Please, read these instructions carefully before attempting installation

**Attention, Danger, Safety Advice!**
Using a wrong tailor made RJ45 or RJ11 cable, the PCB or TFT can be damaged. If so, the components are out of guarantee.
If you wish to lengthen one of both cables you must use a twisted pair shielded cable.

**SECURITY ADVISE SYMBOLES**

- Attention, Danger, Safety Advice!
- Injuries risk!
- Danger from electric current or high voltage!
- Important information.
INDEX

CLEVER CONTROL CHARACTERISTICS.......................................................... 3
CLEVER KIT INCLUDES........................................................................... 5
INTELLIGENT PCB.................................................................................. 5
Connection Diagram – TEMPERATURE SENSOR SHIELDED CABLE .............. 6
Connection Diagram – AIR CURTAIN - 1 Clever Control managing 1 unit (1 PCB) ........................................................ 6
Connection Diagram – AIR CURTAIN - 1 Clever Control managing multiple units (+1 PCB) .................................................. 7
Connection Diagram – FAN HEATER - 1 Clever Control managing 1 unit (1 PCB) ............................................................... 7
Connection Diagram – BASIC FAN HEATER - 1 Clever Control managing multiple units (+1 PCB) ............................................. 8
Connection Diagram – HORIZONTAL FAN HEATER - 1 Clever Control managing multiple units (+1 PCB) ............................... 8
Wiring Diagram – 1 Clever Control with 1 Intelligent PCB........................... 9
Wiring Diagram – 1 Clever Control with 2 Intelligent PCB.......................... 10
MODIFY MODBUS ADDRESS .................................................................... 11
CLEVER CONTROL TFT........................................................................... 12
MAIN STATE SCREEN............................................................................ 12
MAIN STATE SCREEN FUNCTIONS.......................................................... 13
BUTTONS NAVIGATION........................................................................... 14
MENUS................................................................................................. 14
USER MENU............................................................................................ 15
   User Menu / TIME PROGRAMMER ....................................................... 16
   User Menu / Time Programmer / ACTIONS .......................................... 18
   User Menu / ADJUST TIME ................................................................ 18
   User Menu / DAY - NIGHT TEMPERATURE .......................................... 19
User Menu / BASIC CONFIGURATION (MENU) ......................................... 19
   User Menu / Basic Configuration / WORKING PROGRAM – AIR CURTAINS ................................................................. 20
   User Menu / Basic Configuration / WORKING PROGRAM – FAN HEATERS ................................................................. 22
   User Menu / Basic Configuration / CONFIGURATION (INITIAL) ............ 23
   User Menu / Basic Configuration / Configuration / NAME ..................... 24
   User Menu / Basic Configuration / GENERAL ALARM ......................... 25
   User Menu / Basic Configuration / PARAMETERS ................................ 27
   User Menu / Basic Configuration / Parameters / SPEED ....................... 27
   User Menu / Basic Configuration / Parameters / HEATING ..................... 28
   User Menu / Basic Configuration / Parameters / TEMPERATURE .......... 28
   User Menu / Basic Configuration / Parameters / Temperature / SET POINT LIMITS .................................................. 29
   User Menu / Basic Configuration / Parameters / Temperature / CALIBRATION ............................................................ 29
   User Menu / Basic Configuration / Parameters / Temperature / DISCHARGE TEMP (Available soon) .................................. 29
   User Menu / Basic Configuration / Parameters / DISABLE DUE EXT TEMP 30
   User Menu / Basic Configuration / Parameters / DOOR ........................... 30
   User Menu / Basic Configuration / FILTER: HOURS TO NEXT REVISION ... 32
   User Menu / Basic Configuration / COUNTERS ................................... 32
   User Menu / Basic Configuration / LOCK CONTROL TO USERS ............ 32
CODES – ACCESS AND CHANGE .............................................................. 33
   User Menu / ADVANCED CONFIGURATION ......................................... 34
      User Menu / Advanced Configuration / ADVANCED PARAMETERS .......... 34
      User Menu / Advanced Configuration / IN-OUT .................................. 35
Connections and Functions: IN/OUT of Digital/Analogic and Temperature Sensors ......................................................... 37
PROGRAMS FUNCTIONING .................................................................... 40
BMS CONTROL...................................................................................... 45
CLEVER CONTROL – WALL MOUNTING INSTRUCTIONS ......................... 50
HOW TO DO THE CABLES.................................................................... 51
TROUBLESHOOTING............................................................................. 53
CLEVER CONTROL CHARACTERISTICS

CLEVER, the new advanced total control, leads the new generation in air curtains management:
Maximum control + maximum energy saving.
Clever automatically adapts the functioning of the air curtain to the entrance climatic conditions in order to keep the comfort and energy saving.

Simple Installation Plug & Play. Factory adjusted to just switch on and run.

Main Advantages:

INTELLIGENT REGULATION
Depending on door state, on how often the door is open/closed, the internal/outside temperature or discharge temperature, Clever optimizes the ventilation and heating to create an efficient barrier for an optimal and effective climate separation. With manual or automatic functioning, it works with many different programs depending on heating type (water, electrical, heat pump or unheated) and installed temperature sensors. Clever Control has lots of extra functions to fulfil all client needs.

USER FRIENDLY
Multilanguage and easy icons for fully understanding. Main state screen indicates of the most important settings including: Ventilation speed, heating, temperatures, door state, working mode and program, filter state, day/hour, timer, etc.
Different menu configurations depending on who is managing the equipment:

- “User” simplified mode
- “Basic”, with main parameters
- “Advanced” for professionals.

ENERGY SAVING
Clever Control has 3 grades of comfort and energy efficiency which can be adjusted in all manual and automatic programs. “Eco” mode uses the less energy possible without compromising too much the comfort, while “Comfort” spends more ventilation/heating to maintain or achieve quicker the set temperature. As indicates, “Medium” it's in between both modes.

ADAPTIVE DOOR DELAY
When the door closes, the air curtain remains working at door open conditions for certain time to be ready if it's open again. The power of the unit during this delay time is divided in two strength stages, where the first is stronger than the second one in order to save energy. There are two types: “Fixed” where you can select the duration of the delay, or “Flexible” which adapts automatically the time depending on how often the door is opened.

FILTER ALARM
Indicates when filter needs replacing/cleaning. Clever offers 2 options: By “Timer” of functioning hours or by “Pressure Sensor” switch. Filter sign will change colour depending on the state from green to orange and finally red combined with a flashing message on the screen.

MULTI-EQUIPMENT
Clever PCB can manage different types of units: Air curtains, fan heater, AHU, etc. Once programmed, it can work alone without any TFT control. Clever controller display shows the functioning and is used to program each device. One TFT can manage up to 255 different units, each one with its own program. The system detects and shows automatically how many units are connected. End user can customize the name of each equipment.
TIMER / CALENDAR
Once programmed, the air curtain starts and turns off according to the client needs. Calendar function to turn ON/OFF automatically the unit depending on each different day of the week or predefined groups of days. User can select between Day or Night modes with 2 different Set temperatures in order to save energy.

BMS CONNECTION
Clever uses Modbus RTU protocol to communicate between the PCB and TFT control and it can be connected directly to a Modbus RTU BMS system. Available in the future Modbus Ethernet with extra module. The Clever PCB has several digital IN/OUT and analogical IN/OUT (0-10V) to control/monitory directly the unit (ON/OFF, fan speed, heating, temperature set, alarms, etc.).

PC / ANDROID APP
Any Windows PC or Android (iOS in the future) device can manage the air curtain with the same functions as the Clever TFT control. If an IP is assigned, the unit can be externally fully controlled thought internet. Extra Wi-Fi module required for Android.

FULLY PROGRAMABLE
In Advanced configuration mode, user can set the minimum/maximum of many parameters, like ventilation speed or heating when door is open/closed, set the temperatures for day/night and air outlet, the door delay, etc.

Advanced functions:
- Intelligent proactive regulation
- Manual / Automatic Functioning
- Energy saving modes: Eco, Medium and Comfort
- Different programs depending on installed temperature sensors
- Lots of functions to fulfil the client needs
- Fixed / Flexible door delay (progressive / adaptive)
- Calendar (Timer ON day/ON night/OFF)
- Alarms: general, filter, anti-freezing, overheating,
- Fans overheating, airflow, fire, external, heating locked, etc.
- Day / Night Temperatures
- Multi-Equipment management
- Multilanguage
- User / Basic / Advanced configurations
- Control lock option
- 3 Temperature sensors: inside, outside and air jet
- Unheated, electrical or water heated, heat pump (also combined)
- Modulating valve for water heated (includes 24VDC power supply)
- AC and EC fans

External communication:
- 2 independent Modbus RTU – BMS
- Configurable IN/OUT Digital/Analogical - BMS
- Modbus TCP Ethernet - BMS (optional, available soon)
- PC program (RS485)
- Wi-Fi (optional). Bluetooth (optional, available soon)
- Android application. IOS application (available soon). Both require Wi-Fi module.
- External monitoring (IP, available soon)
CLEVER KIT INCLUDES

Clever Control
- Colour TFT screen 2.8 inch
- 114 (h) x 85 (w) x 14 (d) mm
- Prepared for flush-mount installation

Intelligent PCB Box
- Electronic PCB Regulation
- 218 (h) x 140 (w) x 64 (d) mm
- Varnish Protection

PCB Power Supply
- Input: 100-240Vx1 50/60Hz (AC)
- Output: 24V 2A (DC)
- EU 2 pins / BS 3 pins plugs

RJ11 Cable
- Easy Plug & Play installation
- RJ11 (4 Pins), 7m length
  (RJ45 (8 Pins) 7/10 m length cable is included together with the air curtain/fan heater (not in clever kit)

Door Contact
- Monitoring Door Status
- Magnetic contact

Outdoor Temperature Sensor
- Real-time temperature values
- IP65 Protection

INTELLIGENT PCB

Jumper 5 pins (program)
8 Switches Modbus Address
Battery 3V CR2032
LEDs 1 Red 1 green
Reset Button
Ethernet Module
WiFi/Bluetooth Module

Digital IN (x8 +1 expandable)
Analog IN (x2 +1 expandable)
Temperature Sensors (x3 +1 TFT)

Digital OUT (x3 +1 expandable (250V 3A))
Analog OUT (x3 +1 expandable (0-10V 20mA))
24V Power OUT (24V Power Out (24V 1A))
Jumper 12 pins (Modbus)

If more than one PCB connected in serial using Modbus protocol, you should turn ON the 3 switches inside the Clever Control and use 3 jumpers at CN3, CN6 and CN7 according to the wiring diagram.
All Digital and Analogical IN/OUT are defined by default as indicated in the wiring diagram. Installer can modify and select different functions depending on their needs.

The first time you connect the Clever, the equipment will check how many temperature sensors are connected in order to select the program automatically.
The Clever Control TFT has an inbuilt temperature sensor used as inside temperature. If you want an external inside temperature sensor (different place than the controller) you should install it at TS3 (once done, TS3 has priority to the Clever Control TFT).
**SHIELDED CABLE**

To avoid reading interferences in temperature values.

(*) Other optional TS2 and TS3 can be connected to any GND inside the PCB.

---

**Connection Diagram – AIR CURTAIN - 1 Clever Control managing 1 unit (1 PCB)**

(*) If there are communication issues (interferences), use shielded cable connected to GND.
Connection Diagram – AIR CURTAIN - 1 Clever Control managing multiple units (+1 PCB)

> Please consult the operating manual of the air curtain for multiple units' connection.

Connection Diagram – FAN HEATER - 1 Clever Control managing 1 unit (1 PCB)

(*) If there are communication issues (interferences), use shielded cable connected to GND
Connection Diagram – BASIC FAN HEATER - 1 Clever Control managing multiple units (+1 PCB)

Connection Diagram – HORIZONTAL FAN HEATER - 1 Clever Control managing multiple units (+1 PCB)

Please consult the instruction manual of the fan heater for multiple units' connection.
VERY IMPORTANT:
The last connected PCB must incorporate Jumper CN6 (RTU1) and CN5 (if BMS RTU2) to enable resistances and allow a good communication. Clever Control must have the 3 Switches in ON.
By default, the Modbus address of Clever PCB is 1.

If more than one PCB is connected in serial using Modbus protocol, you should give different Modbus addresses to each PCB board (you can choose from 1 to 255). The Modbus addresses should be introduced using a binary code to the switch SW1 as examples shown in this table:

<table>
<thead>
<tr>
<th>PCB number (decimal)</th>
<th>Binary code</th>
<th>PCB switch position</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>00000001</td>
<td>10000000</td>
</tr>
<tr>
<td>2</td>
<td>00000010</td>
<td>01000000</td>
</tr>
<tr>
<td>3</td>
<td>00000011</td>
<td>11000000</td>
</tr>
<tr>
<td>4</td>
<td>00000100</td>
<td>00100000</td>
</tr>
<tr>
<td>5</td>
<td>00000101</td>
<td>10100000</td>
</tr>
<tr>
<td>6</td>
<td>00000110</td>
<td>01100000</td>
</tr>
<tr>
<td>7</td>
<td>00000111</td>
<td>11100000</td>
</tr>
<tr>
<td>8</td>
<td>00001000</td>
<td>00010000</td>
</tr>
<tr>
<td>9</td>
<td>00001001</td>
<td>10010000</td>
</tr>
<tr>
<td>10</td>
<td>00001010</td>
<td>01010000</td>
</tr>
<tr>
<td>34</td>
<td>00100010</td>
<td>01001000</td>
</tr>
<tr>
<td>58</td>
<td>00111010</td>
<td>01011100</td>
</tr>
<tr>
<td>100</td>
<td>01100100</td>
<td>00100110</td>
</tr>
</tbody>
</table>

After choosing an address, you should open the board and turn ON and OFF the correct switches of SW1 for the desired Modbus address. For example:

After modifying the new Modbus address, you should:
- Remove the power supply or click the reset button 2 seconds
- Go to initial configuration (Basic Configuration) and press "Scan" to update all Modbus addresses.
**MAIN STATE SCREEN**

Main state screen indicates of the most important settings, including: ventilation speed, heating, temperatures, door state, working mode and program, filter state, day/hour, timer, etc.
## MAIN STATE SCREEN FUNCTIONS

<table>
<thead>
<tr>
<th>Icon</th>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Fan Speed" /></td>
<td>FAN SPEED</td>
<td>Indicates the fan speed (stages or proportional)</td>
</tr>
<tr>
<td><img src="image" alt="Heating Type / Stages" /></td>
<td>HEATING TYPE / STAGES</td>
<td>Indicates the heating type (electrical, water, heat pump) and state (heating stage, ON/OFF or proportional, heating/cooling). The last sign on the right is the anti-freezing protection at water heated units (safety program to protect the water coil).</td>
</tr>
<tr>
<td><img src="image" alt="Door State" /></td>
<td>DOOR STATE</td>
<td>Indicates if the door is open or closed</td>
</tr>
<tr>
<td><img src="image" alt="Auto / Manual" /></td>
<td>AUTO / MANUAL</td>
<td>Indicates if unit works manually or automatic</td>
</tr>
<tr>
<td><img src="image" alt="Filter State" /></td>
<td>FILTER STATE</td>
<td>Indicates the state of the filter (green = clean, orange = getting dirty, red = dirty)</td>
</tr>
<tr>
<td><img src="image" alt="Energy Mode" /></td>
<td>ENERGY MODE</td>
<td>Indicates the energy saving mode: Eco, Medium or Comfort (Eco prioritizes saving energy against the comfort)</td>
</tr>
<tr>
<td><img src="image" alt="Day" /></td>
<td>TIMER</td>
<td>Indicates that timer is activated. It has 3 states: ON Day, ON Night or OFF.</td>
</tr>
<tr>
<td><img src="image" alt="Day / Night" /></td>
<td>DAY / NIGHT</td>
<td>Indicates that is activated the Day or Night Function to have two different set temperatures (in order to save energy)</td>
</tr>
<tr>
<td><img src="image" alt="Ext / BMS" /></td>
<td>EXTERNAL BMS</td>
<td>Indicates that something is interfering to the device externally or by the BMS</td>
</tr>
<tr>
<td><img src="image" alt="Unit Locked" /></td>
<td>UNIT LOCKED</td>
<td>Indicates that the unit is locked. Unit does not work until you unlock it by code.</td>
</tr>
<tr>
<td><img src="image" alt="Control Locked" /></td>
<td>CONTROL LOCKED</td>
<td>Indicates that the control is locked. Unit works but user needs a code to manage the controller.</td>
</tr>
<tr>
<td><img src="image" alt="Alarm" /></td>
<td>ALARM</td>
<td>The flashing red sign indicates that there is an alarm. If affects any parameter, it will also flash. A second screen with a message will indicate: - Name of device that have the alarm - Which alarm is - Explain or ask you to do something</td>
</tr>
<tr>
<td><img src="image" alt="Temperature" /></td>
<td>TEMPERATURES</td>
<td>Indicates the set temperature (desired). Shows the current temperatures according to the installed sensors: Ambient, outside and discharge (air jet).</td>
</tr>
<tr>
<td><img src="image" alt="Program" /></td>
<td>PROGRAM</td>
<td>Indicates the selected functioning program</td>
</tr>
<tr>
<td><img src="image" alt="Time and Date" /></td>
<td>TIME AND DATE</td>
<td>Indicates time and date</td>
</tr>
<tr>
<td><img src="image" alt="Wifi / Bluetooth" /></td>
<td>WIFI / BLUETOOTH</td>
<td>Indicates that is connected with Wi-Fi or Bluetooth</td>
</tr>
<tr>
<td><img src="image" alt="Unit Selection" /></td>
<td>UNIT SELECTION</td>
<td>When there are arrows, indicates that there is more than one device connected to the TFT. (pressing “✓” it will change to blue colour and with the arrows you can change between other units)</td>
</tr>
<tr>
<td><img src="image" alt="Device Type and Name" /></td>
<td>DEVICE TYPE AND NAME</td>
<td>Indicates the type of device: Air curtain, fan heater, etc. Name: Unit + Modbus address by default, but can be changed to identify with its own name</td>
</tr>
</tbody>
</table>
**BUTTONS NAVIGATION**

When you are managing Control Clever, text in blue colour or flashing sign indicates where you currently are.

| ON / OFF | Turn ON/OFF the equipment  
| When multi equipment (more than 1 unit) it will ask if you want to turn ON/OFF the current unit or all |
| --- | --- |
| MENU BACK EXIT | State Screen | Go to User Menu |
| | Menus | - Exit Menu (if you are in first level)  
| | | - Go back to previous menu screen (if you are in level 2 or higher)  
| | | - When editing the name, time and hour, etc. it goes back to the previous value |
| | State Screen | Manual: Modifies the ventilation (fan icon will flash). Once ventilation is chosen, button “✓” must be pressed, and then arrows buttons will modify the heating. If you press “✓” again then arrows modify the temperature set.  
| | | Auto: Modifies only the Set temperature |
| | Menus | Scroll through option (left) or editing value (between arrows) |
| SCROLL UP/DOWN GO NEXT/BACK | State Screen | Turn the device name into blue and then using arrows you can change between devices (different units and Modbus number) (Only multi-equipment) |
| | Menus | Go from left side to the right side (in order to edit the values)  
| | | Confirm the selected value (between arrows) and go back to left  
| | | Enter to edit an option with “✓” sign |

**MENUS**

There are different menus depending on who is managing the equipment:

- **“User”** very easy for final user  
- **“Basic”** with main parameters to configure the unit. Suitable for people with technical knowledge.  
- **“Advanced”** only for professionals

 المتعلَّق بالعربية: 

**اوFYTSHOIOH**

When you are managing Control Clever، تعليمات في لون أزرق أو ضوء فهد تشير إلى مكانك الحالية.

| ON/OFF | تغيّر التيار في ON/OFF  
| عند التعمال مع أكثر من وحدة، سيتم طلباتك إذا كنت تريد تغيير التيار للوحدة الحالية أو للوحدة الأخرى |
| --- | --- |
| MENU BACK EXIT | حالة الشاشة | تسجيل الدخول إلى خاصية عامل|
| | MENUS | - خفض الدورات إذا كنت في المستوى الأول |
| | | - نشاط الدورات الأعلي (إذا كنت في المستوى الثاني أو أكثر)  
| | | - عند التعديل على الاسم، وقاطع، الحالة. تسجيل الدخول إلى الأعلى السابق |
| | حالة الشاشة | التغيير في الادارة (محرك التيار سيتعثر). عند اختيار الادارة، يجب غلق “✓”، ثم أزرار الأعلى ستسجل الدورات المطلوبة. إذا غلق “✓” مرة أخرى، فإن أزرار الأعلى ستسجل الدورات المطلوبة. |
| | MENUS | تسجيل الدخول إلى الأعلى (من اليسار) أو عدم تسجيل الدخول إلى الأعلى (بين الأزرار) |
| SCROLL UP/DOWN GO NEXT/BACK | حالة الشاشة | تغيير الاسم إلى الأزرق وعند استخدام الأزرار سيتمكنك من تغيير الأجهزة (الأجهزة المختلفة والعدد المودب الرقم) (مجانًا للمواد المتعددة) |
| | MENUS | تسجيل الدخول إلى الأعلى من اليسار إلى الأيمن (للاستعراض)  
| | | التحقق من القيم المحددة (بين الأزرار) وعودة إلى اليسار|
| | | نشاط الدورات الأعلي للتعديل على القيم |

**المenus**

هناك مenus مختلفين حسب من يقوم بتعاليم المعدات: 

- **“User”** بسهولة كبيرة للأفراد المزارعين  
- **“Basic”** مع الأعمدة الرئيسية لتعاليم الوحدة. مناسبًا للمزارعين بخبرة العناية.  
- **“Advanced”** فقط للمحترفين

**Access User Menu by pressing "Menu" button**
### USER MENU

<table>
<thead>
<tr>
<th>Menu Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exit Menu (if you are in first level)</td>
<td>Go back to previous menu screen (if you are in level 2 or higher) When editing the name, time, hour, etc. it goes back to the previous value</td>
</tr>
<tr>
<td>SCROLL UP/DOWN</td>
<td>Scroll through option (left) or editing value (between arrows)</td>
</tr>
<tr>
<td>ENTER OPTION CONFIRM</td>
<td>Go from left side to the right side (in order to edit the values) Confirm the selected value (between arrows) and go back to left With “✓” sign you can edit an option.</td>
</tr>
</tbody>
</table>

#### USER MENU - SCREEN 1

- **Select Operation Mode**
  - Automatic or Manual Functioning
- **Select Energy Saving Mode**
  - **Eco**: Uses the less energy possible
  - **Medium**: In between Eco / Comfort modes.
  - **Comfort**: Spends more ventilation/heating to maintain or achieve quicker the set temperature
- **Adjust Time Programmer**
  - Automatic ON/OFF (see below)
- **Adjust Time and Date** (see below)

#### USER MENU - SCREEN 2

- **Adjust Day / Night Temperature**
  - 2 Different Set temperatures
- **Enter into Basic Configuration Menu:**
  - *Code required to access to technical parameters*
- **Enter into Advanced Configuration Menu:**
  - *Code required to access to professional area*
- **Force Reset**
  - Restart the Clever Control

---

**User Menu**

- **Operation Mode**
  - Automatic
- **Energy Saving**
  - Medium
- **Time programmer**
  - Edit
- **Adjust Time**
  - Edit

**User Menu**

- **Day / Night Temperature**
  - Edit
- **Basic Configuration**
  - Edit
- **Advanced Configuration**
  - Edit
- **Force Reset**
  - Edit

**TFT v 6.0 - PCB v 6.0**
By default it's OFF, showed as "Disable"

To activate to turn it into "Enable" and press “✓” button to activate it and show all the options

TIME PROGRAMMER MENU - SCREENS 1 y 2

- Enable / Disable Time Programmer.
- Select "Day Type" group.
- Create from 1 to 10 different Timer Actions
- Erase selected action.
User Menu / TIME PROGRAMMER

**Day Type:**

- **Custom (default):**
  To make the choice of groups easier you can choose among predefined groups of days that will have the same program.

Groups are:

- **Custom (by default):** Customize each day with a different schedule, it must be programmed daily with desired schedule.
- **Mon-Fri:** Monday to Friday
- **Mon-Sat:** Monday to Saturday
- **Mon-Sun:** Monday to Sunday
- **Mon-Fri Sat:** Monday to Friday and separately Saturday
- **Mon Fri-Sat-Sun:** Monday to Friday and separately Saturday to Sunday

**Actions:**

Use Scroll Up/Down button to select an Action, and press “✓” button to create a new one or edit an existing one.
New Action / Edit Action:

**Timer Actions - Screen 1**

**Action:** (by default “NO”)
- **Day:** Turn ON the unit using “Day Temperature” (set in Day/Night Temperature Menu)
- **Night:** Turn ON the unit using “Night Temperature” (set in Day/Night Temperature Menu)
- **ON:** Turn ON the unit using “Set” temperature
- **OFF:** Turn OFF the unit
- **V1,V2,V3,V4,V5:** Turn ON the unit with ventilation speed 1, 2, 3, 4 or 5.

**Time:**
- **Hour:** Select from 0 to 23 h
- **Minute:** Select from 0 to 59 min

**Confirm:** Should press to confirm your selection and go back to Timer general menu

**Erase:** If you want to delete the editing action, select **Yes** and press “✓”.

User Menu / ADJUST TIME

This function adjusts the general time and date of the Control.

1. Use Scroll Up/Down buttons to select a number, which will represent the hour time (from 0 to 23h). Press “✓” button to accept time and move to next value.

2. Repeat the same process until adjusting **Hour**, **Minute**, **Day**, **Month** and **Year** values.

3. Press “✓” button to accept and go back to general User Menu.
User Menu / DAY - NIGHT TEMPERATURE

This function adjusts the Day/Night Set Temperatures. User can select between Day or Night modes with 2 different Set temperatures in order to save energy.

1. Use Scroll Up/Down buttons to select Day or Night, value.
2. Press “✓” button to enter into selected option.
3. Use Scroll Up/Down buttons to enter temperature values. Press “✓” button when finished.

User Menu / BASIC CONFIGURATION (MENU)

In Basic Configuration mode the technician can configure the main parameters of the clever control.

BASIC CONFIGURATION - SCREEN MENU

- Select Working Program (see below)
- Equipment Configuration (see below)
- Adjust Water Heating Mode
  Only water heated and heat pump units:
  ON/OFF or Proportional (0-10V)
- Parameters (see below)
- General Alarm
  Define which alarms activate the general alarm (digital OUT)
- Filter Revision: Define hours to next revision
- Counters
  Consult Working/Heating/Filter hours
- Lock Control
  Unit in OFF and protected by a code
- Change Basic Code
Enter Code

When entering Basic Configuration Menu, a security code must be introduced to access. Consult section “Codes: Access and change”.

<table>
<thead>
<tr>
<th>Basic Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter Code</td>
</tr>
</tbody>
</table>

1. Use Scroll Up/Down buttons to enter first digit’s value.
2. Press “✓” button to move to next digit.
3. Repeat the same process until the code is fully entered.

User Menu / Basic Configuration / WORKING PROGRAM – AIR CURTAINS

Clever has different operating programs depending on:
- Type of functioning: Manual or Automatic
- Type of heating: unheated, electrical heated, water heated, heat pump
- Energy saving mode: Eco, Medium or Comfort

Manual:

- **P1**: Manually you can select ventilation speed and heating stage (also with heat pump units you can select cooling or heating mode)

- **P2**: Manually you can select ventilation speed and heating stage depending on door state (also with heat pump units you can select cooling or heating mode):
  - When the door is open, you select the door open ventilation speed and heating stage.
  - When the door is closed, you select the door closed ventilation speed and heating stage.

At all programs, if ambient temperature >= set temperature, depending on energy saving mode it will:

- **Comfort**: nothing is modified
- **Medium**: heating is stopped
- **Eco**: stops the air curtain
Automatic:

Depending on door state, Clever will regulate itself the ventilation and heating thanks to its temperature sensors and energy saving mode, to achieve the maximum efficiency according to selected parameters.

- **P1**: Functioning according to:
  - Set and inside temperature
  - Door state
  - Energy saving mode

- **P2**: Functioning according to:
  - Set and external temperature
  - Door state
  - Energy saving mode

- **P3/4**: Functioning according to:
  - Door opened: Set Temperature and External Temperature
  - Door closed: Set Temperature and Inside Temperature
  - P3/4: Energy saving mode (P3 with door opened always in Comfort Mode)
Clever has different operating programs depending on:
- Type of functioning: Manual or Automatic
- Type of heating: electrical heated, water heated or heat pump
- Energy saving mode: Eco, Medium or Comfort

**Manual:**

- **P1:** Manually you can select ventilation speed and heating stage
- **P2:** Manually you can select ventilation speed and heating stage depending on door state:
  - When the door is open, you select the door open ventilation speed and heating stage.
  - When the door is closed, you select the door closed ventilation speed and heating stage.
  (Minimum required sensors: door contact)

At all programs, if ambient temperature &ge; set temperature, depending on energy saving mode it will:
- **Comfort:** nothing is modified
- **Medium:** heating is stopped
- **Eco:** stops the air curtain

**Automatic:**

Depending on program, Clever will regulate itself the ventilation and heating thanks to its temperature sensors, door state and energy saving mode, to achieve the desired temperature.

- **P1/2:** Functioning according to:
  - Set and inside temperature P1 or outside temperature P2
  - Energy saving mode
    P2 stops the unit if ambient temperature &gt; set temperature (while P1 runs at minimum programmed speed)
  (Minimum required sensors: P1 door contact, P2 outside temperature sensor. Recommended: door contact)

- **P3/4:** Functioning according to:
  - Door opened: depending on temperature difference between ambient and set and energy saving mode it will work at maximum programmed speed and heating for door open or will work as door closed.
  - Door closed: Works like P1 (P3) and P2 (P4)
  (Minimum required sensors: outside temperature sensors. Recommended: door contact)
User Menu / Basic Configuration / CONFIGURATION (INITIAL)

CONFIGURATION MENU – FIRST SCREEN
- Select the language: English, Spanish, Catalan, Swedish, Danish, Polish, French, Italian, Finish, German, Dutch, Turkish, Latvian, and Norwegian.
- Select Port Baud speed (this one must not be changed)
- Select Port Baud 2 speed

CONFIGURATION MENU – MIDDLE SCREEN/S
It will appear 1 screen for each different device
- Select the type of unit: air curtain, fan heater, etc.
- Select the name of the unit (by default “Unit + Modbus address”)
- Select the fan speed
  Air Curtains: 2 or 5
- Select the heating
  Air (unheated), Electrical (heated), Water (heated) or Heat Pump
  New questions/options can appear if required.

CONFIGURATION MENU – LAST SCREEN
- Confirm: “Yes” to accept all changes, “No” to go back without saving
- Scan (1-12): quick search
  Scan Config: search within a Modbus set range
  Search connected equipment to the TFT
  *Searching Equipment* screen will appear
- Searching temperature sensors
  Search again or update new temperature sensors.
  It will also change the program to the best option according to the new sensors
In this option, you can edit or rename the unit denomination, to identify it easily.

There is a maximum length of 12 digits available, including letters (either in lowercase or uppercase), numbers, space and other common alphanumerical symbols.

When entering to the Edit's Name screen, scroll up or down through the first digit to start creating the name.

Menu Navigation

**Enter name (less than 12 digits)**

1. Use Scroll Up/Down buttons to move through all characters available. Press “✓” button to select and move to next character.

2. If the name is completed before reaching the total digits, go to “✓” sign to indicate that the edition is finished and confirm

3. Once in Confirm option, press “✓” button to accept and go back to general menu.

**Enter name (using 12 digits)**

1. Use Scroll Up/Down buttons to move through all characters available. Press “✓” button to select and move to next character.

2. If the total 12 digits length is completed, at the 12th character you only have to Confirm to finish the edition

3. Once in Confirm option, press “✓” button to accept and go back to general menu.
Clever control has a General Alarm (digital OUT) that will be activated depending on the selected alarms.

The technician can indicate "Yes" or "No" to all alarms that will activate the General Alarm. If only 1 of those alarms is activated, the general alarm will be also activated.

**GENERAL ALARM MENU - SCREEN 1**

- Overheating Alarm
- Autocooling Alarm
- Dirty Filter Alarm
- Fan Overheating alarm
- Heating Lock Alarm
- Air Flow alarm
- Fire Alarm
- Temperature Sensor Alarm
- RPM Fan Alarm

**GENERAL ALARM MENU - SCREEN 2**

- External Stop Alarm
- External Alarm
- Anti Freeze Alarm
- EC Fan Alarm
User Menu / Basic Configuration / GENERAL ALARM

- **Overheating**
  Indicates that inside the unit there is an overheating. Security program to protect the unit will automatically activate.

- **Autocooling Alarm**
  If we turn the unit off and it has been working with heating (electrical heating), the self-cooling safety program activates automatically to protect the internal components of the equipment. It starts ventilation temporarily to reduce the effects of thermal inertia.

- **Dirty Filter Alarm**
  It indicates that the filter is dirty. It’s activated by hours timer or external pressure switch.

- **Fan Overheating Alarm**
  It indicates that there is an overheating inside the fans of the unit.

- **Heating Lock Alarm**
  It indicates that the heating has been blocked.

- **Air Flow Alarm**
  It indicates that the airflow is too low or 0.

- **Fire Alarm**
  It indicates fire alarm.

- **Temperature Sensor Alarm**
  It indicates a temperature sensor error.

- **RPM Fan Alarm**
  It indicates that RPM of the fan are wrong.

- **External Stop Alarm**
  It indicates that external alarm has switched OFF the unit.

- **External Alarm**
  It indicates an external alarm.

- **Anti Freeze Alarm**
  It indicates that anti-freezing sensor is below the set temperature. It activates the safety program to protect the water coil.

- **EC Fan Alarm**
  It indicates an error of the EC fan.
User Menu / Basic Configuration / PARAMETERS

BASIC PARAMETERS MENU

- Unit's Ventilation Speed (when Door Open/Closed)
- Unit's Heating (when Door Open/Closed)
- Temperature (Set Point Limits, calibration, Discharge Temperature, Antifreeze)
- Disable (Manual/Auto Heating /Cooling due to Ext Temperature)
- Door (Temporized, Delay Type, Delay Stages)
- Timeout Screen Menu (seconds to turn back to the previous menu automatically)
- Time To Screen Off (seconds to turn off TFT automatically)
- Min Damper (minimum opening of the Damper)

Use Scroll Up/Down buttons to move and select an option. When option is highlighted in blue, press “✓” button to enter and edit.

User Menu / Basic Configuration / Parameters / SPEED

- Min / Max Speed when Door Open
- Min / Max Speed when Door Closed
- Max Speed Cool Signal
  Only in cooling mode units, when the outdoor unit is in cooling mode you can limit the speed of the unit in order to control the condensation.
- Min Voltage AOVent1: Defines the minimum voltage at analogic out AOVent1 to start the fan.
- Proportional fan: Changes ventilation from speeds (2 or 5) to proportional 0-100%
- QuickStart: Fans starts at maximum speed during QST time
- QuickStartTime: Time that QuickStart remains at maximum speed.
- Stratification Step: Temperature difference (between ceiling and room) that starts anti-stratification
User Menu / Basic Configuration / Parameters / HEATING

### Heating

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min Heating Door Open</td>
<td>▼ 0 ▲</td>
</tr>
<tr>
<td>Max Heating Door Open</td>
<td>▼ 3 ▲</td>
</tr>
<tr>
<td>Min Heating Door Closed</td>
<td>▼ 0 ▲</td>
</tr>
<tr>
<td>Max Heating Door Closed</td>
<td>▼ 3 ▲</td>
</tr>
<tr>
<td>% Min Heating Door Open</td>
<td>▼ 0 ▲</td>
</tr>
<tr>
<td>% Max Heating Door Open</td>
<td>▼ 100 ▲</td>
</tr>
<tr>
<td>% Min Heating Door Closed</td>
<td>▼ 0 ▲</td>
</tr>
<tr>
<td>% Max Heating Door Closed</td>
<td>▼ 100 ▲</td>
</tr>
<tr>
<td>Stop HP Door Closed</td>
<td>▼ 10 ▲</td>
</tr>
</tbody>
</table>

- **Min / Max Heating when Door Open**
- **Min / Max Heating when Door Closed**
- **% Min / Max Heating when Door Open**
- **% Min / Max Heating when Door Closed**

- **Stop Heat Pump when Door is Closed**
  Only for heat pump units, it limits the OFF time of the heat pump when door closes, waiting the selected minutes. If door is opened again before this time elapses, heat pump will not be turned OFF.

- **Heating Min % Open**: defines minimum water flow at any situation to prevent freezing of pipes (Proportional).

User Menu / Basic Configuration / Parameters / TEMPERATURE

### Temperature

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Point Limits</td>
<td>✔ Edit</td>
</tr>
<tr>
<td>Calibration</td>
<td>✔ Edit</td>
</tr>
<tr>
<td>Discharge Temperature</td>
<td>✔ Edit</td>
</tr>
<tr>
<td>Enable Antifreeze</td>
<td>▼ 10 ▲</td>
</tr>
<tr>
<td>Temperature Units</td>
<td>▼ °C ▲</td>
</tr>
<tr>
<td>Cooling ON</td>
<td>▼ No ▲</td>
</tr>
<tr>
<td>Set cold pipe</td>
<td>▼ 10 ▲</td>
</tr>
<tr>
<td>Set heating pipe</td>
<td>▼ 40 ▲</td>
</tr>
</tbody>
</table>

- **Set Point Limits**
  *See below*
- **Calibration**
  *See below*
- **Discharge Temperature**
  *See below*
- **Enable Antifreeze**
  Uses external temperature sensor as anti-freezing sensor
- **Temperature Units**
  To choose between °Celsius or °Fahrenheit.
- **Cooling ON** (by default NO)
  For water or heat pump coils working in cooling mode.
- **Set cold pipe**
  Uses cold/heat temperature sensor. If it’s below the set temperature, Clever will start cold mode.
- **Set heating pipe**
  It is used in two different kind of sensors:
  a) Uses cold/heat temperature sensor. If it’s over the set temperature, Clever will start heating mode.
  b) Uses return temperature sensor. It does not allow to return the water to more degrees of the set temperature.
User Menu / Basic Configuration / Parameters / Temperature / SET POINT LIMITS

<table>
<thead>
<tr>
<th>Set Point Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min Setpoint Day</td>
</tr>
<tr>
<td>Max Setpoint Day</td>
</tr>
<tr>
<td>Min Setpoint Night</td>
</tr>
<tr>
<td>Max Setpoint Night</td>
</tr>
</tbody>
</table>

- **Min / Max Setpoint Day**
  Limit the minimum and maximum Day temperature that the user can set.

- **Min / Max Setpoint Night**
  Limit the minimum and maximum Night temperature that the user can set.

User Menu / Basic Configuration / Parameters / Temperature / CALIBRATION

<table>
<thead>
<tr>
<th>Calibration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor Calibration1</td>
</tr>
<tr>
<td>Sensor Calibration2</td>
</tr>
<tr>
<td>Sensor Calibration3</td>
</tr>
<tr>
<td>Sensor Calibration Int</td>
</tr>
</tbody>
</table>

- **Sensors Calibration**
  These parameters allow to calibrate each temperature sensor with +/- X °C (plus or minus degrees).

User Menu / Basic Configuration / Parameters / Temperature / DISCHARGE TEMP (Available soon)

<table>
<thead>
<tr>
<th>Discharge Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comfort Mode</td>
</tr>
<tr>
<td>Medium Mode</td>
</tr>
<tr>
<td>Eco Mode</td>
</tr>
</tbody>
</table>

- **Comfort Mode**
  Set maximum discharge temperature in Comfort mode.

- **Medium Mode**
  Set maximum discharge temperature in Medium mode.

- **Eco Mode**
  Set maximum discharge temperature in Eco mode.
User Menu / Basic Configuration / Parameters / DISABLE DUE EXT TEMP

- **Heating Due Ext Temp Man**
  In Manual operating, stops heating if external temperature is over to selected degrees.

- **Cooling Due Ext Temp Man**
  In Manual operating, stops cooling if external temperature is over to selected degrees.

- **Heating Due Ext Temp Auto**
  In Auto operating, stops heating if external temperature is over to selected degrees.

- **Cooling Due Ext Temp Auto**
  In Auto operating, stops cooling if external temperature is over to selected degrees.

- **Stop Due Ext Temp**
  Stops the unit if external temperature is over to selected degrees.

- **Range to Stop Due Ext Temp**
  Stops the unit if external temperature is between Lower and Upper limit degrees.

If you select “NO” it does not stop anything

<table>
<thead>
<tr>
<th>Disable Due Ext Temp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Due Ext Temp Man</td>
</tr>
<tr>
<td>Cool Due Ext Temp Man</td>
</tr>
<tr>
<td>Heat Due Ext Temp Aut</td>
</tr>
<tr>
<td>Cool Due Ext Temp Aut</td>
</tr>
<tr>
<td>Stop Due Ext Temp</td>
</tr>
<tr>
<td>Range to Stop Due Ext Temp</td>
</tr>
<tr>
<td>Upper limit</td>
</tr>
<tr>
<td>Lower limit</td>
</tr>
</tbody>
</table>

User Menu / Basic Configuration / Parameters / DOOR

- **Temporized Door OUT**

If the air curtains should be working at nominal speed or heating when you open the door, you can program at “temporized door out signal” how many seconds the door should remain closed while the air curtain is preparing itself.

Once this time is finish, it will give the signal open to the door.

If time is different than 0 (activated) remember to select the function at one of the available digital outlets.
Delay Close Door

When the door closes, the air curtain remains working at door open conditions for certain time to be ready if it's open again.

The regulation of the unit during this delay time is divided in two strength stages. During the first stage, the unit works according to Open Door parameters (ventilation and heating). During the second stage, ventilation and heating are reduced in order to save energy.

There are two types: “Fixed” where you can select the duration of the delay, or “Flexible” which adapts automatically the time depending on how often the door is open.

<table>
<thead>
<tr>
<th>Door</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Temporized Door OUT</td>
<td>▼ 0 ▲</td>
</tr>
<tr>
<td>Delay Close Door</td>
<td>▼ Flexible ▲</td>
</tr>
</tbody>
</table>

Flexible = Proactive

It adapts the delay functioning according to the traffic of people that crosses the door.

It detects how many times the door is open for the last minutes and adapts the door delay times and strengths to those conditions in order to save energy.

Fixed:

You can set how many seconds will stay at step 1 and then how many seconds will last with step 2.

The functioning is progressive as Step 1 is stronger than Step 2.
User Menu / Basic Configuration / FILTER: HOURS TO NEXT REVISION

Filter: Hours To Next Revision
By default, the filter alarm by hours is activated. It will give us a message that the filter is dirty and ask if we have cleaned it. If so, it will restart the filter counter. Here we can modify the hours to next filter revision.

User Menu / Basic Configuration / COUNTERS

Filter: Hours To Next Revision
It displays the hours without changing the filter / total hours before filter alarm 50/300 = working 50h since last filter alarm and remains 250h to next filter alarm

Working Hours
Counter of all working hours

Heating Working Hours
Counter of only heating working hours

User Menu / Basic Configuration / LOCK CONTROL TO USERS

Enable Lock Control
It will lock the control and the user will have to enter a code to access.

Change Lock Code
The user can modify the lock code
Clever control has different access levels protected by different codes.

**Access levels:**
- User menu: Access without code.
- Basic configuration: Code 1234 (by default).
- Advanced configuration: Only for professionals, please consult

If you want to protect the control from end users, you can lock the control or the unit.

**User protections:**
- Control Locked: Code 1234 by default (unit will remain working)
- Unit Locked: Code 1234 by default (unit will stop)

**Change the codes:** you will have to enter twice the new code.

**IMPORTANT:** code 0000 is not allowed.
**User Menu / ADVANCED CONFIGURATION**

- **Lock Device**
  Lock the unit with code. The unit will be OFF while locked.

- **Parameters**
  Configure Advanced parameters

- **IN/OUT**
  Configure the functions at:
  - Digital IN
  - Digital OUT
  - Analog IN
  - Analog OUT
  Configure temperature sensors
  Configure connections

- **Change Advanced Code**
  You can modify the password

- **Recovery to defaults**
  It turns all parameters to default except the selection made in initial configuration

**User Menu / Advanced Configuration / ADVANCED PARAMETERS**

- **Intervals**
  Intervals are used at automatic programs to modify the ventilation and heating in order to have the most efficient separation.
  Set/Ambient Temp: 2ºC default
  Set/External Temp: 2ºC default
  Hysteresis: 1ºC default

- **Fans Overheating**
  Determines the time the fan stops if there is a fan overheating.
  If it happens more than “X” times in “Y” interval, the heating will be blocked.
  Time of initial stop: 120seg by default
  Detection number: 2 times by default
  Time interval: 30 min by default

- **Fan RPM**
  Under construction

- **Int Modulation P5 0-10V sec**
  At program 5, establishes the interval of modulation in seconds.
Digital Inputs
Modify the functions of Digital Inputs

Digital Outputs
Modify the functions of Digital Outputs

Analog Inputs
Modify the functions of Analog Inputs

Analog Outputs
Modify the functions of Analog Outputs

Temperature Sensors
Modify the functions of temperature sensors

Communications
Configure the communications

Digital Inputs

You can select a function to each Digital IN
Each entrance can be configured to N/O or N/C (normally open/close)

Digital Outputs

You can select a function to each Digital OUT

Analog Inputs

All Analog IN are 0-10V
You can select a function to each Analog IN
Each entrance can be enabled or disabled
### User Menu / Advanced Configuration / IN-OUT

#### Analog Outputs

<table>
<thead>
<tr>
<th>Out</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Out1</td>
<td>Heating 1</td>
</tr>
<tr>
<td>Out2</td>
<td>Fan Speed 1</td>
</tr>
<tr>
<td>Out3</td>
<td>10V Power Supply</td>
</tr>
<tr>
<td>Out4</td>
<td>Not Assigned</td>
</tr>
</tbody>
</table>

All Analog OUT are 0-10V

You can select a function to each Analog OUT

#### Temperature Sensors

<table>
<thead>
<tr>
<th>Sensor</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor 1</td>
<td>Outdoor</td>
</tr>
<tr>
<td>Sensor 2</td>
<td>Not Assigned</td>
</tr>
<tr>
<td>Sensor 3</td>
<td>Not Assigned</td>
</tr>
<tr>
<td>Enable Controller</td>
<td>Yes</td>
</tr>
</tbody>
</table>

By default:

Sensor 1 = Outdoor  
Sensor 2 = Air Discharge  
Sensor 3 = Inside  
Controller Enabled = Yes

Inside sensor has priority to the controller’s one. If it’s not connected, automatically uses the TFT control.

When you connect and configure the unit the first time, it detects automatically the sensors and selects the best available program.
# Connections and Functions: IN/OUT of Digital/Analogic and Temperature Sensors

## ANALOG IN

<table>
<thead>
<tr>
<th>Only Air</th>
<th>Electrical</th>
<th>Water</th>
<th>DX</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating</td>
<td></td>
<td></td>
<td></td>
<td><strong>Electrical Heated Units:</strong>&lt;br&gt;0 - 0.2V: Do not modify the control setting&lt;br&gt;0.3 – 3.2V: Heating Stage 1&lt;br&gt;3.3 – 6.2V: Heating Stage 2&lt;br&gt;6.3 – 10.2V: Heating Stage 3&lt;br&gt;<strong>Water Heated Open/Close:</strong>&lt;br&gt;0 - 0.2V: Do not modify the control setting&lt;br&gt;0.3 – 10.2V: 100%&lt;br&gt;<strong>Water Heated or Heat Pump Proportional:</strong>&lt;br&gt;0 - 0.2V: Do not modify the control setting&lt;br&gt;0.3 – 1.2V = 10%&lt;br&gt;1.3 – 2.2V = 20%&lt;br&gt;2.3 – 3.2V = 30%&lt;br&gt;3.3 – 4.2V = 40%&lt;br&gt;4.3 – 5.2V = 50%&lt;br&gt;5.3 – 6.2V = 60%&lt;br&gt;6.3 – 7.2V = 70%&lt;br&gt;7.3 – 8.2V = 80%&lt;br&gt;8.3 – 9.2V = 90%&lt;br&gt;9.3 – 10.2V = 100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ventilation Speed</th>
<th></th>
<th></th>
<th></th>
<th><strong>Observations</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 0.2V: Do not modify the control setting&lt;br&gt;0.3 – 2.2V: Fan Speed 1&lt;br&gt;2.3 – 4.2V: Fan Speed 2&lt;br&gt;4.3 – 6.2V: Fan Speed 3 (2a a 2v)&lt;br&gt;6.3 – 8.2V: Fan Speed 4 (2a a 2v)&lt;br&gt;8.3 – 10.2V: Fan Speed 5 (2a a 2v)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Set Temperature</th>
<th></th>
<th></th>
<th></th>
<th><strong>Observations</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 0.2V: Do not modify the control setting&lt;br&gt;0.3 – 1.2V = 19°C&lt;br&gt;1.3 – 2.2V = 20°C&lt;br&gt;2.3 – 3.2V = 21°C&lt;br&gt;3.3 – 4.2V = 22°C&lt;br&gt;4.3 – 5.2V = 23°C&lt;br&gt;5.3 – 6.2V = 24°C&lt;br&gt;6.3 – 7.2V = 25°C&lt;br&gt;7.3 – 8.2V = 26°C&lt;br&gt;8.3 – 9.2V = 27°C&lt;br&gt;9.3 – 10.2V = 28°C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## ANALOG OUT

<table>
<thead>
<tr>
<th>Only Air</th>
<th>Electrical</th>
<th>Water</th>
<th>DX</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Damper 1</td>
<td></td>
<td></td>
<td></td>
<td><strong>Modulates a damper during stratification function</strong></td>
</tr>
<tr>
<td>Power Supply 10V</td>
<td></td>
<td></td>
<td></td>
<td><strong>Convert analogical entrance to digital (pending)</strong></td>
</tr>
<tr>
<td>Heating 3</td>
<td>Idem Heating 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heating 2</td>
<td>Idem Heating 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heating 1</td>
<td></td>
<td></td>
<td></td>
<td><strong>Voltage between 0-10V according to the functioning:</strong></td>
</tr>
</tbody>
</table>

| Observations | **Electrical Heated Units:**<br>0 - 0.2V: Heating OFF<br>0.3 – 3.2V: Heating Stage 1<br>3.3 – 6.2V: Heating Stage 2<br>6.3 – 10.2V: Heating Stage 3<br>**Water Heated Open/Close:**<br>0 - 0.2V: Heating OFF = Closed<br>0.3 – 10.2V: Heating ON = Open<br>**Water Heated or Heat Pump Proportional:**<br>0 - 0.2V: OFF<br>0.3 – 1.2V = 10%<br>1.3 – 2.2V = 20%<br>2.3 – 3.2V = 30%<br>3.3 – 4.2V = 40%<br>4.3 – 5.2V = 50%<br>5.3 – 6.2V = 60%<br>6.3 – 7.2V = 70%<br>7.3 – 8.2V = 80%<br>8.3 – 9.2V = 90%<br>9.3 – 10.2V = 100%<br>|

| Ventilation 3 | Idem Ventilation 1 |
| Ventilation 2 | Idem Ventilation 1 |

| Observations | **Ventilation 3**<br>Voltage between 0-10V according to the functioning:<br>0 - 0.2V: Ventilation OFF<br>0.3 – 2.2V: Fan Speed 1<br>2.3 – 4.2V: Fan Speed 2<br>4.3 – 6.2V: Fan Speed 3 (Speed 2 for air curtain with 2 speed)<br>6.3 – 8.2V: Speed 4 (Speed 2 for air curtain with 2 speed)<br>8.3 – 10.2V: Speed 5 (Speed 2 for air curtain with 2 speed) |

| Ventilation 1 | Idem Ventilation 1 |

| Observations | **Ventilation 1**<br>Voltage between 0-10V according to the functioning:<br>0 - 0.2V: Ventilation OFF<br>0.3 – 2.2V: Fan Speed 1<br>2.3 – 4.2V: Fan Speed 2<br>4.3 – 6.2V: Fan Speed 3 (Speed 2 for air curtain with 2 speed)<br>6.3 – 8.2V: Speed 4 (Speed 2 for air curtain with 2 speed)<br>8.3 – 10.2V: Speed 5 (Speed 2 for air curtain with 2 speed) |
## DIGITAL OUT

<table>
<thead>
<tr>
<th>Only Air</th>
<th>Electrical</th>
<th>Water</th>
<th>DX</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>Exc water T Out</td>
<td>DX</td>
<td>Indicates that the valve is modulated to regulate the water return temperature. Not used in heat pump</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Cooling mode</td>
<td>Cooling mode</td>
<td>Indicates that cooling mode is active</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Heating Mode</td>
<td>Heating Mode</td>
<td>Indicates that heating mode is active</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Do ext</td>
<td></td>
<td>Indicate/activate an extract fan on the roof if required by stratification function. (extracts air from the inside the building to outside)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Do est</td>
<td></td>
<td>Indicate/activate a ceiling fan inside if required by stratification function (blows air from the ceiling to the floor inside the building)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alarm - EC fan</td>
<td></td>
<td>Indicate alarm of EC fan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Temporized door</td>
<td></td>
<td>Indicate/activate door signal (When the air curtain starts working, it counts X seconds and then give the signal open to the door. Air curtain is working at nominal speed)</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Damper 3</td>
<td></td>
<td>Not used</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Damper 2</td>
<td></td>
<td>Not used</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Damper 1</td>
<td></td>
<td>Not used</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Fan Stop Alarm</td>
<td></td>
<td>Not used</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Antifreezing</td>
<td></td>
<td>Indicates alarm of antifreezing (to avoid damages in the water coil due to low temperatures. Stops ventilation and turns on heating) Not used in heat pump</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Exc Water Temp</td>
<td></td>
<td>Not used</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Exc Water Temp</td>
<td></td>
<td>Not used</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Boiler ON</td>
<td></td>
<td>Indicate/turns on the boiler</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Lock Heat Pump</td>
<td></td>
<td>Not used</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Heat Pump On</td>
<td></td>
<td>Not used</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Drain pump ON</td>
<td></td>
<td>Indicate/turns on the drain pump (when cooling)</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Cool ON</td>
<td></td>
<td>Indicates or changes to Cooling mode</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Heating stage 2</td>
<td></td>
<td>Indicates or turns on heating stage 2 of electrical heating element</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Heating stage 1</td>
<td></td>
<td>Indicates or turns on heating stage 1 of electrical heating element</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Fan Speed Low</td>
<td></td>
<td>Not used</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Fan Speed High</td>
<td></td>
<td>Not used</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alarm - Fire</td>
<td></td>
<td>Indicates fire alarm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alarm - Airflow</td>
<td></td>
<td>Indicates airflow</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Heating Lock</td>
<td></td>
<td>Indicates or blocks the electrical heating</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alarm - Fans Overheating (TK)</td>
<td></td>
<td>Indicates fans overheating alarm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alarm - Filter</td>
<td></td>
<td>Indicates filter alarm</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>Autocooling</td>
<td></td>
<td>Indicates autocooling (When you stop the unit, if there is an internal overheating it cools itself to protect internal components. It works only in OFF) Not used in heat pump</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Alarm - Overheating</td>
<td></td>
<td>Indicates internal overheating when unit is ON (safety program should run to protect internal components)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alarm - General</td>
<td></td>
<td>Indicates general alarm. Its a group of predefined alarms. If only 1 of those alarms is activated, activates the general alarm. User can select the alarms of the group.</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Heating ON</td>
<td></td>
<td>Indicates or turns on heating</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Run signal</td>
<td></td>
<td>Indicates that ventilation is working</td>
</tr>
</tbody>
</table>
### DIGITAL IN

<table>
<thead>
<tr>
<th>Only Air</th>
<th>Electrical</th>
<th>Water</th>
<th>DX</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alarm - EC fan</td>
<td></td>
<td></td>
<td></td>
<td>Activates EC fan alarm, stops the air curtain and blocks heating</td>
</tr>
<tr>
<td>Alarm - Overheating</td>
<td></td>
<td></td>
<td></td>
<td>Activates overheating alarm. Unit ON: modifies ventilation and heating to decrease internal temperature. At electrical heated units if alarm persists it can block the electrical heater element. Unit OFF: maximum ventilation Not used in heat pump.</td>
</tr>
<tr>
<td>ON Night</td>
<td></td>
<td></td>
<td></td>
<td>Turns on the unit at night temperature. User can't stop the unit and timer won't work.</td>
</tr>
<tr>
<td>ON Day</td>
<td></td>
<td></td>
<td></td>
<td>Turns on the unit at day temperature. User can't stop the unit and timer won't work.</td>
</tr>
<tr>
<td>ON</td>
<td></td>
<td></td>
<td></td>
<td>Turns on the unit as it was when working.</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Cool</td>
<td></td>
<td>Changes heating mode to Cool</td>
</tr>
<tr>
<td>Force Night</td>
<td></td>
<td></td>
<td></td>
<td>Changes to Night temperature</td>
</tr>
<tr>
<td>Force Day</td>
<td></td>
<td></td>
<td></td>
<td>Changes to Day temperature</td>
</tr>
<tr>
<td>Alarm - Fire OFF</td>
<td></td>
<td></td>
<td></td>
<td>Activates fire OFF alarm and stops the air curtain</td>
</tr>
<tr>
<td>Alarm - Fire ON</td>
<td></td>
<td></td>
<td></td>
<td>Activates fire ON alarm and turns on the air curtain</td>
</tr>
<tr>
<td>Alarm - Airflow</td>
<td></td>
<td></td>
<td></td>
<td>Activates airflow alarm when is activated more than 30 seconds and stops the heating</td>
</tr>
<tr>
<td>Alarm - Fan overheating (TK)</td>
<td></td>
<td></td>
<td></td>
<td>Activates fan overheating alarm and stops the air curtain. If persist it can block the air curtain</td>
</tr>
<tr>
<td>Alarm - External (TK)</td>
<td></td>
<td></td>
<td></td>
<td>Activates external alarm (nothing else)</td>
</tr>
<tr>
<td>Alarm - External OFF</td>
<td></td>
<td></td>
<td></td>
<td>Active l’alarme externe OFF et arrête l’appareil.</td>
</tr>
<tr>
<td>Force Automatic Mode</td>
<td></td>
<td></td>
<td></td>
<td>Changes to Automatic mode</td>
</tr>
<tr>
<td>Force Manual Mode</td>
<td></td>
<td></td>
<td></td>
<td>Changes to Manual mode</td>
</tr>
<tr>
<td>Control Lock</td>
<td></td>
<td></td>
<td></td>
<td>Locks the control and a code is required to use the controller</td>
</tr>
<tr>
<td>-</td>
<td>Heating Lock</td>
<td>-</td>
<td>Heating Lock</td>
<td>Stops and blocks the electrical element Not used in heat pump.</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Antifreezing</td>
<td>Activates filter alarm when is activated more than 30 seconds.</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Heating OFF</td>
<td>It stops ventilation and turns on heating. It works always (unit ON and OFF).</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Heating OFF</td>
<td></td>
<td>Stops the heating</td>
</tr>
<tr>
<td>OFF</td>
<td></td>
<td></td>
<td></td>
<td>Stops the unit</td>
</tr>
<tr>
<td>Door Contact</td>
<td></td>
<td></td>
<td></td>
<td>Change state of the door and modify functionig according to the programs</td>
</tr>
</tbody>
</table>

### TEMPERATURE SENSORS

<table>
<thead>
<tr>
<th>Only Air</th>
<th>Electrical</th>
<th>Water</th>
<th>DX</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roof</td>
<td></td>
<td></td>
<td></td>
<td>Air sensor at the ceiling (inside the building) to detect stratification</td>
</tr>
<tr>
<td>Return Pipe</td>
<td></td>
<td></td>
<td></td>
<td>Tube sensor to limit the water return temperature</td>
</tr>
<tr>
<td>Pipe Cool/Heat</td>
<td></td>
<td></td>
<td></td>
<td>Tube sensor to detect the mode cool/heating depending on temperature</td>
</tr>
<tr>
<td>Discharge</td>
<td></td>
<td></td>
<td></td>
<td>Air sensor at discharge</td>
</tr>
<tr>
<td>Outdoor</td>
<td></td>
<td></td>
<td></td>
<td>Air sensor outside the building</td>
</tr>
<tr>
<td>Indoor</td>
<td></td>
<td></td>
<td></td>
<td>Air sensor inside, room temperature (ambience)</td>
</tr>
</tbody>
</table>
When Room Temperature exceeds Set Temperature, concerning Energy Saving mode:

- **ECO**: The air curtain stops itself
- **MEDIUM**: Stops Heating.
- **COMFORT**: Doesn't stop anything.

**Program 1**
Desired ventilation and heating are manually selected.

**Program 2**
Different ventilation speeds and heating can be manually selected according to the door state (Opened or Closed):

- While door is opened, we select or modify Fan speed or heating of Door Opened
- While door is closed, we select or modify Fan speed or heating of Door Closed
AUTOMATIC FUNCTIONING

Program 1

Function Set Temperature/Room Temperature (1 Room Temperature Sensor)
In addition to the Control, it’s necessary:

- Control’s Room Sensor included or Room Temperature Sensor connected to TS3
- Door Contact

- **Door Opened:**
  Always working according to speed value defined by VMaxPO parameter “Max Speed Door Opened”
  Heating works as defined in the following table (Differential Set Temperature and Room Temperature):
  (Example: Set 23 – Room 18 = 5, Water Proportional in 8V)

<table>
<thead>
<tr>
<th>Diferential Temp. - Room Temp.</th>
<th>Heating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Water</td>
</tr>
<tr>
<td>ºC</td>
<td>ON/OFF</td>
</tr>
<tr>
<td>-1, -2 or less</td>
<td>OFF</td>
</tr>
<tr>
<td>0, 1</td>
<td>CMinPO</td>
</tr>
<tr>
<td>2, 3</td>
<td>ON</td>
</tr>
<tr>
<td>4, 5</td>
<td>ON</td>
</tr>
<tr>
<td>6 or more</td>
<td>ON</td>
</tr>
</tbody>
</table>

CMinPO: Works according to the heating defined in “Min Heating Door Opened” parameter.
- Water Heating: 0 = OFF, 1=ON
- Electrical Heating Stage: 0=OFF, 1, 2, 3 (3 only for 5 speed air curtains)

CMin0/10PO: Works according to the heating defined in “Min Proportional Heating Door Opened” parameter.
- Water Heating: 0-10V defines a proportional valve opening from 0 to 100% (0 closed, 10 fully opened)

- **Door Closed**
  Works according to Differential/Room/Set Temperatures and energy saving mode Eco/Medium/Comfort:

  - **ECO:** Air Curtain stops.
  - **MEDIUM:**
    While Inside Temperature remains lower or equal to Set Temperature
    - Works at ventilation speed defined by VminPT parameter “Min Fan Speed Door Closed”
    - Works at heating defined by CminPT parameter “Min Heating Door Closed”
  When Inside Temperature exceeds Set Temperature, the air curtain stops itself.

- **COMFORT:**
  Ventilation and heating work according to the following table of Diferential Set Temperature and Room Temperature ((Fan Speed with VminPT, heating will work if Set Temperature interval isn’t reached))

<table>
<thead>
<tr>
<th>Diferential Temp. - Room Temp.</th>
<th>Ventilation</th>
<th>Heating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Water</td>
<td>Electrical</td>
</tr>
<tr>
<td>ºC</td>
<td>ON/OFF</td>
<td>Proportional 0-10V</td>
</tr>
<tr>
<td>-1, -2 or less</td>
<td>VMinPT</td>
<td>OFF</td>
</tr>
<tr>
<td>0, 1</td>
<td>VMinPT</td>
<td>OFF</td>
</tr>
<tr>
<td>2, 3</td>
<td>VMinPT</td>
<td>ON</td>
</tr>
<tr>
<td>4, 5</td>
<td>VMinPT</td>
<td>ON</td>
</tr>
<tr>
<td>6, 7</td>
<td>VMinPT</td>
<td>ON</td>
</tr>
<tr>
<td>8 or more</td>
<td>VMinPT</td>
<td>ON</td>
</tr>
</tbody>
</table>

VMinPT: Works at Fan Speed defined by “Min Speed Door Closed” parameter.
## AUTOMATIC FUNCTIONING

### Program 2

Function Set Temperature/ Outside Temperature (1 Outside Temperature Sensor)
In addition to the Control, it is necessary:

- Temperature sensor installed outdoors and connected to TS1
- Door Contact

#### Door Opened
Works according to Differential Set / Outside Temperatures/ and energy saving modes Eco/Medium/Comfort (example: Set 23 – Room 18= 5, Water Proportional in Eco/Medium=6V, Comfort=8V)

<table>
<thead>
<tr>
<th>Set Temp. - Outside Temp.</th>
<th>Ventilation</th>
<th>Heating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comfort</td>
<td>Medium</td>
<td>Eco</td>
</tr>
<tr>
<td>°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-5,-6 or less</td>
<td>-7,-8,-9 or less</td>
<td>-9,-10,-11,-12 or less</td>
</tr>
<tr>
<td>-3,-4</td>
<td>-4,-5,-6</td>
<td>-5,-6,-7,-8</td>
</tr>
<tr>
<td>-1,-2</td>
<td>-1,-2,-3</td>
<td>-1,-2,-3,-4</td>
</tr>
<tr>
<td>0,1</td>
<td>0,1,2</td>
<td>0,1,2,3</td>
</tr>
<tr>
<td>2,3</td>
<td>3,4,5</td>
<td>4,5,6,7</td>
</tr>
<tr>
<td>4,5</td>
<td>6,7,8</td>
<td>8,9,10,11</td>
</tr>
<tr>
<td>6,7 or more</td>
<td>9,10,11</td>
<td>12,13,14,15 or more</td>
</tr>
</tbody>
</table>

VMinPO: Works at fan speed defined by “Min Speed Door Opened” parameter.
CMinPO: Works at heating defined by “Min Heating Door Opened” parameter.

- Water Heating: 0 = OFF, 1 = ON
- Electrical Heating Stage: 0 = OFF, 1, 2, 3 (3 only for 5 speed air curtains)

CMin0/10PO: Works at heating defined by “Min Proportional Heating Door Opened” parameter.

- Water Heating: 0-10V defines a proportional valve opening from 0 to 100% (0 closed, 10 fully opened)

#### Door Closed
Works according to Energy Saving Mode:

- **ECO**: Air curtain stops.

- **MEDIUM**: Works at speed defined by VminPT parameter “Min Fan Speed Door Closed” and heating stopped while outside temperature remains lower than Set Temperature, otherwise air curtain will stop itself.

- **COMFORT**: Works always at fan speed defined by VminPT parameter "Min Fan Speed Door Closed" and without heating.
Programs 3,4

Door Opened: Function Set Temperature / Outside Temperature
Door Closed: Function Set Temperature / Room Temperature
(2 Sensors: Room Temp., Outside Temp.)

In addition to the Control, it's necessary:
- Control's Room Sensor included or Room Temperature Sensor connected to TS3
- Temperature sensor installed outdoors and connected to TS1
- Door Contact

- **Door Opened:**
  - Works according to Differential Set Temp. / Outside Temp. and energy saving mode Eco/Medium/Comfort
  - (example: Set 23 – Room 18= 5, Water proportional in Eco/Medium=6V, Comfort=8V)
  - Program 3 always works in Comfort Mode.
  - Program 4 changes its functioning according to energy saving Eco/Medium/Comfort

<table>
<thead>
<tr>
<th>Set Temp. - Outside Temp.</th>
<th>Ventilation</th>
<th>Heating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Water</td>
<td>Electrical</td>
</tr>
<tr>
<td></td>
<td>ON/OFF</td>
<td>Proportional 0-10V (AO Cal1)</td>
</tr>
<tr>
<td>Comfort</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0,1</td>
<td>VMinPO</td>
<td>CMinPO (*)</td>
</tr>
<tr>
<td>2,3</td>
<td>ON (*)</td>
<td>6V (**)</td>
</tr>
<tr>
<td>4,5</td>
<td>ON (*)</td>
<td>8V (**)</td>
</tr>
<tr>
<td>6,7</td>
<td>ON (*)</td>
<td>10V (**)</td>
</tr>
<tr>
<td>8,9 or more</td>
<td>ON (*)</td>
<td>10V (**)</td>
</tr>
<tr>
<td>or more</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

VMinPO: Works at ventilation speed defined by "Min Speed Door Open" parameter.
CMInPO: Works at heating defined by "Min Heating Door Open" parameter.
- Water Heating: 0 = OFF, 1=ON
- Electrical Heating Stage: 0=OFF, 1, 2, 3 (3 only for 5 speed air curtains)
CMIn0/10PO: Works at heating defined by "Min Proportional Heating Door Open" parameter.
- Water Heating: 0-10V defines a proportional valve opening from 0 to 100% (0 closed, 10 fully opened)

(*) If Room Temperature exceeds 2 degrees the Set Temperature, heating will stop.
(**) If Room Temperature approaches to Set Temperature, the heating gradually goes down until it exceeds 4 degrees the Set Temperature, and then heating stops.
Door Closed

It works according to Energy Saving mode:

- **ECO:** Air curtain stops.

- **MEDIUM:**
  
  It works at:
  
  - Speed defined by parameter VminPT “Min Ventilation Door Closed”
  
  - Heating defined by parameters CminPT “Min Heating Door Closed” or Cmin0-10PT “Min Proportional Heating Door Closed”.

  If Room Temperature or Outside Temperature exceed Set Temperature, the air curtain stops itself.

- **COMFORT:**

  Ventilation and heating work according to the following table of Differential Set Temperature and Room Temperature (*)

  (example: Set 23 – Room 18= 5, Water Proportional 8V)

<table>
<thead>
<tr>
<th>Differential Set Temp. - Room Temp.</th>
<th>Ventilation</th>
<th>Heating</th>
</tr>
</thead>
<tbody>
<tr>
<td>°C</td>
<td>VminPT</td>
<td>Aigua</td>
</tr>
<tr>
<td>-1,-2 or less</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>0,1</td>
<td>1</td>
<td>CminPT</td>
</tr>
<tr>
<td>2,3</td>
<td>2</td>
<td>6V</td>
</tr>
<tr>
<td>4,5</td>
<td>3</td>
<td>8V</td>
</tr>
<tr>
<td>6,7</td>
<td>4</td>
<td>10V</td>
</tr>
<tr>
<td>8 or more</td>
<td>5</td>
<td>10V</td>
</tr>
</tbody>
</table>

VminPT: Works at Fan Speed defined by “Min Speed Door Closed” parameter.

CminPT: Works at Heating defined by “Min Heating Door Closed” parameter.

- Water Heating: 0 = OFF, 1=ON
- Electrical Heating Stage: 0=OFF, 1, 2, 3 (3 only for 5 speed air curtains)

Cmin0/10PT: Works at Heating defined by “Min Proportional Heating Door Closed” parameter

- Water Heating: 0-10V defines a proportional valve opening from 0 to 100%
  
  (0 closed, 10 fully opened)

(*) If Outside Temperature exceeds Set Temperature, ventilation changes into VminPT and heating stops.
Clever can be managed externally using:

- Digital/Analogic entrances
- Or by via Modbus RTU

Although you send wrong orders to the equipment, the unit will not allow combinations that can damage the internal components. The internal PCB has instructions to run the unit safety. For example, if you order to electrical heated air curtain go to 3rd heating stage and 1st ventilation speed, it will allow go to air speed 1 but heating will work at 1st stage only (maximum allowed heating stage for first ventilation).

If you stop the ventilation, the heating will also stop except:

- Anti-freezing sensor signal
- Minimum voltage for 0-10V proportional valves (avoid freezing)

The minimum and maximum parameters (door open and door close) will be also respected. For instance, you define that maximum speed when the door is closed should be the 2nd. Then if you order the 3rd ventilation speed and door closes, it will change from 3rd to 2nd. If you open again the door it will go to the 3rd.

**Digital/Analogic entrances:**

Clever has several digital IN and analogic IN to modify the functioning of the unit. At the wiring diagrams (beginning of this manual) you can see the default functions of each entrance. There are more functions than entrances, so you can select the most appropriate to cover your needs (advanced menu).

All digital IN are NO (Normally Open), but you can change to NC (Normally Closed) at advanced menu. For example, here some default functions for air curtains:

- OFF Unit: Digital IN - DIN2 (free voltage, dry contact)
- OFF Heating: Digital IN - DIN3 (free voltage, dry contact)
- Temperature SET: Analog IN 0-10V (IN1)
  - 0V 0-0,2V Do not modify the control setting
  - 1V 0,3-1,2V = 19°C
  - 2V 1,3-2,2V = 20°C
  - 3V 2,3-3,2V = 21°C
  - 4V 3,3-4,2V = 22°C
  - 5V 4,3-5,2V = 23°C
  - 6V 5,3-6,2V = 24°C
  - 7V 6,3-7,2V = 25°C
  - 8V 7,3-8,2V = 26°C
  - 9V 8,3-9,2V = 27°C
  - 10V 9,3-10,2V = 28°C
- Ventilation Speed: Analog IN 0-10V (IN2)
  - If 5 speed air curtain, then:
    - 0V 0-0,2V Do not modifies the control setting
    - 2V 0,3-2,2V = Fan Speed 1
    - 4V 2,3-4,2V = Fan Speed 2
    - 6V 4,3-6,2V = Fan Speed 3
    - 8V 6,3-8,2V = Fan Speed 4
    - 10V 8,3-10,2V = Fan Speed 5
- Heating Stage: Analog IN 0-10V - By default there is no entrance, but you can assign an entrance at advanced menu.

All those orders given by digital/analogic inputs have priority to the programs functioning.

For instance, if the program is running at maximum speed but you send 6V to (IN2), the unit will change to fan speed 3. It doesn’t matter if the program conditions would change.

At this solution there is only 1 manager because all orders from BMS goes to the TFT and then to the Clever PCB.
Modbus RTU:

Modbus system only allows 1 manager. So we should only send orders to the unit by BMS or TFT Clever (if both together there will be problems).

To avoid communication troubles, you should use two different ports: TFT trough Modbus RTU1 and BMS at Modbus RTU2 (shielded cable 0.5mm² x2). See following diagram:

Using the TFT you can select different baud rate at RTU2 port (by default is 115.200). Do not change baud rate of RTU1. Before starting, be sure that port RTU2 has the same speed as BMS.

If you want to send orders via Modbus you should:
1. Lock the TFT to avoid that nobody is sending also orders to the Clever (only 1 manager). You can lock using the same code of TFT or another different (then people won’t be able to unlock from TFT as they won’t know the code).
2. Stop the timer to avoid undesired ON Day/Night or OFF
3. Manage the unit:
   - ON/OFF unit
   - Select Energy Saving Mode (Comfort/Medium/Eco)
   - Select the functioning mode:
     - If MANUAL, you can select:
       - Fan speed
       - Heating stages
       - Temperature SET
     - If AUTOMATIC, you only can change the temperature SET

If you want to stop managing the equipment from BMS and activate the Clever TFT to allow the people manage the unit, then you only have to unlock the TFT (and stop giving Modbus orders).
If you have locked the controller using a different code than TFT, you have to unlock with the old TFT code (known by people that uses TFT).
Following there are all the needed Modbus orders to manage the units.

All changes will not be saved if the power supply stops. To avoid it, after any order you have to save the configuration.

Modbus characteristics: Databits (8), Parity (None), Stop Bits (1), Flow Control (None)
Assembled and Send Command in Binary
Return data in Hexadecimal (from 0 to 9 is 0001 to 0009, then you need a converter)

<table>
<thead>
<tr>
<th>Modbus Command</th>
<th>Observations</th>
<th>Digits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Node</td>
<td>xx</td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td>03 or 04</td>
<td></td>
</tr>
<tr>
<td>Starting Address (Hexa)</td>
<td>xx</td>
<td></td>
</tr>
<tr>
<td>Number of points</td>
<td>xx</td>
<td></td>
</tr>
<tr>
<td>Data</td>
<td>xx</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Node</th>
<th>Function</th>
<th>Starting Address</th>
<th>Number of points</th>
<th>Concept</th>
<th>Answer (Hexadecimal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>03</td>
<td>300C 0001</td>
<td></td>
<td>ON/OFF</td>
<td>ON=1, OFF=0</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>1016 0001</td>
<td></td>
<td>Fan Speed</td>
<td>0,1,2,3,4,5</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>1017 0001</td>
<td></td>
<td>Electrical Heating</td>
<td>Stage 0 (OFF),1,2,3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Water Heating ON/OFF</td>
<td>ON=1, OFF=0</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>3077 0001</td>
<td></td>
<td>Proportional Water Heating %</td>
<td>0-10000 Hundredth Volts in Decimal converted to Hexadecimal</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>300D 0001</td>
<td></td>
<td>Set Point Temperature</td>
<td>Hexadecimal</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>1007 0001</td>
<td></td>
<td>Inside Temperature (TFT by default)</td>
<td>Hexadecimal</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>1008 0001</td>
<td></td>
<td>Outside Temperature (default)</td>
<td>Hexadecimal</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>1009 0001</td>
<td></td>
<td>Discharge Temperature (if TS2 connected)</td>
<td>Hexadecimal</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>100A 0001</td>
<td></td>
<td>Inside Temperature (If TS3 connected)</td>
<td>Hexadecimal</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>200C 0012</td>
<td></td>
<td>Device Name</td>
<td>Hexadecimal 0000 if default (Unit xx)</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>2035 0001</td>
<td></td>
<td>Energy Saving Mode</td>
<td>0=Comfort, 1=Medium, 2=Eco</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>2153 0001</td>
<td></td>
<td>Water Heating Type</td>
<td>ON/OFF=0, Proportional=1</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>1016 0002</td>
<td></td>
<td>Fan + Heating</td>
<td>See Above</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>2000 0002</td>
<td></td>
<td>Product</td>
<td>Air Curtain =1</td>
</tr>
<tr>
<td>Node</td>
<td>Function</td>
<td>Starting Address</td>
<td>Number of points</td>
<td>Concept</td>
<td>Answer (Hexadecimal)</td>
</tr>
<tr>
<td>------</td>
<td>----------</td>
<td>------------------</td>
<td>------------------</td>
<td>---------</td>
<td>----------------------</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>2001</td>
<td>0002</td>
<td>Model</td>
<td>1=AC_2S_AIR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2=AC_2S_WAT</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3=AC_2S_ELE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4=AC_5S_AIR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5=AC_5S_WAT</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6=AC_5S_ELE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7=AC_5S_HPU_2C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8=AC_5S_HPU_1C</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>3000</td>
<td>0002</td>
<td>Door State</td>
<td>BIT 3,4,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>00= Door Closed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>01= Closing Door</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10= Opening Door</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11= Door Open</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>3000</td>
<td>0002</td>
<td>Filter State</td>
<td>BIT 21,22,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>00= Filter Clean</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>01= Filter Getting Dirty</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10= Filter Dirty</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>3000</td>
<td>0002</td>
<td>Heating Blocked (by program)</td>
<td>BIT 16 = 1</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>3000</td>
<td>0002</td>
<td>Ventilation Blocked (by program)</td>
<td>BIT 17 = 1</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>3002</td>
<td>0002</td>
<td>Alarm: General</td>
<td>BIT 0 = 1</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>3002</td>
<td>0002</td>
<td>Alarm: Overheating</td>
<td>BIT 1 = 1</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>3002</td>
<td>0002</td>
<td>Alarm: Autocooling</td>
<td>BIT 2 = 1</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>3002</td>
<td>0002</td>
<td>Alarm: Dirty Filter</td>
<td>BIT 3 = 1</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>3002</td>
<td>0002</td>
<td>Alarm: TK fan (thermocontact)</td>
<td>BIT 4 = 1</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>3002</td>
<td>0002</td>
<td>Alarm: Electrical Heating Blocked</td>
<td>BIT 5 = 1</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>3002</td>
<td>0002</td>
<td>Alarm: Insufficient Air Flow</td>
<td>BIT 6 = 1</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>3002</td>
<td>0002</td>
<td>Alarm: Fire ON</td>
<td>BIT 7 = 1</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>3002</td>
<td>0002</td>
<td>Alarm: Fire OFF</td>
<td>BIT 8 = 1</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>3002</td>
<td>0002</td>
<td>Alarm: Temperature Sensor</td>
<td>BIT 9 = 1</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>3002</td>
<td>0002</td>
<td>Alarm: Fan RPM</td>
<td>BIT 10 = 1</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>3002</td>
<td>0002</td>
<td>Alarm: External Stop</td>
<td>BIT 11 = 1</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>3002</td>
<td>0002</td>
<td>Alarm: External</td>
<td>BIT 12 = 1</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>3002</td>
<td>0002</td>
<td>Alarm: Anti Freezing</td>
<td>BIT 15 = 1</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>3002</td>
<td>0002</td>
<td>Alarm: Heat Pump</td>
<td>BIT 16 = 1</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>3002</td>
<td>0002</td>
<td>Alarm: TK fan blocked</td>
<td>BIT 17 = 1</td>
</tr>
<tr>
<td>01</td>
<td>03</td>
<td>3002</td>
<td>0002</td>
<td>Alarm: EC fan</td>
<td>BIT 18 = 1</td>
</tr>
<tr>
<td>Node</td>
<td>Function</td>
<td>Starting Address</td>
<td>Number of points</td>
<td>Concept</td>
<td>Parameter Value (Hex)</td>
</tr>
<tr>
<td>------</td>
<td>----------</td>
<td>------------------</td>
<td>------------------</td>
<td>---------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>01</td>
<td>06</td>
<td>0014</td>
<td>0001</td>
<td>Lock TFT Control</td>
<td>0001 to 9999 Locked with code 0001-9999</td>
</tr>
<tr>
<td>01</td>
<td>06</td>
<td>0014</td>
<td>0001</td>
<td>Unlock TFT Control</td>
<td>-0001 to -9999 Unlocked with code 0001-9999</td>
</tr>
<tr>
<td>01</td>
<td>06</td>
<td>207D</td>
<td>0001</td>
<td>Timer</td>
<td>ON=1, OFF=0</td>
</tr>
<tr>
<td>01</td>
<td>06</td>
<td>300C</td>
<td>0001</td>
<td>ON/OFF</td>
<td>ON=1, OFF=0</td>
</tr>
<tr>
<td>01</td>
<td>06</td>
<td>3015</td>
<td>0001</td>
<td>Fan Speed</td>
<td>0,1,2,3,4,5</td>
</tr>
<tr>
<td>01</td>
<td>06</td>
<td>3016</td>
<td>0001</td>
<td>Heating</td>
<td>Electrical 0,1,2,3 Water ON/OFF 0,1 Water Proportional 0-10000 Hundredth Volts in Decimal (30% is 3000 so 0BB8)</td>
</tr>
<tr>
<td>01</td>
<td>06</td>
<td>203B</td>
<td>0001</td>
<td>Set Point Temperature</td>
<td>Hundredth of °C in Decimal (22°C is 2200 so 0B98)</td>
</tr>
<tr>
<td>01</td>
<td>06</td>
<td>2035</td>
<td>0001</td>
<td>Energy Saving Mode</td>
<td>0=Comfort, 1=Medium, 2=Eco</td>
</tr>
<tr>
<td>01</td>
<td>06</td>
<td>2034</td>
<td>0001</td>
<td>Manual / Automatic</td>
<td>0=Manual, 1=Automatic</td>
</tr>
<tr>
<td>01</td>
<td>06</td>
<td>2153</td>
<td>0001</td>
<td>Water Heating Type</td>
<td>ON/OFF=0, Proportional=1</td>
</tr>
<tr>
<td>01</td>
<td>10</td>
<td>F030</td>
<td>0001</td>
<td>Save Changes (power supply stops)</td>
<td>0</td>
</tr>
</tbody>
</table>
**CLEVER CONTROL – WALL MOUNTING INSTRUCTIONS**

1. Disassemble the casing using a flathead screwdriver (Press the 2 bottom fixation tabs)

2. Separate the casing in 2 halves

3. Identify wall connection. In case of not having a wall switch box, use Clever’s wall support accessory.

4. Mount the back cover inside the wall switch

5. Connect RJ11 Cable to Clever’s PCB connector, located in the front cover

6. Assemble the front cover in 2 steps: Position it first on the top and press secondly on the bottom for clipping the tabs
Twisted Pair Cable RJ11 between Clever TFT and Clever PCB

The connection between the Clever controller and Clever PCB is made by 4 wires, which conforms a twisted pair cable RJ11.

The Modbus communication produces a very reliable connection without information loss even at long distances. Also the controls have RJ11 connectors for an easy quick connection, free of mistakes.

STANDARD CABLE

The standard cable served with Clever Kit is 7m length twisted pair, but there are more options available: 20, 50 and 100 meters length. Or any other length by request.

HOW TO MAKE A CABLE

If you produce or manipulate by yourself the cable, you must do it according the following drawings:

| TFT PINS: | 1 → GND | 2 → + | 3 → - | 4 → 24V |
| PCB PINS: | 1 → 24V | 2 → - | 3 → + | 4 → GND |

If you catch both connectors same position with your hands, the colours of the wires have to be like a mirror.

If you use a different cable the unit won’t work properly.

COMMUNICATION PROBLEMS?

A wrong cable can damage the electronics. If the connector is joined wrong side, you can solve the problem just by turning it.

If you have problems with the communication, you must do a Shielded Twisted Pair cable, following the same and connect the GND to the Clever PCB Earth Point.

Be careful with high density of electromagnetic fields created by closed electrical wiring, transformers, motors or relays, because it might create interferences. If the communication wire goes in parallel with power supply wiring, especially when there is a big amount of wiring it may create interferences, even though a shielded twisted pair cable can reduce almost all interferences. If the communication cable and the power supply wiring go at the same cable tray, it is recommended to use special separators to create a physical border between the two wiring types.
Twisted Pair Cable RJ45 between air curtain and controller

The connection between the air curtain and controller is made by 8 wires, which conforms a Twisted Pair cable RJ45.

The digital communication produces a very reliable connection without information loss even at long distances. Also the controls have RJ45 connectors for an easy quick connection, free of mistakes.

STANDARD CABLE

The standard cable for commercial air curtains range is 7m length and 10m for industrial air curtains range. Also there are available the following length: 20 and 50 meters, or any other length by request.

HOW TO MAKE A CABLE

If you produce or manipulate by yourself the cable, you must verify according the following drawing:

If you catch both connectors same position with your hands, the colours of the wires have to be like a mirror.

If you use a different cable the unit won’t work properly.

COMMUNICATION PROBLEMS?

A wrong cable can damage the electronics. If the connector is joined wrong side, you can solve the problem just by turning it.

If the problems persists, you must make a new Shielded Twisted Pair Cable, following the same instructions. But this time, connect the Shielded to the Earth Point into the air curtain connections box.

Be careful with the electromagnetic fields created by closed electrical wiring, transformers, motors or relays, because it might create interferences.

If the communication cable goes in parallel with power supply wiring, especially when there is a big amount of wiring it may create interferences. If the communication cable and the power supply wiring go at the same cable tray, it is recommended to use special separators to create a physical border between the two wiring types.
CLEVER – Communication Issues

List of the most common troubles and solutions:

1. Cut and connect again the power supply?
   To see if it works again.

2. Search unit again?
   Basic Menu – Configuration – Scan.

3. Connections?
   To check if any mistake.

4. RJ11 cable is original?
   Clever Kit comes with 7m cable.
   If longer (and not ordered special) it’s made by installer, then check pins and twisted pair. To be sure
   use shielded cable and connect it to the GND.
   Many times, the cable is also manipulated to pass the cable thought pipes, then again check it.

5. Interferences: RJ11 cable closer to power cables?
   Power cables create interferences to the Modbus communication.
   Test spare twisted cable RJ11 from Clever TFT directly to the Clever PCB.
   To solve it, separate the cables from power and use RJ11 twisted pair and shielded connected to
   GND.

6. Modbus cable polarity?
   Do not mix + and -, it won’t work. Check all line from the beginning till the end.

(*) If there are communication issues (interferences), use shielded cable connected to GND
7. **RTU1 port of Clever TFT?**
RTU1 is dedicated exclusively Modbus port of Clever TFT to the first Clever PCB and between other Clever PCBs. All other connections (BMS, PLC, PC) will create communication errors.

8. **BMS Modbus at RTU2?**
RTU2 is dedicated exclusively to communicate to BMS, PLC, PC systems. If you mix RTU1 and RTU2 you will have communication errors. BMS Modbus by default is 115200, if doesn’t work please check BMS has the same speed. If not change it at Basic Menu – Configuration.

9. **End line resistances?** (switch and jumpers act as resistances)
Clever TFT should have always 3 switches in ON.

Clever Modbus RTU1 requires the jumper **CN6** at the last Clever PCB of the line. If only 1 unit already done by default. If Clever TFT is in the middle of the line, then you need jumpers at the beginning and at the end.

If more than one PCB, then it should be done and checked by installer. BMS Modbus RTU2 requires the same but using Jumper **CN5**.
End line resistances – RTU1 – 1 PCB (CLEVER CONTROL AT THE BEGINNING OF THE LINE)

- Modbus Address 1
- The PCB must incorporate Jumper in CN6
- CLEVER PCB
- RTU1
- RJ11

End line resistances – RTU1 – MULTIPLE PCB (CLEVER CONTROL AT THE BEGINNING OF THE LINE)

- Modbus Address 1
- Modbus Address 2
- Modbus Address N
- CLEVER PCB 1
- CLEVER PCB 2
- CLEVER PCB N
- RTU1 (RTU1)
- RJ11

- 3 Switches in: ON

- The last connected Clever PCB of RTU1 line must incorporate Jumper CN6
10. Only 1 Clever TFT at RTU1?
    Each group of PCBs connected by RTU1 can have maximum 1 Clever TFT.

11. Replace Clever TFT?
    All TFTs and PCBs should have same firmware version.
    If replace Clever TFT you should scan devices and sensors at Basic Menu – Configuration.

12. Red LED Clever PCB is OFF?
    If 24V at “OUT 24V 1A” then replace PCB.
    If 0V at “OUT 24V 1A” check power supply and transformer.

13. Repeated Modbus address?
    All devices should have different number. Never use address 0.
    If change number, scan again (Basic Menu – Configuration).

14. Modbus address over 12?
    By default Clever only search from 1 to 12. If over go to Basic Menu – Configuration and modify this search.

15. RTU1 Baud rate?
    Firmware below 5.13: Baud rate of RTU1 at 115200.

16. BMS, PLC, PC Baud rate?
    At Basic Menu - Configuration you can change Baud rate for BMS, PLC, PC.
## CLEVER CONTROL

<table>
<thead>
<tr>
<th>ERROR</th>
<th>CHECK</th>
<th>CAUSE / CONSEQUENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TFT lights are OFF</strong></td>
<td>Red LED inside Clever PCB OFF</td>
<td>Check 24V power supply at terminal block <em>“OUT 24V 1A” inside Clever PCB</em></td>
</tr>
<tr>
<td></td>
<td>Red LED inside Clever PCB ON</td>
<td>Check RJ11 cable (faulty or made on site wrongly) according to instructions</td>
</tr>
<tr>
<td><strong>Air curtain starts alone or does nothing or wrong order of ventilation speeds</strong></td>
<td>RJ45 cable from the Clever is connected to AUX instead of CONTROL</td>
<td>RJ45 cable is faulty or made on site wrongly. Then please check instructions how to do it properly</td>
</tr>
<tr>
<td><strong>Temperature unstable</strong></td>
<td>Use and connect shielded cable to GND of the Clever PCB according to Clever manual to avoid interferences</td>
<td></td>
</tr>
<tr>
<td><strong>Temperature difference</strong></td>
<td>Calibrate temperature sensors at: Basic Menu - Parameters - Temperature – Calibration</td>
<td></td>
</tr>
<tr>
<td><strong>Control inside cabinet</strong></td>
<td>If Clever is inside a room with different temperature that air curtain, use an external extra room temperature</td>
<td></td>
</tr>
<tr>
<td><strong>TFT buttons don’t work</strong></td>
<td>Remove and reconnect power supply</td>
<td>You can remove the RJ11 of the controller or cut Clever power supply</td>
</tr>
<tr>
<td></td>
<td>Manual or Automatic</td>
<td>Manual: user can modify ventilation, heating and temperature (depending on program)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Automatic: user can only change temperature (no fan, no heating)</td>
</tr>
<tr>
<td><strong>Door Contact</strong></td>
<td>When door contact is not installed, then it works always like open door</td>
<td></td>
</tr>
</tbody>
</table>

### Configuration

#### Main questions during installation

- Programs and Temperature Sensors
  - Programs are available depending on installed temperature sensors
    - By default Clever is configured at Auto P3 Comfort to work with:
      - Room temperature sensor of Clever TFT
      - Outside external temperature sensor
    - If outside temperature sensor is not installed, then it will change automatically to basic program Auto P1 and give temperature sensor error message
    - You can connect the required sensor or go to Basic Menu - Configuration - Search temperature sensors and validate to update them
      - If no temperature sensors, then Manual P1 Comfort by default (on option P2)
      - If only room temperature sensor, then Auto P1 by default (on option Manual P1, P2)
      - An extra room temperature connected to TS3 has priority against Clever TFT, but can be modified at Advanced Menu - IN/OUT
    - At some programs information not needed/used is not displayed
## Configuration
### Main questions during installation

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<tr>
<td>Icons</td>
<td>“EXT” means something external is modifying the functioning using analogical or digital IN. Crossed heating sign: by default if outdoor temperature is over 21ºC, heating is disabled. To disconnect, go to Basic Menu - Parameters - Disable - Heat due to ext temp = NO.</td>
<td></td>
</tr>
<tr>
<td>Ventilation speed and heating stage</td>
<td>Ventilation/heating with door open/closed can be limited at Basic Menu - Parameters (by default are not limited). 3rd heating stage only with 4th and 5th ventilation speed / 2nd heating stage only with 2nd/3rd/4th/5th ventilation speed / 1st heating stage, all speeds.</td>
<td></td>
</tr>
<tr>
<td>Energy saving mode</td>
<td>When the air curtain reach the Set temperature, the functioning changes depending on energy saving mode. In some programs at Eco mode the air curtain stops but in Medium mode stops only the heating.</td>
<td></td>
</tr>
<tr>
<td>External connections</td>
<td>Check that connections are the right ones according to set functions. Example: at heat pump units, the mode should be connected to DOUT3, but at many installations it’s connected at DOUT2 (second relay).</td>
<td></td>
</tr>
<tr>
<td>Filter alarm</td>
<td>Filter alarm ask you to clean the filter. When cleaned say YES to restart counter. By default, hour counter is set at 300 hours but can be modified at Basic Menu - Filter hours. If you say YES and alarm persist, update firmware to version 6 or higher. If you can't update firmware, do the following steps: 1- TFT Advanced Menu: Factory reset values 2- Immediately make a reset by pressing the button of the PCB 3- Change hours filter at 0. Old versions has an error and can't work with hours filter.</td>
<td></td>
</tr>
<tr>
<td>BMS only have Modbus RTU</td>
<td>Use gateway to convert to other protocols: Scada, KNX, Bagnet, etc.</td>
<td></td>
</tr>
</tbody>
</table>