



Made in U.S.A.



Power Seriesplus

Digital Switchboard Meters

Power Series^{Plus}

Digital Switchboard Meters

The POWER SERIES^{Plus} digital switchboard meter was developed by Yokogawa Corporation of America to provide customers with a versatile AC digital power meter. The heart of the POWER SERIES^{Plus} meter incorporates the latest DSP microprocessor technology. Careful and thoughtful design has resulted in a family of user-friendly, field-adjustable meters. The design of the POWER SERIES^{Plus} combines a high accuracy digital switchboard meter with transducer output which can be configured in the field by an end-user, or when installed in new electrical equipment by an OEM. It eliminates requirements for a large inventory of dedicated instruments, and provides flexibility when new panel designs or system upgrades require changes in instrument transformer ratings. Our rugged metal case fits standard panel cutouts for switchboard meters and makes it a perfect replacement for less versatile instruments. The RS-485 communications option allows up to 32 meters to be networked together for remote monitoring and control. In addition, the POWER SERIES^{Plus} can be set up and locked out for security via the remote communications option.

The 2493 triple display multifunction power meter...

Ideally designed for easy retrofit into existing switchboard meter panel cutouts. The 2493 features three easy to read LED displays, minimum/maximum values at the touch of a button, scaling up to 9999. Optional 0-1mA DC and 4-20mA DC analog outputs are configurable by the user.



Features

- Scaling of the instrument for PT (potential transformer) primary ratings up to 9999; and CT (current transformer) primary ratings up to 9999.
- Adjustable transducer output proportionate to the primary input setting.
- Display average setting: Adjustable to obtain a “rolling average” of inputs. Increasing the number of samples reduces annoying “digit bounce” by the least significant digit.
- All settings are stored in non-volatile memory. If there is a loss of power to the instrument, all settings will remain as they were prior to power loss.
- Accuracy of $\pm 0.2\%$ of reading, $\pm 0.1\%$ of full scale.
- True RMS current and voltage measuring capability. A most desirable feature when distorted wave forms are present on the line.
- High resolution/ high intensity LED displays that can be viewed from almost any angle.

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Set-up and Configuration (2491, 2492)

The POWER SERIES^{Plus} can be configured for primary and secondary transformer inputs, legends, outputs and averaging function. At Weschler, we program each model according to the specified options required by the user. This minimizes the number of steps to set up the instrument at the job site or on the factory floor.

Each model is programmed only for the options selected, so there are no unnecessary menu items. If you select a Voltmeter without analog output, then set up will be limited to PT ratios, LED display, and average setting. All can be accomplished in less than one minute. If no transformer is required, the ratio entered for PT P and PT S is 1 (1:1).

Set up functions appear on the display as symbols. They are accessible when you press the MODE pushbutton located behind the front cover and beneath the LED display. After pressing MODE, you are in the setting mode "rSET" and can begin setting up. Error codes during set up mean your inputs may be incorrect or outside of the range of the instrument. Refer to the instruction manual for range/span restrictions for each model selected.

The pushbutton setting switches are described below. In order for a setting to be entered into memory, you must complete all entries for that mode such as: "PT P" and "PT S" (PT primary and PT secondary). If the values do not need to be changed from a previous setting, simply push the EN switch several times to go to the next mode.

After auxiliary power connection and removal of the cover, the instruction manual will guide you through set up. Pushbutton switches are located directly below the LED display. The POWER SERIES^{Plus} can be set up before, or after installation in a panel. Once set up is complete, replace the cover and make the appropriate input connections.

PUSHBUTTON SETTING SWITCHES (under the cover)



Mode

Mode switch transfers user back and forth between standard mode (present setting) and "rSET" mode.



This switch moves from one unit setting to another, or mode to mode



This switch moves digits to selected values and moves decimal position.



EN

After each setting, this switch enters input data, then proceeds to next sequence.

Set-up and Configuration (2493)

The new triple display POWER SERIES^{Plus} has front panel pushbuttons which can be used for setting voltage and current inputs from instrument transformers, as well as analog outputs and a rolling average. The exact functions depend on the model options selected by the customer. For example: If you selected a 3 in 1 Voltmeter with no analog output, you would only need to set the PT ratio and average. If you are tied into a network with RS485, then you would also need to identify the network address and baud rate.

All set-up functions can be performed using the four buttons on the front panel (see below). You can also use the buttons to display the minimum and maximum readings and, on some models, to change from phase to phase.

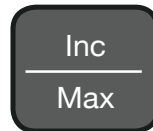
PUSHBUTTON SETTING SWITCHES (front panel)



This button starts all operations. When viewing or changing settings it is used to back out of a mode.



This button can change the phase being displayed. When viewing or changing settings, it moves between settings or between digits.



This button will increment the value being changed. It is also used to display Max readings.



This button, when viewing or changing settings, is used to select a mode, save it, and then move to the next mode in the sequence. It is also used to display Min readings.

All button operations begin with the Mode button. To see the Min or Max, push the Mode button and then the button of the reading you want to see - Min or Max. The values will display for 10 seconds before reverting to the normal display. If you want to reset the values, push the Min or Max button again before 10 seconds have passed.

If the model that you select can change between phases, it is done by pressing the Mode button first, and then the Next button. The display will switch to the next phase in the sequence. For example: A Volt-Amp-Hertz meter with 3P4W connections would cycle A-B-C-AB-BC-CA and then back to A. To view the configuration settings, press Mode twice (Mode-Mode) and then press Set. The first setting will be displayed. For a Triple Amp meter this setting will be the Current Transformer (Ct), for all other models this will be the Potential Transformer (Pt). To see the other settings, press Next. You can scroll through all the settings by pressing Next. To go back to normal operations, press Mode. To change the setting being shown, press Set. See the above paragraphs on the specific settings for details. Once a setting is changed it will display the next setting. At any point while changing settings, pressing Mode will exit without changing anything.

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Model Types and Rated Inputs

MEASURING CAPABILITY	MODEL NUMBER	CONNECTION AVAILABLE*	MAXIMUM INPUT RATING	ELECTRICAL LEGEND	ORDER INFO.
DC VOLT	2491-25		0-600V DC	Volts	Page 7
AC AMPERES	2491-11 2493-05	Single phase Three phase	0-1/0-5 Amp AC 0-1/0-5 Amp AC	Amps AC/Kiloamps AC Amps/Kiloamps	Page 8 Page 16
AC VOLTAGE	2491-21 2493-01 2493-02	Single phase 3P3W Delta 3P4W Wye	0-150/300/600 Volt AC 0-150/300/600 Volt AC 0-150/300/600 Volt AC	Volts AC/Kilovolts AC Volts/Kilovolts	Page 8 Page 16
FREQUENCY	2491-81	Single phase	150/300/600 Volt AC	Hertz	Page 8
WATTS	2491-51 2491-52 2491-53 2491-54 2491-55	1P2W 1P3W 3P3W 3P4W (2 1/2 Element) 3P4W (3 Element)	(select one) 120V/240V/480V AC 1 Amp 120V/240V/480V AC 5 Amp	Watts Kilowatts Megawatts	Page 9
VARS	2491-61 2491-62 2491-63 2491-64 2491-65	1P2W 1P3W 3P3W 3P4W (2 1/2 Element) 3P4W (3 Element)	(select one) 120V/240V/480V AC 1 Amp 120V/240V/480V AC 5 Amp	Vars Kilovars Megavars	Page 9
POWER FACTOR	2491-71 2491-72 2491-73 2491-74 2491-75	1P2W 1P3W 3P3W 3P4W (2 1/2 Element) 3P4W (3 Element)	(select one) 120V/240V/480V AC 1 Amp 120V/240V/480V AC 5 Amp	Power Factor Lag Lead	Page 10
PHASE ANGLE	2491-91 2491-92 2491-93 2491-94 2491-95	1P2W 1P3W 3P3W 3P4W (2 1/2 Element) 3P4W (3 Element)	(select one) 120V/240V/480V AC 1 Amp 120V/240V/480V AC 5 Amp	Phase Angle Lag Lead	Page 10
VOLT / AMP DUAL FUNCTION	2492-12	Single phase	150V/300V/600V 1 Amp 150V/300V/600V 5 Amp	Volts Kilovolts Amps Kiloamps	Page 11
VOLT / HERTZ DUAL FUNCTION	2492-22	Single phase	150V/300V/600V & 50/60Hz 150V/300V/600V & 400Hz	Volts Kilovolts Hertz	Page 12
VOLT / AMP / Hz	2493-07 2493-08 2493-09	1P2W 3P3W Delta 3P4W Wye	(select one) 150V/300V/600V AC 1A or 5A AC 50/60Hz or 400Hz	Amps/Kiloamps Volts Kilovolts Hertz	Page 17
WATT / VAR DUAL FUNCTION	2492-40 2492-41 2492-42 2492-43 2492-44	1P2W 1P3W 3P3W 3P4W (2 1/2 Element) 3P4W (3 Element)	(select one) 120V/240V/480V AC 1 AMP 120V/240V/480V AC 5 AMP	Watts/Kilowatts Megawatts Vars/Kilovars Megavars	Page 13
WATT / PF DUAL FUNCTION	2492-45 2492-46 2492-47 2492-48 2492-49	1P2W 1P3W 3P3W 3P4W(2 1/2 Element) 3P4W(3 Element)	(select one) 120V/240V/480V AC 1 AMP 120V/240V/480V AC 5 AMP	Watts Kilowatts Megawatts Power Factor Lag Lead	Page 14
WATT / VAR / PF	2493-34 2493-35 2493-36 2493-37 2493-38	1P2W 1P3W 3P3W 3P4W(2 1/2 Element) 3P4W(3 Element)	(select one) 120V/240V/480V AC 1 AMP 120V/240V/480V AC 5 AMP	Watts/Vars Kilowatts/Kilovars Megawatts/Megavars Power Factor Lag Lead	Page 15

*see pages 18 through 22 for connection diagrams

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General Specifications

DISPLAY	Type	4 digit red LED (9999 counts) for 2493 readouts (3 displays) 4 1/2 digit red LED for 2491, 2492	
	Digit height	0.56 inch or 14mm	
	Response time	250ms min. update time for V/V/V, A/A/A, 2491 and 2492 Less than 500ms min. update time for V/A/Hz, Watt/VAR/PF 2493	
AUXILIARY POWER		120V or 240V AC (+/- 15%), 45-65 Hz, 4.5VA max. or select 24, 48, 125V DC	
INPUT RATING	Current:	0 to 1 A AC; 0 to 5A AC	
	Voltage:	0-120V AC; 0-240V AC, 0-480V AC (W/VAR/PF/PA) 0-150V AC; 0-300V AC; 0-600V AC (Volt/Freq) 0-150V DC; 0-300V DC; 0-600V DC	
	Frequency	50/60 Hz and 400 Hz (only V/A/Hz units)	
INPUT RANGE	Rated Current:	A/W/VAR: 0-200%; PF/PA: 20-200%	
	Rated Voltage:	V/W/VAR: 0-120%; PF/PA: 50-120%; Frequency: 20-120%	
INPUT FREQUENCY RANGE	Volts, Amps, Hertz	45-65 Hz up to the 9th harmonic measuring capability ±2% of specified accuracy	
SUSTAINED INPUT	Rated Current:	A/W/VAR/PF/PA: 200% continuous; 10x rating for 5 seconds	
	Rated Voltage:	V/W/VAR/FREQ: 120% continuous; PF/PA: 150% continuous	
BURDEN	Current:	<0.2 VA per element	
	Voltage:	<0.2 VA per element; 240V: <0.4VA per element	
ACCURACY	Reference condition: 25°C, 45-74%RH, at rated input 60 Hz sine wave, 30 min. warmup	Voltage Current Watt/VAR	+/- 0.2% of reading +/- 0.1% of full scale
		Power Factor	+/- 0.05 Power Factor
		Phase Angel	+/- 0.5° Phase Angle
		Frequency	+/- 0.1 Hz @ 40-70 Hz, +/- 0.5 Hz @ 300-500 Hz
ANALOG OUTPUT AND RESPONSE TIME	0 to 1 mA, 4 to 20 mA, 12+/-8 mA	10V DC compliance into 10k ohm load maximum; 15V DC compliance into 750 ohm max. 1 second maximum response time within ±1% of final value 16 bit resolution; accuracy 0.4% of span	
OUTPUT RIPPLE		0.5% peak-to-peak maximum of output span	
COMMUNICATIONS		RS-485 half duplex interface with networking up to 32 units Selectable Baud Rate	
ISOLATION VOLTAGE AND INSULATION RESISTANCE	Input to output/case:	2500V AC for 1 minute / more than 10 Megohm @ 500V DC	
	Aux. power to case:	2000V AC for 1 minute / more than 10 Megohm @ 500V DC DC: 500V DC minimum / 10 Megohm minimum @100V DC	
	Aux. power to output:	AC: 2000V AC for 1 minute / more than 10 Megohm @ 500V DC DC: 500V DC minimum / 10 Megohm minimum @ 100V DC	
	Output to case:	1000V AC for 1 minute . more than 10 Megohm @ 500V DC	
TEMPERATURE RANGE	Operating:	-20 to +60°C at 90% RH maximum (non-condensing)	
	Storage:	-40 to +85°C	
TEMPERATURE COEFFICIENT	Display and Comm:	±150 PPM/°C maximum of full scale	
	Analog Output:	±250 PPM/°C maximum of full scale	
INFLUENCE OF:	Magnetic field:	0.5% maximum at 400 ampere turns/meter	
	Input voltage:	<0.05 Power Factor (10-120% of rated voltage)	
	Influence of:	Shock/Vibration: per ANSI C39.1	
	Unbalanced current:	<0.2% of full scale	
	Input frequency:	<0.05 Power Factor (45-65 Hz)	
	Load resistance:	0 to 1 mA: 0-10K ohm within ±0.05% of full scale 4 to 20 mA, 12 ± 8 mA: 0-750 ohm within ±0.05% of full scale	
DIMENSIONS:		W x D x H = 4.33 x 6.54 x 4.33 inches	
WEIGHT:		1000g (2.2 lbs) or less	

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DC VOLTS

MODEL FORMAT: 2491

Insert model code from the selection below:

MODEL 2491

1. FUNCTION

-25 DC VOLTS

2. INPUT RATING

-57 150V DC

-67 300V DC

-77 600V DC

3. FREQUENCY

-0 NONE

4. ANALOG OUTPUT

-AAA NO OUTPUT

-AFA 0 to 1 mA DC

-AHD 4 to 20 mA DC

5. COMMUNICATION

-1 YCA Protocol

-2 MODBUS

6. AUX. POWER

-1 120/240V AC

-3 24V DC

-4 48V DC

-5 125V DC

NOTES:

- 1) THESE MODELS HAVE 4-1/2 DIGIT DISPLAY.
- 2) NIST CALIBRATION CERTIFICATE AVAILABLE FOR AN ADDITIONAL CHARGE.
- 3) CERTIFICATE OF CONFORMANCE WITH TEST DATA AVAILABLE FOR AN ADDITIONAL CHARGE.
- 4) CERTIFICATE OF COMPLIANCE: NO CHARGE, BUT SPECIFY WITH ORDER.



AC AMPS / AC VOLTS / FREQUENCY

MODEL FORMAT: 2491

Insert model code from the selection below:

MODEL 2491

1. FUNCTION

- 11 AMP AC
- 21 VOLTS AC
- 81 FREQUENCY

2. INPUT RATING

- 01 1 AMP
- 05 5 AMP
- 10 150V
- 20 300V
- 30 600V

3. FREQUENCY

- 1 50/60 Hz
- 2 400 Hz

4. ANALOG OUTPUT

- AAA NO OUTPUT
- AFA 0 to 1 mA
- AHD 4 to 20 mA

5. COMMUNICATION

- 1 YCA Protocol
- 2 MODBUS

6. AUX. POWER

- 1 120/240V AC
- 3 24V DC
- 4 48V DC
- 5 125V DC

NOTES:

- 1) THESE MODELS HAVE 4-1/2 DIGIT DISPLAY.
- 2) NIST CALIBRATION CERTIFICATE AVAILABLE FOR AN ADDITIONAL CHARGE.
- 3) CERTIFICATE OF CONFORMANCE WITH TEST DATA AVAILABLE FOR AN ADDITIONAL CHARGE.
- 4) CERTIFICATE OF COMPLIANCE: NO CHARGE, BUT SPECIFY WITH ORDER.

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AC WATTS AND VARS

MODEL FORMAT: 2491

Insert model code from the selection below:

MODEL 2491

1. FUNCTION/ CONNECTIONS

- 51 WATT 1P2W
- 52 WATT 1P3W
- 53 WATT 3P3W
- 54 WATT 3P4W
(2 1/2 element)
- 55 WATT 3P4W
(3 element)
- 61 VARS 1P2W
- 62 VARS 1P3W
- 63 VARS 3P3W
- 64 VARS 3P4W
(2 1/2 element)
- 65 VARS 3P4W
(3 element)

2. INPUT RATING

- 11 120 VOLT / 1 AMP
- 15 120 VOLT / 5 AMP
- 21 240 VOLT / 1 AMP
- 25 240 VOLT / 5 AMP
- 31 480V / 1 AMP
- 35 480V / 5 AMP

3. FREQUENCY

- 1 50/60 Hz

4. ANALOG OUTPUT

- AAA NO OUTPUT
- AFA 0 to 1 mA
- AHD 4 to 20 mA
- AHF 12 ± 8 mA

5. COMMUNICATION

- 1 YCA Protocol
- 2 MODBUS

6. AUX. POWER

- 1 120/240V AC
- 3 24V DC
- 4 48V DC
- 5 125V DC

NOTES:

- 1) THESE MODELS HAVE 4-1/2 DIGIT DISPLAY.
- 2) NIST CALIBRATION CERTIFICATE AVAILABLE FOR AN ADDITIONAL CHARGE.
- 3) CERTIFICATE OF CONFORMANCE WITH TEST DATA AVAILABLE FOR AN ADDITIONAL CHARGE.
- 4) CERTIFICATE OF COMPLIANCE: NO CHARGE, BUT SPECIFY WITH ORDER.



POWER FACTOR AND PHASE ANGLE

MODEL FORMAT: 2491

Insert model code from the selection below:

MODEL 2491

1. FUNCTION/ CONNECTIONS	2. AC INPUT RATING	3. FREQUENCY	4. ANALOG OUTPUT	5. COMMUNICATION
-71 POWER FACTOR 1P2W	-11 120 VOLT / 1 AMP	-1 50/60 Hz	-AAA No Output	-1 YCA Protocol
-72 POWER FACTOR 1P3W	-15 120 VOLT / 5 AMP		-AFA 0 to 1 mA	-2 MODBUS
-73 POWER FACTOR 3P3W	-21 240 VOLT / 1 AMP		-AHD 4 to 20 mA	
-74 POWER FACTOR 3P4W (2 1/2 element)	-25 240 VOLT / 5 AMP		-AHF 12 ± 8 mA	
-75 POWER FACTOR 3P4W (3 element)	-31 480 VOLT / 1 AMP			
-91 PHASE ANGLE 1P2W	-35 480 VOLT / 5 AMP			
-92 PHASE ANGLE 1P3W				
-93 PHASE ANGLE 3P3W				
-94 PHASE ANGLE 3P4W (2 1/2 element)				
-95 PHASE ANGLE 3P4W (3 element)				

6. AUX. POWER
-1 120/240V AC
-3 24V DC
-4 48V DC
-5 125V DC

NOTES:

- 1) THESE MODELS HAVE 4-1/2 DIGIT DISPLAY.
- 2) NIST CALIBRATION CERTIFICATE AVAILABLE FOR AN ADDITIONAL CHARGE.
- 3) CERTIFICATE OF CONFORMANCE WITH TEST DATA AVAILABLE FOR AN ADDITIONAL CHARGE.
- 4) CERTIFICATE OF COMPLIANCE: NO CHARGE, BUT SPECIFY WITH ORDER.

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AC VOLT / AMP DUAL FUNCTION

MODEL FORMAT: 2492

Insert model code from the selection below:

MODEL 2492



1. INPUT RATING

-12 VOLT / AMP AC

2. RATING CODE

-51 150V AC / 1 AMP

-61 300V AC / 1 AMP

-71 600V AC / 1 AMP

-55 150V AC / 5 AMP

-65 300V AC / 5 AMP

-75 600V AC / 5 AMP

3. FREQUENCY

-1 50/60 Hz

-2 400 Hz

4. ANALOG OUTPUT

-AAA NO OUTPUT

-AFA 0 to 1 mA

-AHD 4 to 20 mA

5. COMMUNICATION

-1 YCA Protocol

-2 MODBUS

6. AUX. POWER

-1 120/240V AC

-3 24V DC

-4 48V DC

-5 125V DC

NOTES:

1) THESE MODELS HAVE 4-1/2 DIGIT DISPLAY.

2) NIST CALIBRATION CERTIFICATE AVAILABLE FOR AN ADDITIONAL CHARGE.

3) CERTIFICATE OF CONFORMANCE WITH TEST DATA AVAILABLE FOR AN ADDITIONAL CHARGE.

4) CERTIFICATE OF COMPLIANCE: NO CHARGE, BUT SPECIFY WITH ORDER.

AC VOLT / FREQUENCY DUAL FUNCTION

MODEL FORMAT: 2492

Insert model code from the selection below:

MODEL 2492



1. FUNCTION

-22 VOLT AND Hz

2. INPUT RATING

-10 150V AC

-20 300V AC

-30 600V AC

3. FREQUENCY

-1 50/60 Hz

-2 400 Hz

4. ANALOG OUTPUT

-AAA NONE

-AFA 0 to 1 mA

-AHD 4 to 20 mA

5. COMMUNICATION

-1 YCA Protocol

-2 MODBUS

6. AUX. POWER

-1 120/240V AC

-3 24V DC

-4 48V DC

-5 125V DC

NOTES:

- 1) THESE MODELS HAVE 4-1/2 DIGIT DISPLAY.
- 2) NIST CALIBRATION CERTIFICATE AVAILABLE FOR AN ADDITIONAL CHARGE.
- 3) CERTIFICATE OF CONFORMANCE WITH TEST DATA AVAILABLE FOR AN ADDITIONAL CHARGE.
- 4) CERTIFICATE OF COMPLIANCE: NO CHARGE, BUT SPECIFY WITH ORDER.

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AC WATT / VAR DUAL FUNCTION

MODEL FORMAT: 2492

Insert model code from the selection below:

MODEL 2492



1. FUNCTION/ CONNECTIONS

- 40 WATT / VAR 1P2W
- 41 WATT / VAR 1P3W
- 42 WATT / VAR 3P3W
- 43 WATT / VAR 3P4W
(2 1/2 element)
- 44 WATT / VAR 3P4W
(3 element)

2. INPUT RATING

- 11 120 VOLT / 1 AMP
- 15 120 VOLT / 5 AMP
- 21 240 VOLT / 1 AMP
- 25 240 VOLT / 5 AMP
- 31 480V AC / 1 AMP
- 35 480V AC / 5 AMP

3. FREQUENCY

- 1 50/60 Hz

4. ANALOG OUTPUT

- AAA NONE
- AFA 0 to 1 mA
- AHD 4 to 20 mA
- AHF 12 ± 8 mA

5. COMMUNICATION

- 1 YCA Protocol
- 2 MODBUS

6. AUX. POWER

- 1 120/240V AC
- 3 24V DC
- 4 48V DC
- 5 125V DC

NOTES:

- 1) WATTS/KILOWATTS/MEGAWATTS AND VARS/KILOVARS/MEGAVARS LEGENDS ARE USER SELECTABLE.
- 2) NIST CALIBRATION CERTIFICATE AVAILABLE FOR AN ADDITIONAL CHARGE.
- 3) CERTIFICATE OF CONFORMANCE WITH TEST DATA AVAILABLE FOR AN ADDITIONAL CHARGE.
- 4) CERTIFICATE OF COMPLIANCE: NO CHARGE, BUT SPECIFY WITH ORDER.

AC WATT / POWER FACTOR DUAL FUNCTION

MODEL FORMAT: 2492

Insert model code from the selection below:

MODEL 2492



1. FUNCTION/ CONNECTIONS

- 45 WATT / POWER FACTOR 1P2W
- 46 WATT / POWER FACTOR 1P3W
- 47 WATT / POWER FACTOR 3P3W
- 48 WATT / POWER FACTOR 3P4W (2 1/2 element)
- 49 WATT / POWER FACTOR 3P4W (3 element)

2. AC INPUT RATING

- 11 120 VOLT / 1 AMP
- 15 120 VOLT / 5 AMP
- 21 240 VOLT / 1 AMP
- 25 240 VOLT / 5 AMP
- 31 480V AC / 1 AMP
- 35 480V AC / 5 AMP

3. FREQUENCY

- 1 50/60 Hz

4. ANALOG OUTPUT

- AAA NONE
- AFA 0 to 1 mA
- AHD 4 to 20 mA
- AHF 12 ± 8 mA

5. COMMUNICATION

- 1 YCA Protocol
- 2 MODBUS

6. AUX. POWER

- 1 120/240V AC
- 3 24V DC
- 4 48V DC
- 5 125V DC

NOTES:

- 1) WATTS/KILOWATTS/MEGAWATTS LEGEND IS USER SELECTABLE.
- 2) NIST CALIBRATION CERTIFICATE AVAILABLE FOR AN ADDITIONAL CHARGE.
- 3) CERTIFICATE OF CONFORMANCE WITH TEST DATA AVAILABLE FOR AN ADDITIONAL CHARGE.
- 4) CERTIFICATE OF COMPLIANCE: NO CHARGE, BUT SPECIFY WITH ORDER.

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3 in 1 AC WATT / VAR / POWER FACTOR

MODEL FORMAT: 2493

Insert model code from the selection below:

MODEL 2493



1. FUNCTION/ CONNECTIONS

- 34 WATT / VAR / PF 1P2W
- 35 WATT / VAR / PF 1P3W
- 36 WATT / VAR / PF 3P3W
- 37 WATT / VAR / PF 3P4W
(2 1/2 element)
- 38 WATT / VAR / PF 3P4W
(3 element)

2. INPUT RATING

- 11 120 VOLT / 1A AC
- 15 120 VOLT / 5A AC
- 21 240 VOLT / 1A AC
- 25 240 VOLT / 5A AC
- 31 480V AC / 1 AMP
- 35 480V AC / 5 AMP

3. FREQUENCY

- 1 50/60 Hz

4. ANALOG OUTPUT

- AAA NONE
- AFA 0 to 1 mA
- AHD 4 to 20 mA

5. COMMUNICATION

- 1 YCA Protocol
- 2 MODBUS

6. AUX. POWER

- 1 120/240V AC
- 3 24V DC
- 4 48V DC
- 5 125V DC

NOTES:

- 1) THESE MODELS HAVE 4 DIGIT DISPLAY.
- 2) NIST CALIBRATION CERTIFICATE AVAILABLE FOR AN ADDITIONAL CHARGE.
- 3) CERTIFICATE OF CONFORMANCE WITH TEST DATA AVAILABLE FOR AN ADDITIONAL CHARGE.
- 4) CERTIFICATE OF COMPLIANCE: NO CHARGE, BUT SPECIFY WITH ORDER.

3 in 1 AC VOLT OR AMP

MODEL FORMAT: 2493

Insert model code from the selection below:

MODEL 2493



1. FUNCTION

- 01 3P3W AC VOLT
- 02 3P4W AC VOLT
- 05 3 PHASE A, B, C AC AMP

2. INPUT RATING

- 01 1 AMP
- 05 5 AMP
- 10 150 VOLT
- 20 300 VOLT
- 30 600 VOLT

3. FREQUENCY

- 1 50/60 Hz
- 2 400 Hz

4. ANALOG OUTPUT

- AAA NONE
- AFA 0 to 1 mA
- AHD 4 to 20 mA

5. COMMUNICATION

- 1 YCA Protocol
- 2 MODBUS

6. AUX. POWER SUPPLY

- 1 120/240V AC
- 3 24V DC
- 4 48V DC
- 5 125V DC

NOTES:

- 1) THESE MODELS HAVE 4 DIGIT DISPLAY.
- 2) NIST CALIBRATION CERTIFICATE AVAILABLE FOR AN ADDITIONAL CHARGE.
- 3) CERTIFICATE OF CONFORMANCE WITH TEST DATA AVAILABLE FOR AN ADDITIONAL CHARGE.
- 4) CERTIFICATE OF COMPLIANCE: NO CHARGE, BUT SPECIFY WITH ORDER.

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3 in 1 AC VOLT / AMP / HERTZ

MODEL FORMAT: 2493

Insert model code from the selection below:

MODEL 2493



1. FUNCTION/ CONNECTIONS

- 07 VOLT / AMP / Hz 1P2W
- 08 VOLT / AMP / Hz 3P3W
- 09 VOLT / AMP / Hz 3P4W

2. INPUT RATING

- 51 150 VOLT / 1A AC
- 55 150 VOLT / 5A AC
- 61 300 VOLT / 1A AC
- 65 300 VOLT / 5A AC
- 71 600V AC / 1 AMP
- 75 600V AC / 5 AMP

3. FREQUENCY

- 1 50/60 Hz
- 2 400 Hz

4. ANALOG OUTPUT

- AAA NONE
- AFA 0 to 1 mA
- AHD 4 to 20 mA

5. COMMUNICATION

- 1 YCA Protocol
- 2 MODBUS

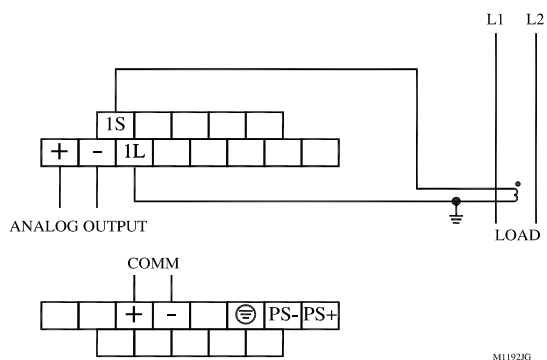
6. AUX. POWER

- 1 120/240V AC
- 3 24V DC
- 4 48V DC
- 5 125V DC

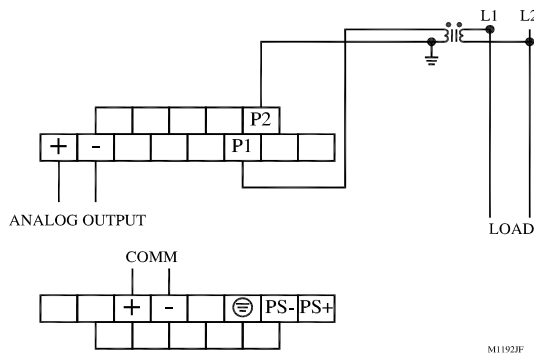
NOTES:

- 1) THESE MODELS HAVE 4 DIGIT DISPLAY.
- 2) NIST CALIBRATION CERTIFICATE AVAILABLE FOR AN ADDITIONAL CHARGE.
- 3) CERTIFICATE OF CONFORMANCE WITH TEST DATA AVAILABLE FOR AN ADDITIONAL CHARGE.
- 4) CERTIFICATE OF COMPLIANCE: NO CHARGE, BUT SPECIFY WITH ORDER.

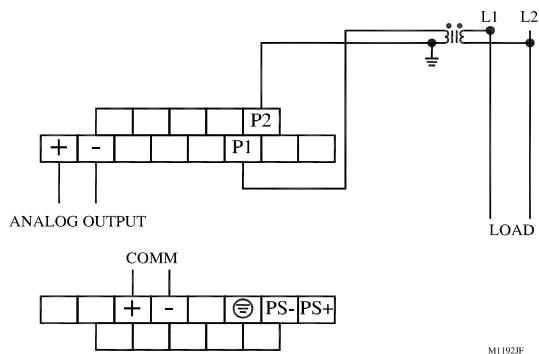
Terminal Connections



249111 and 249115 AC Ammeters

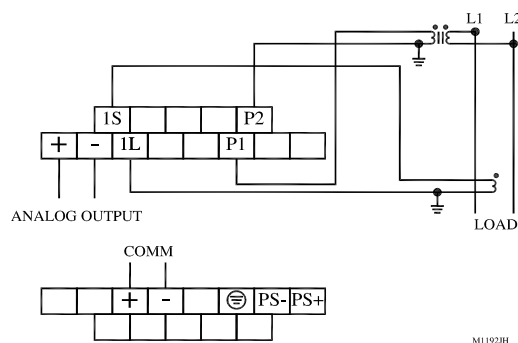


249121 AC Voltmeters



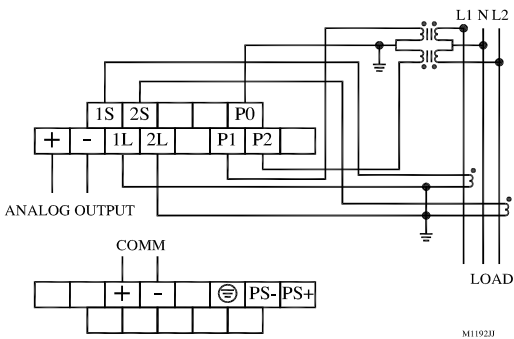
249181 and 249183 Frequency Meters

1 PHASE, 2 WIRE



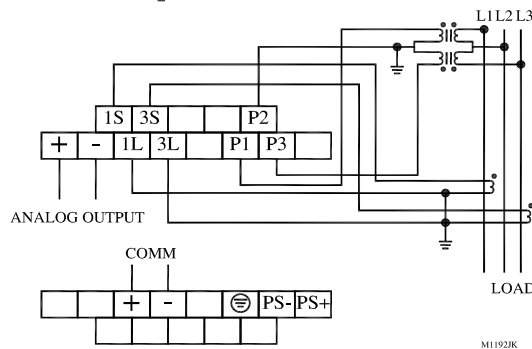
**249151 / 249161 / 249171 / 249191
Watts / Vars / P.F. / Phase Angle**

1 PHASE, 3 WIRE



**249152 / 249162 / 249172 / 249192
Watts / Vars / P.F. / Phase Angle**

3 PHASE, 3 WIRE



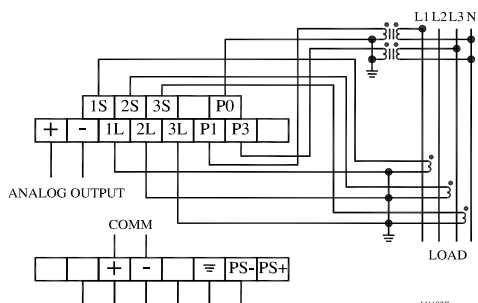
**249153 / 249163 / 249173 / 249193
Watts / Vars / P.F. / Phase Angle**

Power SeriesPlus

Digital Switchboard Meters

Terminal Connections

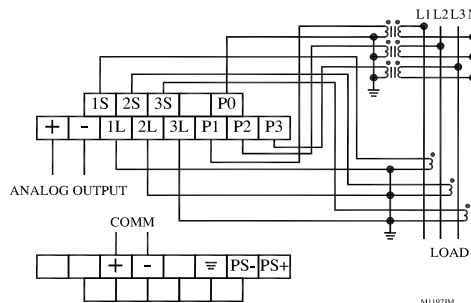
**3 PHASE, 4 WIRE
(2 1/2 ELEMENT)**



M1192L

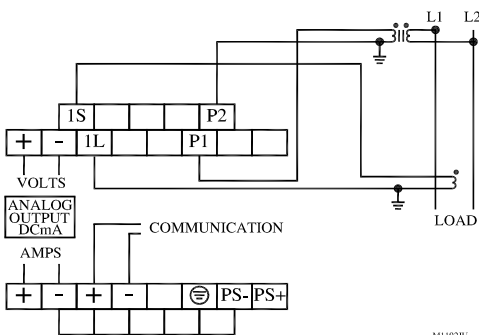
249154 / 249164 / 249174 / 249194
Watts / Vars / P.F. / Phase Angle

**3 PHASE, 4 WIRE
(3 ELEMENT)**



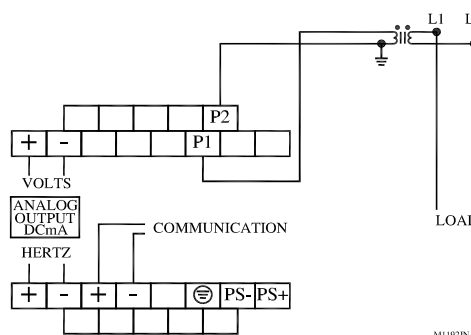
M1192M

249155/249165/249175/249195
Watts / Vars / P.F. / Phase Angle



M1192U

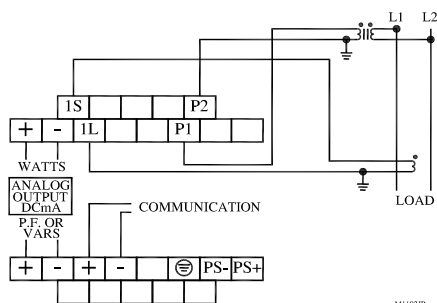
249212 / 249213 / 249216 / 249217
Dual function Volts / Amps



M1192N

249222/249223/249226/249227
Dual function Volts / Hertz

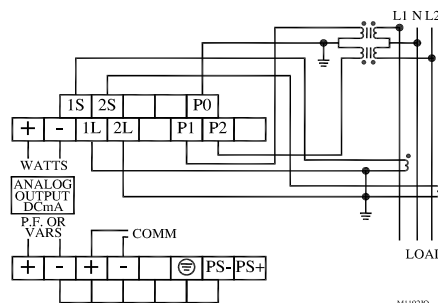
1 PHASE, 2 WIRE



M1192P

249240/249245
Dual function Watts / Vars, Watts / P. F.

1 PHASE, 3 WIRE

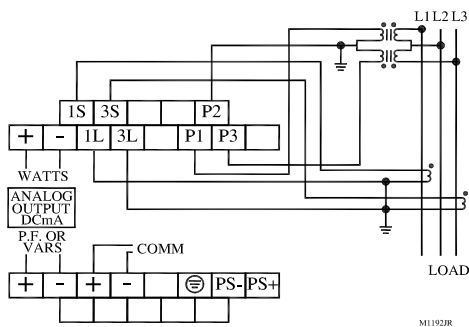


M1192Q

249241/249246
Dual function Watts / Vars, Watts / P. F.

Terminal Connections

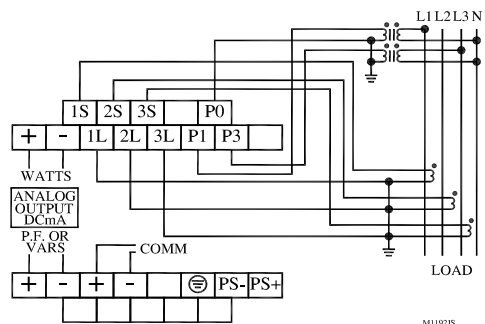
3 PHASE, 3 WIRE



249242 / 249247

Watts / Vars and Watts / Power Factor

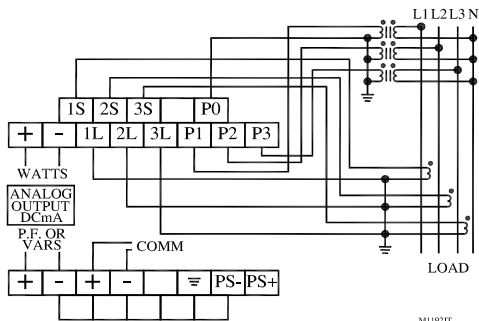
3 PHASE, 4 WIRE (2 1/2 ELEMENT)



249243 / 249248

Watts / Vars and Watts / Power Factor

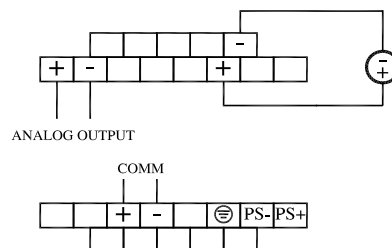
3 PHASE, 4 WIRE (3 ELEMENT)



249244 / 249249

Dual Function Watts / Vars & Watts / P.F.

DC Volts



249125

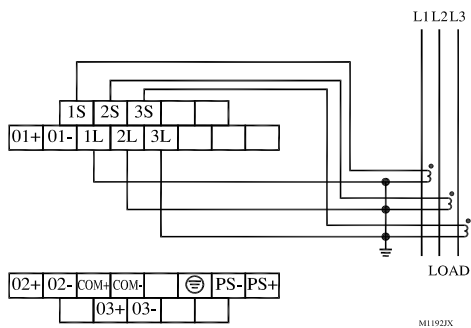
Volts DC

Power SeriesPlus

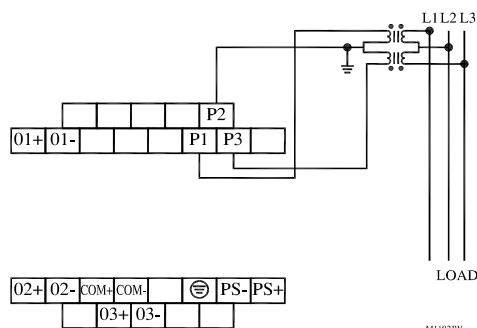
Digital Switchboard Meters

Terminal Connections (see page 21 for notes)

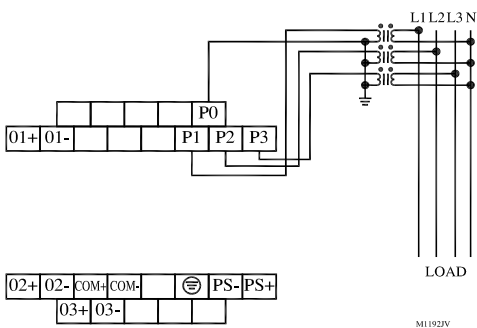
249305
3 in 1 Ammeter



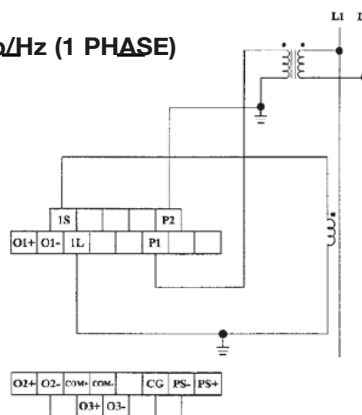
249301
3 in 1 Voltmeter (3P3W)



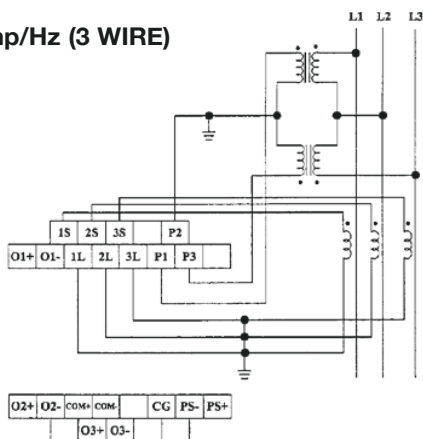
249302
3 in 1 Voltmeter (3P4W)



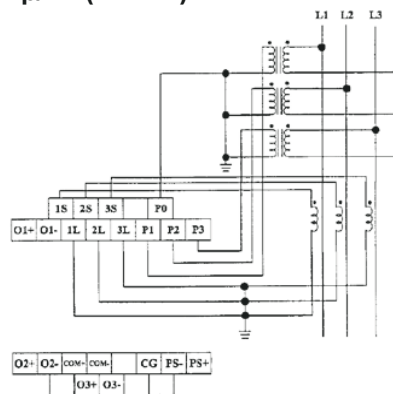
249307
Volt/Amp/Hz (1 PHASE)



249308
Volt/Amp/Hz (3 WIRE)

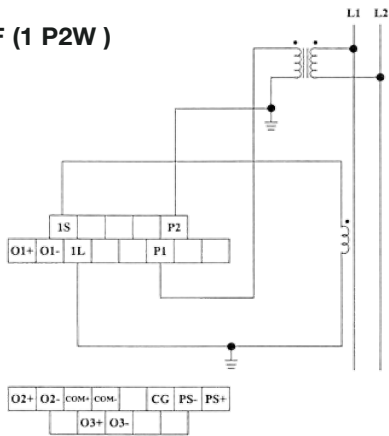


249309
Volt/Amp/Hz (4 WIRE)

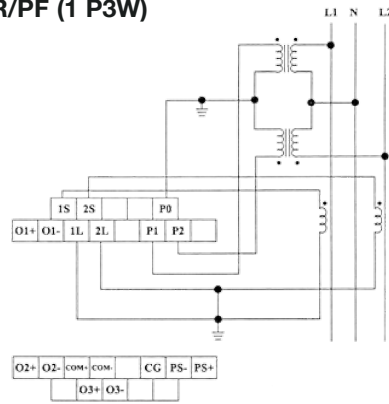


Terminal Connections (see notes below)

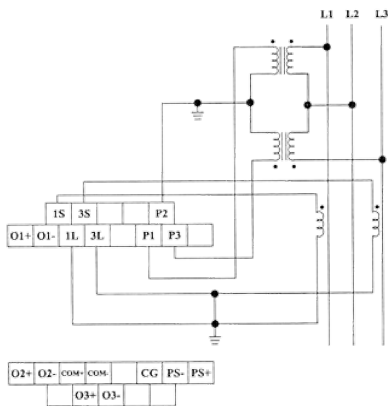
249334
W/VAR/PF (1 P2W)



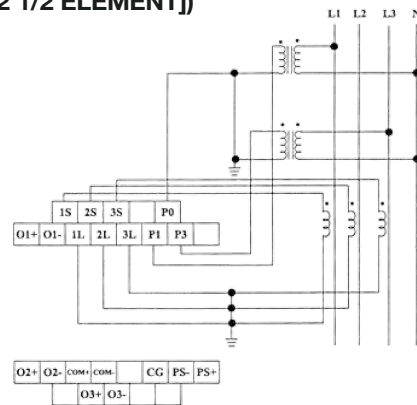
249335
W/VAR/PF (1 P3W)



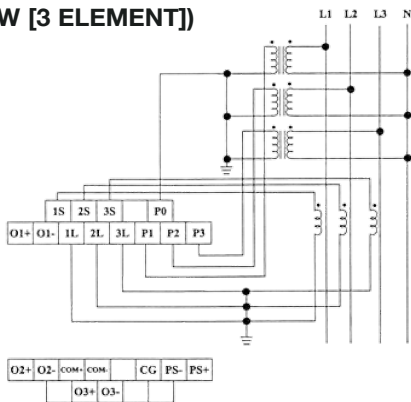
249336
WATT/VAR/PF (3P3W)



249337
WATT/VAR/PF
(3P4W [2 1/2 ELEMENT])



249338
WATT/VAR/PF
(3P4W [3 ELEMENT])



NOTES FOR 2493 CONNECTION DRAWINGS:

PS+ is positive Power Supply connection (line voltage for AC supplies).

PS- is negative Power Supply connection (neutral for AC supplies).

CG is chassis ground. This connection must be made for 125VDC units only.

O1, O2, O3 are analog outputs corresponding to Top Display (O1), Middle Display (O2), Bottom Display (O3).

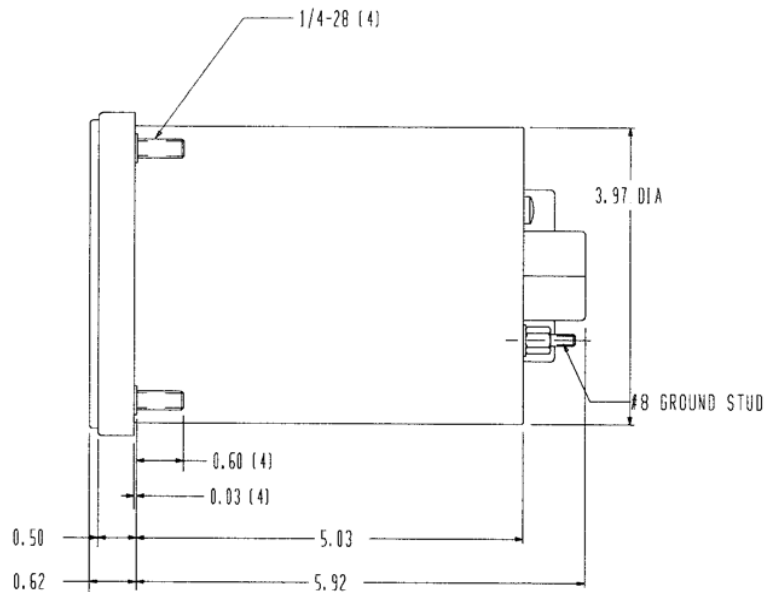
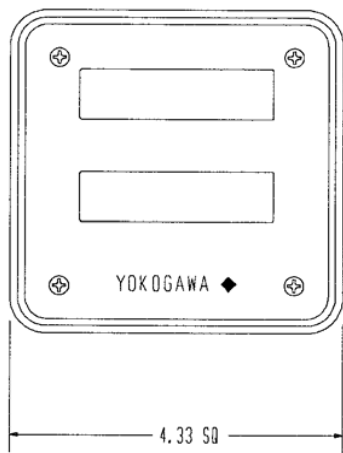
Power Series^{Plus}

Digital Switchboard Meters

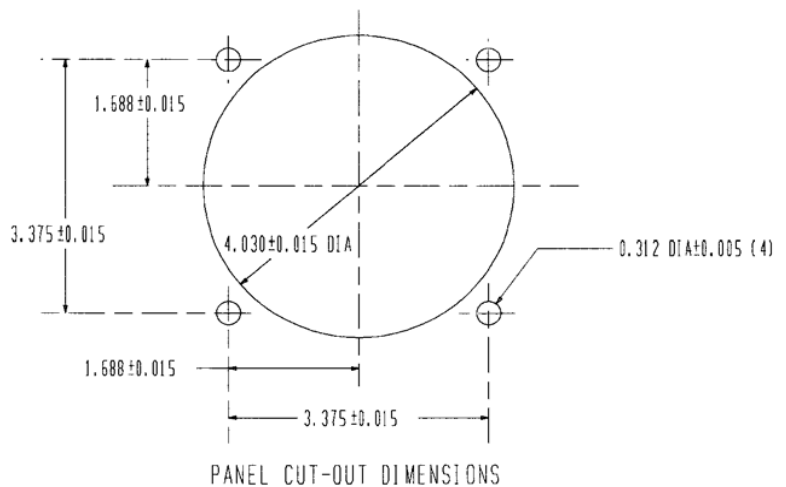
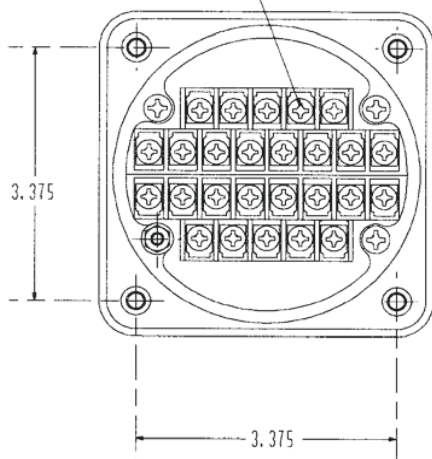
OUTLINE DIMENSIONS

The POWER SERIES^{Plus} is enclosed in a rugged steel case treated with zinc chromate to resist corrosion. The cover assembly and faceplate are constructed of high temperature polycarbonate material and have several gaskets which seal out dust and moisture from the front cover. The 26 position terminal board is a glass-filled polycarbonate material with #8 nickel-plated brass terminals inserted per the connection drawings for the model selected.

front view of 2492



#8 TERMINAL (26 MAX)



A Commitment to Customer Service & Support

Weschler Instruments has acquired the Power Series Plus line from Yokogawa's Meters & Instruments Division. These rugged switchboard meters feature one, two or three digital displays and easily replace less capable analog meters. Up to three analog outputs allow the Power Series Plus to also function as transducers for remote monitoring. The RS-485 Modbus option simplifies networking and computer control.

The PSP line complements Weschler's extensive family of Digital Bargraph Meters, which can also be used to measure AC power systems. Additionally, Weschler manufactures industry-standard, Westinghouse-style analog switchboard meters.

As a supplier of power and process instrumentation for over 75 years, Weschler Instruments is committed to providing users with a wide range of products to sense, measure, display, control, transmit, record & test. In addition to our own products, we carry over 50 leading brands - brands known for quality and reliability. We also offer products at different price points to fit a range of project budgets. Our full-capability Meter Modification Center will quickly build and configure products to order.

Whether your application is best served by a Weschler product or one of the many products we distribute, our experienced application specialists will be happy to work with you to solve your instrumentation needs.



Visit weschler.com for information on:

- ◆ Analog Meters
- ◆ Digital Meters
- ◆ Bargraph Meters
- ◆ Sensors & Transducers
- ◆ Signal Conditioners
- ◆ Controllers
- ◆ Recorders & Data Loggers
- ◆ Test Equipment



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