

# **Graphical Control Panel User Manual**

# JMM-5000 PC/104-Plus DC/DC Power Supply

Revision A.00

March 2016

Revision	Date	Comment
A.00	03/28/2016	Initial release

FOR TECHNICAL SUPPORT PLEASE CONTACT:

support@diamondsystems.com

© Copyright 2016 Diamond Systems Corporation 158 Commercial Street Sunnyvale, CA 94086 USA Tel 1-650-810-2500 Fax 1-650-810-2525 www.diamondsystems.com



# CONTENTS

1. Introduction	3
2. Output Control	4
3. DUTY CYCLE CONTROLLER	6
4. Configuration	7
4.1. Load Configuration to Power Supply	7
4.2. Load Power-On Settings to Power Supply	8
4.3. Save Power Supply Configuration to file	9
4.4. Save Power Supply Power-on Settings to file	
4.5. Display Current Configuration	
4.6. Display Current Configuration	
5. Input Power Settings	
5.1. Update Settings	
5.2. Update Defaults	
6. Output Timing Control	14
6.1. Store Settings	
6.2. Restore Defaults	
6.3. Status Error! I	3ookmark not defined.
7. A/D Section	15
8. EXIT 15	



# **1. INTRODUCTION**

This document provides information relevant to the operation and demonstration of the JMM-5000 power supply module's capabilities.

The Diamond Systems' Universal Driver must be installed before executing the GUI program. For more details read the Universal Driver installation instructions provided with the Universal Driver package.

- To start the GUI in windows, Double click the following executable file JMM5000.exe
- To start the GUI in Linux, Run the following executable file with root user permission \$ /JMM5000.
- The main window of the control panel software is displayed on the screen as shown below in Figure 1.

JMM5000 Control Pa	nel v1.0 © Diamond S	ystems Corp.					- 🗆 🗙
×							
Model : JM	IM-5000 Board Re	vision ID: 0x00	Firmware Version :	1.05 Status	READY	EX	п
- Output Control -	5V	- 3 3V	101/	Configuration			
Fault Indicator :		0.07		📃 💿 Load configu	ration to powe	er supply	
Status :	Turn On	Turn On	Turn On	C Load power-	on settings to	nower supply	
Voltage Setting :	5.000 V	3.300 V	12.000 V	Save power	supply configu	ration to file	
High Voltage Limit :	5.250 V	3.465 V	12.600 V	Save power	supply power-	on settings to	file
Low Volage Limit :	4.750 V	3.135 V	11.400 V	Display curre	ent configuratio	n	
Output Voltage :	0.000 V	0.000 V	0.000 V	Display curre	ent power-on s	ettings	
Output Current :	0.000 A	0.000 A	0.000 A		GO		
Output Power :	0.000 W	0.000 W	0.000 W	- Output Timing	Control —		
	Clear Faults	Clear Faults	Clear Faults	Status :	Turn On	)	
	- Duty Cycle Contro	ller		21	- <b>5V</b>	- 3.3V	- 12V
	Power On/Off Ir	ndicators	]	On Delay:	5 ms	5 ms	5 ms
	💿 5V	3.3V	● 12V	Rise Time:	200 ms	220 ms	250 ms
Turn Off				Fault Check Time:	220 ms	250 ms	300 ms
		Start 💿 Stop		Off Delay:	1 ms	1 ms	1 ms
A/D Section	Cycle Time : 600	Sec Sto	opped				
Channel     O     Channel     O     Channel	PowerOn Time : 30	Sec Duty Cyd	le Percentage: 00.0 %	Program	m Settings	estore Defau	lts
Channel 1	5V	3.3V	101 I 12V			FADLOC	
	- Input power Setti	inac	)	Output Log:		EARLOG	SAVELOG
Go			OV				
	Frimary voltage Rang		V 34 V				
Voltage : 0.000 V	Lindate Se	ttinge . /					
	Opuate se		-raura				

Figure 1: JMM-5000 Control Panel



# 2. OUTPUT CONTROL

- Press on the "Turn On" button to enable the voltages, press on the "Turn Off" button to disable the voltages.
- Provide the Voltage Setting, High Voltage Limit, Low Voltage Limit values.
- Output Voltage, Output Current, and Output Power values are read from Control and updated if the output is enabled.
- Fault Indicator LED turns red when over voltage, under voltage, or over current. Under Current fault occurs when the voltage is enabled. The fault indicator LED remains black if the fault doesn't occur when the voltage is enabled. The output log displays the fault which has occurred when the voltage is enabled.

#### Example: Enabling 12V output

- Press on the "Turn On" button to enable the voltage.
- Enter the Voltage Setting, High Voltage Limit, Low Voltage Limit values.
- Output Voltage, Output Current, Output Power values of 12V are read and updated.

– Output Control —	- 5V	3 3V	- 12V
Fault Indicator :	•	•	•
Status :	Turn On	Turn On	Turn Off 🛛 🔴
Voltage Setting :	5.000 V	3.300 V	12.000 V
High Voltage Limit :	5.250 V	3.465 V	12.600 V
Low Volage Limit :	4.750 V	3.135 V	11.400 V
Output Voltage :	0.000 V	0.000 V	12.000 V
Output Current :	0.000 A	0.000 A	0.312 A
Output Power :	0.000 W	0.000 W	3.738 W
	Clear Faults	Clear Faults	Clear Faults

Figure 2: Output Control



#### Example: Over fault occurrence when 12V output is enabled.

• When the 12V is enabled and over voltage fault occurs, the LED indicator of 12V LED is red in color.

— Output Control —	~ 5V	~ 3.3V	~ 12V
Fault Indicator :	•	•	•
Status :	Turn On 🛛 🔍	Turn On	Turn Off 🛛 🔵
Voltage Setting :	5.000 V	3.300 V	12.000 V
High Voltage Limit :	5.250 V	3.465 V	12.600 V
Low Volage Limit :	4.750 V	3.135 V	11.400 V
Output Voltage :	0.000 V	0.000 V	12.000 V
Output Current :	0.000 A	0.000 A	0.312 A
Output Power :	0.000 W	0.000 W	3.738 W
	Clear Faults	Clear Faults	Clear Faults

• The fault that occurred is displayed in the output log.

Output Log:	CLEAR LOG SAVE LOG
5V: OV Fault	



# 3. DUTY CYCLE CONTROLLER

- Select the power supply outputs which are controlled by the duty cycle controller in the "Select Outputs to Control" group box.
- Provide Cycle time and Power On Time.
- Press the "Start" button to start the duty cycle and press "Stop" button to stop the duty cycle.
- Duty Cycle percentage is displayed based on the power on and cycle time.
- The "Power On/Off Indicators" displays the enabled and disabled status of the output controls.

Output is disabled

Output is enabled

• By selecting the outputs to be controlled by the duty cycle controller, the corresponding outputs are disabled in output control section.

#### Example: Controlling 3.3V, 5V, 12V outputs

- Select the 3.3V, 5V, 12V outputs in the "Select Outputs to Control" group box.
- Cycle time and Power On Time are provided as 600 seconds and 30 seconds respectively.
- Press the "Start" button.
- Duty Cycle percentage is displayed based on the power on and cycle time.
- The "Power On/Off Indicators" displays swhen the outputs are enabled and swhen outputs are disabled.
- 12V, 3.3V, 5V outputs are disabled in output control section.

- Duty Cycle Controller					
Power On/O	ff Indicato	rs ——			
5V 3.3V 12V					
[	Sta	rt 🔘	Stop		
Cycle Time :	600	Sec	Stopped		
PowerOn Time :	30	Sec Duty	/ Cycle Perce	entage: 5.0	%
	<ul> <li>Select C</li> </ul>	Outputs to	Control —		
☑ 5\	/	✓ 3.3V	<b>v</b>	12V	

Figure 3: Duty Cycle Controller



# **4. CONFIGURATION**

#### 4.1. Load Configuration to Power Supply

- Press on the "Load Configuration to Power Supply" button.
- It loads the configuration from the file chosen by the user to the power supply.

Configuration
Output is a state of the sta
$\bigcirc$ Load power-on settings to power supply
Save power supply configuration to file
Save power supply power-on settings to file
Display current configuration
Display current power-on settings
GO

#### Figure 4: Configuration

• Browse to the destination folder containing the configuration file and press "Open" button.

📑 Open Image							x
	omputer 🕨	Development PC (C:)	► Diamond ►	<b>• €</b>	Search Diamond		٩
Organize 🔻 Ne	ew folder						0
☆ Favorites	▲ Nar	ne		Date modified	Туре	Size	
🧮 Desktop		Diamond		03-07-2015 13:02	File folder		
🔚 Recent Places	5	configuration.ini		13-01-2016 15:19	Configuration sett		2 KB
Downloads	<b>₩</b>			111			
	File <u>n</u> ame	configuration.ini		•	Text files (*.ini) <u>O</u> pen ▼	Cance	•



#### 4.2. Load Power-On Settings to Power Supply

- Press on the "Load Power-On Settings to Power Supply" button.
- It loads the configuration from the file chosen by the user to the power-on settings.

Configuration	
Coad configuration to power supply	
Output to power supply to power supply	
Save power supply configuration to file	
Save power supply power-on settings to file	
O Display current configuration	
Display current power-on settings	
GO	

• Browse to the destination folder containing the configuration file and press "Open" button.

🔲 Open Image				×
	mputer   Development PC (C:)  Diamond	<b>-  -  4 </b>	Search Diamond	٩
Organize 🔻 New	w folder			
☆ Favorites	Name	Date modified	Туре	Size
🧮 Desktop	📔 Diamond	03-07-2015 13:02	File folder	
Recent Places	Configuration.ini	13-01-2016 15:19	Configuration sett	2 KB
🐌 Downloads	E			
Libraries 9026 Documents Music Pictures Subversion				
Videos	÷ <	III		•
	File <u>n</u> ame: configuration.ini	-	Text files (*.ini)	•
			<u>O</u> pen 🔽	Cancel



# 4.3. Save Power Supply Configuration to file

- Press on the "Save power supply configuration to file" button.
- It saves the power supply configuration to the file.

Configuration
$\bigcirc$ Load configuration to power supply
$\bigcirc$ Load power-on settings to power supply
Save power supply configuration to file
$\bigcirc$ Save power supply power-on settings to file
Display current configuration
Display current power-on settings
GO

• Enter the name for file with .int extension.

Dialog	<u> २</u> ×
Enter filename to store configuration : ( Eq: filename.ini )	Config.ini
OK Cance	
	·

• The output Log shows the status.





#### 4.4. Save Power Supply Power-on Settings to file

- Press on the "Save power supply power-on settings to file" button.
- It saves the power supply power-on settings configuration to the file.

Configuration
Load configuration to power supply
Coad power-on settings to power supply
Save power supply configuration to file
Save power supply power-on settings to file
Display current configuration
Display current power-on settings
GO

• Enter the name for file with .in extension.

Dialog	8 x
Enter filename to store configuration : (Eg: filename.ini)	Config.ini
OK Cance	1

• The output Log shows the status.





# 4.5. Display Current Configuration

- Press on the "Display Current Configuration" button.
- It displays the current configuration of the power supply.

Configuration
C Load configuration to power supply
Coad power-on settings to power supply
Save power supply configuration to file
Save power supply power-on settings to file
Display current configuration
Display current power-on settings
GO

- Configuration of the power supply is displayed in the "Output Log".
- The configuration can be stored in a file by clicking on the "SAVE LOG" button.
- "Output Log" can be cleared by clicking on the "CLEAR LOG" button.

Output Log:	CLEAR LOG	SAVE LOG
12V		
ON_OFF_CONFIG	2.691	
VOUT_COMMAND	12.000	
VOUT_MAX	12.600	
VOUT_MARGIN_HIGH	12.600	
VOUT_MARGIN_LOW	11.400	-
TOUT CAL CATN	10 141	



#### 4.6. Display Current Configuration

- Press on the "Display Current Power On Settings" button.
- It displays the current configuration of the power-on settings.

Configuration
Coad configuration to power supply
$\bigcirc$ Load power-on settings to power supply
Save power supply configuration to file
Save power supply power-on settings to file
Display current configuration
Display current power-on settings
GO

- Configuration of the power-on settings is displayed in the "Output Log".
- The configuration can be stored in a file by clicking on the "SAVE LOG" button.
- "Output Log" can be cleared by clicking on the "CLEAR LOG" button.

Output Log:	CLEAR LOG	SAVE LOG
12V		*
ON_OFF_CONFIG	2.691	
VOUT_COMMAND	12.000	
VOUT_MAX	12.600	
VOUT_MARGIN_HIGH	12.600	
VOUT_MARGIN_LOW	11.400	-
TOUT CAL CATM	10 1/1	



# **5. INPUT POWER SETTINGS**

#### 5.1. Update Settings

- Press on the "Update Settings" button.
- Enter the voltages in the "UV" and "OV" section of Primary and Secondary Voltage Range.
- The voltages in the "UV" and "OV" section of Primary voltage range updates the RDACs and EEPROMs of the POT1 and POT2.
- The voltages in the "UV" and "OV" section of Secondary voltage range updates the RDACs and EEPROMs of the POT3 and POT4.

— Input power Settings —	UV		OV	]
Primary Voltage Range :	7.000	V	34.000	V
Secondary Voltage Range :	7.000	V	34.000	v
Update Settings Update Defaults				

Figure 5: Update Settings

#### 5.2. Update Defaults

- Press on the "Update Defaults" button.
- Enter the voltages in the "UV" and "OV" section of Primary and Secondary Voltage Range.
- It updates the default values of the four POTs in the PIC flash based on the user input.

— Input power Settings —	UV		OV	
Primary Voltage Range :	7.000	V	34.000	V
Secondary Voltage Range :	7.000	V	34.000	V
Update Settings Update Defaults				

Figure 6: Update Defaults



#### 6. OUTPUT TIMING CONTROL

#### 6.1. Program Settings

- Enter On Delay time, Rise Time, Fault Check Time, Off Delay time in milliseconds.
- Press "Program Settings" button.
- It loads the On Delay time, Rise Time, Fault Check Time, Off Delay time of 12V, 5V, and 3.3V into the LTC2974 RAM.

#### 6.2. Restore Defaults

- Press "Restore Defaults" button.
- It loads the On Delay time, Rise Time, Fault Check Time, Off Delay time of 12V, 5V, 3.3V into the LTC2974 RAM.
- It loads default the On Delay time, Rise Time, Fault Check Time, Off Delay time value of 12V, 5V, 3.3V from the PIC's flash storage to the GUI.

- Output Timing Control						
Status : Turn On						
	— <b>5V</b> —		– <mark>3.3</mark> V		- <b>12</b> V -	— l
On Delay:	5	ms	5	ms	5	ms
Rise Time:	200	ms	220	ms	250	ms
Fault Check Time:	220	ms	250	ms	300	ms
Off Delay:	1	ms	1	ms	1	ms
Program Settings Restore Defaults						

Figure 8: Output Timing Control



## 7. A/D SECTION

- Select the channel number.
- Press Go.
- The voltage of the selected channel pin is displayed in the "Voltage" box.



Figure 7: A/D Section

#### 8. EXIT

- Press on the "EXIT" button.
- It closes the graphical control panel application.

EXIT