CoolMasterNet Technical Data

CoolMasterNet
Universal Interface Adapter
for HVAC Systems

Document Revision 0.6 4/4/2019

© 2019 CoolAutomation LTD.
www.coolautomation.com

Attention

1. During the HVAC system automatic operations the CoolMasterNet must be disconnected from the system. Examples of the automatic operations are:
· Test
· Reset
· Automatic charge
2. Do not change the original positions of the quadruple dip switch S inside CoolMasterNet when using it with VRV/VRF systems.

WEEE Directive & Product Disposal

At the end of its serviceable life, this product should not be treated as household or general waste. It should be handed over to the applicable collection point for the recycling of electrical and electronic equipment, or returned to the supplier for disposal.

Table of Contents

1 Features 4
2 Layout 5
3 Physical data 6
4 Specifications 7
5 LCD data 8
6 HVAC Interfaces 9
7 GPIO 10
8 Options 11

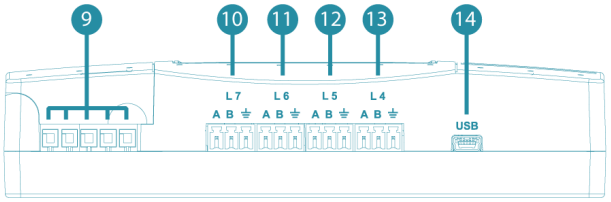
© 2019 CoolAutomation LTD.

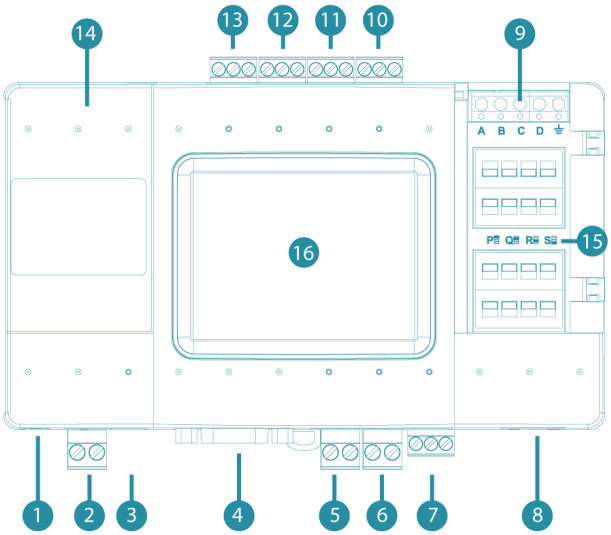
1 Features

- Seamless integration of HVAC systems with all Home Automation/BMS controllers
- Compatibility with all VRV/VRF HVAC brands e.g. Daikin, Mitsubishi Electric, etc
- Multi-brand simultaneous support
- Interfaces via RS232 (ASCII), RS485 (MODBUS RTU according to EIA/TIA-485 standard), Ethernet (ASCII & MODBUS IP) for all HVAC brands
- Full control & monitoring of HVAC indoor units operation
- Color LCD with Touch Screen for control and system management
- "All On" / "All Off" capability using external signal (e.g. for fire alarm systems)
- Configurable GPIO
- Remote access by Smart Phone, Tablet and PC (www.CoolRemote.net). Supported by operating systems: Windows, IOS, Android
- Cloud integration
- HVAC systems diagnostics (optional)
- Direct KNX interface (via extension board)

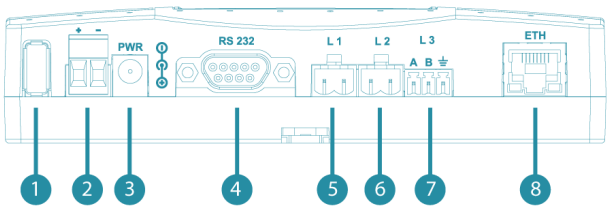
© 2019 CoolAutomation LTD.

2 Layout





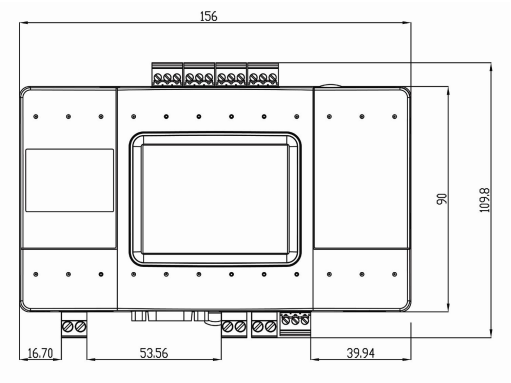
1. USB Host
2. Power
3. Power Plug
4. RS232 Port
5. HVAC Line L1
6. HVAC Line L2
7. HVAC Line L3 or RS485 Port
8. Ethernet Port
9. GPIOs
10. HVAC Line L7
11. HVAC Line L6
12. HVAC Line L5
13. HVAC Line L4
14. USB Device Port
15. DIP Switches P,Q, R,S
16. LCD with Touch Screen



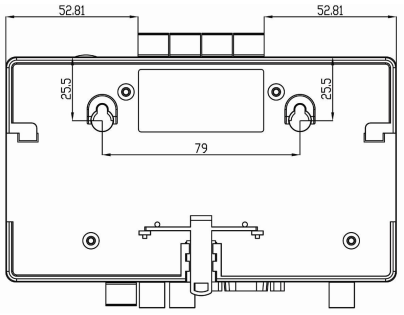
© 2019 CoolAutomation LTD.

3 Physical data

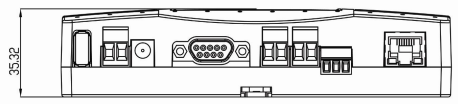
Front view



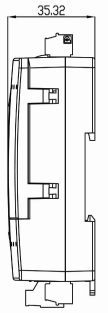
Rear view

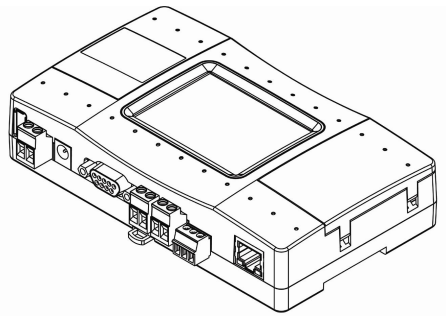


Bottom view



Side view





Product dimensions and weight:

Dimensions (HxWxD)	90 x 156 x 35 [mm]	3.54 x 6.14 x 1.33 ["]
Weight	266 [Gram]	0.58 [lbs]

Transportation packing dimensions and weight:

Dimensions (HxWxD)	70x140x280 [mm]	2.75x5.51x11.02 ["]
Weight	800 [Gram]	1.76 [lbs]

© 2019 CoolAutomation LTD.

4 Specifications

Parameter		Data
Power supply	Min load*	5V/175mA (via mini USB); 12V/120mA; 24V/70mA
	Max load**	5V/300mA (via mini USB); 12V/200mA; 24V/120mA
Mounting		DIN rail / wall
Operating conditions	Ambient temperature	-10°C ~ 60°C / 14°F ~ 140°F
	Humidity	0% ~ 96% non-condensing
Storage conditions	Ambient temperature	-20°C ~ 70°C / -4°F ~ 158°F
	Humidity	0 % ~ 98 % non-condensing
Dimensions	HxWxD	156 x 109.8 x 35.32 [mm] / 6.14 x 4.32 x 1.39 ["]
LCD	Size / # of dots / # of colors	2.8" / 240 x 320 / 262K
Input	Touch panel	8 bit encoded analog input
Communication functions	Direct HVAC conenction	Connection to the 2 wired HVAC bus
	MODBUS (A / B)	RS-485 communication line
	Ethernet	100Mbps
	RS-232	DB9, 9600Bps, ASCII
	USB Host	12Mbps
	USB Device	12Mbps
Maximal allowable wiring length (to BMS) over RS232		25 [m] / 82 [ft]
Maximal allowable wiring length (to BMS) over RS485		1000 [m] / 3300 [ft]
Maximal allowable wiring length (to router) over Ethernet		137 [m] / 450 [ft]
Certification		FCC, CE (EN 60335-1, EN 60335-2-40)

*One HVAC line and Ethernet are connected.
**USB host, Ethernet, HVAC lines 1-7 are connected.

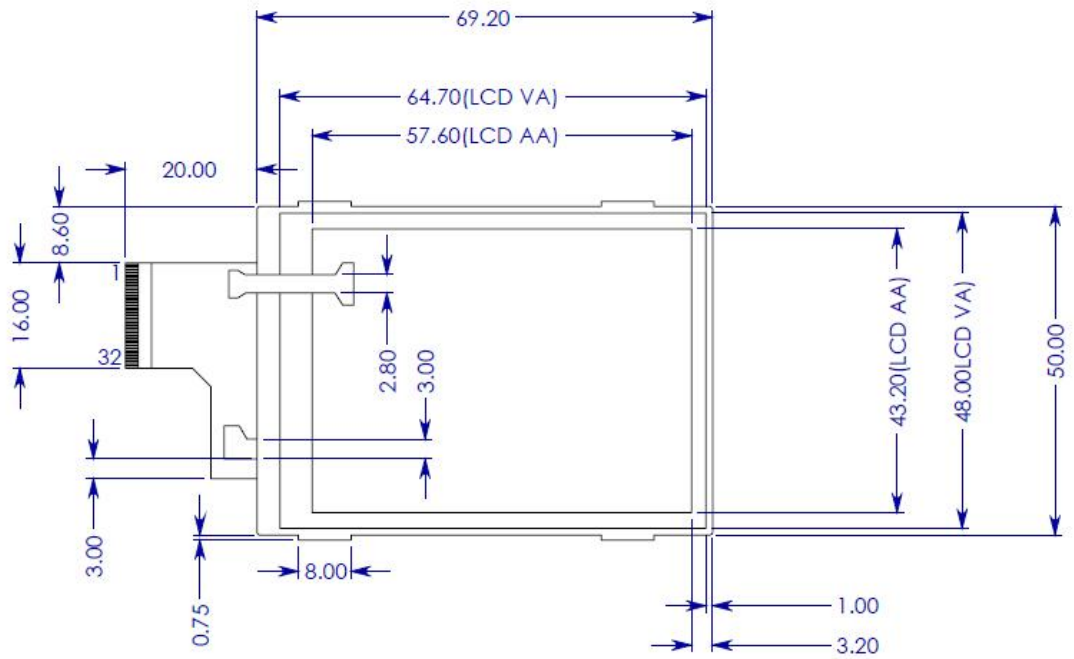
© 2019 CoolAutomation LTD.

5 LCD data

Technical data:

Display Type	TFT NEGATIVE TRANSMISSIVE
Display Color	262K
Display Format	240x320 (RGB)
Operation Temperature	-10°C ~ 60°C / 14°F ~ 140°F
Storage Temperature	-20°C ~ 70°C / -4°F ~ 158°F
Back light Color	WHITE
Dimension (H x W)	57.6 x 43.2 [mm] / 2.26 x 1.70 ["]
Touch panel	Resistive

Dimensions:



© 2019 CoolAutomation LTD.

6 HVAC Interfaces

CoolMasterNet supports various HVAC systems, that have to be connected to designated lines L1-L8. These lines support single or multi brand HVAC, based on limitations, specified below.

HVAC connectivity table

Line #	Manufacturer	Interface	Terminals	Polarity	Maximum Indoor Units (Manufacturers limitation)	Maximum Outdoor Units (Manufacturers Limitation)
L1,L2	Daikin	DIII-NET	F1 F2	none	64	10
	Sanyo	S-NET	U1 U2	none	64	16
	Panasonic		U1 U2	none	64	16
	Toshiba	TCC LINK	U1 U2	none	64	16
	Mitsubishi Electric	M-NET	M1 M2	none	50	10
	Hitachi	H Link, H Link 2	1 2	none	64	10
L4,L5,L6,L7 *	LG		Inter A Inter B	+ -	128	-
	Gree		A B	+ -	16	4
	Mitsubishi Heavy Industries	SuperLink / New SuperLink	A B	+ -	128	10
	Samsung		F1 F2 / R1 R2	+ -	64	10
	Midea		X Y E	+ - GND	64	16
	Kentatsu		X Y E	+ - GND	64	16
	Trane		X Y E	+ - GND	64	16
	Chigo		X Y E	+ - GND	64	16
	Bluestar		A B	+ -	64	10
L8 via USB Host Port	Fujitsu (external LON USB adapter required)	LON (ANSI/CEA-709.1-B)	X1 X2	none	128	10

HVAC Lines interoperability

	L1	L2	L4	L5	L6	L7	L8
L1**		✓	✓		✓	✓	✓
L2**	✓		✓	✓		✓	✓
L4	✓	✓		✓	✓	✓	✓
L5**		✓	✓		✓	✓	✓
L6* **	✓		✓	✓		✓	✓
L7*	✓	✓	✓	✓	✓		✓
L8	✓	✓	✓	✓	✓	✓	

Limitations:

Total number of supported indoors (for all HVAC Lines) can not exceed 255 units

*When DIP switches P1 and P2 are "ON", lines L6 and L7 cannot be used as separated lines. In this case the polarity on the HVAC cable connected to L7 will be automatically detected.

**Line L2 can not be connected simultaneously with line L6 and line L1 can not be connected simultaneously with line L5.

© 2019 CoolAutomation LTD.

7 GPIO

Parameter	GPIO A	GPIO B	GPIO C	GPIO D
V_{IL}	<1V	<1V	<1V	ADC
V_{IH}	>2.4V	>2.4V	>2.4V	ADC
$V_{OUT\ HI}$	3.3V	3.3V	3.3V	3.3V
I_{OUT}	20mA	20mA	20mA	20mA
Pull Up	5.6K	5.6K	5.6K	N.A.

© 2019 CoolAutomation LTD.

8 Options

- **PRO**

This option is available for Daikin, Mitsubishi Electric, Hitachi, Samsung and allows to perform analysis on the HVAC data for service purposes and energy management. It can be enabled on any existing device by activation string.

- **KNX**

Extension PCB board, that can be mounted inside the CoolMasterNet providing direct connection to the KNX bus.

- **Multiple HVAC Port connection**.

This option allows to activate several HVAC lines simultaneously for increasing the number of supported indoors or supporting different HVAC brands on the same site. It can be enabled on any existing device by activation string.

- **GPIO Functions**

CoolMasterNet has 4 digital GPIO, that can be configured for customized applications/functions. By default, GPIO A and B are configured for "All Off" and "All On" functions correspondingly, triggered by external signal.

© 2019 CoolAutomation LTD.