

# DX group commissioning

Technical specification

always the best climate



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## 1. General

The table below shows in which cases it is possible to control DX groups using the EASY controller unit installed in a ZEHNDER CALADAIR AHU.

For any other coil combination, the EASY control cannot control the DX group.

| Case            | Electric heater | Hot water coil | DX Coil (evaporation only) | DX Coil (condensation only) | DX Coil (changeover) | DX source info by AHU |
|-----------------|-----------------|----------------|----------------------------|-----------------------------|----------------------|-----------------------|
| Case n°1        | No              | No             | Yes                        | No                          | No                   | Yes                   |
| Case n°2        | No              | No             | No                         | Yes                         | No                   | Yes                   |
| Case n°3        | No              | No             | No                         | No                          | Yes                  | Yes                   |
| Case n°4        | Yes             | No             | Yes                        | No                          | No                   | Yes                   |
| <b>Case n°6</b> | Yes             | No             | No                         | Yes                         | No                   | <b>No</b>             |
| <b>Case n°7</b> | Yes             | No             | No                         | No                          | Yes                  | <b>No</b>             |
| Case n°5        | No              | Yes            | Yes                        | No                          | No                   | Yes                   |
| <b>Case n°8</b> | No              | Yes            | No                         | Yes                         | No                   | <b>No</b>             |
| <b>Case n°9</b> | No              | Yes            | No                         | No                          | Yes                  | <b>No</b>             |

## 2. Possible management by the AHU

### 2.1. Available information in the AHU control

#### 2.1.1. Case n°1 : DX coil only → DX evaporation only

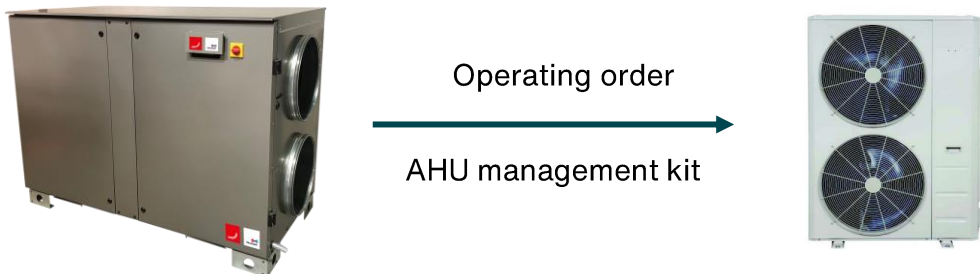
The air handling unit (AHU) is equipped only with a direct expansion DX coil.

There are no water coils or electric coils in the AHU.

The DX coil provides the cooling function of the AHU.

The control system provides :

- A 24V AC output when the air handling unit requires cooling
- A 0-10v cooling output
- An additional pressure switch indicating to the group that the unit is operating.



Equipment required :

- AHU with DX evaporator coil
- Additional pressure switch: OPT005075

#### Controller program modification

*ELECTROPACK™, AQUAPACK™ 3.6*

- Access authorization >> Enter >> required: 1111
- Configuration >> Inputs/Outputs >> DO >> DO4 = Signal : P1-Cold → Start cooling / Auto

*EXAECO™ 3.6*

- No modification
- Use the "DO4 master" output = Signal: Start cooling / Auto

*HEXAMOTION™, FREETIME™, CARMA™, NEOTIME™, SILVERTOP™, FLATPOWER™ EASY 5.0*

- No modification

### 2.1.2. Case n°2 : DX coil only → DX condensation only

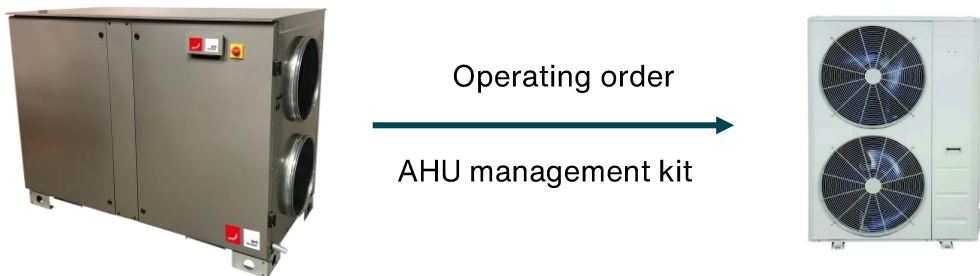
The air handling unit (AHU) is equipped only with a DX condensing coil.

There are no water coils or electric coils in the AHU.

The DX coil provides the heating function of the AHU.

The control system provides :

- A 24V AC output when the air handling unit requires heating
- A 0-10v heating output
- An additional pressure switch indicating to the group that the unit is operating.



Equipment required :

- AHU with DX condensing coil
- Additional pressure switch : OPT005075

#### Controller program modification

##### *AQUAPACK™ 3.6*

- Access authorization >> Enter >> required: 1111
- Configuration >> Inputs/Outputs >> DO >> DO3 = Signal : P1-Heat → Start heating / Auto

##### *EXAECO™ 3.6*

- No modification
- Use the "DO3 master" output = Signal: Start heating / Auto

##### *ELECTROPACK™ 3.6*

- Incompatible

##### *HEXAMOTION™, FREETIME™, CARMA™, NEOTIME™, SILVERTOP™, FLATPOWER™ EASY 5.0*

- No modification

### 2.1.3. Case n°3 : DX coil only → DX changeover

The air handling unit (AHU) is equipped only with a reversible DX coil.

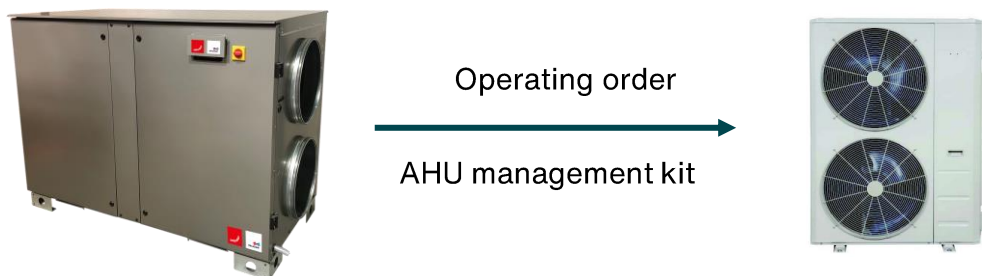
No water coil or electric coil in the AHU.

The DX coil provides the heating function of the AHU.

The DX coil provides the cooling function of the AHU.

The control system provides :

- A 24V AC output when the air handling unit requires heating
- A 0-10V heat output
- A 24V AC output when the air handling unit requires cooling
- A 0-10V cooling output
- An additional pressure switch indicating to the group that the unit is operating.



Equipment required :

- AHU with reversible DX coil
- Additional pressure switch : OPT005075

#### Controller program modification

*ELECTROPACK™, AQUAPACK™ 3.6*

- Access authorization >> Enter >> required: 1111
- Configuration >> Inputs/Outputs >> DO >> DO3 = Signal : P1-Heat → Start heating / Auto
- Configuration >> Inputs/Outputs >> DO >> DO4 = Signal : P1-Cold → Start cooling / Auto

*EXAECO™ 3.6*

- No modification
- Use the "DO3 master" output = Signal: Start heating / Auto
- Use the "DO4 master" output = Signal: Start cooling / Auto

*HEXAMOTION™, FREETIME™, CARMA™, NEOTIME™, SILVERTOP™, FLATPOWER™ EASY 5.0*

- No modification

#### 2.1.4. Case n°4 : Electric + DX coil → DX evaporation only

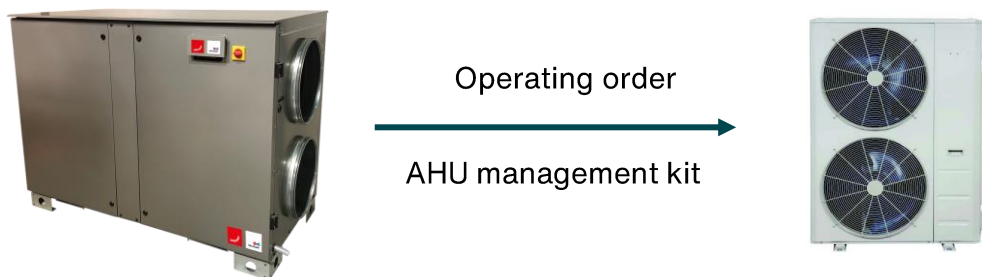
The air handling unit (AHU) is equipped with an electric and a direct expansion DX coil.

The electric coil provides the heating function of the AHU.

The DX coil provides the cooling function of the AHU.

The control system provides :

- A 24V AC output when the air handling unit requires cooling
- A 0-10v cooling output
- An additional pressure switch indicating to the group that the unit is operating.



Equipment required :

- AHU with an electric + DX evaporator coil
- Additional pressure switch: OPT005075

#### Controller program modification

##### *ELECTROPACK™ 3.6*

- Access authorization >> Enter >> required: 1111
- Configuration >> Inputs/Outputs >> DO >> DO4 = Signal : P1-Cold → Start cooling / Auto

##### *EXAECO™ 3.6*

- No modification
- Use the "DO4 master" output = Signal: Start cooling / Auto

##### *AQUAPACK™ 3.6*

- Incompatible

##### *HEXAMOTION™, FREETIME™, CARMA™, NEOTIME™, SILVERTOP™, FLATPOWER™ EASY 5.0*

- No modification

### 2.1.5. Case n°5 : Hot water + DX coil → DX evaporation seul

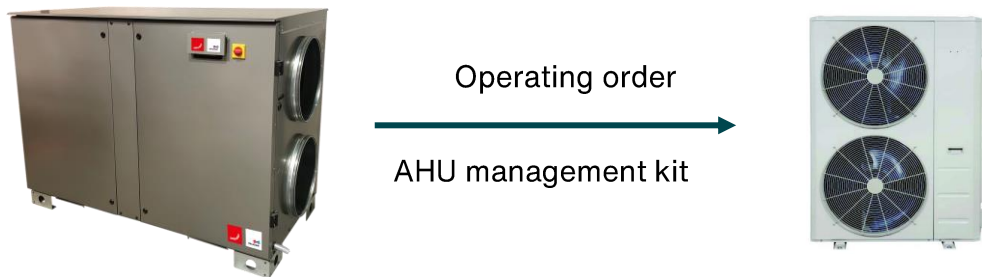
The air handling unit (AHU) is equipped with a hot water and a direct expansion DX coil.

The hot water coil provides the heating function of the AHU.

The DX coil provides the cooling function of the AHU.

The control system provides :

- A 24V AC output when the air handling unit requires cooling
- A 0-10v cooling output
- An additional pressure switch indicating to the group that the unit is operating.



Equipment required :

- AHU with a hot water + DX evaporator coil
- Additional pressure switch: OPT005075

#### Controller program modification

##### *AQUAPACK™ 3.6*

- Access authorization >> Enter >> required: 1111
- Configuration >> Inputs/Outputs >> DO >> DO4 = Signal : P1-Cold → Start cooling / Auto

##### *EXAECO™ 3.6*

- No modification
- Use the "DO4 master" output = Signal: Start cooling / Auto

##### *ELECTROPACK™ 3.6*

- Incompatible

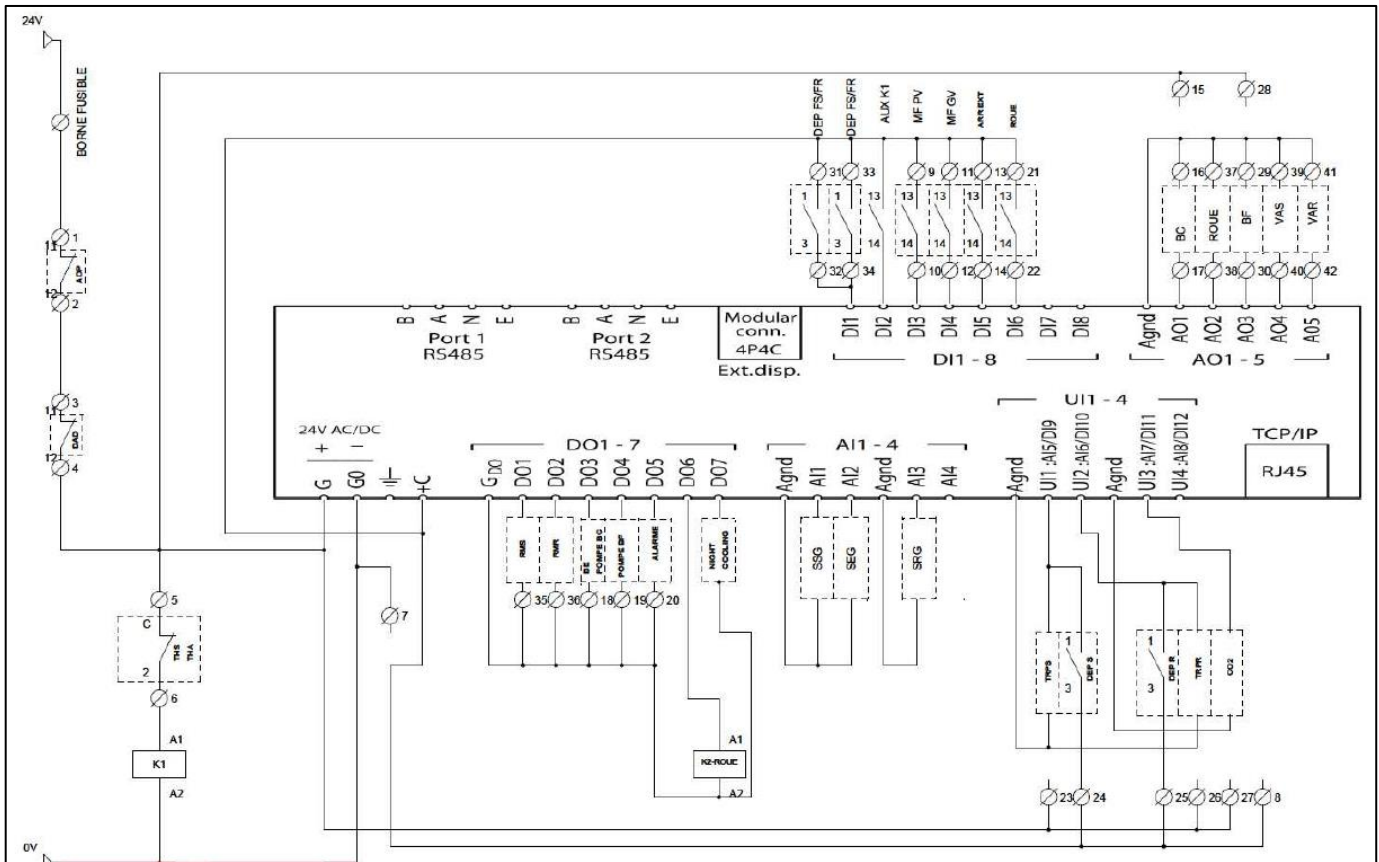
##### *HEXAMOTION™, FREETIME™, CARMA™, NEOTIME™, SILVERTOP™, FLATPOWER™ EASY 5.0*

- No modification



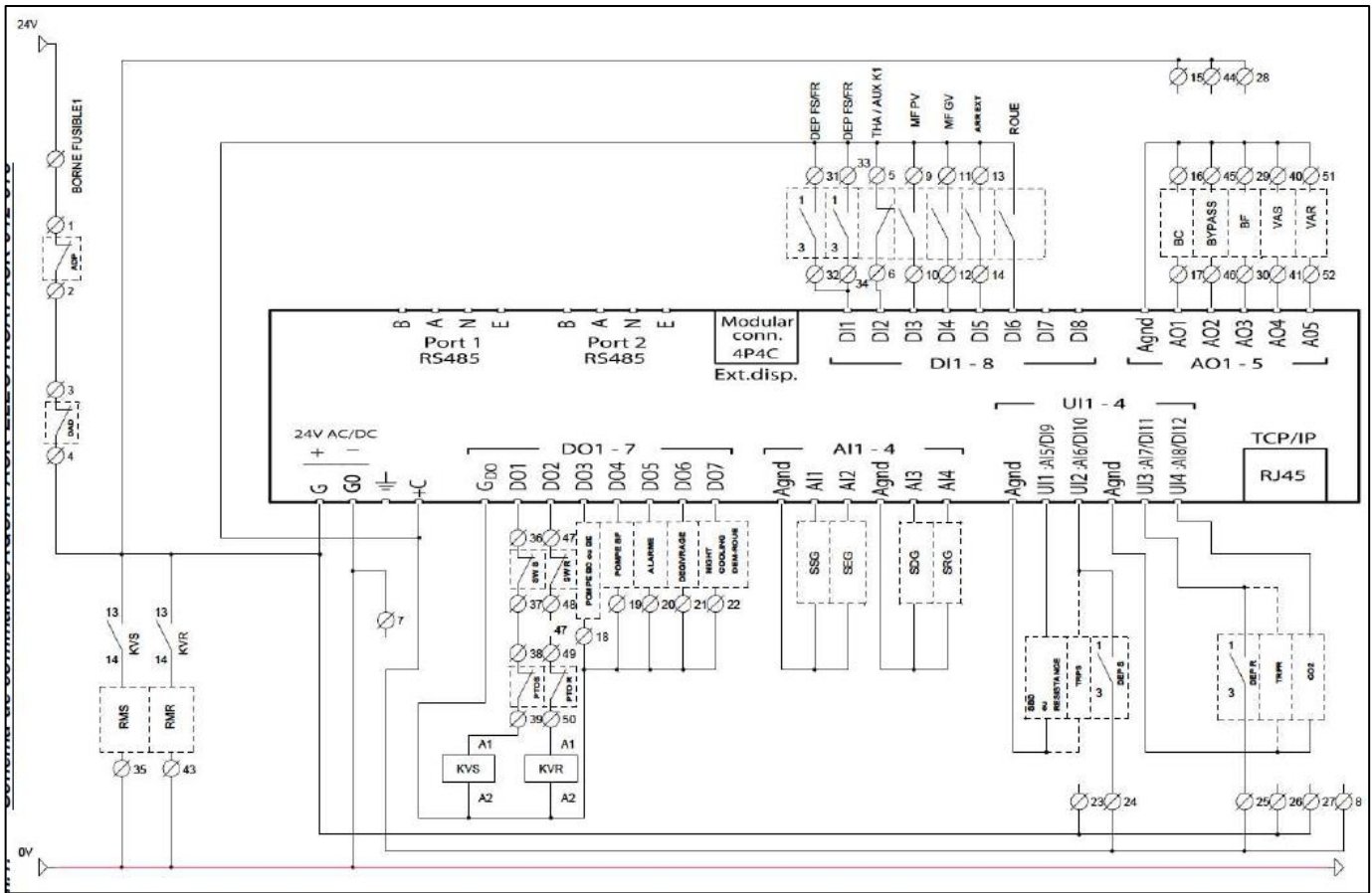
## 2.2. Connection terminals for Zehnder Caladair

### 2.2.1. HEXAMOTION™ & FREETIME™ range

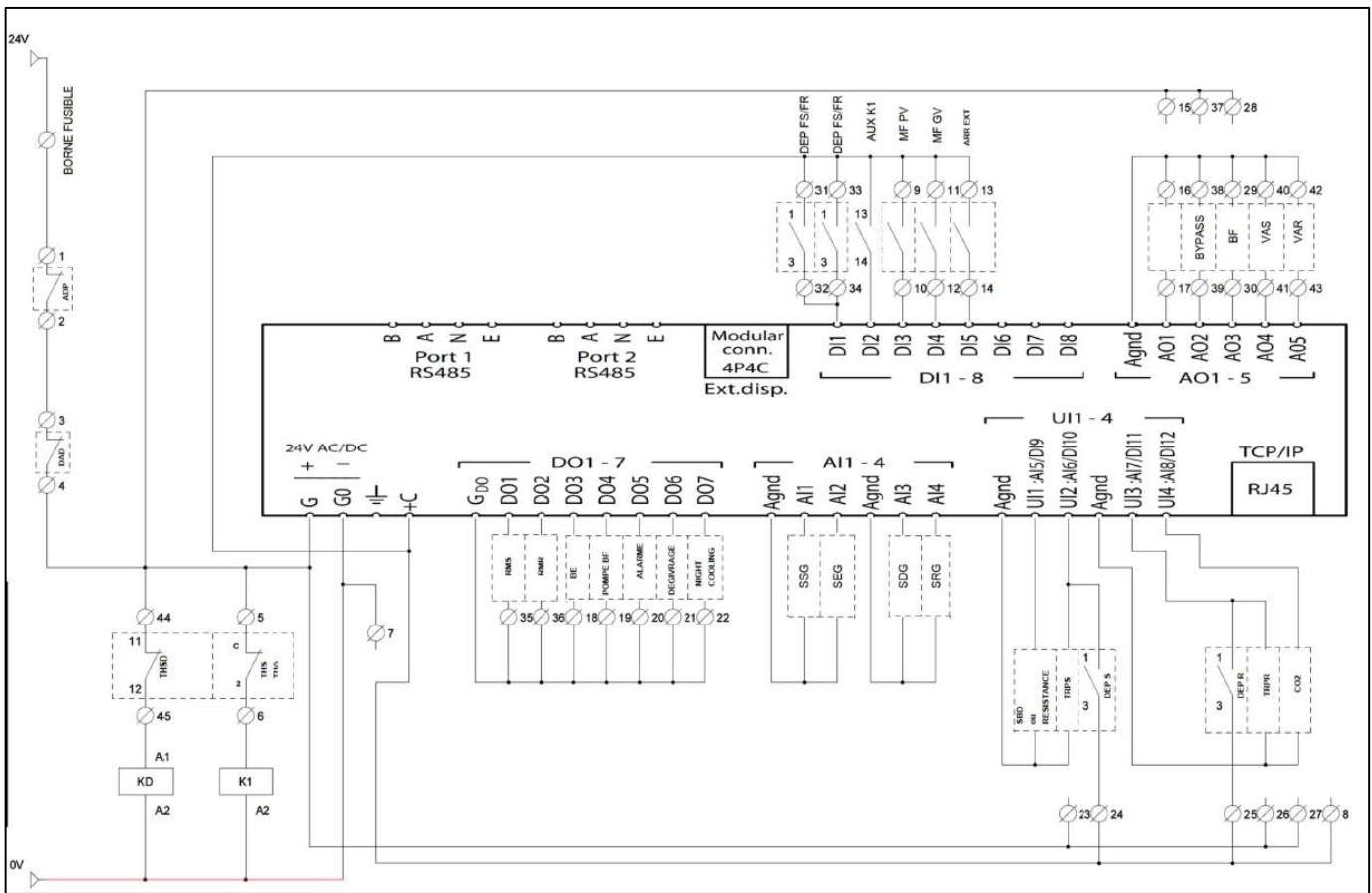


- 24V AC output when the air handling unit requires cooling: DO4 / terminals DO4 (controller) and 19 (terminal block)
- 0-10V cooling output: AO3 / terminals 29 and 30 (terminal block)
- 24V AC output when the air handling unit requires heating: DO3 / terminals DO3 (controller) and 18 (terminal block)
- 0-10V heating output: AO1 / terminals 16 and 17 (terminal block)

### 2.2.2. ELECTROPACK™ & AQUAPACK™ range

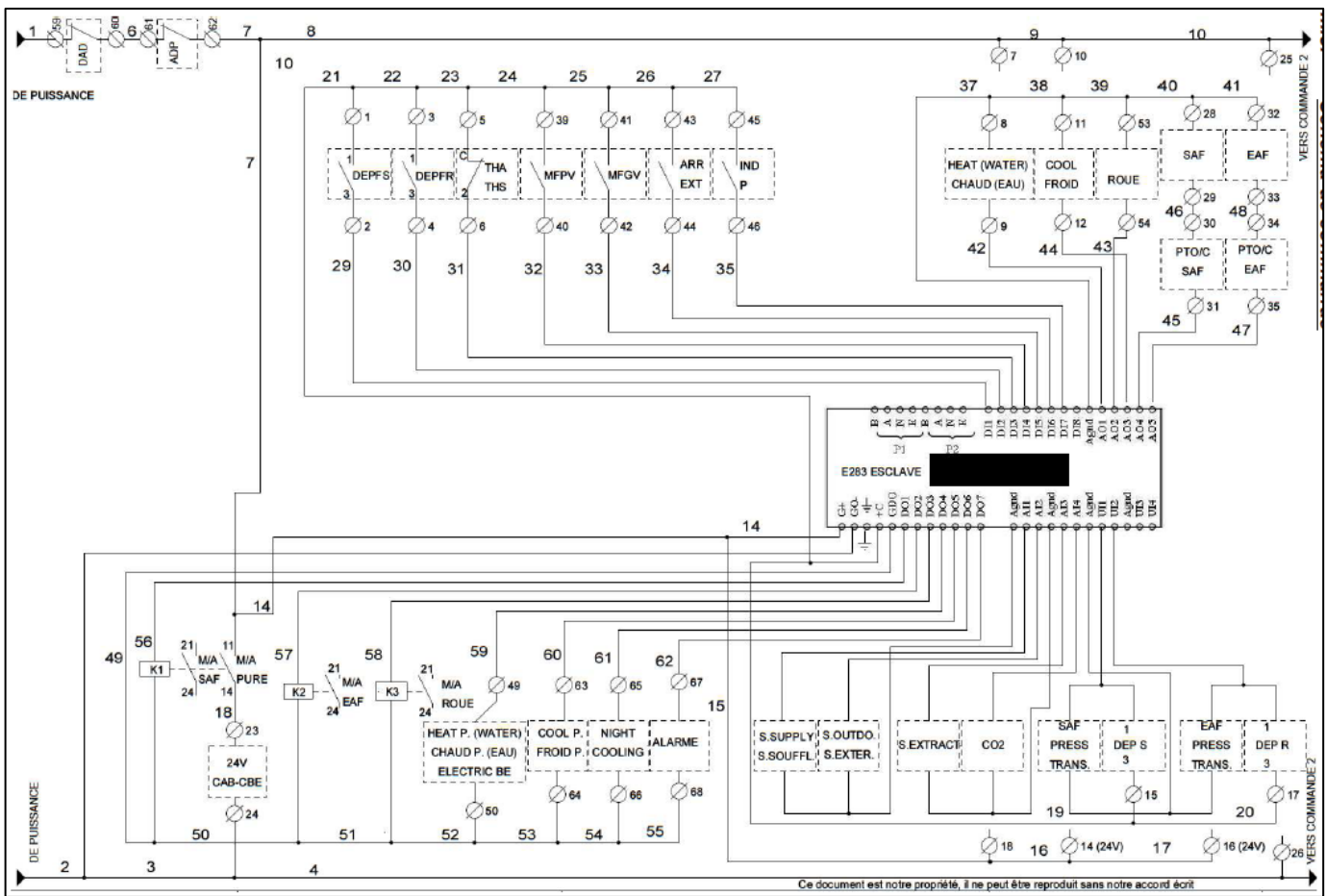


### 2.2.3. CARMA™, NEOTIME™ & SILVERTOP™ range



- 24V AC output when the air handling unit requires cooling: DO4 / terminals DO4 (controller) and 19 (terminal block)
- 0-10V cooling output: AO3 / terminals 29 and 30 (terminal block)
- 24V AC output when the air handling unit requires heating: DO3 / terminals DO3 (controller) and 18 (terminal block)
- 0-10V heating output: AO1 / terminals 16 and 17 (terminal block)

### 2.2.4. EXAECOT™ range



- 24V AC output when air handling unit requires cooling: "DO4 master" / terminals 73 and 74 (terminal block)
- 0-10V cooling output: AO3 / terminals 11 and 12 (terminal block)
- 24V AC output when the air handling unit requires heating: "DO3 master" / terminals 71 and 72 (terminal block)
- 0-10V heating output: AO1 / terminals 8 and 9 (terminal block)

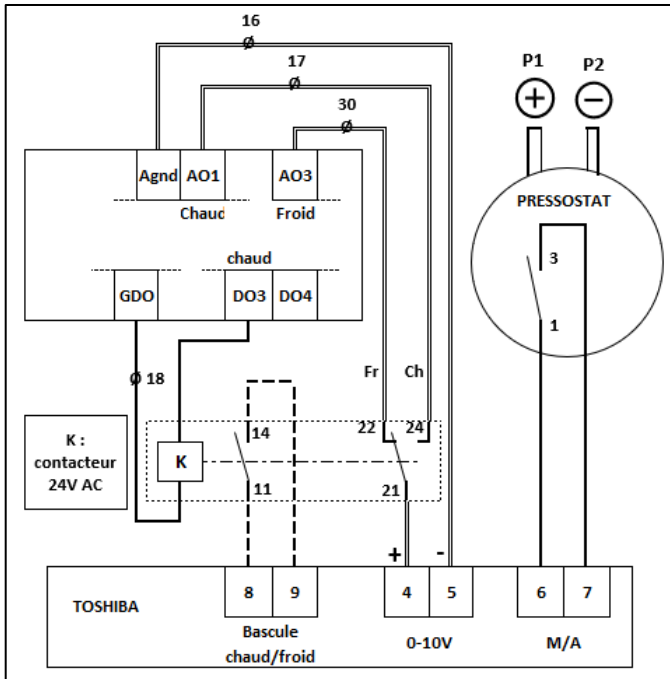
### 2.3. Association examples

#### 2.3.1. TOSHIBA group with CARMA™ and AHU kit combined

→ please contact TOSHIBA to select the appropriate AHU kit

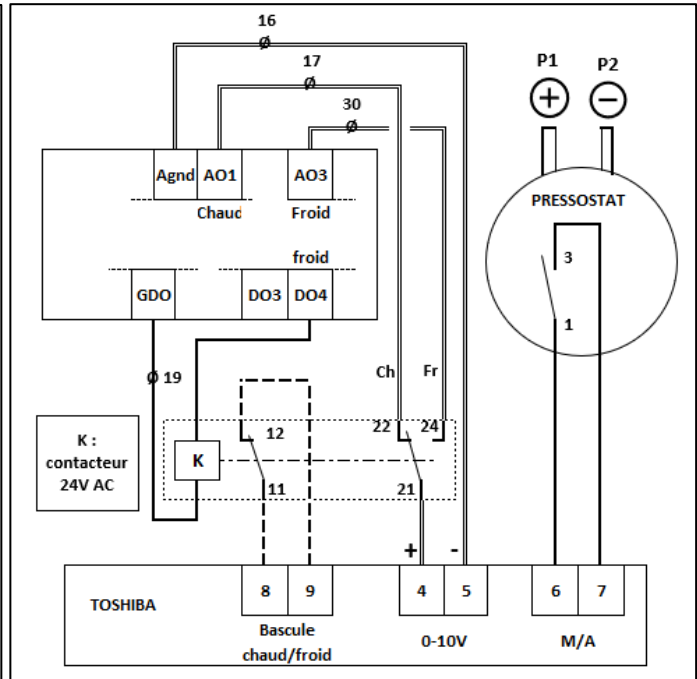
##### Management via heating output

(Possible if AHU without electric coil)



##### Management via cooling output

(Mandatory if AHU fitted with an electric coil)



| Fonction          | Terminal          | Longueur Câble Max. (m) | Spécification du Câble                      |
|-------------------|-------------------|-------------------------|---|
| Entrée analogique | 4 & 5             | 200                     | Câble blindé : 0,5 - 1,0mm <sup>2</sup>     |
| Entrée numérique  | 6 & 7 / 8 & 9     | 100                     | Câble non blindé : 0,5 - 1,0mm <sup>2</sup> |
| Sortie numérique  | 10 & 11 / 12 & 13 | 500                     | Câble non blindé : 0,5 - 1,0mm <sup>2</sup> |

Spécification GTB : Entrée analogique 1

1: EA 1 = Contrôle Capacité  
 2: EA 2 = Sélection mode fonctionnement  
 3: - = Pas utilisé  
 4: COM = Commun

\* Ne PAS utiliser plus de 10 volts DC dans le bornier d'entrée analogique

■ BMS Specification: Digital Inputs

1 & 2: ENTRÉE NUMÉRIQUE 1  
 3 & 4: ENTRÉE NUMÉRIQUE 2  
 5 & 6: PAS UTILISÉ

6 7 8 9

EN\_1: Entrée Marche / Arrêt  
 DI\_2: Mode d'entrée froid / chaud

Contact sec (à se procurer localement) nécessaire pour activer les entrées numériques

| Fonction | EN CIRCUIT OUVERT             | EN COURT-CIRCUIT        |
|----------|-------------------------------|-------------------------|
| EN1      | Fonctionnement ARRÊT          | Fonctionnement MARCHE   |
| EN2      | Mode de refroidissement actif | Mode de chauffage actif |

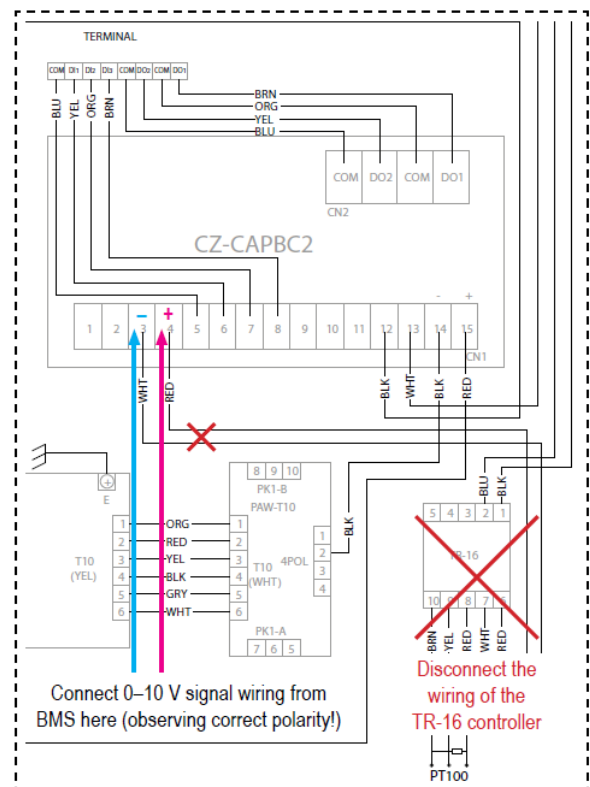
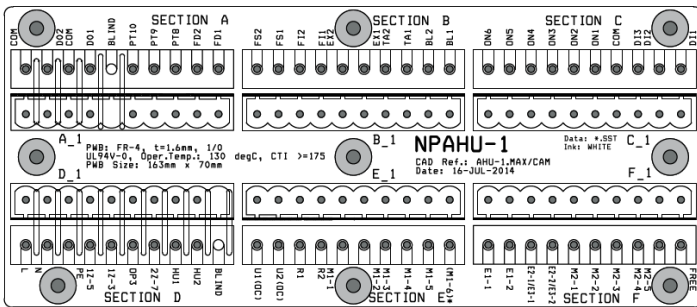
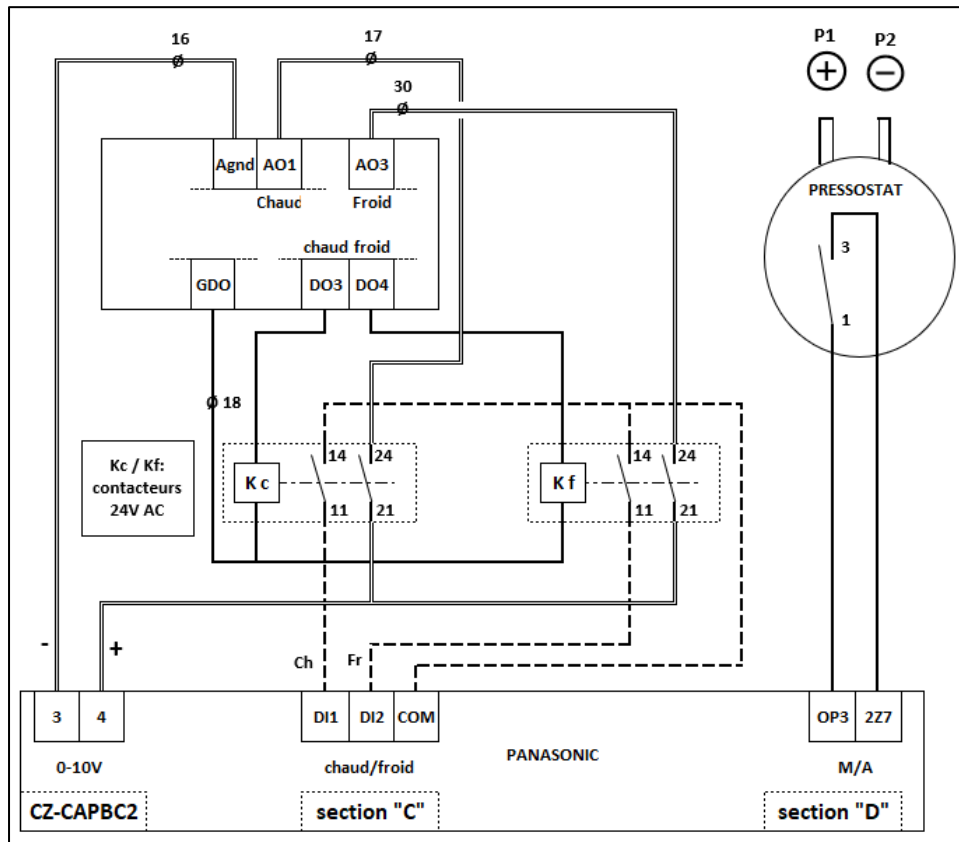
Remarque:  
 • Alimentation du bornier des entrées numériques (12VCC) à partir du circuit imprimé PCB

To set the DX group control parameters, follow the instructions in the TOSHIBA documentation.



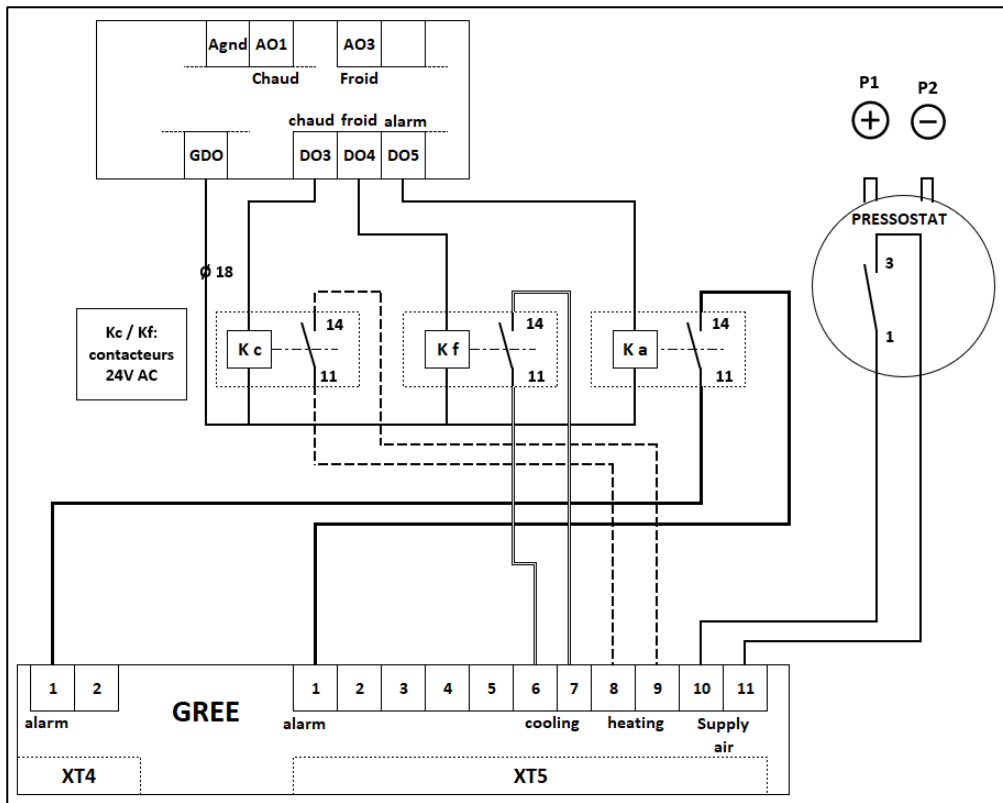
### 2.3.3. PANASONIC group with CARMA™ and AHU kit combined

→ please contact PANASONIC to select the appropriate AHU kit



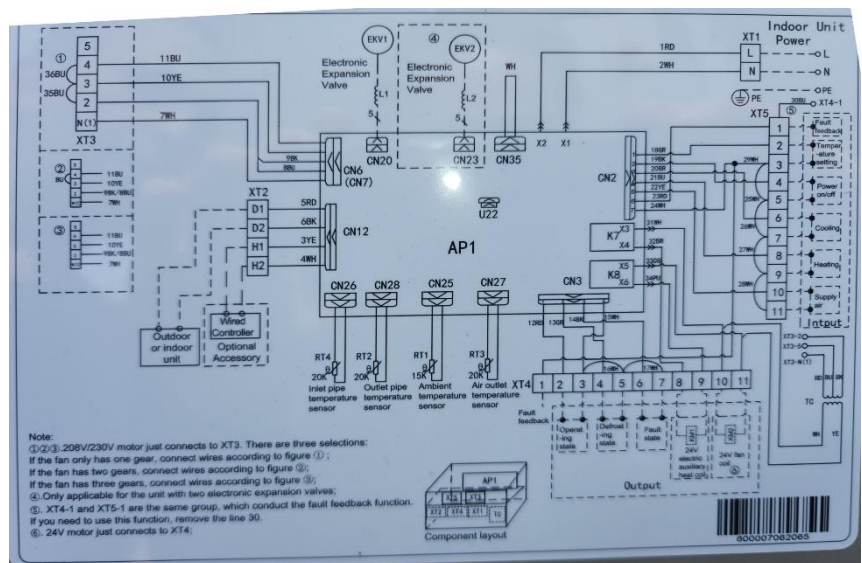
To set the DX group control parameters, follow the instructions in the PANASONIC documentation.

### 2.3.4. GREE group with CARMA™ and AHU kit combined



To set the DX group control parameters, follow the instructions in the GREE documentation.

The room temperature will be controlled by the GREE controller → install the GREE temperature sensors according to the GREE instructions.



Zehnder Caladair unit control : define a fixed supply setpoint (example = 15°C) or a supply setpoint using an air law depending on the outdoor temperature.

**WARNING!** Do not use temperature control on extract air.

The EASY control supply air sensor must be placed in the air flow, before the DX coil (upstream).

HEXAMOTION DX → move the supply air sensor before the DX coil



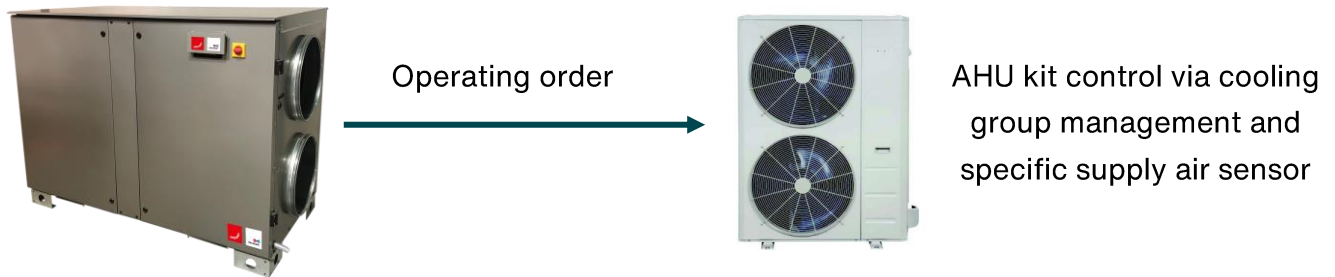
### 3. Impossible management by the AHU

#### 3.1. Case n°6 : Electric + DX condensing coil only

The air handling unit (AHU) is fitted with an electric heater to ensure the minimum temperature at the condenser (AHU supply temperature regulation setpoint = approx. 16°C → check according to DX group manual).

A pressure switch indicates to the group when the unit is operating.

The DX unit is equipped with an AHU kit (only for collecting AHU operating information) and the options needed to operate according to its own setpoint.



Equipment required :

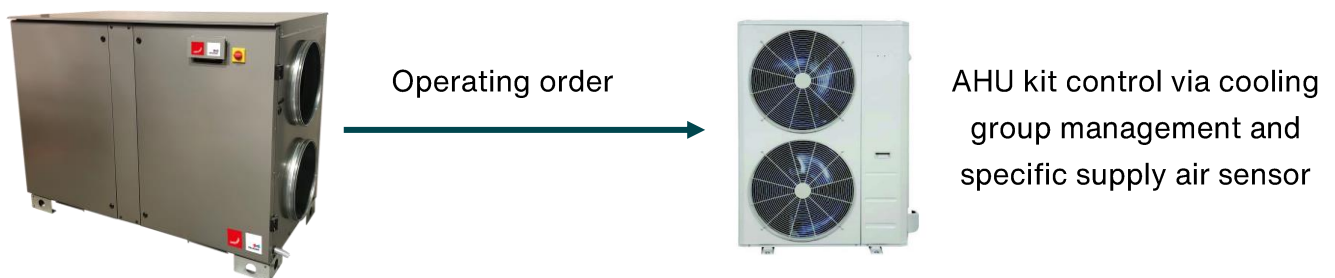
- AHU with an electric + DX condensing coil
- Additional pressure switch : OPT005075

#### 3.2. Case n°7 : Electric + changeover DX coil

The air handling unit (AHU) is fitted with an electric heater to ensure the minimum temperature at the condenser (AHU supply temperature regulation setpoint = approx. 16°C → check according to DX group manual).

A pressure switch indicates to the group when the unit is operating.

The DX unit is equipped with an AHU kit (only for collecting AHU operating information) and the options needed to operate according to its own setpoint.



Equipment required :

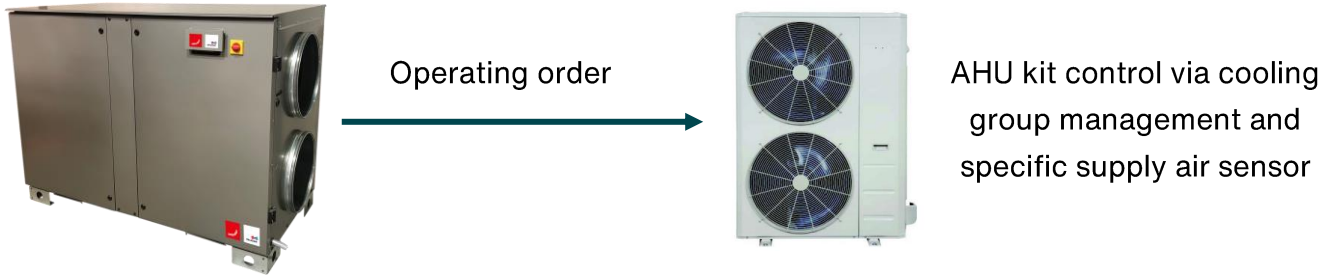
- AHU with an electric heating coil
- Additional pressure switch : OPT005075

### 3.3. Case n°8 : Hot water + DX condensing coil only

The air handling unit (AHU) is fitted with a hot water coil to ensure the minimum temperature at the condenser (AHU supply temperature regulation setpoint = approx. 16°C → check according to DX group manual).

A pressure switch indicates to the group when the unit is operating.

The DX unit is equipped with an AHU kit (only for collecting AHU operating information) and the options needed to operate according to its own setpoint.



Equipment required :

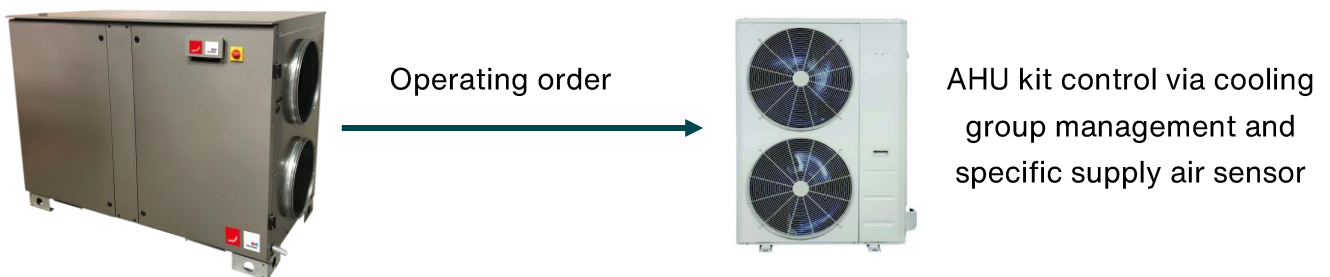
- AHU with a hot water coil
- Additional pressure switch : OPT005075

### 3.4. Case n°9 : Hot water + changeover DX coil

The air handling unit (AHU) is fitted with a hot water coil to ensure the minimum temperature at the condenser (AHU supply temperature regulation setpoint = approx. 16°C → check according to DX group manual).

A pressure switch indicates to the group when the unit is operating.

The DX unit is equipped with an AHU kit (only for collecting AHU operating information) and the options needed to operate according to its own setpoint.



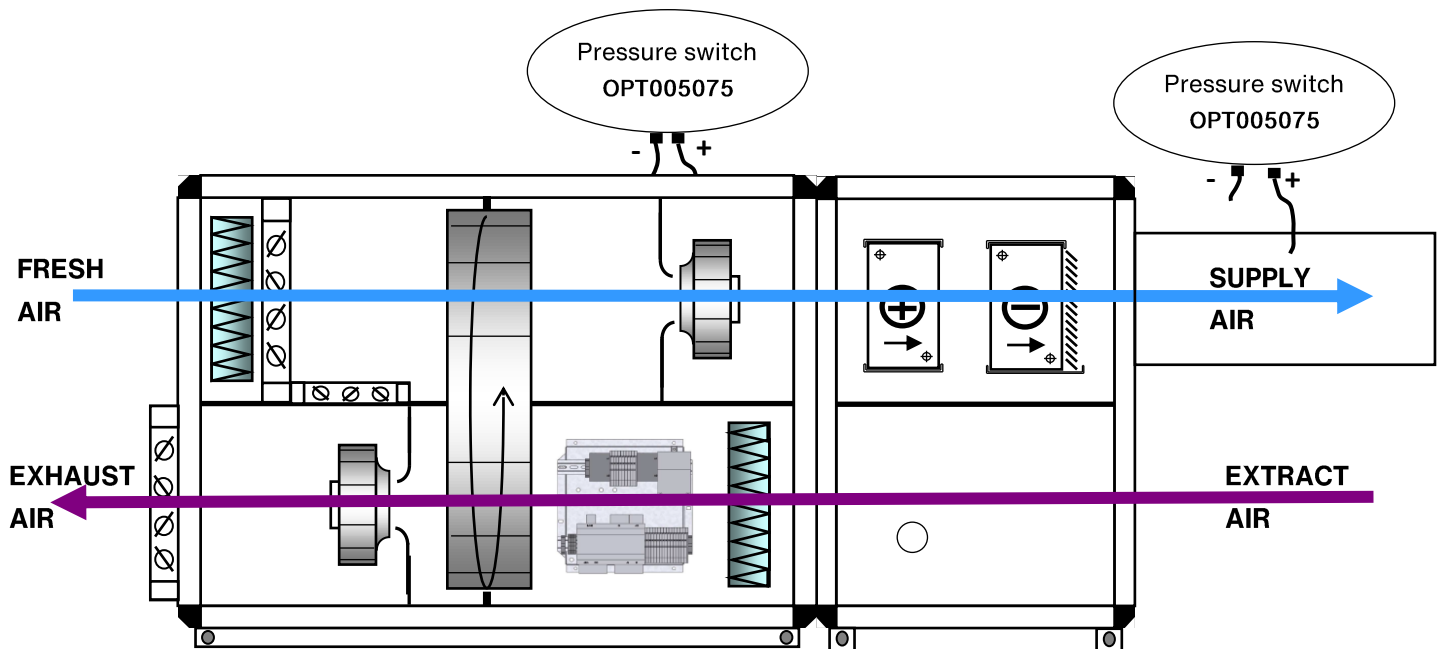
Equipment required :

- AHU with a hot water coil
- Additional pressure switch : OPT005075

### 3.5. Pressure switch positioning examples

#### EXAECO™ range

The pressure switch can be installed in either of the locations shown below :





**ZEHNDER CALADAIR INTERNATIONAL**

61 rue de Saint Veran – 71000 MACON LOCHE – France

<https://www.caladair.com/>

Z-EN-V0324-CSY-INM-DX modul, en, subject to change without notice