

CoolMaster Programmings Reference Manual (PRM)



CoolMaster
Interface Adapter
for VRV, VRF
Air Conditioning Systems



Cool Master 1000D
Cool Master 2000S
Cool Master 3000T
Cool Master 4000M

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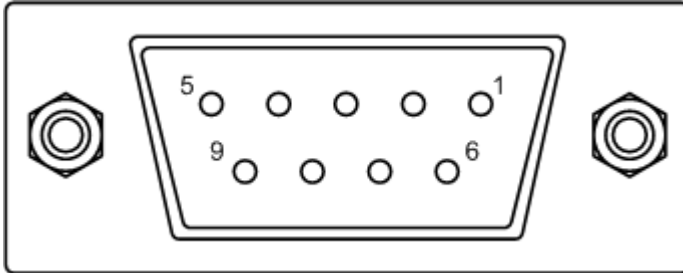
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1 RS232 Interface

1.1 Mechanical and Electrical Specification

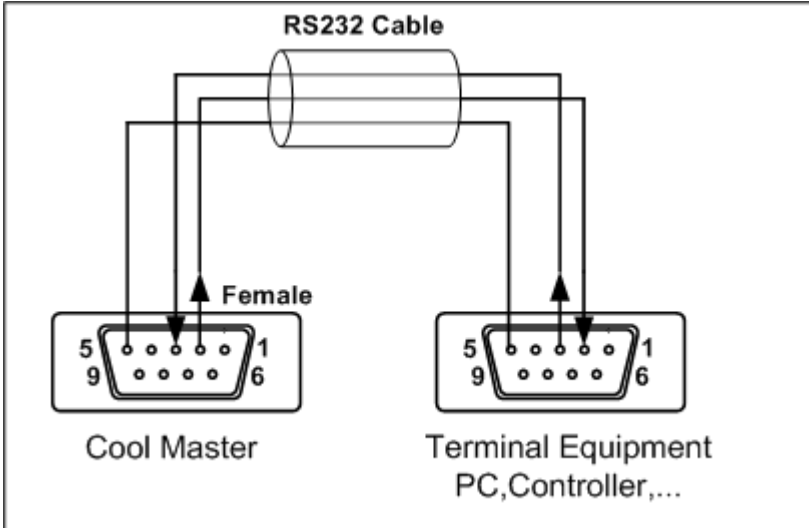
RS232 Interface connector used in Cool Master is D-Type 9-pin DB9 female connector.

Cool Master DB9 Connector front view



DB9 Pin	Signal Level	Description
2	±12V	TxD (Data from Cool Master)
3	±12V	RxD (Data to Cool Master)
5	GND	Ground

Connecting Cool Master to Home Automation Equipment



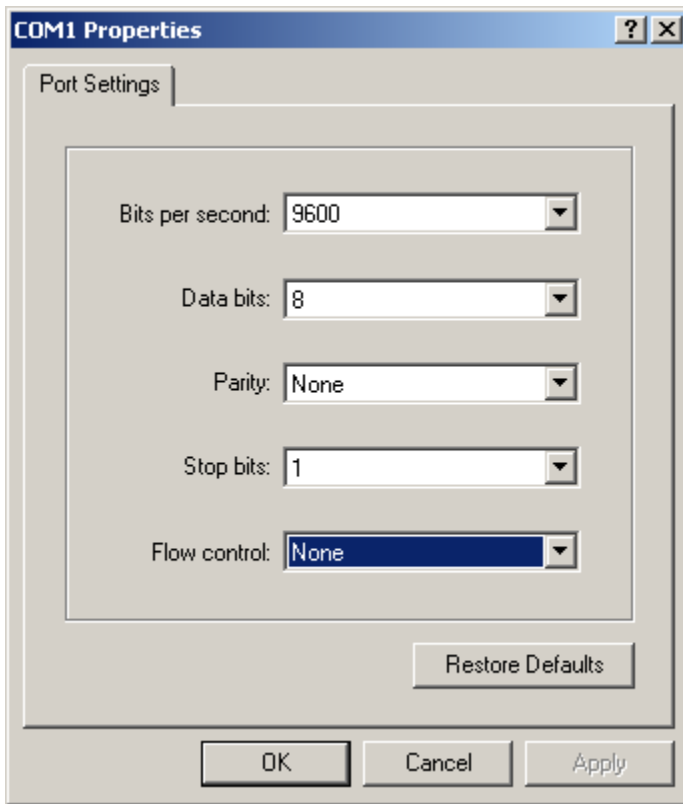
According to RS232 specification cable length should not exceed 25m. RS232 Cable supplied with Cool Master is 1.5m length suitable for direct connection to PC RS232 serial port.

1.2 Port Settings

For proper communication with Cool Master RS232 Port should be configured with following parameters

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

Below is an example of COM port setup in HyperTerminal application





2 General Protocol Definitions

2.1 Message format

Communication between PC or Home Automation Controller and CoolMaster via RS232 interface is based on text messages. Communication example is shown below

>stat 101	command	PC to CoolMaster
101 ON 27C 00,00C Auto Dry OK	response	CoolMaster to PC
OK	exit code	
>	prompt	

Command message sent to CoolMaster must be terminated by CR (carriage return 0x0D) LF (line feed 0x0A) sequence or a single CR character. Messages from CoolMaster (except prompt character) are terminated by 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 character.

In case of wrong command CoolMaster response can be one of the following strings:

Unknown command	Unrecognized command name
Bad parameters	Command has missing or wrong parameters

If command was executed CoolMaster will return optional response and exit code. Detailed information is provided in topics describing specific commands.

2.2 Indoor Unit Addressing

To address specific indoor unit in CoolMaster command the UID parameter is used. UID format is three digits. First digit can be hexadecimal in range 1-9 or A-F to represent system numbers 1 to 15 correspondingly.

1	2	3
System Number 0-9, A-F	Unit Number in System 00-99	

- For CoolMaster 4000M System Number must be 0, Unit Number must be 01-50
- For CoolMaster 1000D System Number must be in range 1-4
- For CoolMaster 2000S and 3000T System Number should not be 0

UID reflects the indoor unit Centralized Address. For proper operation of Cool Master all indoor units have to be given Centralized Address (depending on specific AC system type this can be done automatically by system or has to be done manually by integrator). You should refer to specific AC system manuals to find out how to set and require Centralized Addresses.

Below are examples of accepted UID's.

UID	Centralized Address
100	1-00
101	1-01
201	2-01
310	3-10
F99	15-99



Note: For backward compatibility Unit number in System can be represented by hexadecimal numbers couple in range 00-0F equal to decimal 00-15. For example 10A represents Centralized Address 1-15. We recommend not to use this option in future designs.



3 Commands Reference

3.1 Cool Master Commands

Enter topic text here.

3.1.1 alloff

SYNOPSIS

`alloff`

DESCRIPTION

Turn off all indoor units

EXAMPLE

```
>alloff  
OK
```

EXIT CODE

OK Request Successfully Executed

COMPATIBILITY

CoolMaster 1000D v 0.3.0
CoolMaster 2000S v 2.0.9

3.1.2 allon

SYNOPSIS

`allon`

DESCRIPTION

Turn on all indoor units.

EXAMPLE

```
>allon  
OK
```

EXIT CODE

OK Request Successfully Executed

COMPATIBILITY

CoolMaster 1000D v 0.3.0
CoolMaster 2000S v 2.0.9



3.1.3 boot

SYNOPSIS

boot

DESCRIPTION

Switch CoolMaster to bootloader mode. Bootloader mode is used for Firmware Update. For details please see the [Firmware Update](#) section.

EXAMPLE

```
>boot
reboot...
```

COMPATIBILITY

CoolMaster 1000D v 0.3.0
CoolMaster 2000S v 2.0.9

3.1.4 cool

SYNOPSIS

cool <UID>

DESCRIPTION

Set indoor unit UID mode to COOL.

EXAMPLE

```
>cool 102
OK
```

EXIT CODE

OK Request Successfully Executed
ERROR:1 Unit with specified UID not found

COMPATIBILITY

CoolMaster 1000D v 0.3.0
CoolMaster 2000S v 2.0.9

3.1.5 dry

SYNOPSIS

dry <UID>

DESCRIPTION

Set indoor unit UID mode to DRY.

EXAMPLE

```
>dry 102
OK
```



EXIT CODE

OK Request Successfully Executed
ERROR:1 Unit with specified UID not found

COMPATIBILITY

CoolMaster 1000D v 0.3.0
CoolMaster 2000S v 2.0.9

3.1.6 heat

SYNOPSIS

heat <UID>

DESCRIPTION

Set indoor unit UID mode to HEAT.

EXAMPLE

```
>heat 102  
OK
```

EXIT CODE

OK Request Successfully Executed
ERROR:1 Unit with specified UID not found

COMPATIBILITY

CoolMaster 1000D v 0.3.0
CoolMaster 2000S v 2.0.9

3.1.7 fan

SYNOPSIS

fan <UID>

DESCRIPTION

Set indoor unit UID mode to FAN.

EXAMPLE

```
>fan 102  
OK
```

EXIT CODE

OK Request Successfully Executed
ERROR:1 Unit with specified UID not found

COMPATIBILITY

CoolMaster 1000D v 0.3.0
CoolMaster 2000S v 2.0.9



3.1.8 filt

SYNOPSIS

filt <UID>

DESCRIPTION

Reset filter sign on indoor unit UID.

EXAMPLE

```
>filt 102  
OK
```

EXIT CODE

OK Request Successfully Executed
ERROR:1 Unit with specified UID not found

COMPATIBILITY

CoolMaster 1000D v 0.3.1
CoolMaster 2000S v 2.0.9

3.1.9 fspeed

SYNOPSIS

fspeed <UID> <l|m|h|a>

DESCRIPTION

Set indoor unit UID fan speed to low, medium, high, auto.

EXAMPLE

```
>fspeed 101 l Set unit 1-01 fan speed to low  
OK  
>fspeed 101 m Set unit 1-01 fan speed to medium  
OK  
>fspeed 101 h Set unit 1-01 fan speed to high  
OK  
>fspeed 101 a Set unit 1-01 fan speed to auto  
OK
```

EXIT CODE

OK Request Successfully Executed
ERROR:1 Unit with specified UID not found

COMPATIBILITY

CoolMaster 1000D v 0.3.0 Only l and h options supported
CoolMaster 2000S v 2.0.9

3.1.10 off

SYNOPSIS

offl <UID>



DESCRIPTION

Turn off indoor unit UID.

EXAMPLE

```
>off 102
OK
```

EXIT CODE

OK Request Successfully Executed
ERROR:1 Unit with specified UID not found

COMPATIBILITY

CoolMaster 1000D v 0.3.0
CoolMaster 2000S v 2.0.9

3.1.11 on

SYNOPSIS

on <UID>

DESCRIPTION

Turn on indoor unit UID.

EXAMPLE

```
>on 102
OK
```

EXIT CODE

OK Request Successfully Executed
ERROR:1 Unit with specified UID not found

COMPATIBILITY

CoolMaster 1000D v 0.3.0
CoolMaster 2000S v 2.0.9

3.1.12 set

SYNOPSIS

set [<option> <value>]

DESCRIPTION

Query or set CoolMaster configuration. Without parameters set command will list all supported configuration options and their values. To change option use format with option and value. Some options are read only and can not be changed.

Configuration Option	Access Mode	Description
S/N	Read	CoolMaster Unit Serial Number
myid	R/W	CoolMaster Unit own Centralized Address



version	Read	Firmware Version
echo	R/W	0-Disable 1-Enable Commands echo
lcd	R/W	LCD size
simul	R/W	Number of Indoor units permanently simulated. If simul is not zero CoolMaster will simulate given number of units after reset.
CS count	Read	Check Sum errors counter
TO count	Read	Timeout errors counter

EXAMPLE

```

S/N      : 0041      Query configuration
myid    : 0A
version : 2.1.4
echo    : 1
lcd     : 8
simul   : 0
CS count: 0
TO count: 0
OK
>set echo 0      Set echo option (disable echo)
OK

```

EXIT CODE

OK Request Successfully Executed

COMPATIBILITY

CoolMaster 1000D v 0.3.0
CoolMaster 2000S v 2.0.9

3.1.13 simul**SYNOPSIS**

simul <N>

DESCRIPTION

Simulate N indoor units. Simulation mode can be used to debug Home Automation Controller software without connecting CoolMaster to Air Conditioning system line. To exit simulation mode set N to zero or restart CoolMaster.

EXAMPLE

```

>simul 20      Simulate 20 Indoor Units
OK
>simul 0      Terminate simulation mode
OK

```

EXIT CODE

OK Request Successfully Executed

COMPATIBILITY

CoolMaster 1000D v 0.3.0
CoolMaster 2000S v 2.0.9



3.1.14 stat

SYNOPSIS

stat [UID]

DESCRIPTION

Get Indoor unit(s) status. Specific indoor unit can be addressed by UID. If no UID provided in request, response will contain information about all units

EXAMPLE

```
>stat
100 ON 12C 12,41C High Cool OK
101 OFF 32C 04,93C Low Dry OK
102 ON 07C 08,27C High Dry OK
103 OFF 01C 26,84C Med Dry OK
104 ON 04C 24,08C High Dry OK
105 OFF 11C 07,23C Low Dry OK
106 ON 11C 14,91C Auto Dry OK
107 ON 27C 12,94C Med Cool OK
OK
>stat 101
101 OFF 32C 04,93C Low Dry OK
OK
```

RESPONSE

Position in String	Example	Format	Description
0-2	109	NNN	Indoor unit Centralized Address
4-6	ON	ON or OFF	On/Off Status
8-10	23C	NNC	Set Temperature °C
12-17	24,08C	NN,NNC	Room Temperature °C
20-23	Auto	Low or Med or High or Auto	Fan Speed
25-28	Cool	Cool or Heat or Fan or Dry	Operation Mode
30-32	OK	OK or XN	OK or Failure code

EXIT CODE

OK Request Successfully Executed
 ERROR:1 Unit with specified UID not found

COMPATIBILITY

CoolMaster 1000D v 0.0.1

CoolMaster 2000S v 2.0.9

This command is obsolete and is supported only for backward compatibility.

3.1.15 stat2

SYNOPSIS

stat2 [UID]

DESCRIPTION

Get Indoor unit(s) status. Specific indoor unit can be addressed by UID. If no UID provided in request, response will contain information about all units. stat2 compared to stat1 has additional Filter Reset Sign indication

EXAMPLE

```
>stat2
100 ON 12C 12,41C High Cool OK 0
101 OFF 32C 04,93C Low Dry OK 1
102 ON 07C 08,27C High Dry OK 0
103 OFF 01C 26,84C Med Dry OK 0
104 ON 04C 24,08C High Dry OK 0
105 OFF 11C 07,23C Low Dry OK 0
106 ON 11C 14,91C Auto Dry OK 0
107 ON 27C 12,94C Med Cool OK 1
OK
>stat2 101
101 OFF 32C 04,93C Low Dry OK 0
OK
```

RESPONSE

Position in String	Example	Format	Description
0-2	109	NNN	Indoor unit Centralized Address
4-6	ON	ON or OFF	On/Off Status
8-10	23C	NNC	Set Temperature °C
12-17	24,08C	NN,NNC	Room Temperature °C
20-23	Auto	Low or Med or High or Auto	Fan Speed
25-28	Cool	Cool or Heat or Fan or Dry	Operation Mode
30-32	OK	OK or XN	OK or Failure code
34	0	0 or 1	Filter Reset Sign present

EXIT CODE

OK Request Successfully Executed
 ERROR:1 Unit with specified UID not found

COMPATIBILITY

CoolMaster 1000D v 0.3.1
 CoolMaster 2000S v 2.0.9

3.1.16 stat3

SYNOPSIS

stat3 [UID]

DESCRIPTION

Get Indoor unit(s) status. Specific indoor unit can be addressed by UID. If no UID provided in request, response will contain information about all units. stat3 compared to stat2 has no fractional part in the room temperature presentation.

EXAMPLE

```
>stat3
100 ON 12C 12C High Cool OK 0
101 OFF 32C 04C Low Dry OK 1
102 ON 07C 08C High Dry OK 0
103 OFF 01C 26C Med Dry OK 0
104 ON 04C 24C High Dry OK 0
```



```

105 OFF 11C 07C Low Dry OK 0
106 ON 11C 14C Auto Dry OK 0
107 ON 27C 12C Med Cool OK 1
OK
>stat3 101
101 OFF 32C 04C Low Dry OK 0
OK

```

RESPONSE

<u>Position in String</u>	<u>Example</u>	<u>Format</u>	<u>Description</u>
0-2	109	NNN	Indoor unit Centralized Address
4-6	ON	ON or OFF	On/Off Status
8-10	23C	NNC	Set Temperature °C
12-14	24C	NNC	Room Temperature °C
16-19	Auto	Low or Med or High or Auto	Fan Speed
21-24	Cool	Cool or Heat or Fan or Dry	Operation Mode
26-27	OK	OK or XN	OK or Failure code
29	0	0 or 1	Filter Reset Sign present

EXIT CODE

OK Request Successfully Executed
 ERROR:1 Unit with specified UID not found

COMPATIBILITY

CoolMaster 1000D v 2.0.9
 CoolMaster 2000S v 2.0.9

3.1.17 swing**SYNOPSIS**

swing <UID> <a|h|3|4|6|v>

DESCRIPTION

Set indoor unit <UID> swing to auto, horizontal, 30°, 45°, 60° or vertical. Not all indoor unit types support swing.

EXAMPLE

```

>swing 101 a      Set unit 1-01 swing to auto
OK
>swing 101 h      Set unit 1-01 swing to horizontal
OK
>swing 101 3      Set unit 1-01 swing to 30°
OK
>swing 101 4      Set unit 1-01 swing to 45°
OK
>swing 101 6      Set unit 1-01 swing to 60°
OK
>swing 101 v      Set unit 1-01 swing to vertical
OK

```

EXIT CODE



OK Request Successfully Executed
ERROR:1 Unit with specified UID not found

COMPATIBILITY

CoolMaster 1000D N.A.
CoolMaster 2000S v2.3.1
CoolMaster 3000T v2.3.1
CoolMaster 4000M v2.3.1

3.1.18 temp

SYNOPSIS

temp <UID> [±]<TEMPERATURE>

DESCRIPTION

Set indoor unit temperature. <TEMPERATURE> parameter must be decimal number. Command can work in relative or absolute manner. If plus '+' or minus '-' sign precede <TEMPERATURE> parameter it's value will be used as requested delta. It means the set temperature will be increased (+) or decreased (-) to that delta. Otherwise temperature will be set to the given value.

EXAMPLE

```
>temp 101 20      Set unit 1-01 temperature to 20°C  
OK  
>temp 101 -1     Decrease unit 1-01 temperature by 1°C  
OK  
>temp 101 +3     Increase unit 1-01 temperature by 3°C  
OK
```

EXIT CODE

OK Request Successfully Executed
ERROR:1 Unit with specified UID not found

COMPATIBILITY

CoolMaster 1000D v 2.0.9
CoolMaster 2000S v 2.0.9

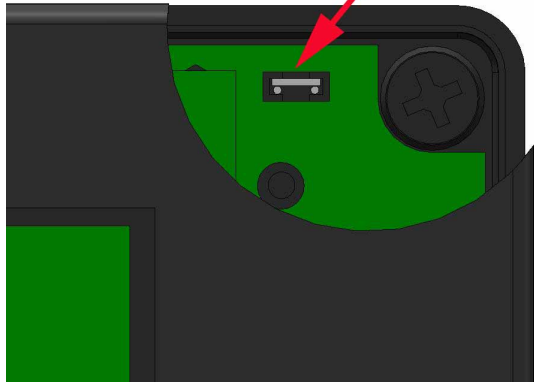
4 Firmware Update

4.1 Entering bootloader mode

To update CoolMaster firmware CoolMaster has to be switched first into bootloader mode. It can be done in two ways:

- Soft
With [boot](#) command. It is preferred method

- Hard
If for some reason CoolMaster is not responding to boot command or preceding firmware update has failed and CoolMaster is not functioning at all this is guaranteed method to enter bootloader mode. Follow next steps:

Step1	Disconnect power supply from CoolMaster	
Step2	Open CoolMaster top cover	
Step3	Open BOOT jumper shown on the diagram	
Step4	Connect power supply to CoolMaster	

When CoolMaster entered bootloader mode it will show corresponding message on LCD. Now CoolMaster is ready to accept new firmware

4.2 Firmware Download

Firmware update is supplied as a set of BAT file(s) and firmware image(s). BAT file can be for example `progp-DAIKIN.bat` and corresponding image file `DAIKIN.INC`. Make sure that BAT file and image file are located in same directory. To perform firmware download after CoolMaster is in bootloader mode connect RS232 cable to CoolMaster and run required BAT file. CoolMaster will react with running address counter on LCD.

4.3 Reboot

After firmware downloading has being finished you need to power reset CoolMaster. If it was entered bootloader mode with BOOT jumper make sure to close jumper before power reset.

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