

1.4 - Technical Specifications

The following items describe the technical characteristics of the GRMP03-1 regulator.

1.4.1 - General

<i>Analog Inputs (optional):</i>	One 4-20 mA input, or 0-10V or +/-9V, according to the client specifications, for external adjustment of the reference voltage.
<i>Digital Inputs:</i>	8 Optocoupler isolated inputs with the following functions: • Enables regulator; • Parallel operation; • Alarms reset; • Increase the reference; • Decrease the reference; • Automatic or manual mode; • Remote or local mode operation; • Enables the rotating diode failure protection.
<i>Outputs to relay (Dry contacts):</i>	05 Operation indicator relays: • Field flashing; • Rotating diode failure; • Parallel operation; • Regulator enabled; • Excitation current limit actuated. 10 indicating relays (alarms and protection): • Rotating diode failure; • Under excitation; • Over excitation; • Output overvoltage of the generator; • Excessive field flashing; • Phase fault; • Sensing fault; • Acquisition fail (acquisition card); • Under frequency; • General protection (fails summary);
<i>Output relay rupture capacity:</i>	8A / 250Vac
<i>Communication:</i>	ModBus (RTU) RS485, 9600bps, 8bits, no parity (8N1), one <i>stop-bit</i> .
<i>External current transformers (CTs):</i>	Three can be used (one per phase) or only one (single phase), with the transformation ratio configurable through the HMI, and 5A secondary. As an option, 1A secondary can be used.
<i>External potential transformers (PTs):</i>	3 external PTs. Transformation ratio of the rated voltage of the generator to 115V (Vp/115V). Type Y-Y.

Table 1.4.1.1 - General specifications

1.4.2 - Power Supply Source

<i>Rated voltage options for DC power supply:</i>	• 24Vdc; • 125Vdc; • 220Vdc.
<i>Rated voltage option for AC power supply:</i>	• 110Vac; • 220Vac.
<i>Maximum consumed power:</i>	150W (considered in the project of the power supply point).
<i>Typical power consumption:</i>	50W.

Table 1.4.2.1 - Power supply source**1.4.3 - Current Inputs**

<i>Rated current:</i>	5A.
<i>CT primary specification:</i>	10A to 10000A.
<i>CT secondary specification:</i>	5A or 1A (optional).
<i>Conversion range:</i>	0,05 to 1,57 X the CT rated current.
<i>Measuring accuracy:</i>	5% in range of operation.
<i>Maximum power consumption:</i>	100mW.

Table 1.4.3.1 - Current inputs**1.4.4 - Voltage Inputs**

<i>Rated voltage:</i>	115V (phase-phase).
<i>PT primary specification:</i>	110A to 15000Vac (phase-phase).
<i>PT secondary specification:</i>	115Vca (phase-phase).
<i>Conversion range:</i>	0,05 to 2,32 times the PT rated voltage.
<i>PT accuracy:</i>	1% in range of operation.
<i>Maximum power consumption:</i>	3VA per phase.
<i>Maximum voltage allowed:</i>	230 Vac (phase-neutral).

Table 1.4.4.1 - Voltage inputs**1.4.5 - Rectifier Factor**

<i>Supply voltage:</i>	As label of identification selted in the body of the regulator.
<i>Rectifier gain ratio:</i>	1,352
<i>Output voltage:</i>	1,352 x supply voltage.

Table 1.4.5.1 - Rectifier Factor

1.4.6 - Dynamic Characteristics

<i>Static regulation:</i>	Less than 0,5%.
<i>Control response time:</i>	Half period of the output frequency of the generator. (Ex.: 60Hz => 8ms).
<i>Droop adjustment for parallel operation:</i>	0 a 25%.
<i>U/F Operation:</i>	40Hz to 60Hz (adjustable).
<i>Drop adjustment Volt/Hertz:</i>	From 0 to 250V/Hz.
<i>Minimum frequency for U/F drop actuation:</i>	40Hz.
<i>Minimum frequency for adjustment of the under frequency protection:</i>	40Hz.
<i>External voltage adjustment:</i>	Through push-buttons at the digital inputs, through external communication by serial port or analog input (optional).
<i>Voltage reading resolution:</i>	1 V.
<i>Current reading resolution:</i>	1A.
<i>Frequency reading resolution:</i>	0,1Hz.
<i>Power factor reading resolution:</i>	0,01.
<i>Thermal stability:</i>	0,5%.

Table 1.4.6.1 - Dynamic characteristics**1.4.7 - Signal Measurement Tolerances**

<i>Generator output voltage:</i>	< 1% for 25°C to 50°C variation.
<i>Generator output current:</i>	< 5% for 25°C to 50°C variation.
<i>Field voltage:</i>	< 3% for 25°C to 50°C variation.
<i>Field current:</i>	< 3% for 25°C to 50°C variation.
<i>Power factor (cos Φ):</i>	< 3° for 25°C to 50°C variation.
<i>Frequency:</i>	< 0,2% for 25°C to 50°C variation.

Table 1.4.7.1 - Signal measurement tolerances**1.4.8 - Mechanical Characteristics**

<i>Weight ¹:</i>	7,0kg.
<i>Dimensions:</i>	250mm x 485mm x 355mm.
<i>Connectors type:</i>	Quick connect / disconnect.

Table 1.4.8.1 - Mechanical characteristics¹ Without the power module.