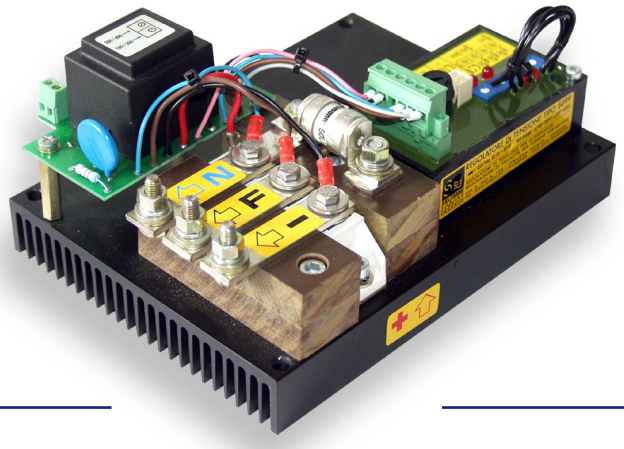
BELTRAME

S 099

REGISTERED MODEL

ENERGY SERVICES CENTRE

AUTOMATIC VOLTAGE REGULATOR



REPRESENTATION VOLTAGE REGULATOR TYPE S099

Nominal tension { △ 180÷260 V / ⅄ 300÷490 V

Excitation { excitation current 45/100A / excitation tension ⩽ 100V

TECHNICAL DESCRIPTION

After over twenty years' experience in the alternators field, BELTRAME c.s.e. has produced a new kind of AVR called S099 , which ensures the highest degree of performance for brush-less and old fashioned generators, suitable for any use condition.

The S099 AVR is the result of the most sophisticated technology offered by electronics . It makes possible the feeding of stator exciting units at values of nominal voltage up to 100 Volts, and it can therefore be used on most brush machines available on the market.

It guarantees the optimum performance of alternators, be they charged or uncharged or in transition phase, in particular during the breakaway of asynchronous motors.

This device also ensures safe protection against persistent over voltage and over load perturbation.

All the components are resin-finished in order to warrant long lasting reliability in any environment and avoid damages caused by vibrations. The S099 is cased in a strong plastic box. It is furthermore supplied with insulated electric clamps connection and internal fuse block, complete with an high-speed fuse as protection against short circuits.

Characteristics:

- Nominal input voltage two phase Volt 180/260 △ - Volt 300/490 ⅄ - 50/60 Hz.
- Precision: in steady condition ±1% (regulation on each phase).
- Nominal continuous current 45/100 A.
- Nominal output voltage >100 Vdc.
- Operative temperature range -20 / +65 C.
- Complete with:
  - Voltage adjustment trimmer.
  - Stability control trimmer.
  - Frequency regulation trimmer.
  - Excitation current adjustment trimmer.
- Protection against maximum excitation in under frequency condition(between 40÷50 or 50÷60 HZ), when diesel or hydroelectric plants are set to self heating from the start.
- **Over voltage protection** (internally calibrated at ±25% of the voltage value, or different on demand).
- Self-excitation at minimum 2 Volts;
- Jumper for 1000Ω -1 Watt (±25%) remote control potentiometer.
- Dimensions:
  S099/45 = mm 200 W, 150 H, 98 D; weight g 1.700.
  S099/100 = mm 200 W, 150 H, 110 D; weight g 2.145.
- Jumper to switch from 50 to 60 Hz.

If different voltage or frequency is needed, BELTRAME c.s.e can supply the regulator according to the feeding value desired by the customer.

Centro Servizi Energia BELTRAME

BELTRAME CSE
VIA S. PIO X, 104
35015 GALLIERA VENETA
PADOVA - ITALY

MAIL TO: info@beltramecse.com
WEB SITE: www.beltramecse.com
TEL.++39/049/5965127
FAX++39/049/9440024

BELTRAME

S 099

REGISTERED MODEL

ENERGY SERVICES CENTRE

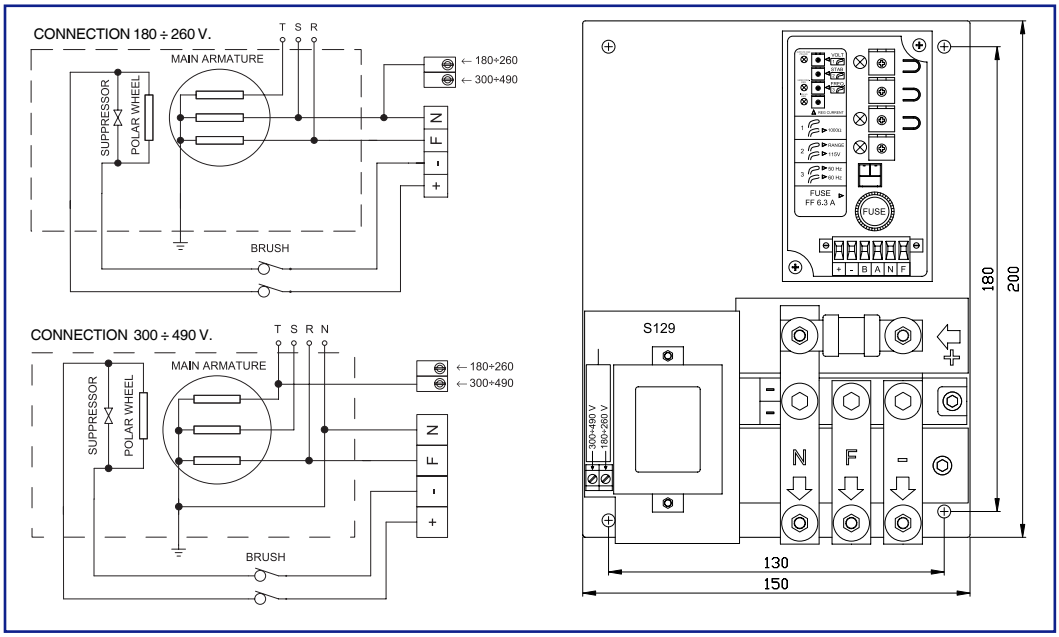
AUTOMATIC VOLTAGE REGULATOR

DIGITAL PF CONTROLLER AND REGULATOR FOR USE ON SYNCHRONOUS GENERATORS

REPRESENTATION VOLTAGE REGULATOR TYPE S099

Nominal tension { △ 180÷260 V / ⅄ 300÷490 V

Excitation { excitation current 45/100A / excitation tension ⩽100V



USER'S AND MAINTENANCE MANUAL

❑ PERFORMANCE

The new S099 AVR is suitable for every type of alternator, and ensures an high current (45/100 A) in a very low dimension . It is complete with over-voltage protection (displayed from a yellow led), and under frequency protection (displayed from a red led). During the first step the voltage increases proportionally with the frequency, to get the under frequency set normal (the starting point of the low-turns protection trimmer is to 20% less of frequency normal value, and this function can be jumped between 50/60 Hz); and from this point on, also the voltage goes immediately to the nominal value .

- Starting from 3,5V minimum self excitation, voltage approaches the nominal value only when the frequency equals the trimmer set value (Hz), and then remains steady onto the nominal value.

Under this condition, regulation is available as a compound with all advantages and precision of electronic regulators. This system moreover allows to charge heavy loads on the main without hampering diesel engine efficiency, both on turbo compressed or old fashion, and hydroelectric stations.

❑ INSTALLATION

The regulator must be installed inside the machine or inside the control panel in order to be protected against accidental contacts. It is recommendable to install it in a well-aired place, where it may also be easily controlled.

For fastening the regulator, 5 MA through-screw should be tightened with self-locking nuts in four corners holes.

❑ ACCEPTANCE

Regulators are normally delivered complete with packing. With a small extra charge, and on specific request the customer may also ask for a particular kind of packing (shipping, airfreight etc.). At the moment of receiving the goods, and in the presence of the carrier, it is advisable to check that packing and goods have not been damaged during the freight. If the goods are found to have been damaged, this must be put on record.

❑ STORAGE

If the regulators are not to be used immediately, it is recommendable to keep them in a clean and dry storeroom at a temperature ranging from -30° to +70° C. If the temperature is such as to give rise to condensation, it is very important to protect the clamps against dampness. It is also recommended to check regularly the good condition of the regulators .

❑ ELECTRIC CONNECTION

All the connection screw-clamps are placed in a multi pole socket for which please see the wiring diagram at Fig. 1 (two phase functioning) △ (180-260V), ⅄ (300-490V), 50/60Hz.

❑ DETAILED INSTRUCTIONS FOR THE REGULATION

-To regulate the output voltage at desired value, turn the Volt trimmer (the value increases when it is turned clockwise and vice-versa);

-If it should be necessary to vary the stability, turn the stability trimmer, (as a rule, the optimum condition is achieved by turning it clockwise), ATTENTION: whenever the stability trimmer undergoes variation, it is necessary to correct the voltage by using the volt trimmer;

-To set the under frequency control device turn the trimmer: when the red light led die away the frequency is over the setting value (range 40÷50 or 50÷60 Hz).

- To adjust excitation current You need to have the alternator is under full load: then turn (Reg current) trimmer clokwise untill the red led (I Max) lights on. Now turn same trimmer counterclokwise just a little. Be carefull not to turn the trimmer completely counterclokwise because in this way (I Max, excitation current) protection is cut off.

-**Note** : any time stab. trimmer value moves , a correction of tension with volt trimmer is needed. If the machine works at 60 Hz frequency, it is sufficient to interrupt the F1-F2 jumper , and then to increase tension with volt trimmer until the desired value is set.

-If a remote voltage control is desired within a range of ±5%, it is necessary to interrupt the P1 jumper, and to connect a 1000 Ω 1Watts potentiometer in the two terminals. Please use screen cable when the distance is more than 4 mt (always when calibration cable is near power cables) to connect the screen with P1 conductor only at the origin side of the screen.

-The regulator is supplied with a protective high speed fuse (45/100 Amps ultra-fast); to replace it remember to switch off the machine first.

The S099 AVR can be equipped with an auxiliary input connection to ensure an high short circuit current.

❑ INSTRUCTION FOR THE ELECTRIC CONNECTION

By following the diagram in Fig. 1 and by making some simple changes, S099 can also be connected with parallel adaptor (S155 generator to generator) or power factor controller (PFC 150 main to generator) on different types of alternators.

ATTENTION: Before connecting the S099 voltage regulator it is necessary to make sure that the value of the phase-ground and phase-phase insulations are both superior to 1 Mega-ohm at 20°C temperature.

(The measurement is to be taken by a Mega-ohm-meter, whose continuous voltage output must be 500 Volts). If the value should be lower, the right minimum value must be reset by a top to bottom cleaning up of the machine.

ED. 02/10 - REV. 02