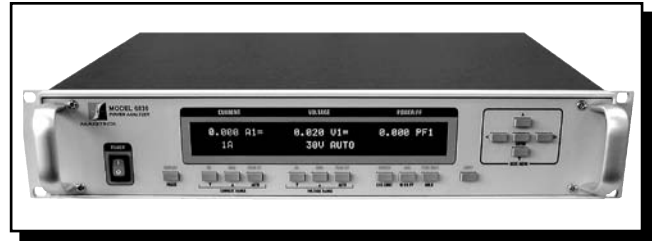


# Models 6510e and 6530 Power Analyzers

## FEATURES

- **Single/Three-Phase Capabilities:** For single (6510e) or three-phase (6530) power measurements
- **Ranges:** Up to 600 V<sub>rms</sub> @ 20 A continuous duty
- **Interfaces:** RS-232 & IEEE-488
- **Data Transfer Rates:** Up to 100 per second
- **Accuracy:** Up to 0.1%
- **Vacuum Fluorescent Display:** High-quality, easy-to-read, customizable readout displays volts, amps, power and power factor
- **Measurement:** Continuous or cycle-by-cycle
- **Bandwidth:** DC up to 100 kHz
- **Input Power:** Accepts 120/240 V<sub>rms</sub>, 60/50 Hz power at 20 VA max
- **Auto Ranging:** Automatically scales instrument for most accurate range
- **Isolation:** 1000 V<sub>rms</sub> to earth, 750 V<sub>rms</sub> line-to-line
- **Average:** Displays running average of amps, volts and watts
- **Peak Hold:** Stores the highest value read. Values can include amps, watts and volts in any combination
- **Analog Outputs:** Plug-in module provides 12 channels of analog output corresponding to volts, amps and watts
- **External Shunt Input**
- **Calibration Certificate:** NIST Traceable
- **Rack Mounting:** 19" (482.6 mm) with handles



## DESCRIPTION

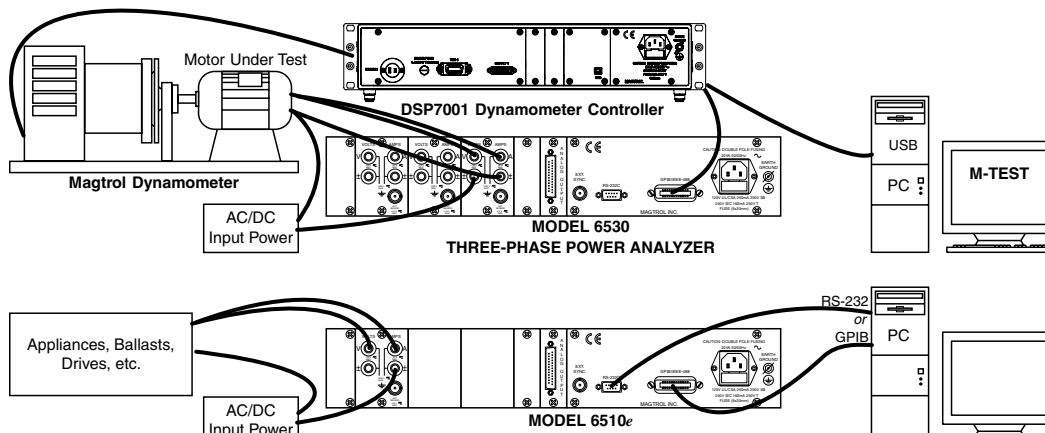
The Magtrol 6510e and 6530 Power Analyzers are easy-to-use instruments ideal for numerous power measurement applications. From DC to 100 kHz AC, the 6510e/6530 measures volts, amps, watts, volt-amps, frequency, crest factor, V<sub>peak</sub>, A<sub>peak</sub> and power factor in one convenient display. They may be used either as stand-alone instruments or in conjunction with any Magtrol Hysteresis, Eddy-Current or Powder Brake Dynamometer; any Magtrol Dynamometer Controller and M-TEST Software for more demanding motor test applications.

## APPLICATIONS

- Motors and Drives
- Lighting Fixtures/Ballasts
- Office Equipment
- Household Appliances
- Power Tools
- HVAC Equipment
- Calibration of Test and Measuring Instruments
- Switching Power Supplies
- Power Inverters
- Transformers

The 6510e's/6530's data transfer rate makes it ideal for both static and dynamic tests.

## SYSTEM CONFIGURATIONS

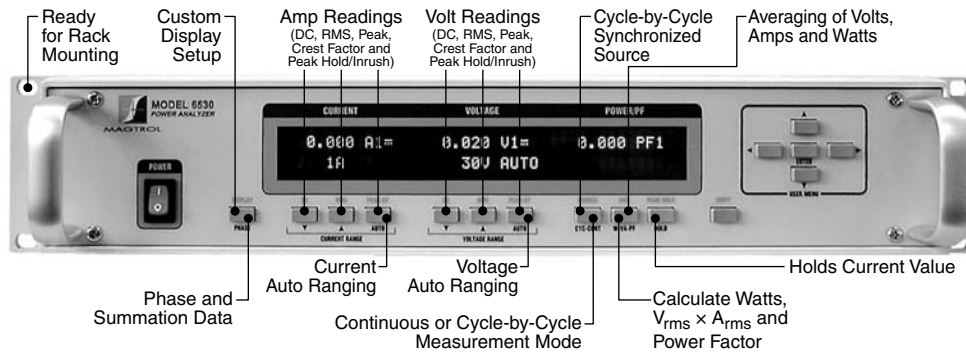


	VOLTAGE INPUT	CURRENT INPUT	EXTERNAL SENSOR INPUT	POWER
<b>Ranges</b>	30 V, 150 V, 300 V, 600 V	1 A, 5 A, 10 A, 20 A	50 mV, 250 mV, 500 mV, 1 V	---
<b>Maximum Voltage</b>	750 V AC/DC terminal (V) to terminal ( $\pm$ ) and 1000 V AC/DC terminal to earth ground	1000 V AC/DC terminal to ground	$\pm 1$ V AC/DC	---
<b>Crest Factor</b>	1.7 @ full scale input	2.7 @ full scale input	2.4 @ full scale input	---
<b>Impedance</b>	2 m $\Omega$	12 m $\Omega$	17 K $\Omega$	---
<b>Display Range</b>	5 digits with 1 mV resolution	5 digits with 1 mA resolution	5 digits with 1 $\mu$ V resolution	5 digits with 1 mW resolution
ACCURACY				
<b>DC</b>	$\pm(0.1\% \text{ Reading} + 0.2\% \text{ Range})$			0.4% of VA range
<b>5 Hz – 500 Hz</b>	$\pm(0.1\% \text{ Reading} + 0.1\% \text{ Range})$			0.2% of VA range
<b>500 Hz – 10 kHz</b>	$\pm((0.015 \times F(\text{kHz})\% \text{ Reading}) + 0.3\% \text{ Range})$			0.6% of VA range
<b>10 kHz – 100 kHz</b>	$\pm((0.015 \times F(\text{kHz})\% \text{ Reading}) + 0.3\% \text{ Range})$			0.6% + (0.03% $\times$ F(kHz)% of VA range)
<b>&gt; 100 kHz</b>	N/A (measurement band limited to DC–100 kHz)			

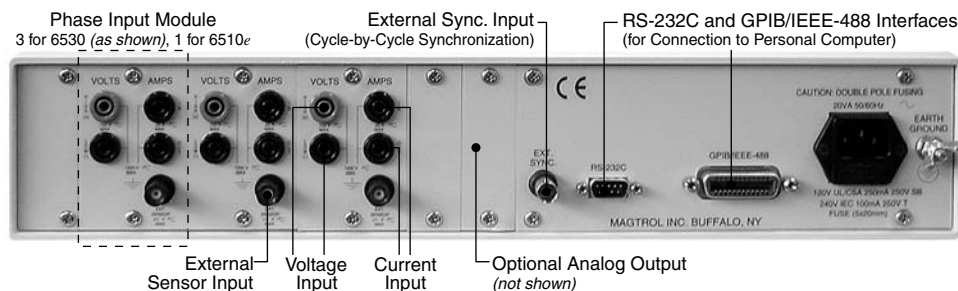
FREQUENCY	
<b>Source</b>	V <sub>1</sub> , A <sub>1</sub> , V <sub>2</sub> , A <sub>2</sub> , V <sub>3</sub> , A <sub>3</sub> , LINE or EXT (For V <sub>x</sub> and A <sub>x</sub> , source input must be >10% of range setting)
<b>Accuracy</b>	20 Hz to 500 Hz; 0.05%
<b>EXT. Input</b>	BNC non-isolated, earth ground referenced
<b>Input Impedance</b>	100 k $\Omega$
<b>Voltage Level</b>	TTL / CMOS
<b>Maximum Voltage</b>	50 V

DIMENSIONS		
<b>Width</b>	19.0 in	483 mm
<b>Height</b>	3.5 in	89 mm
<b>Depth with handles</b>	12.4 in	315 mm
<b>Weight</b>	12.97 lb	5.88 kg

## FRONT PANEL



## REAR PANEL



## ANALOG OUTPUT OPTION

The Analog Output is a plug-in module designed specifically for use with the 6510e Single-Phase Power Analyzer and 6530 Three-Phase Power Analyzer. It provides up to 12 outputs (3 for the 6510e, 12 for the 6530) for analog output corresponding to volts, amps and watts. Each output is capable of, and calibrated to,  $\pm 10$  volts. With the analog output option, the user may apply a scale factor to all outputs. Amps scaling is applied to all amp outputs, volts scaling is applied to all volt outputs and watts scaling is applied to all watt outputs.

Other features include:

- Simple Installation: Plug-in module automatically configures power analyzer for operation
- Frequent Output Updates: Updates every 5 milliseconds
- Output Short Protected
- Factory Calibrated: Calibration data/values stored on board (EEPROM)
- Industry Standard 25-Pin Connection

The Analog Output can be used along with a 6510e or 6530 Power Analyzer to output information to a strip recorder or interface with a data acquisition system. The Analog Output is also used as a safety feature to help trigger alarm events.

SPECIFICATIONS	
Resolution	14 bits
Temperature Coefficient	4 ppm FSR/°C (typical), 20 ppm FSR/°C (maximum)
Output Range	$\pm 10$ V maximum
Number of Outputs	3 (6510e) 12 (6530)
Basic Accuracy	3 least significant bits
Output Update Rate (all channels)	200 samples/second (5 ms)

## ORDERING INFORMATION

6510e	Single-Phase Power Analyzer
6510e-01	Single-Phase Power Analyzer with Analog Output Option
6530	Three-Phase Power Analyzer
6530-01	Three-Phase Power Analyzer with Analog Output Option

## EXTERNAL SHUNTS/SENSORS

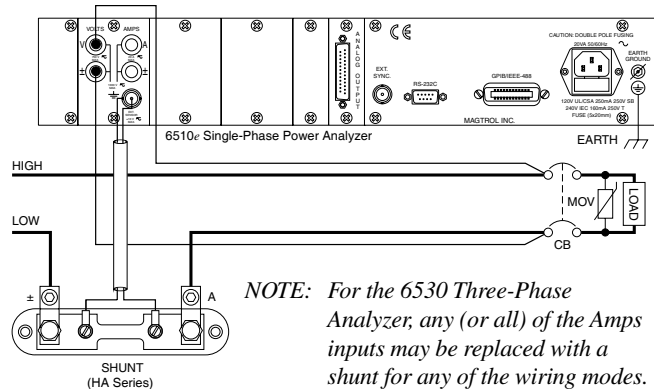
If currents continuously reach above 20 amps, an external sensor must be used. Magtrol offers three different types of external shunts for use with Magtrol Models 6510e or 6530 High-Speed Power Analyzers.

The HA Series shunt, designed for power cable hook-up utilizing 3/8-16 screws, has an insulating base and can be mounted on conductive surfaces. The LAB Series shunt also comes with an insulating base, along with thumb screws for the power leads and knurled nuts on the sensing terminals. The FL Series is a relatively small bus, bar-mounted shunt with large end blocks. The comparatively large end blocks and short spacing aid in cooling and allow the shunt to operate in more extreme environments. All shunts are calibrated on equipment with current certifications traceable to N.I.S.T.

Available Models		
Type	P/N	Amps
HA	004640	50
HA	004641	100
HA	004642	150
HA	004643	200
HA	004644	250
HA	004645	300
HA	004646	400
HA	004647	500
LAB	004648	750
LAB	004649	1000
FL	005214	2000
FL	005286	3000

SPECIFICATIONS			
	HA Series	LAB Series	FL Series
Rated Current	50 to 500 A	750 to 1000 A	2000 to 3000 A
Output	50 mV		
Bandwidth	DC to 60 Hz		
Accuracy	$\pm 0.25\%$ ( $\pm 0.1\%$ accuracy with calibration certificate is available for an additional cost)		
Operating Temperature	For optimum accuracy, temperature of shunt should be 30 °C to 70 °C		

### Sensor Substitution Wiring Connection



Due to the continual development of our products, we reserve the right to modify specifications without forewarning.



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