

CooLinkHub PRM

CooLinkHub
Universal Interface Adapter
for HVAC Split Systems





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1 Revision History

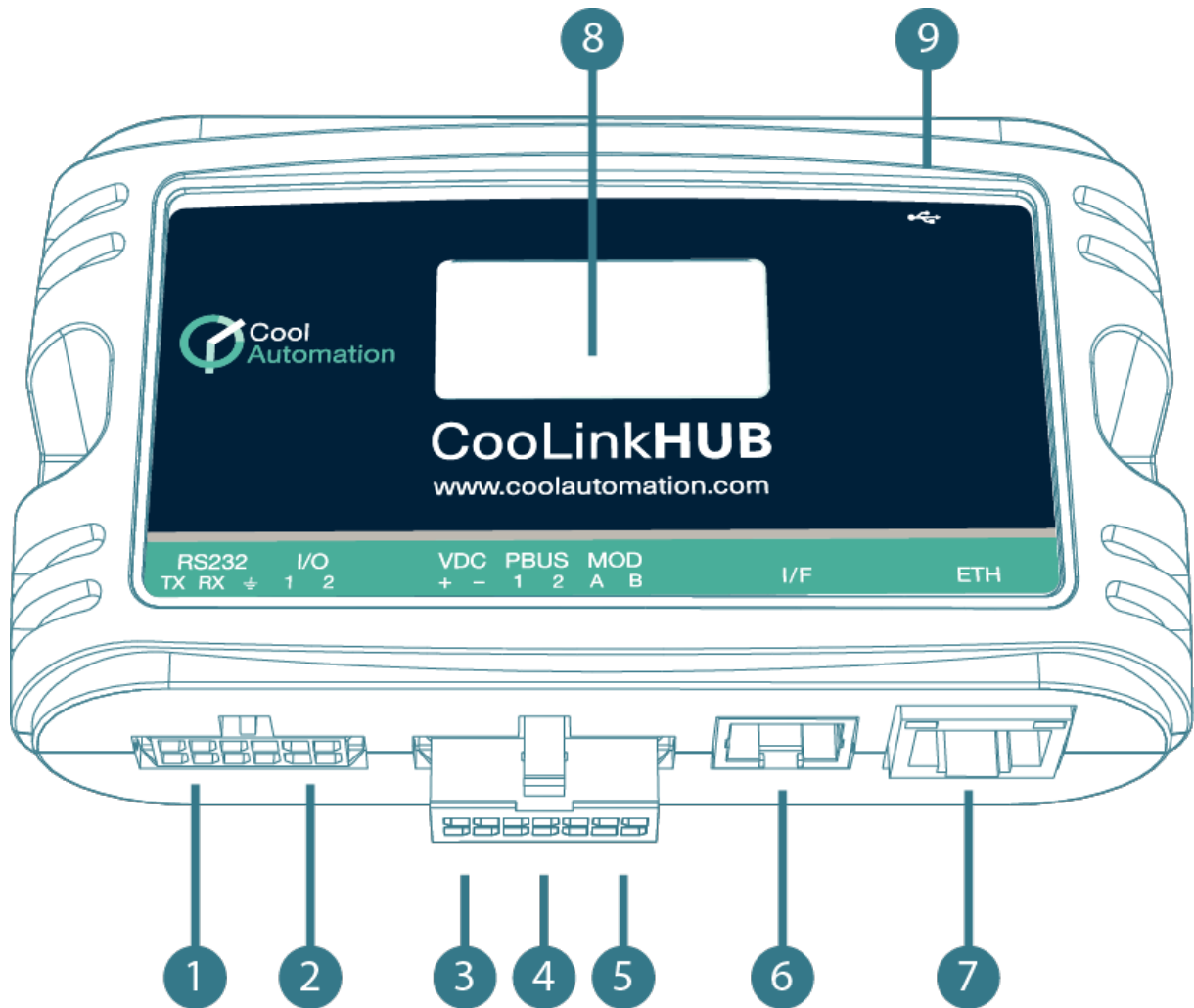
Revision	Changes
1.1	PBUS error codes Updated feed command description
1.0	Initial



2 ACRONYMS

DC	Digital Current
DTE	Data Terminal Equipment
ETH	Ethernet
GPIO	General Purpose Input/Output
HVAC	Heating Ventilation Air Conditioning
MAC	Media Access Control
LCD	Liquid Crystal Display
PRM	Programmer's Reference Manual

3 LAYOUT



(1) RS232, (2) IO Connector

Pin Number	Pin Name	Function
1	RS232 TX	RS232 Transmit
2	RS232 RX	RS232 Receive
3	VDC -	Ground
4	GPIO2	General Purpose I/O
5	GPIO1	General Purpose I/O

(3) Power, (4) PBUS, (5) Modbus Connector

Pin Number	Pin Name	Function
1	VDC +	Input Voltage
2	VDC -	Ground
3	PBUS 1	PBUS 1(+) Terminal
4	PBUS 2	PBUS 2(-) Terminal
5	MOD A	Modbus A(+) Terminal
6	MOD B	Modbus B(-) Terminal



(6) Power Connector

Used to connect 12-24V DC power supply adapter.

(7) ETH Connector

RJ45 connector for ETH network.

(8) Mini USB Device Connector

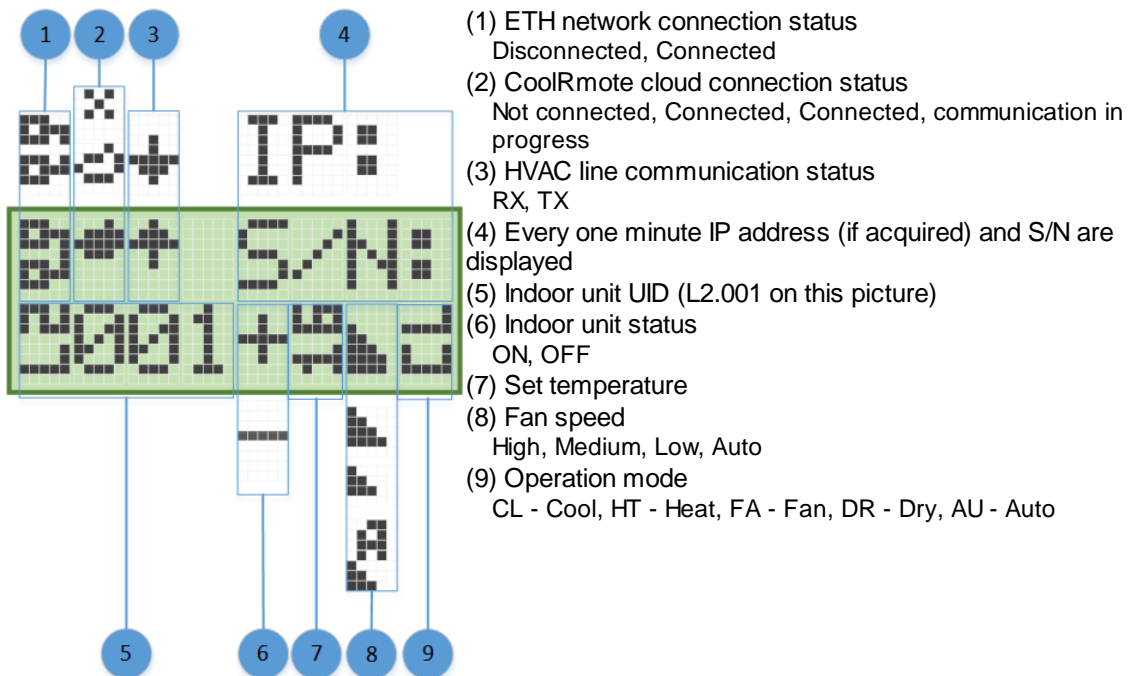
Used to connect CooLinkHub to PC USB Host for configuration and firmware updates.

(9) LCD

Alphanumeric 8x2 characters LCD screen.

3.1 LCD Screen

CoolLinkHub is equipped with an alphanumeric 8x2 characters LCD that presents most of the important device parametric and status information.





4 CONNECTIONS

4.1 Communication Lines

CooLinkHub supports a number of communication lines intended for connection to PBUS interface as well as integration with Home Automation and BMS control systems.

Line Type	Acronym	L1	L2	L3	L4	L5
HVAC						
PBUS Master (PBM)	CH		√	√		
Rolbit Zone Controller	RLBT		√	√		
Home Automation / BMS						
KNX	KNX					√
Modbus RTU	CG5		√	√		
HDL	HDL		√	√		

4.1.1 PBUS

PBUS is a CoolAutomation's proprietary bus interface, based on shielded 2-wired cable (AWG24). It utilizes daisy chain network topology.

PBUS is intended for connection of CoolPlug and ThermoPad devices to CooLinkHub. PBUS is a solution for complete integration of (multi) split HVAC units with Home Automation and BMS systems.

PBUS specific failure codes

CP01 - CoolPlug has no connection to HVAC unit

CP02 - No communication with CoolPlug device

CP03 - CoolPlug device is in BOOT mode

CP04 - CoolPlug is not properly configured

CP05 - CoolPlug can not detect the HVAC unit

4.2 RS232 Port

RS232 Interface in CooLinkHub is available from the RS232/IO connector. RS232 harness, provided with CooLinkHub, routes RS232 signals to DB9 connector as shown below.

RS232/IO Pin	DB9 Pin	Signal Level	Description
1	2	±12V	TxD Data from CooLinkHub
2	3	±12V	RxD Data to CooLinkHub
3	5	GND	Ground

Maximal length of the RS232 Cable should not exceed 25m. The default CooLinkHub RS232 Port settings are:

Baud Rate 9600

Data Bits 8

Parity Control None

Stop Bits 1

Flow Control None

By default RS232 Interface is dedicated for [ASCII I/F protocol](#).



4.3 Ethernet

CooLinkHub incorporates an IEEE 802.3 compatible 10/100 Mb/s Ethernet port available via RJ45 connector. Ethernet port has a following features:

Parameter	Value	Notes
Max Ethernet Cable Length	137m	CAT5 twisted pair cable
Supported 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 used as specified below.

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

Ethernet interface is used by a number of protocol modules available in CooLinkHub

- ASCII I/F (via [ASCII I/F IP Server](#))
- Modbus IP (see [Modbus Integration Guidelines](#) document)
- HDL buspro IP
- SDDP
- CoolRemote

Network setting of the CooLinkHub are controlled with [ifconfig](#) command.

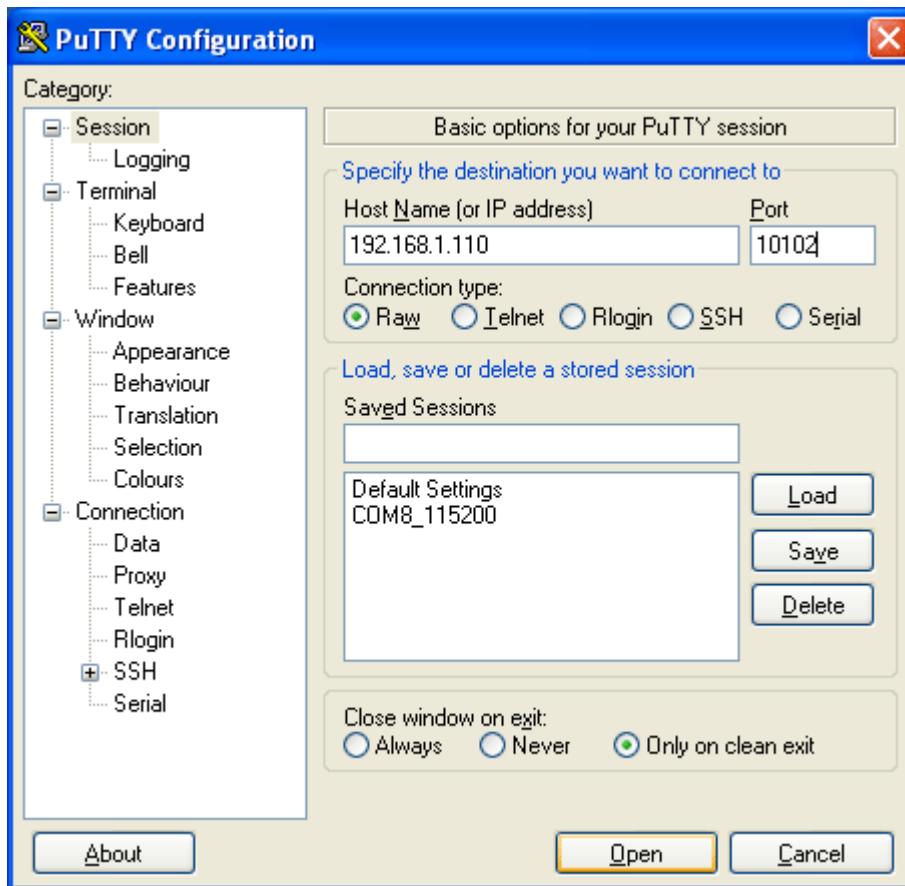
4.3.1 ASCII I/F IP Server

ASCII I/F IP Server referenced **Aserver** is a classic row TCP/IP socket server. Aserver is started by CooLinkHub once the Ethernet link is established and IP address is acquired. Aserver has following default characteristics:

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

Aserver can be configured with [set](#) command.

The screen shoot below illustrates the connection to Aserver with PuTTY utility (CooLinkHub IP address in this example is 192.168.1.110).



4.3.2 CoolRemote Cloud Connection

CoolLinkHub is constantly maintaining connection with CoolRemote cloud server once TCP/IP networking with internet access is established. Connection is made via TCP port 10101 on CoolRemote cloud server side. Unless firewall is involved no special network configuration are required on client side.



5 ASCII I/F

ASCII I/F is a proprietary CoolAutomation's interface utilized by most of the CoolAutomation devices, including CooLinkHub. In CooLinkHub ASCII I/F interface is running over RS232 connection and TCP/IP network connection via [Aserver](#).

5.1 General Definitions

5.1.1 Messaging

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

>ls L2	Command	DTE to CooLinkHub
L2.102 OFF 20C 27C Auto Cool OK - 0	Response	CooLinkHub to DTE
L2.103 OFF 20C 24C Low Auto OK - 0	Exit Code	
OK	Prompt	
>		

Command string sent to CooLinkHub must be terminated with <CR> (carriage return 0x0D) <LF> (line feed 0x0A) sequence or a single <CR> character. Strings from CooLinkHub (except prompt character) are always terminated with <CR> <LF>. Commands are case sensitive and should not contain leading or trailing spaces. The only allowed separator between command name and command parameter(s) is space (0x20) character.

Configuration setting **echo** (see [set](#) command), defines whether characters sent to CooLinkHub via RS232 interface are echoed back or not.

If ASCII I/F protocol is running over RS232 interface, prompt character '>' is unconditionally sent by CooLinkHub. In case of [ASCII I/F IP Server](#) prompt transmission is configurable by **aserver prompt** setting.

5.1.2 Exit Code

CooLinkHub can provide Exit Code in verbose (default) or numeric forms. Numeric form format is: **ERROR:N**, where N is a number in range 0...999. Exit Code format can be configured with **verbose** setting (see [set](#) command).

N	Verbose form	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, command can not be executed
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 switch state is incorrect for defined line type
18	SDDP Not Initialized	SDDP is enabled, but Ethernet link is still down
19	Response not full	Incomplete response received
20	L1 & L5 can't be activated simultaneously	Lines L1 and L5 can not be activated simultaneously
	ModBus Error:80	No response from slave device
	ModBus Error:81	Frame Timeout in received message
	ModBus Error:82	Character Timeout in received message
	ModBus Error:83	Incomplete message received
	ModBus Error:84	Received message is too big
	ModBus Error:85	CRC error in received message
	ModBus Error:EXC(0)	Generic Modbus exception
	ModBus Error:EXC(1)	Modbus exception: Illegal Function
	ModBus Error:EXC(2)	Modbus exception: Illegal Address
	ModBus Error:EXC(3)	Modbus exception: Illegal Data
	ModBus Error:EXC(4)	Modbus exception: Device Failure
	ModBus Error:EXC(5)	Modbus exception: ACK
	ModBus Error:EXC(6)	Modbus exception: Busy
	ModBus Error:EXC(10)	Modbus exception: Wrong path
100	Collision	Collision on HVAC line
101	Unsupported Feature	Unsupported command or parameter
102	Incorrect Indoor Type	Indoor unit doesn't support this command or parameter
103	No ACK From Indoor	Indoor unit didn't acknowledge the 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...	Line initialization is in process
107	Line Error	Error(s) on the HVAC line
108	Feed Disabled	Indoor unit can't receive ambient temperature from CoolLinkHub
109	Line Queue Full	Commands queue of the Line is full
150	HDL Not Initialized	HDL line was not defined or Ethernet link is down
151	HDL DB Overflow	HDL Data Base is full, can't add new configuration
152	HDL Eth Disabled	HDL over Ethernet is disabled
200	UID Not Found	Specified indoor unit not found in Data Base
201	Strict UID Not Found	Specified indoor unit by not found in Data Base
202	Indoor Removed	Indoor unit removed from Data Base
203	DB Overflow	Indoor units Data Base is full
204	Group DB Overflow	Group Data Base is full
205	VA DB Overflow	Virtual address Data Base is full
206	FDB5 Overflow	Properties Data Base is full
207	Incorrect Unit Class	Wrong class of the HVAC unit
250	Link DB Overflow	Link Data Base is full
251	No CoolLinkHub Line	CoolLinkHub line is not defined
252	Auto Visibility Failed	There was an error of visibility during link creation
253	Link already exists	Device already linked

307	KNX DB Overflow	KNX Data Base is full
309	KNX Not Connected	No communication with KNX extender
310	KNX Line Not Started	KNX line not defined
450	Luxom Disabled	Luxom module not enabled
451	Luxom DB Overflow	Luxom Data Base is full
452	Luxom Not Initialized	Luxom module not initialized

5.1.3 UID

UID is used to identify indoor unit or a set of indoor units. UID has the following format:

Line	dot	Indoor number	
L<n>	.	X	YY

- Line is a CooLinkHub HVAC Line number like L1, L2, ... L* - means "any line". To provide backward compatibility with CoolMaster and CooLink devices, Line number can be omitted from the UID.
- Dot is a separator between Line number and Indoor number. If Line number 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"

UID 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 has to be referenced by UID. In this case it is required to use UID_STRICT format: Ln.XYY, where * usage is prohibited and Line number can not be omitted.

5.2 Configuration Commands

5.2.1 set

SYNOPSIS

```
set [<SETTING> <VALUE>]
set defaults
```

DESCRIPTION

Query or change CooLinkHub settings. Without parameters **set** 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** command will load default values to all settings

<SETTING>	Mode	Printed as	Value	Description*
S/N	RO	S/N		CooLinkHub Serial Number
version	RO	version	X.Y.Z	CooLinkHub Firmware Version

baud	R/W	baud rate	1200... 115200	RS232 Interface baud rate. Default is 9600
echo	R/W	echo	0 or 1	RS232 Interface echo control: 0 - echo disabled 1 - echo enabled
verbose	R/W	verbose	0 Or 1	Exit Code format: 0 - numeric 1 - verbose
aserver port	R/W	aserver port	integer	Aserver TCP port. Default is: 10102
aserver prompt	R/W	aserver prompt	0 or 1	Aserver prompt control: 0 - prompt disabled 1 - prompt enabled
deg	R/W	deg C/F	C or F	Temperature scale Celsius or Fahrenheit
melody	R/W	melody	string	Power-up melody. The value is printed as melody name, to change the melody its number should be provided. set melody command lists supported melodies and their numbers.
filter of visi	R/W	filter	visi_0 or visi_1 or "-"	Indoor units visibility according to props . "- " - visibility filter applies only to LCD 1 - visibility filter applies to LCD and status/control commands 0 - visibility logic is inverted and filter is applied to LCD and status/control commands
HVAC lines	RO	HVAC lines	0..8	Maximal allowed number of HVAC lines.
max indoors	RO	max indoors	1..256	Maximal number of supported indoor units
reset on assert	RO	rst on assert	0 or 1	Determines whether CooLinkHub will restart or halt if assertion detected 0 - halt 1 - restart

* - Bold font emphasizes default values.

EXAMPLE

Disable echo

```
>set echo 0
OK
```

Change Aserver TCP port

```
>set aserver port 12345
OK
```

Load defaults

```
>set defaults
OK
```

Apply props visibility filter 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 power-up melody to 3

```
>set melody 3
OK
```

5.2.2 ifconfig

SYNOPSIS

```
ifconfig
ifconfig <PARAMETER> <VALUE>
ifconfig enable|disable
```

DESCRIPTION

Query or configure Ethernet network settings. Without parameters, **ifconfig** command will list current network configuration. To change configuration use format with **<PARAMETER>** and **<VALUE>**.

Parameter	Mode	Description
MAC	RO	MAC address of the CooLinkHub ETH port
Link	RO	Indicates whether Ethernet link is "Up" or "Down"
IP	R/W	Static (fixed) IP address or DHCP
Netmask	R/W	Netmask address in case of static IP
Gateway	R/W	Default Gateway address in case of static IP
DNS1	R/W	Primary DNS address
DNS2	R/W	Alternative DNS address

Parameter **IP** can be set to **DHCP**, to work as DHCP client, or IP number for static (fixed) IP. In case of DHCP, **Netmask** and **Gateway** values are provided by DHCP server. By default CooLinkHub is configured to operate as DHCP client.

EXAMPLE

Query network settings

```
>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 primary DNS address

```
>ifconfig DNS1 208.67.222.222
OK, Boot Required!
```

5.2.3 props

SYNOPSIS

```
props
props <UID_STRICT> <PROPERTY> <VAL>
props delall
```

DESCRIPTION

Query or change CooLinkHub internal database of indoor unit properties. Changes made in this database have no impact on physical capabilities of related indoor units. Indoor unit properties record is created only upon first update made in database for this unit.

In format without parameters **props** command will list all stored properties in a table view.

<PROPERTY> >	Mode	Value	Description*	Notes
visible	R/W	0 or 1	Defines indoor unit visibility. 0 - invisible 1 - visible Also depends on filter setting (see set command).	Effective after reboot
fspeed	R/W	<+ ->v, l, m, h, t, a	Defines indoor unit fan speeds for commands to/from KNX bus. + allow , - forbid, v - very low/quiet, l - low , m - medium , h - high , t - top, a - auto .	A number of properties can be combined in one command (see examples below)
mode	R/W	<+ ->c, d, f, h, hx, hh, a	Defines indoor unit operation modes for control commands to/from KNX bus. + allow , - forbid, c - cool , d - dry , f - fan , h - heat , hx - haux, hh - heat & haux, a - auto	

* Bold values represent defaults.

Command **props delall** will totally erase props database, returning all properties to their default state.

EXAMPLE

Make indoor unit 102 on line L1 invisible


```
>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
```

```
Allow only cool, fan and 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
```

5.3 HVAC Status and Control Commands

5.3.1 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
```

5.3.2 allon

SYNOPSIS

allon

DESCRIPTION

Turn on all indoor units.

5.3.3 off

SYNOPSIS

off [[UID](#)]

DESCRIPTION

Turn off indoor unit(s).

EXAMPLE

Turn off indoor unit 102 on Line L1

```
>off L1.102
```

```
OK
```

Turn on all indoor units on Line L2

```
>off L2*
```

```
OK
```

Turn on all indoor units

```
>off
```

```
OK
```

5.3.4 alloff

SYNOPSIS

```
alloff
```

DESCRIPTION

Turn on all indoor units.

5.3.5 cool

SYNOPSIS

```
cool [UID]
```

DESCRIPTION

Set indoor unit(s) operation mode to cool.

EXAMPLE

Set operation mode of the indoor unit 102 on Line L1 to cool

```
>cool L1.102
```

```
OK
```

Set operation mode of all indoor units on Line L2 to cool

```
>cool L2*
```

```
OK
```

Set operation mode of all indoor units to cool

```
>cool
```

```
OK
```

5.3.6 heat

SYNOPSIS

```
heat [UID]
```

DESCRIPTION

Set indoor unit(s) operation mode to heat.

EXAMPLE

Set operation mode of the indoor unit 102 on Line L1 to heat

```
>heat L1.102
```

```
OK
```

Set operation mode of all indoor units on Line L2 to heat

```
>heat L2*
```

```
OK
```

Set operation mode of all indoor units to heat

```
>heat
```

```
OK
```

5.3.7 fan

SYNOPSIS

```
fan [UID]
```

DESCRIPTION

Set indoor unit(s) operation mode to fan.

EXAMPLE

Set operation mode of the indoor unit 102 on Line L1 to fan

```
>fan L1.102
```

```
OK
```

Set operation mode of all indoor units on Line L2 to fan

```
>fan L2*
```

```
OK
```

Set operation mode of all indoor units to fan

```
>fan
```

```
OK
```

5.3.8 dry

SYNOPSIS

```
dry [UID]
```

DESCRIPTION

Set indoor unit(s) operation mode to dry.

EXAMPLE

Set operation mode of the indoor unit 102 on Line L1 to dry

```
>dry L1.102
```

```
OK
```

Set operation mode of all indoor units on Line L2 to dry

```
>dry L2*
```

```
OK
```

Set operation mode of all indoor units to dry

```
>dry
```

```
OK
```

5.3.9 auto

SYNOPSIS

```
auto [UID]
```

DESCRIPTION

Set indoor unit(s) operation mode to auto.

EXAMPLE

Set operation mode of the indoor unit 102 on Line L1 to auto

```
>auto L1.102
```

```
OK
```

Set operation mode of all indoor units on Line L2 to auto

```
>auto L2*
```

```
OK
```

Set operation mode of all indoor units to auto

```
>auto
```

```
OK
```

5.3.10 haux**SYNOPSIS**

```
haux [UID]
```

DESCRIPTION

Set operation mode of the ThermoPad device(s) connected to PBUS line of CoolLinkHub to auxiliary heat mode.

EXAMPLE

Set operation mode of the ThermoPad 083 on Line L2 to haux

```
>haux L2.083
```

```
OK
```

Set operation mode of all ThermoPad devices on Line L2 to haux

```
>haux L2*
```

```
OK
```

5.3.11 temp**SYNOPSIS**

```
temp [UID] [ $\pm$ ]TEMP>
```

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

DESCRIPTION

Change indoor unit(s) Set Temperature.

- In form **temp** [UID] [\pm]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 the 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 + or - are not allowed). If HVAC system does not support 0.1 precision for the Set Temperature (see table below), the final value will be the nearest supported value.

CoolPlug Type	Set Temperature Precision
CoolPlug ME 12	0.5°C
CoolPlug ME CN105	0.5°C
CoolPlug DK P1P2	0.1°C
CoolPlug DK S21	1.0°C
CoolPlug DKS	1.0°C
CoolPlug FJ	1.0°C

CoolPlug PN/SATO	1.0°C
------------------	-------

The **deg** setting (see [set](#) command) defines which temperature scale Celsius or Fahrenheit is used for **<TEMP>** and **<TEMP.d>** parameters value. (Examples below assume that temperature scale is Celsius).

EXAMPLE

Set indoor unit 102 on line L2 Set Temperature to 23°C

```
>temp L2.102 23
OK
```

Decrease all indoor units on line L2 Set Temperature by 2°C

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

Set all indoor units on line L2 Set Temperature to 24.5°C

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

Set all indoor units Set Temperature to 22°C

```
>temp 22
OK
```

5.3.12 feed

SYNOPSIS

```
feed [UID] [±]<TEMP>
```

```
feed [UID] <TEMP.d>
```

DESCRIPTION

Provides Ambient Temperature suggestion for given indoor unit(s). If **<TEMP>** is zero CoolLinkHub will stop suggesting Ambient Temperature. Suggested Ambient Temperature is not persistent and is lost (set to zero) after power reset of CoolLinkHub.

- In form **feed [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 the current Ambient Temperature suggested value. Otherwise it will be set to the given **<TEMP>** value.

- In form **feed [UID] <TEMP.d>**

Parameter **<TEMP.d>** is a fractal number with 0.1 precision. (In this case preceding + or - are not allowed).

It is not guaranteed that the Ambient Temperature reported by indoor unit will be equal to suggested Ambient Temperature provided with **feed** command. The **feed** command is supported by the following CoolPlug types:

CoolPlug Type	Feed Support & Precision
CoolPlug ME 12	0.1°C
CoolPlug ME CN105	0.5°C
CoolPlug DK P1P2	0.01°C (Master only)
CoolPlug DK S21	Not supported
CoolPlug DKS	0.1°C
CoolPlug FJ	0.5°C
CoolPlug PN/SATO	1°C
CoolPlug CAP	1°C
CoolPlug MH	1°C



CoolPlug HT	0.5°C
CoolPlug GR	1°C
CoolPlug LG	0.5°C
CoolPlug MD XYE	Not Supported
CoolPlug MD X1X2/D1D2	0.5°C
CoolPlug SM	0.1°C

The **deg** setting (see [set](#) command) defines which temperature scale Celsius or Fahrenheit is used for **<TEMP>** and **<TEMP.d>** parameters value. (Examples below assume that temperature scale is Celsius).

EXAMPLE

Suggest Ambient Temperature of 23.5°C for indoor unit L2.102

```
>feed L2.102 23.5
OK
```

Decrease suggested Ambient Temperature for all indoor units on line L2 by 2°C

```
>feed L2* -2
OK
```

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

Not all indoor units support Fan Speed options listed above. Set of Fan Speed options supported by indoor unit depends on specific indoor unit type capabilities. If requested Fan Speed is not supported by indoor unit, **fspeed** command may have no effect.

EXAMPLE

Set indoor unit 102 on Line L2 Fan Speed to low

```
>fspeed L2.102 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
```

5.3.14 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** - 30°
- **4** - 45°
- **6** - 60°
- **x** - turn off louver swing

Not all indoor units support louver position options listed above or have louver position control at all. Louver control is a capability of the specific indoor unit type. If requested louver position is not supported by indoor unit, **swing** command may have no effect.

EXAMPLE

Set indoor unit 102 on Line L2 louver to horizontal position

```
>swing L2.102 h
OK
```

Set all indoor units louver to 30° position

```
>swing 3
OK
```

5.3.15 filt

SYNOPSIS

```
filt [UID]
```

DESCRIPTION

Reset Filter Sign.

EXAMPLE

Reset Filter Sign on indoor unit 102 on line L2

```
>filt L2.102
OK
```

5.3.16 ls

SYNOPSIS

```
ls [UID]
```

DESCRIPTION

Get indoor unit(s) status information. If **UID** is omitted, all indoor units will be listed. Indoor unit status information has a fixed format. So every status field position in the output string is predefined and can be used for information parsing.

- Indoor unit status line layout with Celsius temperature scale

```
0123456789012345678901234567890123456
L2.102 OFF 20C 27C High Cool OK - 0
```

- Indoor unit status line layout with Fahrenheit temperature scale

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

Field	Position in string		Value format
	Celsius	Fahrenheit	

UID	0-5		Ln.XYY
On/Off	7-9		ON or 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 # meaning 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
```

5.3.17 ls2

SYNOPSIS

```
ls2 [UID]
```

DESCRIPTION

Same as [ls](#), but with decimal precision in temperature fields.

- 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
0123456789012345678901234567890123456789012
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 or OFF
Set Temperature	11-14	11-15	nnC or nnnF
Room Temperature	17-20	18-22	nnC or nnnF
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 # meaning 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

```

5.3.18 query**SYNOPSIS**

query <[UID STRICT](#)> <o|m|f|t|h|e|a|s>

DESCRIPTION

Query one of the status parameters for given indoor unit. (<[UID STRICT](#)> parameter references a single indoor unit). Query result is printed as alpha-numeric value according to the table below.

Query parameter	Status parameter	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 number
e	Failure Code	0 - No failure, otherwise failure code
a	Ambient Temperature	Natural number
h	Set Temperature with 0.01° Precision	Fractal number
s	Louver Position	0 - No Louver Control a - auto (swing) h - horizontal 3 - 30° 4 - 45°



		6 - 60° 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
```