WATT TRANSDUCERS

AC WATT TRANSDUCER — *MODELS* PC5, PC4

SINGLE PHASE,TWO WIRE 50/60 HERTZ (PC5)
SINGLE PHASE, TWO WIRE 400 HERTZ (PC4)

FEATURES

- Accurate regardless of variations in voltage, current, power factor, or load.
- Output is proportional to true power delivered to a load; P=EI(COS ø). Provides bi-directional operation.

APPLICATIONS

- Equipment power consumption.
- For use with SCR controls, chopped waveforms, or where harmonic components exist.
- Standard outputs provide signal for interface with meters, recorders, or data acquisition equipment.

(ONE ELEMENT)

INPUTS		F.S. (WATTS)	STANDARD OUTPUTS MODEL PC5- OR PC4-									
AC VOLTS	AC AMPS		0-1mA*	0-1mA	0-10Vdc*	0-10Vdc	4-20mA	4-12-20mA	4-20mA*	4-20mA**	0-5Vdc*	0-5Vdc
0-150	0 - 1	100	103A	103B	103C	103D	103E	103EM	103EY30	103E2	103CX5	103X5
	0 - 2.5	250	106A	106B	106C	106D	106E	106EM	106EY30	106E2	106CX5	106X5
	0 - 5	500	001A	001B	001C	001D	001E	001EM	001EY30	001E2	001CX5	001X5
	0 - 10	1K	010A	010B	010C	010D	010E	010EM	010EY30	010E2	010CX5	010X5
	0 - 15	1.5K	019A	019B	019C	019D	019E	019EM	019EY30	019E2	019CX5	019X5
	0 - 20	2K	117A	117B	117C	117D	117E	117EM	117EY30	117E2	117CX5	117X5
	0 - 25	2.5K	118A	118B	118C	118D	118E	118EM	118EY30	118E2	118CX5	118X5
0-300	0 - 1	200	104A	104B	104C	104D	104E	104EM	104EY30	104E2	104CX5	104X5
	0 - 2.5	500	107A	107B	107C	107D	107E	107EM	107EY30	107E2	107CX5	107X5
	0 - 5	1K	002A	002B	002C	002D	002E	002EM	002EY30	002E2	002CX5	002X5
	0 - 10	2K	011A	011B	011C	011D	011E	011EM	011EY30	011E2	011CX5	011X5
	0 - 15	3K	020A	020B	020C	020D	020E	020EM	020EY30	020E2	020CX5	020X5
	0 - 20	4K	110A	110B	110C	110D	110E	110EM	110EY30	110E2	110CX5	110X5
	0 - 25	5K	119A	119B	119C	119D	119E	119EM	119EY30	119E2	119CX5	119X5
0-600	0 - 1	500	105A	105B	105C	105D	105E	105EM	105EY30	105E2	105CX5	105X5
	0 - 2.5	1K	108A	108B	108C	108D	108E	108EM	108EY30	108E2	108CX5	108X5
	0 - 5	2K	003A	003B	003C	003D	003E	003EM	003EY30	003E2	003CX5	003X5
	0 - 10	4K	012A	012B	012C	012D	012E	012EM	012EY30	012E2	012CX5	012X5
	0 - 15	6K	021A	021B	021C	021D	021E	021EM	021EY30	021E2	021CX5	021X5
	0 - 20	8K	111A	111B	111C	111D	111E	111EM	111EY30	111E2	111CX5	111X5

Highlighted models, (5A), can be used with current transformers.
***Denotes self-powered unit, limiting input voltage ranges to:
85-135 for 150V models
200-280 for 300V models
380-550 for 600V models
****Denotes 4-20mA loop-powered unit, (15-40Vdc).
"E" and "EM" Option model requires 105-135Vac,50-400Hz,5VA inst. power.
All others require 85-135Vac instrument power, (50-400Hz).
Optional 230Vac instrument power - Add suffix **"-22"**.

400 HERTZ MODELS-To order for use on 400Hz application, substitute **"PC4-"** in part number.

ORDERING INFORMATION
Example: Self-Powered, Single Phase, 120V, 5A Input with 0-5Vdc Output, Proportional to 0-500 Watts.
PC5-001CX5

NOTE:
"E", "E2", and "EY30" Models are unidirectional only. Reverse power conditions may cause the output to drop below 4mA but not below 0mA.

	FULL SCALE OUTPUT USING CURRENT TRANSFORMERS/ PC5 AND PC4 WATT TRANSDUCER			FULL SCALE OUTPUT USING CURRENT AND POTENTIAL TRANSFORMERS/ PC5 AND PC4 WATT TRANSDUCER			
MODEL NO. (example) PC5	F.S. WATTS FROM ABOVE	CURRENT TRANSFORMER RATIO (EXAMPLE)	FULL SCALE WATTS	F.S. WATTS FROM ABOVE	CURRENT TRANSFORMER RATIO (EXAMPLE)	POTENTIAL TRANSFORMER RATIO (EXAMPLE)	FULL SCALE WATTS
-001	500	500/5 (100:1)	50,000	500	500/5 (100:1)	2400/120 (20:1)	1,000,000
-002	1000	500/5 (100:1)	100,000				
-003	2000	500/5 (100:1)	200,000				

Add suffix **"Y25"** for use on zero-crossing SCR controllers. NOTE: This option is not available for self-powered models

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WATT TRANSDUCERS

AC WATT TRANSDUCER — *MODELS* PC5, PC4

THREE PHASE, THREE WIRE 50/60 HERTZ (PC5)
THREE PHASE, THREE WIRE 400 HERTZ (PC4)

(TWO ELEMENT)

INPUTS		F.S. (WATTS)	STANDARD OUTPUTS MODEL PC5- OR PC4-									
AC VOLTS	AC AMPS		0-1mA*	0-1mA	0-10Vdc*	0-10Vdc	4-20mA	4-12-20mA	4-20mA*	4-20mA**	0-5Vdc*	0-5Vdc
0-150	0 - 1	200	120A	120B	120C	120D	120E	120EM	120EY30	120E2	120CX5	120X5
	0 - 5	1K	004A	004B	004C	004D	004E	004EM	004EY30	004E2	004CX5	004X5
	0 - 10	2K	013A	013B	013C	013D	013E	013EM	013EY30	013E2	013CX5	013X5
	0 - 15	3K	022A	022B	022C	022D	022E	022EM	022EY30	022E2	022CX5	022X5
	0 - 20	4K	112A	112B	112C	112D	112E	112EM	112EY30	112E2	112CX5	112X5
	0 - 25	5K	123A	123B	123C	123D	123E	123EM	123EY30	123E2	123CX5	123X5
0-300	0 - 1	400	121A	121B	121C	121D	121E	121EM	121EY30	121E2	121CX5	121X5
	0 - 5	2K	005A	005B	005C	005D	005E	005EM	005EY30	005E2	005CX5	005X5
	0 - 10	4K	014A	014B	014C	014D	014E	014EM	014EY30	014E2	014CX5	014X5
	0 - 15	6K	023A	023B	023C	023D	023E	023EM	023EY30	023E2	023CX5	023X5
	0 - 20	8K	113A	113B	113C	113D	113E	113EM	113EY30	113E2	113CX5	113X5
	0 - 25	10K	124A	124B	124C	124D	124E	124EM	124EY30	124E2	124CX5	124X5
0-600	0 - 1	800	122A	122B	122C	122D	122E	122EM	122EY30	122E2	122CX5	122X5
	0 - 5	4K	006A	006B	006C	006D	006E	006EM	006EY30	006E2	006CX5	006X5
	0 - 10	8K	015A	015B	015C	015D	015E	015EM	015EY30	015E2	015CX5	015X5
	0 - 15	12K	024A	024B	024C	024D	024E	024EM	024EY30	024E2	024CX5	024X5
	0 - 20	16K	114A	114B	114C	114D	114E	114EM	114EY30	114E2	114CX5	114X5

Highlighted models, (5A), can be used with Current transformers.
150 volt models may be used with single phase, three wire 120/240Vac Edison systems.
Optional 230Vac instrument power - Add suffix **"-22"**.

NOTE: "E" , "E2" , and "EY30" Models are unidirectional only. Reverse power conditions may cause the output to drop below 4mA but not below 0mA.

***Denotes self-powered unit, limiting input voltage ranges to:
85-135 for 150V models
200-280 for 300V models
380-550 for 600V models

****Denotes 4-20mA loop-powered unit (15-40Vdc).
"E" and "EM" Option model requires 105-135Vac, 50-400Hz,5VA inst. power.
All others require 85-135Vac instrument power (50-400Hz)

MODEL PC5/PC4 SPECIFICATIONS

INPUT

Voltage ..... See Table
Current ..... See Table
Frequency Range ..... PC5 ..... 48 to 70Hz
PC4 ..... 400Hz
Power Factor ..... Any
Response (Transient 90%) ..... < 100µs
Burden
Voltage and Current 1.25VA/Phase
Output amplifier ..... 2 Watts
Current Overload
Continuous ..... 1-10A ..... 2 X F.S.
15A, 20A, and 25A ..... F.S.
Transient ..... 6 X F.S. (10 sec.)
Dielectric Test....(Input/Output/Case)..... 1500Vac (RMS)
Surge ..... Withstands IEEE SWC test

OUTPUT

ACCURACY ..... ± 0.5% F.S.
Includes combined effects of power factor, linearity,repeatability and current sensor.
Output Ripple ..... <1% F.S.
Output Loading (Ω)
0-1mA 0-10K
0-10Vdc ..... 2K min.
4-20mA (E) 0-1500
4-20mA (E2) ..... (@24Vdc)..... 0-600
(@40Vdc)..... 0-1400
0-5Vdc ..... 2K min.
***Response Time....(90%) 250ms
Suffix **"Y25"** (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 Rdg, ±0.1% F.S. output
Instrument Power 85-135Vac, 50-400Hz, 5VA
"E" Option 105-135Vac, 50-400Hz, 5VA
"-22" Option ..... 230Vac, 50/60Hz, ±10%

	FULL SCALE OUTPUT USING CURRENT TRANSFORMERS/ PC5 AND PC4 WATT TRANSDUCER			FULL SCALE OUTPUT USING CURRENT AND POTENTIAL TRANSFORMERS/ PC5 AND PC4 WATT TRANSDUCER			
MODEL NO. (example) PC5	F.S WATTS FROM ABOVE	CURRENT TRANSFORMER RATIO (EXAMPLE)	FULL SCALE WATTS	F.S. WATTS FROM ABOVE	CURRENT TRANSFORMER RATIO (EXAMPLE)	POTENTIAL TRANSFORMER RATIO (EXAMPLE)	FULL SCALE WATTS
-004	1K	1000/5 (200:1)	200K	1K	1000/5 (200:1)	4200/120 (35:1)	7000K
-005	2K	1000/5 (200:1)	400K				
-006	4K	1000/5 (200:1)	800K				

Add suffix **"Y25"** for use on zero-crossing SCR controllers. NOTE: This option is not available for self-powered models

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WATT TRANSDUCERS

AC WATT TRANSDUCER — *MODELS* PC5, PC4

THREE PHASE, FOUR WIRE 50/60 HERTZ (PC5)
THREE PHASE, FOUR WIRE 400 HERTZ (PC4)

(THREE ELEMENT)

INPUTS		F.S. IN (WATTS)	STANDARD OUTPUTS MODEL PC5- or PC4-									
AC VOLTS	AC AMPS		0-1mA*	0-1mA	0-10Vdc*	0-10Vdc	4-20mA	4-12-20mA	4-20mA*	4-20mA**	0-5Vdc*	0-5Vdc
0-150 L-N	0-1	300	125A	125B	125C	125D	125E	125EM	125EY30	125E2	125CX5	125X5
	0-5	1.5K	007A	007B	007C	007D	007E	007EM	007EY30	007E2	007CX5	007X5
	0-5 †	1.5K	7.5A	7.5B	7.5C	7.5D	7.5E	7.5EM	7.5EY30	7.5E2	7.5CX5	7.5X5
	0-10	3K	016A	016B	016C	016D	016E	016EM	016EY30	016E2	016CX5	016X5
	0-15	4.5K	025A	025B	025C	025D	025E	025EM	025EY30	025E2	025CX5	025X5
	0-20	6K	115A	115B	115C	115D	115E	115EM	115EY30	115E2	115CX5	115X5
	0-25	7.5K	127A	127B	127C	127D	127E	127EM	127EY30	127E2	127CX5	127X5
0-300 L-N	0-1	600	126A	126B	126C	126D	126E	126EM	126EY30	126E2	126CX5	126X5
	0-5	3K	008A	008B	008C	008D	008E	008EM	008EY30	008E2	008CX5	008X5
	0-5 †	3K	8.5A	8.5B	8.5C	8.5D	8.5E	8.5EM	8.5EY30	8.5E2	8.5CX5	8.5X5
	0-10	6K	017A	017B	017C	017D	017E	017EM	017EY30	017E2	017CX5	017X5
	0-15	9K	026A	026B	026C	026D	026E	026EM	026EY30	026E2	026CX5	026X5
	0-20	12K	116A	116B	116C	116D	116E	116EM	116EY30	116E2	116CX5	116X5
	0-25	15K	128A	128B	128C	128D	128E	128EM	128EY30	128E2	128CX5	128X5

Highlighted models, (5A), can be used with current transformers.
Voltage specifications are **line-to-neutral voltage**.
***Denotes self-powered unit, limiting input voltage ranges to:
85-135V for 150V models
200-280V for 300V models
380-550 fVor 600V models
****4-20mA loop-powered unit (15-40Vdc).
"E" and "EM" Option model requires 105-135Vac, 50-400Hz, 5VA inst. power.
All others require 85-135Vac instrument power, (50-400Hz).
Optional 230Vac instrument power - Add suffix **"-22"**
Add suffix **"Y25"** for use on zero-crossing SCR controllers.
NOTE: This option is not available for self-powered models

400 HERTZ MODELS-To order for use on 400Hz application, substitute **"PC4"** in part number.
† 2.5 Element

ORDERING INFORMATION
Example: Self-Powered, Three Phase-Four Wire, 120V, 5A Input with 0-5Vdc Output, Proportional to 0-1500 Watts.
PC5-007CX5

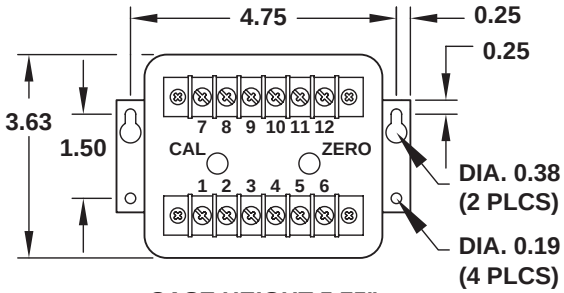
NOTE:
"E" , "E2" , and "EY30" Models are unidirectional only. Reverse power conditions may cause the output to drop below 4mA but not below 0mA.

FULL SCALE OUTPUT USING CURRENT TRANSFORMERS/PC5/PC4 WATT TRANSDUCER			
MODEL NO. (EXAMPLE) PC5	F.S. WATTS FROM ABOVE	CURRENT TRANSFORMER RATIO (EXAMPLE)	FULL SCALE WATTS
-007	1.5K	300/5 (60:1)	90K
-7.5	1.5K	300/5 (60:1)	90K
-008	3K	300/5 (60:1)	180K
-8.5	3K	300/5 (60:1)	180K

FULL SCALE OUTPUT USING CURRENT AND POTENTIAL TRANSFORMERS/PC5/PC4 WATT TRANSDUCER			
F.S. WATTS FROM ABOVE	CURRENT TRANSFORMER RATIO (EXAMPLE)	POTENTIAL TRANSFORMER RATIO (EXAMPLE)	FULL SCALE WATTS
1.5K	300/5 (60:1)	2400/120 (20:1)	1800K
1.5K	300/5 (60:1)	2400/120 (20:1)	1800K

CASE DIMENSIONS

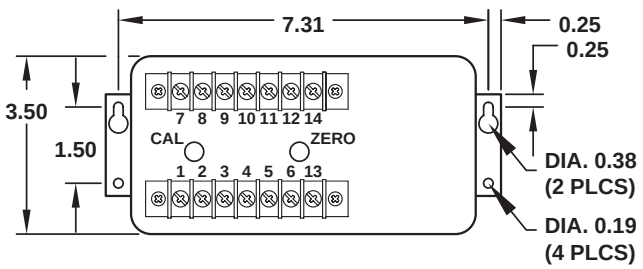
SINGLE-PHASE & THREE-PHASE, THREE-WIRE



CASE HEIGHT 5.75"
1PH 2.2 Lbs.
3PH 3.7 Lbs.

THREE-PHASE, FOUR-WIRE

(also used on three-phase, three-wire models with "E" , "EM" , and "EY30" option)



CASE HEIGHT 5.50"
3PH 3W 3.7 Lbs.
3PH 4W 4.2 Lbs.

All Dimensions In Inches

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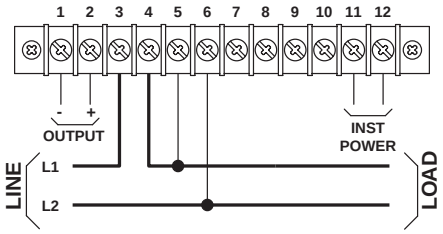
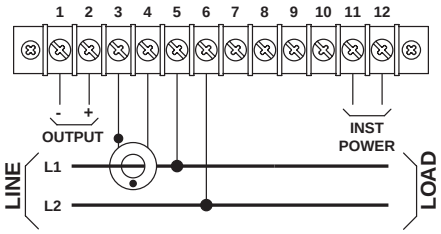
WATT TRANSDUCERS

CONNECTION DIAGRAMS — *MODELS* PC5, PC4

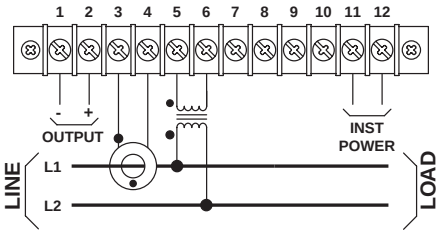
SINGLE-PHASE, TWO-WIRE CONNECTIONS (ONE ELEMENT)



USING INTERNAL SENSOR

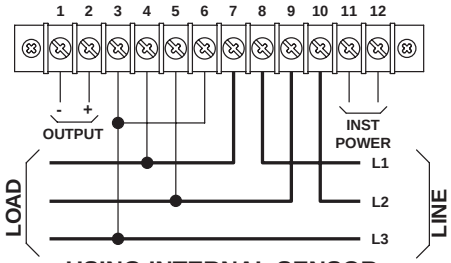


USING CURRENT TRANSFORMERS

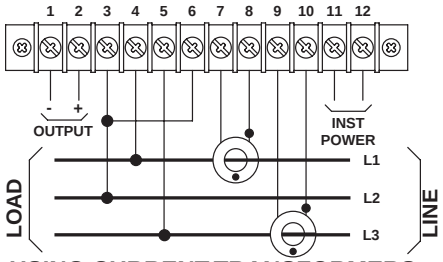


USING CURRENT TRANSFORMERS AND POTENTIAL TRANSFORMERS

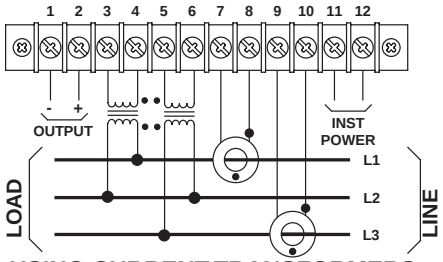
THREE-PHASE, THREE-WIRE CONNECTIONS (TWO ELEMENT)



USING INTERNAL SENSOR

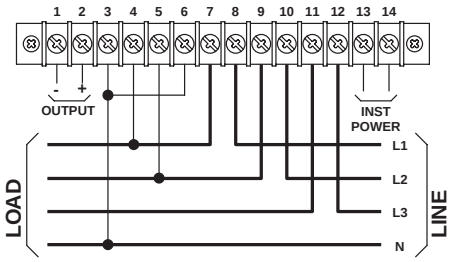


USING CURRENT TRANSFORMERS

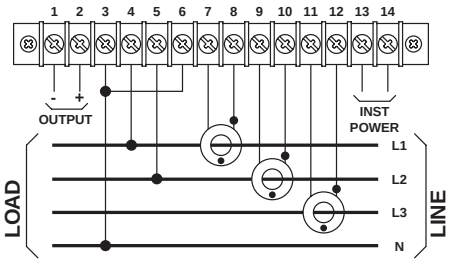


USING CURRENT TRANSFORMERS AND POTENTIAL TRANSFORMERS

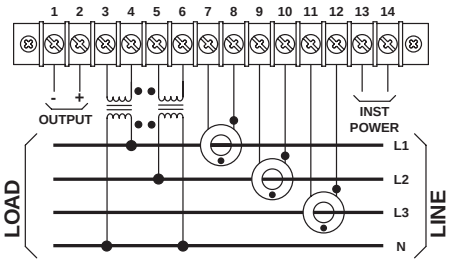
THREE-PHASE, FOUR-WIRE CONNECTIONS (2 1/2 ELEMENT)



USING INTERNAL SENSOR

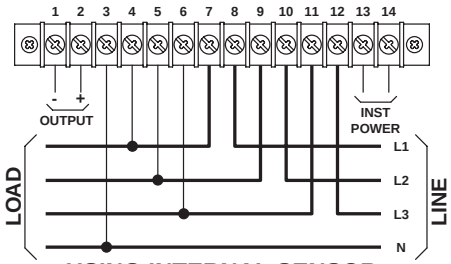


USING CURRENT TRANSFORMERS

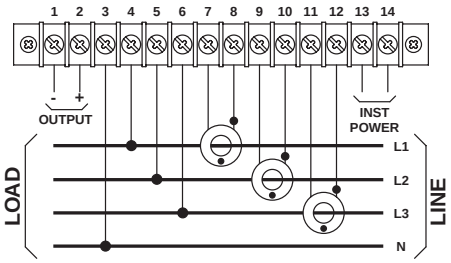


USING CURRENT TRANSFORMERS AND POTENTIAL TRANSFORMERS

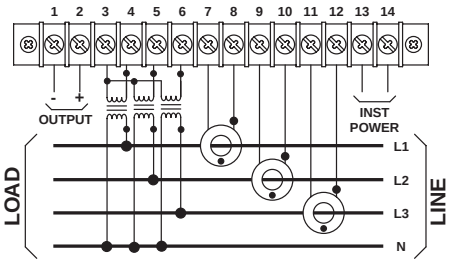
THREE-PHASE, FOUR-WIRE CONNECTIONS (THREE ELEMENT)



USING INTERNAL SENSOR

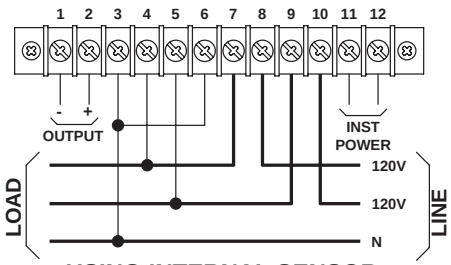


USING CURRENT TRANSFORMERS

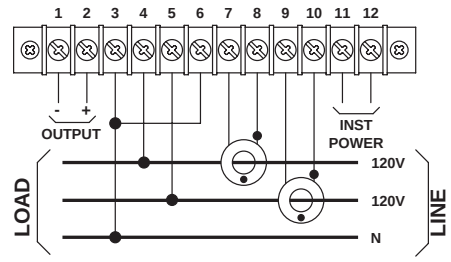


USING CURRENT TRANSFORMERS AND POTENTIAL TRANSFORMERS

EDISON CIRCUIT 1 PHASE-THREE-WIRE (120/240) CONNECTIONS



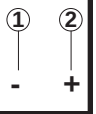
USING INTERNAL SENSOR (≤ 20 AMP)



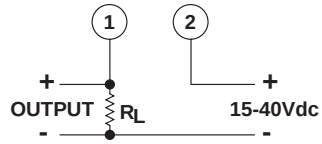
USING CURRENT TRANSFORMERS (> 20 AMP)

OUTPUT CONNECTIONS

A, B, C, D, E, EM, EY30, X5, CX5
0-5V, 10V, 1mA, 4-20mA



E2
4-20mAdc Loop- Powered



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