2 - Specifications

VOLTAGE

Three DC and AC Ranges:

- 150, 300, and 600 Volts DC and Volts rms.

Remote Voltage Sensing:

- Differential input - 110 dB CMRR.
- Maximum of 30 Volts peak, volts low terminal to amps output terminal.

CURRENT

Three DC and AC Ranges:

- 5, 25 and 100 Amps DC and Amps rms.

METER IMPEDANCE

Voltage, DC or AC:

- 3 Megohm load on each voltage range.

Current, DC or AC Ranges:

- 0.016 Ohm shunt resistance for 5 Amp range.
- 0.003 Ohm shunt resistance for 25 Amp ranges.
- 0.001 Ohm shunt resistance for 100 Amp range.

RESOLUTION

Processing resolution is 16 binary bits.

Voltage Display Resolution:

- All ranges $\leq$ 9.999 V is ± 0.001 Volt.
- Ranges $\geq$ 10 V and $\leq$ 99.9 V is ± 0.01 Volt.
- Ranges $\geq$ 100 V is ± 0.1 Volt.

Current Display Resolution:

- All ranges $\leq$ 9.999 A is ± 0.001 Amp.
- Ranges $\geq$ 10 A and $\leq$ 50 A is ± 0.01 Amp.

Power Display Resolution:

- Better than 0.015 % of the product of the active Voltage and Amperes ranges.

GPIB: Amps, Volts and Watts

- Same as display resolution.

ISOLATION

1500 Vrms break down from input circuit to chassis (ground).

DISPLAY AUTO ZERO

When the A and V display indication is less than 0.5 % of range, the displayed value is set to ZERO. Refer to *Section 5 - CT/PT Installation* to disable the AUTO ZERO function.

ANALOG OUTPUTS

This is an optional feature.

Analog AMPS, VOLTS and WATTS output signals are DC proportional signals of 5.00 volts at full scale, for each AMPS, VOLTS and WATTS range. Ripple is less than 5 millivolts. The outputs are low impedance operational amplifiers <1 Ohm and <4 milliamperes current capacity. Each monitor signal and the common are electrically isolated from the monitored circuits. Isolation voltage is 750 Volts continuous and 2500 Volts test breakdown. Leakage current is less than 0.3 micro Amps at 240 Vrms, 60 Hz. Vrms

DATA ACQUISITION

ANALOG

The conversion of true rms to DC is expressed as:

$$V_{rms} \equiv \sqrt{\frac{1}{T}\int_0^T v^2(t)\ dt}$$

- Rms to DC conversion averaging time constant:
  Volts and Amps time constant TC ≅ 60 msec.
  Watts time constant TC ≅ 120 msec.
  Watts = V × I × cos θ (instantaneous)

DIGITAL

- Processing:
  Integration period = 0.10 second.
  Display update time = 2 readings per second.
- IEEE-488 (GPIB):
  Synchronized = 0.1 sec. per reading
  Non-synchronized is 0.04 to 0.07 sec per reading.

MEASUREMENT ACCURACY

Specified test conditions: Ambient temperature of 72° ± 10°F and power factor of 0.1 to 1.0, lead or lag.

VOLTAGE - DC	± (0.1% of reading + 0.2% of range)
VOLTAGE - AC:	
10 Hz to < 20 Hz	± 1.0% of range
20 Hz to < 45 Hz	± (0.2% of reading + 0.3% of range)
45 Hz to < 10 kHz	± (0.1% of reading + 0.2% of range)
10 kHz to 20 kHz	± (0.2% of reading + 0.5% of range)
CURRENT - DC	**25 and 100 Amp Ranges**
	± (0.1% of reading + 0.2% of range)
CURRENT - AC:	**5 Amp Range**
10 Hz to < 20 Hz	± 1.0% of range
20 Hz to < 45 Hz	± (0.2% of reading + 0.3% of range)
45 Hz to < 1 kHz	± (0.1% of reading + 0.2% of range)
1 kHz to < 5 kHz	± (0.2% of reading + 0.3% of range)
5 kHz to < 10 kHz	± (1.0% of reading + 1.0% of range)
10 kHz to 20 kHz	± (2.0% of reading + 2.0% of range)
	25 Amp Range
10 Hz to < 5 kHz	same as 5 Amp range
5 kHz to 10 kHz	± (2.0% of reading + 2.0% of range)
	100 Amp Range
10 Hz to < 1 kHz	± 0.5% of rng
1 kHz to 2 kHz	± (2.0% of reading + 2.0% of range)
POWER - DC	± (0.1% of reading + 0.2% of VA range)
POWER - AC	± [(0.1% of reading + 0.2% of (Amps range × Volts range)]
POWER FACTOR	± (VA error ± W error)
CREST FACTOR	Exceeds 3:1 (at 50% of range full scale)
TEMPERATURE COEFFICIENT	± 0.01% of range per deg. C maximum
DISPLAY	Digital display error ± 1 LSB.

ACCURACY CERTIFICATION

All instruments are shipped with a Certificate of Calibration from Magtrol Inc. Magtrol policies and procedures comply with MIL-STD-45662A. Measurement standards are traceable to the National Institute of Standards and Technology (NIST).

Instrument calibration every six calendar months is necessary to maintain full compliance with all specifications. If a one year calibration cycle is used, all accuracy specifications are reduced by 0.1%. After one calendar year, the instrument is considered to be out of calibration.