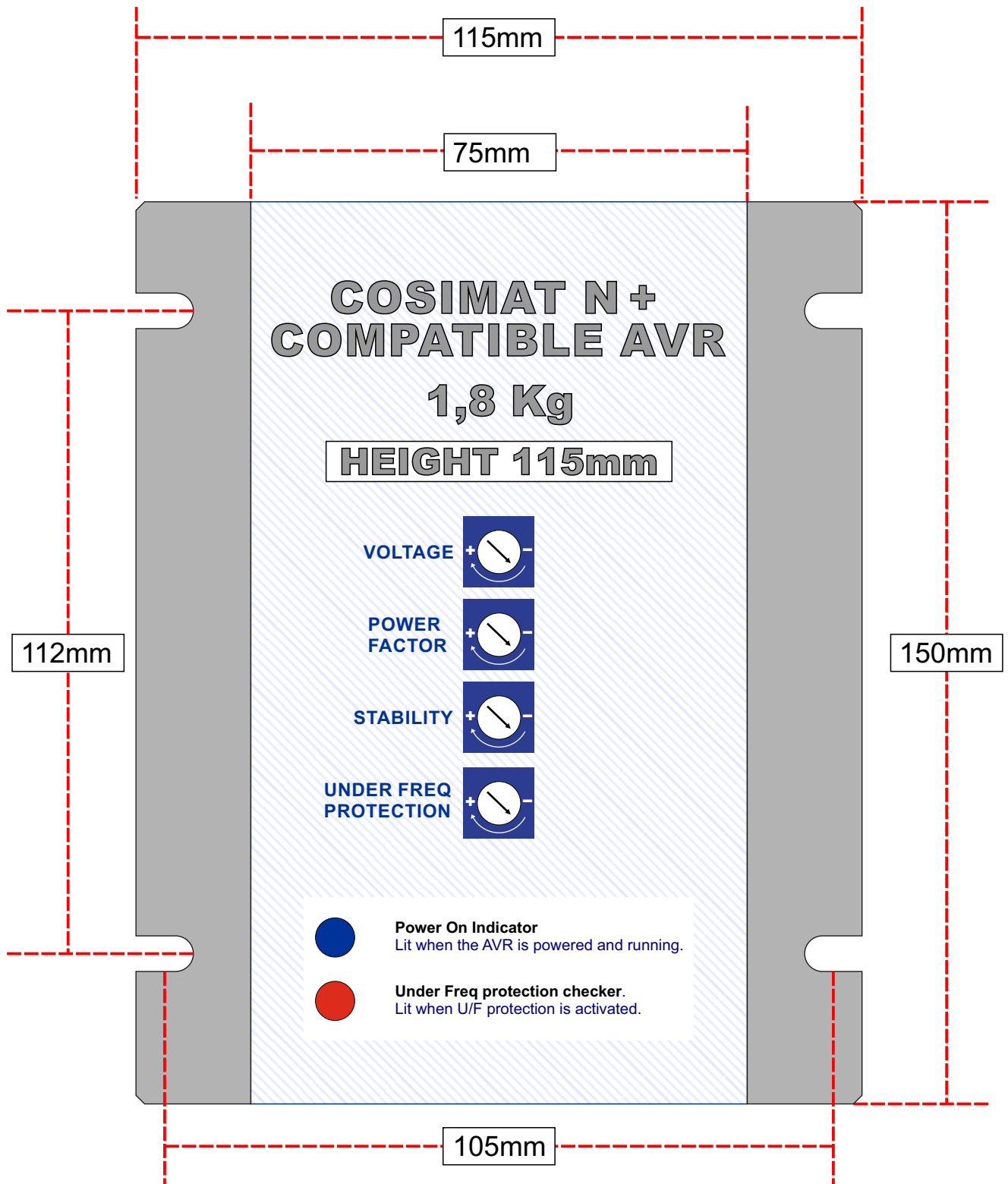


STAMFORD AVK COSIMAT N+
COMPATIBLE
AUTOMATIC VOLTAGE REGULATOR

USER MANUAL

STAMFORD AVK COSIMAT N+
COMPATIBLE
AUTOMATIC VOLTAGE REGULATOR





TECHNICAL DESCRIPTION

This is the replacement of **AVK COSIMAT N+**.
This AVR has no need for any kind of modifications.
This goes for the cables as well as the mounting.
Its all the same except one thing, its better.
Note that (as with every other compatible AVR we make) the inner design is completely different from the original and much improved in every aspect.
Practically this AVR works much better and will never malfunction.

**ADJUSTMENTS**

- **VOLT** for voltage output level
- **STAB** for stability voltage control
- **P/F** for power factor correction
- **U/F** for under frequency protection
- **FINE POT** for external voltage level

Dimensions (mm)

Length	Width	Height	Weight (Kg)
150	115	115	1.8

DESIGN AND MANUFACTURE
BY RESEARCH TEAM OF
POWER ELECTRONICS C.O.
GREECE

COSIMAT N+ COMPATIBLE

- DESIGNED TO HAVE THE SAME FIT AS ORIGINAL.
- AUTOMATIC FLASH
- 50 - 60 Hz COMPATIBILITY.
- UNDER FREQUENCY PROTECTION.
- P/F COMPENSATED IN PARALLEL OPERATION.
- REGULATION $\pm 0.5\%$
- OPERATIONAL TEMPERATURE 80°C MAX
- M / n VAR/PF CONTROL.
- CT RATIO , GENERATORS AMPS TO ONE.

SPECIFICATIONS**INPUT**

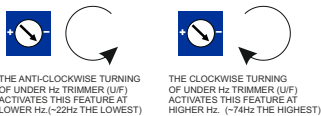
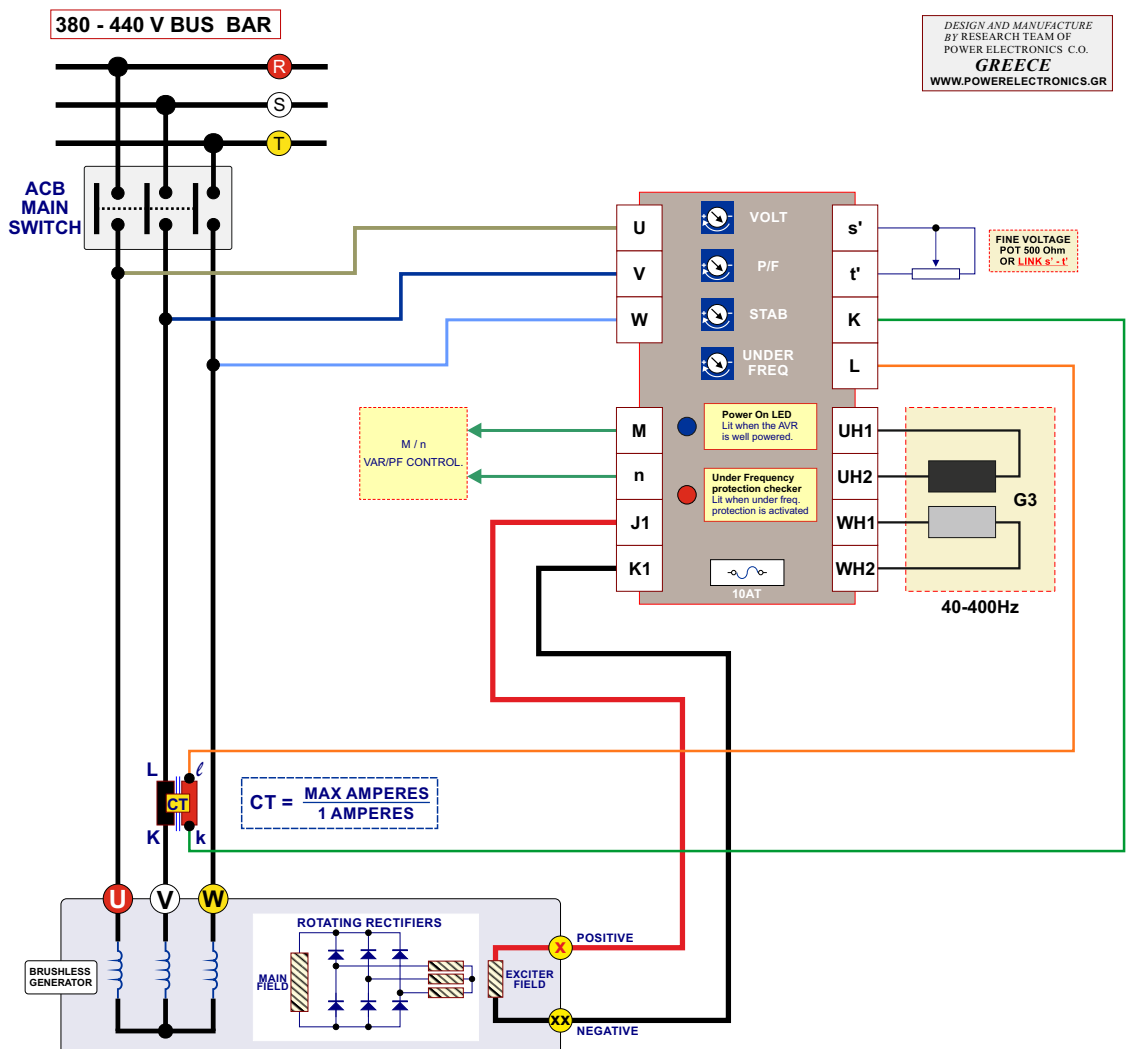
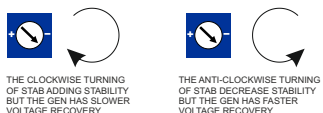
VOLT AC 350-500
PHASE 3 - NO NEUTRAL
G3 FREQUENCY 40 - 400 Hz

OUTPUT

VOLT DC 80% OF G3 AUXILIARY
CURRENT 10A CONTINUOUS
EXC. FIELD OHMS 1 Ohm MINIMUM

IMPORTANT INSTALLATION NOTES

- FOR EXCLUSIVE SINGLE OPERATION THE USE OF "CT" IS **NOT** NECESSARY.
- IN CASE OF USING "CT" CURRENT TRANSFORMER **IT MUST BE TO PHASE V.**
- CONNECT FINE VOLTAGE POT ON PANEL (500 Ohm) **OR ELSE YOU MUST LINK TERMINAL s' - t'.**
- USE MAX 10 AMPERES FUSES.

UNDER FREQUENCY PROTECTION**(PRE-ADJUSTED)****STABILITY**

DESIGN AND MANUFACTURE
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WWW.POWERELECTRONICS.GR

COSIMAT N+ COMPATIBLE

- DESIGNED TO HAVE THE SAME FIT AS ORIGINAL
- AUTOMATIC FLASH
- 50 - 60 Hz COMPATIBILITY.
- UNDER FREQUENCY PROTECTION.
- P/F COMPENSATED IN PARALLEL OPERATION.
- REGULATION +/- 0.5%
- OPERATIONAL TEMPERATURE 80°C MAX
- M / n VAR/PF CONTROL.
- CT RATIO , GENERATORS AMPS TO ONE.

SPECIFICATIONS

INPUT

VOLT AC	350-500
PHASE	3 - NO NEUTRAL
G3 FREQUENCY	40 - 400 Hz

OUTPUT

VOLT DC	80% OF G3 AUXILIARY
CURRENT	10A CONTINUOUS
EXC. FIELD OHMS	1 Ohm MINIMUM

IMPORTANT INSTALLATION NOTES

- FOR EXCLUSIVE SINGLE OPERATION THE USE OF "CT" IS **NOT** NECESSARY.
- IN CASE OF USING "CT" CURRENT TRANSFORMER **IT MUST BE TO PHASE V.**
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UNDER FREQUENCY PROTECTION



THE ANTI-CLOCKWISE TURNING OF UNDER Hz TRIMMER (U/F) ACTIVATES THIS FEATURE AT LOWER Hz (~22Hz THE LOWEST)

THE CLOCKWISE TURNING OF UNDER Hz TRIMMER (U/F) ACTIVATES THIS FEATURE AT HIGHER Hz. (~74Hz THE HIGHEST)

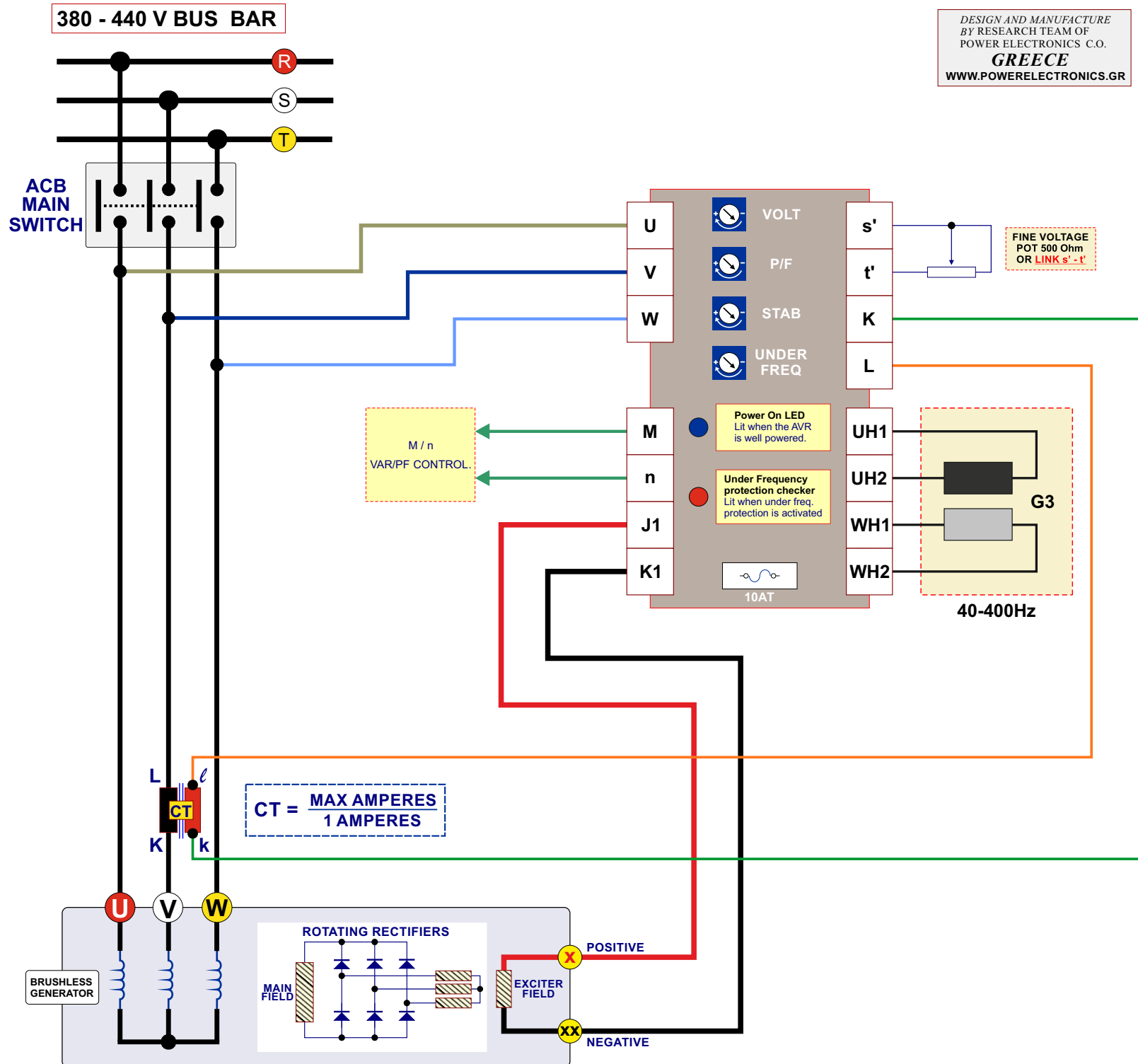
(PRE-ADJUSTED)

STABILITY



THE CLOCKWISE TURNING OF STAB ADDING STABILITY BUT THE GEN HAS SLOWER VOLTAGE RECOVERY.

THE ANTI-CLOCKWISE TURNING OF STAB DECREASE STABILITY BUT THE GEN HAS FASTER VOLTAGE RECOVERY.



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- AUTOMATIC FLASH
- 50 - 60 Hz COMPATIBILITY.
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INPUT

VOLT AC	350-500
PHASE	3 - NO NEUTRAL
G3 FREQUENCY	40 - 400 Hz

VOLT DC	80% OF G3 AUXILIARY
CURRENT	10A CONTINUOUS
EXC. FIELD OHMS	1 Ohm MINIMUM

- FOR EXCLUSIVE SINGLE OPERATION THE USE OF "CT" IS NOT NECESSARY.
- IN CASE OF USING "CT" CURRENT TRANSFORMER IT MUST BE TO PHASE V.
- CONNECT FINE VOLTAGE POT ON PANEL (500 Ohm) OR ELSE YOU MUST LINK TERMINAL s' - t'.
- USE MAX 10 AMPERES FUSES.

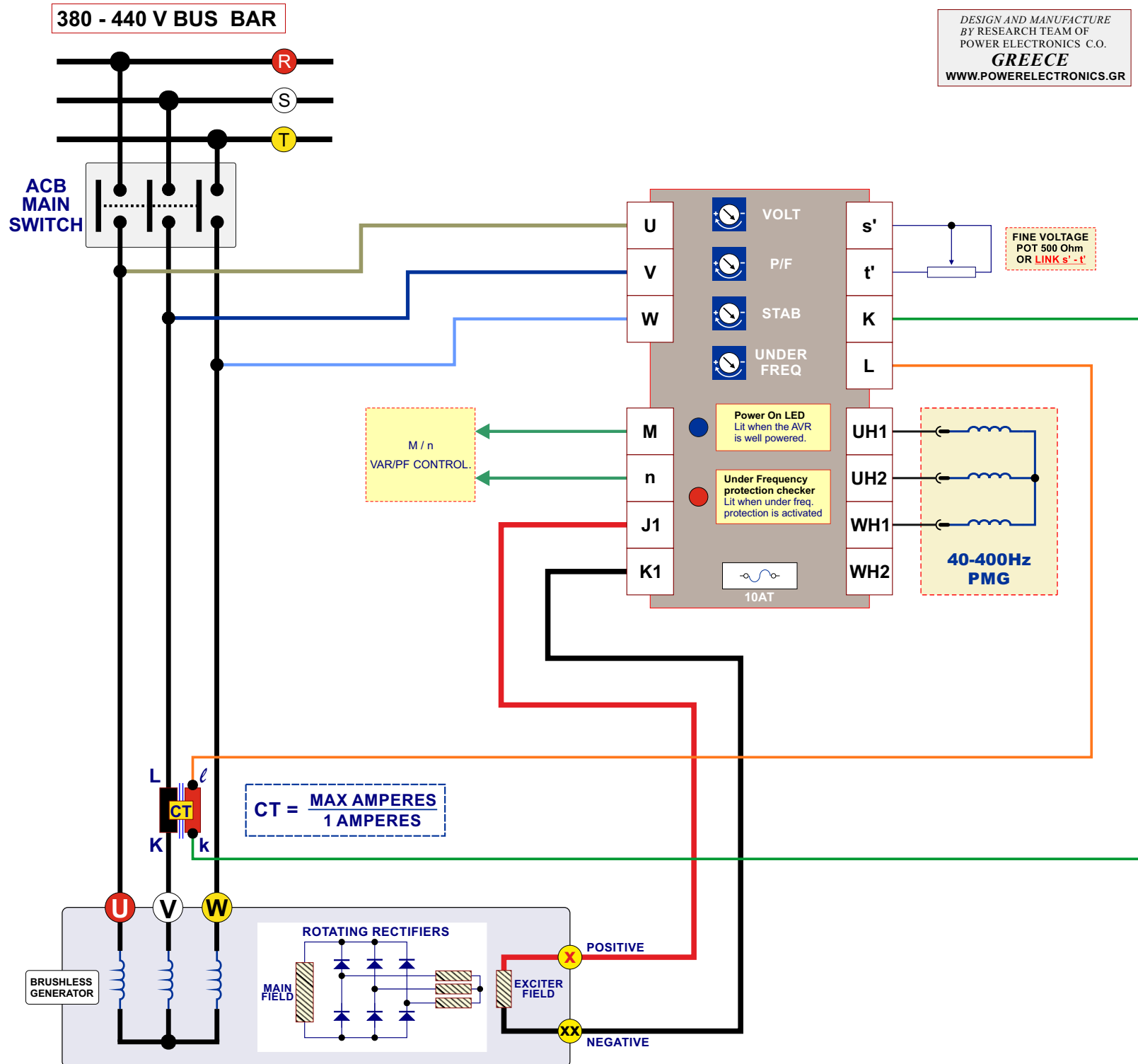
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THE CLOCKWISE TURNING OF STAB ADDING STABILITY BUT THE GEN HAS SLOWER VOLTAGE RECOVERY.

THE ANTI-CLOCKWISE TURNING OF STAB DECREASE STABILITY BUT THE GEN HAS FASTER VOLTAGE RECOVERY.



INSTRUCTIONS TO INSTALLING AND ADJUSTING THE AVR

MODELS: STAMFORD-AVK COSIMAT N+ COMPATIBLE

U/F - Under Frequency Protection. It protects the generator from over-excitation current due to lower engine revs.

To adjusting the U/F trimmer proceed as follows:

The AVR comes with pre-configured **Under frequency** protection. If re-adjusting is to be needed, proceed to the follows:

1. We turn all the way (anti-clockwise) the trimmer **U/F**.
2. We start the engine and set it to normal run (50Hz or 60Hz)
3. We reduce the fuel from the Governor until the periods are 6Hz less than the normal e.g. If the engine is running on 50Hz, then the periods are to be reduced to 44Hz and if the engine is running on 60Hz, then the periods are to be reduced to 54Hz.
4. Turn clockwise the **U/F** trimmer until the **red led** lights up.

Note that the generator voltage will also starts to drop.

After that procedure, we can have brought up speed to the normal levels.

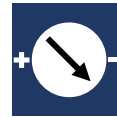
STAB - Stability. It eliminates the voltage fluctuations.

To adjusting the STAB trimmer, proceed as follows:

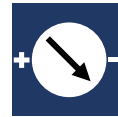
1. Turn anti-clockwise the Stab trimmer all the way (1 turn).
 2. Turn clockwise the STAB trimmer and set it just after the voltage fluctuation stops.
- *Setting the trimmer at a far clockwise position will decrease the generator sensitivity. This may result to extensive voltage recovery time due to the vast self-induction loads.

UNDER FREQ PROTECTION

ONE TURN TRIMMER



THE CLOCKWISE
TURNING OF U/F
TRIMMER ACTIVATES
THIS FEATURE AT
HIGHER Hz.
(~74Hz THE HIGHEST)



THE ANTI-CLOCKWISE
TURNING OF U/F
TRIMMER ACTIVATES
THIS FEATURE AT
LOWER Hz.
(~22Hz THE LOWEST)

(DEFAULT (PRE-ADJUSTED) VALUE FOR 380V: 44 Hz

(DEFAULT (PRE-ADJUSTED) VALUE FOR 440V: 54 Hz

STABILITY

ONE TURN TRIMMER



THE CLOCKWISE
TURNING OF STAB
ADDING STABILITY BUT
THE GEN HAS SLOWER
VOLTAGE RECOVERY.



THE ANTI-CLOCKWISE
TURNING OF STAB
DECREASE STABILITY BUT
THE GEN HAS FASTER
VOLTAGE RECOVERY.

(PRE-ADJUSTED TO THE POSITION YOU SEE HERE)

VOLT - Voltage. Voltage adjustment. It co-operates with the external pot.

To adjusting the VOLT trimmer, proceed as follows:

Since the engine has the right-periods (cycles), then the remote knob is adjusted to the middle position. Then the VOLT trimmer (which is located in the main unit) is adjusted until the right voltage is reached. All the above adjustments i.e. U/F, STAB, VOLT, must be done without any load in the generator, the switch (ACB) must be in OFF position.

P/F - Power Factor. This adjustment is done when the generator is already in parallel with another or others.

To adjusting the P/F trimmer proceed as follows:

We start by placing the trimmer to the middle position.

If turning it anti-clockwise, the amperes of generator build-up in relation to the other generator.

If the trimmer is moved in a clockwise manner, the amperes are reduced in relation to the other or others generators.

BLUE LED

The blue led is a "power on" indication led.

INSTRUCTIONS TO INSTALLING AND ADJUSTING THE AVR

MODELS: STAMFORD-AVK COSIMAT N+ COMPATIBLE

U/F - Under Frequency. Προστατεύει την γεννήτρια από υπερδιέγερση λόγω χαμηλής ταχύτητας περιστροφής .

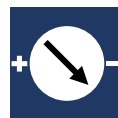
Η ρύθμιση του U/F τρίμερ γίνεται ως εξής :

Το avr έρχεται προρυθμισμένο.Αν απαιτείται επαναρύθμιση, ακολουθήστε τα παρακάτω βήματα:

1. Γυρίζουμε περιστροφικά (anti-clockwise) το τρίμερ **U/F** μέχρι το τέλος της διαδρομής του.
2. Ξεκινάμε την μηχανή και φτάνουμε τις κανονικές στροφές και τάση λειτουργίας.
3. Μειώνουμε με το Governor από τα 50Hz ή 60Hz κατά έξι τις περιόδους στα 44Hz ή 54Hz αντίστοιχα.
4. Γυρίζουμε περιστροφικά (clockwise) το τρίμερ **U/F** μέχρι έως ότου το **κόκκινο led** να ανάψει.
5. Επαναφέρουμε με το Governor τις περιόδους της μηχανής.

UNDER FREQ PROTECTION

TRIMMER ΜΙΑΣ ΣΤΡΟΦΗΣ



Η ΔΕΞΙΟΣΤΡΟΦΗ ΠΕΡΙΣΤΡΟΦΗ ΤΟΥ TRIMMER **U/F** ΕΝΕΡΓΟΠΟΙΕΙ ΑΥΤΗ ΤΗΝ ΛΕΙΤΟΥΡΓΙΑ ΣΕ ΥΨΗΛΟΤΕΡΑ Hz

Η ΑΡΙΣΤΕΡΟΣΤΡΟΦΗ ΠΕΡΙΣΤΡΟΦΗ ΤΟΥ TRIMMER **U/F** ΕΝΕΡΓΟΠΟΙΕΙ ΑΥΤΗ ΤΗΝ ΛΕΙΤΟΥΡΓΙΑ ΣΕ ΧΑΜΗΛΟΤΕΡΑ Hz

ΠΡΟΡΥΘΜΙΣΜΕΝΗ ΛΕΙΤΟΥΡΓΙΑ ΣΤΑ 380V: 44 Hz

ΠΡΟΡΥΘΜΙΣΜΕΝΗ ΛΕΙΤΟΥΡΓΙΑ ΣΤΑ 440V: 54 Hz

STAB - Stability. Σταθεροποιεί την διακύμανση της τάσης.

Η ρύθμιση του STAB τρίμερ γίνεται ως εξής :

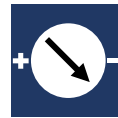
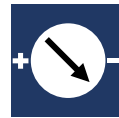
1. Περιστρέφουμε αριστερόστροφα το τρίμερ STAB μέχρι το τέλος της διαδρομής του (1 στροφή).
2. Περιστρέφουμε δεξιόστροφα έως ότου η τάση της γεννήτριας να σταθεροποιηθεί από την ταλάντωση που έχει περιέλθει.

*Αν ρυθμίσουμε το STAB πολύ δεξιόστροφα ,είναι πιθανό η τάση της γεννήτριας να έχει αργή αποκατάσταση μετά από κάθε επιβολή φορτίου.

*Το AVR έρχεται προ-ρυθμισμένο σε μια “γενικής αποδοχής” θέση, (Το βελάκι του τρίμερ να δείχνει ώρα 5).

STABILITY

TRIMMER ΜΙΑΣ ΣΤΡΟΦΗΣ



Η ΔΕΞΙΟΣΤΡΟΦΗ ΠΕΡΙΣΤΡΟΦΗ ΤΟΥ STAB ΕΧΕΙ ΣΑΝ ΑΠΟΤΕΛΕΣΜΑ ΤΗΝ ΠΕΡΙΣΣΟΤΕΡΗ ΣΤΑΘΕΡΟΤΗΤΑ ΤΗΣ ΤΑΣΗΣ ΑΛΛΑ ΚΑΙ ΤΗΝ ΠΙΟ ΑΡΓΗ ΑΠΟΚΑΤΑΣΤΑΣΗ ΤΗΣ ΜΕΤΑ ΑΠΟ ΚΑΘΕ ΕΠΙΒΟΛΗ ΦΟΡΤΙΟΥ

Η ΑΡΙΣΤΕΡΟΣΤΡΟΦΗ ΠΕΡΙΣΤΡΟΦΗ ΤΟΥ STAB ΕΧΕΙ ΣΑΝ ΑΠΟΤΕΛΕΣΜΑ ΛΙΓΟΤΕΡΗ ΣΤΑΘΕΡΟΤΗΤΑ ΤΗΣ ΤΑΣΗΣ ΑΛΛΑ ΚΑΙ ΤΗΝ ΠΙΟ ΓΡΗΓΟΡΗ ΑΠΟΚΑΤΑΣΤΑΣΗ ΤΗΣ ΜΕΤΑ ΑΠΟ ΚΑΘΕ ΕΠΙΒΟΛΗ ΦΟΡΤΙΟΥ

ΠΡΟΡΥΘΜΙΣΜΕΝΗ ΘΕΣΗ ΤΟ ΒΕΛΑΟΣ ΝΑ “ΔΕΙΧΝΕΙ” 5

VOLT - Voltage. Η ρύθμιση της τάσεως. Συνεργάζεται με τον εξωτερικό ρυθμιστή.

Η ρύθμιση του VOLT τρίμερ γίνεται ως εξής :

Εφόσον η μηχανή έχει σωστές περιόδους περιστρέφουμε τον εξωτερικό ροοστάτη στη μέση της διαδρομής του και ρυθμίζουμε από το τρίμερ VOLT (του AVR) την σωστή τάση της γεννήτριας. Απαραίτητη προϋπόθεση , η γεννήτρια να βρίσκεται εκτός φορτίου. Δηλαδή ο διακόπτης (ACB) να είναι OFF.

P/F - Power Factor. Αυτή η ρύθμιση γίνεται όταν πλέον η γεννήτρια είναι παραλληλισμένη με άλλη.

Η ρύθμιση του P/F τρίμερ γίνεται ως εξής :

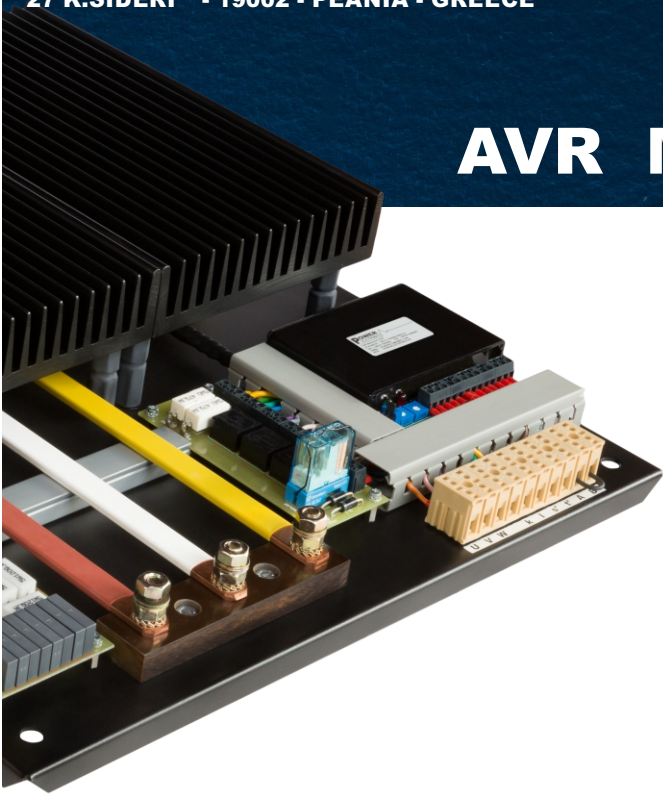
Ξεκινώντας από την μέση και στρίβοντας αριστερόστροφα (anti-clockwise) τα αμπερ της γεννήτριας ανεβαίνουν σε σχέση με την άλλη. Δεξιόστροφα (clockwise) συμβαίνει το αντίθετο , τα αμπερ της γεννήτριας χαμηλώνουν σε σχέση με την άλλη ή τις άλλες γεννήτριες.

ΜΠΛΕ LED

Το μπλε led είναι ενδεικτικό . Όταν ανάβει δηλώνει ότι το AVR παίρνει τροφοδοσία.



AVR MANUFACTURER



POWER ELECTRONICS is a market leader in professional grade marine Automatic Voltage Regulators. Our company operates since 1985 and deals exclusively with AVRs for ships power generators of all types and power supply capacities.

Our products design philosophy is the bolt on-philosophy. Very easy to understand customized schematics and instructions are provided in both English and Greek languages with every piece of equipment which helps technicians in completing their tasks quickly and easily without expertise. Apart from the **POWER ELECTRONICS** product line we offer many replacement models such as **6GA-2491** or **EXU-61A**, that are 100% compatible in both connectivity as well as fitting / mounting. The main difference lies in a completely different inner design from the original being much more improved in every aspect. **Everything works just better.**

With **POWER ELECTRONICS AVR** any kind of generator can be in parallel with any kind of generator. With **POWER ELECTRONICS AVR** all the generators act as one. Period.

Life cycle of our products exceed expectations.

AVR systems installed on power generators more than 20 years ago continue to work perfectly until now.

The construction is extra rugged and solid.

All of our products are built to last, as long as possible.

None of our AVR design, no matter the provided power, has any need for active air cooling.

This is possible because of our sophisticated high efficiency design.

POWER ELECTRONICS AVR is designed with extended use of high precision industrial-grade analogue integrated circuits that provide excellent performance even at extremely high ambient temperatures, which could reach 80 degrees Celsius.

Digital integrated circuits present serious malfunctions at ambient temperatures of only 50 degrees Celsius. This is a "starting" temperature in the ship's engine room. This is the reason behind the usage of extended analogue integrated circuits versus digital integrated circuits.

Workmanship of the most advanced models embody a pioneering technique of self-controlling system. This self-controlling system checks for:

1. Correct phase sequence on U, V, W, terminals.
2. Proper polarity on current transformer's terminals.
3. Correct phase identity at U, V, W, terminals.

Our goal at **POWER ELECTRONICS** is to provide top-quality products that meet and exceed your expectations and for that and we are proud to introduce a **15 YEARS WARRANTY** for our finest and most high-end products.