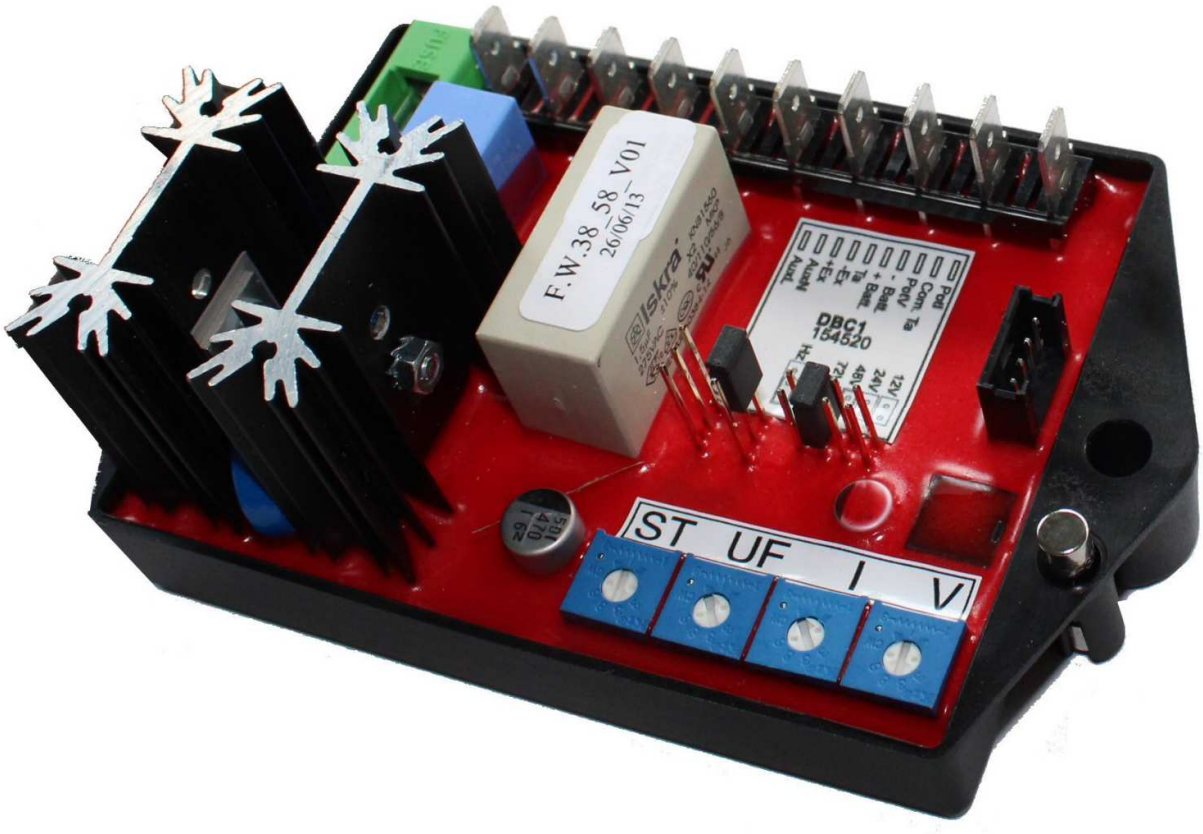
DBC1

Digital AVR

Automatic Voltage Regulator

OPERATION MANUAL



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GENERAL FEATURES

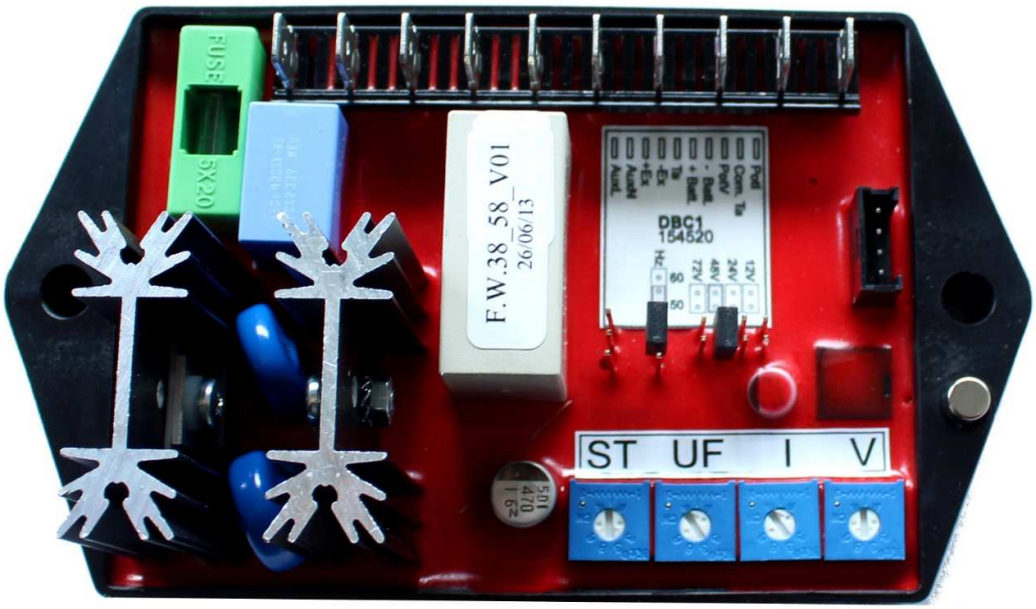
SINCRO DBC1 is a digital voltage regulator designed for brush and brushless DC alternators.

It regulates the output voltage of a generator by controlling the field current.
It has DC sensing.

The modular architecture enables optimization for different applications.

The voltage regulator controls and keeps constant the average value of the DC voltage.

A frequency control progressively deactivates the machine when the drive motor speed drops below a pre-set adjustable threshold preventing over-excitement at low operating speeds.



ELECTRICAL SPECIFICATIONS

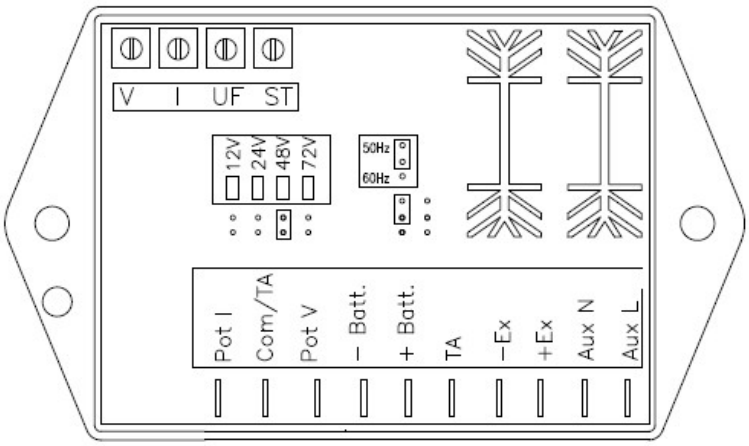
DBC1 AVR includes:

- a terminal strip (10 terminals)
- a voltage trimmer
- a current trimmer
- a stability trimmer
- an under frequency trimmer
- a range sensing selection jumper
- a frequency selection jumper
- electric protection with fuse.

The electronic is sealed with resin (it is a perfect protection against vibration and humidity).

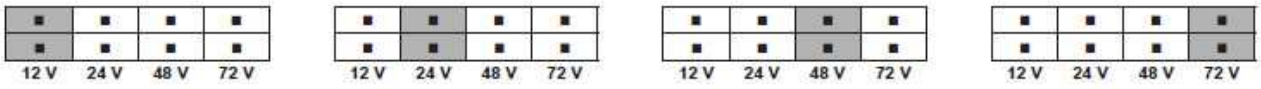
JUMPERS

RD1 AVR has two groups of jumpers.



The first group of jumpers selects the nominal voltage of sensing.
- 12 Vdc
- 24 Vd
- 48 Vdc
- 72 Vdc.

Example of jumper position:



The second group of jumper, which is identified by letter Hz, refers to the operation of the alternator at 50 or 60 Hz (*Figure 1* and *Figure 2*).

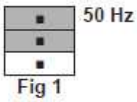


Fig 1

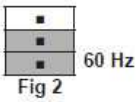


Fig 2

ADJUSTMENTS

VOLTAGE ADJUSTMENT

Adjusting the trimmer “V” changes the output voltage.
Take the generating set to its nominal speed and turn clockwise if you want to increase the voltage and anticlockwise to decrease the voltage.
If a small variation in speed causes a voltage variation, then the underspeed protection trimmer “UF” should first be calibrated.

CURRENT ADJUSTMENT

Adjusting the trimmer “I” changes the output current.
If you want to increase the limit of current output, turn clockwise trimmer and anticlockwise to decrease the current limit.

UNDER FREQUENCY ADJUSTMENT

Set the frequency selection jumper at 50 (60)Hz.
Start up rotation of the generating set adjusting it to obtain a frequency of 46 (56)Hz.
Turn trimmer “UF” until the voltage begins to drop.
Restore nominal speed.

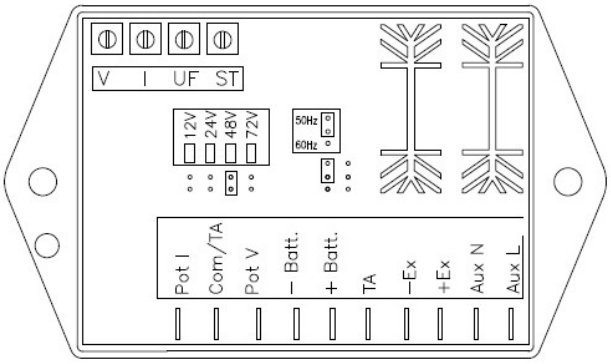
If the UF protection is adjusted at too low values, alternator may be damaged. On the other hand, too high adjustments can cause voltage drops with high loads.

The adjustment range is:
- jumper on 50 Hz position, range 42÷50 Hz, the central position of trimmer corresponds to 46 Hz;
- jumper on 60 Hz position, range 52÷60 Hz, the central position of trimmer corresponds to 56 Hz.

STABILITY ADJUSTMENT

If there are voltage fluctuations, adjust the potentiometer “ST”, which modulates the reaction time of the regulator to external inputs, thereby eliminating any instability in the alternator-load system.

CONNECTIONS

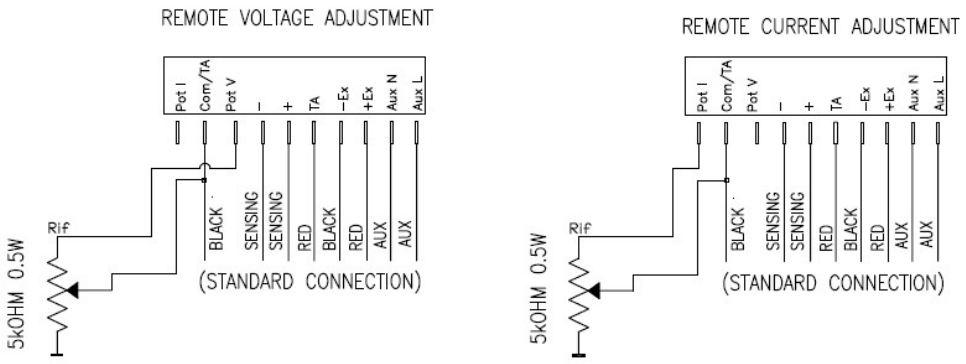


Following fast-on connections are available on the AVR:
- Power input, terminals AuxL, AuxN
- Power output, terminals –Ex, +Ex
- Voltage sensing, terminals – Batt., +Batt
- Current sensing, terminals Com\TA (black), TA (red)
- External potentiometer for adjustment output voltage , terminals Pot V, Com.Ta
- External potentiometer for adjustment current limitation, terminals Pot I, Com.Ta.

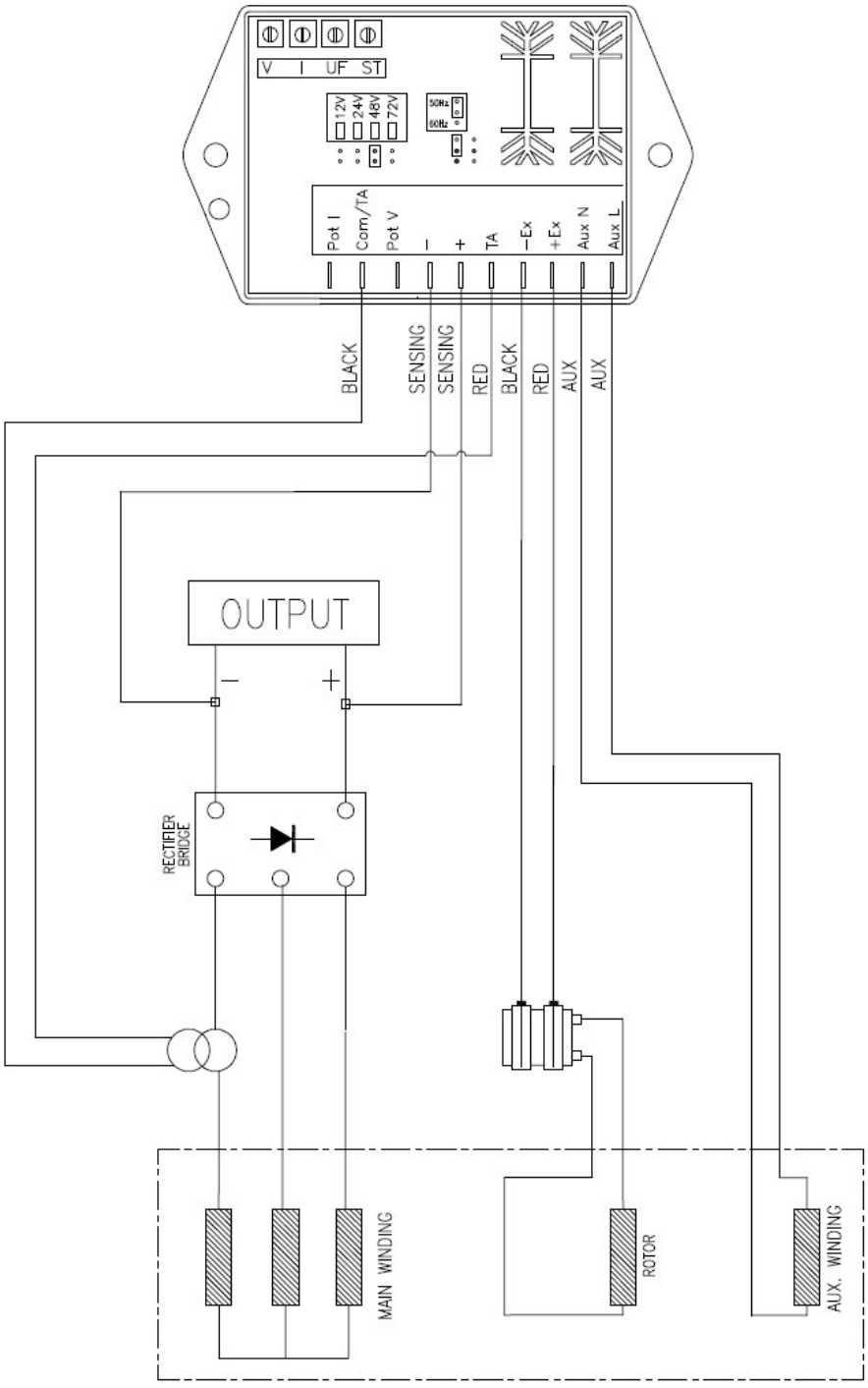
CONNECTING AN EXTERNAL POTENTIOMETER (5 kOhm)

Remote voltages adjustment:
connect the external potentiometer (5kOhm, ½W) to the free terminal “POT V” and to "Com.Ta", and the V trimmer on the AVR board must be adjusted fully anticlockwise.

Remote current adjustment:
connect the external potentiometer (5kOhm, ½W) to the free terminal “POT I” and to "Com.Ta".



WIRING DIAGRAM



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