

# CoolMasterNet

## User Manual

### *Touchscreen Operation*



Document Number: 1.1.2

Contact information: <https://coolautomation.com/support/>

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## Revision History

Version Number	Date	Author/Owner	Description of Change
1.0	19/8/2019		Preliminary CoolMasterNet User Manual
1.1	17/02/2021		February 2021 UM update
1.1.2	17/03/2021		March 2021 UM update

## Acronyms and Abbreviations

Acronym	Literal Translation
BMS	Building Management System
CMN	CoolMasterNet
DHCP	Dynamic Host Configuration Protocol
ETH	Ethernet
HVAC	Heating Ventilation and Air Conditioning
MAC	Media Access Control

# 1. Overview

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This user manual provides the touchscreen operation instructions necessary for the proper use of the **CoolMasterNet**.

**CoolMasterNet** provides automation integrators, facilities managers, service providers, and HVAC professionals with the ability to control, monitor, service, and manage any VRF system through the creation of a universal communication channel between the HVAC and automation systems.

**CoolMasterNet** enables VRF HVAC connectivity to:

- CoolAutomation suite of applications
- Any Home & Building Automation systems
- Smart Home Devices

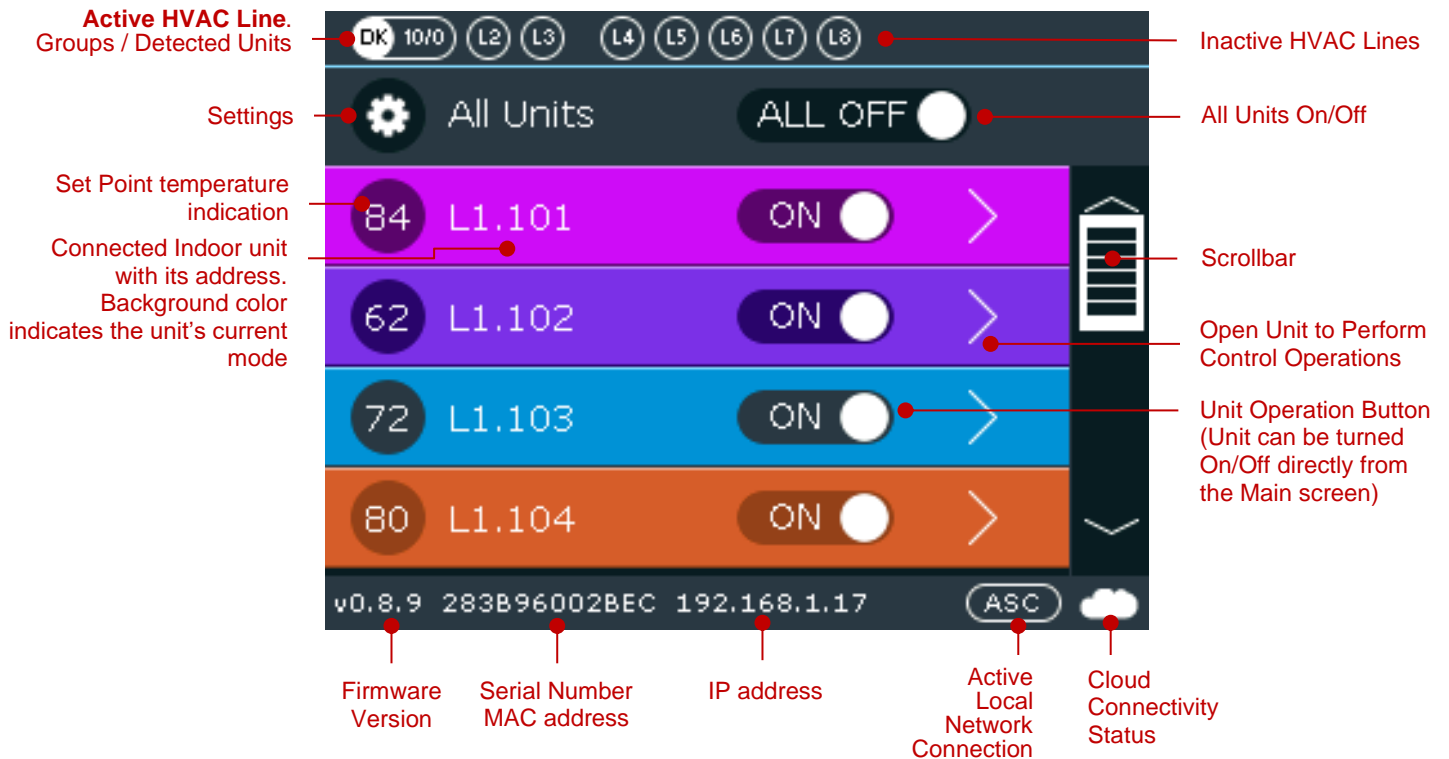
## 1.1 What You Can Do From the CoolMasterNet Touchscreen

- Control and monitoring of all connected VRF Indoor units.
- Perform control operations (increase/decrease temperature setpoint, fan setting, mode setting (heat, cool), turn unit On/Off, view room temperature, select desired lock functionality, and select temperature limits for cool and heat separately.
- Reconfigure the device for different HVAC brands.
- Turn On or Off all detected Indoor units at once (All On/All Off capability) or turn them Off or On individually.
- View Indoor unit mode as indicated by the unit's background color on the screen and its set point temperature.
- View device's settings and status: firmware version, Serial Number/MAC address, IP address, active local network connection and cloud connectivity status.
- Change the device settings (Configuration, Network, and BMS settings).

## 2. The CoolMasterNet Touchscreen

### 2.1 General Layout of the Main Screen

When the device is connected, the following screen is displayed. After a successful installation, all connected units are automatically detected, and the Main screen displays the detected Indoor units and their status.



### 2.2 Screen Functionality and Indications

#### 2.2.1 HVAC Line Details

As described on the top row of the above image, the Active HVAC line is displayed on the left side of the screen —circle with white fill and black font— and inactive lines on the right side of the screen —circles with black fill and white font. The active line's manufacturer abbreviation is displayed inside the white circle on the left —DK on the above screen (for a list of available manufacturers and respective abbreviations refer to the [Appendix](#)). The number to the right of the manufacturer indicates the number of detected units. Daikin (DK) specific cases have two numbers: one represents groups and the second the number of detected units.

To change device settings, tap the **Gear** icon on the left and follow the instructions on the [CoolMasterNet Settings](#) chapter.

All HVAC lines can be turned On or Off by toggling the switch to the right of the Gear icon or individually by toggling the HVAC line's switch. Use the **Scrollbar** on the right to scroll through available lines.

## 2.2.2 Each Indoor unit is represented by a single row on the screen

The Indoor unit's mode is reflected by the background **color** of its respective row:

- Violet - unit in Fan mode
- Red – unit in Error state. The error code is indicated on the circle to the left
- Blue – unit in Cool mode
- Purple - unit in Auto mode
- Green - unit in Dry mode
- Light brown/orange - unit in Heat mode
- Grey - unit Off

## 2.2.3 VRF Error Message Display

When there is an error/malfunction in the VRF system, it is displayed on the CoolMasterNet.

When an Indoor unit is in error, the Indoor unit's row on the Main screen is displayed in **red** and the **original HVAC vendor's error code** is displayed on the left side of the row (see image below). The user should contact the HVAC Technical Support indicating the displayed code.



## 2.2.4 Screen Indications

On the lower part of the Main screen, five indications are displayed from left to right:

- Firmware Version
- Serial Number/MAC Address
- IP Address
- Active Local Network Connection
- Cloud Connectivity Status

CoolMasterNet maintains permanent connection with the CoolRemote cloud server once TCP/IP networking with internet access is established. The CoolRemote connection status is displayed on the LCD screen as a cloud icon on the bottom right-hand corner of the screen.

## IP Address

The IP Address can be either set automatically or manually. By default, **DHCP** is enabled. To change, tap the **Settings** button on the Main screen and select **Network Settings**. For automatic setting, simply turn On **DHCP**. To set manually, turn **DHCP** Off and select **IP** by tapping its > button. Follow the instructions on [Section 4.2 Network Settings](#).

## Active Local Network Connection

Available Local Network Connections are described on the following table.

Local Network Connection	Description
ASC	ASCII IF Server
MIP	ModBus IP
REST	REST API
SSDP	Control4 protocol
BAC	BACnet IP
HDL	HDL Buspro over IP
IZone	Izone protocol

## Cloud Connectivity

Cloud Connectivity status indicators:

No cloud icon – No TCP/IP networking

 Connected – Communicating

 Connected – Idle

 Disconnected – communication error code (see following table)

Communication Error Code	Description
-3	Timeout – No reply from the server
-4	A packet was not delivered to the server due to routing problems
-6	Illegal value, port forwarding is disabled or DNS resolution problem
-8	IP duplicate
-9	Trying to connect again, while already connected
-10	Connection was <b>aborted</b> by the server or by one of the nodes/routers on the way to the server (firewall)
-11	Connection was <b>reset</b> by the server or by one of the nodes/routers on the way to the server (firewall)
-12	Connection was <b>closed</b> by server or by one of the nodes/routers on the way to the server (firewall)
-13	Sending packets to the server while not connected
-64	Security reasons



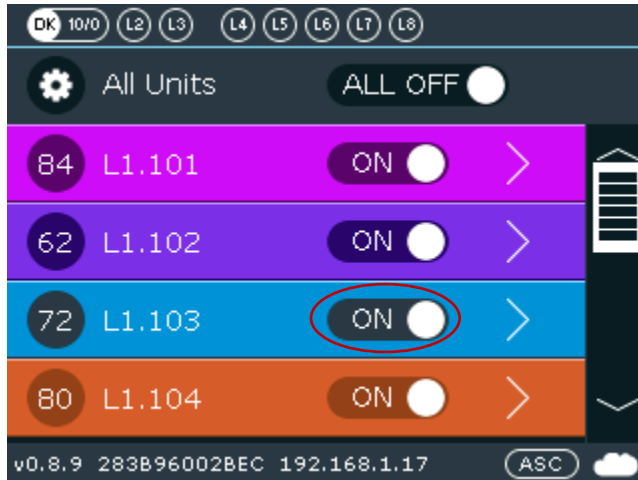
## 3. Operational Functions

### 3.1 Basic Operational Controls

Basic operational controls like Unit On/Off, Set Temperature, Fan speed and Unit mode can be performed from the main screen by selecting an indoor unit.

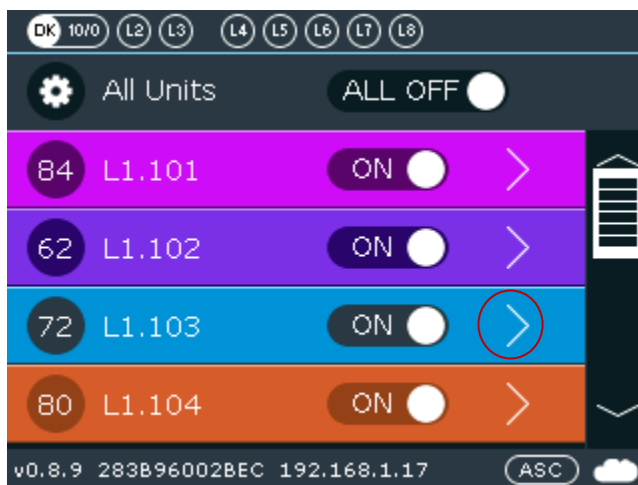
#### 3.1.1 To Turn a Single Indoor Unit On/Off

Turning a unit On/Off can be performed directly from CoolMasterNet's main screen.



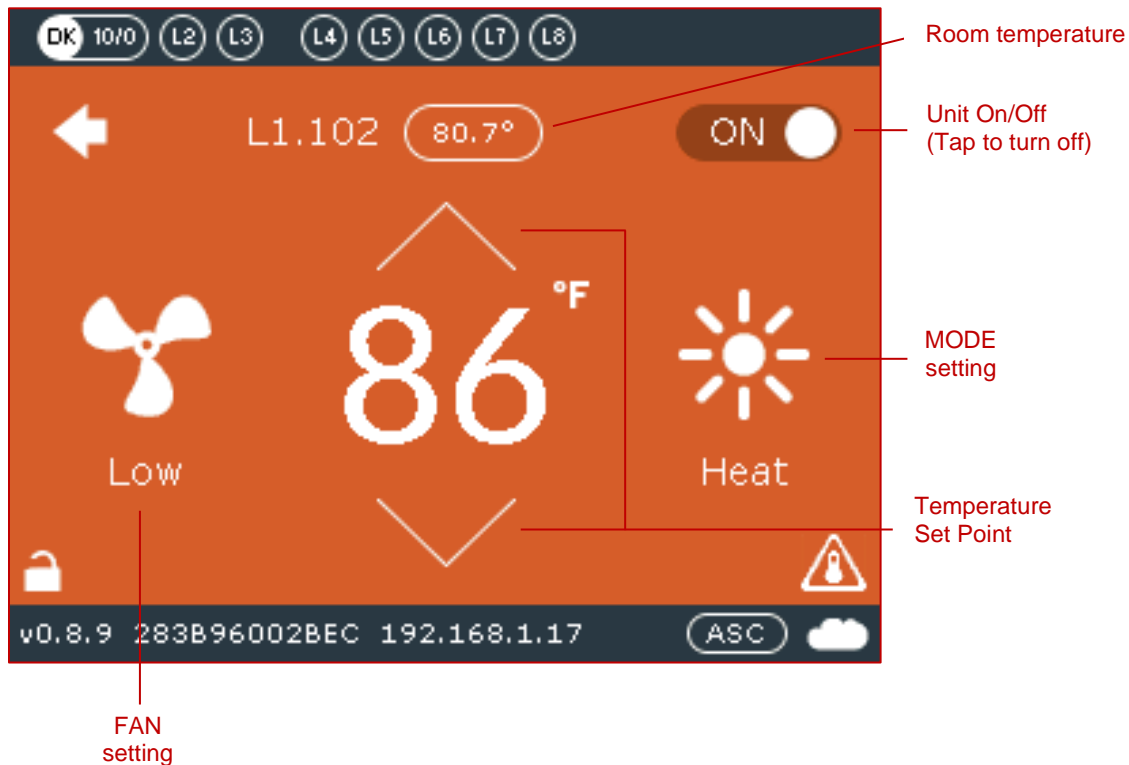
#### 3.1.2 To Change Fan Speed and Temperature Set Point

Select the desired indoor unit by tapping the > button to enter the unit and perform other control operations.



On the displayed screen you can change the following settings by tapping on the corresponding setting:

- **FAN SPEED** (options: Low, Medium, High, Top, Auto)
- **Temperature Set Point** (repeatedly tap the respective arrow to increase or decrease the temperature set point)
- **Room Temperature indication** (reported by the VRF system)

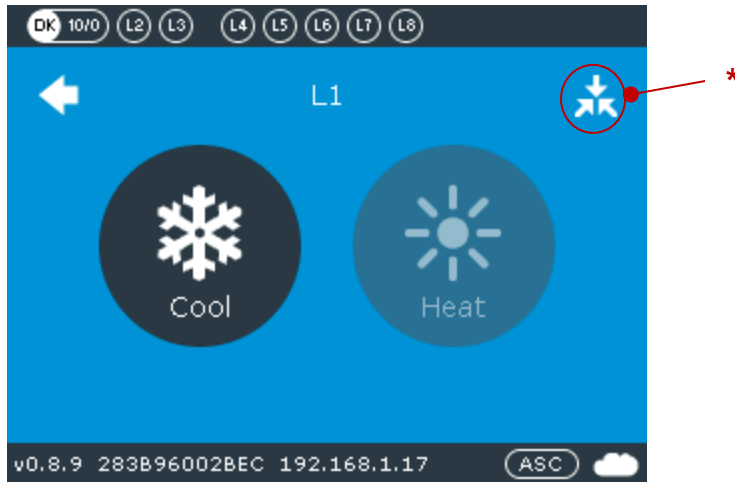


### 3.1.3 To Change the MODE setting

Tap the **Mode** setting to select unit mode (Cool, Heat, Dry, Fan, Auto).

**Note:** Mode change can only be done for all connected indoor units. It is not available for each individual indoor unit.

**Note:** Auto and Dry modes are available only in systems that support these modes.



\* This sign is displayed only on Master indoor unit, which is responsible for system Cool/Heat transition, available only on Daikin.

To view the **Cool/Heat Master** screen, tap on the above-referenced sign (\*). The screen on the left is displayed. To enable the Cool/Heat master, tap on screen center. The screen on the right is displayed. The Master feature is only available and required for Daikin only.

**Note:** To change a Master unit, you must first turn Off the currently active Master unit.



## 3.2 Lock and Temperature Limitation Settings

### 3.2.1 Lock Functionality

This functionality allows the facility manager to enable/disable the user's access to turning the unit On or Off, changing the system mode or changing the system's temperature setting.

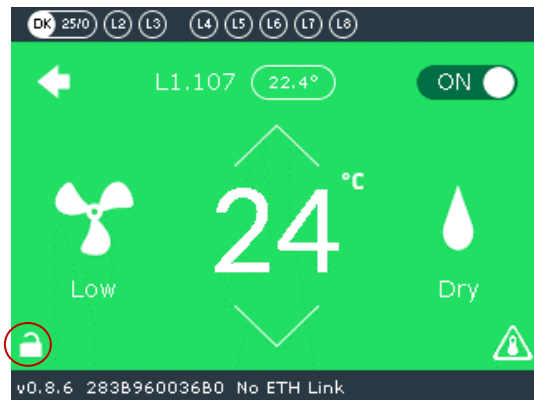
**Note:** The lock functionality applies on all control interfaces (Wired Remote Control, BMS, Home Automation, Coolautomation Apps suite).

For each of these options the **Green** display indicates the function is **disabled** and the **Red** display indicates the function is **enabled**. When tapping on an option, the option toggles between enabled and disabled.

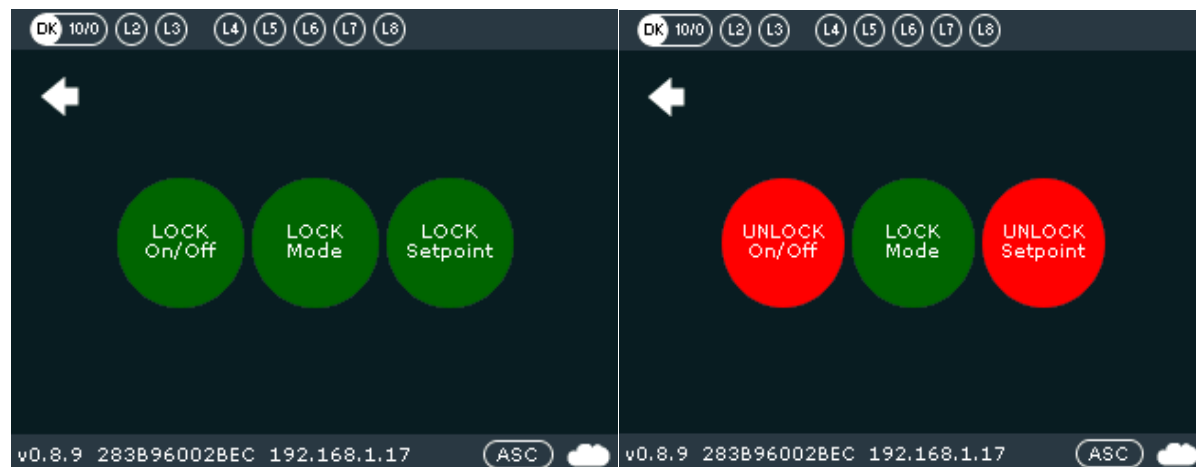
Available lock options:

- Lock On or Off (Unit On/Off)
- Lock Mode
- Lock Setpoint

To activate tap the **Lock** icon (see image below).



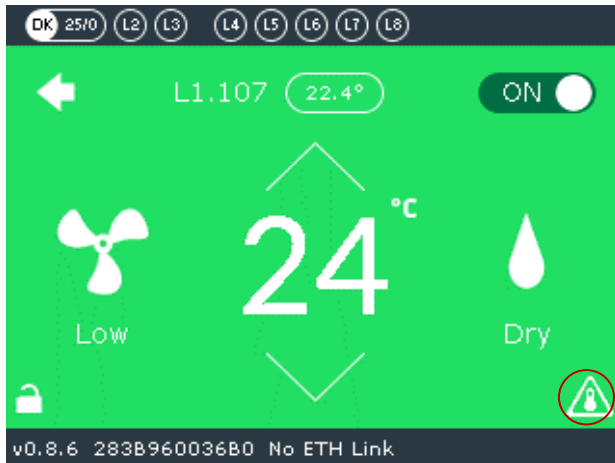
The following screen is displayed.



Tap the desired lock functions. The selected functions turn red and the other one remains green.

### 3.2.2 Temperature Limit Functionality

Tap the **Temperature Limit Settings** icon (see image below).

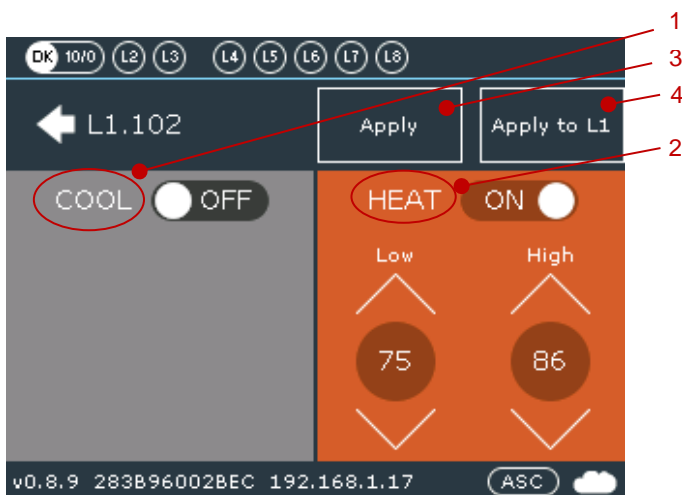


**Note:** The limits apply on all control interfaces (Wired Remote, BMS, Home Automation, Coolautomation Apps suite).

Select temperature limits for Cool (1) and Heat (2) separately.

Select Low and High limits and tap **Apply** (3).

Tapping “**Apply to Lxxx**” (4) applies the limits to all units connected to the Lxxx line.

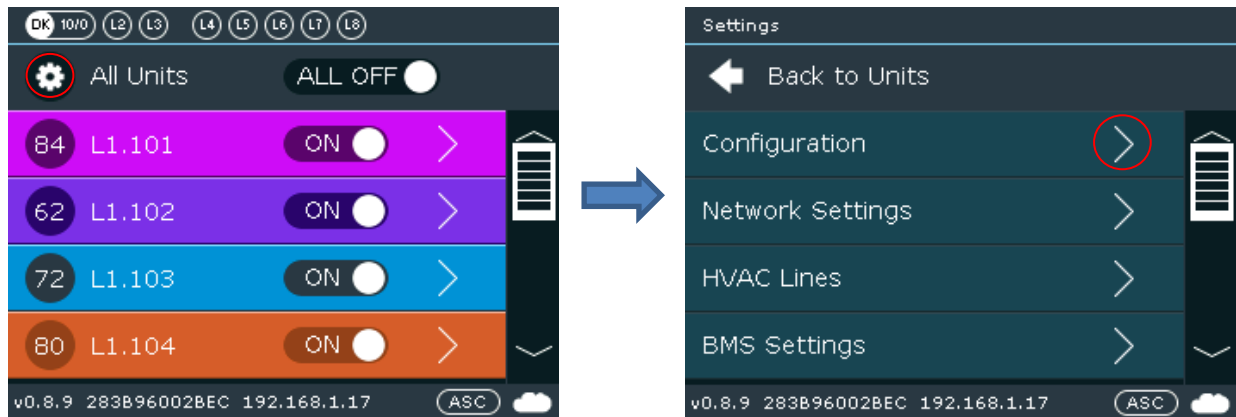


## 4. CoolMasterNet Settings

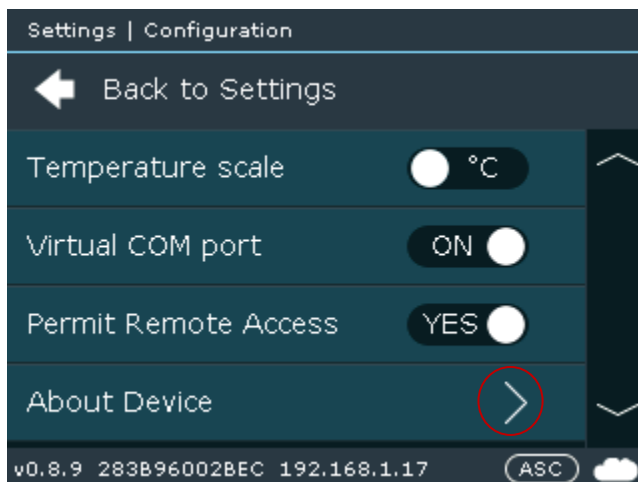
To change the device settings, tap the **Gear icon** on the upper left-hand side of the Main screen. The screen on the right is displayed.

### 4.1 Configuration settings

Select **Configuration** by tapping the > button.



The following screen is displayed.



Select the desired **Temperature scale** (°C/°F). This applies only to the way the temperature is displayed on the screen. It does not affect the temperature scale on the HVAC system.

Enable the **Virtual Com port** to allow connection via mini-USB terminal. Required for local configuration with terminal software tools. Used mainly for support.

**Permit Remote Access** (enabled by default). Used when the CoolMasterNet owner wants remote support.

Select **About Device** by tapping the > button.

The following screen is displayed. The screen shows if BACnet IP and ModBus IP are enabled/disabled.

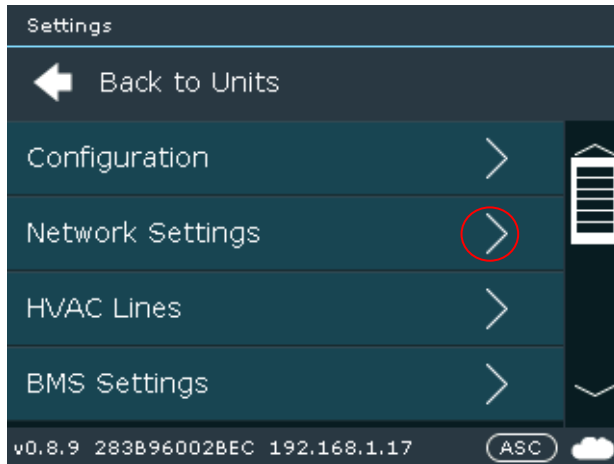


To enable **BACnet IP** please contact CoolAutomation support (<https://coolautomation.com/support/#contact>)

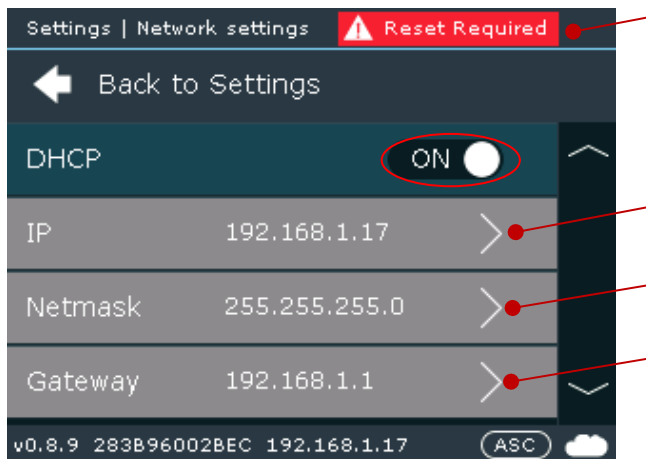
**Modbus IP** can be enabled via the [BMS Settings](#).

## 4.2 Network Settings

Select **Network Settings** by tapping the > button.



The following screen is displayed.



**Note:** The device is set by default to **DHCP** (automatic IP address received from the network).

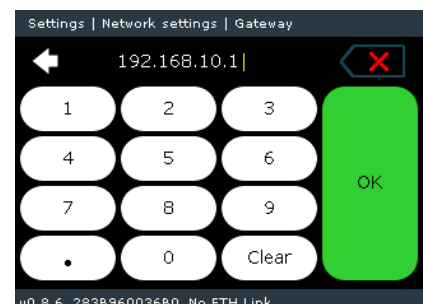
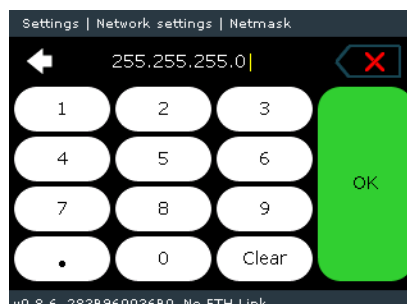
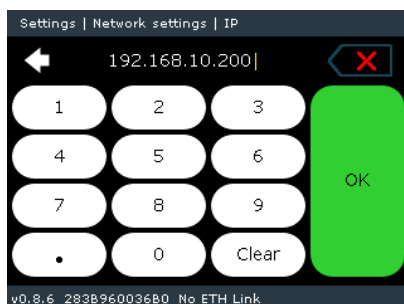
Disable **DHCP** to set network settings manually (static IP address, Netmask, Gateway)

To set **IP** address manually, tap its > button, enter desired IP address and tap OK.

To set **Netmask** manually, tap its > button, enter desired Netmask address and tap OK.

To set **Gateway** manually, tap its > button, enter desired Gateway address and tap OK.

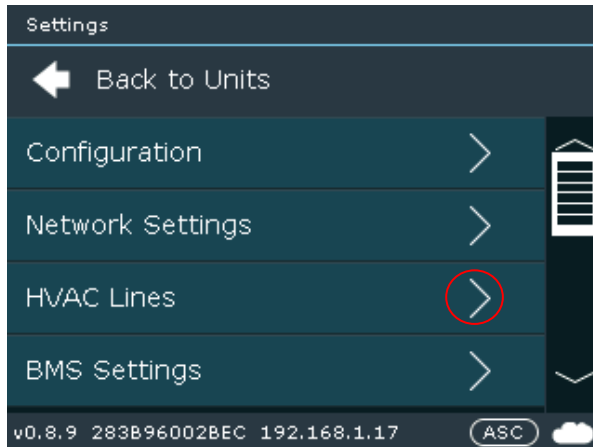
**Note:** After changing these settings, reset the device (Power Off).





## 4.3 HVAC Lines

Select **HVAC Lines** by tapping the > button.



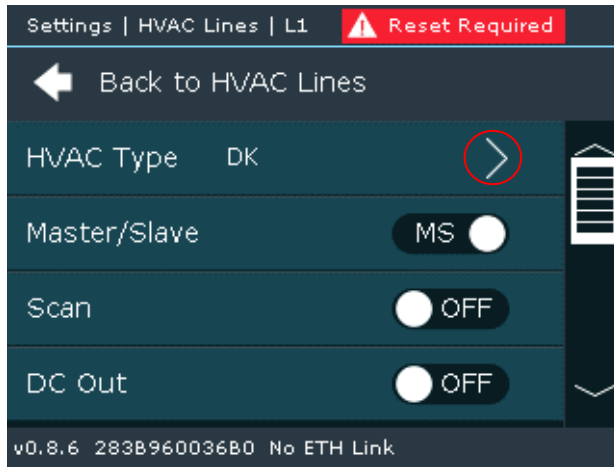
### 4.3.1 To Reconfigure the Device to a Different HVAC Line

1. Tap the Settings button. On the displayed screen tap the HVAC Lines > button.
2. Select the row with the currently active line (DK in our example) and tap the > button.
3. On the HVAC Type row, tap the > button. A screen is displayed showing all the available HVAC Types (by [manufacturer name](#)).
4. Select the desired manufacturer by tapping on the On/Off button. The selected manufacturer becomes the active HVAC Type, and all other brands are automatically turned Off.
5. Reset the CMN device (power Off). When the device is turned On, the selected manufacturer is displayed as the active HVAC Line.

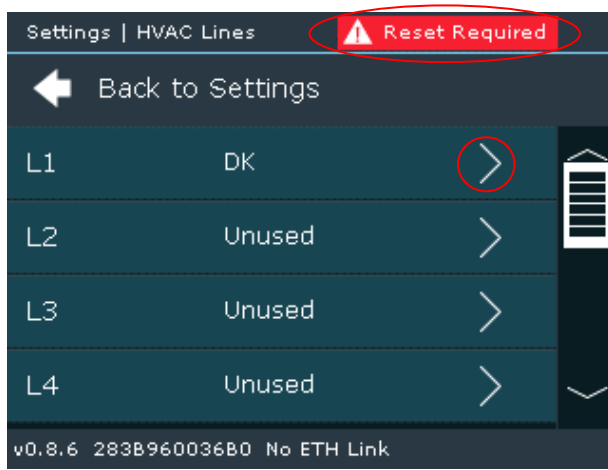
The device is factory pre-set for required VRF brand.

Lines L1-L2 and L4-L7 are used for specific VRF brands.

CoolMasterNet can be reconfigured from one brand to another from the HVAC **Lines** menu and corresponding position of DIP switches, located behind the door on the front, right-hand side of the device. For DIP switch positions, and list of the brands please refer to the Installation manual on <https://coolautomation.com/support/#products>.



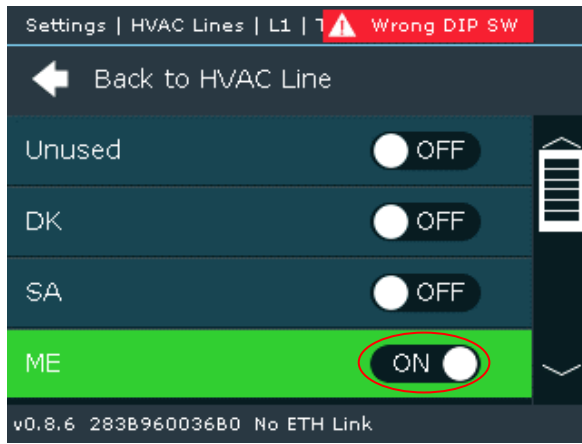
On the image above, select **HVAC Type**. To change the HVAC brand, tap the > button. The following image is displayed.



Select desired HVAC line (from L1 to L8) using the Scroll bar and tap the > button (in the example above, L1 is set to DK (Daikin)).

Select desired HVAC brand from the list using scroll bar and enable it (enabling one brand automatically disables the others) (see image below).

In the example below, L1 was changed to ME (Mitsubishi Electric).



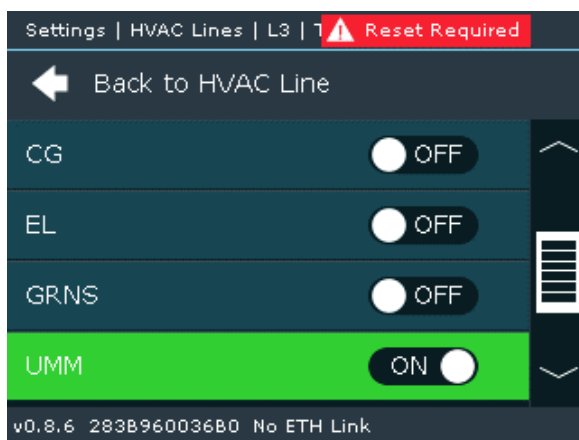
After completion of the changing process, reset the device (Power Off).

**Note:** If the DIP switches have not been changed accordingly, a notification message is displayed in red on the upper right-hand side of the screen. For DIP switch positions please refer to the Installation manual on <https://coolautomation.com/support/#products>.

Besides VRF systems, CoolMasterNet can also connect to different type of HVAC systems using RS485 based interfaces (mainly Modbus RTU), which can be connected on lines L3-L7, normally as a default to line L3. Changing the brands is the same process, as described in the examples above.

Coolautomation CoolPlugs are connected to the same L3 line and displayed as CH (CoolHub).

In the image below, examples of the different HVAC systems, displayed as options in L3:



CG – Chigo

EL- Electra, ducted units with Modbus based control interface.

GRNS – Green-Sys, 3<sup>rd</sup> party control modules, mainly used for fan coil controls and underfloor heating with Modbus-based control interface.

UMM (Universal Modbus Master) – CoolMasterNet is set as UMM.

Other options are for the integration options besides the HVAC brands, connected in the same L3.

### 4.3.2 HVAC Line Special Functions

Set CoolMasterNet as **Master/Slave** in the VRF network.

By default, CoolMasterNet is set as **Master**. In some cases, with specific HVAC brands (LG and Samsung), when original central controller is installed in the project, it should be manually set to **Slave**.

Enable the **Scan** option.

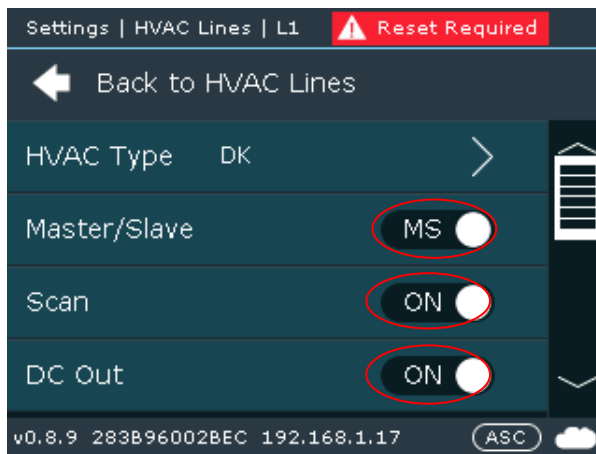
Scanning the HVAC line is an automatic process that autodetects connected indoor units. In some cases, when CoolMasterNet set to **Slave**, manual **Scan** should be disabled. By default, manual **Scan** is enabled.

Enable the **DC Out** option. Required only with Daikin or Mitsubishi Electric NON-VRF systems with the corresponding DIP switch positions.

Before enabling this function, please consult with Coolautomation tech support

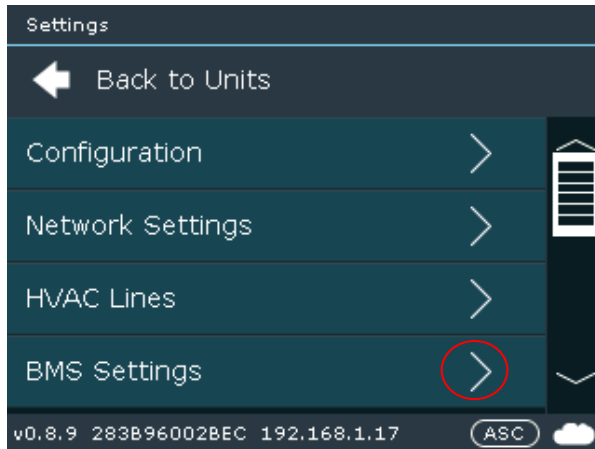
<https://coolautomation.com/support#support>

**Note:** After changing these settings, reset the device (Power Off).

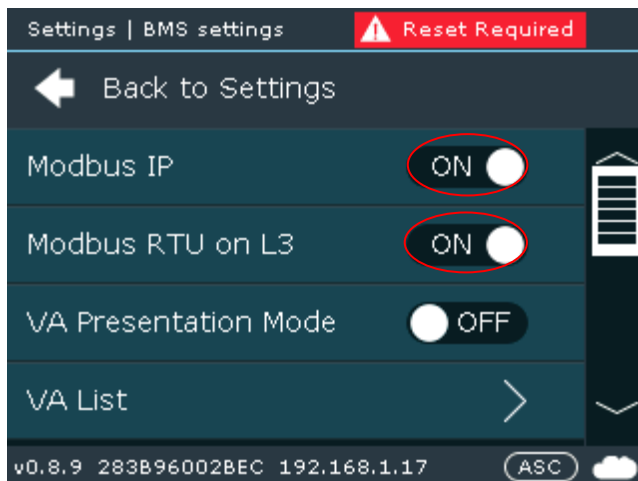


## 4.4 BMS Settings

From the Main screen, tap the **Gear icon**. The following screen is displayed.



Select **BMS Settings** by tapping the > button. The following screen is displayed.



The **Modbus IP** and **Modbus RTU on L3** options should be enabled.

**Note:** After changing these settings, reset the device (Power Off).

**Note:** To enable the **Modbus RTU** on other HVAC Lines (L4-L7), refer to the **HVAC Lines** settings (Section [4.3.1](#)).

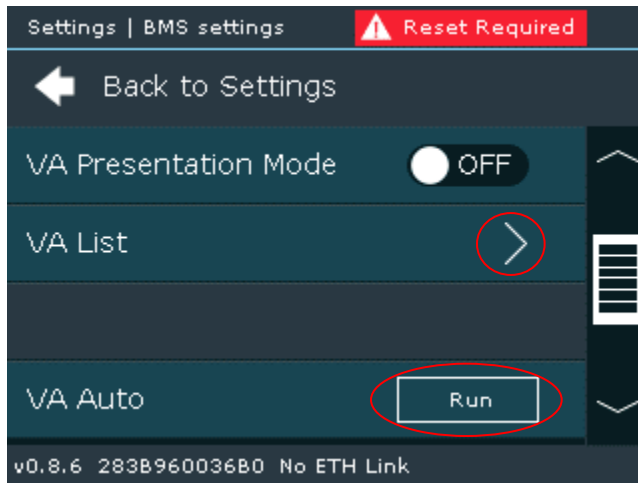
**Note:** To enable **BACnet IP** and **BACnet MS/TP**, contact Coolautomation support.

<https://coolautomation.com/support/#contact>

### 4.4.1 Virtual Addresses (VA)

To keep the BMS (BACnet and Modbus) integration process the same for all connected systems, CoolMasterNet allows unifying all connected indoor units to one type of internal, normalized, virtual table, where each connected indoor unit is represented as a unified Virtual Address. Each indoor unit is represented as a table of Modbus/BACnet related objects with corresponding register type.

To create the referenced table, scroll to the **VA Auto** row and tap **Run** (see image below).

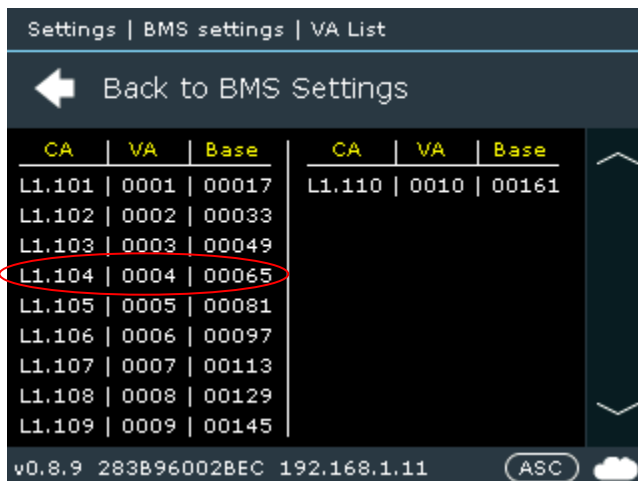


**Note:** It is particularly important to perform this action after verifying that all indoor units are connected and properly recognized. Otherwise, after adding a missing indoor unit to the network and running the **VA Auto** command again, all VA's would be overwritten, which may cause an incorrect integration process from the BMS side.

**Note:** a missing unit may be entered manually (without causing problems with the addresses) via the Coolautomation SW tool or with the help of Coolautomation tech support.

After completing VA distribution, reset the device (Power Off).

Select the **VA List** option to see the distributed VAs list by clicking > button. The following screen is displayed.



Each indoor unit (e.g., L1.104) is presented in the table with a corresponding VA Address (0004) and its Base register (00065).

For more details, refer to Modbus and BACnet guidelines on the Coolautomation support page [https://coolautomation.com/support/#integration\\_guidelines/](https://coolautomation.com/support/#integration_guidelines/)

## Appendix

List of available manufacturers for HVAC Line configuration

Brand abbreviation	Brand Name	HVAC Line
DK	Daikin	L1
HT	Hitachi	L1
HA	Haier	L1
ME	Mitsubishi Electric	L1
TO	Toshiba	L1
PN	Panasonic	L1
FJ	Fujitsu	L8
LG	LG	L7
SM	Samsung	L7
MD	Midea	L7
CG	Chigo	L7
GR	Gree	L8
AU	AUX	L7
BS	Blue Star	L7
MH	Mitsubishi Heavy	L7

## Support

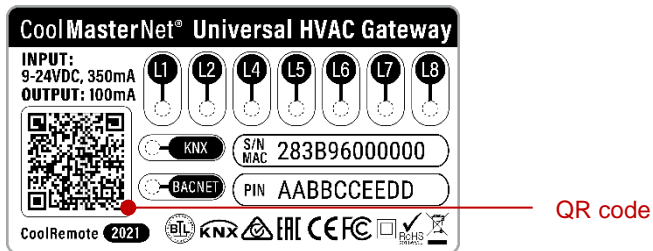
All documentation can be found on the CoolAutomation website, in the Support Center:

<https://coolautomation.com/support>

Contacting customer support can be done by opening a service ticket at

[www.coolautomation.com/support/#contact](http://www.coolautomation.com/support/#contact)

Another way of getting help is by scanning the QR code on the back side of the device.



Once scanned from the mobile, it autodetects the type of the product, its serial number, and offers an easy access menu to:

- Online documentation
- Registration to the CoolRemote App
- Opening service ticket for technical support