply to components marked as "***powered by Intellinox™***", or as “***Intellinox™***", regardless of the main trademark displayed on cases. Some examples of possible main trademarks are :

ecoAZUR®, CONCEPT AZUR®, or any other custom trademark.

* the U.S. Environmental Protection Agency’s 2015 ENERGY STAR Emerging Technology Award applies to the complete **ecoAZUR®** system with the **MPS** PLC option.

1.2 - DEFINITIONS

ecoAZUR® DCKV system includes a number of concepts that are related to specific terms. Following is a short list of some of those terms, along with their definitions.

1.2.1 - DISPLAY MODE

The **CT** (pictured on the right) is the **ecoAZUR®** component that includes a LCD display and a 4 buttons keypad. The **CT** includes two interfaces, called *Display Modes :*

- a main user interface, called *Normal Display Mode*, designed to inform the user about current ventilation airflows in his system. It is the only *Display Mode* the average user will ever need to use. *Normal Display Mode* is described in section “2 - Normal Display Mode“.
- a more advanced interface called *Setup Mode* used for setup, debugging, and monitoring among other things. *Setup Mode* is described in section “3 - Setup Mode“.

1.2.2 - OPERATING MODE

Operating Modes modify the behavior of all **ecoAZUR®** controlled ventilation airflows.

ecoAZUR® has 4 operating modes:

- *AUTO Mode*: Fan speed/damper position is determined automatically. Best energy efficiency. Each Fan and damper can be in one of the following states : *IDLE state* (no cooking detected, lowest ventilation), *PREPARATION state* (no cooking detected, but temperature has risen above a user defined value, intermediate ventilation), *COOKING state* (cooking activity detected, higher ventilation), and *COOLDOWN state* (cooking just stopped, intermediate ventilation).
- *MAX Mode*: Maximum fan speed. No energy savings. *MAX mode* can be timed or not.
- *STOP Mode*: Ventilation stops (0% fan speed, dampers fully closed).
- *FIRE Mode*: Exhaust fans and exhaust dampers at max speed/position, and make-up air units and intake dampers stopped/close position. *FIRE Mode* can not be selected using **CT** buttons. (see **CU** parameters 02-04, 02-06, 02-08, 02-10, or 02-12 described in section "4.2.1 - AS" for more information).

When in *Normal Display Mode*, *Operating Modes* are usually selected by the user using the **CT** buttons (except *FIRE Mode*). See section "2.2 - Operating Modes and Buttons" for more information.

Access to some modes can be locked (see **CT** parameters 02-10, 02-11, and 02-12 described in section "4.2.3 - CT" for more information).

Third-party controllers can force *Operating Modes* using digital signals (see **CU** parameters 02-04, 02-06, 02-08, 02-10, or 02-12 described in section "4.2.1 - AS" for more information).

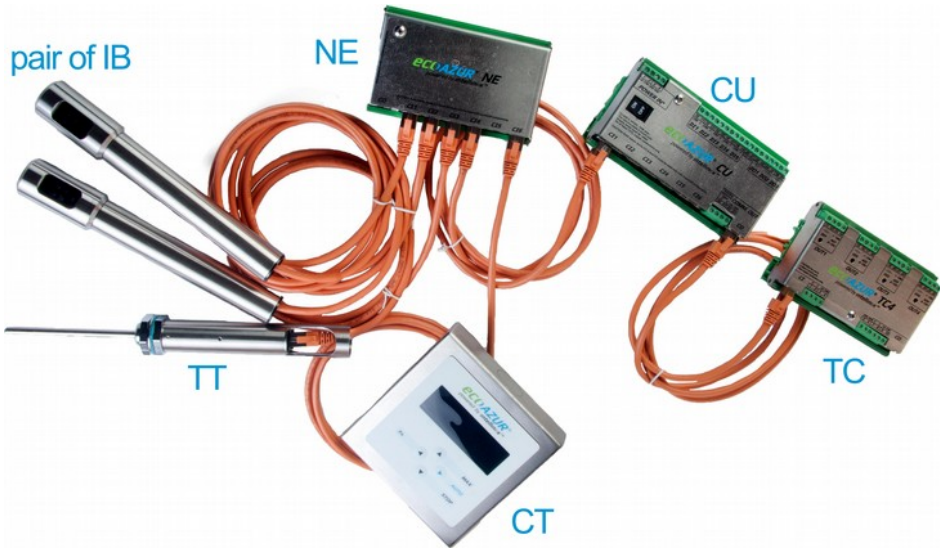
1.2.3 - PHYSICAL DEVICES

In this document, a *Physical Device* describes an intelligent **ecoAZUR®** **networks** component. Cables and fittings are not considered *Physical Devices* since their are not intelligent, and variable frequency drives or third-party controller are not considered *Physical Devices* since they are not part of the **ecoAZUR®** **networks**.

There are 8 possible types of *Physical Devices* :

- The **CU** processor unit (always only 1 per system) supplies power to the complete networks,
- The **NE** network hub extends the input capabilities of the **CU** processor unit,
- The **CT** keypad is the main user interface, (may have more than one per system)
- The **IB** optical sensor generates demand (in %) based on optical detection.
- The **TT** temperature sensor generates demand (in %) based on temperature detection.
- The **AS** analog signal reader generates demand (in %) based on analog 0 to 10V signal reading.
- The **DS** digital signal reader generates demand (in %) based on dry contact reading and timers.
- And the **TC** output module translates demand (in %) into analog and digital signals.

For identification purpose, here is a basic system with some *Physical Devices*:



1.2.4 - NETWORKS

The **ecoAZUR®** **network** consists of two different sub-networks, both originating from the unique **CU** processor unit :

- The **sensors network** comprises the following *Physical Devices* : **CU**, **IB**, **TT**, **NE**, **CT**, **AS**, **DS**.
  It originates from the 6 **CI#** ports of the **CU** processor unit.
  It features a tree topology that can be expanded using **NE** network hubs (1 **NE** occupies 1 port, but offers 6 additional ports). **NE** can be nested into one another.
  It must respect the following limits :
  - An overall maximum of 5 **CT** keypads per **CU**.
  - A maximum of 20 *Physical Devices* on any given **CU** **CI#** port.
  - A maximum of 3 **NE** on any given **CU** **CI#** port.
- The **output network** regroups the **TC** output modules.
  It originates from the single **CO** port of the **CU** processor unit.
  It features a linear topology that can support a maximum of 5 **TC** output modules per **CU**.
  Since each **TC** includes 4 dual outputs channels (a 0-10V analog output + a dry contact digital output), the maximum value of supported output channels is 20 for a single **ecoAZUR®** system. Each output channel can control a ventilation equipment such as a variable frequency drive, an **ecoAZUR®** modulating damper, third-party PLC, or other.

Finally, the combined size of both networks must not exceed a total of 50 *Physical Devices.*

For more information about networks, please refer to section “3.5 - Topology and addressing“.

1.2.5 - VENTILATION APPLIANCES

In this document, *Ventilation Appliances* describe software objects used by the **ecoAZUR®** system to send analog signals to ventilation equipment (such as variable frequency drives, physical dampers, third-party PLC, etc.) via a **TC** output module**.**
Ventilation Appliances fall into two categories :

- **exhaust appliances**, such as exhaust fans, who drive air outside the kitchen/building, and thus contribute to lower the ambiant air pressure,
- and **intake appliances**, such as make-up air units, who drive air inside the kitchen/building, and thus contribute to raise the ambiant air pressure.

The **ecoAZUR®** system will always try to balance the signals sent to **exhaust** and **intake appliances** to keep the ambiant air pressure at a comfortable level.
Exhaust appliances will usually be controlled **ecoAZUR®** sensors detection. Sometimes, one or more sensors may also need to control a specific **intake appliance**.
For that purpose, *Ventilation Appliances* usually regroup one or more demand-generating *Physical Devices* (can be sensors like **IB** and **TT**, or a **NE** containing sensors), and may also regroup other *Ventilation Appliances*.

The operating sequence goes as follow :

1. At all time, each *Ventilation Appliance* monitors the highest demand from all *Physical Devices* and *Ventilation Appliances* included in its group.
2. That demand gets then converted into a setpoint value in %, depending on *Operating Mode*, digital signals states, and other user defined limits or thresholds.
3. Finally, any **TC** linked to that *Ventilation Appliance* translates the setpoint into both an analog signal (in volts) and a digital signal (dry contact).

Each defined *Ventilation Appliance* is unique, and has a unique ID comprised of 1 letter and 1 number.
There are 4 possible types of *Ventilation Appliances* :

- exhaust fans, named E1 to E8, are **exhaust appliances**.
- make-up air units, named M1 to M4, are **intake appliances**.
- dampers, named D1 to D20, (a damper can be connected to an exhaust fan, thus considered as an **exhaust appliance**, or a make-up air unit, thus considered as an **intake appliance**)
- or undefined (named NONE).

For more information about *Ventilations Appliances* and how to customize them, please read section “3.3 - System Menus“.

1.2.6 - MENUS AND PARAMETERS

The **ecoAZUR®** *Setup Mode* contains a lot of information, structured inside *Menus* and *Parameters*.

Menus fall into two categories :

- *System Menus*, whose scope extends to the entire **ecoAZUR®** system.
  There are 3 unique System Menus in total : *VENTILATION SYSTEM*, *PHYS DEVICES* and *WARNINGS*. Since they contain either *Physical Devices* or *Ventilation Appliance*, they are mainly used for navigation purposes. These *Menus* are dynamic, so no exhaustive table exists for them. For a complete description about *System Menus*, please read section “3.3 - System Menus“.
- *Sub-menus* belong to either a *Physical Device* or a *Ventilation Appliance*.
  Sub-menus contain *Read-only* and *Editable Parameters*, and are used for setup, debugging, and monitoring among other things. These *Menus* are static but vary depending on the component type they belong to. Tables of all possible *Sub-menus* are provided in section “4 - Sub-menu trees“

Parameters all have a name and a value (that can be a number, a binary state, or a character string). They also fall into two categories :

- *Read-only Parameters*, mainly for informative and debugging purposes. Most *Read-only Parameters* describe the current state of the system, and vary in real-time.
- *Editable Parameters*, such as limits and thresholds for instance, used to change the systems behavior. *Editable Parameters* are identified by a * preceding their value.

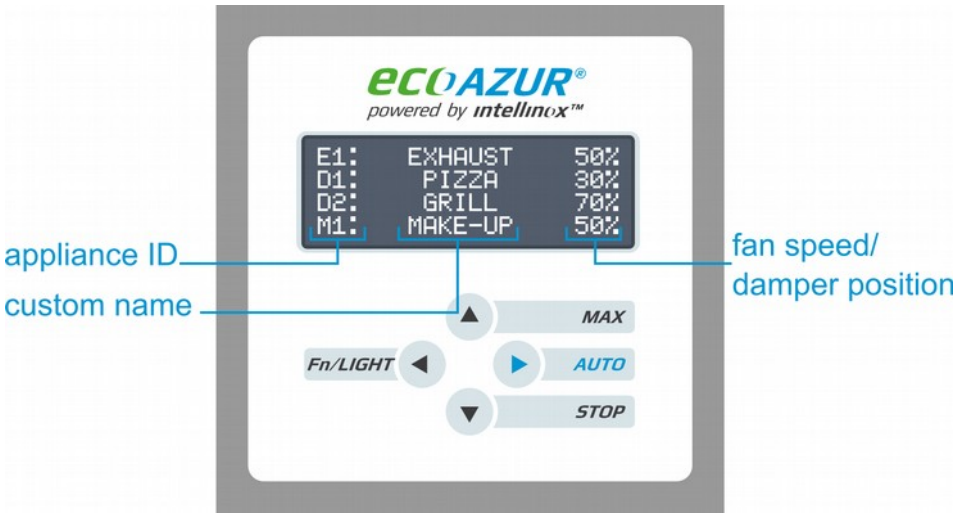
2 - Normal Display Mode

Normal Display Mode is designed to inform the user about current airflows rates in his system.

2.1 - DISPLAY

In *Normal Display Mode*, **ecoAZUR® CT** displays *Ventilation Appliances*, along with custom names and fans speeds.

If the system has more than 4 *Ventilation Appliances* in total, the screen display will cycle through all appliance, displaying them 4 by 4. Typical display:



- **Appliance ID** (left side) : Unique combination comprising 1 letter and 1 number : dampers start with letter "D", exhaust fans with letter "E" and make-up air units start with letter "M".
- **Custom name** (center): User defined name. When in fault, "*WARNING!*" blinks on top of the custom name, to indicate that an action must occur to keep the system operating at maximum efficiency.
- **Fan speed/damper position/AUTO state** (right side): Speed or position in %. When refering to a damper, 100% means fully open, and 0% means fully close. If operating outside of *AUTO Mode* :
  - When in *STOP Mode*, "*STOP*" blinks on top of all fans speeds/damper positions, which read 0%.
  - When in *MAX Mode*, no fan speed is displayed. Instead, "*MAX*" blinks, along with the time remaining before switching back to *AUTO Mode* (ie : *15m*, *6h*, or *INF* for infinite)

2.2 - OPERATING MODES AND BUTTONS

Operating modes apply to all exhaust fans and all make-up air units. **ecoAZUR®** has 3 user-accessible operating modes, plus one special *FIRE Mode* :

- *AUTO Mode*: Fans speeds/dampers positions are determined automatically. Best energy efficiency.
- *MAX Mode*: Maximum fans speeds, dampers fully open. No energy savings.
- *STOP Mode*: 0% fan speed, dampers fully closed.
- *FIRE Mode*: Special mode that can not be selected using **CT** buttons.
  Exhaust fans and exhaust dampers at max speed/open position, and make-up air units and intake dampers stopped or in closed position. (see **CU** parameters 02-04, 02-06, 02-08, 02-10, or 02-12 described in section "4.2.2 - CU" for more information).
  When activated, *FIRE Mode* takes precedence over any other mode.

Button	Function	Note
▲ (MAX)	Start system / Toggle *MAX Mode* timer value	No energy savings
▶ (AUTO)	Start system / toggle *AUTO Mode* by default	Should be default operating mode.
▼ (STOP)	Toggle *STOP Mode*	Do not use if gas pilot lights are active.
◀ (Fn/LIGHT)	By default, force screen cycling when more than 4 liNE need to be displayed. Can be set to control hood lights, or any other user defined relay.	-

3 - Setup Mode

3.1 - ENTERING SETUP MODE

- To access *Setup Mode*, simultaneously press ▲ and ▼ for 6 seconds.

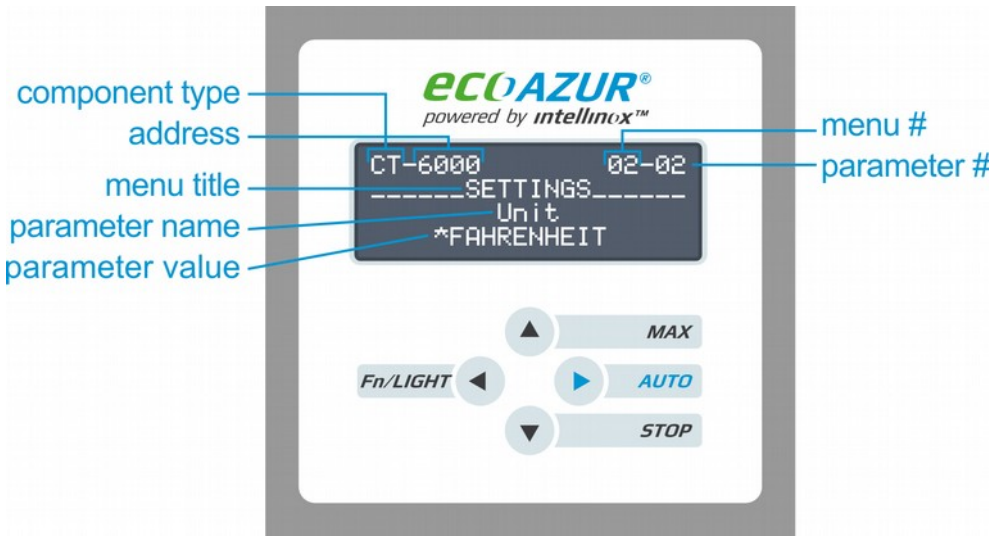
  If language is set to english, you will see the screen pictured on the right. If your language is not english, please refer to section 3 of the "ecoAZUR® Troubleshooting Guide" to change language.

- After 5 seconds, the *Ventilation System* menu appears.

  This is the first of the 3 *System Menus* (when inside a *System Menu*, nothing is displayed in the top-left corner).

  Please note that access to *Setup Mode* can be locked. In that case, the message "PASSWORD" is displayed prior to accessing any *System Menu*, and access is not be granted unless the correct password is entered. (see **CU** parameters 02-03 in section "4.2.2 - CU" for more information)

When in *Setup Mode*, when a menu is selected, screen will look as follows:



The following info is available :

- **Component type** and **address** (top left corner) comprise the **current location**.
  This field is empty when inside System Menu.
  Component type can refer to either a *Physical Device* (**CU**, **NE**, **CT**, **IB**, **TT**, or **TC**) or a *Ventilation Appliance* (E1 to E8, M1 to M4, D1 to D20)
  Addresses are unique 4-digits number, available only to *Physical Devices* (for more information about addresses, see section 3.5 - Topology and addressing)
- **Menu #** and **parameter #** (top right corner) comprise the **parameter/menu reference**.
  The **parameter/menu reference** combination is not unique, and vary depending on the **component type**.
  Parameter # will not be displayed when browsing menus.
  A blinking number indicates browsing.
- Current **menu title** is displayed on the second line.
- **Parameter name** and **value**, displayed on the third and fourth line, will only appear when a menu is selected (ie. not when browsing menus).
  When a modifiable parameter is selected, **parameter value** will blink.

3.2 - NAVIGATION

In *Setup Mode*, the 4 buttons behave as follow:

▲ = Next item/increase current value.

When browsing *Menus* (**menu #** blinking), press to skip to next *Menu*.
When browsing *Parameters* (**parameter #** blinking), press to skip to next *Parameter*.
When modifying *Parameter* value (**parameter value** blinking), press to increase number/toggle value.

▼ = Previous item/decrease current value.

When browsing *Menus* (**menu #** blinking), press to skip to previous *Menu*.
When browsing *Parameters* (**parameter #** blinking), press to skip to previous *Parameter*.
When modifying *Parameter* value (**parameter value** blinking), press to decrease number/toggle value.

◄ = Back/exit key.

When browsing *System Menus*, (top-left corner is empty), press to exit *Setup Mode*.
When browsing *Sub-menus* (**current location** is displayed, **menu #** blinking), press to exit to previous *Menu*.
When browsing *Parameters* (**parameter #** blinking), press to exit to browsing current *Menu*.
When modifying *Parameter* value (**parameter value** blinking), press to cancel current change to value and return to browing *Parameters*.

► = Select/Enter key.

When browsing *Menus* (**menu #** blinking), press to select current *Menu*.
When browsing *Parameters* (**parameter #** blinking), press to select current *Parameter*.
When modifying *Parameter* value (**parameter value** blinking), press to validate new value.
When modifying *Parameter* value with multiple settings, press to add new value or remove existing one.

3.3 - SYSTEM MENUS

ecoAZUR® includes 3 unique *System Menus*, that are displayed as soon as *Setup Mode* is accessed.

These *Menus* are dynamic, and mainly made for navigation purposes, so no exhaustive table exists for them.

05- VENTILATION SYSTEM

This menu contains all *Ventilation Appliances* used in the system. Its maximum size is 20 *Ventilation Appliances*. This is the first menu displayed when first entering *Setup Mode*.

By default, this menu is empty (all 20 *Ventilation Appliances* are set to "undefined"). This causes a "*system not set*" warning message in *Normal Display Mode*. To clear that warning, the menu needs to be edited to include at least one defined *Ventilation Appliance*.

As a reminder, there are 4 possible types of *Ventilation Appliances* :

- dampers (named D1 to D20),
- exhaust fans (named E1 to E8),
- make-up air units (named M1 to M4)
- or undefined (named NONE).

This menu is sorted by display position : when in *Normal Display Mode*, the screen cycles through up to 5 groups of up to 4 *Appliances*, displayed with their custom names and speeds. The appliances displayed on the first group correspond to *Ventilation Appliances* 01-01 to 01-04 of this menu. The appliances displayed on the second group correspond to *Ventilation Appliances* 01-05 to 01-08, and so forth up to 01-20.

When browsing this *Menu*, *Appliances* are displayed with their **component type**, **custom name**, demand value, and warning (if available).

Selecting an *Appliance* through this *Menu* changes the screen top-left corner to selected **component type**, and switches to the first *Appliance*-specific *Sub-menu* (typically "*01- READ-ONLY*").

06- PHYS DEVICES

This menu is comprised of all connected *Physical Devices* in the **ecoAZUR®** **network**, sorted by **address** (for more information about addressing, see section 3.5 - Topology and addressing). Unlike *VENTILATION SYSTEM Menu*, this *Menu* doesn't need editing, since *Physical Devices* are added automatically.

This menu is mainly used to access **ecoAZUR®** *Physical Devices*.

As a reminder, there are 8 possible types of *Physical Devices* :

- **CU** processor unit (always 1 per system, its address is always 0000),
- **NE** hood network hub,
- **CT** keypad,
- **IB** optical sensor,
- **TT** temperature sensor,
- **AS** analog reader,
- **DS** digital reader,
- and **TC** output module.

When browsing this menu, *Physical Devices* are shown with their **component type**, **address**, demand value, linked *Appliance* (if available), and warning (if available).

Selecting a *Physical Device* through this *Menu* changes the screen top-left corner to selected **component type** and **address**, and switches to the first *Device*-specific *Sub-menu* (typically "*01-READ-ONLY*").

07- WARNINGS

This menu comprises the *Physical Devices* for which a warning message is issued, sorted by **address**. When no warning is issued, this menu is empty. Like *PHYS DEVICES* menu, this menu cannot be directly modified, since *Physical Devices* are added automatically.

It is used to get information regarding warnings, for informative or debugging purposes.

3.4 - SUB-MENUS

Unlike *System Menus*, *Sub-menus* always have a unique **location** that can be either a *Ventilation Appliance*, or a *Physical Device*. Thus, when browsing or selecting *Sub-menus*, the top-left corner is always displayed with the **current location**.

For *Physical Devices* and *Ventilation Appliance* of the **sensors network**, the possible *Sub-menus* are:

01- READ-ONLY

The *Parameters* in this menu vary depending on the **component type**.

The *Parameters* in this menu cannot be modified. They are meant for informative or debugging purpose only.

02- SETTINGS

The *Parameters* in this menu vary depending on the **component type**.

The *Parameters* in this menu can be directly modified.

The only *Physical Device* included in the **output network** is the **TC**. Its *Sub-menus* are :

01- OUTPUT 1 to 4

Each **TC** includes 4 dual outputs (1 analog output + 1 digital output) named OUT1 to OUT4. Each dual output has a specific *Sub-menu.* These menus comprise both *Read-only* and *Editable Parameters*. *Editable Parameters* are identified by a * preceding the parameter value.

Since this menu is only found in the **TC component type**, its structure is always the same.

05- GLOBAL

This menu comprises parameters specific to the **TC**, but not to any specific output in particular.

Since this menu is only found in the **TC component type**, its structure is always the same.

A full list of *Sub-menus* with parameters and description is found in section “4 - Sub-menu trees“.

3.5 - TOPOLOGY AND ADDRESSING

All *Physical Devices* have an **address**. An **address** is a 4-digit number, usually displayed in the top-left corner while in setup mode. It represents the exact position of the current component in the **ecoAZUR® network**.

It is important to understand the **ecoAZUR® network** topology to correctly interpret the address.

The **ecoAZUR® network** consists of two different sub-networks : the **sensors network** which uses a tree topology, and the **output network** which uses a linear topology. Both sub-networks originate from the unique **CU** processor unit **CU** whose address is always 0000.

The networks features and limitations are as follow :

- The **sensors network** comprises the following physical devices :
  - **CU** processor unit : Root of both sub-network, level 0. Its address is always 0000.
    Can be linked to up to six *Physical Devices*, using its six physical ports **CI1** to **CI6**.
    A *Physical Device* directly connected to the **CU** belongs to the first level of the **sensors network**. Its address is comprised of the **CU** port number (from 1 to 6) used to connect it, followed by three 0.
    In the illustration next page, there are three level-1 *Physical Devices* (NE-1000, CT-2000, and NE-3000).
  - **NE** hood network hub. Multiple node, level 1 to 3.
    Can be linked to up to 6 *Physical Devices* of higher level, using its 6 physical ports **CI1** to **CI6**.
    A *Physical Device* directly connected to a **NE** will inherit the left-most part of the **NE** address, minus the zeros. The digit following that truncated address is the **NE** port number (from 1 to 6) used to connect to the *Physical Device*. If the component level is less than 4, the remaining digits are all 0.
    In the illustration next page, there are two level-1 **NE** (NE-1000, and NE-3000) and one level-2 **NE** (NE-3100)
    Since the maximum limit of **NE** on any given **CU CI#** port is 3, the highest level a component can achieve is 4.
  - **CT** keypad. Single node. Level 1 to 4. The maximum limit of **CT** keypads per system is 5.
    In the illustration next page, there is only one level-1 **CT** (CT-2000).

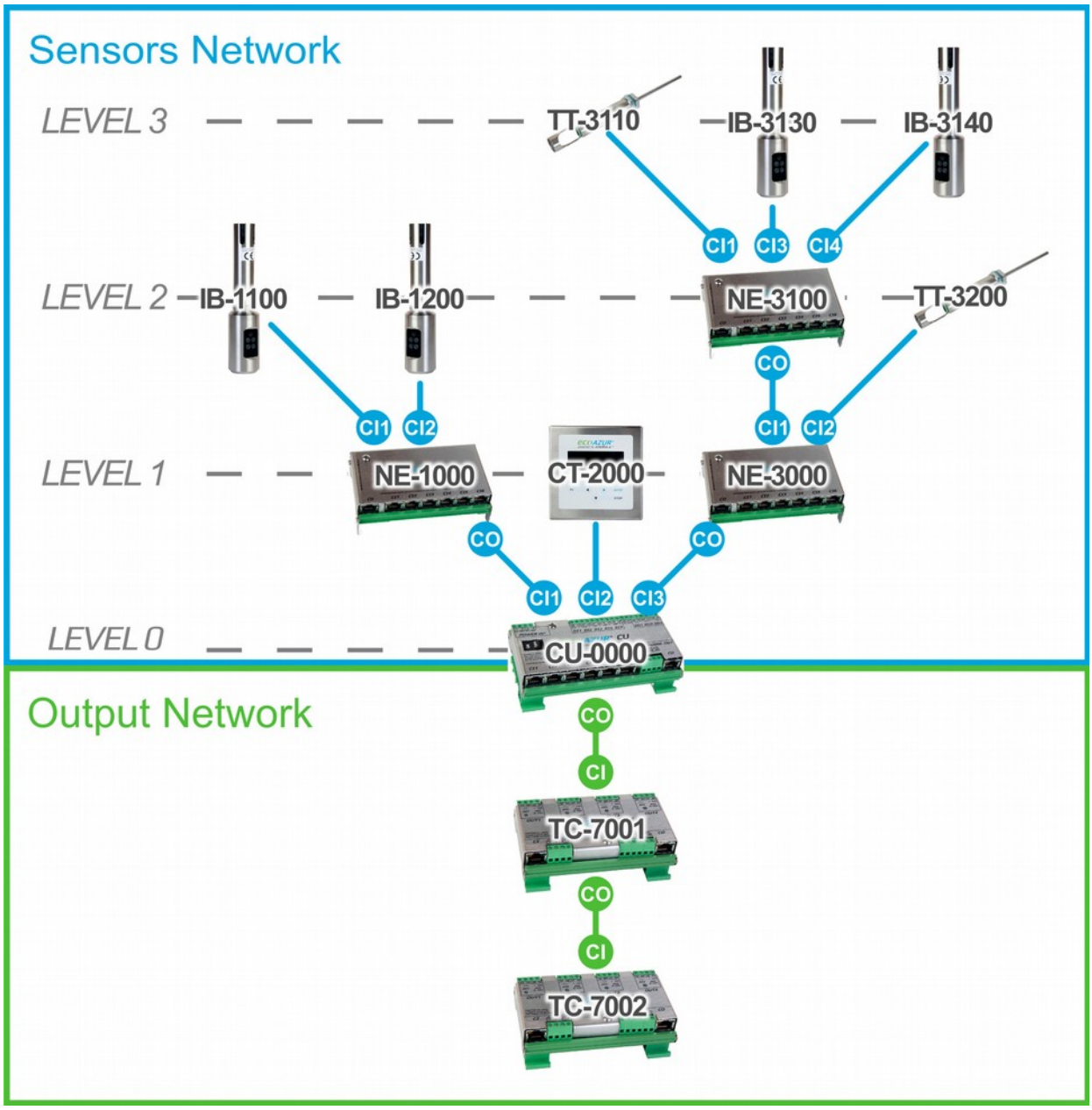
- **IB** optical sensor. Single nodes coming in pair. Level 1 to 4. An **IB** pair is connected to its parents terminal **CI1** and **CI2** together, or **CI3** and **CI4** together. In the illustration below, there are two **IB** pairs (IB-1100 + IB-1200, and IB-3130 + IB-3140).
- **TT** temperature sensor. Single node. Level 1 to 4. In the illustration below, there are two **TT** (TT-3200 and TT-3110).
- **AS** analog reader and **DS** digital reader. Single nodes. Level 1 to 4.

In the **sensors network**, the maximum limit of physical devices on any given **CU CI#** port is 20.

- The **output network** regroups the **TC** output modules.
  - **TC** output module are dual nodes.
    The first **TC** is connected to the **CU CO** port through its **CI** port. Its address is 7001.
    If needed, a second **TC** may connect to the TC-7001 **CO** port through its **CI** port. Its address is 7002.
    An overall maximum of 5 **TC** can be linked together, up to TC-7005.
    In the illustration below, there are two **TC** (TC-7001 and TC-7002).

Finally, the combined size of both sub-networks must not exceed a total of 70 *Physical Devices*.

Illustrated below is an example of a properly connected system :



4 - Sub-menu Trees

4.1 - VENTILATION APPLIANCES SUB-MENUS

4.1.1 - EXHAUSTS [E#]

E# 01 – READ-ONLY

Parameter N°	Parameter Name	Parameter Range	Default Value	Parameter Description
01-01	Setpoint	0-100%		Current speed setpoint for the exhaust fan. Value may be greater than 'Parameter 01-04 - Sensors Req. Flow' because of applied limits, delays, and balancing algorithms.
01-02	Actual Mode	IDLE, PREP, COOKING, COOL, STOP, MAN		Current operating mode of exhaust fan.
01-03	Sensor Mode	STOP, PREP, COOKING		Operating mode of the currently most active sensor amongst all sensors linked to exhaust fan. COOKING: at least one linked sensor is in COOKING mode, PREP: no linked sensor is in COOKING mode, and at least one TT sensor is in PREP mode, STOP: all linked sensors are in STOP mode.
01-04	Sensors Requ. Flow	0-100%		Greatest ventilation demand amongst all sensors linked to exhaust fan. Comparing value to 'Parameter 01-01 – Setpoint' allows to determine the impact of limits, delays, and balancing algorithms.
01-05	Warnings	Empty, or alarm message		Whether or not a WARNING message is currently issued for the exhaust.

E# 02 - SETTINGS

Parameter N°	Parameter Name	Parameter Range	Default Value	Parameter Description
02-01	Equipement ID	E1 to E8, M1 to M4, D1 to D20, NONE	NONE	Exhaust Fan ID. Note that selecting a value other than E1 to E8 will change the Ventilation appliance type to either Make-up, Damper, or Empty, thus modifying the possible options in the present menu and reset parameters to their new default value.
02-02	Name 1	EMPTY, EXHAUST, MAKE-UP, DAMPER, PLATES, DEEP FRYER, GRILL, CHICKEN, PIZZA, POTS, JIGS, OVEN, BREAD OVEN, RANGE, COMBI, PREPARATION, BREAKFAST, DISHWASHER, PASTRY, BLEACH, STOVE, STEAMER, PRESS. COOKER, 1, 2, 3, 4.	EMPTY	Names 1, 2 and 3 are concatenated to create the appliance custom name.
02-03	Name 2		EMPTY	Names 1, 2 and 3 are concatenated to create the appliance custom name.
02-04	Name 3		EMPTY	Names 1, 2 and 3 are concatenated to create the appliance custom name.
02-05	Nominal Flow	100 to 29900	2000	In cfm. Air flow when exhaust fan speed runs at 100%. Used to balance air flows between intake and exhaust ventilation appliances.
02-07	Compensated By	NONE, M1 to M4, D1 to D20	NONE	Single choice. Determines which specific intake appliance compensates for the airfow exhausted by the exhaust fan.
02-08	Idle Setpoint	0-100%	20%	Absolute minimum exhaust fan speed. Exhaust fan speed will run at that speed when in IDLE state. Can not be higher than parameters 02-09, 02-10 and 02-11.
02-09	Prep/Cool Setpoint	0-100%	20%	Exhaust fan speed when in PREP mode. Optional : In PREP mode, total cfm exhausted by appliances compensated by the same make-up air fan needs to be lower than air make-up parameters '02-15'x'02-05' in order to prevent the make-up air unit to start. Can not be lower than parameter 02-09, nor higher than parameters 02-10 and 02-11.
02-10	Cooking Setpoint	0-100%	30%	Exhaust fan low speed limit in COOKING mode. All linked sensors 0-100% demands are scaled between this speed limit and parameter '02-12 Max Setpoint'. Can not be lower than parameters 02-09 and 02-10, nor higher than parameter 02-11.
02-11	Max Setpoint	0-100%	100%	Absolute maximum exhaust fan speed. In COOKING mode, all linked sensors 0-100% demands are scaled between parameter '02-11 Cooking Setpoint' and this speed limit. If lower than 100%, '02-05 Nominal Flow' parameter is derated accordingly. Can not be lower than parameters 02-09, 02-10, and 02-11.
02-12	Prep Off Delay	0-9999 min	15 min	When in PREP mode, exhaust fan will return automatically to IDLE mode after all linked sensors remain in STOP mode for a time duration equal to 'Prep Off Delay'
02-13	Cooking Off Delay	0-9999 min	15 min	When in COOKING mode, exhaust fan will switch automatically to COOLDOWN mode after the last linked sensor has left COOKING mode for a time duration equal to 'Cooking Off Delay'.
02-14	Cooldown Off Delay	0-9999 min	15 min	When in COOLDOWN mode, exhaust fan will return automatically to IDLE mode after all linked sensors remain in STOP mode for a time duration equal to 'Cooldown Off Delay'
02-17	Peak Duration	0-9999 sec	15 sec	In seconds. Speed peaks hang time.
02-18	Ramp Down	0-9999 sec	30 sec	Exhaust fan speed ramp down time (sec per 100% change)

4.1.2 - MAKE-UP AIR UNITS [M#]

M# 01 – READ-ONLY

Parameter N°	Parameter Name	Parameter Range	Default Value	Parameter Description
01-01	Setpoint	0-100%		Current speed setpoint for the make-up air fan.
01-02	Actual Mode	IDLE, PREP, STOP		Current operating mode of make-up air fan. In this case, PREP indicates that the make-up air unit is running.
01-04	Sensors Requ. Flow	0-100%		Greatest ventilation demand amongst all sensors linked to the make-up air fan.
01-05	Warnings	Empty, or alarm message		Whether or not a WARNING message is currently issued for the make-up air fan.

M# 02 – SETTINGS

Parameter N°	Parameter Name	Parameter Range	Default Value	Parameter Description
02-01	Equipement ID	E1 to E8, M1 to M4, D1 to D20, NONE	NONE	Make-Up Air Fan ID. Note that selecting a value other than M1 to M4 will change the Ventilation Appliance type to either Exhaust, Damper, or Empty, thus modifying the possible options in the present menu and reset parameters to their new default value.
02-02	Name 1	EMPTY, EXHAUST, MAKE-UP, DAMPER, PLATES, DEEP FRYER, GRILL, CHICKEN, PIZZA, POTS, JIGS, OVEN, BREAD OVEN, RANGE, COMBI, PREPARATION, BREAKFAST, DISHWASHER, PASTRY, BLEACH, STOVE, STEAMER, PRESS. COOKER, 1, 2, 3, 4.	EMPTY	Names 1, 2 and 3 are concatenated to create the appliance custom name.
02-03	Name 2		EMPTY	Names 1, 2 and 3 are concatenated to create the appliance custom name.
02-04	Name 3		EMPTY	Names 1, 2 and 3 are concatenated to create the appliance custom name.
02-05	Nominal Flow	100 to 29900	2000	In cfm. Air flow when make-up air fan runs at 100%. Used to balance air flows between intake and exhaust ventilation appliances.
02-08	Idle Setpoint	0-100%	0%	Absolute minimum make-up air fan speed. Exhaust fan will run at that speed only when the sum of exhausted cfm from appliances compensated by this make-up air fan is inferior to 'Parameter 02-15 Start Threshold'. Can be set to 0 to allow the make-up air to be stopped automatically. Can not be higher than parameters 02-09, 02-11 and 02-15.
02-09	Min Setpoint	0-100%	50%	Make-up air fan minimum speed when running outside IDLE mode (ie. when the sum of exhausted cfm from appliances compensated by this make-up air fan is superior to 'Parameter 02-15 Start Threshold'. Can not be lower than parameter '02-08', nor higher than parameters 02-11 and 02-15.
02-11	Max Setpoint	0-100%	100%	Absolute maximum exhaust fan speed, including in MAX mode. If lower than 100%, '02-05 Nominal Flow' parameter is derated accordingly. Can not be lower than parameters 02-08, 02-09, and 02-15.
02-12	Min Time On	0-9999 min	15min	Minimum time delay during which the Make-up Air Unit will remain in PREP mode (out of IDLE mode). If required, exhaust fans will remain running even when no sensor requires them to, until this delay condition is met.
02-15	Start Threshold	0-100%	10%	When the sum of exhausted cfm from appliances compensated by this make-up air unit is below this threshold, the make-up air will remain in IDLE mode.
02-16	Force start with	E1 to E8, D1 to D20, NONE	NONE	Multiple selection possible. The make-up air fan will leave IDLE mode as soon as selected exhaust appliances leave IDLE mode, regardless of parameter '02-15'.
02-17	Peak Duration	0-9999 sec	15 sec	In seconds. Speed peaks hang time.
02-18	Ramp Down	0-9999 sec	30 sec	Make-up air fan speed ramp down time (sec per 100% change)

4.1.3 - DAMPERS [D#]

D# 01 – READ-ONLY

Parameter #	Parameter Name	Parameter Range	Default Value	Parameter Description
01-01	Setpoint	0-100%		Current airflow setpoint for the damper. Generally, 0% means the damper is in fully closed position, and 100% is fully open. Value may be greater than 'Parameter 01-04 - Sensors Req. Flow' because of applied limits, delays, and balancing algorithms.
01-02	Actual Mode	IDLE, PREP, COOKING, COOL, STOP, MAN		Current operating mode of damper.
01-03	Sensor Mode	STOP, PREP, COOKING		Operating mode of the currently most active sensor amongst all sensors linked to damper. COOKING: at least one linked sensor is in COOKING mode, PREP: no linked sensor is in COOKING mode, and at least one TT sensor is in PREP mode, STOP: all linked sensors are in STOP mode.
01-04	Sensors Requ. Flow	0-100%		Greatest ventilation demand amongst all sensors linked to damper. Comparing value to 'Parameter 01-01 – Setpoint' allows to determine the impact of limits, delays, and balancing algorithms.
01-05	Warnings	Empty, or alarm message		Whether or not a WARNING message is currently issued for the damper.

D# 02 – SETTINGS

Parameter #	Parameter Name	Parameter Range	Default Value	Parameter Description
02-01	Equipement ID	E1 to E8, M1 to M4, D1 to D20, NONE	NONE	Damper ID. Note that selecting a value other than E1 to E8 will change the Ventilation appliance type to either Make-up, Exhaust, or Empty, thus modifying the possible options in the present menu and reset parameters to their new default value.
02-02	Name 1	EMPTY, EXHAUST, MAKE-UP, DAMPER, PLATES, DEEP FRYER, GRILL, CHICKEN, PIZZA, POTS, JIGS, OVEN, BREAD OVEN, RANGE, COMBI, PREPARATION, BREAKFAST, DISHWASHER, PASTRY, BLEACH, STOVE, STEAMER, PRESS. COOKER, 1, 2, 3, 4.	EMPTY	Names 1, 2 and 3 are concatenated to create the appliance custom name.
02-03	Name 2		EMPTY	Names 1, 2 and 3 are concatenated to create the appliance custom name.
02-04	Name 3		EMPTY	Names 1, 2 and 3 are concatenated to create the appliance custom name.
02-05	Nominal Flow	100 to 29900	2000	In cfm. Air flow when damper position is 100% open. Used to balance air flows between intake and exhaust ventilation appliances.
02-06	Connected To	NONE, E1 to E8, M1 to M4, D1 to D20	NONE	Used to link damper another appliance in the duct network, closer to outside (downstream for exhaust appliance, upstream for intake).
02-07	Compensated By	NONE, M1 to M4, D1 to D20	NONE	Single choice. Only applicable when parameter 02-06 is NOT set to M1-M4. To be left at NONE in most dampers cases, unless the appliance in 'parameter 02-06' has its own parameter 02-07 set to NONE. Determines which specific intake appliance compensates for the airfow exhausted by the damper.
02-08	Idle Setpoint	INHERIT*, 0-100%	20%	Absolute minimum damper position. Dampers will remain in that position when in IDLE state. Can not be higher than parameters 02-09, 02-10 and 02-11.
02-09	Prep/Cool Setpoint	INHERIT*, 0-100%	20%	Damper position when in PREP mode. Can not be lower than parameter 02-09, nor higher than parameters 02-10 and 02-11.
02-10	Cooking Setpoint	INHERIT*, 0-100%	30%	Damper low position limit in COOKING mode. All linked sensors 0-100% demands are scaled between this position and parameter '02-12 Max Setpoint'. Can not be lower than parameters 02-09 and 02-10, nor higher than parameter 02-11.
02-11	Max Setpoint	INHERIT*, 0-100%	100%	Absolute maximum damper open position. In COOKING mode, all linked sensors 0-100% demands are scaled between parameter '02-11 Cooking Setpoint' and this position. If lower than 100%, '02-05 Nominal Flow' parameter is derated accordingly. Can not be lower than parameters 02-09, 02-10, and 02-11.
02-12	Prep Off Delay	INHERIT*, 0-9999 min	15 min	When in PREP mode, damper will return automatically to IDLE mode after all linked sensors remain in STOP mode for a time duration equal to 'Prep Off Delay'
02-13	Cooking Off Delay	INHERIT*, 0-9999 min	15 min	When in COOKING mode, damper will switch automatically to COOLDOWN mode after the last linked sensor has left COOKING mode for a time duration equal to 'Cooking Off Delay'.
02-14	Cooldown Off Delay	INHERIT*, 0-9999 min	15 min	When in COOLDOWN mode, damper will return automatically to IDLE mode after all linked sensors remain in STOP mode for a time duration equal to 'Cooldown Off Delay'
02-17	Peak Duration	INHERIT*, 0-9999 min	15 sec	In seconds. Position peaks hang time.
02-18	Ramp Down	INHERIT*, 0-9999 min	30 sec	Damper position ramp down time (sec per 100% change)

***INHERIT:** setting a parameter to INHERIT (set to '-1' value) allows to link a given parameter to '02-06 Connected to' ventilation appliance values.*

4.1.4 - UNDEFINED [NONE]

01 – READ-ONLY

Parameter #	Parameter Name	Parameter Range	Default Value	Parameter Description
01-01	Setpoint	0		Always 0%.

02 – SETTINGS

Parameter #	Parameter Name	Parameter Range	Default Value	Parameter Description
02-01	Selected Appliance	E1 to E8, M1 to M4, D1 to D20, NONE	NONE	Appliance ID. Select a value other than NONE to create a new ventilation appliance.

4.2 - PHYSICAL DEVICES SUB-MENUS

4.2.1 - AS

AS 01 – READ-ONLY

Parameter #	Parameter Name	Parameter Range	Default Value	Parameter Description
01-01	Sensor Mode	STOP, COOKING		Displays sensor's state. The two possible values are : **COOKING:** sensor detects a cooking load, and can keep linked appliances in COOKING state (AUTO mode only) **STOP:** Demand is below parameter '02-04'. This sensor may not keep linked appliances from leaving COOKING state (AUTO mode only).
01-02	Demand	0.0-100.0%		Current demand, in %.
01-03	Detection	0-10V		Current analog input signal (0-10V)
01-05	Version			Firmware version. This guide is written for AS v4.0.20

AS 02 – SETTINGS

Parameter #	Parameter Name	Parameter Range	Default Value	Parameter Description
02-01	Linked Appliances	UNDEFINED, E1 to E8, M1 to M4, D1 to D20	UNDEFINED	Multiple selection possible. Every appliance set here will continuously read the demand of the AS signal reader.
02-02	Conversion PT1	0-100% | 0-10V	0% | 0V	Analog signal scaling point 1 (Min Voltage ; Min Demand). Used for converting analog signal value in Volts to demand in %.
02-03	Conversion PT2	0-100% | 0-10V	100% | 10V	Analog signal scaling point 2 (Max Voltage ; Max Setpoint)). Used for converting analog signal value in Volts to demand in%.
02-04	Idle Threshold	0-100%	1	When demand decreases below this value, AS signal reader switches to STOP mode. Demand will still be taken into account for speed, position and airflows calculations (the greatest demand amongst all sensors linked to the same Ventilation Appliance is applied), but will not be sufficient to maintain Ventilation Appliance from leaving COOKING, PREP or COOLDOWN mode if all sensors linked to the same Ventilation Appliance are in STOP mode.
02-05	Prep/cool Threshold	0-100%	1	When demand is above this threshold and below 'parameter 02-05 Cooking Threshold', AS signal reader switches to PREP mode. Demand is taken into account for speed, position and airflows calculations, and the linked Ventilation Appliances selected in parameter 02-01 are forced out of IDLE mode (ie. In COOKING, PREPARATION or COOLDOWN mode).
02-05	Cooking Threshold	0-100%	1	When demand is above this threshold, AS signal reader sensor switches in COOKING mode. Demand is taken into account for speed, position and airflows calculations, and the linked Ventilation Appliances selected in parameter 02-01 are forced in COOKING mode. Note that if parameter is set to 100%, AS signal reader will never be able to force COOKING mode.

4.2.2 - CU

CU 01 – READ-ONLY

Parameter #	Parameter Name	Parameter Range	Default Value	Parameter Description
01-01	Version			Firmware version. This guide is written for CU v4.0.24
01-02	DI1 State	Parameter 02-05 | ON or OFF	FIRE ALARM | OFF	CU Digital Input 1 (terminal 10 and 11) function, with current state.
01-03	DI2 State	Parameter 02-06 | ON or OFF	AUTO PULSE | OFF	CU Digital Input 2 (terminal 12 and 13) function, with current state.
01-04	DI3 State	Parameter 02-07 | ON or OFF	MAX PULSE | OFF	CU Digital Input 3 (terminal 14 and 15) function, with current state.
01-05	DI4 State	Parameter 02-08 | ON or OFF	STOP PULSE | OFF	CU Digital Input 4 (terminal 16 and 17) function, with current state.
01-06	DI5 State	Parameter 02-09 | ON or OFF	STOP PULSE | OFF	CU Digital Input 5 (terminal 18 and 19) function, with current state.
01-07	DO1 State	Parameter 02-10 | ON or OFF	LIGHT | ON	CU Digital Output 1 (terminal 22 and 23) function, with current state.
01-08	DO2 State	Parameter 02-11 | ON or OFF	AUTO | OFF	CU Digital Output 2 (terminal 24 and 25) function, with current state.
01-09	DO3 State	Parameter 02-12 | ON or OFF	MAX | OFF	CU Digital Output 3 (terminal 26 and 27) function, with current state.

CU 02 – SETTINGS

Parameter #	Parameter Name	Parameter Range	Default Value	Parameter Description
02-01	Components found (read-only) Confirm number (yes/no)	YES or NO	NO	This parameter needs to be set to YES everytime a network change occurs (like adding or removing a component). If not, a 'CHECK COMP. COUNT' warning message will appear.
02-02	Commissioning. D-E-M	OFF/ON | 0-100% | 0-100% | 0-100%	OFF	During startup, User may activate Commissioning parameter to force manually all Dampers, Ehaust fans and Make-up air ventilation appliances to a specific speed/position setpoint. This allows for an easier calibration of air flows. The 3 different septoint values respectively control Dampers, Exhaust fans, and Make-Up Air Fans. Note: Commissioning currently does not support CT % display, but only overrides TC analog output signals. For that reason, TC digital run/stop outputs may still be triggered by some CU digital input conditions. A good practice is to temporarily deactivate all CU digital inputs during the air balancing phase of startup.
02-03	Change password	DISABLE, 0-9999	DISABLE	If desired, a number can be used as a password to enter Setup mode.
02-05	DI1	**LEFT FIELD:** DISABLED, STOP_OVERRIDE, AUTO_OVERRIDE, MAX_OVERRIDE, FAULT_EXT, BYPASS_EXT, COOK.EQUIP_OFF, WINTER_MODE, STOP_PULSE, AUTO_PULSE, MAX_PULSE, FIRE_ALARM **RIGHT FIELD:** Normally Open dry contact (NO), Normally Closed dry contact (NC)	FIRE ALARM | NO	**STOP OVERRIDE:** system is forced to STOP as long as input is active. Priority 3. **AUTO OVERRIDE:** system is forced to AUTO mode as long as input is active. Priority 5. **MAX OVERRIDE:** system is forced in MAX mode as long as input is active. Priority 4. **FAULT EXT:** used to issue a warning message that an external component is in fault (no other impact on the system). Priority 2 (second highest). **BYPASS_EXT:** used to indicate that an external component such as a VFD is in Bypass mode. This will send all exhaust fans, dampers and make-up appliances at their maximum flow septoint. **COOK.EQUIP_OFF:** used to issue a message that an external manual reset relay is off (no other impact on the system) **WINTER MODE:** a manual selector switch may be added to limit sensors demands when input is active. Priority 9 (lowest) **STOP PULSE:** switches system to OFF state (system will remain in that state even after input is deactivated). Priority 6. **AUTO PULSE:** switches system to AUTO mode. Priority 8. **MAX PULSE:** switches system to MAX mode. Priority 7. **FIRE ALARM:** system is forced in FIRE mode as long as input is active. Priority 1 (highest).
02-06	DI2		AUTO_PULSE | NO	
02-07	DI3		MAX_PULSE | NO	
02-08	DI4		STOP_PULSE | NO	
02-09	DI5		STOP_PULSE | NO	
02-10	DO1	**LEFT FIELD:** ALARM, LIGHT, SWITCH1, SWITCH2, SWITCH3, FAULT_EXT, BYPASS_EXT, STOP, AUTO, MAX, RUN **RIGHT FIELD:** Normally Open (NO) solid-state relay, Normally Closed solid-state relay (NC)	LIGHT | NO	**ALARM:** A warning message is issued LIGHT: ON/OFF control of hood lights through an interposing external relay. **SWITCH1-2-3:** Triggered when a CT keypad left arrow button assigned to the corresponding switch (with CT 'parameter 02-13') is pressed. **FAULT_EXT, BYPASS_EXT:** Triggered by a CU digital input (see CU parameters 02-05 to 02-09). CU is in BYPASS mode. **STOP:** system is in STOP mode (not IDLE) **AUTO:** system is either in IDLE, PREP, COOKING or COOLDOWN mode. **MAX:** system is in MAX mode, **RUN:** system is in PREP, COOKING, COOLDOWN or MAX mode (but not IDLE or STOP mode).
02-11	DO2		AUTO | NO	
02-12	DO3		MAX | NO	
02-15	Fire: Exhaust Mode	MAX, NORMAL, OFF	MAX	**MAX:** When in FIRE mode, all Exhaust Fans will be forced to 100%. **NORMAL:** FIRE mode doesn't modify Exhaust Fans speeds. **OFF:** When in FIRE mode, all Exhaust Fans will be forced to 0%.
02-16	Fire: Exhaust Damper Mode	MAX, NORMAL, OFF	MAX	**MAX:** When in FIRE mode, all Exhaust Dampers will be forced to 100%. **NORMAL:** FIRE mode doesn't modify Exhaust Dampers speeds. **OFF:** When in FIRE mode, all Exhaust Dampers will be forced to 0%.
02-17	Fire: Lights Mode	ON, NORMAL, OFF	NORMAL	**ON:** When in FIRE mode, CU Digital Outputs assigned to LIGHT (CU parameter 02-10 to 02-12) will be activated. **NORMAL:** FIRE mode doesn't interfer with CU Digital Outputs. **OFF:** When in FIRE mode, CU Digital Outputs assigned to LIGHT (CU parameter 02-10 to 02-12) will be deactivated.
02-18	Hood Lights	AUTO, MAN	AUTO	**MAN:** CU Digital Outputs assigned to LIGHT (CU parameter 02-10 to 02-12) are toggled manually by a CT keypad left arrow button, when CT parameter 02-13 is set to LIGHT. **AUTO:** CU Digital Outputs assigned to LIGHT are automaticaly activated when system is out of IDLE or STOP mode, and deactivated in IDLE or STOP mode..

4.2.3 - CT

CT 01 – READ-ONLY

Parameter #	Parameter Name	Parameter Range	Default Value	Parameter Description
01-01	Version			Firmware version. This guide is written for CT v4.0.24

CT 02 – SETTINGS

Parameter #	Parameter Name	Parameter Range	Default Value	Parameter Description
02-01	Linked Appliances	ALL, E1 to E8, M1 to M4, D1 to D20	ALL	Multiple selection possible. This parameter allows a for CT keypad to control and display either the whole network or a subset of Ventilation Appliances.
02-02	Language	EN, FR, ES	FR	Language selection. EN for English, FR for French, ES for Spanish.
02-03	Unit	CELSIUS, FAHRENHEIT	CELSIUS	Temperature display unit.
02-10	STOP Button	COOL, COOL + _IDLE_, COOL + _STOP_ , IDLE, STOP, DISABLED	COOL + _IDLE_	**COOL:** Pressing STOP button forces all the Ventilation Appliances set in CT parameter 02-01 'Linked Appliances' to COOLDOWN mode, when no linked sensor remain in COOKING mode. This allows overriding Ventilation Appliances parameter 02-13 'Cooking Off Delay'. **COOL + _IDLE_:** A short press on the STOP button forces all the Linked Appliances to COOLDOWN mode, when no linked sensor remain in COOKING mode. This allows overriding Ventilation Appliances parameter 02-13 'Cooking Off Delay'. A long press on the STOP button forces all the Linked Appliances to IDLE mode, when all linked sensors are in STOP mode. **COOL + _STOP_** : A short press on the STOP button forces all the Linked Appliances to COOLDOWN mode, when no linked sensor remain in COOKING mode. This allows overriding Ventilation Appliances parameter 02-13 'Cooking Off Delay'. A long press on the STOP button forces all the Linked Appliances to STOP mode. **IDLE:** Pressing STOP button forces all the Linked Appliances to IDLE mode, when all linked sensors are in STOP mode. **STOP:** Pressing STOP button forces all the Linked Appliances to STOP mode. **DISABLED:** Pressing STOP button has no effect on the system operation modes.
02-11	AUTO Button	PREP, PREP + _COOKING_, COOKING, DISABLED	PREP + _COOKING_	**PREP:** Pressing AUTO button forces all the Ventilation Appliances set in CT parameter 02-01 'Linked Appliances' that are not already in PREP or COOKING mode to PREP mode. **PREP + _COOKING_:** A short press on the AUTO button forces all the Linked Appliances are not already in PREP or COOKING mode to PREP mode, and a long press on the AUTO button forces all the Linked Appliances to COOKING mode. **COOKING:** Pressing AUTO button forces all the Linked Appliances to COOKING mode. **DISABLED:** Pressing AUTO button has no effect on the system operation modes.
02-12	MAN Button	ENABLED, DISABLED, 15m, 60m+15m, 6h+60m+15m, 24h+6h+60m+15m	ENABLED	Enables up arrow toggling of MAX mode, as well as available timer values.
02-13	"<" Button	SCROLL, LIGHT, SWITCH1, SWITCH2, SWITCH3	SCROLL	Sets function of left arrow button. Either screen scrolling, or toggling of a switch relay that can be attached to a CU Digital Output with CU parameter 02-10 to 02-12.

4.2.4 - DS

DS 01 – READ-ONLY

Parameter #	Parameter Name	Parameter Range	Default Value	Parameter Description
01-01	Sensor Mode	STOP, COOKING		Displays sensor state. The two possible values are : COOKING: Sensor is at a level above 0, and can keep linked appliances in COOKING state (AUTO mode only) STOP: Sensor is at Level 0.
01-02	Demand	0.0-100.0%		Current demand, in %.
01-03	Contact	OFF, ON		Actual contact state (ON = contact closed)
01-05	Version			Firmware version. This guide is written for DS v4.0.20

DS 02 – SETTINGS

Parameter #	Parameter Name	Parameter Range	Default Value	Parameter Description
02-01	Linked Appliances	UNDEFINED, E1 to E8, M1 to M4, D1 to D20	UNDEFINED	
02-02	Step Up Delay	0 à 9999 sec	15 sec	As soon as DS receives a pulse (OFF-ON transition), DS steps up one level. If pulse is maintained for Step Up Delay, DS will step up an additionnal level.
02-03	Step Down Delay	0 à 9999 sec	30 sec	Time delay before DS steps down one level. Timer starts when pulse returns to OFF state (ON-OFF transition).
02-04	Level 0	0-100%	0%	Basic level, when no pulses have been detected. Sensor is in STOP mode.
02-05	Level 1	0-100%	33%	Sets the sensor demand when at Level 1. Sensor is in COOKING mode.
02-06	Level 2	0-100%	66%	Sets the sensor demand when at Level 2. Sensor is in COOKING mode.
02-07	Level 3	0-100%	100%	Sets the sensor demand when at Level 3. Sensor is in COOKING mode.

4.2.5 - IB

IB 01 – READ-ONLY

Parameter #	Parameter Name	Parameter Range	Default Value	Parameter Description
01-01	Sensor Mode	STOP, COOKING		Displays sensor's state. The two possible values are : **COOKING:** sensor detects a cooking load, and can keep linked appliances in COOKING state (AUTO mode only) **STOP:** No cooking detected, demand is 0%. This sensor may not keep linked appliances from leaving COOKING state (AUTO mode only).
01-02	Demand	0.0-100.0%		Current demand, in %.
01-06	Amplif. Level	HIGH, MEDIUM or LOW		Current amplification level
01-07	Raw Signal	0-12000		This value is used to monitor the optical signal recieved by the IB sensor. If 0, it means the current IB is used as emitter only. If value is above 10000, IB sensor will saturate and not function properly. Try turning the IB sensor head away from the opposite IB sensor to lower the value under 9000. If value is below 1000, a CLEANING REQUIRED warning message will be issued and IB sensor will detected 100% demand. Try cleaning the IB sensor head and aligning it towards the opposite IB sensor to raise the value over 1500.
01-08	Version			Firmware version. This guide is written for IB v4.0.21

IB 02 – SETTINGS

Parameter #	Parameter Name	Parameter Range	Default Value	Parameter Description
02-01	Linked Appliances	UNDEFINED, E1 to E8, M1 to M4, D1 to D20	UNDEFINED	Multiple selection possible. Every appliance set here will continuously read the demand of the IB sensor.

4.2.6 - NE

NE 01 – READ-ONLY

Parameter #	Parameter Name	Parameter Range	Default Value	Parameter Description
01-01	Version			Firmware version. This guide is written for NE v4.0.20

NE 02 – SETTINGS

Parameter #	Parameter Name	Parameter Range	Default Value	Parameter Description

4.2.7 - TT

TT 01 – READ-ONLY

Parameter #	Parameter Name	Parameter Range	Default Value	Parameter Description
01-01	Sensor Mode	STOP, PREP, COOKING		Displays sensor's state. The two possible values are : **COOKING:** sensor detects a cooking load, and can keep linked appliances in COOKING state (AUTO mode only). **PREP:** Sensor may keep linkind Appliances from leaving PREP or COOLDOWN states, but not COOKING state. **STOP:** No cooking detected, demand is 0%. This sensor may not keep linked appliances from leaving COOKING state (AUTO mode only).
01-02	Demand	0.0-100.0%		Current demand, in %.
01-03	Temperature	-999,9 to 999.9 C, F		Current temperature reading.
01-05	Winter mode	YES/NO		Whether or not Winter Mode limits are applied. See CU parameter 02-05 to 02-09 WINTER MODE for more info.
01-06	Version			Firmware version. This guide is written for TT v4.0.21

TT 02 – SETTINGS

Parameter #	Parameter Name	Parameter Range	Default Value	Parameter Description
02-01	Linked Appliances	UNDEFINED, E1 to E8, M1 to M4, D1 to D20	UNDEFINED	Multiple selection possible. Every appliance set here will continuously read the demand of the TT sensor. Leaving this parameter to UNDEFINED issues an error.
02-02	Idle Temp	-999,9 à 999.9 C, F	25.0 C	Temperature below which TT returns to STOP mode. Cannot be higher than parameters 02-03, and 02-04.
02-03	Prep/Cool Temp	-999,9 à 999.9 C, F	27.0 C	**If TT sensor is in STOP mode:** Temperature above which TT is switched to PREP mode. **If TT sensor is in COOKING mode:** Temperature below which TT is switched to COOLDOWN mode. Cannot be lower than parameter 02-02, nor higher than parameters 02-04.
02-04	Cooking Temp min/max	-999,9 à 999.9 C, F | -999,9 à 999.9 C, F	30.0 C | 40.0 C	**Cooking Temp min:** Temperature above which TT is switched to COOKING mode. This temperature corresponds to a sensor demand of 0%. **Cooking Temp Max:** Temperature for 100% sensor demand. Note: TT sensor demand value will be scaled between Ventilation Appliances parameters '02-09 Cooking Min Septoint' and '02-11 Max Setpoint'.
02-07	Start with Temp rise	DISABLE, 0.1 à 999.9 C, F | 0.0 à 999.9 sec	DISABLE | 60 sec	When not set to DISABLE, this parameter will force TT in PREP mode for 1 min when the temperature sensed rises for more than this temp value, faster than the delay set.
02-08	Max Winter Demand	0.0-100.0%	90%	Maximum demand limit when Winter Mode is on. See CU parameter 02-05 to 02-09 WINTER MODE for more info.

4.2.8 - TC

TC 01 – OUTPUT1 : *ID*

Menus 02 – OUTPUT2, 03 – OUTPUT3 and 04 – OUTPUT4 have the same structure as menu 01 - OUTPUT 1.

Parameter #	Parameter Name	Parameter Range	Default Value	Parameter Description
01-01	Linked Appliance	NONE, E1 to E8, M1 to M4, D1 to D20	NONE	Single selection only. Link a specific Ventilation Appliance to Output Channel 1..4
01-02	Setpoint *(read-only parameter)*	0-100%		Current appliance setpoint.
01-03	Analog Output Value *(read-only parameter)*	0.0 to 10.0V	0.0V	Current analog output value.
01-04	Output PT1	DISABLED, 0-100% | 0.0 to 10.0V	0% | 0.0V	Used for caracterisation of 0-10V analog output. Specify the first point of caracterisation curve. The following condition must be met: %PT1 <= %PT2 <= %PT3 <= %PT4 (when points 3 and 4 are enabled).
01-05	Output PT2	DISABLED, 0-100% | 0.0 to 10.0V	100% | 10.0V	Used for caracterisation of 0-10V analog output. Specify the second point of caracterisation curve. The following condition must be met: %PT1 <= %PT2 <= %PT3 <= %PT4 (when points 3 and 4 are enabled).
01-06	Output PT3	DISABLED, 0-100% | 0.0 to 10.0V	DISABLED | 0.0V	Used for caracterisation of 0-10V analog output. Specify the third point of caracterisation curve. The following condition must be met: %PT1 <= %PT2 <= %PT3 <= %PT4 (when points 3 and 4 are enabled).
01-07	Output PT4	DISABLED, 0-100% | 0.0 to 10.0V	DISABLED | 0.0V	Used for caracterisation of 0-10V analog output. Specify the fourth point of caracterisation curve. The following condition must be met: %PT1 <= %PT2 <= %PT3 <= %PT4 (when points 3 and 4 are enabled).
01-08	Deadband	0.0 to 100.0%	0,0%	If the calculated 0-10V output signal differs from actual Analog Signal for more than this amount, update the Analog Signal Value. Used to prevent insignificant small changes to Analog output Signal values.
01-09	Deadband delay	0 to 9999 sec	60 sec	If the last update to the Analog Signal value is older than this delay, update the Analog Signal Value. Used to prevent frequent changes to Analog Signal values.

TC 05 – GENERAL

Parameter #	Parameter Name	Parameter Range	Default Value	Parameter Description
05-01	Version			Firmware version. This guide is written for TC v4.0.20