

USER MANUAL



ALR3206D

2x 0 – 32 V ; 0 – 6 A

DUAL PROGRAMMABLE DC POWER SUPPLY

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1 PREFACE

Manufacturer : ELC 59 avenue des Romains 74000 ANNECY - FRANCE
Phone : +33 (0)4 50 57 30 46 Fax : +33 (0)4 50 57 45 19
Website : <http://www.elc.fr> - commercial@elc.fr
Item : DUAL DC STABILIZED PROGRAMMABLE POWER SUPPLY
Brand : elc
Type : ALR3206D

2 DESCRIPTION

2.1 PRESENTATION

You just bought a DUAL DC STABILIZED PROGRAMMABLE POWER SUPPLY type elc ALR3206D. We thank you and congratulate you for your good choice.

elc's company is a specialist manufacturer proposes a wide range of POWER SUPPLIES and many other electronic test instruments : FUNCTION GENERATORS, DECADE BOXES, DIGITAL PANEL METERS...

This item has been conceived according to the European standard EN61010-1 and supplied in good condition. This electrical instrument is intended to professionals, industrials and school users. This instructions manual contains information and notes, which must be respected by the purchaser, in order to ensure a safe working and to maintain the instrument in good condition.

2.2 FUNCTIONAL DESCRIPTION OF THE UNIT

This item is used in laboratories. It is designed with : a large graphic display, a touch keypad, a compact vertical box with : an handle and a cord storage integrated in the rear panel. This item will give you satisfaction by offering many possibilities.

Fully programmable, this power supply can be controlled in several ways :

- via the front panel using the sensitive keypad
- via the isolated USB interface
- via the isolated RS485 interface
- via the isolated analogical interface (0 - 10V or the 10K potentiometer)

Each output of this DC power supply is regulated in voltage of 0 to 32V and current of 0 to 6A.

"Parallel" "Series" and "Tracking" modes allowing you to pair inside, the two channels of the power supply to obtain :

Parallel : 0 to 32V and 0 to 12A

Serial : 0 to 64V and 0 to 6A

Tracking : ± 0 to 32V and 0 to 6A (mode coupled) or 2x 0 to 32V 0 to 6A (mode isolated with common adjustment)

Several programmable functions U and I are accessible directly from the keypad and you will make positive or negative ramp, up or down time, or a square, or arbitrary wave.





An automatic remote sensing can be enabled in mode 4 wires on the rear panel outputs.

The outputs can be turned "ON" or "OFF" together or separately and there is a sleep mode by a "standby" touch.

All parameters are displayed on the graphic display.


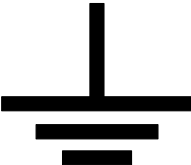
2.3 SAFETY INSTRUCTIONS

Before any operation, read the following safety precautions to avoid injury and prevent damage to this product or another connected.

-  **To avoid all potential hazards, use this product only in the specified limits.**
-  **Do not use the device without its cover. Do not use the item with its housing or any panels removed.**
- **Any intervention inside the casing, and particularly the fuses replacement, must imperatively be effected by a skilled staff.**
- **The instrument must be used according to the instructions of this manual.**
- **Use it in a well ventilated area. The air inlets and the fan outlet must be widely free, do not block them.**
- **Do not use in wet conditions. Do not use in wet environment to avoid electric shocks or short-circuit inside the product.**
- **Do not use in an explosive atmosphere. It is very important do not operate the item near an explosive atmosphere, to prevent damage to the device or any personal injuries.**
- **The power cable is used as a cut system, the product must be connected to a 230V main source, easily accessible, with earth.**
- **When this unit must be powered via a separate autotransformer for a reduction of voltage, ensure that the common socket is connected to the grounding pole of the circuit of the supply.**
-   **The common mode voltage between ground and the output terminals must not exceed 100VDC. In this case a deemed dangerous voltage (> 60VDC) can be reached between one of the terminals and earth. Therefore, it is imperative to use safety cables to connect the outputs of the device. Also, all connected devices must not have conductive parts accessible.**

2.4 SAFETY TERMS AND SYMBOLS

You will find the following symbols on this equipment :

 CAUTION REFER TO MANUEL	 CAUTION HIGH VOLTAGE RISK	 PROTECTIVE GROUND (EARTH) TERMINAL
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2.5 PACKAGING AND REPACKAGING

Your power supply ALR3206D comes with an quickstart guide and its power cable 2 poles + earth type "EUROPE" : CEE7 / 7 - IEC60320 C13.

3 OPERATING

3.1 TECHNICAL FEATURES

The specifications below are given after at least 30 minutes use within the specified operating temperature range.

3.1.1 Power supply with separated or tracking mode

Operating (Channel 1 & 2)	Constant voltage	Automatic	
	Current voltage	Automatic	
Mini maxi adjustment (Channel 1 & 2)	Voltage	0 to 32,00 Volts (0 to ± 10 mV)	
	Current	0 to 6,000 Amps	
	OVP (voltage protection)	0 to 32,20 Volts	
	OCP (current protection)	0 to 6,10 Amps	
Adjustment accuracy (Channel 1 & 2) \pm (%output + offset)	Voltage	0,03% + 10 mV	
	Current	0,03% + 2 mA	
Regulation / Load 10 – 90%	Constant voltage	< 12 mV	
	Constant current	< 1 mA	
Regulation / Source $\pm 10\%$	Constant voltage	< 1 mV	
	Constant current	< 1 mA	
Ripple (BP 20 MHz)	Constant voltage	$\leq 0,7 \text{ mV}_{\text{RMS}}$; $\leq 4 \text{ mVp-p}$ noise $\leq 15 \text{ mVp-p}$ of commutation	
	Constant current	< 1 mA _{RMS} or 3mA _{p-p}	
Accuracy measurement (25°C $\pm 5^\circ\text{C}$) \pm (%output + offset)	Voltage	0,03% +10 mV	
	Current	0,03% + 2 mA	
Temperature coefficient \pm (% output + offset)	Voltage	0,01% /°C	
	Current	0,05% /°C	
Resolution	Voltage / Current	4 digits	
Time of answer (Load variation)	Load 10 – 90%	$\leq 1,5 \text{ ms}$ (± 20 mV)	
	Load 90 – 10%	$\leq 0,4 \text{ ms}$ (± 20 mV)	
Hold time	Load 100% CH1 or CH2	> 22ms	
	Load 100% CH1 & CH2	> 11ms	
Overvoltage output	ON/OFF source or output	< 0,4V	
Voltage programming speed to 1% of the total course.		Without load	Load 100%
Rise times	0 – 32 V	35 ms	45 ms
	0 – 5 V	1 ms	2,5 ms
Fall times	32 V – 0 V	670ms	2,5 ms
	5 V – 0 V	160 ms	1 ms

3.1.2 Power supply with serial mode

Mini maxi adjustment	Voltage	0 to 64,00 Volts (0 to ± 20 mV)	
	Current	0 to 6,000 Amps	
	OVP (voltage protection)	0 to 64,40 Volts	
	OCP (current protection)	0 to 6,10 Amps	

Adjustment accuracy ± (% output + offset)	Voltage	0,03% + 20 mV	
	Current	0,03% + 2 mA	
Regulation / Load 10 – 90%	Constant voltage	< 24 mV	
	Constant current	< 2 mA	
Regulation / Source ±10%	Constant voltage	< 1 mV	
	Constant current	< 1 mA	
Ripple (BP 20 MHz)	Constant voltage	≤ 1,5 mV _{RMS} ; ≤ 10 mVp-p noise ≤ 30 mVp-p of commutation	
	Constant current	< 1 mA _{RMS} or 3mApp	
Accuracy measurement (25°C ±5°C) ± (% output + offset)	Voltage	0,03% + 20 mV	
	Current	0,03% + 2 mA	
Time of answer (Load variation)	Load 10 – 90%	≤ 1,5 ms (±20mV)	
	Load 90 – 10%	≤ 0,3 ms (±20mV)	
Overvoltage output	ON/OFF source or output	< 0,3V	
Voltage programming speed to 1% of the total course.		Without load	Load 100%
Rise times	0 – 64 V	36 ms	50 ms
Fall times	64 V – 0 V	510ms	2,5 ms

3.1.3 **Power supply with parallel mode**

Mini maxi adjustment	Voltage	0 to 32,00 Volts (0 to ±10mV)	
	Current	0 to 12,00 Amps	
	OVP (voltage protection)	0 to 32,20 Volts	
	OCP (current protection)	0 to 12,20 Amps	
Adjustment accuracy ± (% output + offset)	Voltage	0,03% + 10 mV	
	Current	0,08% + 10 mA	
Regulation / Load 10 – 90%	Constant voltage	< 40 mV	
	Constant current	< 2 mA	
Regulation / Source ±10%	Constant voltage	< 1 mV	
	Constant current	< 1 mA	
Ripple (BP 20 MHz)	Constant voltage	≤ 0,7 mV _{RMS} ; ≤ 4 mVp-p noise ≤ 15 mVp-p of commutation	
	Constant current	< 1 mA _{RMS} or 3mAp-p	
Accuracy measurement (25°C ±5°C) ± (% output + offset)	Voltage	0,03% + 10 mV	
	Current	0,08% + 10 mA	
Time of answer (Load variation)	Load 10 – 90%	≤ 12 ms	
	Load 90 – 10%	≤ 1,2 ms	
Overvoltage output	ON/OFF source or output	< 0,4V	
Voltage programming speed to 1% of the total course.		Without load	Charge 100%
Rise times	0 – 32 V	35 ms	46 ms
Fall times	32 V – 0 V	490ms	2,4 ms

3.1.4 Connections

Outputs + and - (Channel 1 & 2)	Front panel	Safety terminals Ø4 mm
	Rear panel	Screw terminal block for 2mm ²
Ground terminal	Front panel	Safety terminals Ø4 mm
	Rear panel	Earth and safety terminal Ø4 mm

3.1.5 Display

Display	LCD graphic display FSTN N&B 3.2 inch
Resolution	128 x 64 pixels
Backlight	White LED

3.1.6 Protections

Against short-circuits	By current regulation
Against over-temperature	By fan and thermal circuit-braker
Against over-current on main source	By internal fuse (T5A ; 250V ; 5x20)

3.1.7 Memories

Memory	Storage	15 configurations
	Recall	16 (1 no configurable)

3.1.8 Functions

Functions accessible by keypad	7 available In Voltage or Current	SQUARE periodic
		RAMP positive and negative periodic and single shot
		ARBITRARY periodic and multi shot
Timer (2 Ranges)	Seconde or minute	10 ms to 50 min

3.1.9 Standby

Isolation mode of the output	Enable / disable output(s)
Standby mode	Puts the power supply in standby mode

3.1.10 Remote-sensing

Connectors on the rear panel	Mode 4 wires	Disconnect scribe terminal blocks for 0,5mm ² wires
Correcting the voltage drop	Front and rear	2 Volts

3.1.11 Interfaces

Isolation / output	150 Vdc
Isolation / Earth	100 Vdc
USB & RS485	Serie
Processing time of control	< 20ms
Analog Control for U-CH1 and CH2, or U and I of CH1 (3 operating modes)	Voltage control (0 – 10 V)
	Potentiometer 10K
	Variable resistor 10K
Reaction time U interface	< 100 ms

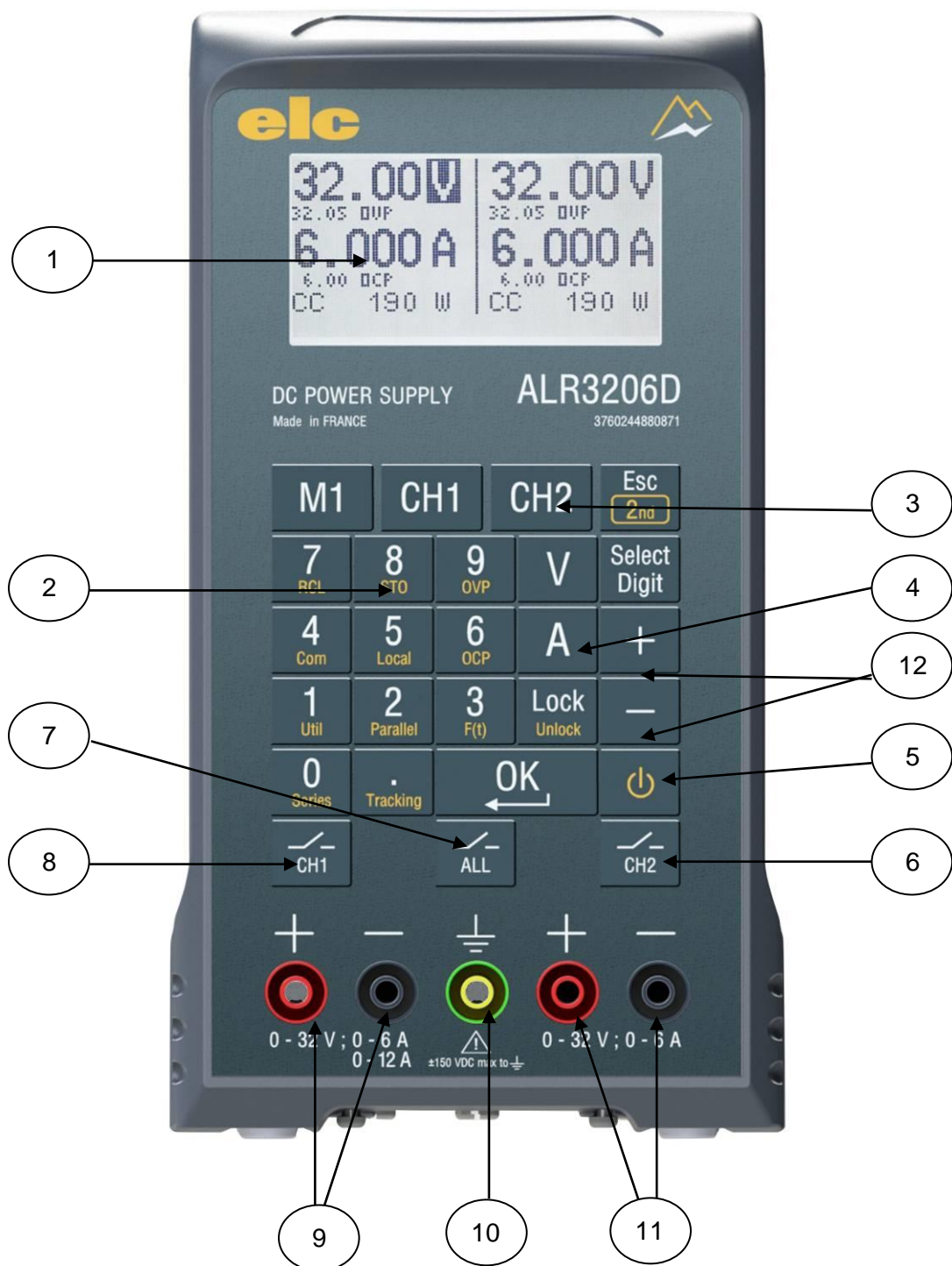
3.1.12 Other characteristics

Power source	220 – 240 Volts $\pm 10\%$, 50 – 60 Hz
	EEC socket C14 for cable 2 poles + earth C13 (2P + E)
Maximum power consumption	475W (2,1W in Standby mode)
Internal fuses (x2) AC input	5 x 20 ; 250V T4A
Efficiency	> 81% of the maxi powerful
Safety	Class I, CAT II, degree of pollution 2
	Complies with EN 61010-1, CAT II
CEM	Complies with EN 61326-1 & EN 55011
Voltage on the earth	± 100 Vdc
Operating temperature	0°C to + 40°C
Storage temperature	-20°C to + 60°C
Humidity condition	< 85% to 30°C and decrease to 50% at 40°C
Altitude	< 2000 m
Db level of fan	42dB to 48dB
Presentation	Front panel with soft-touch keypad, back side with handle and cord storage area, metallic case with epoxy finish
Dimensions	111 mm x 210 mm x 260 mm
Weight	2,90 kg

4 OVERVIEW

4.1 FRONT PANEL

1	LCD display	2	Keypad double function
3	Channel selection	4	Functions key
5	Standby	6	ON/OFF channel 2
7	ON/OFF general	8	ON/OFF channel 1
9	Safety socket output channel 1	10	Earth socket
11	Safety socket output channel 2	12	Adjustment keys



4.2 REAR PANEL

13	Handel	14	Sense connector channel 2
15	Powerful connector channel 2	16	Sense connector channel 1
17	Powerful connector channel 1	18	RS485 connector
19	Analogical control connector	20	USB Connector
21	Power connector	22	ON / OFF
23	Earth safety socket Ø4mm	24	Cord storage



5 SHORT DESCRIPTION OF THE FRONT PANEL

5.1 DISPLAY

The basic mode on the LCD display (1) shows the value of the voltage and current setting about two channels ; the output's powerful, the currently regulation mode (CV or CC) and the output's state (ON or OFF). If the OVP and OCP stopped are less than the maximum setting (32V and 6A) they will be displayed.



The measurement (voltage or current) is displayed instead of the set, if different. Simply touch on V or A selection keys, displays the operator instructions.

5.2 KEYPAD AND SHIFT

The keypad (2) allow directly modifying the set values U and I and getting access to secondary functions.

5.3 CHANNEL SELECTION

The keypad (4) allows choosing channel to set. "V" or "A" selected indicates the channel you choose and you can set.

5.4 KEY CONTROL

The keys (3) allows the selection of the set to change and the selection of the dual function keyboard with shift.

5.5 STANDBY MODE

The keypad (5) enabled or disabled standby mode (Consumption < 2.5W)

5.6 ON/OFF: CHANNEL 1 & CHANNEL 2

The keypad (6) or (8) allow to enable or disable the channel 2 or channel 1. The keypad (7) allows enable or disable both channels.

5.7 KEY SETTING AND NAVIGATE

The keypad + and - (12) allow a direct change the set values voltage and current or navigate through the secondary functions menu.

5.8 FEEDBACK SOUND

Short signal low frequency : keypad detect [0] to [9].

Short signal medium frequency : keypad detect function ([V], [A], [OK], ...)

Long signal high frequency : Input value error or safety detect.

5.9 SAFETY SOCKETS CHANNEL 1 & CHANNEL 2

The sockets (9) (safety sockets Ø4mm) allow the connection to the outputs + and – of the channels 1 to the load. The sockets (11) (safety sockets Ø4mm) allow the connection to the outputs + and – of the channels 1 to the load.


5.10 EARTH FUNCTIONAL SOCKETS

The sockets (10) (safety socket Ø4mm) & (23) (safety and inversed socked Ø4mm) allow a functional connection to the earth.


6 DESCRIPTION OF CONTROL COMMANDS

6.1 PARAMETERS SETTING

6.1.1 "Esc" Key

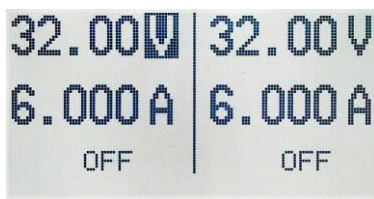
	Touch 	"Escape"	Allow to go out without taking the value
--	---	----------	--















6.1.2 "CH1" or "CH2" Key

	Touch 	"Channel 1"	Select the channel 1 to change the values (idem for CH2)
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6.1.3 Setting Voltage and Current

Two possibilities :



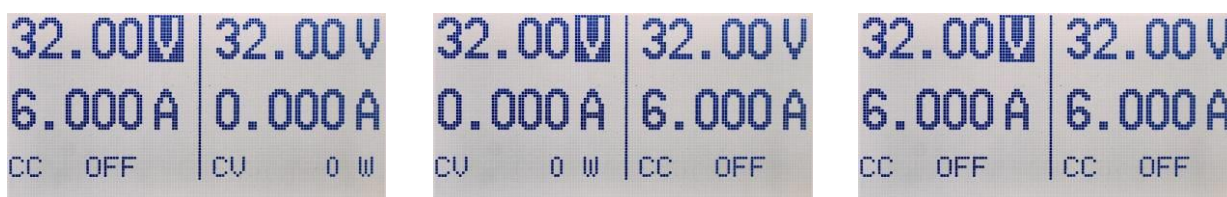
	Action	Description
1.	Touch on  or 	Select the channel to change
2.	Touch on  or 	Select the voltage or current value to change
3.	Touch on  to 	Enter the value
4.	Touch on  or  or 	Valid the value
1.	Touch on  or 	Select the value voltage or current to change
2.	Touch on 	Select digit with key
	Touch on  or 	Change value selected, step by step

6.1.4 Setting the OVP or OCP limits



	Action	Description
1.	Touch on	Select key "2 nd "
2.	Touch on or	Enter the U (OVP) or I (OCP) limit
3.	Touch to	Enter the value
4.	Touch	Valid the value
CANCEL OVP or OCP		
1.	Touch on	Select key "2 nd "
2.	Touch on or	Enter the U (OVP) or I (OCP) you need to cancel
3.	Touch	Cancel the limit selected

6.1.5 Isolation of one (or two) outputs

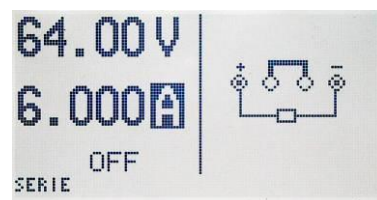


	Action	Description
1.	Touch on	Touch this key disconnects 2 outputs together. So, the instructions are displayed
1.	Touch on or	Touch one of this key disconnects the output selected and the instructions are displayed.

6.2 SELECT THE MODE

6.2.1 Serial mode

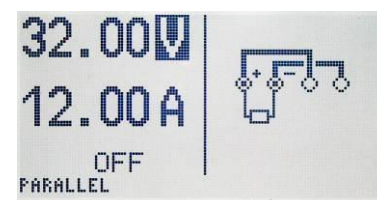
The sockets "- CH1" and "+ CH2" are linked inside.
The load is connected on the sockets "+ CH1" and "- CH2"
Idem on the rear panel, with "sense" connection corresponding.



	Action	Description
1.	Touch on Esc 2nd	Select key "2 nd "
2.	Touch on 0 Series	Select the "serial" mode and set the parameters
COME BACK MODE : SEPARATED		
1.	Touch on Esc 2nd	Select key "2 nd "
2.	Touch on 0 Series	Deselect the "serial" mode

6.2.2 Parallel mode

The 2 sockets "-" and the 2 sockets "+" are linked inside. On the front panel, the load is connected on "+ & -" of the CH1. On the rear panel, link the two "+", and the two "-" as well as "senses" to the load.



	Action	Description
1.	Touch on Esc 2nd	Select key "2 nd "
2.	Touch on 2 Parallel	Select the "parallel" mode and set the parameters
COME BACK MODE : SEPARATED		
1.	Touch on Esc 2nd	Select key "2 nd "
2.	Touch on 2 Parallel	Deselect the parallel mode

6.2.3 Tracking mode

Two possibilities :

- Tracking isolated : The same setting is sent simultaneously on the two channels, but they're staying independent electrically.
- Tracking linked : The same setting is sent simultaneously on the two channels which are linked (socket "- CH1" & "+ CH2" linked inside) to realize a symmetrical power supply.

```
[1] LANGUAGE
[2] CONTRAST
[3] TRACKING
[4] CLEAR MEMORIES
[5] ON/OFF BEEP












[+ or -] or [1 to 9]
[OK] FOR VALID
```

```
[1] ISOLE
[2] COUPLE

[+ ou -] ou [0 à 9]
[OK] POUR VALIDER
```

```
[1] ISOLE
[2] COUPLE



[+ ou -] ou [0 à 9]
[OK] POUR VALIDER
```



	Action	Description
1.	Touch on 	Select key "2 nd "
2.	Touch on 	Select the function "Util"
3.	Touch on  or touch on  or 	Select tracking mode with with key or the arrows keys
4.	Touch on 	Valid the choice with "OK"
5.	Touch on  or  Touch on  or 	Select ISOLATED or COUPLED with the arrow keys
6.	Touch on 	Valid the choice with "OK"

TRACKING COUPLED

TRACKING ISOLATED

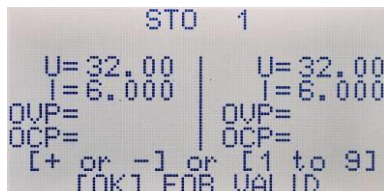
```
32.00V 32.00V
6.000A 6.000A
CC OFF CC OFF
TRACKING
```







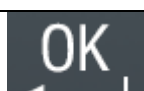
	Action	Description
1.	Touch on 	Select key "2 nd "
2.	Touch on 	Select "tracking" mode. Depending on the choice done before, the display shows

	Action	Description
		ISOLATED or COUPLED
COME BACK TO ISOLATED MODE		
1.	Touch on 	Select key "2 nd "
2.	Touch on 	Deselect the "tracking" mode

6.3 MEMORIES

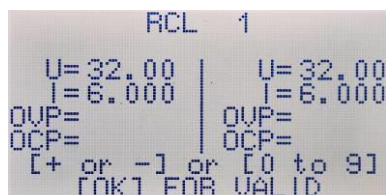

6.3.1 Storage setting









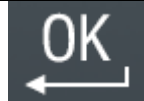

	Action	Description
1.	Touch on 	Select key "2 nd "
2.	Touch on 	Select the function "Storage" configuration
3.	Touch on  to  Touch on  or 	Select where to save the current configuration (1-15). The display shows the registration number and the current contents. (ex. STO 3 = empty)
4.	Touch on 	Stores the current configuration and display the storage number selected.

6.3.2 Recall setting

The memorie "0" recalls a basic configuration and can't be erased.

	Action	Description
1.	Touch on 	Select the key "2 nd "
2.	Touch on 	Select the function "Recall" configuration






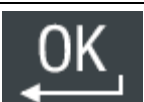

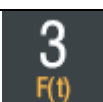


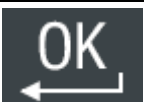
	Action	Description
3.	Touch on  to  Touch on  or 	Select the configuration number (0-15). The display shows the contents of the configuration.
4.	Touch on 	Recall the configuration with the output disconnected

6.4 RS485 CONTROL

6.4.1 Transmission of parameters






	Action	Description
1.	Touch on 	Select key "2 nd "
2.	Touch on 	Select the function "Com", communication
3.	Touch on  or touch on  or 	Select the menu with keys
4.	Touch on 	Valid the choice with "OK"
5.	Touch on  to  Touch on  or 	Select with the keys different configuration choices.
4.	Touch on 	Valid each choice with "OK"

6.4.2 Configuration RS485 address

See wiring in Appendix C.

```
[1] CONFIGURATION
[2] RS485
[3] 0-10V
[4] ON/OFF EXT

[+] or [-] or [1 to 9]
[OK] FOR VALID
```






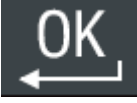




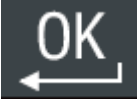
```
ADDRESS MASTER

9600 BAUDS
8 BITS & 1 STOP BIT

[+] or [-] or [0 to 9]
[OK] FOR VALID
```

```
SLAVE
[2] SLAVE END

[+] or [-] or [0 to 9]
[OK] FOR VALID
```

	Action	Description
1.	Touch on 	Select key "2nd"
2.	Touch on 	Select the function "Com", communication
3.	Touch on  or touch on  or 	Select the menu with keys
4.	Touch on 	Valid the choice with "OK"
5.	Touch on  to  Touch on  or 	Select with the keys different configuration choices.
6.	Touch on 	Valid each choice with "OK"

6.5 0-10V CONTROL

This function changes the voltage setpoints for channels 1 and 2 or voltage / current for channel 1 via an analogical voltage, a potentiometer or resistance (wiring APPENDIX D)
The maximum setpoint value is the one displayed before activating the function.

```
[1] CONFIGURATION
[2] RS485
[3] 0-10V
[4] ON/OFF EXT

[+] or [-] or [1 to 9]
[OK] FOR VALID
```

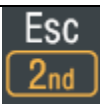





```
CONTROL MODE
[1] POTENTIOMETER
[2] VOLTAGE

[+] or [-] or [1 to 9]
[OK] FOR VALID
```

```
[1] CH1(V)
[2] CH2(V)
[3] CH1(A)
[4] CH1(V) & CH2(V)
[5] CH1(V) & CH1(A)

[+] or [-] or [1 to 9]
[OK] FOR VALID
```

```
ADJUST POTENTIOMETER
TO MAXIMUM
```







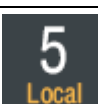


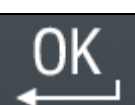
	Action	Description
1.	Touch on 	Select the key "2nd"
2.	Touch on 	Select the function "Com", communication
3.	Touch on  or touch on  or 	Select menu "0-10V" with the keys
4.	Touch on 	Valid the choice with "OK"

6.6 EXTERNAL ON/OFF CONTROL

This function allow control isolation of one, two or all outputs (see wiring Appendix E)

```
[1] CONFIGURATION
[2] RS485
[3] 0-10V
[4] ON/OFF EXT
[+] or [-] or [1 to 9]
[OK] FOR VALID
```

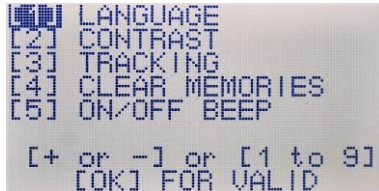
```
[1] ON/OFF CH1
[2] ON/OFF CH2
[4] ON/OFF CH1 & CH2
[+] or [-] or [0 to 9]
[OK] FOR VALID
```








	Action	Description
1.	Touch on 	Select the key "2nd"
2.	Touch on 	Select the function "Com", communication
3.	Touch on  or touch on  or 	Select the choice "ON/OFF EXT"
4.	Touch on  to  Touch on  or 	Select the choice.
5.	Touch on 	Valid the choice with "OK"

6.7 CONTROL UTILITIES

This function control includes the following functions :

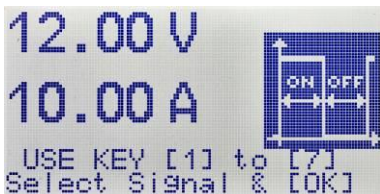
- Language choice
- Changing the contrast of the display
- Tracking mode
- Clear memories
- ON/OFF sound feedback
- Select display mode (2 or 3 columns)







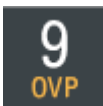



	Action	Description
1.	Touch on 	Select the key "2nd"
2.	Touch on 	Select the function "Util" Utility
3.	Touch on  to  Touch on  or 	Select an follow the choice
4.	Touch on 	Valid the choice with "OK"

6.8 PROGRAMMED FUNCTIONS

Enabling this key allows to get to the output, multiple periodic wave forms or not, in voltage or current mode (see Appendix G).






	Action	Description
1.	Touch on 	Select the key "2nd"
2.	Touch on 	Select the function generator, "F(t)"
3.	Touch on 	Valid the choice with "OK"

4.	Touch on  to  Touch on  or 	Follow the choices
5.	Touch on 	Valid the choice with "OK"

6.9 OTHER FUNCTIONS

6.9.1 Sleep mode

"Standby" mode is available on the front panel. This mode reduces the current consumption if the power supply is ON but not used.

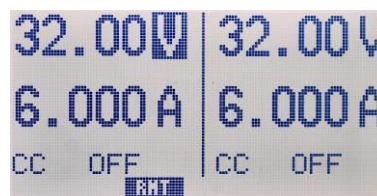
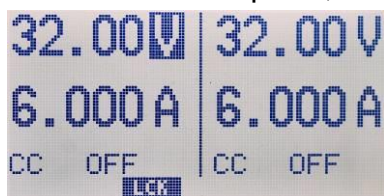
	Action	Description
1.	Touch on 	Select the key "2 nd "
2.	Touch on 	Sleep mode ON The backlight is OFF
3.	Touch on 	Go out the sleep mode The backlight comes back after few seconds


6.9.2 Locked and unlocked keyboard



Two possibilities :

Hold on the key "5"

Without a connection to a computer, touch on "Local"



	Action	Description
	LOCKED / UNLOCKED	
1.	Touch on  during 4s	Active the locked or unlocked keyboard

	Action	Description
1.	Touch on 	Select the key "2 nd "
2.	Touch on 	Active the locked "RMT" or unlocked keyboard. (control via USB or RS485)

6.9.3 Locked setting values

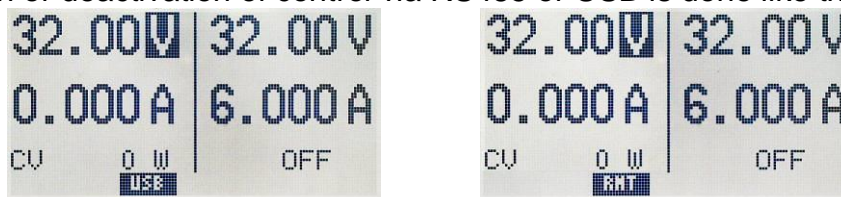
A key allows locked (or unlocked) setting voltage or current value.



	Action	Description
	LOCKED	
1.	Touch on CH1	Select channel
2.	Touch on V or A	Select Voltage or Current value to locked
3.	Touch on Lock Unlock	Press key until displaying "LCK" for locked setting value
	UNLOCKED	
1.	Touch on CH1	Select channel
2.	Touch on V or A	Select Voltage or Current value to unlocked
3.	Touch on Esc 2nd	Select the key "2 nd "
4.	Touch on Lock Unlock	Press key until erase "LCK" on display for unlocked setting value

7 PC control

The activation or deactivation of control via RS485 or USB is done like that :



	Action	Description
1.	Touch on Esc 2nd	Select the key "2 nd "
2.	Touch on 5 Local	Enable or disable the takeover via the serial RS485 or USB port.

You will find the list of commands in APPENDIX A and drivers to Appendix A.

8 MAINTENANCE

No particular maintenance is required for this instrument.

Avoid : dust, humidity, shocks ; your instrument will appreciate it.

For the cleaning, please use a smooth duster.

8.1 TROUBLESHOOTING

If indicators do not light up on switching on, check :

- The mains connection
- The replacement of the cord can be realized only with the model : 3G0.75mm² ; H05VV-F ; CEE7/7 – IEC60320 C13
- The mains voltage
- That the ON switch is pressed

8.2 ERROR MESSAGE

If following messages appear on the display, please contact the after sales service.

Message	Possible cause
“FAULT : FAILURE START-UP VOLTAGE”	Internal auxiliary power doesn't work
“TEMPERATURE SENSOR ERROR”	Internal temperature sensor doesn't work
“UNREGULATED CURRENT/VOLTAGE PROTECTION”	Internal stage power doesn't work
“FAN OUT OF ORDER”	Fan doesn't work

9 AFTER SALES SERVICE

The after sales service is ensured by the elc company.

During two years, spare parts and workmanship are guaranteed. This guarantee does not apply to instruments presenting defects or faults caused by an improper use (wrong mains voltage, shocks ...) or which have been repaired outside our factory or the repair shops of our authorized agencies.

10 DECLARATION OF CONFORMITY

Manufacturer : elc
Address : 59 avenue des Romains 74000 Annecy France

Declares the product

Name : DC POWER SUPPLY
Type : ALR3206D

conformable to the requirements of the directives:

Low voltage 2014/35/UE, Electromagnetic Compatibility 2014/30/UE and
RoHs 2017/2102/UE.

The following harmonized standards have been applied :

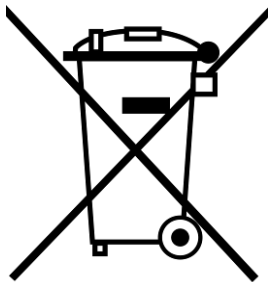
Safety : EN 61010-1:2010
EMC : EN 61326-1:2013

Annecy March 2021

H.CURRI, Manager



ELIMINATION OF MANUFACTURING WASTES BY THE PRIVATE USERS IN THE EU



This symbol written in the product or in its packaging indicates that this product must not be throw in the garbage with your other waste.

Its your responsibility to rid of your manufacturing wastes bringing it to a specialized sorting office for the recycling of electrical and electronic instruments.

Collection and recycling separated of your wastes will contribute to preserve natural resources and guarantee a recycling respectful of the Environment and human health.

For further information concerning the recycling center near your place of residence, contact your town hall, the elimination service of garbage heap or the store where you bought the instrument.

APPENDIX A – Commands control

Commands control format :

[address] <SP>Parameter<SP>Command<SP>[Value]<CR>

[address] = character ASCII 0 (port USB)
character ASCII 1 to 31 (port RS485)
character ASCII 32 (broadcast address)

Parameter = IDN - SERIAL - VOLT1 - CURR1 - OVP1 - OCP1 - OUT1 - VOLT2 - CURR2 - OVP2 - OCP2 - OUT2 – OUT – RCL – STO – REM – MODE - TRACK (ASCII character).

Command = WR - RD - MES (ASCII character).

<SP> = 20h (space).

[Value] = ASCII character.

<CR> = 0Dh (return)

Example 1 : 0 VOLT WR 1250 ↵ → *Writing setpoint 1,25 V on USB port*

Example 2 : 1 CURR MES ↵ → *Current measurement request on address 1 from the RS485 port*

Answer :

[address] <SP>Status<SP>Value<CR>

[address] = character ASCII 0 (USB)
character ASCII 1 to 31 (port RS485)

Status = OK- ERR- Local (ASCII character).

OK	Command valid.
ERR	Syntax error in the command.
LOCAL	Command impossible, the power supply is in local mode.

<SP> = 20h (space).

[Value] = characters ASCII.

<CR> = 0Dh (enter)

Example 3 : 0 OK ↵ → *Back of example 1*

Example 4 : 1 OK 450 ↵ → *Back of example 2 current measurement : 450 mA*

Special case of **broadcast address 32**: Messages sent to address 32 are read by all connected power supplies. This address is only used for sending messages, the commands will not return any information.

Command & Answers	Description
Command : [address] VOLT1 WR [0-64400] ↵ Answer : [address] OK ↵	Writing the voltage setpoint (mV) channel 1, In double mode. Writing the voltage setpoint (mV) in serial, parallel or tracking mode.

Command & Answers	Description
Command : [address] CURR1 WR [0-12200] ↵ Answer : [address] OK ↵	Writing the current setpoint (mA) channel 1, In double mode. Writing the current setpoint (mA) in serial, parallel or tracking mode.
Command : [address] OVP1 WR [0-64400] ↵ Answer : [address] OK ↵	Writing the limit voltage setpoint (mV) channel 1, In double mode. Writing the voltage setpoint (mV) in serial, parallel or tracking mode.
Command : [address] OCP1 WR [0-12200] ↵ Answer : [address] OK ↵	Writing the limit current setpoint (mA) channel 1, In double mode. Writing the limit current setpoint (mA) in serial, parallel or tracking mode.
Command : [address] OUT1 WR [0-1] ↵ Answer : [address] OK ↵	Disconnect /Connect the output of channel 1, in double mode. 0 -> OFF 1 -> ON
Command : [address] VOLT2 WR [0-32200] ↵ Answer : [address] OK ↵	Writing the voltage setpoint (mV) channel 2, In double mode.
Command : [address] CURR2 WR [0-6100] ↵ Answer : [address] OK ↵	Writing the current setpoint (mA) channel 2, In double mode.
Command : [address] OVP2 WR [0-32200] ↵ Answer : [address] OK ↵	Writing the limit voltage setpoint (mV) channel 2, In double mode.
Command : [address] OCP2 WR [0-6100] ↵ Answer : [address] OK ↵	Writing the limit current setpoint (mA) channel 2, In double mode. .

Command & Answers	Description
Command : [address] OUT2 WR [0-1] ↵ Answer : [address] OK ↵	Disconnect /Connect the output of channel 2, in double mode. 0 -> OFF 1 -> ON
Command : [address] OUT WR [0-1] ↵ Answer : [address] OK ↵	Disconnect /Connect the output of all outputs 0 -> OFF 1 -> ON
Command : [address] RCL WR [1-16] ↵ Answer : [address] OK ↵	Recall the configuration stored.
Command : [address] STO WR [1-16] ↵ Answer : [address] OK ↵	Save the usual configuration.
Command : [address] REM WR [0-1] ↵ Answer : [address] OK ↵	Control mode's power supply. 0 -> Local 1 -> Remote
Command : [address] MODE WR [0-3] ↵ Answer : [address] OK ↵	Mode coupling of the outputs. 0 -> Double mode 1 -> Serial mode 2 -> Parallel mode 3 -> Tracking mode
Command : [address] TRACK WR [0-1] ↵ Answer : [address] OK ↵	Output sockets linked inside in tracking mode. 0 -> coupling OFF (isolated) 1 -> coupling ON (coupled)
Command : [address] VOLT1 RD ↵ Answer : [address] OK [0-64400] ↵	Reading the voltage setpoint (mV) channel 1, In double mode. Reading the voltage setpoint (mV) in serial, parallel or tracking mode.

Command & Answers	Description
Command : [address] CURR1 RD ↵ Answer : [address] OK [0-12200] ↵	Reading the current setpoint (mA) channel 1, In double mode. Reading the limit current setpoint (mA) in serial, parallel or tracking mode.
Command : [address] OVP1 RD ↵ Answer : [address] OK [0-64400] ↵	Reading the limit voltage setpoint (mV) channel 1, In double mode. Reading the voltage setpoint (mV) in serial, parallel or tracking mode.
Command : [address] OCP1 RD ↵ Answer : [address] OK [0-12200] ↵	Reading the limit current setpoint (mA) channel 1, In double mode. Reading the limit current setpoint (mA) in serial, parallel or tracking mode.
Command : [address] OUT1 RD ↵ Answer : [address] OK [0-1] ↵	Reading output connection channel 1. 0 -> OFF 1 -> ON
Command : [address] VOLT2 RD ↵ Answer : [address] OK [0-32200] ↵	Reading the voltage setpoint (mV) channel 2, in double mode.
Command : [address] CURR2 RD ↵ Answer : [address] OK [0-6100] ↵	Reading the current setpoint (mA) channel 2, in double mode.
Command : [address] OVP2 RD ↵ Answer : [address] OK [0-32200] ↵	Reading the limit voltage setpoint (mV) channel 2, in double mode.
Command : [address] OCP2 RD ↵ Answer : [address] OK [0-6100] ↵	Reading the limit current setpoint (mA) channel 2, in double mode.

Command & Answers	Description
Command : [address] OUT2 RD ↵ Answer : [address] OK [0-1] ↵	Reading output connection channel 2. 0 -> OFF 1 -> ON
Command : [address] OUT RD ↵ Answer : [address] OK [0-1] ↵	Reading the two output's connection. 0 -> OFF 1 -> ON
Command : [address] MODE RD ↵ Answer : [address] OK [0-1] ↵	Reading the mode coupling of the outputs. 0 -> Double mode 1 -> Serial mode 2 -> Parallel mode 3 -> Tracking mode
Command : [address] TRACK RD ↵ Answer : [address] OK [0-1] ↵	Reading sockets coupling of outputs in tracking mode. 0 -> coupling OFF (isolated) 1 -> coupling ON (coupled)
Command : [address] MODE1 RD ↵ Answer : [address] OK [0-2] ↵	0 => not defined mode (output OFF) 1 => voltage regulation mode channel 1. 2 => current regulation mode channel 1
Command : [address] MODE2 RD ↵ Answer : [address] OK [0-2] ↵	0 => not defined mode (output OFF, serial, //) 1 => voltage regulation mode channel 2. 2 => current regulation mode channel 2
Command : [address] VOLT1 MES ↵ Answer : [address] OK [0-64400] ↵	Measuring voltage (mV) channel 1, in double mode. Measuring voltage (mV) in serial, parallel or tracking mode.
Command : [address] CURR1 MES ↵ Answer : [address] OK [0-6100] ↵	Measuring current (mA) channel 1, in double mode. Measuring current (mA) in serial, parallel or tracking mode.

Command & Answers	Description
Command : [address] VOLT2 MES ↵ Answer : [address] OK [0-32200] ↵	Measuring voltage (mV) channel 2, in double mode.
Command : [address] CURR2 MES ↵ Answer : [address] OK [0-6100] ↵	Measuring current (mA) channel 2, in double mode.
Command : [address] SERIAL RD ↵ Answer : [address] OK [0-N] ↵	Read the serial number of the device.
Command : [address] IDN RD ↵ Answer : [address] OK ALR3206D VERSION [N] ↵	Read the device ID.

APPENDIX B –USB connection



Preparation of communication :

Download on our website www.elc.fr the file : ALR3206D.inf

Connect the power supply to the USB2.0 PC port with a USB cable as A / B type USB (its length shouldn't exceed 5 meters).

Install the file.

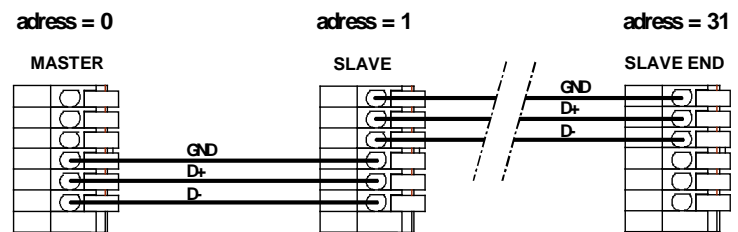
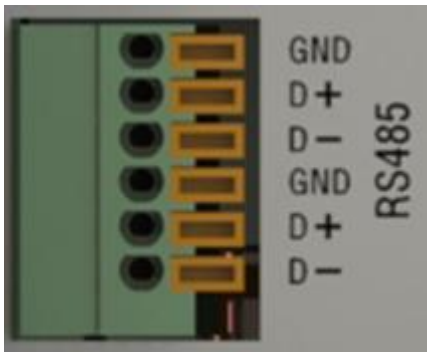
Your PC is ready to communicate with the ALR3206D.

Use "Hyper Terminal ®" simple utility to communicate via the serial port, present on all PCs with Windows 95®, 98®, XP®, Seven®.

You will find on the website www.elc.fr, LabVIEW ® drivers.

This USB connection allow upgrade "*Firmware*" (see website).

APPENDIX C – RS485 connection



You will find on the website www.elc.fr, LabVIEW ® drivers to drive the master.

APPENDIX D – 0–10V connection

This function changes the voltage setpoints for channels 1 and 2 or voltage / current for channel 1 via an analogical voltage, a potentiometer or resistance.

The maximum setpoint value is the one displayed before activating the function.

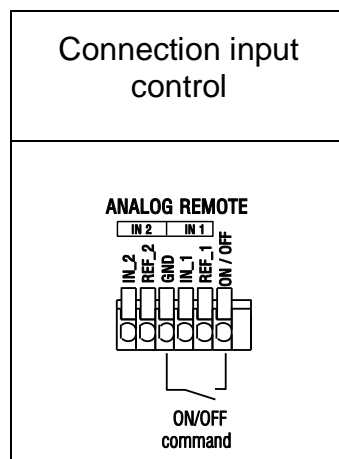


Mode variable resistor (Configuration R)	Mode potentiometer (Configuration U)	Mode voltage driving (Configuration U)
<p>ANALOG REMOTE</p> <p>CH2 (V) CH1 (V/A) or CH1(A) command command</p>	<p>ANALOG REMOTE</p> <p>CH2 (V) CH1 (V/A) or CH1 (A) command command</p>	<p>ANALOG REMOTE</p> <p>CH2 (V) CH1 (V/A) or CH1 (A) command command</p>

APPENDIX E - external ON/OFF control

Use pin ON/OFF to GND (relay contact, manual switch, sensor, ..) allow control isolation of one or all outputs .

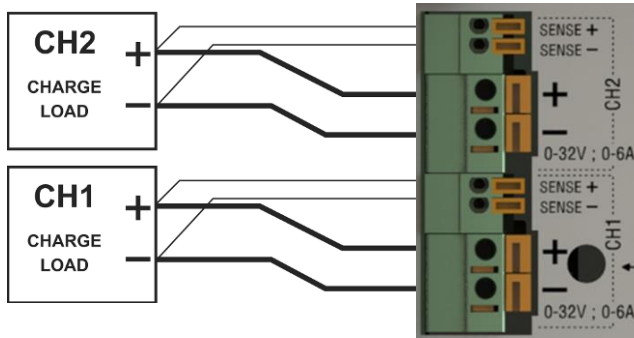
Open contact => ON output(s), Closed contact => OFF output(s).



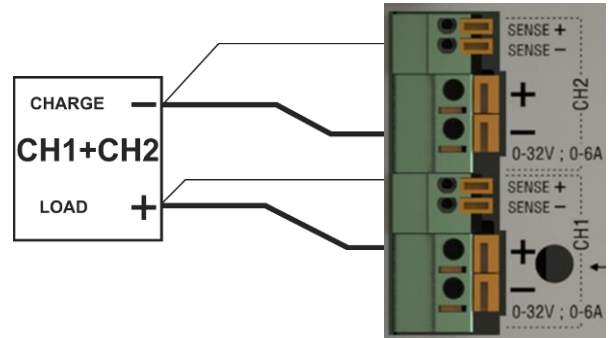
APPENDIX F – sense

Configuration "**sense**" **4 wires** for output to terminals on the rear panel of the power supply. Recommended conductors for the power are of 1 to 2 mm² ; those of the "sense" are minimum 0,22mm².

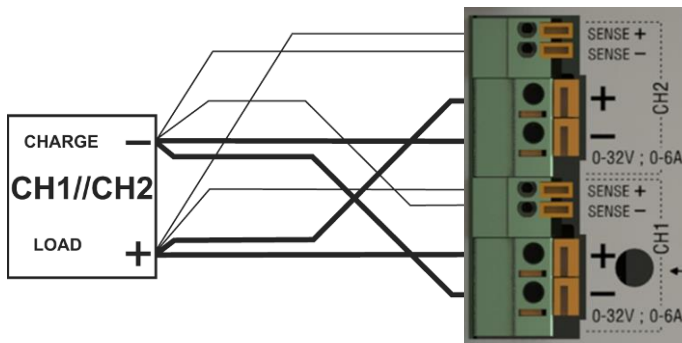
Separated mode or tracking isolated



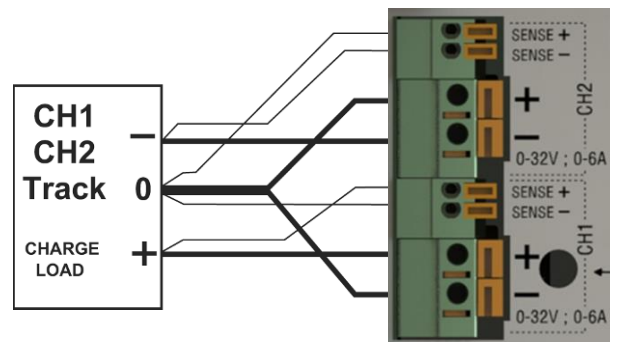
Serial Mode




Parallel Mode




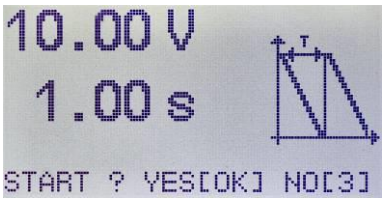


















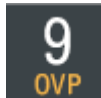

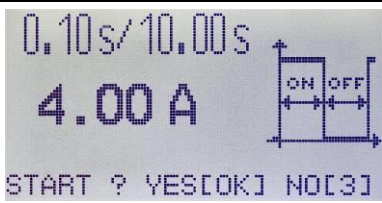















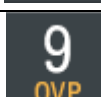

Tracking mode coupling (symetric)











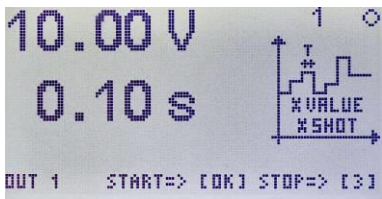








APPENDIX G – Sequencer









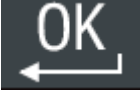







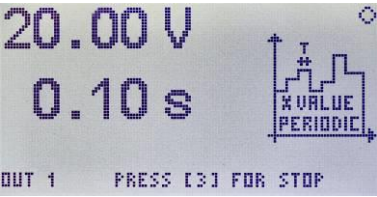
The key  allows to generate the signal function (Voltage or Current) on outputs CH1 or CH2.

Step	Action	Description
Before use sequencer, select channel 1 or 2 and setting value.		
1.	Touch on 	Select key “2nd”
2.	Touch on 	Select sequencer function
3.	Touch on 	Run signal displayed
		
Setting pre-programmed signal		
1.	Touch on 	Select key “2nd”
2.	Touch on 	Select sequencer function
3.	Touch on 	Enter in setup sequencer mode
4.	Touch on  to  or touch on  or 	Select signal.
5.	Touch on  or  or touch on  or 	Select regulation mode (voltage or current)
6.	Touch on  or  or	Select range of timer (seconds or minutes)

Step	Action	Description
	touch on  or 	
7.	Touch on  to 	Setting value timer (60 seconds maxi or 50 minutes maxi)
8.	Touch on 	Valid timer value, sequencer run, for exemple :
		
Setting arbitrary multi-shot signal		
1.	Touch on 	Select key "2nd"
2.	Touch on 	Select sequencer function
3.	Touch on 	Enter in setup sequencer mode
4.	Touch on  or touch on  or 	Select multi-shot arbitrary signal.
5.	Touch on  or  or touch on  or 	Select regulation mode (voltage or current)
6.	Touch on  or  or touch on  or 	Select range of timer (seconds or minutes)
7.	Touch on  to 	Setting value timer (60 seconds maxi or 50 minutes maxi)
8.	Touch on 	Timer value is valid when press "OK"

Step	Action	Description
9.	Touch on  to 	Setting value in regulation mode selected step 5 (Voltage or current).
10.	Touch on  or 	Valid value by unit selected step 5 (32 values maximum)
11.	Touch on 	End setting value (Voltage or current)
 		
12.	Touch on  to 	Enter number of repeat signal (1 to 99).
13.	Touch on 	Run sequencer with the key "OK"
		
Displaying at right up repeat value remaining		

Step	Action	Description
Setting arbitrary periodic signal.		
1.	Touch on 	Select key "2nd"
2.	Touch on 	Select sequencer function
3.	Touch on 	Enter in setup sequencer mode
4.	Touch on 	Select periodic arbitrary signal.
5.	Touch on  or  or	Select regulation mode (voltage or current)

Step	Action	Description
	touch on  or 	
6	Touch on  or  or touch on  or 	Select range of timer (seconds or minutes)
7	Touch on  to 	Setting value timer (60 seconds maxi or 50 minutes maxi)
8	Touch on 	Timer value is valid when press "OK"
9	Touch on  to 	Setting value in regulation mode selected step 5 (Voltage or current).
10	Touch on  or 	Confirm the value entered by the unit of the selected control. The number of values recorded in the sequencer is displayed at the top right of the display (32 values maximum)
 		
11	Touch on 	Run sequencer with the key "OK"
		

Setting example pulse $I = 4A$ $R \text{ load} = 2.25 \Omega$

Function : square

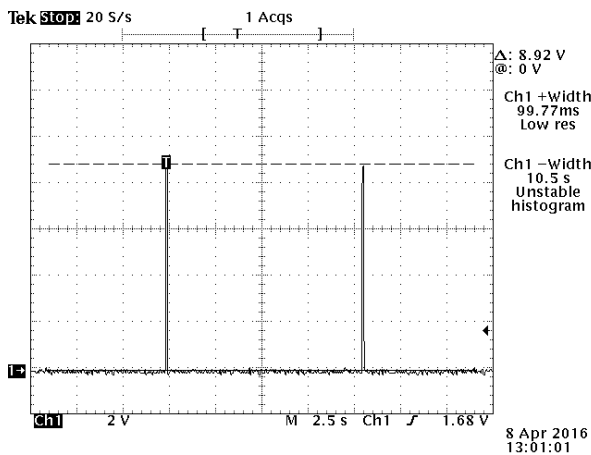
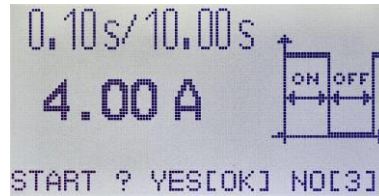
Regulation mode : current

Unity : seconde

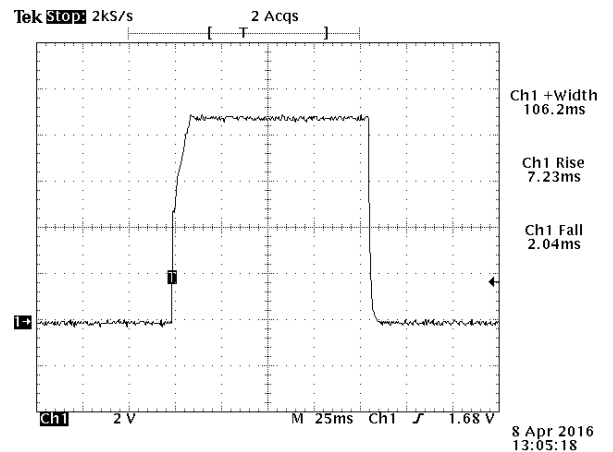
Ton : 0.1s

Toff : 10 s

Display after setting square signal



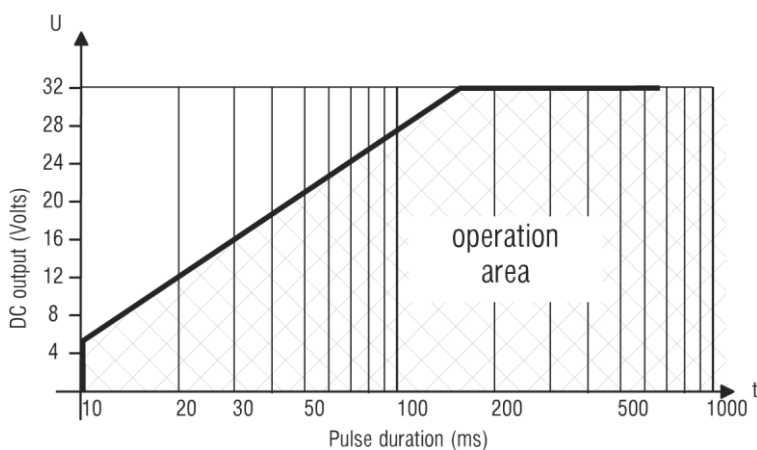
100ms impulse ever 10s..



Details of the 100ms impulse

Operating area

(pulse width / voltage)



Other form : Ramp of 400ms in parallel mode with $U=32V$ & $I_{max}=12A$

