CoolMasterNet
CooLinkNet

HDL Integration Guidelines
Table of Contents

1 Connection 3

2 Configuration 4

   2.1 HDL 4-wire activation ................................................................. 4
   2.2 HDL Ethernet activation ............................................................... 4
   2.3 HDL settings ............................................................................ 5

3 HDL Project 5

   3.1 Feed temperature .................................................................. 9

4 HDL commands reference 10
# 1 Connection

CoolAutomation devices can be connected to HDL buspro via 4-wire or Ethernet UDP interface.

### CoolMasterNet 4-wire connection

![CoolMasterNet 4-wire connection diagram]

### CooLinkNet 4-wire connection

![CooLinkNet 4-wire connection diagram]
For the Ethernet connection, CoolAutomation device should be in the same TCP/IP subnet with HDL Ethernet bus gateway. Example of the gateway is SB-DN-1IP device.

# Configuration

Only one connection to HDL bus may be enabled in CoolAutomation device. Simultaneous 4-wire and Ethernet connection is not supported.

## 2.1 HDL 4-wire activation

HDL 4-wire interface module of the CoolAutomation device has to be activated by assigning appropriate communication Line. In CoolMasterNet it is highly recommended to use Line L3, although it is possible to use any of the L4, L5, L6, L7 lines as well. In CooLinkNet Line L3 usage for HDL 4-wire interface module is mandatory.

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

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

To check if HDL 4-wire module is already activated, `line` command should be used:

```
CoolMasterNet
>line
L1: DK Master U00/G00 myid:0B
  Tx:2/2 Rx:2/2 TO:0/0 CS:0/0 Col:0/0 NAK:0/0
L2: Unused
L3: HDL SubNetID:0x01, DeviceID:0x63
  Tx:0/0 Rx:0/0 TO:0/0 CS:0/0 Col:0/0 NAK:0/0
L4: Unused
L5: Unused
L6: Unused
L7: Unused
L8: Unused
OK

CooLinkNet
>line
L1: Unused
L2: Unused
L3: HDL SubNetID:0x01, DeviceID:0x63
  Tx:0/0 Rx:0/0 TO:0/0 CS:0/0 Col:0/0 NAK:0/0
L4: MIM2 Slave U00/G00 Not Connected
L5: Unused
L6: Unused
L7: Unused
L8: Unused
OK
```

## 2.2 HDL Ethernet activation

Ethernet HDL interface module of the CoolAutomation device is activated and queried with below commands.

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

Power reset required to make changes current.

Query:
```
>hdl eth
status : enabled
```
To disable Ethernet connection to HDL buspro run:

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

### 2.3 HDL settings

- Configure Subnet and Device ID in 4-wire mode:

```
> line myid L3 0164
OK, Boot Required!
```

- Configure Subnet and Device ID in Ethernet mode:

```
> hdl eth myid 0164
OK, Boot Required!
```

Hexadecimal value 0164 shown in example above denotes resulting Subnet ID = 01 (01 hexadecimal) and Device ID = 100 (64 hexadecimal). The default value for Subnet ID is 01 and for Device ID it is 99.

### 3 HDL Project

This chapter describes a simple HDL project where CoolMasterNet and a DLP panel are used and interplay. Detailed information about HDL Buspro Setup tool should be obtained from corresponding HDL documentation. In this document only basic information required for given example is provided.

- Launch HDL Buspro Setup tool and run "Search on-line devices". CoolMasterNet should be detected and shown like in example below:
Add found HDL devices to device list and exit device search panel. Note that in this example CoolMasterNet has Subnet ID = 1 and Device ID = 99.

- Double click on CoolMasterNet line in device list to open "CoolMaster <--> HDL Data Transfer" window. Go to "CoolMaster <--> BUS" tab. Here you can link between Indoor Units detected by CoolMasterNet and "HDL AC No". To see Indoor Units that CoolMasterNet has detected run `ls` command:

```
> ls
L1.100 ON 067F 072F Low Fan OK - 0
L1.101 OFF 064F 081F Auto Heat OK - 0
L1.102 OFF 077F 081F Auto Cool OK # 0
L1.103 OFF 087F 082F Low Auto OK # 0
L1.104 ON 066F 074F Med Fan OK - 0
OK
```

And now link them to "HDL AC No" as shown in example below:
To store linkage click "Save" button. The linkage will be as following:

HDL AC 1 - Indoor Unit L1.100
HDL AC 2 - Indoor Unit L1.101
HDL AC 3 - Indoor Unit L1.102

Linkage information is persistent and it is stored in CoolMasterNet device. Next time you reach the same window, linkage data will be read from CoolMasterNet by HDL Buspro Setup tool. You can see current linkage data stored in CoolMasterNet with `hdl` command:

```
> hdl
```

<table>
<thead>
<tr>
<th>Ch</th>
<th>AC</th>
<th>Valid</th>
<th>Remark</th>
<th>CA</th>
<th>CHFAD</th>
<th>AHML</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>L1.100</td>
<td>L1.100</td>
<td>++---</td>
<td>-+++</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>1</td>
<td>L1.101</td>
<td>L1.101</td>
<td>++---</td>
<td>-+++</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>1</td>
<td>L1.102</td>
<td>L1.102</td>
<td>+++++</td>
<td>-+++</td>
</tr>
</tbody>
</table>

OK

- Now you can configure DLP panel "Air Conditioning function".
Relation between specific DLP panel and Indoor Unit is made with fields in “Basic information on air-condition” box:

- **Air conditioner function**: Enable
- **HVAC Subnet ID**: 1
- **HVAC Device ID**: 99
- **AC No**: 1
- **Type**: NEW
- **Chn ID**: Defines Indoor unit according to information provided by `hdI` command.

HVAC Subnet ID = 1 and HVAC Device ID = 99 leads to CoolMasterNet device. AC No = 1 leads to Indoor Unit L1.100. After this information is saved in DLP panel all HVAC operations and statuses of this panel will be sent/received to/from corresponding CoolMasterNet device and via CoolMasterNet to/from Indoor unit L1.100. **Make sure to set Type: NEW**. Same way other HDL user interface devices capable to control HVAC units can be connected to desired Indoor Units.

To represent Indoor return air temperature on DLP panel below configuration required. To reach there click “Setup” button in “Other function” box. “SubNet ID” and “Device ID” should correspond to CoolMasterNet device address. “Chn ID” defines Indoor unit according to information provided by `hdI` command.
3.1 Feed temperature

It is possible to feed room temperature measured by HDL panel into linked indoor unit. To do that in “Air conditioning function” tab “Broadcast temp” setup enable “Broadcast function”. “Subnet ID” and “Device ID” can specify CoolMasterNet device address or it can be a broadcast within subnet if “Device ID” is 255.
Not all HVAC systems support temperature feeding. Refer to CoolMasterNet documentation for information about HVAC systems supporting feed function.

## 4 HDL commands reference

- **line** type L3 HDL - Enable 4-wire HDL interface module on line L3

- **line myid L3 <ID>** - Change Subnet ID and Device ID in HDL 4-wire connection mode via line L3
  ```
  >line myid L3 0164
  OK, Boot Required!
  ```

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

- **hdl del all** - delete all linkage data

- **hdl** - <UI D_Str | CT> - delete specific link
  ```
  >hdl - L1.100
  OK
  ```

- **hdl eth** - print HDL Ethernet connection status and packet counters
  ```
  >hdl eth
  status : enabled
  ID : 0x01 0x63
  ```
send cntr : 0
recv cntr : 0
crc cntr : 0
OK

• **hdl eth <enable|disable>** - Enable/Disable HDL Ethernet interface module

• **hdl eth myid <I D>** - Change Subnet ID and Device ID in HDL Ethernet connection mode

  > hdl eth myid 0163
  OK, Boot Required!