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Piezo Driver Sortiment Status 05 2015

- **Linear amplifiers FSLE:**
  After along period of experience with 1000V linear finalstages , in 2014 and -15 it came to a new simply scalable structure of linear amplifiers (**FSLE**) , the function is proofed by some selected customers .
  The series of **FSLE** shows some very useful features to provide long time stability : its thermal behavior is very efficient and the output power ist not limited to only a few milliseconds as I find it in many papers , but the amplifier detects overload and reduces power and finally switches off after a reasonable time (1 second....).
  The design is very economically , its usefull for a high leveled lab design or can get minimised to an industrial box-design to supply machines .
  Its Bandwith is reasonable good for piezo loads from....200n F up to 20...uF , in the range of 5...kHz depending on the amplitude.Noise also is low .
  The powerrange is scalable in voltage and power (200, 500 , 1000, or even higher V) , (400mA....2A).
  In opposition to many other linear amplifiers the offered currents are way higher and almost continuously and so many applications of the customer are thinkable and not limited to soon by a weak amplifier , important for laboratory supply and universities .
  My web recherche even was not very successful to find any competitor in this range.
  FSLE Types ,status 05-2015:

  FSLE 1000V-1 A 1000V Sinus , 1A peak , overcurrent detection : ..1sec
  FSLE 500V-2A 500V , 2A , dto
  FSLE 200V-5A 200V , 5A , dto

  Personally I like this model very much because of its compact design : it fits in any lab or desktop
  FSLE 1000V-400mA 1000V 400mApeak , dto
  appr. 24 x20 x17cm (ca 4HE 42TE):

  The **FSLE** amplifiers offer an alternative to my switched recharging amplifiers **FSRCV** , established since many years as a powerfull and only hard to replace heavy load power amplifier which is to prefer for higher currents (1000V - 3 , 7 ,or even 10 A continuously). **FSRCV** is very usefull to drive high power stacks , but at the lower end of current they are an overkill and also noise level is easier to handle with a linear amplifier **FSLE**.
  Modifikations are possible , please ask if needed.

  Quick offer possible :
  FSLE 1000- 400 mA
  FSLE 1000-1A

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- **Switched ,recharging amplifier FSRCV**

in case of need of high power , limited space , low thermal loss the competitor of a linear amplifier is the **FSRCV** . Just to imagine : if 1000V 10A are needed the linear design **FSLE** can reach easily the size of high 19" rack , hard to imagine if some more of these types are needed for a bigger mechanical project . Also in price , space , cooling.

FSRCV offers astonishing high values (1000V-7A , in 4 High units , 63 Units wide. Its designe for bigger piezos (1...2uF....20uF), high forces , high efficiency . So RCV1000-7 draws under full power some 2...3A from line 240VAC.

Maximum current is provided in the range of seconds , not milliseconds, bandwith is in a reasonable range of 2...5kHz , depending on adjusting the loop and the size of the piezo.
FSRCV delivers power even at the limits of voltage (-50V up to 1050V or more), low crossover distortion of sinusoidal shape . Noise is adjustable , depends on the load (1...2Vpp).

established FSRCV Models:

FSRCV 1000-3	1000V 3A("Continuous"!)
FSRCV 1000- 7	1000V 7A("Continuous"!)
FSRCV1000- 10	1000V 10A("Continuous"!)
FSRCV 500-15	1000V 15A("Continuous"!)

- **Piezo pulse Driver** :

Pulse shaped by resitor (RC time constant):

Pulsdrivers deliver currents and voltages in a wide range . The voltage is adjustable internally or externally , the pulse gets triggered by an external signal .
The loading power is in the range of 20 , 50 , 300W...., a very accurate charging unit delivers the conditions for a good pulse to pulse stability (no 50Hz fluctuation....)

❖ **FSHVP** (Signal following)
The output of FSHVP pulse follows this trigger signal , up and down , the risetime is destinced by a resistor .

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typical models of FSHVP:

FSHVP 1000-20	1000V- 20 A
FSHVP 1000-200	1000V-200A
FSHVP 200- XXX	200V -X A
FSHVP 500-XXX	500V -X A

❖ **FSHVP MF**

(Limited pulsewidth , active positive pulse , fast risetime, passive falltime)
The output of FSHVP MF triggers the rise of the pulse , its width is fixed internally , after the active pulse the fall of the pulse is passive , causes by a resitor.

Typical application is high speed acceleration , rise time 1..2usec to 1000V and 200A , necessary for high g- testing of sensors .
established type :
FSHVP MF 1000-200 1000V 200A p risetime <<10usec

❖ **FSCCHVP**

(Current Controlled Piezo Pulse Driver)
The rising and the falling time of the ramp of the pulse can get adjusted at the frontpanell.So the charging and the discharging current is destincted and not only following an e-function as it is done with a resistor . So its an active controll of the mechanical response of the piezo , very useful to provide a constant extension per (milli) second.... and helpful for
lab experiments and test equipment (valves ...., optics , levels.)

established types :

FSCCHVP 300-20 **300Vp 20 A**

.

ask for others .

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Conclusion:

Finally I have to report that all the types of drivers **FSRCV** , **FSLE** , **FSHVP ,FSCCHVP**.. got profoundly updated the last two years . Especially the linear amplifiers made a big step forward by changing the concept .
Special efforts where made to limit the power delivered to the piezo , to limit and controll the rise and falltimes , to limit overshoot in voltage , specially in **FSRCV**...
All this protects the amplifier and even the piezo , so good for both sides .
The prefix FS gets used to label the types neutral from the existing labeling of the established devices .

This paper gets actualized even by describing other projects . , so look for updates .