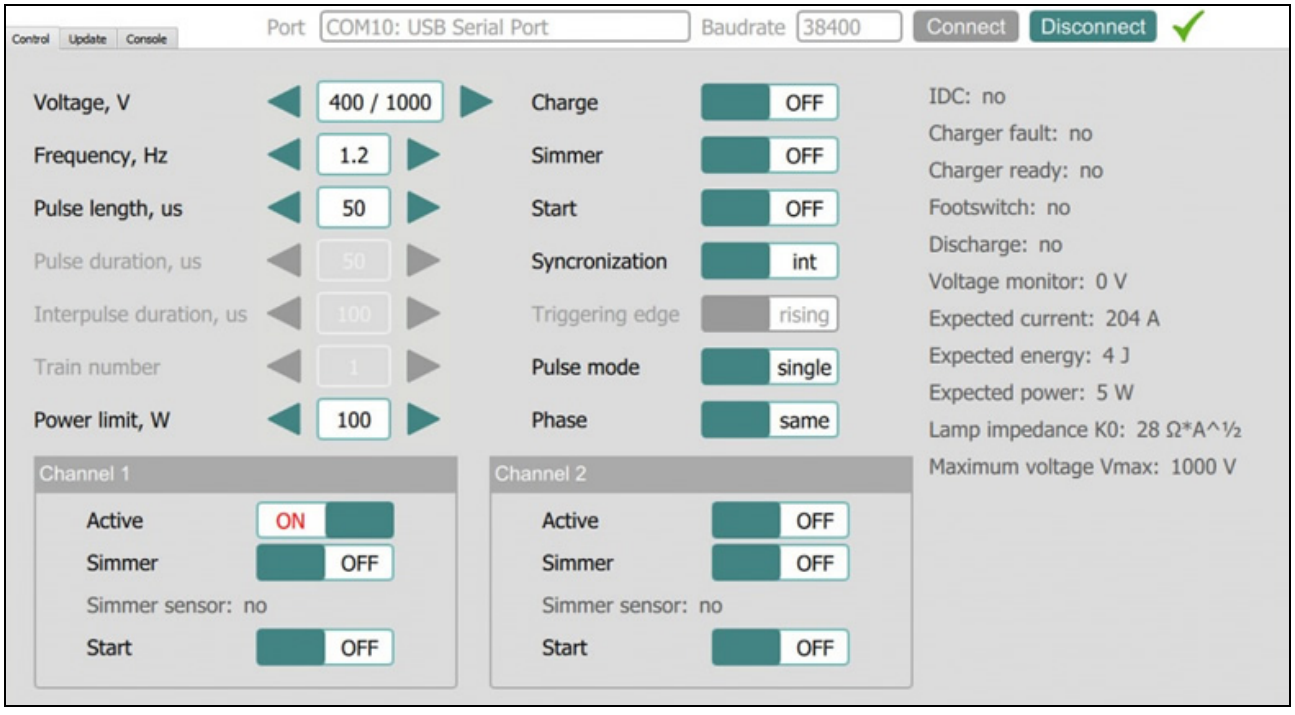
Sintec Optronics

STO Series Flashlamp Drivers

1. STO-FLD-mini Flashlamp Driver

STO-FLD-mini is a miniature all-in-one flashlamp driver especially designed to drive solid-state lasers like flashlamp pumped Nd:YAG. Driver's major features are:

24VDC input
Maximal output power – 300W
Maximal output voltage – 450V (base version), 500V (on request)
Embedded 2mF capacitor bank
Flashlamp triggering and simmering circuits
Base interface is RS-232 (RS-485 is available on request).
Simple PC software is supplied along with the adapter.



2. STO-FLD-4U Flashlamp Driver

STO-FLD-4U is a family of flashlamp drivers (syn. laser power supplies) for pulsed flashlamp pumped solid-state lasers such as Nd:YAG, Er:YAG, Alexandrite etc. STO-FLD-4U drivers are all-in-one solutions and embed all the neccessary subsystems - capacitor bank, capacitor charging power supply, simmer supply and discharge circuit (discharge circuits).

STO-FLD-4U can be equipped with up to two output channels and up to two flashlamps connected in series can be connected to the every output. In that way each STO-FLD-4U is able to drive up to four flashlamps. Drivers are 19"-rack mounted. Height is 4U, depth is around 400mm.

All the important parameters - output voltage, pulse width and pulse repetition rate and others - can be adjusted via front panel user interface (7" colour display and touch panel) and RS-232 machine interface.

Specifications:
Input voltage: 230 VAC (110/230 VAC on request)
Output:

- Number of driven flashlamps: 1 or 2 (outputs aren't independent and can work with identical parameters only)
- Output type: pulsed, variable pulse width, partial discharge, quasi-rectangular pulse shape
- Max. output voltage: 450/700/900 V (other on request)
- Max. output power: 1.75/2.0/3.5 kW
- Pulse width: 0.1-20 ms (other on request)
- Repetition rate: 1-50 Hz (other on request)

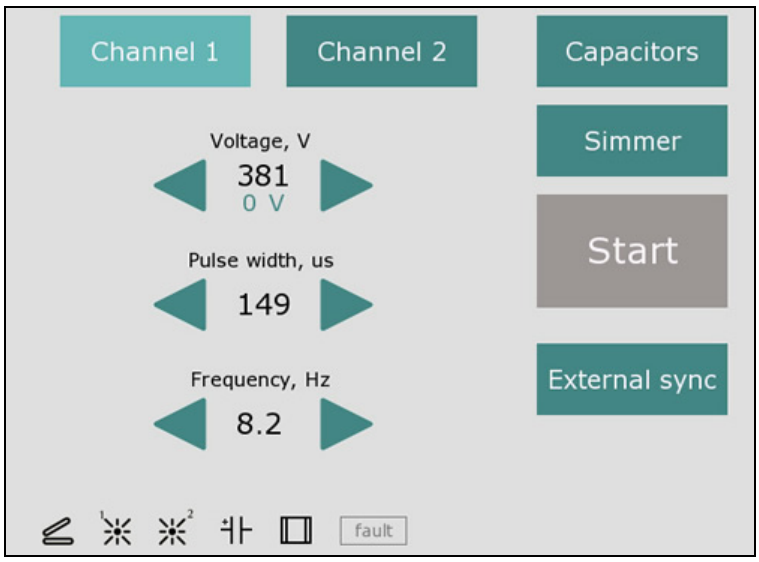
Design:

- Protections: overvoltage, overheating, flashlamp breakdown, interlock etc
- Cooling: forced air (built-in fans)
- Simmer supply: SBZ-2008 or SBZ-3008
- Triggering: serial or parallel
- Capacitor charger: PCP-17, PCA-20 or two PCP-17 connected in parallel
- Embedded capacitor bank: 28000 uF / 450 V, or 10000 uF / 700 V, or 7000 uF / 900 V (others on request)
- External capacitor bank: extension slot
- Interfaces: - 7" display, touch panel; - RS-232 (full control); - 1x synchro input; - 2x synchro outputs; - 1x power input; - 1x or 2x flashlamp outputs; - 1x capacitor bank extension slot; - 1x footswitch/fingerswitch connector; - 1x interlock-door connector
- Operation temperature: 0 … +40 °C
- Storage temperature: -20 … +60 °C
- Humidity: 90%, non-condensing
- Size (WxDxH): 500x380x172 mm
- Weight: 10-12 kg (in dependence on configuration)

A lot of options is available:

- number of outputs - one of two channel modifications (although channels aren't independent)
- different output voltages (up to 1350 V)
- different output powers (up to 3500 W)
- different parameters adjustment ranges
- serial or parallel triggering
- interfaces - display/touchscreen based user interface is supplied by default
- Pockels cell driver as an option
- modifications with complete discharge could be discussed

Besides drivers can be equipped with external capacitor banks units with the possible capacitances up to: - 112000 uF / 450 V; - 80000 uF / 700 V; - 28000 uF / 900 V.



Some Standard Configurations:

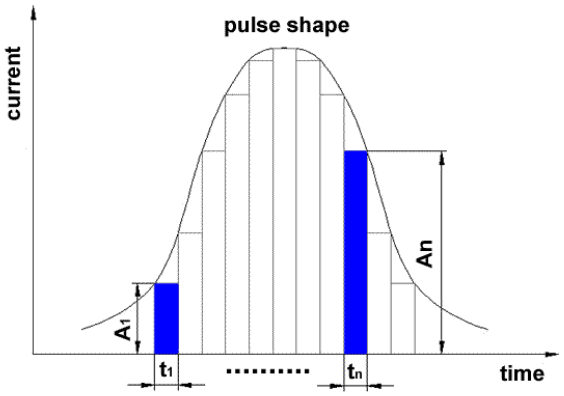
1. STO-FLD-4U-TYPE 1
2 output channels,
maximal output voltage 450 V,
maximal output power 3.5 kW (2 pcs PCP-17-450V-PD),
embedded capacitor bank 28000 uF,
7" display/touch panel user interface

2. STO-FLD-4U-TYPE 2
2 output channels,
maximal output voltage 700 V,
maximal output power 3.5 kW (2 pcs PCP-17-700V-PD),
embedded capacitor bank 10000 uF,
7" display/touch panel user interface

3. STO-FLD-4U-TYPE 3
2 output channels,
maximal output voltage 900 V,
maximal output power 3.5 kW (2 pcs PCP-17-900V-PD),
embedded capacitor bank 7000 uF,
7" display/touch panel user interface

Pulsed Flashlamp Power Supply

CM series pulsed laser power supply is our latest developed, which is based on a touch screen control of high precision intelligent constant-current power supply. Its internal adopts basing FPGA and ARM embedded system software programming, external with 65536 color LCD display, supported operating via touch and press, provided water temperature, water pressure, lack of phase, over-voltage and other various alarm functions, realized the programming of multiple segmented laser wave-form and parameters, display in real time like oscilloscope. And also provides communication interface and USB interface, which can be easily connected to host computer via serial interface to control the power supply through the USB interface to read the parameters, storage and hardware upgrades. V2.2 version supports remote upgrading function. The user may send machine codes of the equipment to us and the activation codes from inputting feedback into the touch control screen can upgrade the device's current, pulse width, frequency, maximum power and other configure parameters. This series pulsed laser power supply, human-machine interface elegant, function powerful, quality reliable, and various technical parameters are leading level in the industry. It is the standard pulsed Nd:YAG laser power supply.



As indicated in above figure, a pulse can be divided into 32 sections and each section may have its own current and pulse width, and pulse repetition rate. According to different current and pulse width setting in each section, the various pulse waveforms can be achieved**.**

Typical characteristics

1) Based on modular circuit programming design, can be used to drive single lamp, dual lamp, four lamps or eight lamps.
2) Based on industrial site date communicate, ensure good anti-interference ability, communication. The distance can be 100m.
3) 65536-color high resolution 7 inch LCD color screen, support for touch-control;
4) The system alarm operate information complete, provide protection for less current, over current, over-load, phase failure and phase sequence fault, pressure over-load, temperature over run, radiator over-temperature, alarm reminding function can real-time display more than 100 fault handling information.
5)With the corresponding interface circuit to achieve 128 sets of parameters continuous light soft hand-over and 64 sets of parameters hard hand-over(soft handover is software control hand-over, can be set in the touch control interface; hard handover is hardware control hand-over, can be controlled by external logic circuit given relative level).
6) The pulse waveform can be set in 32 section wave-form arbitrarily at least. Each section provides current slope rise and fall and the system can save 100 programs for user to be used.
7) From the interface, external control can set the valve to start ahead before laser output or delay time after laser stopped.
8) Intelligent optical switch control. Delay time in milliseconds of time can be customized according to user's needs, ensuring total blackout.
9) Slowly ascending and descending control can be set by user and current amplitude and starting point can be set for ascending or descending.
10) Can realize energy real time feed-back, make the output energy stabilization error within ±2%.
11) Current parameter is split into starting current and end current, can set them discriminability, in order to gain more ideal wave-form. The highest current can be up to 600A.
12) Pulse width can realize 0.1ms stable laser output, highest up to 20ms.

13) Frequency highest up to 1000Hz, can alternated light acting on the xenon flash lamp to alternating the light intensity.

14) Beam control, in the scope of 0.1-0.3mm laser beam control, and have starting up self-motion function, that is when starting up it automatically adjusts to negative limit minimum values. Parameters of step motor adjustable.

15) Support USB testing, convenient for maintenance and debugging.

16) Can edit program in the process of working.

17) Real-time display working current wave-form, can customize process wave-form via dragging the lines.

18) Support power on self test, and report the specific problem of the main chip.

19) Offer remote up-grating model, only need to offer machine code of equipment, parameters can be configured according to user requirements for the upgrade.

Technical Parameters

1. Working mode: pulse
2. Control current: 60A-600A(single lamp)
3. Pulse width: 0.1ms-20ms
4. Laser frequency: 0Hz-500Hz(0Hz is dot pin, can be customized to high frequency)
5. Spot diameter: 0.1-3.0mm
6. Warm-up time: about 1 minute
7. Power output: ≤20KW
8. Display: 65536 high resolution LCD, support touch screen control.
9. Handover No.: 128 set (soft hand-over); 64 set (hard hand-over)
10. Real-time feedback error: less than 2%.
11. Working environment: input power 3 phase 380V±10%, using at ambient temperature below30℃ drying condition, air dust <0.01g/cubic metres, no condensation.

Model	CM-1-A	CM-1-B	CM-4-SMC	CM-4-C
Xenon lamp No.	Single lamp	Single lamp	Four lamps	Four lamps
Structure	Drawer	Cart	Drawer	Frame
Dimension, mm	478×586×200	900×520×1145	478×586×800	882×500×1310
Weight, kg	20	22	80	80
Output current	50-600A	50-600A	50-600A	50-600A
Output pulse width	0.1-20ms	0.1-20ms	0.1-20ms	0.1-20ms
Output pulse frequency	0-500Hz	0-500Hz	0-500Hz	0-500Hz
Output power	6KW	6KW	24-32KW	24-32KW
Input voltage	220V	220V	380V	380V
Section programming	32 waveform programming			
Air valve	Light in advance 0.01-5s; light delay 0.01-5s			
Eye brake	Support eye switch delay adjustable			
Slowly ascending & descending	Support slow ascending, descending and starting point adjustable			
Handover	Support 64 channel hard handover and 128 channel soft handover			
Display	65536 color high resolution LCD screen, support touch screen control			
Spot diameter	0.1-3mm(optional)			
Energy feedback	Energy real-time feedback error: less than 2% (optional)			
Industrial control	RS232/485 serial communication (optional)			

Model	CM-SMC	CM-SD	CM-SD(500HZ)	CM-SD(500HZ)-F
Xenon lamp No.	Dual lamp	Dual lamp	Dual lamp	Dual lamp
Structure	Drawer	Cart	Cart	Frame
Dimension, mm	540×430×400 (2 layers) 540x430x600 (3 layers)	900×520×1145	900×520×1145	882×500×655
Weight, kg	40 (2 layers)	42	42	40
Output current	30-600A	50-600A	50-600A	50-600A
Output pulse width	0.1-20ms	0.1-20ms	0.1-20ms	0.1-20ms
Output pulse frequency	0-100Hz (2 layers) 0-500Hz (3 layers)	0-500Hz	0-500Hz	0-500Hz

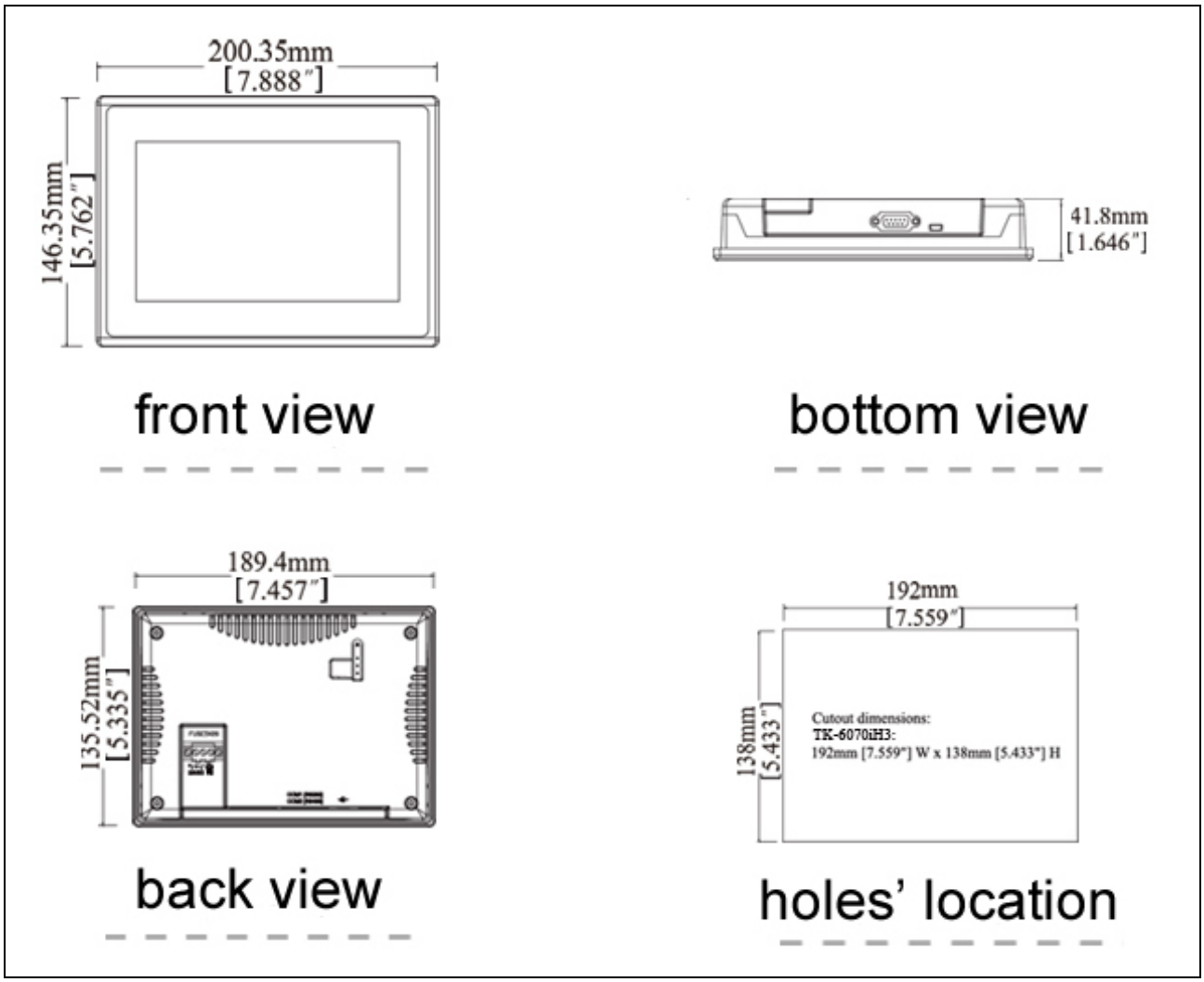
Output power	≤18KW	12-14KW	16-24KW	16-24KW
Input voltage	380VAV, 3-phase	380VAV, 3-phase	380VAV, 3-phase	380VAV, 3-phase
Section programming	32 waveform programming			
Air valve	light in advance 0.01-5s; light delay 0.01-5s			
Eye brake	Support eye switch delay adjustable			
Slowly ascending & descending	Support slow ascending, descending and starting point adjustable			
Handover	Support 64 channel hard handover and 128 channel soft handover			
Display	65536 color high resolution LCD screen, support touch screen control			
Spot diameter	0.1-3mm(optional)			
Energy feedback	Energy real-time feedback error: less than 2% (optional)			
Industrial control	RS232/485 serial communication (optional)			

Model	CM-SD(500HZ)-FS	CM-SD(500HZ)-S
Xenon lamp No.	Dual lamp	Dual lamp
Structure	Frame	Cart
Dimension	882×500×655mm	900×520×1145mm
Weight	40	42
Output current	50-600A	50-600A
Output pulse width	0.1-20ms	0.1-20ms
Output pulse frequency	0-500Hz	0-500Hz
Output power	16-24KW	16-24KW
Input voltage	380V	380V
Section programming	32 waveform programming	
Air valve	Light in advance 0.01-5s; light delay 0.01-5s	
Eye brake	Support eye switch delay adjustable	
Slowly ascending & descending	Support slow ascending, descending and starting point adjustable	
Handover	Support 64 channel hard handover and 128 channel soft handover	
Display	65536 color high resolution LCD screen, support touch screen control	
Spot diameter	0.1-3mm(optional)	
Energy feedback	Energy real-time feedback error: less than 2% (optional)	
Industrial control	RS232/485 serial communication (optional)	

Structure outline

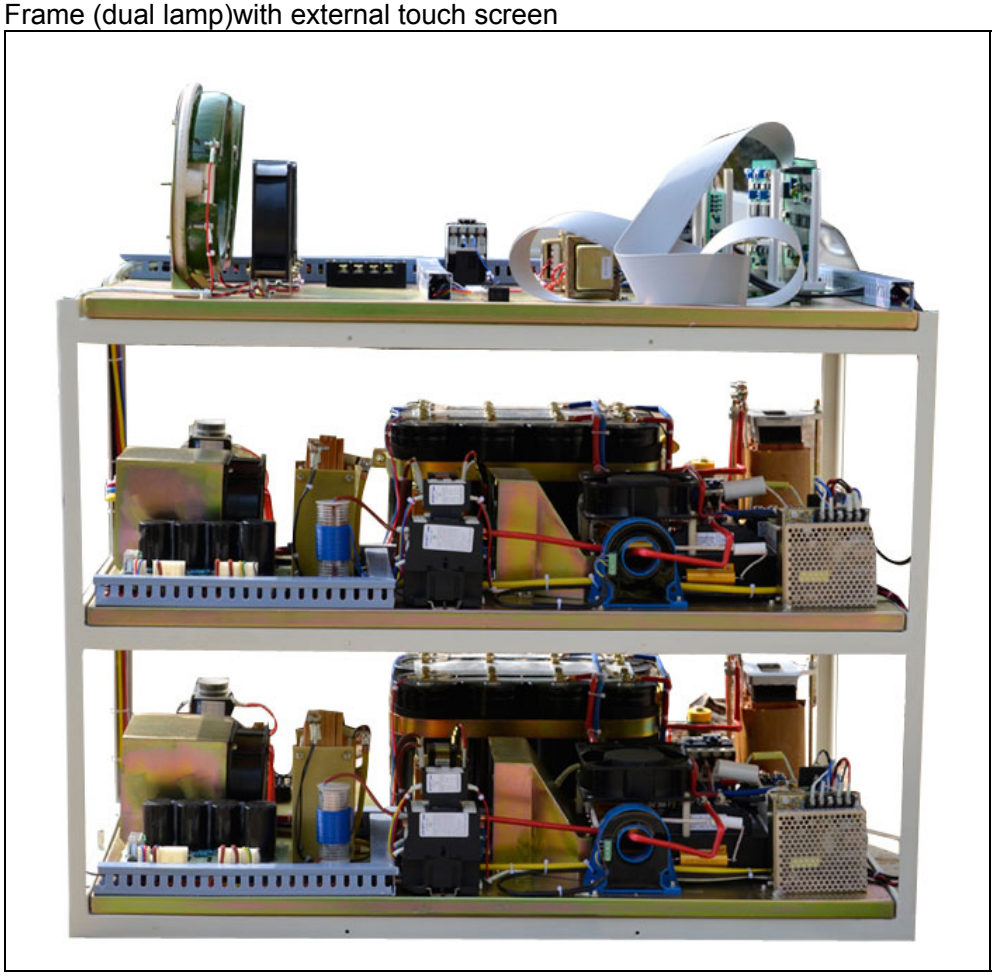
Drawer-type with external touch screen

Dimension of touch screen



Cart (dual lamp)

Frame (dual lamp)with external touch screen



STFD Series Lamp-pumped Pulsed Laser Power Supply

STFD series laser power supply is designed for lamp-pumped lasers. It's used for operation in the industrial laser applications (welding, heat treatment, cutting, scribing and firmware holes), laboratory, educational, medical and experimental machines.

Model	STFD-SF134-1	STFD-SF134-2	STFD-SF138
Number of lamps	one	one	One or two
Pulse rate	0.1-30Hz ,single pulse	0.1-30Hz ,single pulse	0.1-20Hz ,single pulse
Output Voltage	1000V	1600V	750V
Voltage accuracy	± 0.3 %	± 0.3 %	± 0.3 %
Battery capacitance	According technical task-	According technical task	
Pulse duration	Determined by storage	Determined by storage	0.1-6ms
Duration changing step	-	-	0.1ms
Discharging type	Full discharge	Full discharge	Partial discharge
Average charge power	1.6kw	1.6kw	5kw
Simmer mode current	0.6A	0.6A	0.6A
Communication interface	RS232	RS232	RS23
Data display	LCD	LCD	LCD
Trigger in	5V,10us	5V,10us	5V,10us
Trigger out	5V,10us	5V,10us	5V,10us
Attenuator control	-	-	2*27V
Trigger delay	Up 0 to+25us	Up 0 to+25us	0-6ms
Interlock	Switch contact closure	Switch contact closure	Switch contact closure
Accessories connection	220VAC,50Hz	220VAC,50Hz	Three phase 220/380VAC,50Hz
Power input	Single phase 220VAC,50Hz	Single phase 220VAC,50Hz	Three phase 220/380VAC,50Hz
Dimensions	440*179*440;4U	440*179*440;4U	440*356*440mm;2*4U
Weight	25kg	27kg	40kg