Vision Light Tech
creating optical solutions

DDC-3

DIGITAL DIMMING CONTROLLER

# USER MANUAL
Version 7.X
August 2014

DDC-3 Overview

Metaphase Technologies' Digital Dimming Controller (DDC-3) provides 0-10V voltage dimming control of three independent LED loads in increments of 0.1V.

The DDC-3 may be remotely controlled over Ethernet using Metaphase Technologies' MetaBOSS Windows software or by third-party programs using the DDC-3's Ethernet Commands. Additionally, user-adjustments of the DDC-3 are provided by way of a user-friendly LCD interface.

Wiring Connections

Please refer to the diagram below for LED output and trigger input connections.
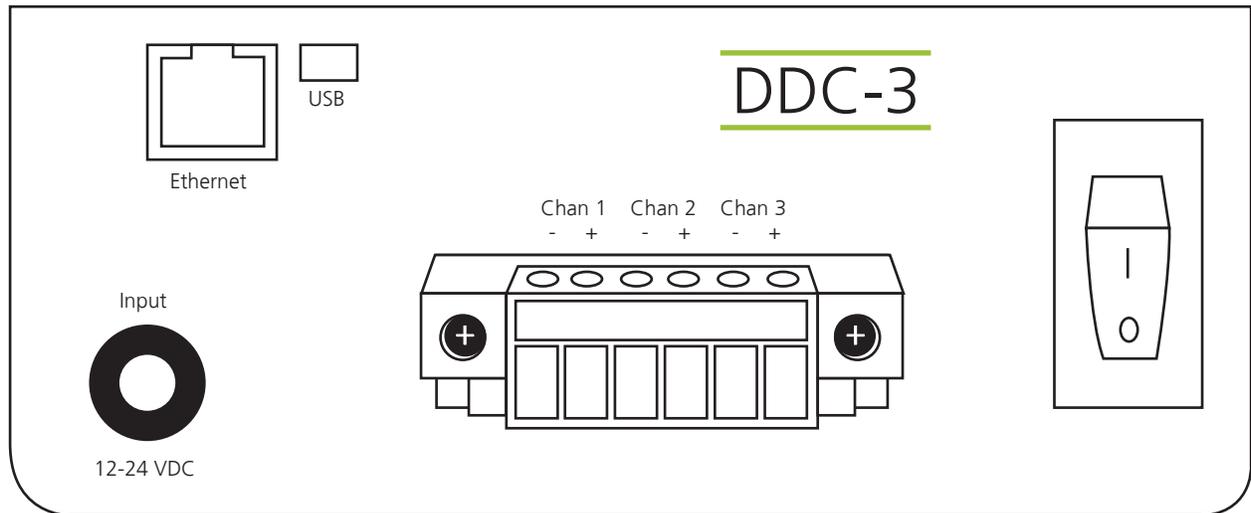
The DDC-3 is powered by a user-supplied regulated power supply having the following ratings:

- 12 to 24VDC
- 30 mA

DDC-3 Wire Recommendations

- Minimum recommended wire size - 24AWG
- The device being driven by the DDC-3's 0-10V output should be located close to the DDC-3, ideally 10 ft (3 meters) or less. However, the maximum distance is strongly determined by the electrical noise in the operating environment. In general, the 0-10V output wire pair should be twisted and/or shielded so they do not create an enclosed area in which to pick up magnetic fields from external sources. The output wire pair should not be located near wires carrying high voltage (120V or greater) or fast-rising edges (solendoids) which could induce noise into the DDC-3 output. Typical signal noise suppression techniques such as putting flyback "snubber" diodes across inductive loads (solenoid coil) should be utilized.

Quick Start

Follow the steps below to quickly setup the Metaphase DDC-3 for basic operation using the DDC-3 keypad:

1. With external loads disconnected, apply power to the unit.

2. After applying power to the device, the boot-up screen will flash and display the current software versions. At the bottom left you will find the current Controller Version followed by the two Driver Versions:

```
Metaphase DDC-3
7.0
```

3. When prompted, choose Yes to enter the Setup Menus.

```
Enter Setup?
            No  Yes
```

Scroll through the various menus using the (On/Off Menu) button located on the DDC-3 front panel.

*If setup prompt is missed at startup, the unit can be prompted to enter the setup menu at any time by pressing the (On/Off Menu) (↑) and (↓) buttons simultaneously.

Light Level Max = 0-100%
0-100% relating to 0-10V
1% = 0.1V

(C) to cycle through the 3 channels

(On/Off Menu) to cycle the settings

• Repeat the above steps for Channel 2 and 3. Scroll through the channels using the ⓒ button located on the DDC-3 front panel. Use the (On/Off Menu) button to cycle the menu settings.

• IP Address - To change the IP Address, select IP Addr Octet from the menu. Using the down ⬆ and up ⬇ arrow, scroll through each Octet 1-4 with (On/Off Menu) to change each segment of the IP address.

```
IP Addr Octet 1:
172.16.1.1
```

```
IP Addr Octet 2:
172.16.1.1
```

```
IP Addr Octet 3:
172.16.1.1
```

```
IP Addr Octet 4
172.16.1.1
```
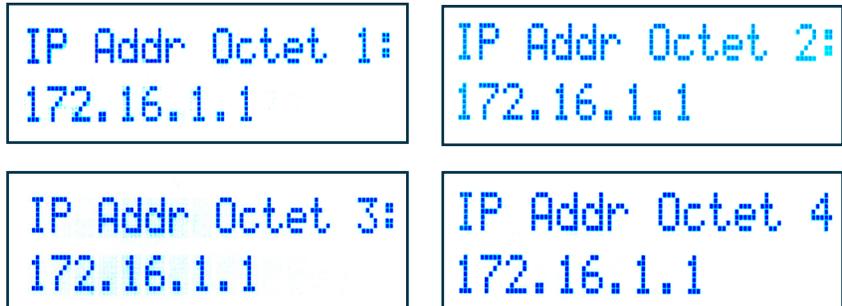
• Keypad Lock: To prevent changes to the DDC-3 controls, a lock button feature is included

• Keypad Unlock: When locked, press the (On/Off Menu) ⬇ and ⬆ buttons similtaneously and select YES to enter the setup mode. From there, scroll down to the Unlock Menu and select UNLOCK (A locked controller can also be unlocked via MetaBOSS).

```
Keypad Status:
Keys unlocked
```

```
Keypad Status:
Keys are locked
```
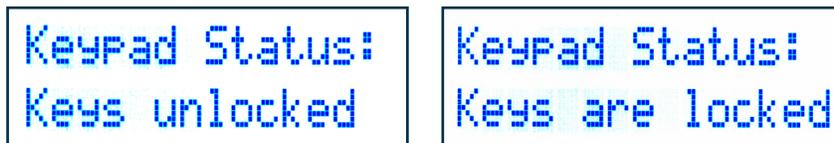
4. Exit the Setup Menus to enter the Runtime Menus.

```
Exit Setup?
              Yes
```

User-Interface Menus

A. Setup Menus

The setup menus below appear only when the DDC-3 is powered on. Each menu described below applies to three channels independently. The menus include:

Light Level Max

This menu allows the user to set the light level max for each of the three independent channels.

IP Address

This menu allows you to set the IP address for Octets 1-4. For Octets 1-3, use 0-255. For Octet 4 octet use, 0-254.

Keypad Status

This menu allows user to lock or unlock the keypad.

Exit Setup

This menu provides the user a way to exit setup menus, and return to the runtime menu.

Restore to Default

This allows for the device to be restored to original factory settings, but does not change the IP address. First, reboot the device and wait until the version menu is displayed.

```
Metaphase DDC-3
7.0
```

When the above is displayed, hold the Down Arrow ⊕ button to restore default settings.
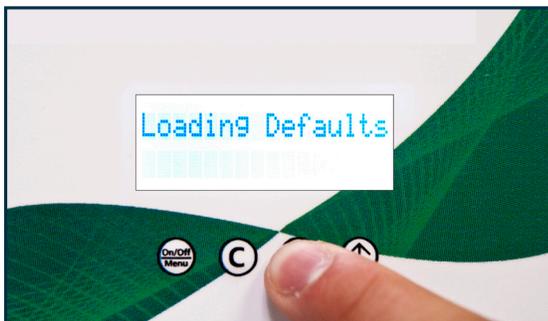
User-Interface Menus

The device should now be restored to the original settings and prompt you to enter setup mode.

Jump to Setup

Hold down the ⊙ ⬆ and ⬇ buttons simultaneously to return to the Setup Menu at any time.

Resetting IP Address

In the unlikely event that, the software is corrupted, preventing IP address changes within the Setup menu, the IP Address can be reset to 172.16.1.1 by pressing ⊙ & ⬆ simultaneously immediately after power up. Alternatively, for applications where the controller does not have buttons on the front face, the IP address can be reset to 172.16.1.1 by power cycling the controller four times, leaving it in powered on for 5 to 6 seconds each time. Exceeding the 6 seconds will reset the counter and subsequently require four more power cycles.

Runtime Menus

Runtime Menus allow you to adjust the voltage setting for each channel:

```
*Ch1   Ch2   Ch3
 OFF   0.0V  10V
```

* indicates active channel

Use the ⓒ button to cycle through the 3 channels

Use the ⊙ button to cycle through the settings

MetaBOSS Windows Control Software

Metaphase provides Windows software to control DDC-3 controller from a remote PC. Please follow the instructions below for setting up the MetaBOSS software:
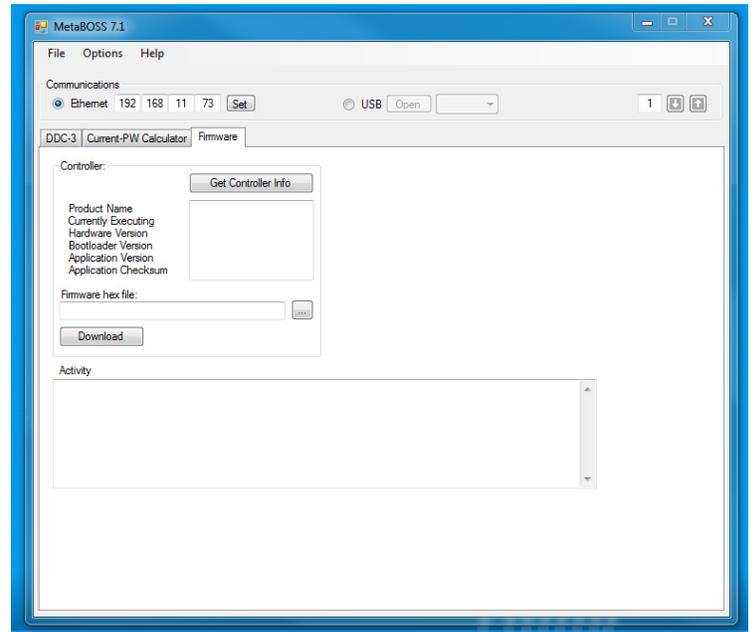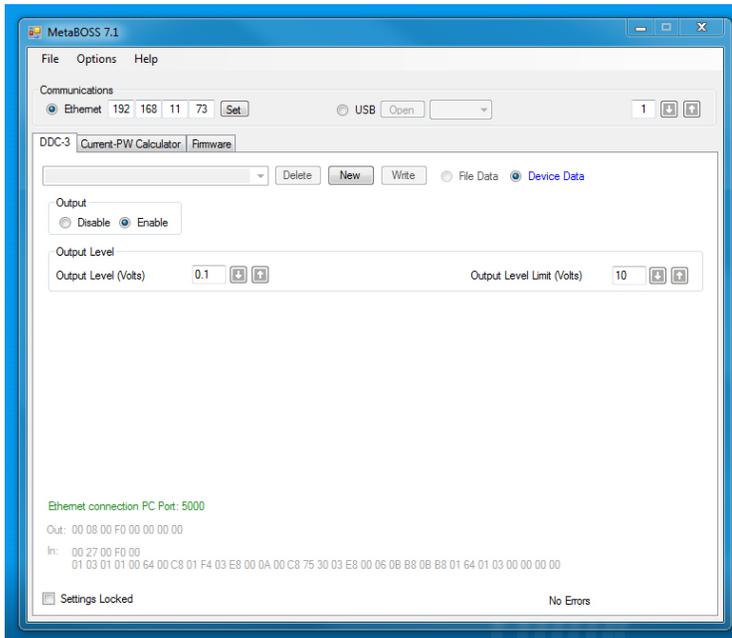
MetaBOSS Installation & Operation

- Go to http://www.metaphase-tech.com/Controllers/Controllers/DDC_3 to download a copy of the latest MetaBOSS software.

- Unzip the file into a folder of your choosing (typically c:\Metaboss)

- Microsoft .Net Framework 4.0 or later must be installed on the PC. The free upgrade may be found at http://www.microsoft.com/download/en/details.aspx?id=17851

- The DDC-3 Controller has a default IP address of 172.16.1.1. The PC running MetaBOSS must be on the same subnet. i.e. – the PC must have an address beginning with 172.16. As required, set the IP address of the host PC to a 172.16 address (such as 172.16.0.100). The subnet mask should be set to 255.255.0.0 on a 172.16 network and 255.255.255.00 on a 192.168 network.

- Connect the DDC-3 and host PC, using standard CAT-5 patch cables, to an Ethernet switch. Alternatively, connect the host PC directly to the DDC-3 using a "cross-over" CAT-5 cable.

- Double-click the MetaBOSS.exe application within the installed folder.

- DDC-3 parameters should be displayed automatically upon startup

DDC-3 Ethernet Command List

For users that do not want to use the MetaBOSS Software or the DDC-3 keypad, Metaphase provides an Ethernet command list that can be embedded into users' custom programs. Use the link below to access the complete command list on Metaphase Technologies' website, located in the "file cabinet" at the bottom of the page:

http://www.metaphase-tech.com/Controllers/Controllers/DDC_3

The Ethernet commands are of the following format:

Incoming and Outgoing Message Structure:
<2-byte length> <1-byte channel> <1-byte command> <1-byte reserved> <3-bytes of data>

Message Example: 00 08 00 B3 00 00 00 31   all data is in Hex

- Length is   00 08   the length is always 00 08

- Channel is   00   channel is either 00 or 01

- Command is   B3   command for setting output level

- Reserved is   00   reserved is always 00

- Data is   00 00 31   Output Level for channel 1 is 4.9V (31 hex is 49 decimal)

[APPENDIX E]

Specifications

General

Channels:	3 Channels, Independantly Controllable
Supply Voltage:	12-24VDC regulated supply
Supply Current:	30mA. Power supply capable of approx.1A recommended
Ethernet Control:	UDP messaging listening on port 5000 for any incoming source port
IP Address:	User selectable. Defaults to 172.16.1.1
Operating Modes:	0-10 Voltage Control
ROHS Compliance:	Yes
Expected Lifetime:	75,000 hours
Mounting:	DIN Rail (vertical preferred for maximum power output)
Dimensions:	4.75in x 4.75in x 2.38in (120.5mm x 120.5mm x 59.75mm)
Weight:	1lb
Operating Ambient Temperature	35C (95F) maximum
Operating Humidity	0% to 90% RH non-condensing
Enclosure IP Rating	None
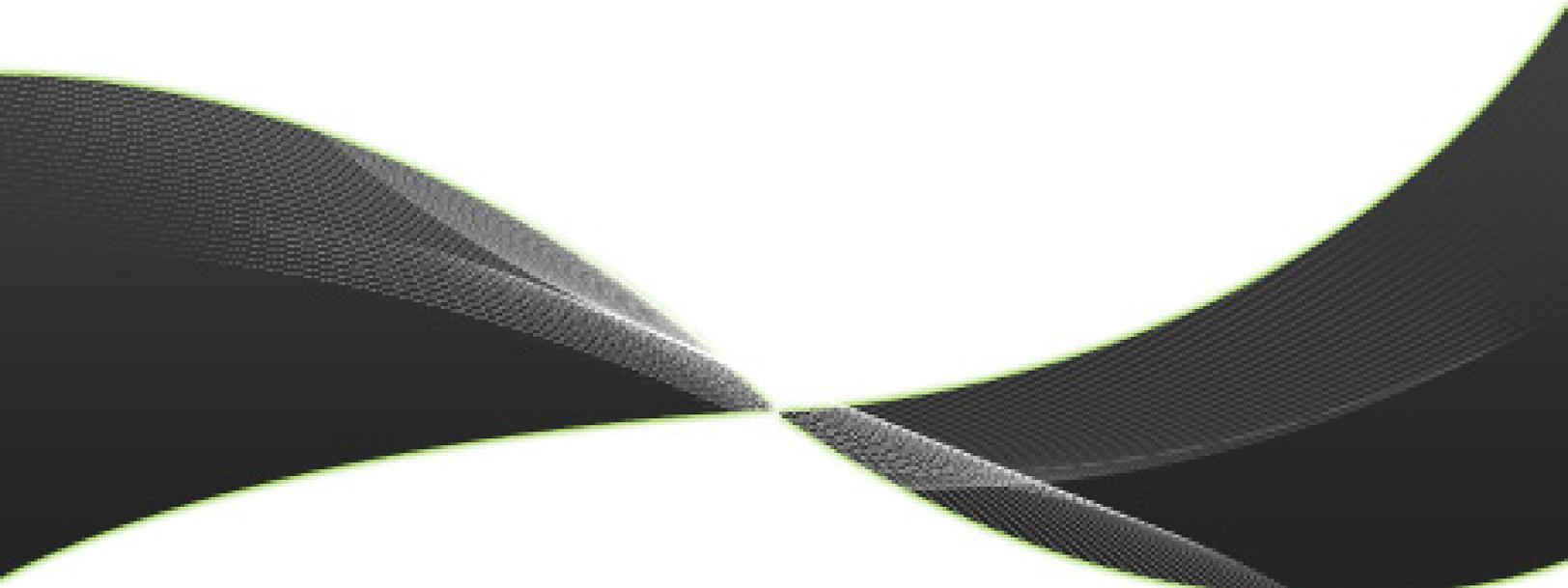
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Metaphase Technologies, Inc.
metaphase-tech.com

211 Sinclair Rd, Suite 100
Bristol, PA 19007
p.   215.639.8699
f.   215.639.0877
sales@metaphase-tech.com