Information sheet

Display menu

DucoBox Focus / IQ unit

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DUCO

01 Preliminary remarks

The display menu can be used both to read parameters and to make changes to the network and settings of each DUCO component.

Master unit

As the software is the same for several DUCO products such as the DucoBox Focus and IQ unit, further in the manual these products will be referred to as the master unit.

> ⊘ Depending on the type of master unit, the software version and the presence of a Duco Connectivity Board, some items may be missing from the display menu.

Operation

This menu can be operated using the arrow keys (,▲▼) and the enter key (■). Use the arrow keys to scroll through the menu. At the end of each submenu there is always a '**>Back**' command to navigate to a higher menu. By pressing the arrow keys together briefly, you return to the main menu.
If the keys are not operated for 2 minutes, the display will turn off . When a button is pressed (up, down, enter), the menu reappears.

The main menu contains the following items:

- `>Config` In this menu, **settings of the box and of the components** in the network can be modified.
- `>Network` Gives an **overview of the network**. Various parameters can be displayed via this network, such as sensor values or valve positions.
- `>Infolog` Gives an overview of the **most recently performed actions**.
- `>SelfTst` Can activate a **self-test** . A list of **error messages** can be retrieved.
- `>Perform` Lists the **various pressure drops** across the system's ducts.
- `>Upload` / `>SDCard` Shows the status of **software update**.
- `>ServCde` **(as from IQ unit and DucoBox Focus version** `180327`**)**
            Shows the status of the **software update**.

What is a zone?

Many parameters relate to the "zone" in which the component is located. A zone always contains a component and all underlying components. If several Remote controls (or Room sensors) with underlying Tronic window ventilators are in the same zone, they will constitute separate subzones (e.g. zone 2 and zone 3 in the example of a diagram shown below).
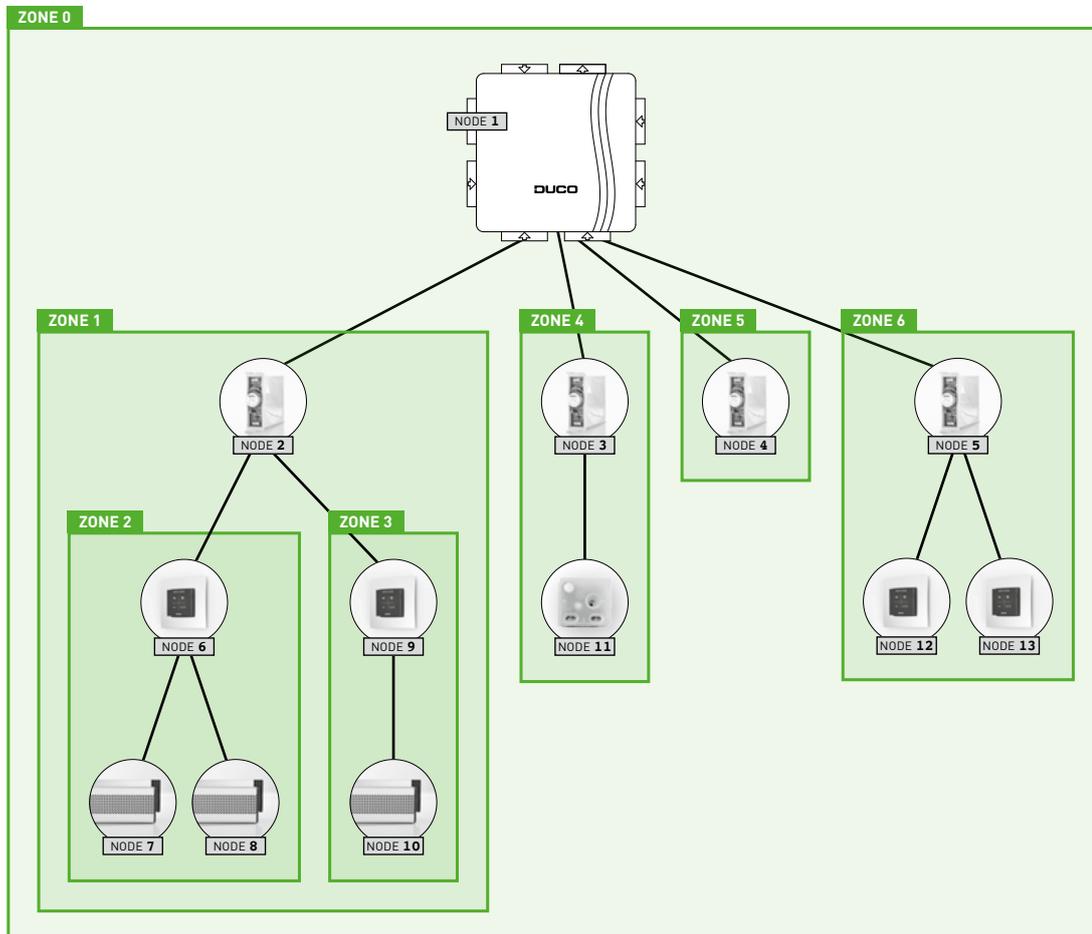
02   Config menu (change settings)

This menu provides an overview of all possible components, regardless of whether these components are actually present in the network. The LED button of each component whose settings are currently being changed turns blue . Thus, the component selected in the menu is identified with the physical component in the ventilation system . The parameters of the respective component can be configured in the following submenus:

02.A `>Box` Master unit (DucoBox Focus, IQ unit,...)
02.B `>Valve` Control valves
02.C `>Ctrl` Remote controls or sensors
02.D `>Vent` Electronically controlled window ventilators
02.E `>Actr` Actuator control via 2- or 3-point control, 0-10 VDC or PWM.
02.F `>Switch` Fixed voltage-free contacts (present on the DucoBox Focus and IQ unit) and the wireless voltage-free contacts
02.G `>Extern` External communication (Modbus)
02.H `>TcpIp` Ethernet settings
02.I `>VntCool` Ventilative cooling
02.J `>NghtBst` NightBoost

02.A   CONFIG: BOX (Master unit)

Shows the various configuration parameters of the master unit (e.g. DucoBox Focus, IQ unit...):

- `>Automin` Minimum ventilation setting in automatic mode (default = 10%)
- `>Automax` Maximum ventilation setting in automatic mode (default = 100%)
- `>TempDep` Temperature-dependent ventilation when using Tronic window ventilators (**ON/OFF**) (default = **ON**).
  This function limits the nuisance of cold air for the people present in the building by bringing in fresh air at a **lower flow rate**. This is done by restricting the air opening of each Tronic window ventilator.
- `>Time` Current time. Required for correct operation of NightBoost, among others.
  - `>Time` Time (e.g. **20:05**)
  - `>Day` Day of the month (e.g. **22**)
  - `>Month` Month (e.g. **March**)
  - `>Year` Year (e.g. **2015**)
  - `>Timezon` Time zone (e.g. **+1HRS**)
- `>GrndBnd` **Only applicable for non-zonal systems! (= central extraction)**
  Indicates whether a property is a house or a flat. This setting, in combination with **Persons** ensures the optimum setting of manual position 2 (= medium setting).
- `>Persons` **Only applicable for non-zonal systems! (= central extraction)**
  Number of occupants. This setting, in combination with **GrndBnd** ensures the optimum setting of manual position 2 (= medium setting).

02.B   CONFIG: VALVE (Control valve / iAV Control valve)

Displays the various configuration parameters for the different control valves (in DucoBox or Intelli Air Valve) in the network, indicated by their node number (sequential number when pairing components, e.g.: **Node 2**, **Node 3**,...). Control valves include the following settings:

- `>Flow` Setting the desired flow rate in m³/h (default depending on control valve type:)
  bathroom / laundry room - toilet - living room / open kitchen - bedroom
  This parameter does not apply to the Intelli Air Valve.
- `>Automin` Minimum ventilation setting in automatic mode (default = 10%)
- `>Automax` Maximum ventilation setting in automatic mode (default = 100%)
- `>CO2Setp` Setpoint for any CO_2 sensor in the control valve (default = 800 ppm)
- `>CO2TCmp` Temperature-dependent ventilation when using Tronic window ventilators (**ON/OFF**) (default = **ON**).
  This function limits nuisance from cold air for people present in the building by making the system **less responsive** to high CO_2 values in the current zone . It works by dynamically compensating for the CO_2 setpoint.
- `>RHSetp` Setpoint for any relative humidity sensor present in the control valve (default = 60%)
- `>RHDelta` Possibility of activating a delta control (on/off) (default = off) . This delta control increases the ventilation if there is a certain increase in the moisture content over a period of time (e.g. 10% in 5 seconds). Because this may cause the ventilation system to overreact, it is off by default.

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02.C **CONFIG: CTRL** (Remote control / Room sensor)

Displays the various configuration parameters for the different controllers in the network. E.g.: `Node 4`, `Node5`,... Remote controls have the following settings:

- `>Manual1` Ventilation flow rate for manual setting with 1 wave (default = 10% for extraction and 0% for window ventilator)
- `>Manual2` Ventilation flow rate for manual setting with 2 waves (default = 50%)
- `>Manual3` Ventilation flow rate for manual setting with 3 waves (default = 100%)
- `>ManTime` Time before a sensor / remote control returns to automatic mode (default = 15 min for extraction and 8 h for supply)
- `>RHSetp` Setpoint for any relative humidity sensor present in the user controller (default = 60%)
- `>RHDelta` Possibility of activating a delta control (on/off) (default = off) . This delta control increases the ventilation if there is a certain increase in the moisture content over a period of time (e.g. 10% in 5 seconds). Because this may cause the ventilation system to overreact, it is off by default.
- `>CO2Setp` Setpoint for any CO_2 sensor in the user controller (default = 800 ppm)
- `>CO2TCmp` Temperature-dependent ventilation when using Tronic window ventilators (**ON/OFF**) (default = **ON**). This function limits nuisance from cold air for people present in the building by making the system **less responsive** to high CO_2 values in the current zone . It works by dynamically compensating for the CO_2 setpoint.
- `>SenVLvl` Sensor visualisation level **(as from IQ unit and DucoBox Focus version 180327)**
  When the ventilation system detects a CO_2 or humidity level that is too high (based on the set CO_2 or RH setpoint), the system will start ventilating at a certain percentage . By setting a percentage in **SenVLvl** , the AUTO button LED will light up blue (for a Humidity Room sensor) or purple (for a CO_2 Room sensor) when the ventilation level is at or above this percentage . This is useful to detect why the ventilation system is revving up high in a particular zone.
  For example: when **SenVLvl** is set to 50%, the LED of the AUTO button on the CO_2 Room sensor will light purple when the ventilation system starts running at 50% or more due to excessive CO_2 concentration.

02.D **CONFIG: VENT** (Electronically controlled window ventilator)

Shows the various configuration parameters for the different electronically controlled window ventilators in the network. E.g.: `Node 4`, Node 5 ,... Electronically controlled window ventilators have the following settings:

- `>Inlet` Determines the proportion of outdoor air from the window ventilator compared to the extracted air in this zone (default: 0 % → each window ventilator has the same supply "weight")
- `>Automin` Minimum ventilation setting in automatic mode (default = 10%)
- `>Automax` Maximum ventilation setting in automatic mode (default = 100%)

02.E **CONFIG: ACT** (Actuator board)

Displays the various configuration parameters for the different actuator boards in the network. E.g.: `Node 4`, Node 5 ,... Actuator boards have the following settings:

- `>Inlet` Determines the proportion of air supply / feed-through from the window ventilator compared to the extracted air in this zone (default: 0 m³/h → each window ventilator has the same supply "weight")
- `>Automin` Minimum ventilation setting in automatic mode (default = 0%)
- `>Automax` Maximum ventilation setting in automatic mode (default = 100%)
- `>Range` Total time indicating how long it takes for the controlled device to go from open to closed. **This value must be set in order to allow intermediate settings.** (default = 130 s)
  Example: The total time from open to closed is 60 seconds. This means that the actuator is controlled by the master for 30 seconds to achieve a setting of 50%.
- `>Hybrid` This parameter indicates the physical control of the output signal of the actuator, namely 2/3-point control and/or PWM. For a hybrid value of '0%' the 2/3-point control completes its operation, for the hybrid value of '100%' it is the PWM output. Setting the hybrid value to an intermediate value (e.g. '50%') will first cause the 2/3-point control to change from 0 to 100% between 0 and 50% of the output signal, and from 50% the PWM will take over and also change from 0 to 100% between 50 and 100% of the output signal.
- `>Acttype` Determines the function of the actuator in the ventilation system: supply ('INPUT'), feed-through ('TRANSIT') or extraction ('OUTPUT') . (default = 'INPUT')
- `>KeepPwr` **(as from IQ unit and DucoBox Focus version 180327)**
  If this function is set to **TRUE**, the control voltage is maintained at the final values (0% and 100%). This ensures that the Actuator control is always fully closed or open, respectively . (default **TRUE**)

- `>PwmOut` **(as from IQ unit and DucoBox Focus version** `180327`**)**
    If this option is set to **TRUE**, the PWM/0-10V output of the Actuator control is set to PWM . When **FALSE** , it is set to 0-10V control . (default **TRUE**)

02.F   CONFIG: SWITCH (Switch sensor)

De-energised contacts are inputs that detect when a connected on/off component, e.g. a relay, switches . An action can be linked to this circuit via the display menu . The menu displays the various configuration parameters for the different de-energised contacts in the network . E.g.: **Node** 4, **Node** 5,… Fixed dry contacts can also be set on the master's PCB. If a switch sensor does not appear in the menu, it must be closed once to be paired to the master.

De-energised contacts have the following settings:

- `>SwMode` Indicates what the switch sensor is used for (default = **PRESENCE**)
    PRESENCE (e.g. toilet detection): indicates which ventilation position is required for extraction in the toilet (default SwValue = 100%)
    HEATPUMP: indicates to which ventilation level the flow rate must be increased depending on the connected heat pump (standard SwValue = 150 m³/h
    OVERRULE (e.g. alarm): indicates to which ventilation level the system is overruled (0-250% / 'MAX'). If set to 'MAX', the fan speeds up to maximum and the valve opens fully.
    (default SwValue = 100%)
- `>SwZone` Determines which zone is to be switched.
- `>SwValue` The desired value of ventilation in the current zone if the Switch Sensor is activated. The value is expressed in % or m³/h depending on the SwMode selected.

02.G   CONFIG: External (Modbus)

Here the settings of external links, such as the Modbus link, can be set.

- `>#Modbus` The Modbus address of the master (e.g. DucoBox Focus, IQ unit...) can be set here (default = 1).
- `>RegOffs` Register offset. By default, addresses start counting from 1.
- `>Speed` **(IQ unit only)**
    This sets the Baud rate (speed) of data transmission via Modbus communication. The options are 4800, 9600, 19200, 38400, 57600, 115200, 230400. (Standard 9600 bps)
- `>Parity` **(IQ unit only)**
    The type of parity used in Modbus communication. The options are NONE, EVEN and ODD . (Default NONE)
- `>StopBit` **(IQ unit only)**
    The number of stop bits used in Modbus communication. The options are 1 or 2. (default 1)

02.H   CONFIG: TcpIp

(only for DucoBox Focus with Duco Connectivity Board)
When using a Duco Connectivity Board, there is the option to connect it to the local network to use the Duco Installation App. The settings to set up the network connection can be found below.
- `>DHCP` If this option is activated, the IP address of the DucoBox is retrieved automatically . (Default ON)
- Depending on the DHCP setting, the following settings are visible:
    `>DynamIp` (when DHCP = ON) This is the automatically retrieved IP address of the DucoBox.
    `>StatIp` (when DHCP = OFF) This is the static IP address of the DucoBox.
    `>NetwMsk` (when DHCP = OFF) This is the subnet mask.
    `>DftGtwy` (when DHCP = OFF) This is the default gateway.
    The display always shows one of the four digit groups . The other three digit groups are represented by a dash . Press the enter key (■) to navigate to the next digit group:
    `xxx.___` → enter (■) → `_.xxx.__` → enter (■) → `__.xxx._` → enter (■) → `___.xxx` (where **xxx** = active digit group) . With a static IP address (DHCP = OFF), the IP address, subnet mask and default gateway can be changed using the arrow buttons (▲, ▼).
- `>HostNam` **(IQ unit only)**
    This indicates the web address that can be surfed to via the web browser on the local network to read or change the parameters of the DucoBox. This web address is http://ducoxxx.local, with xxx = the entered number in this parameter . (Standard duco001)
- `>MacAddr` This is the MAC address of the DucoBox.

02.I   **CONFIG: VntCool** (Ventilative Cooling)

The Ventilative Cooling function uses the ventilation system to cool an entire building by ventilating large flows of cold outside air through the building. This function requires window ventilators with high supply flow rates (= purge ventilation) . Ventilative Cooling can be used mainly in non-residential buildings (e.g. cooling office buildings when no one is present) . The system uses smart algorithms to determine what is a comfortable indoor temperature for the current period . The following parameters automatically determine whether and when Ventilative Cooling is switched on:

- Time
- Indoor temperature: via sensors in Room Sensors, Control Valves and/or Actuator Print
- Outdoor temperature: via Tronic window ventilators (less exact) or weather station (more exact)
- CO_2: detects whether anyone is present in the building

Settings:
- `>Monday` through `>Sunday` On which days of the week should the Ventilative Cooling function be activated (**ON/OFF**), (default = **OFF**)
- `>Start` Time at which Ventilative Cooling should be activated (default = **22:**00)
- `>Stop` Time at which Ventilative Cooling should be deactivated (default = **06:**00)
- `>Mode` Mode in which Ventilative Cooling operates (default = **OFF**)
  OFF: Ventilative cooling off (applies to all days)
  AUTO: Automatic activation and deactivation of Ventilative Cooling based on time of day, indoor and outdoor temperature (only when outdoor air is colder than indoors) and CO_2 (only when the system does not detect anyone present)
  MANUAL: Activate and deactivate Ventilative Cooling based only on time of day, regardless of temperatures and presence of persons.

02.J   **CONFIG: NghtBst** (NightBoost)

DUCO's NightBoost function is used to set the ventilation system during the summer to assist in cooling down high indoor temperatures. The NightBoost function works zonally . This function is mainly aimed at homes and uses **small flow rates** (= basic ventilation) . Please refer to the manual of the master unit for more information.

> (!)   For the NightBoost function to work correctly, the time must be set correctly, see chapter 02.A on page 3.

- `>StartMo` and `>StopMo` Start and end month of the period during which the NightBoost function should be active. (The end month is included in the period. (default = **May** through **September**)
- `>StartTi` and `>StopTim` Start and end time between which the NightBoost function may be active ((default = **1:00** to **6:00**)
- `>SetTemp` When the indoor temperature exceeds the set value, the NightBoost function should be activated (default = **24°C**)
- `>Mode` Switch NightBoost function on or off (default = **OFF**)

03 Network menu (network overview)

03.A **Introduction**

The network submenu provides an overview of the login structure . A tree structure is used for this purpose . Upon entering the submenu, you will see the following:

`+Box 1`

The plus in front of the box means that other components have been paired to the box . Press the 'enter' key '■' to check which components have been paired.

- `-Valv 2` A valve to which nothing is paired
- `+Valv 2` A valve to which other components, such as electronically controlled window ventilators, have been paired
- `>Ctrl 3` The remote control commands the component to which it has been paired.

Example of tree structure

The structure below corresponds to the example network on page 2.

```
+Box 1
    +Valv 2
        >Ctrl 6
        >Vent 7
        >Vent 8
        >Ctrl 9
        >Vent 10
    +Valv 3
        >Swit 11
    -Valv 4
    +Valv 5
        >Ctrl 12
        >Ctrl 13
```

Parameters

Apart from the overview, various parameters such as the current sensor values or ventilation settings can also be read. Press the 'enter' key '■' for five seconds at the selected component to read these values.

03.B **BOX PARAMETERS** (Master unit)

- `StatusXX` **00**= normal; **01**= manually overruled; **99**=error
- `Pos   XX%` Ventilation level of the box in %
- Version numbers: **(as from IQ unit and DucoBox Focus version** `170816`**)**
  These parameters can be read for any component.
  `Sw XXXXX` This indicates the software product type of the component. This is for internal communication only and is of no interest to the installer or user.
  `Rel    XX` This is the release number of the component
  `Rev    XX` This is the revision number of the component
  `Tst    XX` This is the test number of the component
  The software version of a component is `Rel.Rev.Tst`, which leads to e.g. **4.3.0**.

03.C **VALVE PARAMETERS** (Control valve)

- `StatusXX` **00**= normal; **01**= manually overruled; **99**=error
- `Pos   XX%` Ventilation level in %
- `Tmp   XXC` Temperature in °C
- `CO2 XXXP` CO_2 level in ppm (0 = no CO_2 sensor present)
- `RH    XX%` Relative humidity in % (0 = no humidity sensor present)

`>CO2 1 0 4 3`

CO_2 level in ppm

- Version numbers: **(from IQ unit and DucoBox Focus version** `170816`**)** see chapter 03.B on page 8.

03.D **CTRL PARAMETERS** (Remote control / Room sensor)

- `StatusXX` **00**= normal; **01**= manually overruled; **99**=error
- `Pos   XX%` Ventilation level in %
- `Tmp   XXC` Temperature in °C
- `CO2   XXp` CO_2 level in ppm (0 = no CO_2 sensor present)
- `RH    XX%` Relative humidity in % (0 = no humidity sensor present)
- Version numbers: **(from IQ unit and DucoBox Focus version** `170816`**)** see chapter 03.B on page 8.

03.E **VENT PARAMETERS** ((Electronically controlled window ventilator)

- `StatusXX` **00**= normal; **01**= manually overruled; **99**=error
- `Pos   XX%` Ventilation position in %
- `Tmp   XXC` Temperature in °C
- `HtSw     ` Air preheating switched on (**ON/OFF**)
- `Heat     ` Preheating active (**ON/OFF**)
- Version numbers: **(from IQ unit and DucoBox Focus version** `170816`**)** see chapter 03.B on page 8.

03.F   **SWITCH PARAMETERS** (Switch sensor)

- `Status00` **00**= normal; **01**= manually overruled; **99**=error
- `Pos   XX%` Ventilation position in %
- Version numbers: **(from IQ unit and DucoBox Focus version `170816`)** see chapter 03.B on page 8.

03.G   **ACT PARAMETERS** (Actuator print)

- `Status00` **00**= normal; **01**= manually overruled; **99**=error
- `Pos   XX%` Ventilation position in %
- `Tmp   XXC` Temperature in °C
- Version numbers: **(from IQ unit and DucoBox Focus version `170816`)** see chapter 03.B on page 8.

04   Infolog menu (Last actions performed)

This information is available to the DUCO intervention team. The code displays the last actions performed.

05   Self-test menu

The master unit (e.g. DucoBox Focus, IQ unit...) includes a function that checks the entire network for errors . A self-test can be started and the error list consulted via the submenu item. The errors consist of codes. The first three characters indicate the node number of the component containing an error. After the # comes the error code according to the list below:

1 2 3 # 1

node number   error code

#0	CO_2 error
#1	RH error
#2	Temperature error
#3	Low battery
#4	Fan error
#5	Motor error
#6	Communication error
#7	Clima strip error

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06 **Perform menu** (system resistances)

This menu shows the total pressure drop to be bridged by the fan . Moreover, the pressure drop can be displayed separately for each duct.

- `Tot XXPa` Total pressure drop that the fan must bridge
- `Out XXPa` Pressure drop over the outlet duct and roof feed-through
- `VY   XPa` Pressure drop over the duct with node no. 'Y'
- `Pavg XXW` Average power consumption
- `Pmax XXW` Maximum power consumption

07 **Upload / SDcard menu** (software update)

- `>Upload` **(up to IQ unit and DucoBox Focus version** `180327`**)**
  `>SwUpdte` **(as from IQ unit and DucoBox Focus version** `180327`**)**
  Shows the status of the software update. This updates both the software of the master and underlying slave components in the network. **During the update, the LED of the master unit <u>flashes</u>** magenta (≈ purple) . The update is **complete as soon as the LED <u>lights</u> magenta** continuously. During the update it is possible that the master restarts and the LED is temporarily yellow. The progress of the update process of each component can be read in the **`Upload`** / **`SwUpdte`** menu.
- `>BmbRepl` **(IQ unit only)**
  Allows you to copy your entire network onto SD card to transfer it to another master. This function is for replacing a faulty Master in a large network. This master must be of the same type (e.g. from IQ unit to IQ unit).
  `>BmbToSd` Copies the network from the master to the SD card.
  `>SdToBmb` Copies the network from the SD card to the network.

08 **ServiceCode menu**

- `>ServCde` **(as from IQ unit and DucoBox Focus version** `180327`**onwards**)
  This code lists the components in the network and their software version and provides insight into the system for service purposes. **Note that the code is case-sensitive!** The code can consist of several pages, allowing scrolling with the arrow key.