CoolMasterNet PRM

CoolMasterNet
Universal Interface Adapter
for HVAC Systems

Document Revision 0.7 1/12/2017

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 Document Revision History

0.7
- Added Haier

0.6
- Added Chigo

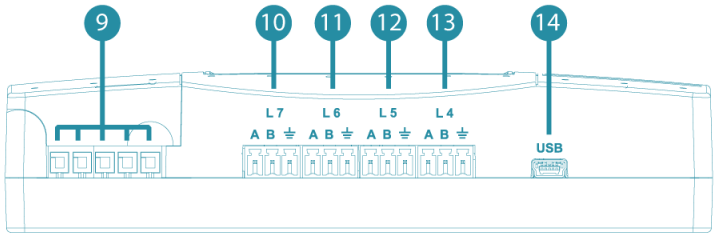
0.5
- Added Midea, Kentatsu, Trane, Fujitsu

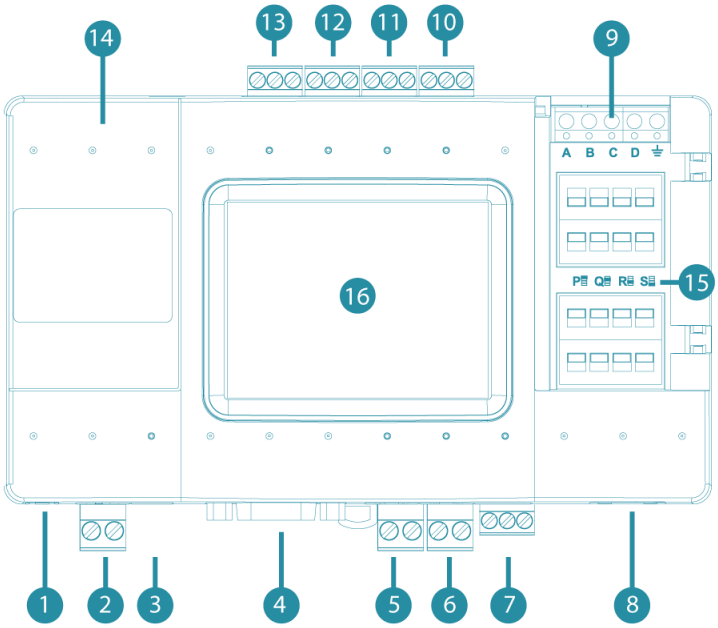
0.4 - Initial
0.3 - Preliminary

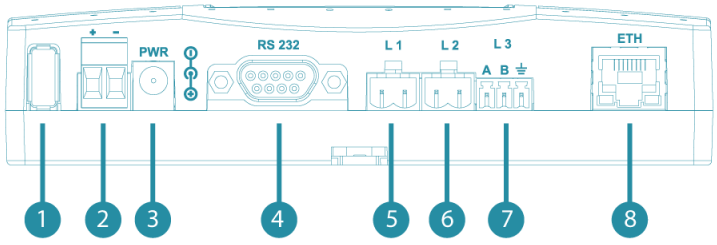
2 Acronyms

DTE	Data Terminal Equipment
ETH	Ethernet
GPIO	General Purpose Input/Output
HVAC	Heating Ventilation and Air Conditioning
TBD	To Be Defined

3 Layout







1. USB Host, HVAC Line L8
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. GPIO
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

4 Connections

4.1 HVAC Lines

CoolMasterNet supports eight HVAC Lines labeled as **L1** ... **L8** (see Layout), intended for connection to various HVAC systems. All eight HVAC Lines can be used simultaneously (except **L1** with **L5** and **L2** with **L6**) and independently according to CoolMasterNet configuration. Most of the HVAC Lines capable to support a number of HVAC Types as specified in table below, but one at time, according to configuration of the specific Line.

HVAC Manufacturer	Acronym	L1	L2	L3	L4	L5	L6	L7	L8
Daikin	**DK**	✓	✓						
Mitsubishi Electric	**ME**	✓	✓						
Sanyo	**SA**	✓	✓						
Toshiba	**TO**	✓	✓						
Panasonic	**PN**	✓	✓						
Hitachi	**HT**	✓	✓						
LG	**LG**			✓	✓	✓	✓	✓	
Mitsubishi Heavy Industries	**MH**			✓	✓	✓	✓	✓	
Gree	**GR**			✓	✓	✓	✓	✓	
Midea	**MD**			✓	✓	✓	✓	✓	
Kentatsu	**KT**			✓	✓	✓	✓	✓	
Trane	**TR**			✓	✓	✓	✓	✓	
Chigo	**CG**			✓	✓	✓	✓	✓	
Fujitsu	**FJ**								✓
Samsung	**SM**			✓	✓	✓	✓	✓	
Tadiran Inverter	**TI**			✓	✓	✓	✓	✓	
Meitav	**MT**			✓	✓	✓	✓	✓	
Haier	**HA**	✓	✓						

Notes:

- DIP Switches **Q** and **R** are used to adjust lines **L1** and **L2** internal parameters to meet specific HVAC Type requirements.
- Lines **L1** and **L5** share the same internal resources of CoolMasterNet and can not be used simultaneously.
- Lines **L2** and **L6** share the same internal resources of CoolMasterNet and can not be used simultaneously. DIP Switch P3 defines which line is enabled.
- Lines **L6** and **L7** can be linked into a single line **L7** with polarity auto-detection, by DIP Switches P1 and P2. Line **L2** can be enabled in this case.
- Line **L3** is by default used for ModBus RTU RS485 communication.

4.2 HomeAutomation/BMS Protocols

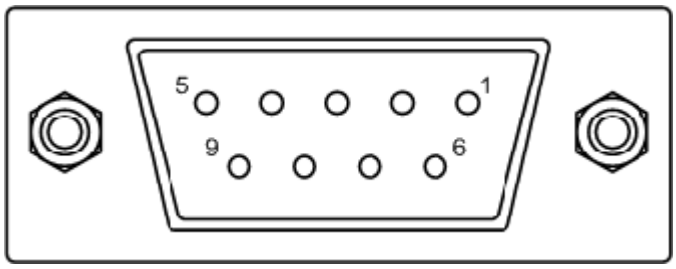
CoolMasterNet supports several Home Automation/BMS protocols.

Home Automation/BMS Protocol	Acronym	Line(s)/Port
KNX	**KNX**	**L3**
PlugBus (CoolHub)	**CH**	**L3,L4,L5,L6,L7**
HDL buspro 4-wire	**HDL**	**L3,L4,L5,L6,L7**
HDL buspro IP		**Ethernet**

ModBus RTU CoolGate 4	**CG4**	**L3,L4,L5,L6,L7**
ModBus RTU CoolGate 5	**CG5**	**L3,L4,L5,L6,L7**
ModBus IP		**Ethernet**
SDDP		**Ethernet**
ASCII I/F		**RS232, Ethernet**
CoolRemote		**Ethernet**

4.3 RS232 Port

RS232 Interface on CoolMasterNet is available from the RS232 DB9 female connector. Below is a DB9 connector front view and signals table.



DB9 Pin	Signal Lvel	Description
2	±12V	TxD (Data from CoolMasterNet to DTE)
3	±12V	RxD (Data from DTE to CoolMasterNet)
5	GND	Ground
1,4,6,7,8	Not Connected	

Gender and pinouts of the RS232 cable supplied with CoolMasterNet are suitable for connection to PC RS232 port directly or via standard RS232 to USB adapter. Maximal length of the RS232 Cable should not exceed 25m. By default RS232 Interface is dedicated for ASCII I/F. The default CoolMasterNet RS232 Port settings are:

Baud Rate	9600
Data Bits	8
Parity Control	None
Stop Bits	1
Flow Control	None

4.4 Ethernet

CoolMasterNet incorporates an IEEE 802.3 compatible 10/100 Mb/s Ethernet port supported via RJ45 connector. Below are main port features.

Parameter	Value	Notes
Max Ethernet Cable Length	137m	CAT5 twisted pair cable
Bit Rate	10/100 Mb/s	
Supported Ethernet Protocols	10BASE-T/100BASE-TX	
Protocol Auto-Negotiation	Enabled	Against Link Partner

RJ45 connector comprises Link and Activity indication LEDs providing following statuses.

LED	Color	Function
Link Led	Green	ON for good link OFF for no link
Activity Led	Orange	BLINK for Tx/Rx Activity

Ethernet port is used by a number of protocol modules available in CoolMasterNet
- ASCII I/F (via ASCII I/F IP Server)
- ModBus IP
- HDL buspro IP
- SDDP
- CoolRemote

Network setting of the CoolMasterNet are controlled with ifconfig command.

4.4.1 ASCII I/F IP Server

ASCII I/F IP Server referenced as **aserver** is a classic row TCP/IP socket server. Aserver has following default characteristics:

Maximal number of simultaneous connections	4
Default TCP/IP port	10102
Prompt character >	enabled

Aserver can be configured with **set** command.

4.4.2 ModBus IP

4.5 RS485

By default Line **L3** is used as an RS485 Interface line for **DTE** connection. CoolMasterNet supports the following RS485 based protocols:
- ModBus RTU (Slave mode)

4.5.1 ModBus RTU

CoolMasterNet can be used as a ModBus RTU slave device working in accordance with Modbus-IDA.ORG "MODBUS over serial line specification and implementation guide". RS485 default frame format is

Baud Rate	9600
Data Bits	8
Parity Control	None
Stop Bits	1
Flow Control	None

4.5.2 CoolGate 4

CoolGate 4 is based on ModBus RTU protocol. Its address map is similar to CoolGate device, previously manufactured by CoolAutomation (see CoolGate PRM for more information). CoolGate 4 protocol can be used for backward compatibility.

4.5.3 CoolGate 5

CoolMasterNet can be used as a ModBus RTU slave device working in accordance with Modbus-IDA.ORG "MODBUS over serial line specification and implementation guide". RS485 default frame format is (can be changed with line baud command)

Baud Rate	9600
Data Bits	8
Parity Control	None
Stop Bits	1
Flow Control	None

CoolGate 5 Indoors Address Map:
In order to simplify translation of the UID (like L1.100) into ModBus object address, CoolMasterNet uses VA, associated with UID. Hex and Dec numbers printed after **va** command are Base Address used to access ModBus objects related to UID-VA association. Base Address can be calculated as BaseAddress = VA*16 + 1. For example Indoor Unit L1.100 has associated VA = 007, thus Base Address = 7*16+1 = 113 (0x71).

Once the Base Address is determined, access to the specific Indoor Unit parameter(s) is done via Modbus objects listed below.

Base Address	Discrete Inputs	Coils	Holding Registers	Input Registers
+0	Reserved	On/Off	Operation Mode	UID
+1		Filter Sign	Fan Speed	Room Temperature x10
+2		Reserved	Set Temperature x10	Failure Code String first two characters
+3			On/Off	Failure Code String last two characters
+4			Filter Sign	Reserved
+5			Swing	
+6			Room Temperature x10 (RO)	
+7			Failure Code (RO)	
+8			Lock Bits	
+9	Digital Input 1	Digital Output 1	Reserved	
+10	Digital Input 2	Digital Output 2		
+11	Digital Input 3	Digital Output 3		
+12	Digital Input 4	Digital Output 4		
+13	Digital Input 5	Digital Output 5		Analog Input 1
+14	Digital Input 6	Digital Output 6		Analog Input 2
+15	Reserved	Reserved		Reserved

UID Encoding

MSB		LSB
Bits 15..12	Bits 11..8	Bits 7..0
Ln	X	YY

Corresponds to Ln.XYY (like for example L1.100)

Operation Mode Encoding

0 - Cool	1 - Heat	2 - Auto	3 - Dry
4 - Haux	5 - Fan	6 - HH	
8 - VAM Auto	9 - VAM Bypass	10 - VAM Heat Exchange	11 - VAM Normal

Fan Speed Encoding

0 - Low	1 - Medium	2 - High	3 - Auto
4 - Top	5 - Very Low (quiet)		7 - VAM Super High
8 - VAM Low Fresh Up	9 - VAM High Fresh Up		

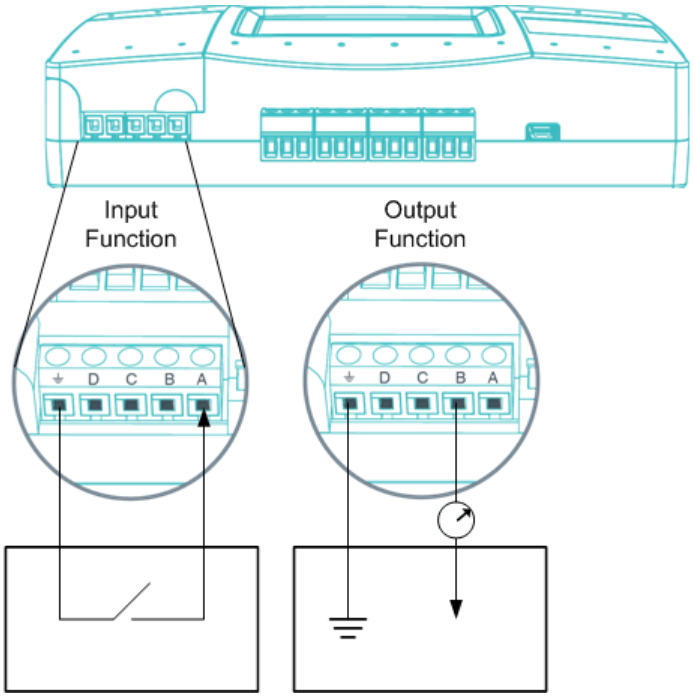
Swing Encoding

0 - Vertical	1 - 30 deg	2 - 45 deg	3 - 60 deg
4 - Horizontal	5 - Auto	6 - OFF	

There is a possibility to read/write holding registers of several indoors by one request. If the read request started from one of the readable registers (not reserved) the values of reserved registers will be 0xFFFF in the response. If the read request started from reserved register the response will be illegal data address. In a similar way it works with the write request. If the write request started from one of the writable registers (not reserved) the values that were intended for reserved registers will be ignored. If the write request started from one of the reserved registers the response will be illegal data address.

4.6 GPIO

CoolMasterNet supports four GPIO marked as **A B C D** (see Layout). GPIO can be in Input or Output mode depending on it's functionality



Parameter	GPIO A	GPIO B	GPIO C	GPIO D
Input Low Voltage (V_{IL})	<1V	<1V	<1V	ADC
Input High Voltage (V_{IH})	>2.4V	>2.4V	>2.4V	ADC

Output High Voltage (V OUT HI)	3.3V	3.3V	3.3V	3.3V
Max Output Current (I OUT)	20mA	20mA	20mA	20mA
Pull Up	5.6K	5.6K	5.6K	N.A.

Control of the GPIO functionality is done with **gpio** command.

4.7 USB

CoolMasterNet incorporate USB Device and USB Host ports. USB Device port is used for maintenance operations.

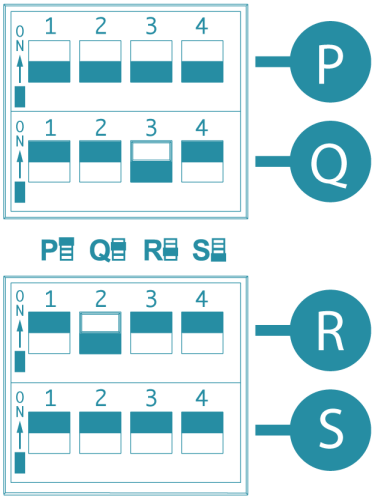
4.8 Power

CoolMasterNet can be powered from different power sources:

- AC/DC adapter supplied with CoolMasterNet
- 12-24V DC from HVAC or other equipment
- USB Device port

5 DIP Switches

DIP Switches are located behind the small access door at the upper right side of the CoolMasterNet.



DIP Switch P

Switch	ON	OFF
P1,P2	Link L6,L7 and enable polarity auto-detection on L7	Separate L6,L7
P3	L6 Enabled, L2 Disabled	L2 Enabled, L6 Disabled
P4	Production Mode	Normal Operation Mode

Notes:

- Switches P1 and P2 should be in the same position. If they are both in ON position, HVAC Lines L6 and L7 are linked into one line with option to auto-detect line polarity. Otherwise, if both P1 and P2 are in OFF position HVAC Lines L6 and L7 are separate independent lines.
- If L6 and L7 are linked into L7, enabling of the L2 with P3 will not influence on L7 operation.
- Switch P4 must be in OFF position for normal operation of CoolMasterNet.

DIP Switches Q,R

DIP Switched Q and R are used to adjust HVAC Lines L1 and L2 internal parameters to meet specific HVAC type requirements.

HVAC Type	DIP Switch Q - HVAC Line L1			
	Q1	Q2	Q3	Q4
DK	ON	OFF	ON	OFF
ME	OFF	OFF	OFF	OFF
TO	OFF	ON	OFF	ON
SA	OFF	ON	OFF	ON
PN	OFF	ON	OFF	ON
HT	OFF	ON	OFF	ON
HA	OFF	ON	OFF	ON

HVAC Type	DIP Switch R - HVAC Line L2			
	R1	R2	R3	R4
DK	ON	OFF	ON	OFF
ME	OFF	OFF	OFF	OFF

TO	OFF	ON	OFF	ON
SA	OFF	ON	OFF	ON
PN	OFF	ON	OFF	ON
HT	OFF	ON	OFF	ON
HA	OFF	ON	OFF	ON

Notes:

- If all four Dip Switches R1, R2, R3, R4 are in ON position during CoolMasterNet power reset, CoolMasterNet will be forced to enter BOOT Mode.

Dip Switch S

Switch	ON	OFF
S1,S2	Enable DC Output on HVAC Line L1	Disable DC Output on HVAC Line L1
S3,S4	Enable DC Output on HVAC Line L2	Disable DC Output on HVAC Line L2

Notes:

- Switches S1 and S2 should be in the same position.
- Switches S3 and S4 should be in the same position.
- DC Output on HVAC Line L1 or L2 is required only in case when the line is configured as DK or ME and non VRF equipment is connected to this line (via KRP, MAC or similar adapter). **And only if no other DC source is present on this line**.

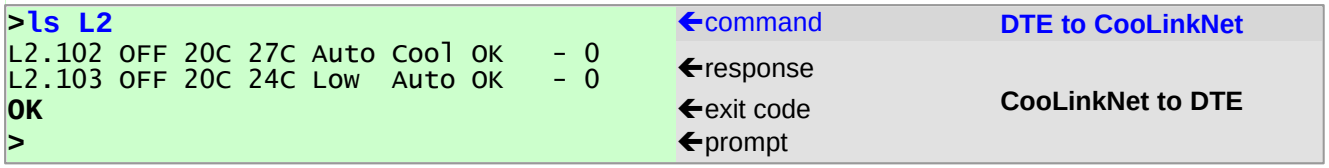
6 ASCII I/F

CoolMasterNet provides a simple and comprehensive ASCII I/F Protocol, based on text (ASCII) strings, representing verbal commands and responses . ASCII I/F implemented in CoolMasterNet is fully backward compatible with previous versions of CoolAutomation products, but has a number of significant extensions and improvements mainly aimed to support additional CoolMasterNet functionality. ASCII I/F can be utilized via RS232 interface (see RS232 Port) or TCP/IP Server.

6.1 General Protocol Definitions

6.1.1 Messaging

Communication between DTE and CooLinkNet via ASCII I/F is based on text (ASCII) strings. Communication example is shown below



Command string sent to CooLinkNet must be terminated with <CR> (carriage return 0x0D) <LF> (line feed 0x0A) sequence or a single <CR> character. Strings from CooLinkNet (except prompt character) are always terminated with <CR> <LF>. Commands are case sensitive and should not contain leading or trailing spaces. The only separator between command name and command parameter(s) is space (0x20) character.
Configuration parameter **echo** (see set command), defines if characters sent to CooLinkNet via RS232 interface are echoed back or not. If **echo** is not zero - characters are echoed.
In case of RS232 interface, prompt character '**>**' is unconditionally sent by CooLinkNet. In case of ASCII Server prompt sending is configurable.

6.1.2 Exit Code

CoolMasterNet provides Exit Code in verbose or numeric form. Numeric form format is
ERROR:N
where N is a number in range 0...999. If verbose format is not specified in table below it means error has only numeric format.

Numeric	Verbose	Description
0	OK	Command executed successfully
1	No UID	UID not found
2	Not Strict UID	UID must be precise
3	Bad Format	Command format is wrong
4	Failed	Command execution failed
5	Line Unused	Line is unused
6	Unknown Command	Command is unknown
7	Bad HVAC Line	Line number is wrong
8	Bad Function	Wrong function
9	Bad Line Type	Wrong line type definition
10	Bad Parameter	Command parameter is wrong
11	OK, Boot Required!	Command execution will be effective after reboot
12	Bad GPIO	Wrong GPIO
13	SDDP Disabled	SDDP module is disabled, enable it to proceed

14	Virtual Address In Use	Virtual address already in use
15	Bad Property	Wrong property
16	Number of lines exceeded	Can't define more line types
17	Warning! Dip Switch State Incorrect	Dip swith state is incorrect for defined line type
18	SDDP Not Initialized	SDDP is enabled, but Ethernet link is still down
80	ModBus Error:80	No response from the addressee
81	ModBus Error:81	Big timeout between bytes in received message
82	ModBus Error:82	Small timeout between bytes in received message
83	ModBus Error:83	Received message with internal timeout
84	ModBus Error:84	Received message is too big
85	ModBus Error:85	CRC error in received message
86	ModBus Error:86	ModBus exception in response
100	Collision	Collision in sent command on HVAC line
101	Unsupported Feature	Unsupported command or command's parameter for this HVAC line
102	Incorrect Indoor Type	Chosen Indoor Unit doesn't support this command or command's parameter
103	No ACK From Indoor	Indoor Unit didn't acknowledged sent command
104	Time Out on Receive	No response from Indoor Unit
105	CS Error In Received Message	Check Sum error in received message
106	Line Init In Progress...	Can't show lines status due to initialization process
107	Line Error	Some error on the HVAC line
108	Feed Disabled	Indoor Unit can't receive measured ambient temperature due to its switch position
150	HDL Not Initialized	HDL line was not defined or ethernet cable is unplugged
151	HDL DB Overflow	HDL Data Base is full, can't add new configuration
152	HDL Eth Disabled	HDL over ethernet disabled
200	UID Not Found	Specified Indoor Unit not found in Data Base
201	Strict UID Not Found	Specified Indoor Unit by uid strict not found in Data Base
202	Indoor Removed	Indoor Unit removed from Data Base
203	DB Overflow	Indoor Units Data Base is full, can't add new one
204	Group DB Overflow	Group Data Base is full, can't add new group
205	VA DB Overflow	Virtual address Data Base is full, can't associate Indoor Unit with new virtual address
206	FDB5 Overflow	Properties Data Base is full, can't add new property
250	Link DB Overflow	Link Data Base is full, can't link new CoolPlug device with Indoor Unit
251	No CoolHub Line	CoolHub line not defined, define it to proceed
252	Auto Visibility Failed	During link creation there was an error on adding visibility props
253	Link already exists	CoolPlug device already linked, delete previous link before creating the new one
307	KNX DB Overflow	KNX Data Base is full, can't add new group
309	KNX Not Connected	No connection with KNX chip
310	KNX Line Not Started	KNX line not defined

6.1.3 UID

UID is used to identify Indoor Unit or a set of Indoor Units. UID has the following format:

Line	Dot	Indoor Number	
Ln	**.**	X	YY

- Line is a CooLinkNet HVAC Line number in range L1..L4. **L*** means "any line". In some cases to provide backward compatibility Line can be omitted from the UID.
- Dot is a separator between Line and Indoor Number. If Line is omitted or has a **L*** form, dot must also be omitted.
- Indoor Number is an Indoor Unit number in HVAC system. Indoor Number can be '*' that means "any"

Examples:

L1.102	Indoor Unit 102 on line L1
L2.003	Indoor Unit 003 on line L2
L*100	Set of Indoor Units 100 on all lines
L3.1*	Set of Indoor Units 1xx on line L3 (L3.100, L3.101, ...)
L4	All Indoors on line L4
L*	All Indoors on all lines
203	Similar to L*203 (for backward compatibility only)

UID_STRICT

In some cases only specific Indoor Unit should be referenced by UID. In this case it is required to use UID_STRICT in format **Ln.XYY** where '*' usage is prohibited.

6.2 Commands Reference

Synopsis and description of the commands listed below have the following notation:

- Parameters or parameters group in angle brackets **< >** are mandatory.
- Parameters or parameters group in square brackets **[ ]** are optional and can be omitted.
- The curly braces **( )** are used to denote group inside braces
- The **|** character between parameters inside brackets means OR.

6.2.1 Configuration Commands

---

set

SYNOPSIS

set [<SETTING> <VALUE>]
set defaults

DESCRIPTION

Query or change CoolMasterNet setting(s). Without parameters **s e t** command will list all supported settings

and their values. To change setting use format with **<SETTING>** and **<VALUE>**. Some settings are read only (RO) and can not be changed.
set defaults will load default values to all settings

<SETTING>	Mode	Printed as	Value*	Description
S/N	RO	S/N		CoolMasterNet Serial Number
version	RO	version	X.Y.Z	CoolMasterNet Firmware Version
app	R/W	application	string	CoolMasterNet Application
baud	R/W	baud rate	1200...115200	RS232 Interface baud rate. Default: **9600**
echo	R/W	echo	0 or **1**	RS232 Interface echo control. 0 - disabled, 1 - enabled
verbose	R/W	verbose	0 0r **1**	Exit Code format. 0 - numeric, 1 - verbose
aserver port	R/W	aserver port	integer	aserver TCP port. Default: **10102**
aserver prompt	R/W	aserver prompt	0 or **1**	aserver prompt control
deg	R/W	deg C/F	**C/c** or F/f	Temperature scale Celsius or Fahrenheit
melody	R?W	melody	string	PowerUp melody. The value is printed as melody name, to change the melody its number should be typed. **set melody** will list supported melodies and their numbers.
filter visi	R/W	filter	visi_0 or visi_1 or **-**	Indoor Units visibility regarding props command. - props visibility applies only to LCD, 1 props visibility applies to LCD and status/control commands, 0 - props visibility logic is inverted and it applies to LCD and status/control commands
HVAC lines	RO	HVAC lines	0...8	Allowed number of HVAC lines. Can be changed through encoded activation string.

* - Bold values are defaults.

EXAMPLE
Disable echo
```
>set echo 0
OK
```
Change aserver TCP port
```
>set aserver port 12345
OK
```
Load defaults
```
>set defaults
OK
```
Apply props visibility to status/control commands
```
>set filter visi 1
OK, Boot Required!
```
Set RS232 Interface to 19200, 8 data bits, even parity, 1 stop bit
```
>set baud 19200 8E1
OK
```
Set temperature scale to Fahrenheit
```
>set deg f
OK
```
Set PowerUp melody to 3
```
>set melody 3
OK
```

line

SYNOPSIS

line
line <PROPERTY> <Ln> <VAL>

DESCRIPTION

Query or change HVAC Line(s) status and configuration. In format without parameters **l i n e** command will provide information about current Line statuses. Second format is used to change write enabled properties.

<PROPERTY>	Mode	Value	Description	Notes
master	R/W	0 or 1	CoolMasterNet acts as a Master device	DK, LG, SA, TO, PN only
simul	R/W	integer	Simulate given number of Indoor Units. To disable simulation use "0". Simulation is persistent (not disabled after power reset) By default the simulation model is: with failures, no ventilation units, no input/output units. To enable/disable special conditions use the following flags: +/-flr, +/-vam, +/-io (see example)	Input/Output units for ME only Ventilation units for DK, ME, LG only
myid	R/W	string	CoolMasterNet Own address on given HVAC Line. **For ModBus RTU Line myID is a "Slave Device Address"**	
baud	R/W		Configure UART parameters for given Line. Value format is: <BAUD> <8|9><N|E|O><1|2> For example: 9600 8N1	Where applicable
Tx	RO	integer counter	Transmitted messages	Printed as Last/Total Last means since previous print
Rx	RO		Received messages	
TO	RO		Timeout errors	
CS	RO		Checksum errors	
Col	RO		Collision errors	
NAK	RO		NAK errors	
haux	R/W	heat or haux	Heat mode treated as Haux mode. This is only for situation when HomeAutomation controller doesn't have Haux support, but need to set Haux mode on ThermoPad(s) connected to CH line.	For CoolHub (CH) line only
type	R/W	string	Define line type by acronym. Number of HVAC lines cannot exceed the value of HVAC lines in set command. HomeAutomation/BMS lines don't count as HVAC Lines. To free a line use **Unused** instead of acronym.	See the full list of HVAC and HomeAutomation/BMS lines supported
scan	R/W	0 or 1	Implicitly detect Indoor Units	ME, HT, SA, TO, PN only
DCOUT	R/W	- or +	Control DC output on L1,L2	DK,ME only
slink	R/W	O/o or N/n	Configure Mitsubishi Heavy SuperLink mode: O - old, N - new	MH only
			Configure Samsung model type: O - DVM, N - DVM-S	SM only
[A|B] or [B|A]	RO		Current polarity	Line L7 only

EXAMPLE

```
>line
  L1: SA U00/G02 myID:E5
   Tx:732/732 Rx:47227/47227 TO:0/0 CS:0/0 Col:0/0 NAK:0/0
  L2: DK Master U00/G07 myID:0B
   Tx:4579/4579 Rx:50633/50633 TO:3/3 CS:0/0 Col:10/10 NAK:0/0
  L3: Unused
```

```
   Tx:0/0 Rx:0/0 TO:0/0 CS:0/0 Col:0/0 NAK:0/0
  L4: Unused
   Tx:0/0 Rx:0/0 TO:0/0 CS:0/0 Col:0/0 NAK:0/0
  L5: Unused
   Tx:0/0 Rx:0/0 TO:0/0 CS:0/0 Col:0/0 NAK:0/0
  L6: Unused
   Tx:0/0 Rx:0/0 TO:0/0 CS:0/0 Col:0/0 NAK:0/0
  L7: MH SLink:N U00/G02 myID:C900 [A|B]
   Tx:20072/20072 Rx:26989/26989 TO:25/25 CS:0/0 Col:1/1 NAK:0/0
OK
```

Become Slave on Line L4

```
>line master L4 0
OK, Boot Required!
```

Set Line L3 baud rate to 19200, 8 data bits, even parity, 1 stop bit

```
>line baud L3 19200 8E1
OK, Boot Required!
```

Simulate 5 Units on line L2 without failures ventilation units and with input/output units

```
>line simul L2 5 -flr-vam+io
OK, Boot Required!
```

Heat mode will be treated as haux for ThermoPads connected to CH line

```
>line haux L3 heat
OK, Boot Required!
```

Free line L2 by defining it as Unused

```
>line type L2 Unused
OK, Boot Required!
```

Define Toshiba type on line L2

```
>line type L2 TO
OK, Boot Required!
```

Define HDL Bus Pro on line L3

```
>line type L3 HDL
OK, Boot Required!
```

ifconfig

SYNOPSIS

ifconfig
ifconfig <PROPERTY> <VALUE>
ifconfig enable|disable

DESCRIPTION

Query or configure Ethernet network settings. Without parameters, **ifconfig** command will list current configuration. To change configuration use format with **<PROPERTY>** and **<VALUE>**. Parameter **IP** can be set to **DHCP** (DHCP client) or fixed IP number. In case of DHCP - Netmask and Gateway values are provided by DHCP server. By default CoolMasterNet is configured for DHCP client operation. CoolMasterNet Ethernet module can be enabled or disabled with corresponding command.

<PROPERTY>	Mode	Value	Description	Notes
MAC	RO	string	MAC (Media Access Control) address of CoolMasterNet	
Link	RO	Up or Down	Indicate whether ethernet link is active	
IP	R/W	string	Set fixed (static) IP address or set it to DHCP	

Netmask	R/W	string	Set Netmask address in case IP is static	
Gateway	R/W	string	Set Gateway address in case IP is static	
DNS1	R/W	string	Set prefered DNS address	
DNS2	R/W	string	Set alternate DNS address	

EXAMPLE

Query

```
>ifconfig
MAC    : 28:3B:96:00:02:0F
Link   : Up
IP     : 192.168.16.108 (DHCP)
Netmask: 255.255.255.0
Gateway: 192.168.16.254
DNS1   : 8.8.8.8
DNS2   : 8.8.4.4
OK
```

Configure fixed IP, Gateway and Netmask

```
>ifconfig IP 192.168.1.102
OK, Boot Required!
>ifconfig Gateway 192.168.1.0
OK, Boot Required!
>ifconfig Netmask 255.255.0.0
OK, Boot Required!
```

Configure DHCP client operation

```
>ifconfig IP DHCP
OK, Boot Required!
```

Disable Ethernet

```
>ifconfig disable
OK, Boot Required!
```

Change DNS prefered address

```
>ifconfig DN1 208.67.222.222
OK, Boot Required!
```

boot

SYNOPSIS

boot
boot [N]

DESCRIPTION

- <N> omitted - Enter Boot Mode
- <N> = 2 - Reset CoolMasterNet

sddp

SYNOPSIS

sddp
sddp <enable|disable|identify|offline|alive>

DESCRIPTION

Configure Control4® Simple Device Discovery Protocol (SDDP) module. CoolMasterNet is compliant with Control4® SDDP v1.0 specification and can act as SDDP enabled device.

- Without parameters, if SDDP module was enabled and Ethernet cable connected, **sddp** command will list supported protocol version and packet counters.
- **sddp enable** - persistently enables SDDP module (effective after reset). Default state.
- **sddp disable** - persistently disables SDDP module (effective after reset)
- **sddp identify** - sends IDENTIFY message to Control4® Composer tool to add CoolMasterNet to the current project
- **sddp offline** - signals that CoolMasterNet is going offline
- **sddp alive** - signals that CoolMasterNet is online

EXAMPLE

Enable SDDP module

```
>sddp enable
OK, Boot Required!
```

Send IDENTIFY message

```
>sddp identify
OK
```

---

knx

SYNOPSIS

knx
knx addr <area/line/device>
knx ram <R>
knx funcs
knx group
knx group <GA>[<func> <direction> <UID>]
knx group dellall
knx group -<G>

DESCRIPTION

Query or change KNX status and configuration. In format without parameters **knx** command will provide information about current connection status and number of used groups.

- **knx addr <area/line/device>** - Set KNX physical address in the form of area/line/device
- **knx ram <R>** - Create group Data Base for R groups. The operation will take effect after reboot. Use this operation only if default group Data Base is too small. The current Data Base usage can be seen in **knx** command.
- **knx funcs** - Print all available group functions.
- **knx group** - List existing KNX groups (linkage status)
- **knx group <GA>** - List existing KNX groups (linkage status) for the given group address
- **knx group <GA> <func> <direction> <UID>** - Create new KNX group, i.e. link KNX group address <GA> with CoolMasterNet function and UID. <GA> can be in the form of Main/Mid/Sub or Main/Sub, direction: < - CoolMasterNet input, > - CoolMasterNet output.
- **knx group dellall** - Delete all KNX groups
- **knx group -<G>** - Delete KNX group number **<G>**. Group numbers displayed in the list of existing groups.

SUPPORTED FUNCTIONS

Name used in command	Full name	Values	Data type	Can be sent to CoolMasterNet	Can be sent from CoolMasterNet
onoff	On/Off	0 - off, 1 - on	1.001	✓	✓
ST	Set temperature	float value according to data	9.001	✓	✓

		type			
RT	Room Temperature	float value according to data type	9.001	✓	✓
Mode	Mode value	0 - cool, 1 - heat, 2 - auto, 3 - dry, 5 - fan	5.010	✓	✓
M	Mode	0 - cool, 1 - heat	1.001	✓	✓
Fstep	Fan speed step	0 - previous fan speed, 1 - next fan speed (according to fspeed properties*)	1.001	✓	
F8	Fan speed count	value is a sequential fan speed regarding allowed fan speeds in fspeed properties*	5.010	✓	✓
F%	Fan speed scale %	the percent value is converted to fan speed count (previous function) and then to actual fan speed, the steps are inversed when fan speed is sent from CoolMasterNet	5.001	✓	✓

Notes:
* - If properties record doesn't exist default fan speeds are used: low, medium, high, auto

EXAMPLE

Print KNX status

```
>knx
KNX Line  : Not Detected
KNX RAM   : 7/128
OK
```

Create KNX group: link 10/0/1 with L1.100 as CoolMasterNet Mode input

```
>knx group 10/0/1 M < L1.100
OK
```

Create KNX group: link 10/0/1 with L1.100 as CoolMasterNet Room Temperature output

```
>knx group 10/0/1 RT > L1.100
OK
```

List KNX group for group address 10/0/1

```
>knx group 10/0/1
G000:10/0/1  [ On/Off           ] < L1.100
G001:10/0/1  [ Mode             ] < L1.100
G002:10/0/1  [ Room temperature ] > L1.100
OK
```

Print all available group functions

```
>knx group 10/0/1
   onoff ->  On/Off           DT:{1.001} [<|>]
   ST    ->  Set temperature  DT:{9.001} [<|>]
   RT    ->  Room temperature DT:{9.001} [<|>]
   M     ->  Mode             DT:{1.001} [<|>]
   Fstep ->  Fan speed step   DT:{1.001} [<| ]
   F8    ->  Fan speed count  DT:{5.010} [<|>]
   F%    ->  Fan speed scale % DT:{5.001} [<|>]
OK
```

Delete group number 2

```
>knx group -2
OK
```

props

SYNOPSIS

props
props <UID_STRICT> <PROPERTY> <VAL>

DESCRIPTION

Query or change Indoor Unit(s) properties. In format without parameters **props** command will list all stored properties in comfortable table.

<PROPERTY>	Mode	Value	Description	Notes
visible	R/W	0 or **1**	Define Indoor Unit visibility on LCD. 0 - invisible, 1 - visible. Also depends on filter setting.	The property take effect after reboot
name	R/W	string	Define Indoor Unit name to display on LCD. Default value is no name.	When Indoor Unit doesn't have name property the default name in format **Ln.XYY** is displayed
fspeed	R/W	<+|->v, **l, m, h,** t, **a**	Define fan speed previous/next switch options on LCD: + allow, - forbid. Works also with fan speed commands to/from KNX bus. v - very low/quiet, l - low, m - medium, h - high, t - top, a - auto	Different fan speed properties can be combined in one command (see example below)
mode	R/W	<+|->**c, d**, **f**, **h**, hx, hh, **a**	Mode properties logic not implemented yet. c - cool, d - dry, f - fan, h - heat, hx - haux, hh - heat & haux, a - auto	Different mode properties can be combined in one command (see example below)

Notes:
Indoor Unit properties record created when defining any of the listed properties, while the rest properties receive default values that can be overwritten later.
Bold values are defaults.

EXAMPLE

Add name property to Indoor Unit 204 on line L6

```
>props L6.204 name Kitchen
OK
```

Make Indoor Unit 102 on line L1 invisible on LCD

```
>props L1.102 visible 0
OK, Boot Required!
```

Forbid medium and auto fan speeds to Indoor Unit 107 on line L2

```
>props L1.102 fspeed -m-a
OK
```

Define cool, fan, haux modes to Indoor Unit 101 on line L1

```
>props L1.101 mode +c+f+hx-h-d-hh-a
OK
```

List all stored properties

```
>props
  UID   |      Name       | Visi |      Modes      |   Fspeeds   |
------- ---------------- ------ ----------------- -------------
L6.204 | Kitchen         |  1   | c d f h       a |   l m h   a |
```

```
L1.102 | -              |  0   | c d f h       a |   l m h   a |
L2.107 | -              |  1   | c d f h       a |   l   h     |
L1.101 | -              |  1   | c   f   hx      |   l m h   a |
OK
```

link

SYNOPSIS

l i n k
link delall
link -L
link ram R
link <UID1_STRICT><=|~><UID2_STRICT>

DESCRIPTION

Control link operation in CoolMasterNet. Linking ThermoPad on CoolHub line with Indoor Unit will grant the ThermoPad full control over the Unit.

- In format without parameters **l i n k** will list existing links
- **link delall** - delete all links
- **link -L** - delete link number L (link numbers displayed in the list of existing links)
- **link ram R** - create link Data Base for R groups. The operation will take effect after reboot. Use this operation only if default link Data Base is too small.
- **link <UID1_STRICT><=|~><UID2_STRICT>** - create new link, where UID1 is ThermoPad on CoolHub line and UID2 is Indoor Unit. The command generate invisible property for one of the UID's. **<=|~>** defines link type: = regular link, the ThermoPad will become invisible; ~ link with haux mode usage, the Indoor Unit will become invisible. Regular link will allow to control the Indoor Unit through UID2, while haux link through UID1.

EXAMPLE

List existing links

```
>link L3.082=L1.101
L000: L3.081 <--> L7.096
L001: L3.083 <--> L1.100
OK
```

Delete link number 0

```
>link -0
OK
```

Link ThermoPad 082 on line L3 with Indoor Unit 101 on line L1 (regular link)

```
>link L3.082=L1.101
OK, Boot Required!
```

Link ThermoPad 080 on line L3 with Indoor Unit 100 on line L1 (haux link)

```
>link L3.080~L1.100
OK, Boot Required!
```

Delete all links

```
>link delall
OK
```

Create link Data Base for 60 links

```
>link ram 60
OK, Boot Required!
```

plug

SYNOPSIS

plug <UID_STRICT> <ascii if command>

DESCRIPTION

Forward compatible HVAC status and control or configuration command to CoolPlug device connected to CoolHub line. CoolPlug device will be recognized by CoolMasterNet as Indoor Unit with UID. Refer to CoolPlug PRM for list of compatible commands.

EXAMPLE

Send set command to CoolPlug device 080 on CoolMasterNet line L3

```
>plug L3.080 set
S/N           : 00E60100
version       : 0.0.2
baud rate     : 9600
echo          : 1
verbose       : 1
deg C/F       : C
HVAC lines    : 1
OK
OK
```

Query current line statuses of CoolPlug device 080 on CoolMasterNet line L3

```
>plug L3.080 line
  L1: P1P2 A:Master U00/G10 Simul(10)  Not Main RC
   Tx:1154/1695 Rx:1153/1694 TO:0/0 CS:0/0 Col:0/0 NAK:0/0
  L2: PB Address:0x50(80) 9600_8N1
   Tx:752/1038 Rx:1497/2319 TO:0/0 CS:0/0 Col:0/0 NAK:0/0
OK
OK
```

hdl

SYNOPSIS

hdl
hdl delall
hdl - <UID_STRICT>
hdl + <UID_STRICT> <channel> <AC_No> <enable> <m0m1m2m3m4f0f1f2f3>
hdl eth
hdl eth <enable|disable>
hdl eth myid <ID>

DESCRIPTION

Query or change HDL status and configuration. In format without parameters **hdl** command will list existing AC (Air Condition) configurations in similar way it is displayed in HDL Buspro Setup tool.

- **hdl delall** - delete all AC configurations
- **hdl - <UID_STRICT>** - delete AC configuration for specific Indoor Unit
- **hdl + <UID_STRICT> <channel> <AC_No> <enable> <m0m1m2m3m4f0f1f2f3>** - create AC configuration for Indoor Unit. All parameters are taken from AC configurations table in HDL Buspro Setup tool: channel - line number in AC configurations table, AC_No - integer number to bind to Indoor Unit, enable - 0 (invalid) or 1 (valid), modes - m0=cool m1=heat m2=fan m3=auto m4=dry, fan speeds - f0=auto f1=high f2=medium f3=low: +=allowed -=not allowed (see example).
- **hdl eth** - print HDL ethernet status and packet counters
- **hdl eth <enable|disable>** - enable/disable HDL over ethernet
- **hdl eth myid <ID>** - change Subnet and Device ID: the ID is entered in hexadecimal format, MS byte is Subnet ID, LS byte is Device ID (see example)

Notes:
Subnet ID and Device ID of HDL RS485 line can be changed with line myid command.

EXAMPLE

List existing AC configurations

```
>hdl
Ch | AC | En |     Remark     |   CA    | CHFAD | AHML |
--- ---- ---- ---------------- -------- ------- ------
1  |  1 |  1 | L1.100         | L1.100 | ++--- | -+-+ |
2  |  2 |  1 | L1.101         | L1.101 | ++++- | ++++ |
OK
```

Delete AC configuration for Indoor Unit L1.101

```
>hdl - L1.101
OK
```

Create AC configuration for Indoor Unit L2.301: channel=2, AC number=2, valid, modes=cool heat, fan speeds=high medium

```
>hdl + L2.301 2 2 1 ++----+-+
OK
```

HDL ethernet status

```
>hdl eth
status    : enabled
ID        : 0x01 0x63
send cntr : 0
recv cntr : 0
crc cntr  : 0
OK
```

Enable HDL over ethernet

```
>hdl eth enable
OK, Boot Required!
```

Change HDL ID of CoolMasterNet: Subnet ID=0x01=1, Device ID=0x63=99

```
>hdl eth myid 0163
OK, Boot Required!
```

---

simul

SYNOPSIS

simul [Ln] <CNT>

DESCRIPTION

Simulate **<CNT>** Indoor Units on HVAC Line **<Ln>**. If **<Ln>** is omitted the first not "Unused" HVAC Line will be taken. Simulation is not persistent and CoolMasterNet reset will terminate it.

EXAMPLE

Simulate 5 Indoor Units on HVAC Line L2

```
>simul L2 5
OK
```

---

gpio

SYNOPSIS

gpio
gpio func <A|B|C|D> <GPIO_FUNCTION>

gpio norm <A|B|C|D> <c|C|o|O>

DESCRIPTION

Query or configure GPIO functionality. GPIO configurations are persistent (over power reset) and take effect only after reboot.

- Without parameters **gpio** command provides information about current GPIO configuration in the below format:

```
>gpio
  A: ALL OFF (HI), N.O.
  B: ALL ON  (LO), N.C.
  C: Unused  (HI)
  D: Unused  (HI)
OK
```

Field	Value	Description
GPIO name	A,B,C,D	
GPIO function	Unused	GPIO has no functionality and stays in HiZ input state
	ALL OFF Input	Turn all Indoor Units OFF in transition from Normal to Active state
	ALL ON Input	Turn all Indoor Units ON in transition from Normal to Active state
	OOS Output	On/Off Status. GPIO is in Normal state if all Indoor Units are OFF. GPIO is in Active state if all Indoor Units are ON
Current GPIO Signal Level	(HI)	Signal Level on GPIO is HI
	(LO)	Signal Level on GPIO is LO
Signal Level in Normal State	N.O.	Normal state of GPIO is "Normally Open" (HI)
	N.C.	Normal state of GPIO is "Normally Closed" (LO)

- **gpio func <A|B|C|D> <GPIO_FUNCTION>**

Configure GPIO function. Supported GPIO functions are listed in table above.

- **gpio norm <A|B|C|D> <c|C|o|O>**

Configure Normal state of GPIO.

EXAMPLE

Disable GPIO A functionality

```
>gpio func A Unused
OK, Boot Required!
```

Set GPIO C function to "ALL OFF"

```
>gpio func C ALL OFF
OK, Boot Required!
```

Set Normal state of GPIO A to N.C.

```
>gpio norm A C
OK
```

info

SYNOPSIS

info

DESCRIPTION

Query CollMasterNet dip switches position and DC output on lines L1 and L2.

```
>info
DIP P: | X |OFF| X | X |
DIP Q: |ON | X |ON | X |
DIP R: | X | X | X | X |
DIP S: | X |ON |ON |ON |
L1 DC- OFF  0V
L2 DC+ ON  16V
OK
```

Parameter		Description	
DIP switch	ON	DIP switch is ON	
	OFF	DIP switch is OFF	
	X	DIP switch can't be read	
Line DC	+	DCOUT enable command was given to CoolMasterNet	
	-	DCOUT disable or no command at all was given to CoolMasterNet	
	0v	No voltage detected on the line	
	16v	16 volt detected on the line (own or external)	
	ON	CoolMasterNet enabled DC output on the line	On reboot, CoolMasterNet will enable DC output only if DCOUT enable command was given and DIP switch S is in correct position, otherwise it will disable DC output
	OFF	CoolMasterNet disabled DC output on the line	

modbus

SYNOPSIS

modbus [<SETTING> <VALUE>]
modbus cg4

DESCRIPTION

Query or change CoolMasterNet ModBus configurations. Without parameters **modbus** command will list current ModBus configurations.

<SETTING>	Mode	Printed as	Value	Description
IP	R/W	ModBus IP	enable or disable	Enable/Disable ModBus IP server
server port	R/W	server port	integer	Change Modbus IP server port
ignore	R/W	`CG4 ignore*`	r	The setting is togglable, first command will enable the setting, second will disable (see example)
cg4	RO			List CoolGate 4 ModBus addresses of existing (visible with ls command) Indoor Units

Notes:
* - This setting is applicable only for CoolGate 4. When the setting is enabled it will allow to read/write registers of several indoors by one request. Pay attention that there are reserved registers for every indoor, that will return an error when read/write requested without this setting. If the read request started from one of the readable registers (not reserved) the values of reserved registers will be 0xFFFF in the response. If the read request started from reserved register the response will be illegal data address. In a similar way it works with the write request. If the write request started from one of the writable registers (not reserved) the values that were intended for reserved registers will be ignored. If the write request started from one of the reserved registers the

response will be illegal data address.

EXAMPLE

List current ModBus configuration

```
>modbus
ModBus IP      : disabled
server port    : 502
CG4 ignore     : none
OK
```

Enable ignore setting

```
>modbus ignore r
OK
```

Lisk current ModBus configuration

```
>modbus
ModBus IP      : disabled
server port    : 502
CG4 ignore     : regs
OK
```

Disable ignore setting

```
>modbus ignore r
OK
```

Enable ModBus IP

```
>modbus IP enable
OK, Boot Required!
```

Change ModBus IP server port

```
>modbus server port 500
OK, Boot Required!
```

List CoolGate 4 ModBus addresses of existing Indoor Units

```
>modbus cg4
L1.100 --> Hex: 0x1001, Dec: 4097
L1.101 --> Hex: 0x1011, Dec: 4113
OK
```

6.2.2 HVAC Status and Control Commands

on
allon
off
alloff
cool
heat
fan
dry
auto
haux
temp
fspeed
swing
filt
stat
ls
ls2
query
feed

wh
main
vam
lock
group
CA
va

---

on

SYNOPSIS

on [UID]

DESCRIPTION

Turn on Indoor Unit(s).

EXAMPLE

Turn on Indoor Unit 102 on line L1

```
>on L1.102
OK
```

Turn on all Indoor Units on Line L2

```
>on L2*
OK
```

Turn on all Indoor Units

```
>on
OK
```

---

allon

SYNOPSIS

allon

DESCRIPTION

Turn on all Indoor Units.

---

off

SYNOPSIS

off [UID]

DESCRIPTION

Turn off Indoor Unit(s).

EXAMPLE

Turn off Indoor Unit 102 on line L1

```
>off L1.102
OK
```

Turn off all Indoor Units on line L2

```
>off L2*
OK
```

Turn off all Indoor Units

```
>off
```

```
OK
```

---

alloff

SYNOPSIS

a l l o f f

DESCRIPTION

Turn off all Indoor Units.

---

cool

SYNOPSIS

cool [UID]

DESCRIPTION

Set Indoor Unit(s) operation mode to cool.

EXAMPLE

Set Indoor Unit 102 on line L1 to cool mode

```
>cool L1.102
OK
```

Set all Indoor Units on line L2 to cool mode

```
>cool L2*
OK
```

Set all Indoor Units to cool mode

```
>cool
OK
```

---

heat

SYNOPSIS

heat [UID]

DESCRIPTION

Set Indoor Unit(s) operation mode to heat.

EXAMPLE

Set Indoor Unit 102 on line L1 to heat mode

```
>heat L1.102
OK
```

Set all Indoor Units on line L2 to heat mode

```
>heat L2*
OK
```

Set all Indoor Units to heat mode

```
>heat
OK
```

fan

SYNOPSIS

fan [UID]

DESCRIPTION

Set Indoor Unit(s) operation mode to fan.

EXAMPLE

Set Indoor Unit 102 on line L1 to fan mode

```
>fan L1.102
OK
```

Set all Indoor Units on line L2 to fan mode

```
>fan L2*
OK
```

Set all Indoor Units to fan mode

```
>fan
OK
```

dry

SYNOPSIS

dry [UID]

DESCRIPTION

Set Indoor Unit(s) operation mode to dry.

EXAMPLE

Set Indoor Unit 102 on line L1 to dry mode

```
>dry L1.102
OK
```

Set all Indoor Units on line L2 to dry mode

```
>dry L2*
OK
```

Set all Indoor Units to dry mode

```
>dry
OK
```

auto

SYNOPSIS

auto [UID]

DESCRIPTION

Set Indoor Unit(s) operation mode to auto.

EXAMPLE

Set Indoor Unit 102 on line L1 to auto mode

```
>auto L1.102
OK
```

Set all Indoor Units on line L2 to auto mode

```
>auto L2*
OK
```
Set all Indoor Units to auto mode
```
>auto
OK
```

haux

SYNOPSIS

haux [UID]

DESCRIPTION

Set ThermoPad(s), connected to CoolHub line, operation mode to haux.

EXAMPLE

Set ThermoPad 083 on line L3 to haux mode
```
>haux L3.083
OK
```
Set all ThermoPads on line L3 to haux mode
```
>haux L3
OK
```
Set all ThermoPads to haux mode
```
>haux
OK
```

temp

SYNOPSIS

temp [UID] [±]<TEMP>
temp [UID] <TEMP.d>

DESCRIPTION

Change Indoor Unit(s) Set Temperature.

- In form **temp [UID] [±]<TEMP>**

<TEMP> parameter must be decimal natural number. Command can work in relative or absolute manner. If plus '+' or minus '-' sign precedes **<TEMP>** parameter it's value will be added to or substituted from current Set Temperature value. Otherwise Set Temperature will be set to the given **<TEMP>** value.

- In form **temp [UID\ <TEMP.d>**

Set Temperature parameter **<TEMP.d>** is a fractal number with 0.1 precision. (In this case preceding +|- are not allowed). If HVAC System does not support 0.1 precision for the Set Temperature (see table below), the final value will be nearest supported value.

AC Type	Set Temperature Precision
DK	0.1ºC
ME	0.1ºC
SM	0.1ºC
FJ	0.3ºC
SA	0.5ºC
TO	0.5ºC
PN	0.5ºC

MH	0.5ºC
LG	0.5ºC
HT	1ºC
GR	1ºC
MD,CG,KT,TR	1ºC
TI	1ºC
MT	1ºC

The **deg** setting (see set command) defines which temperature scale Celsius or Fahrenheit is used for **<TEMP>** and **<TEMP.d>** parameters value.

EXAMPLE

Set Indoor Unit 102 on line L1 Set Temperature to 23º

```
>temp L1.102 23
OK
```

Decrease all Indoor Units on line L2 Set Temperature by 2º

```
>temp L2* -2
OK
```

Set all Indoor Units on line L2 Set Temperature to 24.5º

```
>temp L2* 24.5
OK
```

Set all Indoor Units Set Temperature to 22º

```
>temp 22
OK
```

fspeed

SYNOPSIS

fspeed [UID] <v,V|l,L|m,M|h,H|t,T|a,A>

DESCRIPTION

Set Indoor Unit(s) Fan Speed to:

- v, V - very low or quiet
- l, L - low
- m, M - medium
- h, H - high
- t, T - top or very high
- a, A - auto

Not all Indoor Units support Fan Speed options listed above. Specific Fan Speeds support depend on specific Indoor Unit capabilities. If requested Fan Speed is not supported by Indoor Unit(s) **fspeed** command will have no effect.

EXAMPLE

Set Indoor Unit 102 on line L1 Fan Speed to low

```
>fspeed L1.102 l
OK
```

Set all Indoor Units on Line L2 Fan Speed to high

```
>fspeed L2* h
OK
```

Set all Indoor Units Fan Speed to medium

```
>fspeed m
OK
```

swing

SYNOPSIS

swing [UID] <h|v|a|3|4|6|x>

DESCRIPTION

Set Indoor Unit(s) louver position to:

- h - horizontal
- v - vertical
- a - auto (swing)
- 3 - 30º
- 4 - 45º
- 6 - 60º

Not all Indoor Units support louver position options listed about or have louver position control at all. Louver control is capability of the specific Indoor Unit type. If requested louver position is not supported by Indoor Unit(s), **swing** command will have no effect or will return an error.

EXAMPLE

Set Indoor Unit 102 on line L1 louver to horizontal position

```
>swing L1.102 h
OK
```

Set all Indoor Units louver to 30º position

```
>swing 3
OK
```

filt

SYNOPSIS

filt [UID]

DESCRIPTION

Reset Filter Sign.

EXAMPLE

Reset Filter Sign on Indoor Unit 102 0n line L1

```
>filt L1.102
OK
```

Reset Filter Sign on all Indoor Units on Line L2

```
>filt L2*
OK
```

Reset Filter Sign on all Indoor Units

```
>filt
OK
```

stat

SYNOPSIS

stat [UID]
stat2 [UID]
stat3 [UID]

stat4 [UID]

DESCRIPTION

Get Indoor Unit(s) status list.
These commands are deprecated and are not recommended for use in CooMasterNet. They are implemented for backward compatibility only. Detailed description of these commands can be found in the PRM of previous CooMaster versions.

---

ls

SYNOPSIS

ls [UID]

DESCRIPTION

Get Indoor Unit(s) status list. If UID is omitted all Indoor Units connected to CoolMasterNet will be listed. Indoor Unit status line has strict format, so that every status field is printed in fixed position.

- Indoor Unit status line with Celsius temperature scale

```
01234567890123456789012345678901234567
L2.102 OFF 20C 27C High Cool OK   - 0
```

- Indoor Unit status line with Fahrenheit temperature scale

```
012345678901234567890123456789012345678
L2.102 OFF 120F 127F High Cool OK   - 0
```

Field	Position in string		Values
	Celsius	Fahrenheit	
UID	0-5		LN.XYY
On/Off	7-9		ON,OFF
Set Temperature	11-12	11-13	nnC or nnnF
Room Temperature	15-16	16-18	nnC or nnnF
Fan Speed	19-22	21-24	VLow, Low, Med, High, Top, Auto
Operation Mode	24-27	26-29	Cool, Heat, Fan, Dry, Auto
Indoor Failure Code	29-32	31-34	OK - no failure, else Indoor Failure Code
Filter Sign	34	36	- or # (Filter Sign)
Demand	36	38	0 or 1

EXAMPLE

```
>ls L2
L2.101 ON  25C 27C Low  Cool OK   - 1
L2.102 OFF 20C 27C High Cool OK   - 0
OK
>ls L2.101
L2.101 ON  25C 27C Low  Cool OK   - 1
OK
>ls
L1.101 ON  25C 24C Low  Cool OK   - 1
L1.102 ON  22C 23C Med  Cool OK   - 0
L2.101 ON  25C 27C Low  Cool OK   - 1
L2.102 OFF 20C 27C High Cool OK   - 0
OK
```

ls2

SYNOPSIS

ls2 [UID]

DESCRIPTION

Same as ls, but with decimal precision in temperatures.
Get Indoor Unit(s) status list. If UID is omitted all Indoor Units connected to CoolMasterNet will be listed.
Indoor Unit status line has strict format, so that every status field is printed in fixed position.

- Indoor Unit status line with Celsius temperature scale

```
01234567890123456789012345678901234567890
L1.102 ON  16.9C 27.0C High Cool OK   - 0
```

- Indoor Unit status line with Fahrenheit temperature scale

```
012345678901234567890123456789012345678901
L1.102 ON  062.4F 080.6F High Cool OK   - 0
```

Field	Position in string		Values
	Celsius	Fahrenheit	
UID	0-5		LN.XYY
On/Off	7-9		ON,OFF
Set Temperature	11-14	11-15	nn.nC or nnn.nF
Room Temperature	17-20	18-22	nn.nC or nnn.nF
Fan Speed	23-26	25-28	VLow, Low, Med, High, Top, Auto
Operation Mode	28-31	30-33	Cool, Heat, Fan, Dry, Auto
Indoor Failure Code	33-36	35-38	OK - no failure, else Indoor Failure Code
Filter Sign	38	40	- or # (Filter Sign)
Demand	40	42	0 or 1

EXAMPLE

```
>ls L2
L2.101 ON  25.7C 27.2C Low  Cool OK   - 1
L2.102 OFF 20.0C 27.3C High Cool OK   - 0
OK
>ls L2.101
L2.101 ON  25.7C 27.2C Low  Cool OK   - 1
OK
>ls
L1.101 ON  25.4C 24.1C Low  Cool OK   - 1
L1.102 ON  22.1C 23.4C Med  Cool OK   - 0
L2.101 ON  25.7C 27.2C Low  Cool OK   - 1
L2.102 OFF 20.0C 27.3C High Cool OK   - 0
OK
```

query

SYNOPSIS

query <UID_STRICT> <o|m|f|t|h|e|a|s>

DESCRIPTION

Query one of the operation conditions of given Indoor Unit. **<UID_STRICT>** parameter must define single Indoor

Unit in form **Ln.XYY** or **XYY**. Resulting value is printed as alpha-numeric value according to the table below.

Query	Operation Condition	Value
o	On/Off	0 - Off, 1 - On
m	Operation Mode	0 - Cool 1 - Heat 2 - Auto 3 - Dry 4 - Haux 5 - Fan
f	Fan Speed	0 - Low 1 - Medium 2 - High 3 - Auto 4 - Top
t	Set Temperature	Natural
e	Failure Code	0 - No failure, otherwise failure code same as in ls command
a	Ambient Temperature	Natural
h	Set Temperature	0.01º Precision
s	Louver Position	0 - No Louver Control a - auto (swing) h - horizontal 3 - 30º 4 - 45º 6 - 60º v - vertical x - stop (swing)

EXAMPLE

```
>query L1.100 o
1
OK
>query L1.100 m
0
OK
>query L1.100 t
25
OK
>query L1.100 a
27
OK
>query L1.100 f
2
OK
>query L1.100 e
U4
OK
>query L1.100 e
0
OK
>query L1.100 h
20.50
```

```
OK
```

feed

SYNOPSIS

feed [UID] [±]<TEMP[.d]>

DESCRIPTION

This command defines CoolMasterNet Own Ambient Temperature (as if it were measured by CoolMasterNet itself). Command can work in relative or absolute manner. If plus '+' or minus '-' sign precedes **<TEMP>** parameter it's value will be added to or substituted from current value. Otherwise Own Ambient Temperature will be set to the given **<TEMP>** value. **<TEMP>** can be provided with 0.1 precision. If **<TEMP>** is zero CoolMasterNet will not use Own Ambient Temperature for it's operation.
CoolMasterNet keeps separate Own Ambient Temperature for each Indoor Unit.

Own Ambient Temp usage depends on HVAC Line type.

HVAC Line	Own Ambient Temp usage
ME	If not zero, sent to Indoor Unit as Smart Controller temperature sensor value
M1M2	If not zero, sent to Indoor Unit as Wired Thermostat temperature sensor value
FUS	
P1P2	
H1H2	
TAD	Temperature sent to Indoor Unit in i-feel message

EXAMPLE

Define Own Ambient Temperature to all Indoor Units on line L2

```
>feed L2 24.5
OK
```

Define Own Ambient Temperature to Indoor Unit 101 on line L1

```
>feed L1.101 27
OK
```

wh

SYNOPSIS

wh <UID_STRICT> <h|e|w|a|t<+|-|temp>|b<+|->>
wh <UID_STRICT>

DESCRIPTION

Control Water Heater Unit. When letter is omitted special water heater status is displayed.

Letter	Operation	Compatibility	
		ME	P1P2 (Altherma)
h	Heat Mode	✓	
e	Eco Mode	✓	
w	Hot Mode	✓	
a	Anti-freeze Mode	✓	
t	Tank (+=on, -=off, temp=set point)		✓
b	Booster (+=on, -=off)		✓
"no letter"	Print status		✓

ON/OFF control of the Water Heater Unit is performed with regular **on** and **o f f** commands.

EXAMPLE

Set Hot Mode on Water Heater Unit 101 on Line L1

```
>wh L1.101 w
OK
```

Set Altherma Unit 000 on Line L4 Tank Set Temperature to 40º

```
>wh L4.000 t40
OK
```

Turn on Tank of Altherma Unit 000 on Line L4

```
>wh L4.000 t+
OK
```

Turn on Tank Booster of Altherma Unit 000 on Line L4

```
>wh L4.000 b+
OK
```

Print Tank status of Altherma Unit 000 on Line L4

```
>wh L4.000
L4.000 ON  40C 35C +
OK
```

---

main

SYNOPSIS

main [Ln]
main <UID_STRICT> <0|1>

DESCRIPTION

Change or query Daikin Indoor Units main RC setting. Without parameters **main** command will list main RC setting of all Daikin Indoor Units on all lines. Line number **Ln** can be indicated to list Daikin Indoor Units on specific line.

Main RC setting	Description
+	Indoor Unit is main RC
-	Indoor Unit is not main RC
?	No main RC in the system

Notes:
To set Indoor Unit as main RC the previous main RC have to be unset first.

EXAMPLE

List main RC setting of Indoor Units on line L2

```
>main L2
L2.200 -
L2.201 -
L2.202 -
L2.203 -
L2.204 -
L2.205 -
L2.206 +
OK
```

List main RC setting of all Indoor Units

```
>main
```

```
L1.300 -
L1.301 +
L1.302 -
L2.100 ?
L2.101 ?
L2.102 ?
L2.103 ?
OK
```

Unset main RC: Indoor Unit 206 on line L2

```
>main L2.206 0
OK
```

Set new main RC: Indoor Unit 201 on line L2

```
>main L2.201 1
OK
```

---

vam

SYNOPSIS

vam <UID_STRICT> <a|b|x|n|l|L|h|H|s|t|A|+|->
vam
vam <UID_STRICT>

DESCRIPTION

Control Ventilation Unit.

- **vam <UID_STRICT>** - get Ventilation Unit status.
- **vam** - get all Ventilation Units status.

Letter	Operation	Compatibility			
		DK	ME	LG	SM
a	Auto Mode	✓	✓	✓	✓
b	Bypass (Bps) Mode	✓	✓		✓
x	Heat Exchange (HExc) Mode	✓	✓	✓	✓
n	Normal Mode			✓	
S	Sleep Mode				✓
l	Low Fan	✓	✓	✓	✓
L	Low Fan with Fresh-Up	✓			
h	High Fan	✓	✓	✓	✓
H	High Fan with Fresh-Up	✓			
s	Super High Fan			✓	✓
t	Top Fan		✓		
A	Auto Fan		✓	✓	
+	Turn on ventilation unit*				✓
-	Turn off ventilation unit*				✓

ON/OFF control of the Ventilation Unit is performed with regular **on** and **o f f** commands.
There are, though, dual units, that consist of Air Condition Unit and Ventilation unit. In this case **on** and **o f f** commands will control the Air Condition Unit, while **vam <UID_STRICT> +/vam <UID_STRICT> -** will control the Ventilation Unit.

EXAMPLE

Set Heat Exchange mode on Ventilation Unit 101 on Line L1

```
>vam L1.101 x
```

```
OK
```

lock

SYNOPSIS

lock <UID_STRICT>
lock [UID] <-|+>[o|m|t|n]

DESCRIPTION

Most of the HVAC systems have an prohibit/lock/inhibit functionality to prevent user from changing Indoor Unit settings via wired or remote Local Controller. Same functionality is provided by CoolMasterNet with **lock** command.

- **lock <UID_STRICT>** - Query locks for specific Indoor Unit. <UID_STRICT> defines single Indoor Unit in form **Ln.XYY**

Lock	Operation	Compatibility			
		DK	SA, TO, PN	HT	MD, KT, TR, CG
+	Full lock*: On/Off, Mode, Set Temperature	✓	✓	✓	✓
-	Full unlock**: On/Off, Mode, Set Temperature	✓	✓		
+o	Lock On/Off	✓	✓		
-o	Unlock On/Off	✓	✓		
+m	Lock Mode	✓	✓		
-m	Unlock Mode	✓	✓		
+t	Lock Set Temperature	✓	✓		
-t	Unlock Set Temperature	✓	✓		
+n	Lock On	✓			
-n	Unlock On	✓			

Notes:
Different invocations can be combined in one command (see example below)
Lock* - means operation(s) is(are) prohibited
Unlock** - means operation(s) is(are) enabled

EXAMPLE

Query locks for Indoor Unit L1.103 (SA/TO/PN)

```
>lock L1.103
-o -m -t
OK
```

Query locks for Indoor Unit L2.101 (MD/KT/TR/CG/HT)

```
>lock L2.101
+
OK
```

Query locks for Indoor Unit L1.100 (DK)

```
>lock L1.100
-o -m -t +n
OK
```

Lock Mode change and Unlock Set Point change

```
>lock L1.102 +m-t
OK
```

Full Lock

```
>lock L5.002 +
OK
```

group

SYNOPSIS

```
group
group  <UID1_STRICT>  <UID2_STRICT>
group    delall
group  -G
group  ram  R
```

DESCRIPTION

Control group operation in CoolMasterNet. Grouping of two Indoor Units means that second Indoor Unit will follow ON/OFF, Mode, Fan Speed, Set Temperature and Swing settings of the first Indoor Unit.

- In format without parameters **group** will list existing groups
- **group delall** - delete all groups
- **group -G** - delete group number G (group numbers displayed in the list of existing groups)
- **group <UID1_STRICT> <UID2_STRICT>** - create new group, where UID2 will follow UID1
- **group ram R** - create group Data Base for R groups. The operation will take effect after reboot. Use this operation only if default group Data Base is too small.

EXAMPLE

Group Indoor unit L5.001 with L5.002

```
>group L5.001 L5.002
OK
```

List existing groups

```
>group
G000: L5.001 --> L5.002
G001: L5.001 --> L5.003
OK
```

Delete group number 0

```
>group -0
OK
```

Delete all groups

```
>group delall
OK
```

Create group Data Base for 50 groups

```
>group ram 50
OK, Boot Required!
```

CA

SYNOPSIS

```
CA  <Ln>  [adr]
CA <Ln> ?
```

DESCRIPTION

In format **CA <Ln> ?** query centralize address of Indoor Units on line **Ln** (only for SA/TO/PN). In format **CA <Ln> [adr]** distribute new group addresses on line **Ln** starting from **adr**, without **adr** the default value of 100 is taken (only for DK).

EXAMPLE

Query centralize address of Indoor Units on line L2 (SA/TO/PN)

```
>CA L2 ?
L2.101 --> Z56
L2.102 --> Z62
L2.103 --> Z23
L2.104 --> Z33
OK
```

Distribute new group addresses on line L1 starting from 300 (DK)

```
>CA L1 300
OK, Boot Required!
```

---

va

SYNOPSIS

va
va auto
va delall
va ram R
va - <UID_STRICT|VA>
va + <UID_STRICT> <VA>

DESCRIPTION

In order to simplify translation of the UID into ModBus object address, CoolMasterNet uses VA (Virtual Address), associated with UID. Each UID can have none, one or a number of associated VA's, but each VA can be associated only with one UID. VA's are plain numbers starting from 001 (decimal). Virtual Address concept is applicable to CoolGate 5 and ModBus IP.

- In format without parameters **va** command will list all VA associations and their ModBus addresses in hexadecimal and decimal format.
- **va auto** - CoolMasterNet will automatically associate VA's with existing (visible with ls command) UID's. This will delete previous associations
- **va delall** - delete all VA associations
- **va ram R** - create VA Data Base for R associations. The operation will take effect after reboot. Use this operation only if default VA Data Base is too small.
- **va - <UID_STRICT|VA>** - delete all VA associations with specific Indoor Unit or delete specific VA association
- **va + <UID_STRICT> <VA>** - add new VA association

EXAMPLE

Auto associate all existing Indoor Units

```
>va auto
OK
```

Associate VA 007 with Indoor Unit 100 on line L1

```
>va + L1.100 7
OK
```

List all VA associations

```
>va
L1.100 --> 001 [Hex: 0x0011 | Dec: 0017]
       +-> 007 [Hex: 0x0071 | Dec: 0113]
L1.101 --> 002 [Hex: 0x0021 | Dec: 0033]
L2.101 --> 003 [Hex: 0x0031 | Dec: 0049]
L2.102 --> 004 [Hex: 0x0041 | Dec: 0065]
L2.103 --> 005 [Hex: 0x0051 | Dec: 0081]
```

```
L2.104 --> 006 [Hex: 0x0061 | Dec: 0097]
OK
```

Delete all VA associations of Indoor Unit 100 on line L1

```
>va - L1.100
OK
```

Delete VA association number 4

```
>va - 4
OK
```

Delete all VA associations

```
>va delall
OK
```

Create VA Data Base for 200 associations

```
>va ram 200
OK, Boot Required!
```