

WATT/WATTHOUR TRANSDUCERS

AC WATT/WATT HOUR TRANSDUCER

MODELS W, W4

FEATURES

- Accurate regardless of variations in voltage, current, power factor, or load.
- Standard Analog outputs for Watts, relay contact or 5V pulse for Watthours.
- **Factory calibrated**, traceable to NIST.

APPLICATIONS

- Measurement of power consumption.
- Can be easily integrated into building management systems.
- Pulse outputs interface with electronic or mechanical counters for accumulation of Watt Hours.



(W) SINGLE PHASE, TWO WIRE 50/60 HERTZ (ONE ELEMENT)

(W4) SINGLE PHASE, TWO WIRE 400 HERTZ (ONE ELEMENT)

INPUTS		F.S. WATTS	F.S. COUNTS PER HR	STANDARD OUTPUTS MODEL W or W4-						
VOLTS	AMPS			0-±1mAdc*	0-±1mAdc	0-±10Vdc*	0-±10Vdc	0-±5Vdc*	0-±5Vdc	4-20mAdc
0-150	0-1	100	100	103A	103B	103C	103D	103CX5	103X5	103E
	0-2.5	250	250	106A	106B	106C	106D	106CX5	106X5	106E
	0-5	500	5000	001A	001B	001C	001D	001CX5	001X5	001E
	0-10	1000	1000	010A	010B	010C	010D	010CX5	010X5	010E
	0-15	1500	1500	019A	019B	019C	019D	019CX5	019X5	019E
	0-20	2000	2000	117A	117B	117C	117D	117CX5	117X5	117E
0-300	0-2.5	250	250	106A	106B	106C	106D	106CX5	106X5	106E
	0-5	500	5000	001A	001B	001C	001D	001CX5	001X5	001E
	0-10	1000	1000	010A	010B	010C	010D	010CX5	010X5	010E
	0-15	1500	1500	019A	019B	019C	019D	019CX5	019X5	019E
	0-20	2000	2000	117A	117B	117C	117D	117CX5	117X5	117E
	0-25	2500	2500	118A	118B	118C	118D	118CX5	118X5	118E
0-600	0-1	100	100	103A	103B	103C	103D	103CX5	103X5	103E
	0-2.5	250	250	106A	106B	106C	106D	106CX5	106X5	106E
	0-5	500	5000	001A	001B	001C	001D	001CX5	001X5	001E
	0-10	1000	1000	010A	010B	010C	010D	010CX5	010X5	010E
	0-15	1500	1500	019A	019B	019C	019D	019CX5	019X5	019E
	0-20	2000	2000	117A	117B	117C	117D	117CX5	117X5	117E

Highlighted models, (5A), can be used with current transformers.

*Denotes self-powered unit, limiting input voltage ranges to:

103-135 for 150Vac models

215-280 for 300Vac models

395-550 for 600Vac models

All others require 103-135Vac instrument power, (50-400Hz), 5VA.

"E" MODELS ARE UNIDIRECTIONAL ONLY.

Optional 230Vac instrument power-Add suffix **"-22"** to part number.

Add suffix **"Y27"** for use on zero-crossing SCR controllers

NOTE: This option is not available for self-powered models

OPTION "V" - PROGRAMMABLE PULSES/HOURS

OPTION "T" - TTL OUTPUT FOR WATTHOURS. 5Vdc PULSE

CUSTOM COUNT RATES ARE AVAILABLE

400 HERTZ MODELS

To order for use on 400Hz application, substitute **"W4"** in part number.

ORDERING INFORMATION

Example: Self-Powered, Single-Phase, 120V, 5A Input with 0-5Vdc Output Proportional to 0-500 Watts, TTL Pulse Output for Watt Hours, each Pulse Proportional to 0.1 Watt Hours.

W-001CX5-T

FULL SCALE OUTPUT USING CURRENT TRANSFORMERS/MODEL W AND W4 WATT/WATTHOUR TRANSDUCERS

MODEL NO. (EXAMPLE) W/W4	F.S. WATTS FROM ABOVE	CURRENT TRANSFORMER RATIO (EXAMPLE)	FULL SCALE WATTS	COUNTS PER HR FROM ABOVE	WH PER COUNT
-001	500	500/5 (100:1)	50,000	5000	10
-002	1000	500/5 (100:1)	100,000	1000	100
-003	2000	500/5 (100:1)	200,000	2000	100

FULL SCALE OUTPUT USING CURRENT AND POTENTIAL TRANSFORMERS/ MODEL W AND W4 WATT/WATTHOUR TRANSDUCERS

F.S. WATTS FROM ABOVE	CURRENT TRANSFORMER RATIO (EXAMPLE)	POTENTIAL TRANSFORMER RATIO (EXAMPLE)	FULL SCALE WATTS	COUNTS PER HR FROM ABOVE	WH PER COUNT
500	500/5 (100:1)	2400/120 (20:1)	1,000,000	5000	200

FLEX-CORE®

Div. Morlan & Associates, Inc.

4970 Scioto Darby Rd. Hilliard, Ohio 43026

WWW.FLEX-CORE.COM

sales@flex-core.com

PHONE (614) 889-6152

TECH. ASSISTANCE (614) 876-8308

FAX # (614) 876-8538

WATT/WATTHOUR TRANSDUCERS

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AC WATT/WATT HOUR TRANSDUCER

MODELS W, W4



(W) THREE PHASE, FOUR WIRE 50/60 HERTZ (THREE ELEMENT)

(W4) THREE PHASE, FOUR WIRE 400 HERTZ (THREE ELEMENT)

INPUTS		F.S. WATTS	F.S. COUNTS PER HR	STANDARD OUTPUTS MODEL W- or W4-						
VOLTS	AMPS			0-±1mAdc*	0-±1mAdc	0-±10Vdc*	0-±10Vdc	0-±5Vdc*	0-±5Vdc	4-20mAdc
0-150 L-N	0-1	300	300	125A	125B	125C	125D	125CX5	125X5	125E
	0-5	1.5K	1500	007A	007B	007C	007D	007CX5	007X5	007E
	0-5	1.5K	1500	7.5A	7.5B	7.5C	7.5D	7.5CX5	7.5X5	7.5E
	0-10	3K	3000	016A	016B	016C	016D	016CX5	016X5	016E
	0-15	4.5K	4500	025A	025B	025C	025D	025CX5	025X5	025E
	0-20	6K	6000	115A	115B	115C	115D	115CX5	115X5	115E
0-300 L-N	0-25	7.5K	7500	127A	127B	127C	127D	127CX5	127X5	127E
	0-1	600	600	126A	126B	126C	126D	126CX5	126X5	126E
	0-5	3K	3000	008A	008B	008C	008D	008CX5	008X5	008E
	0-5	3K	3000	8.5A	8.5B	8.5C	8.5D	8.5CX5	8.5X5	8.5E
	0-10	6K	6000	017A	017B	017C	017D	017CX5	017X5	017E
	0-15	9K	9000	026A	026B	026C	026D	026CX5	026X5	026E
0-20	12K	12000	116A	116B	116C	116D	116CX5	116X5	116E	
	0-25	15K	1500	128A	128B	128C	128D	128CX5	128X5	128E

Highlighted models, (5A), can be used with current transformers.

*Denotes self-powered unit, limiting input voltage ranges to:

- 103-135 for 150V models
- 215-280 for 300V models
- 395-550 for 600V models

All others require 103-135Vac instrument power, (50-400Hz)

Optional 230Vac instrument power-Add suffix "-22" to part number.

Add suffix "Y27" for use on zero-crossing SCR controllers

NOTE: This option is not available for self-powered models

CUSTOM COUNT RATES,

OPEN COLLECTOR WH OUTPUT AND TTL OUTPUTS

AVAILABLE - CONSULT FACTORY

400 HERTZ MODELS

To order for use on 400Hz application, substitute "W4" in part number.

ORDERING INFORMATION

Example: Self-Powered,
Three Phase- Four Wire, 120V, 5A Input
with 0-5Vdc Output Proportional to 0-1500 Watts,
TTL Pulse Output for Watthours,
each Pulse Proportional to 1.0 Watthour.
W-007CX5-T

FULL SCALE OUTPUT USING CURRENT TRANSFORMERS/MODEL W AND W4 WATT/WATTHOUR TRANSDUCERS

MODEL NO. (EXAMPLE) W	F.S. WATTS FROM ABOVE	CURRENT TRANSFORMER RATIO (EXAMPLE)	FULL SCALE WATTS	COUNTS PER HR FROM ABOVE	WH PER COUNT
-007	1500	500/5 (100:1)	150,000	1500	100
-008	3000	500/5 (100:1)	300,000	3000	100

FULL SCALE OUTPUT USING CURRENT AND POTENTIAL TRANSFORMERS/MODEL W AND W4 WATT/WATTHOUR TRANSDUCERS

F.S. WATTS FROM ABOVE	CURRENT TRANSFORMER RATIO (EXAMPLE)	POTENTIAL TRANSFORMER RATIO (EXAMPLE)	FULL SCALE WATTS	COUNTS PER HR FROM ABOVE	WH PER COUNT
1500	500/5 (100:1)	2400/120 (20:1)	3,000,000	1500	2000

SPECIFICATIONS

INPUT

Voltage..... See Tables

Current..... See Tables

Frequency Range W..... 48 to 70Hz

W4..... 400Hz

Power Factor..... Any

Response (Transient 90%) < 100µs

Burden

Voltage and Current..... 1.25VA/phase

Output amplifier 2 Watts

Current Overload (Continuous) 2 X F.S.

15A, 20A, 25A..... F.S.

Dielectric Test....(Input/Output/Case)..... 1500Vac (RMS)

Surge Withstands IEEE SWC test

Instrument Power..... 103-135Vac, 50-400Hz, 5VA

"-22" Option..... 230Vac, 50/60Hz, ±10%

Self Powered Inst. Power Not Required

OUTPUT

ACCURACY ± 0.5% F.S.

Includes combined effects of power factor, linearity and repeatability .

WH Relay N/O SPST; 150Vac, 0.5A Rated

Contact Closure Period 200ms

Analog Output Ripple < 1% F.S.

Output Loading (Ω)

4 - 20mAdc..... 0-500

0 - ±1mAdc..... 0-10K

0 - ±10Vdc..... 2K min.

0 - ±5Vdc..... 2K min.

Response Time....(90%) 250ms

Suffix "Y27" (for use on zero-crossing SCR controllers) ...5s

Note: This option is not available on self-powered models.

Field Adjustable Cal. ± 10%

Temperature Range -10°C to +60°C

Temperature Effect ±1.0% of R_{dg.}, ±0.1% F.S. Output

Optional 5V Pulse..... TTL output for watthours 5Vdc pulse

add suffix "-T" to part number

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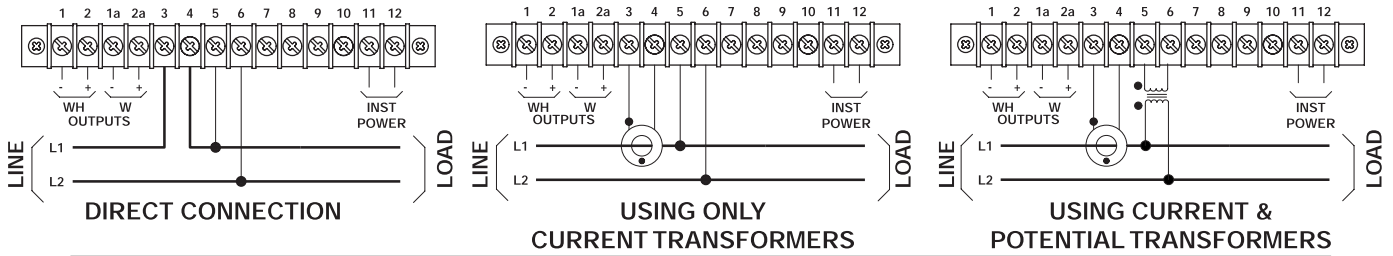
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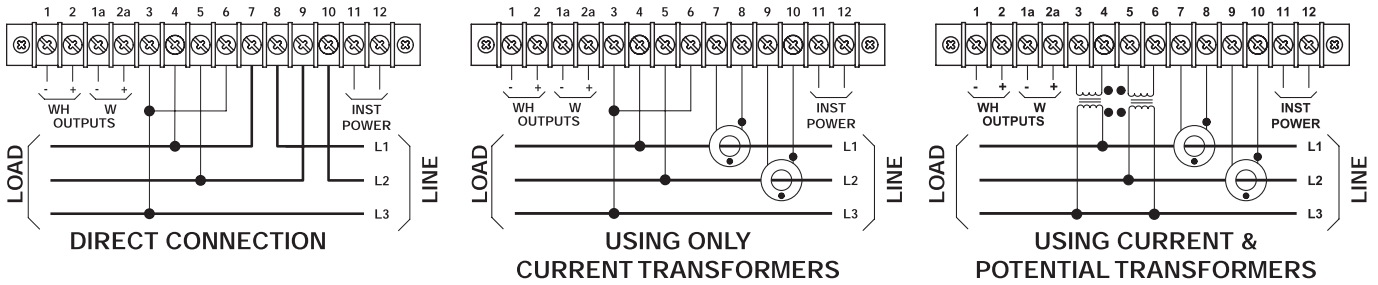
CONNECTION DIAGRAMS

MODELS W, W4

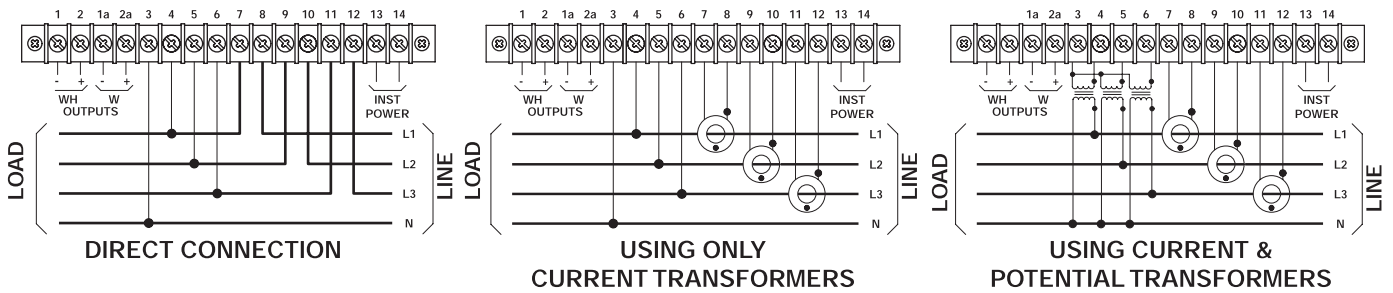
SINGLE PHASE CONNECTIONS



THREE-PHASE, THREE-WIRE CONNECTIONS

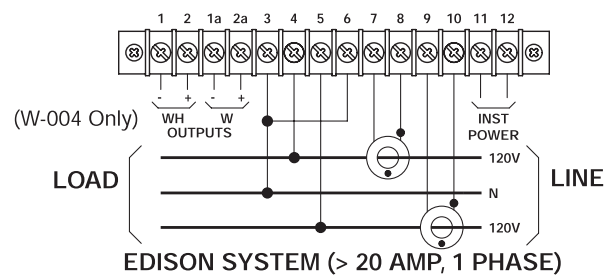
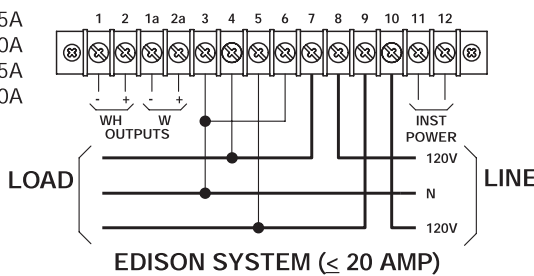


THREE-PHASE, FOUR-WIRE CONNECTIONS

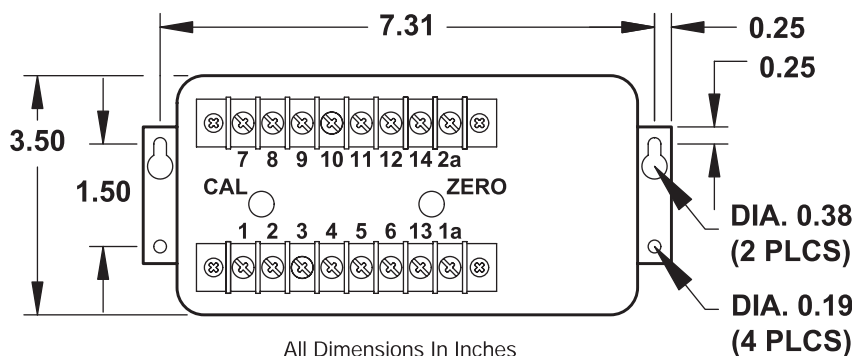


EDISON CIRCUIT 1 PHASE, 3-WIRE (120/240)

- (W-004) 5A
- (W-013) 10A
- (W-022) 15A
- (W-112) 20A



CASE DIMENSIONS



- CASE HEIGHT 5.50"
- 1PH 2W 3.0 Lbs.
- 3PH 3W 3.7 Lbs.
- 3PH 4W 4.5 Lbs.

All Dimensions In Inches

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