

## DIGITAL AUTOMATIC VOLTAGE REGULATOR DR-30

The DR-30 digital automatic voltage regulator is made with state-of-the-art electronic components which permit to obtain, with reduced dimensions, all needed functions to control any type of alternator.

The main features of this digital regulator are the following:

- Voltage static error within the limit of  $\pm 0.25\%$  on RMS value (on the average voltages connected to the sensing input with linear load and frequency  $\pm 4\%$ )
- Wide stability control regulation to guarantee the most suitable dynamic response to any possible situation (depending on the type of drive engine and on the size of the alternator)
- 3-phase or 1-phase voltage sensing available (3-ph sensing is very important when the generator is used with unbalanced loads)
- Totally made with digital technology and IGBT output stage
- Basic setting through dip switches
- Advanced setting through PC software, Bluetooth, mobile App
- External Voltage Adjustment through a remote trimmer or an external DC signal
- C.T. input port ( $0 \div 5$  A)
- Opto-isolated alarm output port

### TECHNICAL SPECIFICATIONS

- Feeding Voltage: **80Vac ÷ 280Vac**
- Maximum Exciter Field current: **10Adc**
- Permanent Exciter Field current: **8Adc**
- Sensing Voltage: **80Vac ÷ 480Vac**
- Output Voltage gross adjustment through on-circuit Dip Switch
- Output Voltage fine adjustment through on-circuit multi-turn Trimmer
- Stability setting-up through on-circuit Dip Switch & programmable parameters
- Under-Frequency threshold & V/F slope setting-up through programmable parameters
- Over-Excitation threshold setting-up through programmable parameters
- 50Hz or 60Hz operation

- 0 ÷ 5 Vdc input port to control alternator output voltage, able to work with parallel governors
- External trimmer input port (>10kΩ) to control alternator output voltage

## CONDITIONS OF USE

- Operating Temperature range: -25°C / +85°C
- Storage Temperature range: -40°C / +85°C

## BASIC OPERATION SETTINGS via DIP SWITCHES

All basic settings are made though Dip Switches:

- Rated voltage (400Vac or 230Vac or 115Vac) – Dip Switch 1 & 2  
Pre-set value: 400Vac / 50Hz L-L output voltage on a 12-wire generator
- Sensing Voltage (single-phase or three-phase) – Dip Switch 3  
Pre-set value: 115Vac / 50Hz sensing voltage
- Rated frequency (50Hz or 60Hz) – Dip Switch 4  
Pre-set value: 50Hz
- Stability control, to prevent voltage hunting – Dip Switches 5 – 6 – 7 – 8 – 9  
Pre-set value: slow dynamic response
- Voltage adjustment – Dip Switch 11 & Trimmer adjustment
- Internal or external trimmer for voltage adjustment – Dip Switch 12

## ADVANCED SETTINGS via PC SOFTWARE

A PC software allows you to change some other settings which affect the AVR operation, like:

- excitation current (pre-set value is 3A)
- voltage adjustment trimmer range (pre-set value is 10%)
- start-up time (pre-set value is 20s)
- UP frequency (pre-set value is -3Hz):  
This is the value at which the AVR starts controlling the output voltage
- UP frequency hysteresis (pre-set value is 0.5Hz):

This is the value from which the AVR starts limiting the output voltage and following the start-up ramp, if the generator frequency is decreasing

- LOW ramp frequency (pre-set value is 25Hz):

This is the value from which the AVR switches from “feedback” mode to “ramp” mode, during which the reference voltage is increased following a V/F shape

- external C.T. gain (pre-set value is 1):

If a current transformer is connected to the AVR to measure the generator output current, you can set its ratio (primary to secondary current)

- PID controller setting

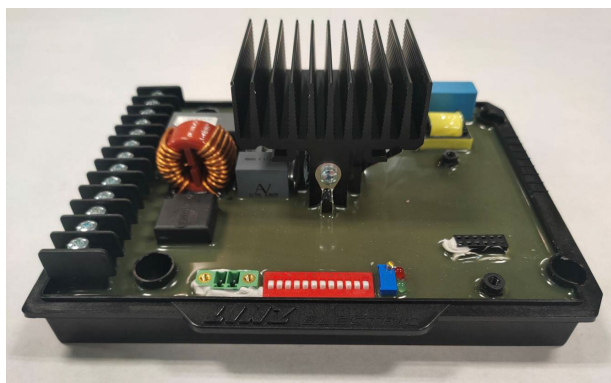
## PROTECTIONS SETTINGS via PC SOFTWARE

The PC software also allows you to set some protections implemented in the AVR, like:

- short-circuit timer (maximum time the AVR can work with a sensing voltage lower than the rated value)
- over-excitation (excitation current higher than a pre-set value)
- under-excitation (excitation current lower than a pre-set value)
- generator over-voltage (sensing voltage higher than a pre-set value)
- loss of sensing voltage (sensing voltage lower than a pre-set value)

## SIGNALLING LED's

There are two signalling LED's in the DR-30 regulator, for different status indications.



## DR-30 TERMINAL BOARD

**F-** (Exciter Field negative connector)

**F+** (Exciter Field positive connector)

**Aux 1** (Auxiliary Winding connector)

**Earth** (System Earth connector)

**Aux 2** (Auxiliary Winding connector)

**V<sub>R</sub>** (connector to phase R of sensing voltage)

**V<sub>S</sub>** (connector to phase S of sensing voltage)

**V<sub>T</sub>** (connector to phase T of sensing voltage)

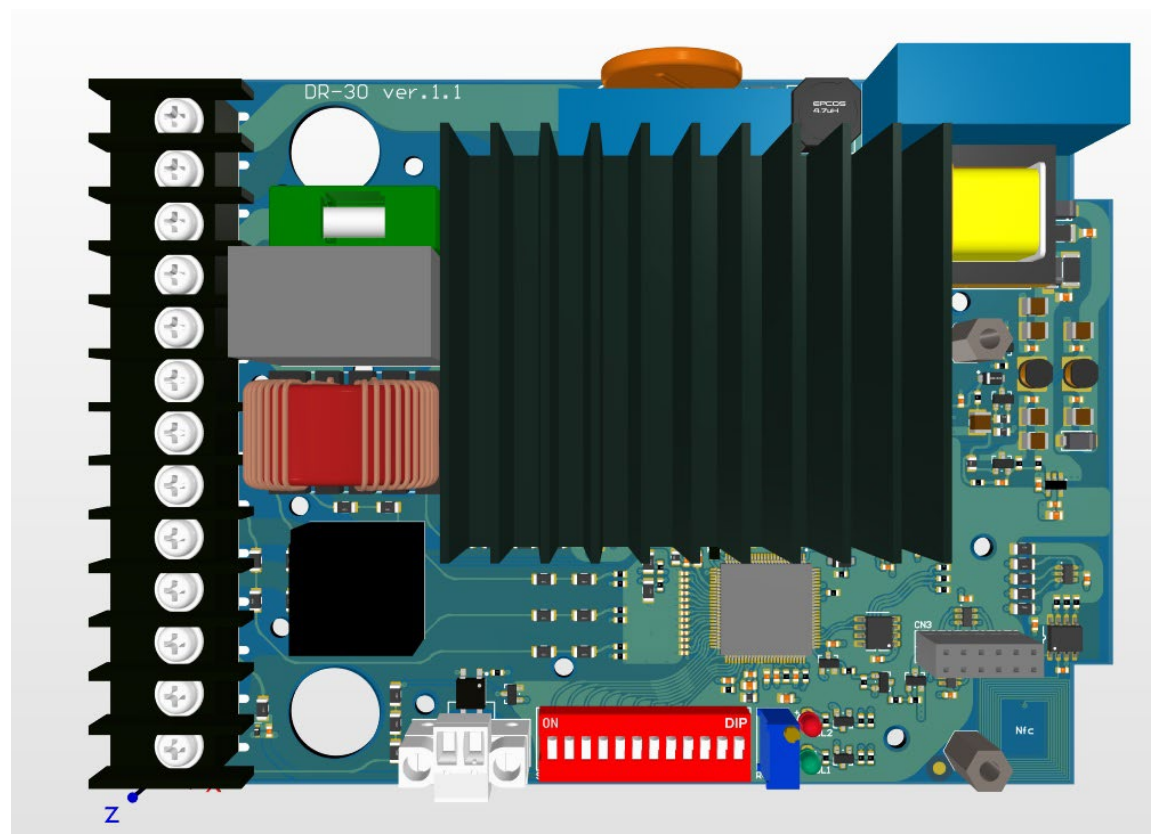
**I** (connector to CT for current measuring – 5A max)

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**+5V**

**An** (special connector for 0÷5V analogue input or ext. pot.)

**GND** (Ground connector)



*We reserve the right to modify technical specifications without notice*

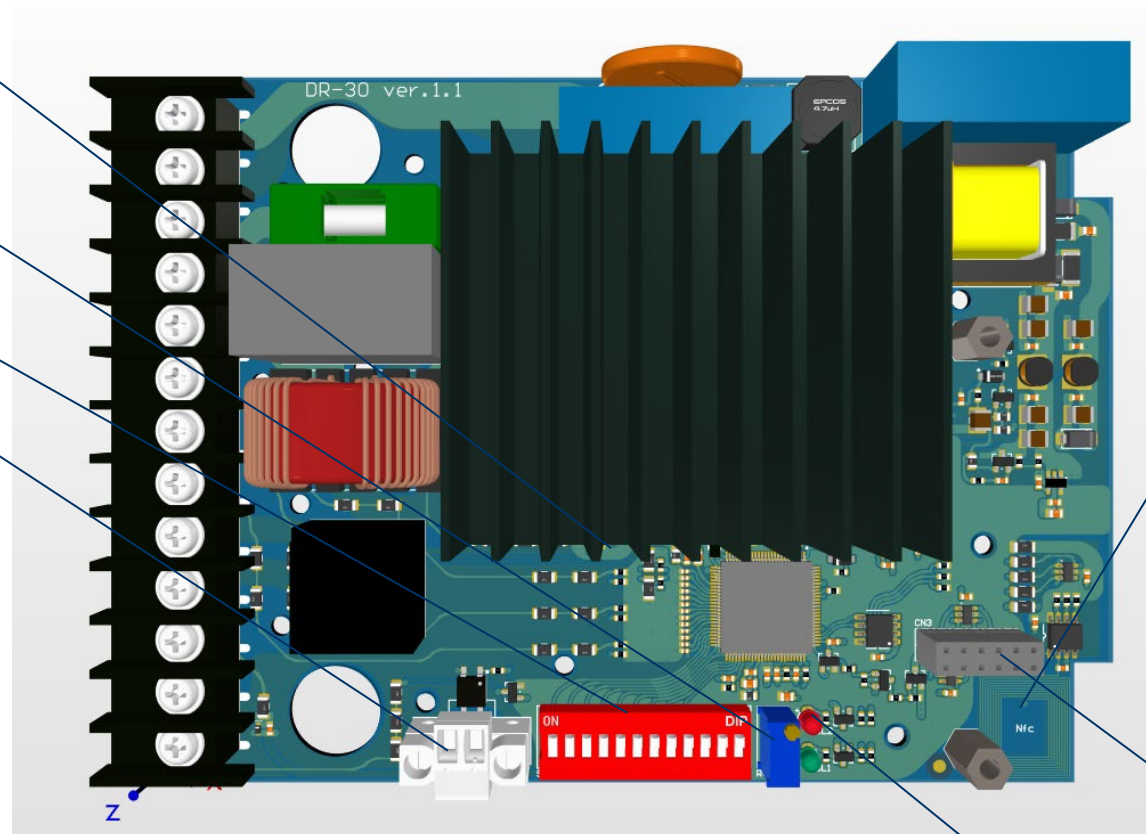
## DR-30 MAIN COMPONENTS

Ntc (Temperature Probe)

Potentiometer

DIP Switches

Warning



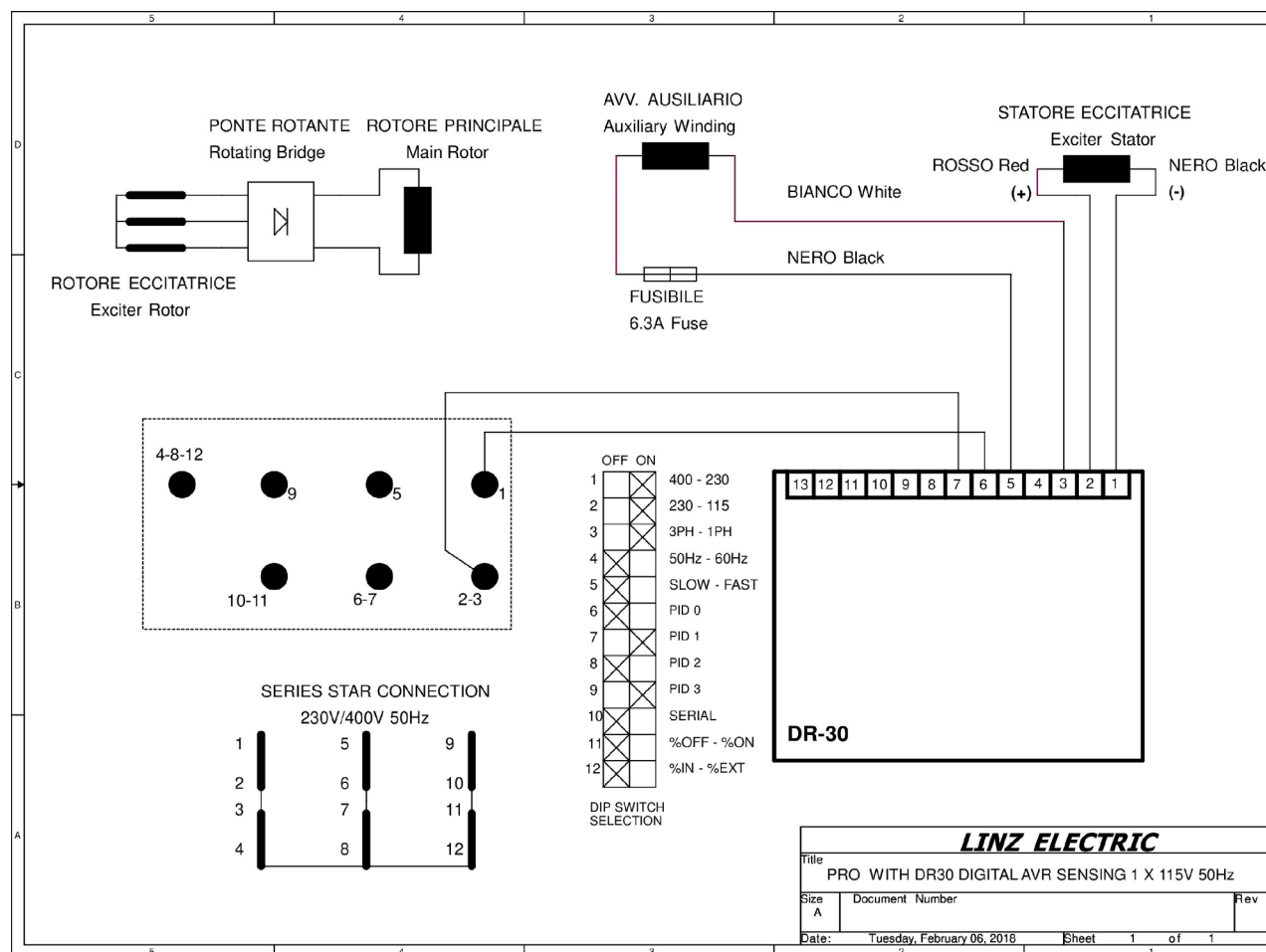
Rfid Antenna

Exp. Connector

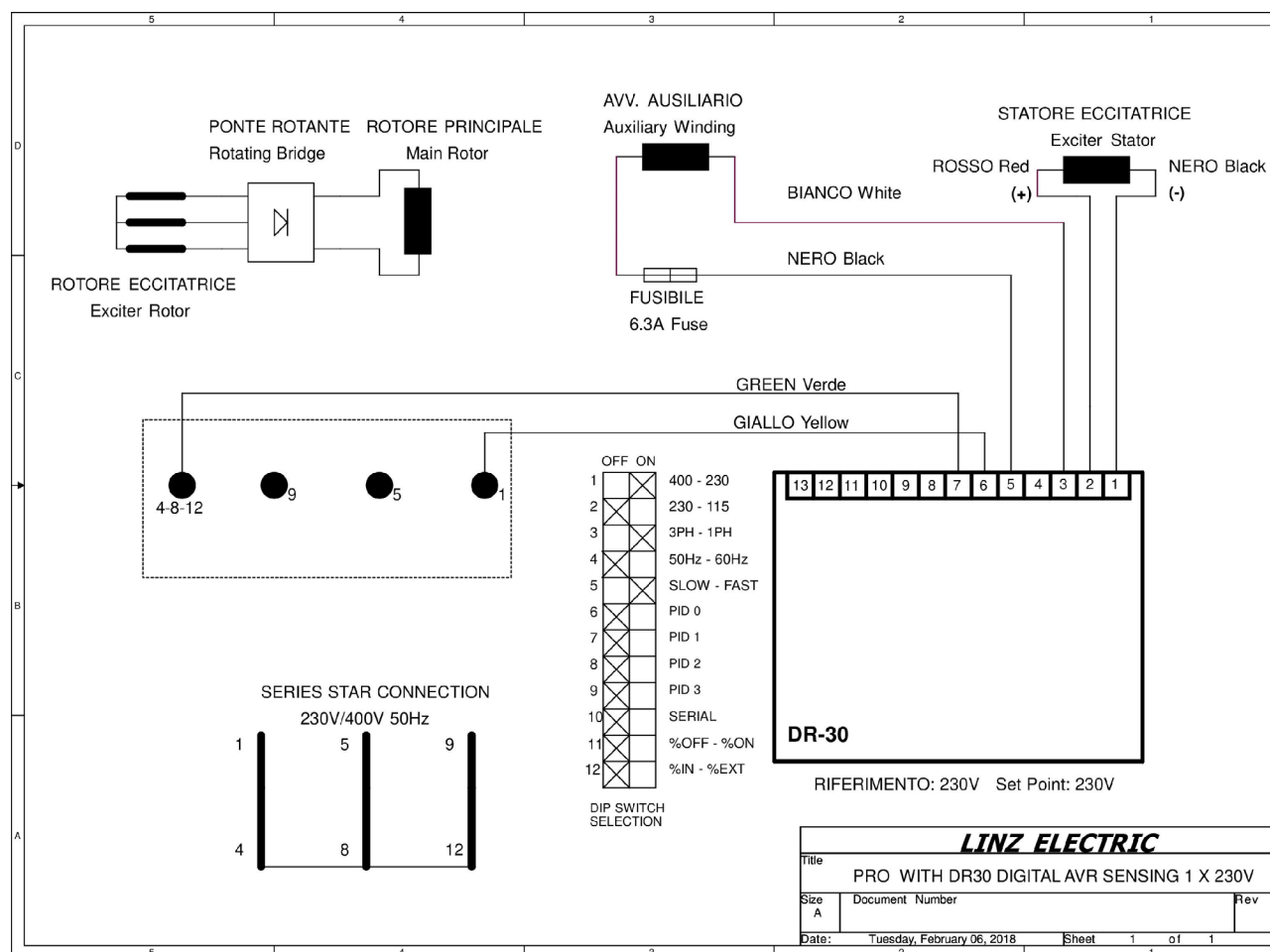
LED's

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## DR-30 WIRING DIAGRAMS



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