

CEREBRAL-55

SMART DC-DC CONVERTER





SAFETY, HANDLING & SUPPORT

WARNING: Failure to follow these safety instructions could result in fire, electric shock, other injuries, or damage to CEREBRAL-55 Smart DC-DC Converter (CEREBRAL-55) or other property. Read all the safety information below before using CEREBRAL-55.

Handling Handle CEREBRAL-55 with care. It comprises half-brick DC-DC converter modules, printed circuit board, electronic components, heat sinks and cooling fans. CEREBRAL-55 is not designed for extreme conditions, rough handling, vibration, shock or drop. Keep CEREBRAL-55 away from heat, flame, strong sunlight, water, dust, soil or mud. Do not use a damaged CEREBRAL-55.

Repairing Do not disassemble or tamper with CEREBRAL-55. Do not troubleshoot, repair or replace any component by yourself.

Ventilation Operate CEREBRAL-55 in a well ventilated environment. Hot air exiting from the cooling fans shall not be obstructed or restricted.

Connectors, ports and buttons Never force a connector into a port or apply excessive pressure to a button. If the connector and port do not join with reasonable ease, they probably do not match. Check for obstructions and ensure that the connector matches the correct port.

Disposal and recycling As CEREBRAL-55 contains electronic components, it must be disposed of separately from household waste. When CEREBRAL-55 reaches its end of life, follow local laws and regulations for proper disposal and recycling options.

High-consequence activities CEREBRAL-55 is a customized system with pending safety tests and certifications. It is not intended for use where the failure of the system could lead to death, personal injury or severe environmental damage.

Disclaimer Every effort has been made to ensure that the information in this manual is accurate. This manual serves to adequately recommend safe operating procedures, but shall not be treated as comprehensive. Do not use CEREBRAL-55 in any other way than the one recommended in this manual. Spectronik reserves the right to change system specifications, appearance or discontinue the product at any time.

Warranty Spectronik warrants the included hardware product and accessories against defects in materials and workmanship for the first 30 days after delivery. Spectronik does not warrant against normal wear and tear, nor damage caused by accident or abuse.

To obtain service, contact support@spectronik.com

SPECIFICATIONS

1.1 CEREBRAL-55 SPECIFICATIONS

Description	5.5kW 9UV 75A Smart DCDC Converter Regulated Non-Isolated Buck-Boost
	Wide input & output voltage ranges
Features	User-configurable Voltage and Current output via GUI User-configurable Current output ramp rate via GUI Power output On/Off switch Live monitoring of input Current and Voltage from source Live data logging (csv file) via GUI Load sharing among the internal DC-DC modules Inrush Current limiter Integrated thermal control with heat sink and cooling fans Applicable for battery charging (voltage output droop while maintaining set Current output)
Product Code	C-55-1590-75-S
Electrical Specifications	
Isolation ⁽¹⁾	Non-isolated DCDC
Input V ^{(2) (3)}	15 to 90 V
Input I max	75 A
Output V range ^{[4] [5]}	12 to 90 V
Output I limit range ⁽⁴⁾	2 to 75 A
Output current ramping ^[4]	1 to 20 A/s
Rated max Power ⁽⁶⁾	5500 W
Efficiency	94 - 98 %
Start-up Duration ⁽⁷⁾	< 1700 ms
Mechanical Specifications	
Mass with Heatsink & fan	1460 g
Size L x W x H	360 x 100 x 90 mm (with spacers)
Power Cables Connections	Lug connection for M5 male with Nut
Mounting	10 x Ø3.2mm or M3 spacers
Advised ambient temperature	-15 to 60 °C
Advised temperature threshold ^{[6] [8]}	< 80 °C on converter
Converter Safety Features	

CAN/CSA-C22.2 No.60950-1:2007/A2:2014 UL 60950-1:2007/A2:2014 EN 60950-1:2006/A2:2013

[1] UART communication port is isolated.

(2) Non-operating Input max 99V.

(3) Input Over-Voltage shutdown during operation, if > 90V.

(4) Programmable settings through GUI during start-up via comm port with PC.

(5) Might require a minimum load of 0.5A for tighter tolerance at Output V.

(6) Output current derates when $> 80 \degree$ C.

(7) System boot-up in 1200ms automatically when there is input power. Max power output in about 500ms after switch is turned on.

(8) High-Temperature shutdown, if > 105 °C.



2.1 CEREBRAL-55 SYSTEM OVERVIEW



Output Voltage: V_set = 12V Output Current: I_set = 2A (the minimum Current Limit value) Output Current Ramping = Deactivated (displayed as 0, 1.0 A/s)

Configure new V_set / I_set / Ramping settings through Spectronik Cerebral DCDC GUI.

V_set and I_set are limited such that their product does **not exceed 5600W**. This allows the full 5.5kW to the load end despite in-line voltage drops from conduction losses.

	ITEM DESCRIPTION							
1.	Output On/Off Switch	6.	Control board	11.	Converter Board			
2.	Programming Port	7.	Fans x3	12.	GND M5 stud			
З.	Load VI sensing	8.	DCDC Converters x3	13.	V_in M5 stud			
4.	Supply/Battery VI sensing	9.	Status LED	14.	V_out M5 stud			
5.	UART Port	10.	Mounting M3 Spacers x10	15.	GND M5 stud			

2.2 GRAPHIC USER INTERFACE (GUI) OVERVIEW

Configure CEREBRAL-55 output settings through the "**Spectronik Cerebral DCDC GUI**" PC app using the USB-to-UART cable.

Tip: A terminal emulation program on a computer, such as a HyperTerminal, is an alternative. Use com port settings: 57600 bps | 8 Data Bit | No Parity Bit | 1 Stop Bit | No Flow Control

The GUI has the following features:

- I. Display input and output values.
- II. Display CEREBRAL-55's settings.
- III. Display CEREBRAL-55's operational status.
- IV. Clear step-by-step user guide on how to configure settings.
- V. Data-logging into CSV file.



ITEM DESCRIPTION						
1.	Operational Status	6.	User input text box			
2.	Values of Inputs	7.	System messages output box			
З.	Values of Outputs	8.	Communications port drag-down selector			
4.	Output Settings	9.	Data-logging "Save" button			
5.	Converter Temperature	10.	System "Connect" button			

GUI displays output configurations and instructions for new settings.



GUI displays live status when the output Switch is turned on.

Specification of the pair o			
Status: In Operation			
V_in: 47.80 V	L_in : 15.82 A	P_in : 756.1 W	Temp: 28.67 C
V_out: 74.75 V	I_out: 10.07 A	P_out: 752.5 W	
V_set: 75.00 V	L_set: 12.50 A	Ramp:0, 1.0 A/s	
Command Input		COM PORT CONT	8 5
	Lateral Activity	BAUD RATE	

Live data-logging is available and will be saved in a CSV format.





3.1 GETTING STARTED (SYSTEM CONNECTIONS)



Turn **on** the power at **source**. System will boot up.

Turn **Switch** to **ON** to **allow output** at **V_out** (to load). (Output settings are set to last used configuration. If in doubt, connect to GUI to verify output settings.)

3.2 GETTING STARTED (GUI SETUP)

Install "Spectronik Cerebral DCDC GUI" on a PC.

The GUI loader icon will be on desktop screen after installation. (Software can be downloaded from Spectronik website.)



Connect the CEREBRAL-55 **UART-Port** to the **PC** using the **USB-to-UART** cable.

At the UART connection, ensure <u>correct orientation</u>, Black wire to "BLACK" locator.



Caution

The UART connector has a tight fit to provide a robust connection.

When connecting, ensure the UART console is fully inserted into the receiving port.

When disconnecting, firmly grip the sides of the console head and pull out. You may jiggle it sideways but not up-down. Do not pull by the wires.



When the CEREBRAL-55 and the PC are connected, **Run** the **GUI**.

The program windows shown below would appear.



Select the correct **communication port** and click on the **Select** (Connect) button.



The GUI is now connected to the CEREBRAL-55.

GUI will respond once there is power into the CEREBRAL-55.

Note

GUI is not needed to turn on the CEREBRAL-55.

GUI is only needed for output setting(s) reconfigurations.

The GUI may remain connected for monitoring and datalogging.

3.3 GETTING STARTED (SYSTEM CONFIGURATION)

Turn on the input power (at **Input +**) to the CEREBRAL-55.

Input power automatically activates the system.)

The CEREBRAL-55 has entered "**Standby**" status, as shown on the GUI. (If the GUI screen remains unchanged (blank), it is likely that the com port is incorrect.)

Spectronik Cerebral DCDC GUI			- B K
Status: StandBy			
V_in	l_in	P_in	Тетр
V_out	I_out	P_out	
V_set	l_set	Ramp	
Max Power = 5500 W Input Voltage range = 15.0 ~ 90.0 V Max Input Current = 75.0 A Output Voltage range = 12.0 ~ 90.0 V Output Current range = 2.0 ~ 75.0 A Present Power Irant = 2.00 A Present Power Irant = 2.400 W Present Current Ramping Stelling = 0, 1.0 A/s To reconfigure output VOLTACE, example 48.5 Command in the following format: V ENTER '48.5' ENTER To reconfigure output CURRENT Limit, example Command in the following format: Y ENTER '48.5' ENTER To reconfigure output CURRENT Limit, example Command in the following format: Y ENTER '18.5' ENTER To reconfigure output current RAMPING, 'rang' ENTER and then follow the instructions	V. 185 A.		
Command Input		COM PORT COM17	
	10000	BAUD RATE 5760	

Keep the **Switch** at **Off** to make changes to the output settings.

Refer to the guide printed in the message box, Follow the relevant steps to change the output setting(s). Illustrations are available in the appendix.

Max Power = 5500 W Input Voltage range = 15.0 ~ 90.0 V Max Input Current = 75.0 A Output Voltage range = 12.0 ~ 90.0 V Output Current range = 2.0 ~ 75.0 A	 CEREBRAL-55 operational range
Present Voltage Setting = 12.0 V Present Current Limit = 2.00 A Present Power limit = 24.00 W Present Current Ramping Setting = 0, 1.0 A/s	 Output configurations
To reconfigure output VOLTAGE, example 48.5 V, Command in the following format: 'v' ENTER '48.5' ENTER	
To reconfigure output CURRENT Limit, example 18.5 A, Command in the following format: 'i' ENTER '18.5' ENTER	 change the output configurations
To reconfigure output current RAMPING, 'ramp' ENTER and then follow the instructions.	

CEREBRAL-55 is now **ready**. (Ensure output settings are configured correctly.)



Turn **Switch** to **On**, to allow power **output**. GUI will show that the system has entered "**In Operation**" status.

Spectronik Cerebral DCDC GUI			- 10 - 8
Status: In Operation			
V_in: 47.92 V	I_in : 0.16 A	P_in: 7.5 W	Temp: 25.35 C
V_out: 75.01 V	I_out: 0.04 A	P_out: 2.8 W	
V_set: 75.00 V	I_set: 12.50 A	Ramp:0, 1.0 A/s	
			States.
			and a set of
C			
		COM PORT COMING	
		BAUD RATE 57000	

3.4 SHUTTING DOWN

Turning off output

To disable output power from the CEREBRAL-55, turn ${\bf Switch}$ to ${\bf Off}.$ The system will return to " ${\bf Standby}$ " status.

Note: CEREBRAL-55 will automatically shut down if there is no Input power.



Aborting the GUI program

The GUI can be disconnected or terminated at anytime.

Click on the 🧧 (Connect) button to end GUI.

The 🔳 (Save) button must be at 'off' in order to end the GUI.

Spectronik Cerebral DCDC GUI			- 3 X
Status: In Operation			
V_in: 47.80 V	l_in : 15.79 A	P_in: 754.7 W	Temp: 33.21 C
V_out: 74.72 V	I_out: 10.07 A	P_out: 752.2 W	
V_set: 75.00 V	I_set: 12.50 A	Ramp:1, 1.5 A/s	
Command Input		COM PORT COM17 U	<u> </u>
		BAUD RATE 57500 -	

3.5 CURRENT-RAMPING

"Current-Ramping" is a process to control the current increase slew rate, in a stepwise manner.

This feature is pragmatic for application where the power source prior to the DCDC converter might not be able to provide/discharge its full power instantaneously (such as fuel cells) and requires time to meet that capacity. This also support smoothening the transition between multiple power sources.

The current ramping rate is configurable,

Ramping function can be set to **Active** or **Non-active** (configurable through setting) Step length resolution = **500ms** (fixed)

Step height resolution = **500mA ~ 10000mA** / 500ms (configurable through setting) [Range given as 1A/s to 20A/s]

Refer to "Output Current Ramping Setting (active & non-active)" in the appendix for setup guide.

When operating with an active Current-Ramping program, it is <u>necessary</u> to have an **auxiliary power source** (Aux_P_out), in parallel to the Cerebral-55 output (P_out).

The auxiliary power must be there to <u>support the full power</u> demand from the load, while the Cerebral-55 ramps up its power output.



See example on next slide.

An example

Cerebral-55 Settings:

I_Set: 12.5 A, (Output I Limit) Ramp: 1, 1.5 A/s ∴ step resolution \rightarrow 750mA/500ms

Electronic-Load:

Mode: Constant-Current (For steady current demonstration) Load: 10 A



3.6 PERFORMANCE GRAPHS & TABLES

VI Characteristic of Input & Output relations Graph



Efficiency reference Table

V_in	V_set	V_out	I_in	l_out	P_in	P_out	Effi	Notes
15	24	24.04	71.80	40.99	1077.00	985.40	91.49	Low-low buck
24	15	15.00	50.70	74.49	1216.80	1117.35	91.83	Low-low boost
24	48	47.68	75.10	35.39	1802.40	1687.40	93.62	Low-mid boost
48	24	23.81	38.90	73.99	1867.20	1761.70	94.35	Mid-low buck
48	48	47.19	75.00	73.29	3600.00	3458.56	96.07	Mid-mid buck/boost
15	90	89.60	75.40	10.89	1131.00	975.74	86.27	Low-high boost
90	15	15.05	14.00	73.99	1260.00	1113.55	88.38	High-low buck
48	80	79.10	75.50	43.99	3624.00	3479.61	96.02	Mid-high boost
80	48	47.14	45.30	73.99	3624.00	3487.89	96.24	High-mid buck
80	80	78.50	67.30	66.99	5384.00	5258.72	97.67	High-high buck/boost

Startup Duration Graph



3.7 SYSTEM INTEGRATIONS

Stand-Alone Power Source

If the load is capable of generating a potential,

A **Diode** at the converter output must be in place.



With Parallel Power Source(s)

When integrating with another source of power in parallel to the converter output,

A **Diode** at the converter output must be in place.

*And depending on the type and function of the parallel source, it may require a diode as well.



Sizing up Power Requirements in an Integration

Work backwards to determine power requirements and obligations on respective segments.

An example:



Peak Reverse Voltage: 170V Max Forward Current: 100A Reference diode model: STPS200170



4.1 MECHANICAL DRAWINGS - CEREBRAL-55







All dimensions in mm						
Α	100.00	G	91.00			
В	90.00	н	31.00			
С	68.00	I	360.00			
D	73.00	J	40.00			
Е	68.00	К	54.30			
F	19.00	L	75.20			



5.1 APPENDIX – OUTPUT VOLTAGE SETTING

Type in "v" into the input text box, followed by the "enter" key.



Type in desired voltage, e.g. "75", and "enter".

Spectronik Cerebral DCDC GUI			- D K
Status: StandBy			
V_in	L'm	P_in	Temp
V_out	I_out	P_out	
V_set	I_sot	Ramp	
Max Power = 5500 W Input Voltage range = 15 0 ~ 90.0 V Max Input Voltage range = 12.0 ~ 90.0 V Output Voltage range = 12.0 ~ 90.0 V Output Current range = 2.0 ~ 75.0 A Present Voltage Sating = 12.0 V Present Current Limit = 2.00 A Present Voltage Sating = 0, 1.0 A/s To reconfigure output VOLTAGE, example 48.5 V, Command in the following format: V ENTER 48.5 ENTER To reconfigure output CURRENT Limit, example 18 Command in the following format: Y ENTER *18.5' ENTER To reconfigure output current RAMPING, 'ramp' ENTER and then follow the instructions.	.5A		
Command Input		COM PORT COMPLETE	
75		BAUD RATE 57600	

Acknowledgement to the voltage change is printed.

Spectronik Cerebral DCDC GUI			- B X
Status: StandBy			
V_in	l_in	P_in	Temp
V_out	l_out	P_out	
V_set	l_set	Ramp	
Max Power = 5500 W Input Voltage range = 15.0 ~ 90.0 V Max Input Voltage range = 12.0 ~ 90.0 V Output Voltage range = 2.0 ~ 75.0 A Present Voltage Setting = 12.0 ~ 75.0 A Present Voltage Setting = 12.0 ~ 75.0 A Present Voltage Setting = 12.0 V Present Vourent Limit = 2.00 A Present Vourent Limit = 2.00 A Present Current Ramping Setting = 0, 1.0 A/s To reconfigure output VOLTAGE, example 48.5 V, Command in the following format: Y ENTER '48.5' ENTER To reconfigure output CURRENT Limit, example 18 Command in the following format: Y ENTER '48.5' ENTER To reconfigure output CURRENT Limit, example 18 Command in the following format: Y ENTER '18.5' ENTER To reconfigure output current RAMPING, 'rang' ENTER and then follow the instructions. Y Yoltage setting updated	54		
Command Input		COM PORT	
75			
		BAUD RATE 57800	

Values on output configuration is updated and displayed.

Spectronik Cerebral DCDC GUI			- a x
Status: StandBy			
V_in	l_in	P_in	Тотр
V_out	I_out	P_out	
V_set	I_set	Ramp	
Max Power = 5500 W Input Voltage range = 15.0 ~ 90.0 V Max Input Voltage range = 12.0 ~ 90.0 V Output Voltage range = 12.0 ~ 90.0 V Output Current range = 2.0 ~ 75.0 A Present Voltage Setting = 75.0 V Present Current Limit = 2.00 A Present Current Ramping Setting = 0, 1.0 A/s To reconfigure output VOLTACE, example 48.5 Command in the following format: V ENTER 48.5 'ENTER To reconfigure output CURRENT Limit, example Command in the following format: Y ENTER '18.5' ENTER To reconfigure output current RAMPING, 'ramp' ENTER and then follow the instructions.	V, † 18.5 A,		
Command Input		COM PORT COM17	
		BAUD RATE 5760	

5.2 APPENDIX - OUTPUT CURRENT LIMIT SETTING

Type in "i" into the input text box, followed by the "enter" key.

Spectronik Cerebral DCDC GUI			- a k
Status: StandBy			
V_in	t_in	P_in	Temp
V_out	I_out	P_out	
V_set	L_set	Ramp	
Max Power = 5500 W Input Voltage range = 15 0 ~ 90.0 V Max Input Voltage range = 12.0 ~ 90.0 V Output Voltage range = 12.0 ~ 90.0 V Output Current range = 2.0 ~ 75.0 A Present Voltage Setting = 75.0 V Present Ournent Limit = 2.00 A Present Current Limit = 2.00 A Present Current Ramping Setting = 0, 1.0 A/s To reconfigure output VOLTAGE, example 48.5 V Command in the following format: Y ENTER 48.5 ENTER To reconfigure output CURRENT Limit, example Command in the following format: Y ENTER 18.5 ENTER To reconfigure output CURRENT Limit, example Command in the following format: Y ENTER 18.5 ENTER To reconfigure output current RAMPING, Yamp' ENTER and then follow the instructions	'. 185 A.		
Command Input			8 5
		BAUD RATE 5700 V	

Type in desired current limit, e.g. "12.5", and "enter".

Spectronik Cerebral DCDC GUI			- 0, K
Status: StandBy			
V_in	l_in	P_in	Temp
V_out	I_out	P_out	
V_set	l_set	Ramp	
Max Power = 5500 W Input Voltage range = 15 0 ~ 90.0 V Max Input Voltage range = 12.0 ~ 90.0 V Output Voltage range = 12.0 ~ 90.0 V Output Current range = 2.0 ~ 75.0 A Present Voltage Setting = 75.0 V Present Current Limit - 2.00 A Present Power limit - 150.00 W Present Current Ramping Setting = 0, 10 A/s To reconfigure output VOLTAGE, example 48.5 V, Command in the following format: V ENTER 48.5 ENTER To reconfigure output CURRENT Limit, example 18 Command in the following format: Y ENTER 418.5 YENTER To reconfigure output current RAMPING, Yamp' ENTER and then follow the instructions.	.5A		
Command Input		COM PORT COMIT	\square
12.5		BAUD RATE 57800 -	

Acknowledgement to the current change is printed.

Spectronik Cerebral DCDC GUI			- a, x,
Status: StandBy			
V_in	Lin	P_in	Temp
V_out	l_out	P_out	
V_set	l_set	Ramp	
Max Power = 5500 W Input Voltage range - 15 0 ~ 90.0 V Max Input Current = 75.0 A Output Voltage range - 12.0 ~ 90.0 V Output Current range = 2.0 ~ 75.0 A Present Voltage Setting = 75.0 V Present Current Limit = 2.00 A Present Current Limit = 2.00 A Present Power limit = 150.00 W Present Current Ramping Sotting = 0, 1.0 A/s To reconfigure output VOLTAGE, example 48.5 V, Command in the following format: V ENTER 48.5 ENTER To reconfigure output CURRENT Limit, example 18 Command in the following format: Y ENTER *18.5 'ENTER To reconfigure output current RAMPING, 'ramp' ENTER and then follow the instructions. i 12.5 Current limit setting updated	5A,		
Command Input		COM PORT	
12.5			
		BAUD RATE 5160	

Values on output configuration is updated and displayed.

Spectronik Cerebral DCDC GUI			- a X
Status: StandBy			
V_in	L_m	P_in	Temp
V_out	I_out	P_out	
V_set	l_set	Ramp	
Max Power = 5500 W Input Voltage range = 15 0 ~ 90.0 V Max Input Voltage range = 12.0 ~ 90.0 V Output Voltage range = 12.0 ~ 90.0 V Output Current range = 2.0 ~ 75.0 A Present Voltage Setting = 75.0 V Present Current Limit = 12.50 A Present Powor limit = 937.50 W Present Current Lamging Setting = 0, 1.0 A/s To reconfigure output VOLTAGE, example 48.5 V, command in the following format: V ENTER 48.5 ENTER To reconfigure output CURRENT Limit, example 18 Command in the following format: Y ENTER *18.5' ENTER To reconfigure output current FAMPING, 'ramp' ENTER and then follow the instructions.	154		
Command Input		COM PORT COM17	
	10001	BAUD RATE S7600	

5.3 APPENDIX - OUTPUT CURRENT RAMPING SETTING (ACTIVE & NON-ACTIVE)

	100		Tom
∧ [_] ni			remp
V_out	I_out	P_out	
V_sel	l_sot	Ramp	
Max Power = 5500 W Input Voltage range = 15.0 ~ 90.0 V Max Input Current = 75.0 A Output Voltage range = 12.0 ~ 90.0 V Output Current range = 2.0 ~ 75.0 A			
Present Voltage Setting = 75.0 V Present Current Limit = 12.50 A Present Power limit = 937.50 W Present Current Ramping Sotting = 0, 1.0 A/s			A .
To reconfigure output VOLTAGE, example 48.5 Command in the following format: 'Y ENTER '48.5' ENTER	, v.		
To reconfigure output VOLTAGE, example 48.5 Command in the following format: Y ENTER 48.5 ENTER To reconfigure output CURRENT Limit, example Command in the following format: Y ENTER 118.5' ENTER	e 18.5 A,		
To reconfigure output VOLTAGE, example 48.5 Command in the following format: Y ENTER 48.5 ENTER To reconfigure output CURRENT Limit, example Command in the following format: Y ENTER 18.5' ENTER To reconfigure output current RAMPING, 'ramp' ENTER and then follow the instructions.	o 18.5 A,		and the second s
To reconfigure output VOLTAGE, example 48.5 Command in the following format: Y ENTER 48.5' ENTER To reconfigure output CURRENT Limit, example Command in the following format: Y ENTER 118.5' ENTER To reconfigure output current RAMPING, 'ramp' ENTER and then follow the instructions.	e 185 A,		

Type in "ramp" into the input text box, followed by the "enter" key.

Type in selection for ramping function to be **active** and the desired ramp rate, e.g. "**1**, 1.5" and "enter".

1st value "1" = ramping activated "O" = ramping not activated

2nd value

"1.5" = ramp rate of 1.5A/sec

S Spectronik Cerebrai DCDC GU			– n):
Status: StandBy			
V_in	I_in	P_in	Тетр
V_out	I_out	P_out	
V_set	I_set	Ramp	
ramp Enter, 'T' for Ramp, '0' for No-Ramp ''.comma, '1.0' - 20.0' A/s ramp-rate ENTER Examples: '1, 1.5' ENTER (Ramp, 1.5A/s) '0' ENTER (No-Ramp)			
Command Input		COM PORT COMIT	
1,1.5		BAUD RATE 5760	

Acknowledgement to the ramping change is printed.

Spectronik Carebral DCDC GUI			- I I X
Status: StandBy			
V_in	L_in	P_in	Tomp
V_out	I_out	P_out	
V_set	t_set	Ramp	
ramp			
Enter, 1º for Ramp, '0' for No-Ramp 1º comma, 1º - 2'00 ///s ramp-rate ENTER			
Examples 1, 1.5' ENTER (Ramp, 1.5A/s) '0' ENTER (No-Ramp) 1,1.5			Rea.
Current-ramping Setting Updated			
Command Input		COM PORT CONTROL	
1,1.5	Printer .	BAUD RATE	
		DI IOLO I DI IL	

Values on output configuration is updated and displayed.



When "In Operation" with above current ramping setting, "Ramp" = "1, 1.5 A/s"

Spectronik Cerebuil DCDC GUI			- 0 X
Status: In Operation			
V_in: 47.80 V	I_in : 15.76 A	P_in : 753.2 W	Temp 32.47 C
V_out: 74.72 V	L_out: 10.07 A	P_out: 752.2 W	
V_set: 75.00 V	L_set: 12.50 A	Ramp 1, 1.5 A/s	
Command Input		COM PORT COMIT	Ρ 5
		BAUD RATE 5100 2 V	

Selection for ramping function to be **non-active**, (ramp rate value is irrelevant) e.g. "**O**" and "enter".

Spectronik Cerebral DCDC GUI			- 0
Status: StandBy			
V_in	l_in	P_in	Тетр
V_out	I_out	P_out	
V_set	t_set	Ramp	
Output Voltage range = 12.0 ~ 90.0 V Output Current range = 2.0 ~ 75.0 A			
Present Voltage Setting = 75.0 V Present Current Limit = 12.50 A Present Power limit = 937.50 W Present Current Ramping Setting = 1, 1.5 A/s			
To reconfigure output VOLTAGE, example 48.5 V, Command in the following format: 'Y' ENTER '48.5' ENTER			Ś.
To reconfigure output CURRENT Limit, example 18 Command in the following format: 'Y ENTER '18.5' ENTER	L5 A,		
To reconfigure output current RAMPING, 'ramp' ENTER and then follow the instructions.			a fores
Enter, 11 for Ramp, 10' for No-Ramp 1' comma, 1.0' - 20.0' A/s ramp-rate			
Command Input		COMPORT	=
0	1000		
		BAUD RATE	NWW IS 1

Acknowledgement to the ramping deactivation is printed.

Spectronik Carebuil DCDC GUI			- n x
Status: StandBy			
V_in	1_in	P_in	Тетр
V_out	Lout	P_out	
V_set	l_set	Ramp	
ramp Entor, 1' for Koamp, '0' for No Ramp '' comma, '' O' - 20.0' A/s ramp-rate ENTER Examples: 'I, 1.5' ENTER (Ramp, 1.5A/s) '0' ENTER (No-Ramp) 0 Current-ramping do activated			
Command Input		COM PORT	
	EMPLOYE E March	BAUD RATE	

When "In Operation" with above current ramping setting, "Ramp" = "O, 1.0 A/s"

Spectronik Cerebuil DCDC GUI			- II X
Status: In Operation			
V_in: 47.92 V	L_in : 0.16 A	P_in : 7.5 W	Temp: 25 35 C
V_out: 75.01 V	I_out: 0.04 A	P_out: 2.8 W	
V_set: 75.00 V	I_set: 12.50 A	Ramp:0, 1.0 A/s	
Command Input		COM PORT CONT	8 5
	a martine	BAUD RATE	

5.4 APPENDIX - DATA LOGGING

Click on the (Save) button. Name the file in the pop-up box. E.g. "abc". (if the box is cancelled, the default name would be given, "Spectronik Cerebral DCDC GUI", and can be edited later)

29 Special Center and Color Gold			
Status: In Operation			
V_in: 47.80 V	I_in : 15.76 A	P_in : 753.2 W	Temp: 36.88 C
V_out: 74 72 V	Lout: 10.07 A	P_out: 752.2 W	
V_set: 7		Ramp:1, 1.5 A/s	
Save File As :			
abd	SAVE		
			Reas.
			a second second
Command Input		COM PORT COM17	
		BAUD BATE	
Contraction and a second			

Hereafter, all values would be recorded live into the csv file. Do not open the file while on "save" mode, as it would terminate the recording.

You may save your recording under the same name, and the new recordings would be saved below the previous data lines.

av spectronik Cerebra: DCDC-601			- <u>1</u>
Status: In Operation			
V_in: 47.83 V	l_in : 15 79 A	P_in : 755 1 W	Temp: 37 74 C
V_out: 74.72 V	I_out: 10.07 A	P_out: 752.2 W	
V_set. 75.00 V	I_set: 12.50 A	Ramp:1, 1.5 A/s	
Command Input		COM PORT CONTENT	
		BAUD RATE STEE	

Files will be saved on desktop.





18.	the Copy	y = net Fainter	B I	ų - E	- @-	∆ -	2.2.2		g wrap red Merge & r	Center =	E8 -	% 9 1	1 -11	Conditional comatting =	Format as Table = - 5 Three	Cell tyles=	Insert Dele	te Format	€ Clear =	Z '6 Sort & Eitter =	Find & Select =	Asatype Data	Secularly 	
		115		6																				-
1			× .	24																				
4	A	8	С	D	E	F.	G	н	1	1	ĸ	10	M	N	0	P	Q	R	S	T:	U	V	W	1
3		V In (V)	1_15 (A)	P_In (W)	Temp (C)	V_out (V)	cut (A)	P Out (W)	V_Set (V)	TSet (A)	Ramp (A	(1)												
3.	12:31:40	47.95	0.4	19.2	38.18	75.13	0.11	5	75	12.5	1/15													
8.	12:31:41	47.98	0.43	20.7	18.21	75.13	0.11		75	12.5	1/1.5													
4	12:31:42	47.90	0.43	20.7	18.18	75.1	0.08	5.8	15	32.5	1/1.5													
3	12:31.43	47.90	0,63	20.7	18.21	75.13	0.11		15	32.5	1/1.5													-
6	12:31:64	47.98	0.4	19.2	38.18	75.1	0.08	5.8	75	22.5	1/1.5													
7	12:31:45	47.92	0.43	20.7	18.18	75.1	0.14	10.2	75	12.5	1/1.5													-
8	12:31:46	67.98	0.4	19.2	38.15	75.1	0.05	1.3	75	12.5	1/1.5													
9	12:31:47	48.01	0.4	19.3	38.18	75.1	0.05	3.5	75	12.5	1/1.5													
10	12:31:48	47.95	0.43	20.7	38.18	75.13	0.08	5.8	75	12.5	1/1.5													- 1
11	12:31:49	47.98	0.4	19.2	38.18	75.13	0.08	5.8	75	12.5	1/1.5													
12	12:31:50	48.01	0.37	17.8	38.24	75.07	0.11	8	75	12.5	1/1.5													1
13	12:31:51	47.95	0.37	17.8	38.24	75.1	0.14	10.2	75	12.5	1/1.5													-
14	12:31:52	47.98	0.43	20.7	18.27	75.07	0.05	3.5	75	12.5	1/1.5													1.
15	12:31.53	47.98	0.4	19.2	18.16	75.16	0.17	12.4	75	12.5	1/15													
16	12:31.54	47.98	0.4	19.2	38.36	75.1	0.11		75	12.5	1/1.5													
17	12:31:55	47.98	0,43	20.7	38.46	75.13	0.11		75	32.5	1/15													
10	12:31:56	47.98	0.37	17.8	38.55	75.1	0.05	3.5	75	12.5	1/1.5													
19	12:31:57	48.01	0.4	19.3	18.58	75.07	0.08	5.8	75	12.5	1/15													
20	12:31:58	47.95	0,37	17.8	38.67	75.07	0.08	5.8	75	12.5	1/15													
21	12:31:59	47.95	0.4	19.2	38.74	75.1	0.11	8	75	12.5	1/1.5													
22	12:32:00	47.98	0.37	17.8	38.74	75.1	0.08	5.8	75	12.5	1/1.5													
23	12:32:01	47.98	0.43	20.7	38.0	75.1	0.08	5.8	75	12.5	1/1.5													
24	12:32:02	47.95	0.4	19.2	38.74	75.1	0.11	5	75	12.5	1/1.5													
25	12:32:03	48.01	0.4	19.3	38.71	75.1	0.08	5.8	75	12.5	1/15													
26	12:32:04	47.95	0.4	19.2	18.71	25.1	0.11	8	75	12.5	1/15													
27	12:32:05	48.01	0.4	19.3	18.67	75.1	0.08	5.8	75	12.5	1/1.5													
28	12:32:05	47.92	0.4	19.2	18.67	75.1	0.17	12.4	75	12.5	1/1.5													
29	12:32:07	47.98	0.4	19.2	38.64	75.1	0.11		75	12.5	1/1.5													
	1.1.1.1	abc (Ð																					•
	. Alexan	COLUMN TRUE	A.L.																	1000 700	1117			1.000

To terminate data-logging, click on the 🔳 (Save) again.

Spectronik Cerebral DCDC GUI			- <u>3</u> K
Status: In Operation			
V_in: 47.80 V	I_in : 15.76 A	P_in : 753.2 W	Temp: 37.93 C
V_out: 74.72 V	I_out: 10.07 A	P_out: 752.2 W	
V_set: 75.00 V	I_set: 12.50 A	Ramp:1, 1.5 A/s	
Command Input		COM PORT COM17	
		BAUD RATE BING	
		I Manufacture Construction	

5.5 APPENDIX - LED OUTPUTS AND CRITICAL ERROR SHUTDOWNS

LED Output

Critical Error SHUTDOWN message	LED			
Power ON	Green	Short Blinking		
In Operation	Green	Solid		
High Temperature Warning	Orange	Long Blinking		
Fan Tacho Lost	Red	Short Blinking		
Critical Error SHUTDOWN	Red	Solid		

Critical Error Shutdowns Identifications

Critical Error SHUTDOWN message	Corrective Action
Sys Over-Temperature SHUTDOWN	Check ventilation system/layout
Input Over-Voltage SHUTDOWN	Verify possible 90V exceedance at input
Input Under-Voltage SHUTDOWN	Check possible short-circuit at input
Input Over-Current SHUTDOWN	Verify that supply is adequate for load demand
Output Under-Voltage SHUTDOWN	Verify that supply is adequate for load demand
Output Over-Current SHUTDOWN	Check possible short-circuit at output

GUI notification message for Critical Error Shutdowns

An example:



The error code message