

HDL Integration Guidelines



CoolMasterNet
CoolLinkNet

HDL Integration
Guidelines

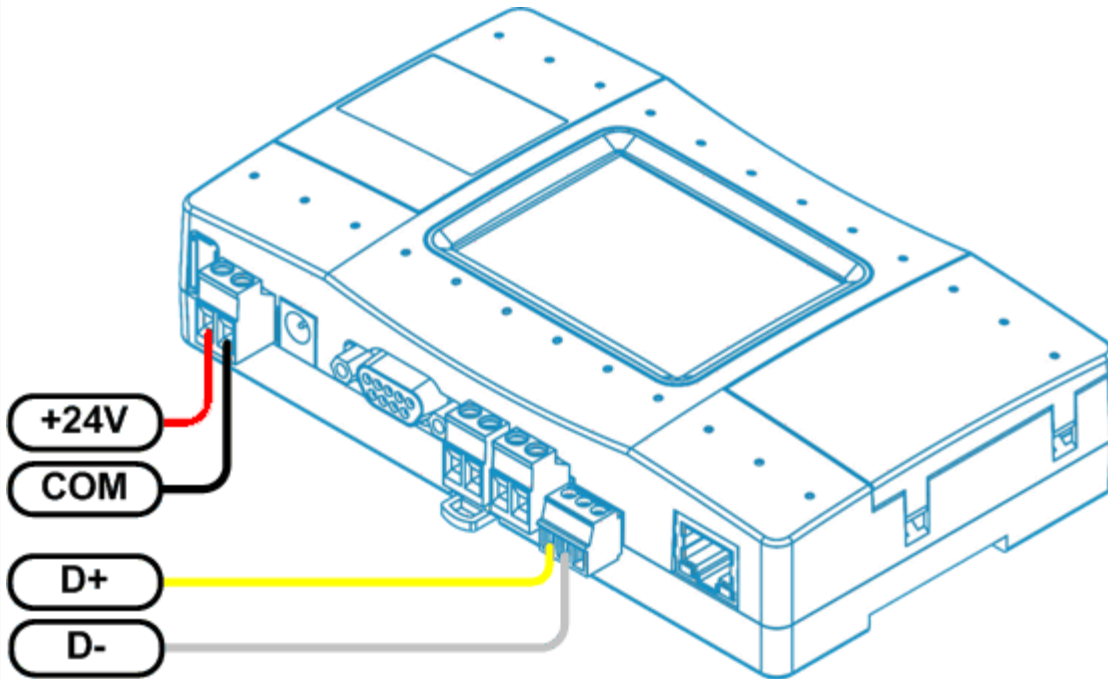
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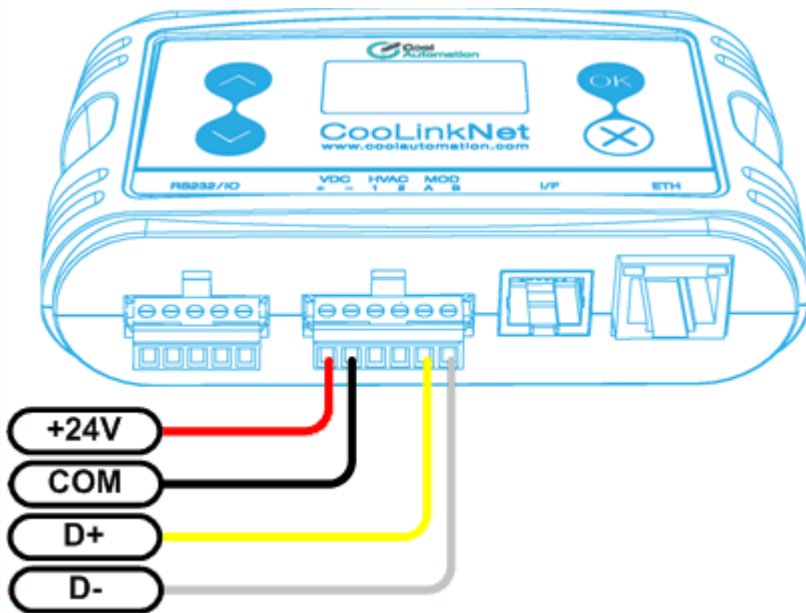
1 Connection

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

CoolMasterNet 4-wire connection



CooLinkNet 4-wire connection



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.

2 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 CoolLinkNet Line **L3** usage for HDL 4-wire interface module is mandatory.

CoolMasterNet

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

CoolLinkNet

```
>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
Tx:0/0 Rx:0/0 TO:0/0 CS:0/0 Col:0/0 NAK:0/0
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
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: Unused
Tx:0/0 Rx:0/0 TO:0/0 CS:0/0 Col:0/0 NAK:0/0
L8: Unused
Tx:0/0 Rx:0/0 TO:0/0 CS:0/0 Col:0/0 NAK:0/0
OK
```

CoolLinkNet

```
>line
L1: Unused
Tx:0/0 Rx:0/0 TO:0/0 CS:0/0 Col:0/0 NAK:0/0
L2: Unused
Tx:0/0 Rx:0/0 TO:0/0 CS:0/0 Col:0/0 NAK:0/0
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: M1M2 Slave U00/G00 Not Connected
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
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
ID          : 01 63
send cntr   : 0
recv cntr   : 0
crc cntr    : 0
OK
```

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:

The screenshot shows the 'Search on-line devices' window. It has a search bar and several search options: 'Fast Search', 'Advanced Search' (with Subnet ID and Device ID fields), and 'Manually Add'. Below the search options is a table titled 'Current on-line devices' with the following data:

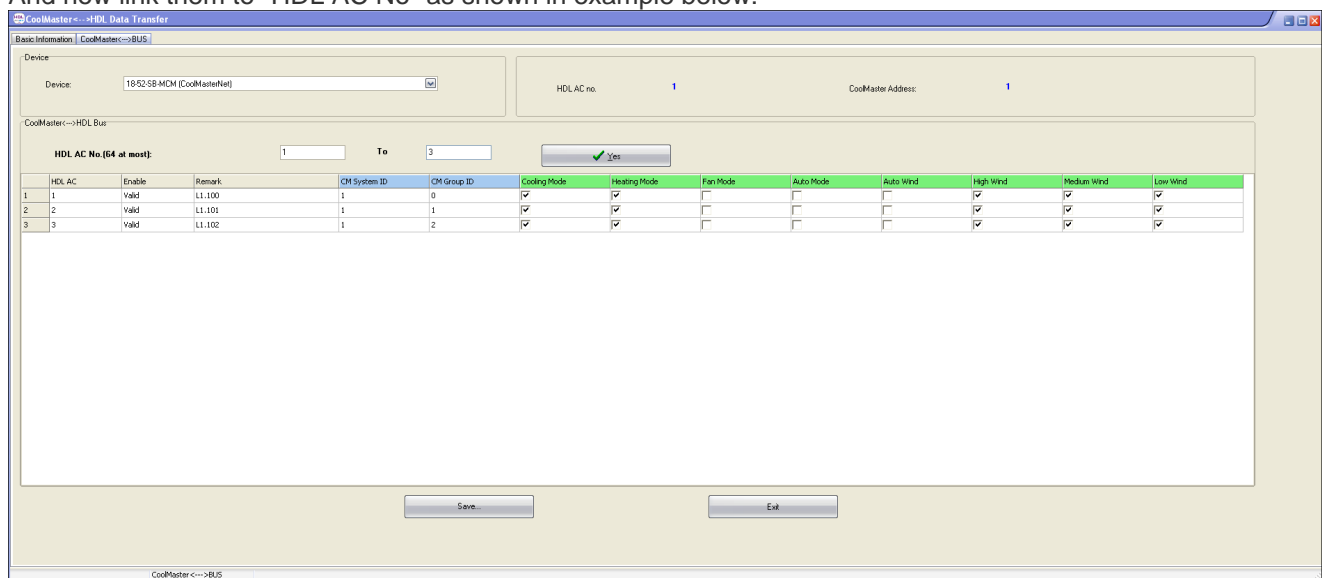
Status	Subnet ID	Device ID	Model	Remark	Description
✓	1	99	SB-MCM	CoolMasterNet	CoolMaster->HDL Data Transfer
✓	1	105	SB-DN-48DMX	IP Gateway	48 channels scene controller bus
✓	1	115	SB-DN-RMK10	RElays	Hotel room control module
✓	1	47	HDL-MPL8-48FH	KE keypad	DLP Panel with AC Music Clock Floor Heating

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:



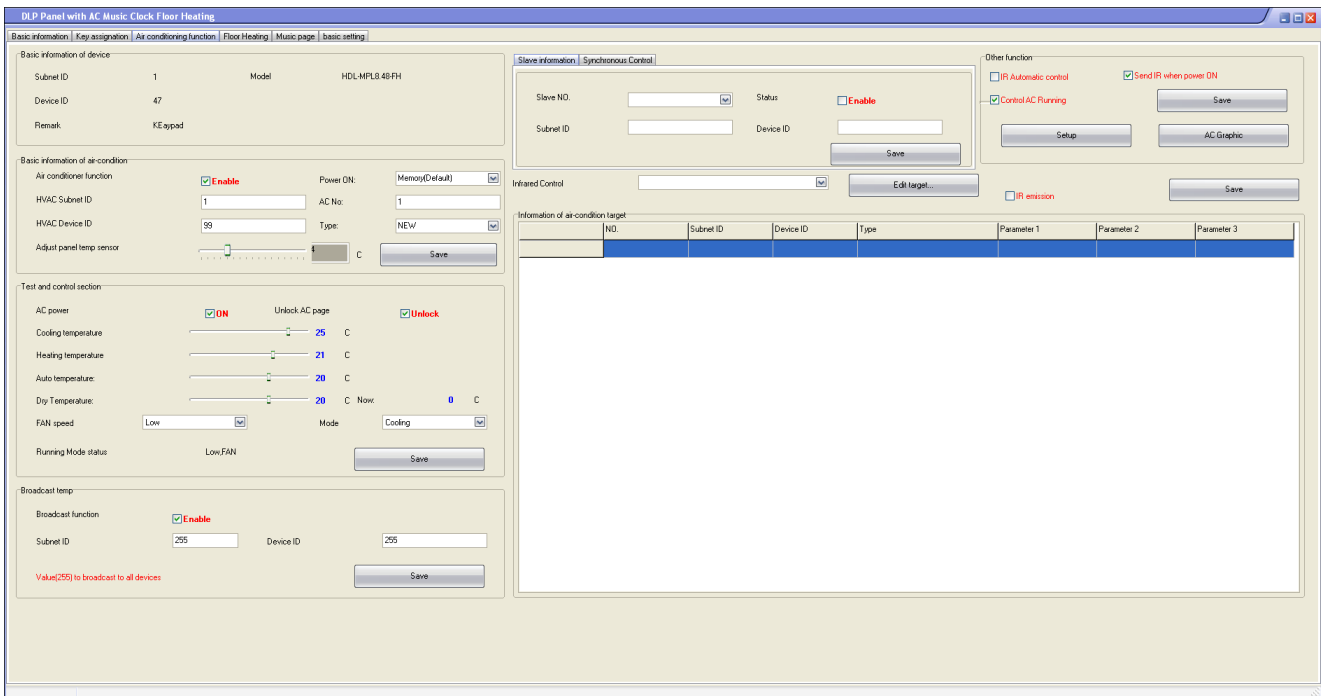
To store linkage click "Save" button. The linkage will be as following:

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

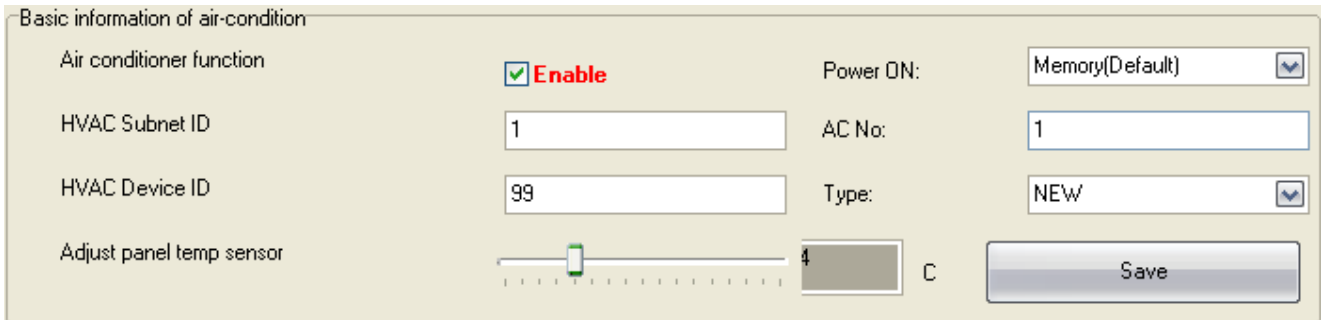
Linkage information is persistent and it is stored in CoolMasterNet device. Next time you reach the same window, linkage data will be read from CoolMasterNet by HDL Buspro Setup tool. You can see current linkage data stored in CoolMasterNet with **hdl** command:

```
>hdl
Ch | AC | Valid | Remark | CA | CHFAD | AHML |
---|---|---|---|---|---|---|
1 | 1 | 1 | L1.100 | L1.100 | ++--- | -+++ |
2 | 2 | 1 | L1.101 | L1.101 | ++--- | -+++ |
3 | 3 | 1 | L1.102 | L1.102 | ++--- | -+++ |
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:



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.

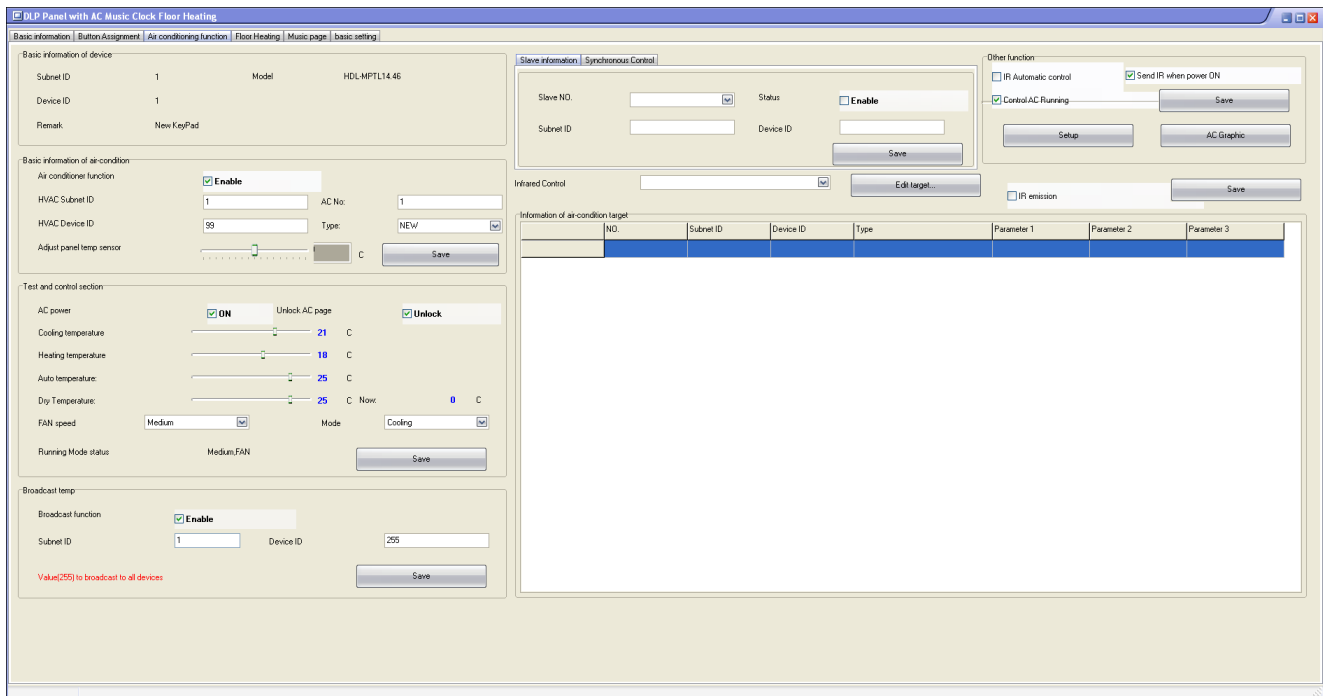
To represent Indoor return air temperature on DLP panel below configuration required. To reach there click "Setup" button in "Other function" box. "SubNet ID" and "Device ID" should correspond to CoolMasterNet device address. "Chn ID" defines Indoor unit according to information provided by **hdl** command.

The screenshot shows a software window titled "Air-condition collocation information" with a tabbed interface. The "Sensor Model Setting" tab is active. It contains three radio button options: "Refer to internal Sensor", "Refer to outdoor Sensor" (which is selected), and "Refer to average Value". A "Save" button is located to the right of these options. Below is a table with columns for "SubNet ID", "Device ID", and "Chn ID". Each row represents a sensor from "Sensor 1" to "Sensor 8". The "SubNet ID" column contains the value "1" for all sensors. The "Device ID" column contains "99" for Sensor 1 and "1" for Sensors 2 through 8. The "Chn ID" column contains the value "1" for all sensors. Each row also includes a dropdown menu with a "Close" button next to it.

	SubNet ID	Device ID	Chn ID
Read active <input type="button" value="Close"/> Sensor 1	1	99	1
Close <input type="button" value="Close"/> Sensor 2	1	1	1
Close <input type="button" value="Close"/> Sensor 3	1	1	1
Close <input type="button" value="Close"/> Sensor 4	1	1	1
Close <input type="button" value="Close"/> Sensor 5	1	1	1
Close <input type="button" value="Close"/> Sensor 6	1	1	1
Close <input type="button" value="Close"/> Sensor 7	1	1	1
Close <input type="button" value="Close"/> Sensor 8	1	1	1

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 delall** - delete all linkage data
- **hdl - <UID_STRICT>** - 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 <ID>** - Change Subnet ID and Device ID in HDL Ethernet connection mode

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