



## Crompton Instruments ANSI Switchboard Meters

Authorized Distributor:

**WESCHLER INSTRUMENTS**

phone: 800-903-9870 440-378-6580

fax: 800-903-9590 440-238-0660

www.weschler.com info@weschler.com





# Crompton Instruments

## ANSI SWITCHBOARD METERS

An extensive range of analog and digital/analog meters in the 4½" ANSI case style. Meters utilize a robust pivot and jewel movement design, and provide 1% accuracy for all RMS AC and DC ranges. The range offers various customized options and features UL and CE Listings and Certifications.



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### Features

- Rugged polycarbonate
- Class 1 accuracy

### Benefits

- Meets all requirements of ANSI C39.1
- Customize options and features
- Parallax error-free platform dials

### Applications

- Switchgear
- Distribution Systems
- Generator Sets
- Control Panels
- Energy Management
- Building Management
- Utility Power Monitoring
- Process Control
- Motor Control

### Certifications



# ANSI Switchboard Meters

High quality range of switchboard instruments with Class 1 accuracy and which complies with American ANSI-C39.1 (1981) specifications. Available in 4 1/2" case size, the rugged design characteristics meet the needs of the most demanding environmental applications. This extensive range of analog and digital/analog meters utilizes high shock and provides 1% accuracy for all RMS AC and DC ranges. The range offers various customized options and features.

## Description

Our Switchboard Meter series offers two case types; models 007 and 078.

Model 078 is high shock hermetically sealed and all models have heavy gauge pressed steel cases. Mounting is by four integral studs. Model 078 has a die-cast bezel and a projecting moulded toughened glass window, which incorporates a gas tight zero adjuster.

Model 007 is a one piece flame retardant polycarbonate moulding with a black matte finished bezel area, and a specially contoured window to minimize reflection from adjacent light sources.

Scales are 240° moving iron and 250° moving coil with parallax error-free platform dials. Standard dials are white matte with black printed scales and bar knife-edge pointers.

## Specifications

<b>Performance</b>	ANSI C39.1 (1981)
<b>Accuracy</b>	Class 1
<b>Terminals</b>	10 - 32 UNF terminals
<b>Response time</b>	Approximately 2.5 seconds to full scale (007 and 078)
<b>Dielectric voltage</b>	Withstand test 2.3 kV for 1 minute
<b>Standard calibration</b>	23°C
<b>Operating temperature</b>	0°C to +60°C. Model 078: -40°C to +70°C
<b>Storage temperature</b>	-10°C to +50°C
<b>Extreme temperature range</b>	-20°C to +65°C
<b>Enclosure integrity</b>	Model 007 to IP54 (NEMA 3S) splash proof, IP55 (NEMA 4) hoseproof is an optional extra Model 078 to IP67 (NEMA 6 and 6P)
<b>Fixing on panel</b>	4 integral 1/4 -28 UNF fixing studs
<b>Certifications</b>	c-UL-us, CE

## Dimensions (in inches)

Model	Panel Cutout			Rear View		Side View		
	Dia	A	B	C	D	E	F	G
007 (Amps, Volts & Freq.)	4.06	3.37	1.69	4.31	0.65	2.41	-	4.05
007 Others	4.06	3.37	1.69	4.31	0.65	-	0.91	4.05
078	4.06	3.37	1.69	4.31	0.63	-	0.91	4.05

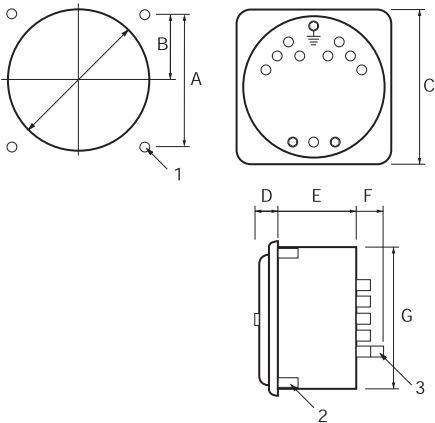
Dimension E on 007 others and 078 products varies with measured parameter. See product code on following page.

Dimension F on 078 (Amps, Volts & Freq.) products is included with dimension E.

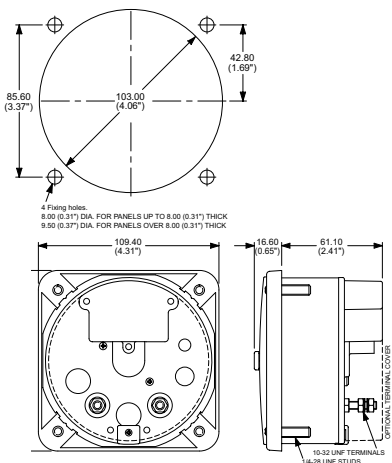
1-4 Fixing holes Ø 8mm. 2-1/4-28 UNF fixing studs. 3-10-32 UNF terminals.



## 007 Power and 078



## 007 AMPs | Volts | Frequency Only





### Features

- Rugged pivot and jewel movement
- Class 1 accuracy

### Benefits

- Meets all the requirements of ANSI-C39.1 (1981)
- Parallax error-free platform dials
- Bump, shock and vibration proof
- Customized options and features

### Applications

- Switchgear
- Distribution systems
- Generator sets
- Control panels
- Energy management
- Building management
- Utility power monitoring
- Process control
- Motor control

### Certifications



Type of instrument	Ranges	Dimension E		Product code
		007	078	
AC rectified ammeter	1 - 30A	56	86	007/078-05B
AC rectified voltmeter	30 - 800V	56	86	007/078-05W
AC voltmeter expanded scale	110 - 130V	86	86	007/078-05Y
AC RMS ammeter	1 - 30A	56	86	007/078-05F
AC RMS voltmeter	150 - 750V	56	86	007/078-05G
Elapsed time meter (99999.99)	50 or 60Hz / 100 - 440V* and DC	56	56	007/078-155/156/077-151
Frequency meter	50, 60	86	86	007/078-41L
AC wattmeter or VArmeter	0.2 - 10A/100 - 440V*	132	132	007/078-21 or 31
LED synchroscope only	63.5 - 480V****	86	-	077-14A
LED synchroscope and synchro check relay	63.5 - 480V****	86	-	077-14 L/G/D/U
Phase sequence indicator	100 - 150, 151 - 300, 301 - 500V	56	-	077-12P
Transducer operated indicator	1, 5, 10, 20, or 4/20mA	56	56	007/078-05
DC ammeter moving coil	200QA - 30A 56	56	56	007/078-05A
DC voltmeter moving coil	50mV - 600V 56	56	56	007/078-05V
240° phase angle   power factor	1 or 5A, 100 - 400V, 50, 60	132	132	007/078-42
DIGI/Analog AC ammeter	1mA - 10A	86	-	007-DIB
DIGI/Analog AC voltmeter	200mV - 600V	86	-	007-DIW
DIGI/Analog DC ammeter	1mA - 1A	86	-	007-DIA
DIGI/Analog DC voltmeter	20mV - 600V	86	-	007-DIV
DIGI/Analog transducer indicator	DC mA	86	-	007-DIT
DIGI/Analog tachometer	AC or DC rated	86	-	007-DI2

\* 100-440V = (100/125, 200/250, 380/440).

\*\*100-440V = (100/125, 200/250, 380/440). Frequencies 45/55, 55/65, 45/65, 46/54, 50/70, 58/62, 56/64.

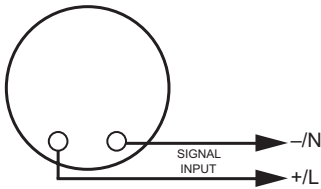
\*\*\*\*Nominal voltage to be specified.

# AC and DC Ammeters, Voltmeters and Frequency Meters

This range of self contained, pivot and jewel moving iron meters feature 250° linear scale. AC instruments are available with true RMS converting circuit or RMS compensated rectifier. While types of frequency meters can be damaged by transient supply voltage spike, Crompton Instruments 007-41 frequency meters can withstand, without damage, 10 successive transient spikes of 1250 volts. The range offers c-UL-us certification.



Fig. AA 007-05/007-41



## Specifications-General

Manufactured in accordance with American National Standards ANSI C39.1, (1981)

<b>Accuracy</b>	±1% full scale at 23°C (73°F)
<b>Scales arc</b>	250° full scale deflection
<b>Scale length</b>	007 and 078: 175.2 mm (6.9")
<b>Scale plate</b>	2 piece, platform type
<b>Response time</b>	007 and 078: Approximately 2.5 seconds to full scale
<b>Operating temperature</b>	0 to 40°C (32 to 104°F)
<b>Storage temperature</b>	-10 to +50°C (14 to 122°F)
<b>Extreme temperature range</b>	-20° to +65°C (-4° to 149°F)
<b>Terminals</b>	Standard 10-32 UNF stud. M5 screw clamp is optional
<b>Dielectric withstand</b>	2300V AC for 1 minute between electrical circuit and case
<b>Overshoot</b>	33% maximum
<b>Enclosure code</b>	007: IP54, optional IP55 and 078: IP67
<b>Certification</b>	c-UL-us

## Specifications-Ammeters and Voltmeters

<b>Overload rating</b>	AC ammeters - 2 x continuous, 50 x for 1 second AC voltmeters and frequency meters - 1.2 x continuous DC ammeters - 2 x continuous 10 x for 1 second DC voltmeters - 1.2 x continuous
<b>Frequency range</b>	AC calibration 50/60Hz ±20%

## Specifications-Frequency Meters

<b>Response time</b>	3 seconds maximum
<b>External temperature influence</b>	0.6 times accuracy maximum with ±10°C from reference temperature
<b>External field influence</b>	2.0 times accuracy maximum with 0.5m T field
<b>Acceptable input harmonic influence</b>	up to 30% distortion

Maximum Frequency - Hz	Center Scale - Hz	Error in Hz
45-55	50	0.15
46-54	50	0.15
45-65	55	0.25
50-70	60	0.25
55-65	60	0.15
56-64	60	0.15

## RMS Reading AC Ammeters

Product Codes - Self Contained 40/70Hz - Accuracy  $\pm 1\%$ , 60Hz\*\*\*

Rating	Scaling*	4 1/2" square flange	
		Std. case catalog number	Std. case hi-shock catalog number
1A	0-1A	•007-05FA-LALA-C7	078-05FJ-LALA-C6
1.5A	0-1.5A	•007-05FA-LCLC-C7	078-05FJ-LCLC-C6
2A	0-2A	•007-05FA-LELE-C7	078-05FJ-LELE-C6
3A	0-3A	•007-05FA-LJLJ-C7	078-05FJ-LJLJ-C6
5A	0-5A	•007-05FA-LSLS-C7	078-05FJ-LSLS-C6
7.5A	0-7.5A	•007-05FA-MFMF-C7	078-05FJ-MFMF-C6
10A	0-10A	•007-05FA-MTMT-C7	078-05FJ-MTMT-C6
15A	0-15A	•007-05FA-NDND-C7	078-05FJ-NDND-C6
20A	0-20A	•007-05FA-NGNG-C7	078-05FJ-NGNG-C6
30A	0-30A	•007-05FA-NLNL-C7	078-05FJ-NLNL-C6

For AC rectified non-RMS compensated meter, please replace the -05F in the product code with -05B.

Product Codes - Transformer Rated 40/70Hz - Burden 0.3VA\*\*\*

5A	0-10A	•007-05FA-LSMT-C7	078-05FJ-LSMT-C6
5A	0-15A	•007-05FA-LSND-C7	078-05FJ-LSND-C6
5A	0-20A	•007-05FA-LSNG-C7	078-05FJ-LSNG-C6
5A	0-25A	•007-05FA-LSNJ-C7	078-05FJ-LSNJ-C6
5A	0-30A	•007-05FA-LSNL-C7	078-05FJ-LSNL-C6
5A	0-40A	•007-05FA-LSNP-C7	078-05FJ-LSNP-C6
5A	0-50A	•007-05FA-LSNT-C7	078-05FJ-LSNT-C6
5A	0-75A	•007-05FA-LSPB-C7	078-05FJ-LSPB-C6
5A	0-100A	•007-05FA-LSPK-C7	078-05FJ-LSPK-C6
5A	0-150A	•007-05FA-LSPZ-C7	078-05FJ-LSPZ-C6
5A	0-200A	•007-05FA-LSRL-C7	078-05FJ-LSRL-C6
5A	0-250A	•007-05FA-LSRS-C7	078-05FJ-LSRS-C6
5A	0-300A	•007-05FA-LSRX-C7	078-05FJ-LSRX-C6
5A	0-400A	•007-05FA-LSSC-C7	078-05FJ-LSSC-C6
5A	0-500A	•007-05FA-LSSF-C7	078-05FJ-LSSF-C6
5A	0-600A	•007-05FA-LSSJ-C7	078-05FJ-LSSJ-C6
5A	0-800A	•007-05FA-LSSN-C7	078-05FJ-LSSN-C6
5A	0-1000A	•007-05FA-LSSS-C7	078-05FJ-LSSS-C6
5A	0-1200A	•007-05FA-LSSU-C7	078-05FJ-LSSU-C6
5A	0-1500A	•007-05FA-LSTC-C7	078-05FJ-LSTC-C6
5A	0-1600A	•007-05FA-LSTE-C7	078-05FJ-LSTE-C6
5A	0-2000A	•007-05FA-LSTM-C7	078-05FJ-LSTM-C6
5A	0-2500A	•007-05FA-LSTU-C7	078-05FJ-LSTU-C6
5A	0-3000A	•007-05FA-LSUA-C7	078-05FJ-LSUA-C6
5A	0-4000A	•007-05FA-LSUE-C7	078-05FJ-LSUE-C6
5A	0-5000A	•007-05FA-LSUJ-C7	078-05FJ-LSUJ-C6
5A	0-6000A	•007-05FA-LSUP-C7	078-05FJ-LSUP-C6
5A	0-7000A	•007-05FA-LSUS-C7	078-05FJ-LSUS-C6
5A	0-8000A	•007-05FA-LSUW-C7	078-05FJ-LSUW-C6

For AC rectified non-RMS compensated meter, please replace the -05F in the product code with -05B.

\* Other scales are available.

\*\*\* For case types 007/078 use 10-32 UNF terminals.

• c-UL-us certified.



AC Ammeter

## RMS Reading AC Voltmeters

Product Codes - Self Contained 50/60Hz ± 20% - Accuracy ±1%\*\*\*



AC Voltmeter

Rating	Scaling*	4 1/2" square flange	
		Std. case catalog number	Std. case hi-shock catalog number
150V	0-150V	•007-05GA-PZPZ-C7	078-05GJ-PZPZ-C6
250V	0-250V	•007-05GA-RSRS-C7	078-05GJ-RSRS-C6
300V	0-300V	•007-05GA-RXRX-C7	078-05GJ-RXRX-C6
500V	0-500V	•007-05GA-SFSF-C7	078-05GJ-SFSF-C6
600V	0-600V	•007-05GA-SJSJ-C7	078-05GJ-SJSJ-C6
750V	0-750V	007-05GA-SMSM-C7	078-05GJ-SMSM-C6

For AC rectified non-RMS compensated meter, please replace the -05G in the product code with -05W.

Product Codes - Transformer Rated 50/60Hz - Accuracy 31%  
0.8VA @ 150V\*\*\*

150V	0-300V	•007-05GA-PZRX-C7	078-05GJ-PZRX-C6
150V	0-600V	•007-05GA-PZSJ-C7	078-05GJ-PZSJ-C6
150V	0-750V	•007-05GA-PZSM-C7	078-05GJ-PZSM-C6
150V	0-3000V	•007-05GA-PZUA-C7	078-05GJ-PZUA-C6
150V	0-5250V	•007-05GA-PZUL-C7	078-05GJ-PZUL-C6
150V	0-6000V	•007-05GA-PZUP-C7	078-05GJ-PZUP-C6
150V	0-9000V	•007-05GA-PZUY-C7	078-05GJ-PZUY-C6
150V	0-15kV	•007-05GA-PZWC-C7	078-05GJ-PZWC-C6
150V	0-18kV	•007-05GA-PZWD-C7	078-05GJ-PZWD-C6
150V	0-45kV	•007-05GA-PZWJ-C7	078-05GJ-PZWJ-C6
250V	0-600V	•007-05GA-RSSJ-C7	078-05GJ-RSSJ-C6

For AC rectified non-RMS compensated meter, please replace the -05G in the product code with -05W.

Product Codes - Expanded Scale - Moving Coil Zener Diode \*\*\*  
Accuracy ±0.3% of Mid-scale Value Self Contained, 20-1000Hz

110-130V	110-130V	007-05YA-PNPN-C6	078-05YJ-PNPN-C6
110-130V	To suit PT	007-05YA-PN**-C6	078-05YJ-PN**-C6

- \* Other scales are available.
- \*\* Scaling information provided at time of order.
- \*\*\* For case types 007/078 use 10-32 UNF terminals.
- c-UL-us listed.



AC Voltmeter - Expanded Scale



## DC Ammeters

Product Codes - Self Contained - Accuracy  $\pm 1\%$ \*\*\*

Rating	Scaling*	4 1/2" square flange	
		Std. case catalog number	Std. case hi-shock catalog number
0-200uA	0-200uA	•007-05AA-EAEA	078-05AJ-EAEA
0-300uA	0-300uA	•007-05AA-EEEE	078-05AJ-EEEE
0-500uA	0-500uA	•007-05AA-EMEM	078-05AJ-EMEM
0-800uA	0-800uA	•007-05AA-EWEW	078-05AJ-EWEW
0-1mA	0-1mA	•007-05AA-FAFA	078-05AJ-FAFA
0-2mA	0-2mA	•007-05AA-FGFG	078-05AJ-FGFG
0-5mA	0-5mA	•007-05AA-FXFX	078-05AJ-FXFX
0-10mA	0-10mA	•007-05AA-HAHA	078-05AJ-HAHA
0-20mA	0-20mA	•007-05AA-HFHF	078-05AJ-HFHF
0-30mA	0-30mA	•007-05AA-HMHM	078-05AJ-HMHM
0-50mA	0-50mA	•007-05AA-HXHY	078-05AJ-HXHY
0-100mA	0-100mA	•007-05AA-JRJR	078-05AJ-JRJR
0-200mA	0-200mA	•007-05AA-KAKA	078-05AJ-KAKA
0-300mA	0-300mA	•007-05AA-KGKG	078-05AJ-KGKG
0-500mA	0-500mA	•007-05AA-KMKM	078-05AJ-KMKM
0-800mA	0-800mA	•007-05AA-KWKW	078-05AJ-KWKW
0-1A	0-1A	•007-05AA-LALA	078-05AJ-LALA
0-5A	0-5A	•007-05AA-LSLS	078-05AJ-LSLS
0-10A	0-10A	•007-05AA-MTMT	078-05AJ-MTMT
0-15A	0-15A	•007-05AA-NDND	078-05AJ-NDND
0-20A	0-20A	•007-05AA-NGNG	078-05AJ-NGNG
0-30A	0-30A	•007-05AA-NLNL	078-05AJ-NLNL



DC Ammeter

Product Codes - Millimeters - Suppressed Zero, No Zero Adjust Unless Specified

1/5mA	To Suit	•007-05RA-GM**	078-05RJ-GM**
4/20mA	To Suit	•007-05RA-HG**	078-05RJ-HG**
10/50mA	To Suit	•007-05RA-HZ**	078-05RJ-HZ**

Product Codes - Shunt Rated - Accuracy  $\pm 1\%$ \*\*\*

Rating	Scaling*	4 1/2" square flange	
		Std. case catalog number	Std. case hi-shock catalog number
50mV	To suit shunt rating	•007-05AA-EY**	078-05AJ-EY**
50-0-50mV		•007-05CA-GB**	078-05CJ-GB**
100mV		•007-05AA-GB**	078-05AJ-GB**
100-0-100mV		•007-05CA-GM**	078-05CJ-GM**

Product Codes - Zero Left For Use With 50 mV Shunts and 0.05 Ohm Shunt Leads\*\*\*and \*\*\*\*

50mV	0-15A	•007-05AA-EYND	078-05AJ-EYND
50mV	0-20A	•007-05AA-EYNG	078-05AJ-EYNG
50mV	0-30A	•007-05AA-EYNL	078-05AJ-EYNL
50mV	0-40A	•007-05AA-EYNP	078-05AJ-EYNP
50mV	0-75A	•007-05AA-EYPB	078-05AJ-EYPB
50mV	0-100A	•007-05AA-EYPK	078-05AJ-EYPK
50mV	0-150A	•007-05AA-EYPZ	078-05AJ-EYPZ
50mV	0-200A	•007-05AA-EYRL	078-05AJ-EYRL
50mV	0-300A	•007-05AA-EYRX	078-05AJ-EYRX
50mV	0-400A	•007-05AA-EYSC	078-05AJ-EYSC
50mV	0-500A	•007-05AA-EYSF	078-05AJ-EYSF
50mV	0-750A	•007-05AA-EYSM	078-05AJ-EYSM
50mV	0-1000A	•007-05AA-EYSS	078-05AJ-EYSS
50mV	0-1200A	•007-05AA-EYSU	078-05AJ-EYSU
50mV	0-1500A	•007-05AA-EYTC	078-05AJ-EYTC
50mV	0-2000A	•007-05AA-EYTM	078-05AJ-EYTM
50mV	0-3000A	•007-05AA-EYUA	078-05AJ-EYUA

- c-UL-us certified.  
Specify shunt lead resistance value if in excess of 0.05 ohms for calibration purposes.  
DC shunt rated ammeters have thermistor circuit ambient temperature compensation.  
Separate shunt and shunt leads are not included.
- \* Other scales are available.
- \*\* Specify scale required.
- \*\*\* Other mV ratings and scale options available upon request.
- \*\*\*\* For case types 007/078 use 10-32 UNF terminals.

## DC Voltmeters

Product Codes - Sensitivity 1000 Ohms / Volt - Accuracy  $\pm 1\%$ \*\*\*



DC Voltmeter

Rating	Scaling*	4 1/2" square flange	
		Std. case catalog number	Std. case hi-shock catalog number
500MV-800V	To suit	•007-05VA-**	078-05VJ-**
0-15V	0-15V	•007-05VA-NDND	078-05VJ-NDND
0-30V	0-30V	•007-05VA-NLNL	078-05VJ-NLNL
0-50V	0-50V	•007-05VA-NTNT	078-05VJ-NTNT
0-75V	0-75V	•007-05VA-PBPB	078-05VJ-PBPB
0-150V	0-150V	•007-05VA-PZPZ	078-05VJ-PZPZ
0-300V	0-300V	•007-05VA-RXR X	078-05VJ-RXR X
0-400V	0-400V	•007-05VA-SCSC	078-05VJ-SCSC
0-500V	0-500V	•007-05VA-SFSF	078-05VJ-SFSF
0-600V	0-600V	•007-05VA-SJSJ	078-05VJ-SJSJ
0-750V	0-750V	007-05VA-SMSM	078-05VJ-SMSM
0-800V	0-800V	007-05VA-SNSN	078-05VJ-SNSN

Product Codes - Zero Center - Sensitivity 2000 Ohms / Volt Accuracy  $\pm 1\%$ \*\*\*

150-0-150V	150-0-150V	•007-05NA-RXR X	078-05NJ-RXR X
300-0-300V	300-0-300V	•007-05NA-SJSJ	078-05NJ-SJSJ
500-0-500V	500-0-500V	•007-05NA-SSSS	078-05NJ-SSSS
600-0-600V	600-0-600V	•007-05NA-SUSU	078-05NJ-SUSU

## Frequency Meters

Product Codes - 120V Self Contained\*\*\*



Frequency Meter

Ratings	Scaling*	4 1/2" square flange	
		Std. case catalog number	Std. case hi-shock catalog number
50Hz +/-0.15	45-55Hz	•007-41LA-PNAG-AG	078-41LJ-PNAG-AG
50Hz +/-0.15	46-54Hz	•007-41LA-PNAH-AH	078-41LJ-PNAH-AH
50Hz +/-0.25	45-65Hz	•007-41LA-PNAJ-AJ	078-41LJ-PNAJ-AJ
60Hz +/-0.25	50-70Hz	•007-41LA-PNAL-AL	078-41LJ-PNAL-AL
60Hz +/-0.15	55-65Hz	•007-41LA-PNAN-AN	078-41LJ-PNAN-AN
60Hz +/-0.15	56-64Hz	•007-41LA-PNAO-AO	078-41LJ-PNAO-AO
60Hz +/-0.08	58-62Hz	•007-41LA-PNAT-AT	078-41LJ-PNAT-AT

For alternative voltage rating 200-250V, use code RN instead of PN.  
For alternative voltage rating 380-480V, case types 007/078 use code SE instead of PN.

10-32 UNF terminals.  
\* Other scales are available.  
\*\* Specify scale required.  
\*\*\*For case types 007/078 use 10-32 UNF terminals.  
• c-UL-us certified.

# AC Wattmeters and VArmeters



The Crompton Instruments Switchboard series of AC Wattmeters and VArmeters incorporate a DC moving coil, pivot and jewel indicator with a micro-circuit watt transducer PCB to read power on single or three-phase systems. The most frequently selected wattmeter scale marking for common current and voltage transformers are listed on the following pages. In addition, these instruments may be supplied with zero-left or center-zero scale.

## Scaling

Wattmeter and VArmeter current circuits should have equal carrying capacity because they are frequently connected in series. This means that the sum of the left and right end-scale values of the VArmeters should be equal to or greater than the full scale value of the Wattmeter (or have higher end-scale values if the instruments are center or offset-zero). Instruments measuring 10,000 kilowatts and over are marked in megawatts. Center-zero or offset-zero Watt and VArmeters are marked "IN" for left deflection and "OUT" for right deflection. On ordering, Wattmeter and VArmeter scales will be calculate, the nearest preferred scale will be offered from the charts on the following pages. Custom scales are available but at an extra cost.

## Calibration

For full load value of Watts or VAr, assuming unity power factor:

1-phase 2-wire Watts = amps x volts

3-phase 3-wire Watts = amps x line-to-line volts x  $\sqrt{3}$

3-phase 4-wire Watts = amps x line-to-neutral volts x 3

Minimum scale values are obtained by multiplying resultant Watts, using the above formula x 0.7 and selecting next higher standard scale.

For maximum scale value, multiply x 1.3 and select the next lowest standard.

If scale calculates to an exact listed value, use this value rather than the next higher or lower value.

**Note:** When ordering Wattmeters and VArmeters, please specify CT ratio, VT ratio and required scale.

## Specifications

<b>Burden per element</b>	Current circuit: 2VA   Voltage Circuit: 1VA
<b>Accuracy</b>	Class 1.0
<b>Ambient range</b>	0° to $\pm 60^\circ$ (32° to 104°F) std. calibration 20°C (68°F)
<b>Ambient influence</b>	0.05% per 1°C maximum
<b>Overloads-current</b>	10 x rating for 5 seconds, 1.2 x continuously
<b>Voltage influence</b>	2 x rating for 5 seconds, 1.2 x continuously voltage Accuracy maintained, 80 - 110% rated voltage
<b>Power factor influence</b>	Accuracy maintained, 0.1 lag to 0.1 lead
<b>Enclosure code</b>	007 IP54 optional IP55   078 IP67
<b>Response time</b>	007 and 078 approximately 2.5 seconds
<b>Dielectric withstand</b>	Live parts to case including panel 2600V RMS for 1 minute

# Wattmeter | VArmeter Scale Selector Guide

Primary potential transformer voltage system	120	208	240	480	600	2400	3600	4200	4800	6000	7200	8400
	(1:1)	(1.73:1)	(2:1)	(4:1)	(5:1)	(20:1)	(30:1)	(35:1)	(40:1)	(50:1)	(60:1)	(70:1)
3-phase 3-wire (L-L) system voltage	120	208	240	480	600	2400	3600	4200	4800	6000	7200	8400
3-phase 4-wire (L-N) current transformer	69	120	139	277	347	1390	2100	2400	2770	3500	4160	4800

RATIO 25/5 (5:1)	Normal	5KW	10KW	10KW	20KW	25KW	100KW	150KW	175KW	200KW	250KW	300KW	350KW
	Max.	6	10	12	25	30	120	200	200	250	300	400	450
	Min.	3	5	6	12.5	15	60	100	100	125	150	200	225
RATIO 50/5 (10:1)	Normal	10KW	20KW	20KW	40KW	50KW	200KW	300KW	350KW	400KW	500KW	600KW	700KW
	Max.	12	20	25	50	60	250	400	450	500	600	800	900
	Min.	6	10	12.5	25	30	125	200	250	250	300	400	450
RATIO 75/5 (15:1)	Normal	15KW	25KW	30KW	60KW	75KW	300KW	500KW	500KW	600KW	750KW	900KW	1000KW
	Max.	20	30	40	80	100	400	600	700	800	1000	1200	1200
	Min.	10	15	20	40	50	200	300	350	400	500	600	600
RATIO 100/5 (20:1)	Normal	20KW	30KW	40KW	75KW	100KW	400KW	600KW	700KW	800KW	1000KW	1200KW	1200KW
	Max.	25	40	50	100	120	500	800	900	1000	1200	1500	1500
	Min.	12.5	20	25	50	60	250	400	450	500	600	750	750
RATIO 150/5 (30:1)	Normal	30KW	50KW	50KW	100KW	150KW	600KW	800KW	1000KW	1200KW	1500KW	1800KW	2000KW
	Max.	40	70	75	150	200	800	1200	1200	1500	2000	2400	2500
	Min.	20	35	35	75	100	400	600	600	750	1000	1000	1250
RATIO 200/5 (40:1)	Normal	40KW	75KW	75KW	150KW	200KW	800KW	1200KW	1200KW	1500KW	2000KW	2500KW	3000KW
	Max.	50	80	100	200	250	1000	1500	1500	2000	2500	3000	3500
	Min.	25	40	50	100	125	500	750	750	1000	1250	1500	1500
RATIO 300/5 (60:1)	Normal	70KW	100KW	100KW	200KW	300KW	1200KW	1500KW	2000KW	2500KW	3000KW	3500KW	4500KW
	Max.	75	120	150	300	400	1500	2000	2500	3000	4000	4000	5000
	Min.	35	60	75	150	200	750	1000	1250	1500	2000	2000	2500
RATIO 400/5 (80:1)	Normal	75KW	125KW	150KW	300KW	400KW	1500KW	2500KW	3000KW	3000KW	4000KW	5000KW	6000KW
	Max.	100	150	200	400	500	2000	3000	3600	4000	5000	6000	7000
	Min.	50	75	100	200	250	1000	1500	1500	2000	2500	3000	3500
RATIO 600/5 (120:1)	Normal	125KW	200KW	200KW	450KW	600KW	2000KW	3000KW	4000KW	5000KW	6000KW	7500KW	8000KW
	Max.	150	250	300	600	800	3000	4000	5000	6000	8000	8000	10MW
	Min.	75	125	150	300	400	1500	2000	2500	3000	4000	4000	5000KW
RATIO 800/5 (160:1)	Normal	150KW	250KW	300KW	600KW	800KW	3000KW	5000KW	6000KW	6000KW	8000KW	10MW	12MW
	Max.	200	350	400	800	1000	4000	6000	7500	8000	10MW	12	15
	Min.	100	175	200	400	500	2000	3000	3000	4000	5000KW	6000KW	7500KW
RATIO 1000/5 (200:1)	Normal	200KW	350KW	400KW	800KW	1000KW	4000KW	6000KW	6000KW	8000KW	10MW	12MW	15MW
	Max.	250	450	500	1000	1200	5000	8000	8000	10MW	12	15	18
	Min.	125	225	250	500	600	2500	4000	4000	5000KW	6000KW	7500KW	10
RATIO 1200/5 (240:1)	Normal	250KW	400KW	500KW	1000KW	1200KW	5000KW	7000KW	8000KW	10MW	12MW	15MW	10MW
	Max.	300	500	600	1200	1500	6000	8000	10MW	12	15	18	20
	Min.	150	250	300	600	750	3000	4000	5000KW	6000KW	7500KW	10	10
RATIO 1500/5 (300:1)	Max.	300KW	500KW	600KW	1200KW	1500KW	6000KW	10MW	10MW	12MW	15MW	20MW	20MW
	Max.	400	700	750	1500	2000	8000	12	12	15	20	20	25
	Min.	200	350	375	1000	1000	4000	6000KW	6000KW	7500KW	10	10	12.5
RATIO 2000/5 (400:1)	Normal	400KW	750KW	800KW	1600KW	2000KW	8000KW	12MW	12MW	15MW	20MW	25MW	30MW
	Max.	500	800	1000	2000	2500	10MW	15	15	20	25	30	35
	Min.	250	400	500	750	1250	5000	7500KW	7500KW	10	12.5	15	20
RATIO 3000/5 (600:1)	Normal	750KW	1000KW	1200KW	2000KW	3000KW	12MW	18MW	20MW	25MW	30MW	35MW	40MW
	Max.	800	1200	1500	3000	4000	15	20	25	30	40	40	50
	Min.	400	600	750	1500	2000	7500KW	10	12.5	15	20	20	25
RATIO 4000/5 (800:1)	Normal	800KW	1200KW	1500KW	3000KW	4000KW	15MW	20MW	25MW	30MW	40MW	50MW	50MW
	Max.	1000	1500	2000	4000	5000	20	30	30	40	50	60	75
	Min.	500	750	1000	2000	2500	10	15	15	20	25	30	40
RATIO 5000/5 (1000:1)	Normal	1000KW	1500KW	2000KW	4000KW	5000KW	20MW	30MW	20MW	40MW	50MW	60MW	75MW
	Max.	1250	2000	2500	5000	6000	25	40	25	50	60	80	80
	Min.	500	1000	1250	2500	3000	12.5	20	12.5	25	30	40	40
RATIO 6000/5 (1200:1)	Normal	1200KW	2000KW	2500KW	5000KW	6000KW	25MW	35MW	40MW	50MW	60MW	60MW	80MW
	Max.	1500	2500	3000	6000	8000	30	40	50	60	80	80	100
	Min.	750	1250	1500	3000	4000	15	20	25	30	40	40	50

# Wattmeter | VArmeter Scale Selector Guide

Primary potential transformer voltage system		12kV	14.4kV	24kV	34.5kV	38kV	46kV	92kV	115kV	138kV	345kV	765kV
		(100:1)	(120:1)	(200:1)	(300:1)	(330:1)	(400:1)	(800:1)	(1000:1)	(1200:1)	(3000:1)	(6000:1)
3-phase 3-wire (L-L) system voltage		12KV	14.4kV	24kV	34.5kV	38kV	46kV	92kV	115kV	138kV	345kV	765kV
3-phase 4-wire (L-N) current transformer		6900	8300	13.8KV	20kV	22kV	26.5kV	53kV	66kV	80kV	200kV	440kV
RATIO 25/5 (5:1)	Normal Max. Min.	500KW 650 325	600KW 800 400	1000KW 1200 600	1500KW 1500 750	1500KW 2000 1000	1500KW 2500 1250	3000KW 200 100	5000KW 200 100	6000KW 250 125	15MW 300 150	30MW 400 200
RATIO 50/5 (10:1)	Normal Max. Min.	1000KW 1200 600	1200KW 1500 750	2000KW 2500 1250	3000KW 3500 1750	3000KW 4000 2000	3500KW 5000 2500	8000KW 10MW 5000KW	10MW 12 6000KW	12MW 15 7500KW	30MW 35 15	60MW 80 40
RATIO 75/5 (15:1)	Normal Max. Min.	1500KW 2000 1000	1800KW 2000 1000	3000KW 4000 2000	4000KW 5000 2500	5000KW 6000 3000	5000KW 7500 3000	10MW 15 7500KW	15MW 15 7500KW	15MW 20 10	45MW 50 25	100MW 125 50
RATIO 100/5 (20:1)	Normal Max. Min.	2000KW 2500 1250	2500KW 3000 1500	4000KW 5000 2500	6000KW 7500 3000	6000KW 8000 4000	7500KW 10MW 5000KW	15MW 20 10	20MW 25 12.5	25MW 30 15	60MW 70 35	125MW 150 75
RATIO 150/5 (30:1)	Normal Max. Min.	3000KW 4000 2000	3500KW 4000 2000	6000KW 4000 2000	10MW 10 5000KW	10MW 12 6000KW	10MW 15 7500KW	20MW 30 15	30MW 35 15	35MW 40 20	90MW 100 50	200MW 250 100
RATIO 200/5 (40:1)	Normal Max. Min.	4000KW 5000 2500	4500KW 6000 3000	8000KW 5000 2500	12MW 15 7500KW	12MW 15 7500KW	15MW 20 10	30MW 40 20	35MW 50 25	50MW 60 30	100MW 150 75	250MW 300 150
RATIO 300/5 (60:1)	Normal Max. Min.	6000KW 8000 4000	7000KW 8000 4000	12MW 15 7.5	18MW 20 10	18MW 25 12.5	20MW 30 15	45MW 60 30	60MW 75 30	75MW 80 40	150MW 200 100	400MW 500 250
RATIO 400/5 (80:1)	Normal Max. Min.	8000KW 10MW 5000KW	10MW 12 6000KW	15MW 20 10	24MW 30 15	25MW 30 15	30MW 40 20	60MW 80 40	80MW 100 50	100MW 120 60	200MW 300 150	500MW 600 300
RATIO 600/5 (120:1)	Normal Max. Min.	12MW 15 7500KW	15MW 18 10	25MW 30 15	35MW 40 20	40MW 50 25	45MW 60 30	90MW 120 60	100MW 150 75	150MW 180 75	350MW 450 225	800KW 1000 500
RATIO 800/5 (160:1)	Normal Max. Min.	15MW 20 10	20MW 25 12.5	30MW 40 20	50MW 60 30	50MW 60 30	60MW 80 40	120MW 150 75	150MW 200 100	200MW 200 100	500MW 600 300	1000MW 1200 600
RATIO 1000/5 (200:1)	Normal Max. Min.	20MW 25 12.5	25MW 30 15	40MW 50 25	50MW 60 30	60MW 80 40	75MW 100 50	150MW 200 100	200MW 250 125	250MW 300 150	600MW 750 300	1200MW 1500 750
RATIO 1200/5 (240:1)	Normal Max. Min.	25MW 30 15	30MW 35 20	50MW 60 30	60MW 80 40	80MW 100 50	100MW 120 60	175MW 200 100	250MW 300 150	300MW 350 175	750MW 900 450	1500MW 2000 1000
RATIO 1500/5 (300:1)	Normal Max. Min.	30MW 40 20	35MW 40 20	60MW 80 40	75MW 100 50	100MW 120 60	120MW 150 75	250MW 300 150	300MW 350 175	350MW 450 225	900MW 1000 500	2000MW 2500 1250
RATIO 2000/5 (400:1)	Normal Max. Min.	40MW 50 25	50MW 60 30	80MW 100 50	100MW 150 75	120MW 150 75	150MW 200 100	300MW 400 200	400MW 500 250	500MW 600 300	1000MW 1500 750	2500MW 3000 1500
RATIO 3000/5 (600:1)	Normal Max. Min.	60MW 80 40	75MW 80 40	100MW 150 75	150MW 200 100	200MW 250 125	200MW 300 150	400MW 500 250	600MW 750 350	700MW 900 450	1500MW 2000 1000	3500MW 5000 2500
RATIO 4000/5 (800:1)	Normal Max. Min.	80MW 100 50	100MW 125 60	150MW 200 100	200MW 300 150	250MW 300 150	300MW 400 200	500MW 800 400	800MW 1000 500	1000MW 1200 600	2000MW 3000 1500	500MW 6000 3000
RATIO 5000/5 (1000:1)	Normal Max. Min.	100MW 120 60	125MW 150 75	200MW 250 125	250MW 300 150	300MW 400 200	400MW 500 250	750MW 1000 500	1000MW 1200 600	1200MW 1500 750	3000MW 3500 1750	6000MW 8000 4000
RATIO 6000/5 (1200:1)	Normal Max. Min.	120MW 150 75	150MW 175 80	250MW 300 150	350KW 400 200	400MW 500 250	450MW 600 300	1000MW 1200 600	1200MW 1500 750	1500MW 1750 800	3500MW 4000 2000	8000MW 10000 5000



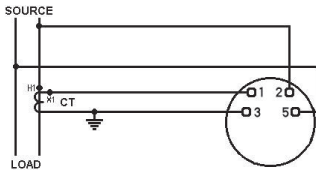
## AC Wattmeters

**Product Codes - 1-Element, Transformer Rated, 50/60Hz  
Integral Transducer - Accuracy 1.0%, 50/60Hz**

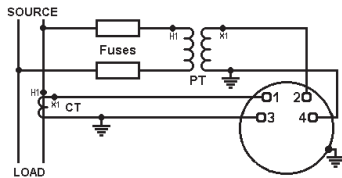


**AC Wattmeter**

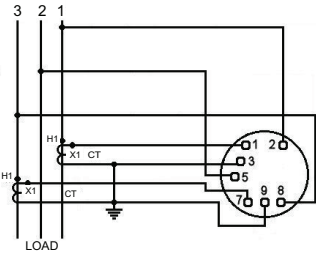
**Fig. A1** Models 007-215  
Wattmeter Single Phase



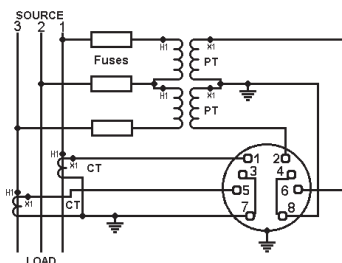
**Fig. A2** Models 078-215  
Wattmeter Single Phase



**Fig. B1** Models 007-218 Wattmeter  
3-Phase, 3-Wire Unbalanced Load



**Fig. B2** Models 078-218 Wattmeter  
3-Phase 3-Wire Unbalanced Load



Phases	Wires	Amperes 1VA max. burden	Volts 1 VA max. burden	Scaling	4 1/2" square flange	
					Std. case catalog number	Std. case hi-shock catalog number
1	2	5	120V	To suit	•007-215A-QQ**-C7	078-215J-QQ**-C6
1	2	5	240V	To suit	007-215A-QS**-C7	078-215J-QS**-C6

For connection diagram refer to Figure A1 & A2.

**Product Codes - 2 -Element, Transformer Rated, 50/60Hz  
Taut Band Integral Transducer - Accuracy 1.0%, 50/60Hz**

3	3	5	120V	To suit	•007-218A-QQ**-C7	078-218J-QQ**-C6
3	3	5	208V	To suit	•007-218A-QR**-C7	078-218J-QR**-C6
3	3	5	240V	To suit	•007-218A-QS**-C7	078-218J-QS**-C6
3	3	5	380V	To suit	•007-218A-QX**-C7	078-218J-QX**-C6
3	3	5	480V	To suit	•007-218A-QT**-C7	078-218J-QT**-C6

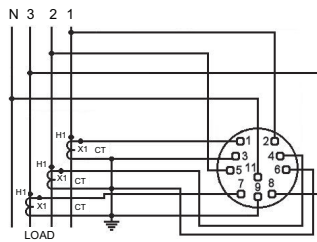
For connection diagram refer to Figure B1 & B2.

**Product Codes - 2 1/2 - Element, Transformer Rated, 50/60Hz  
Taut Band Integral Transducer - Accuracy 1.0%, 50/60Hz**

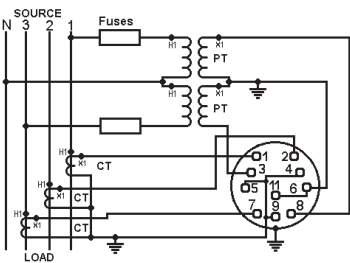
3	4	5	69V	To suit	•007-219A-QL-C7**	078-219J-QL**-C6
3	4	5	120V	To suit	•007-219A-QQ-C7**	078-219J-QQ**-C6
3	4	5	277V	To suit	•007-219A-QY-C7**	078-219J-QY**-C6
3	4	5	346V	To suit	•007-219A-QZ-C7**	078-219J-QZ**-C6

For connection diagram refer to Figure C1 & C2.

**Fig. C1** Models 007-219 Wattmeter  
3-Phase 4-Wire Unbalanced Load



**Fig. C2** Models 078-219 Wattmeter  
3-Phase 4-Wire Unbalanced Load



- \* Other scales are available.
- \*\* Specify CT (Current Transformer) and VT (Voltage Transformer) ratios if used and preferred scale at time of ordering.
- c-UL-us certified.

## AC VArmeters

**Product Codes - Element, Transformer Rated, 50/60Hz**  
**Integral Transducer - Accuracy 1.0%, 50/60Hz**

Measured System				Scaling	4 1/2" square flange		
					Std. case catalog number	Std. case hi-shock catalog number	
Phases Wires Amperes 1VA max. burden Volts 1 VA max. burden	3	3	5	120V	To suit	•007-31LA-QQ**-C7	078-31LJ-QQ**-C6
	3	3	5	208V	To suit	•007-31LA-QR**-C7	078-31LJ-QR**-C6
	3	3	5	240V	To suit	•007-31LA-QS**-C7	078-31LJ-QS**-C6
	3	3	5	380V	To suit	•007-31LA-QX**-C7	078-31LJ-QX**-C6
	3	3	5	480V	To suit	•007-31LA-QT**-C7	078-31LJ-QT**-C6

For connection diagram refer to Figure D1 & D2.

**Product Codes - 2 1/2-Element, Transformer Rated, 50/60Hz**  
**Taut Band Integral Transducer - Accuracy 1.0%, 50/60Hz**

3	4	5	120V	To suit	•007-31UA-QQ**-C7	078-31UJ-QQ**-C6
3	4	5	208V	To suit	•007-31UA-QR**-C7	078-31UJ-QR**-C6
3	4	5	480V	To suit	•007-31UA-QT**-C7	078-31UJ-QT**-C6

For connection diagram refer to Figure D1 & D2.

- \* Other scales are available.
- \*\* Specify CT (Current Transformer) and VT (Voltage Transformer) ratios if used and preferred scale at time of ordering.
- c-UL-us certified.

## DC Transducer Indicators

**Product Codes**

Rating	Scaling*	4 1/2" square flange	
		Std. case catalog number	Std. case hi-shock catalog number
Watts 1mA	To suit	•007-055A-FA**	078-055J-FA**
VARS 1mA	To suit	•007-056A-FA**	078-056J-FA**
Frequency 1mA	To suit	•007-053A-FA**	078-053J-FA**
Power factor 1mA	To suit	•007-054A-FA**	078-054J-FA**
AC amps 1mA	To suit	•007-05AA-FA**	078-05AJ-FA**
AC volts 1mA	To suit	•007-05VA-FA**	078-05VJ-FA**
Speed 1mA	To suit	•007-052A-FA**	078-052J-FA**
VA 1mA	To suit	•007-057A-FA**	078-057J-FA**

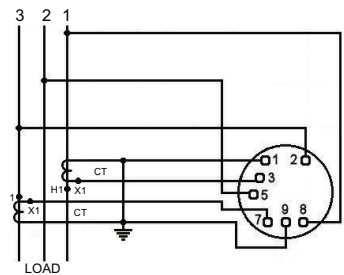
- \*Case types 007/078 use 10-32 UNF terminals.
- \*\*Specify scale. Input: 1mA DC for 4/20mA change "FA" to "HG".
- c-UL-us certified.

For use with the following transducers: Watts, Vars, Frequency, Power Factor, AC amperes, AC volts and temperature.

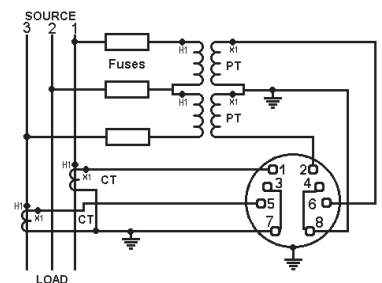


**AC VArmeter**

**Fig. D1** Models 077-31L VArmeter  
3-Phase 3-Wire Unbalanced Load



**Fig. D2** Models 078-31L VArmeter  
3-Phase 3-Wire Unbalanced Load



**DC Transducer Indicator**



**Elapsed Time Meter**

## Elapsed Time Meters

**Product Codes - 99,999.99 Hours, Non Reset, Burden 2.5VA  
50 or 60Hz**

Synchronous motor running time meter with a non-resettable indicator.

Rating	4 1/2" square flange	
	Std. case catalog number	Std. case hi-shock catalog number
110/130V 50Hz	•007-155A-PNZH-C5	078-155J-PNZH-C5
200/250V 50Hz	•007-155A-RNZH-C5	078-155J-RNZH-C5
480V 50Hz	•007-155A-SEZH-C5	078-155J-SEZH-C5
110/130V 60Hz	•007-156A-PNZH-C6	078-156J-PNZH-C6
200/250V 60Hz	•007-156A-RNZH-C6	078-156J-RNZH-C6
480V 60Hz	•007-156A-SEZH-C6	078-156J-SEZH-C6
12/24/40/110V DC	007-151A-**-ZH-DC	Not Available

## AC Phase Sequence, Phase Failure Indicators

**Product Codes - Neon Bulb Type, Burden 2.5VA**

Two neon bulbs for phase sequence indication - first marked the caption "correct 1-2-3", the second marked "incorrect 3-2-1". Three neon bulbs for phase failure indication - first marked 1, second marked 2, third marked 3.

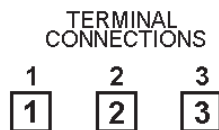


**AC Phase Sequence and Phase Failure Indicator**

Rating	4 1/2" square flange	
	Std. case catalog number	Std. case hi-shock catalog number
100/150V 50/60Hz	077-12PA-P2C6	Not available
151/300V 50/60Hz	077-12PA-P3C6	Not available
301/500V 50/60Hz	077-12PA-P4C6	Not available

For connection diagram refer to Figure E.

**Fig. E** Model 007-12P  
Phase Sequence Indicator  
3-Phase 3- or 4-Wire systems



## DC Indicators for Tachometer Generators

**Product Code**

Rating	4 1/2" square flange	
	Std. case catalog number	Std. case hi-shock catalog number
DC Volts	007-052A-**	078-052J-***

Select nearest higher rated voltmeter and specify requirement.

- \* Other ranges are available. upon request Consult with the factory.
- \*\* RI for 10 ohm or R2 for 100 ohm platinum.
- \*\*\* Specify input and scale.
- c-UL-us certified.

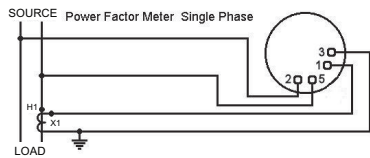
# AC Power Factor Meter

## Specifications

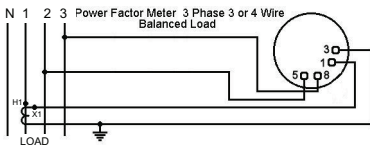


**AC Power Factor Meter**

**Fig. E** Models 007-425, 078-425J  
Electronic Phase Angle Meter  
Single Phase



**Fig. F** Models 007-427, 078-427J  
Electronic Phase Angle Meter  
3-phase, 3- or 4-wire Balanced Load



**Ratings, self-contained**

Current windings 5A. Voltage windings minimum 50V, maximum 600V

**Accuracy**

Balanced load: Class 1

**Overshoot**

33%

**External temperature influence**

0.5% fid minimum

**External field influence**

0.5% fid maximum

**Frequency range**

50Hz or 60Hz standard, 25-3000Hz optional (Specify)

**Frequency influence**

Single phase instruments, 59 to 61Hz 1.0% fid maximum  
polyphase instruments  $\pm 10\%$  deviation from 69Hz: 1.0%

**Overload capacity: 25% indefinitely**

Current coils 1000% momentarily, 100% for 15 minutes  
Voltage circuits 25% indefinitely

**Burdens**

Each current circuit, 1.5VA approximately  
Each voltage circuit 1VA approximately  
Measuring systems 077-427-3 or 4-wire

**Ranges available**

Lag 0.5-1 - 0.5 lead power factor  
Lag 0.2-1 - 0.8 lead power factor

## Product Codes - Balanced Load - Accuracy $\pm 1\%$

Phases	Wires	Amperes 2VA max. burden	Volts 1 VA max. burden	Scaling	4 1/2" square flange	
					Std. case catalog no.	Std. case hi-shock catalog no.
1	2	5	120V	0.5-1-0.5	•007-425A-QQAD-C6	078-425J-QQAD-C6
1	2	5	240V	0.5-1-0.5	•007-425A-QSAD-C6	078-427J-QSAD-C6
3	3/4	5	120V	0.5-1-0.5	•007-427A-QQAD-C6	078-427J-QQAD-C6
3	3/4	5	208V	0.5-1-0.5	•007-427A-QRAD-C6	078-427J-QRAD-C6
3	3/4	5	240V	0.5-1-0.5	•007-427A-QSAD-C6	078-427J-QSAD-C6
3	3/4	5	480V	0.5-1-0.5	•007-427A-QTAD-C6	078-427J-QTAD-C6

Instruments may be used on loads down to 20% of current and between 90% and 110% of voltage rating.

For connection diagrams refer to Fig. E and F.

- c-UL-us certified.

# LED Digital | Analog Combination

Crompton Instruments model 007-DI features a combination of the traditional 250° 4 1/2" switchboard indicator with the trend indication plus the benefits of wide angle LED visibility. This rugged shock and vibration resistant design provides precision accuracy and instantaneous reading via the bright in-dial mounted 3 1/2" digit LED display.



## Description

Model 007-DI digital analog indicators are ideal for all applications where moving pointer instruments are preferable to indicate trend with the simultaneous display of a high visibility precision LED readout for increased user interface.

The 007-DI is interchangeable with other analog and digital instruments designed to directly mount in to a standard ANSI-C39. 4 1/2" switchboard cut-out.

Available in side, center, or off-set zero versions, the 007-DI can accept AC and DC current and voltage inputs as well as a wide range of transducer outputs, making it suitable for a variety of other applications including low-load current, temperature, speed, Watt/Vars, percent and level.

## Features

- Rugged shock and vibration resistant pivot and jewel design
- High accuracy LED display
- Wide selection of AC and DC inputs
- Maximum trend indication visibility
- Input isolation
- External decimal point selection option
- Interchangeable with 4 1/2" switchboard meters

## Benefits

- Cost effective
- Meets all the requirement of ANSI-C39.1 (1981)
- IP54 (NEMA 3) protection
- Optional IP55 (NEMA 4) gasket
- Bump, shock and vibration proof
- Customized option and features

## Applications

- Switchgear
- Distribution systems
- Generator sets
- Control panels
- Energy management
- Building management
- Utility power monitoring
- Process control
- Motor control

## Specifications

<b>Inputs</b>	DC Voltage: 20mV-600V (1MΩ input impedance as standard) DC Current: 1mA-1A, 4 to 20mA (Voltage drop 200mV nominal) External shunt operation (50mV and 100mV) AC Voltage: 200mV-600V (1 kΩ /volt) AC Current: 1mA-999mA (Using internal shunt, voltage drop 200mV nominal) 1A, 2A, 5A and 10A using internal current transformer
<b>Common mode rejection</b>	=>80dB @ 50/60Hz
<b>Overload</b>	Voltage: x 1.2 continuous. x 1.5 for 10 seconds Current using internal CT: x 1.2 continuous. x 10 for 10 seconds
<b>External power requirement</b>	Standard: 120 and 240V 315% Optional: 480V 315% AC 40-60Hz
<b>Burden</b>	3VA @ 60Hz
<b>DC</b>	Standard: 12, 24, 48, 110 and 125V ±15%
<b>Display analog</b>	Long-scale moving coil. 250° deflection. Scale length 6.8" Response time less than 2.5 seconds
<b>Display options</b>	Center or offset zero. Scale plate in colors other than white Colored lines or segments on scale
<b>Digital display</b>	3 1/2 digit red LED. 7 segment (7.6mm, 0.3" high). Right hand decimal points. Polarity indication: positive / none. Negative / horizontal bar " - ". Update time (standard): 1 per second
<b>Accuracy - analog</b>	DC and AC ±1% of FSD (calibrated at 25°C)
<b>Accuracy - digital</b>	DC: ±0.05% of reading ±1 count ±100ppm of reading / °C max AC current: 0-1 Amp ±0.1% reading ±3 counts ±150ppm of reading / °C AC current: 0-10 amps 30.1% reading 310 counts 3150ppm of reading / °C (maximum) AC voltage: ±0.1% of reading ±3 counts ±150ppm of reading / °C (maximum) Zero ±1 count ±0.2 counts/°C (maximum), DC offset scale only. Warm-up time: 1 minute
<b>Long term stability</b>	±2 counts
<b>Calibration check</b>	Recommended 12 monthly intervals
<b>Enclosure code</b>	IP54 (optional IP55 using panel gasket)
<b>Operational temperature</b>	0 to 60°C (32° - 140° F)
<b>Storage temperature</b>	-20° to 60°C (-4° - 140° F)
<b>Humidity</b>	Up to 90% relative @ 55° C. Tests to BS2011 part 2DA
<b>Isolation test voltage</b>	2kV RMS 60Hz for 1 minute
<b>Interference rejection</b>	To IEEE STD472, ANSI C37 90A, SEN 361503, IEC 255-4



## LED Digital | Analog Combination

### Product Codes - AC Voltmeters - Direct Reading (40/70Hz)\*\*

Digital accuracy  $\pm 0.1\%$   $\pm 3$  counts, analog accuracy  $\pm 1\%$

Rating	Scaling*	Catalog number
200mV	0-200mV	007-DIWA-KAKA-C6-**
250mV	0-250mV	007-DIWA-KDKD-C6-**
500mV	0-500mV	007-DIWA-KMKM-C6-**
1V	0-1V	007-DIWA-LALA-C6-**
5V	0-5V	007-DIWA-LSLS-C6-**
10V	0-10V	007-DIWA-MTMT-C6-**
15V	0-15V	007-DIWA-NDND-C6-**
30V	0-30V	007-DIWA-NLNL-C6-**
150V	0-150V	007-DIWA-PZPZ-C6-**
250V	0-250V	007-DIWA-RSRS-C6-**
300V	0-300V	007-DIWA-RXRX-C6-**
500V	0-500V	007-DIWA-SFSF-C6-**
600V	0-600V	007-DIWA-SJSJ-C6-**

For connection diagrams, refer to Figure H.

### Product Codes - AC Voltmeters Transformer Rated (40/70Hz)\*\*

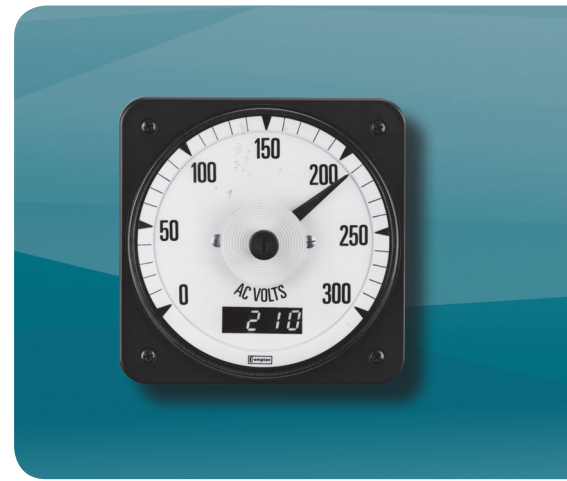
Rating	Scaling*	Catalog number
150V	0-300V	007-DIWA-PZRX-C6-**
150V	0-600V	007-DIWA-PZSJ-C6-**
150V	0-750V	007-DIWA-PZSM-C6-**
150V	0-3000V	007-DIWA-PZUA-C6-**
143V	0-5000V	007-DIWA-PTUJ-C6-**
150V	0-5250V	007-DIWA-PZUL-C6-**
150V	0-6000V	007-DIWA-PZUP-C6-**
150V	0-9000V	007-DIWA-PZUY-C6-**
150V	0-15kV	007-DIWA-PZWC-C6-**
150V	0-18kV	007-DIWA-PZWD-C6-**
150V	0-45kV	007-DIWA-PZWJ-C6-**
150V	0-60kV	007-DIWA-PZWL-C6-**

For connection diagrams, refer to Figure H.

\* Other scalings are available.

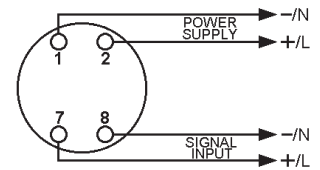
\*\* Specify power supply voltage according to power supply codes table located on page 22.

\*\*\* Case types 007 use 10-32 UNF terminals.

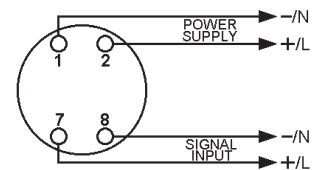


**AC Voltmeter**

**Fig. G** Models 007-DA2, 007-DAA  
LCD Digital/Analog Meter



**Fig. H** Models 007-DI2, 007-DIA  
007-DIB, 007-DIC, 007-DIN,  
007-DIT, 007-DIV, 007-DIW  
LED Digital/Analog Meter



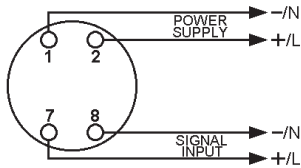
## LED Digital | Analog Combination

Product Codes - AC Ammeters - Direct Reading (40/70Hz)\*\*\*



### AC Ammeter

**Fig. 1** Models 007-DI2, 007-DIA, 007-DIB, 007-DIC, 007-DIN, 007-DIT, 007-DIV, 007-DIW LED Digital/Analog Meter



Rating	Scaling*	Catalog number
1A	0-1A	007-DIBA-LALA-C6-**
1.5A	0-1.5A	007-DIBA-LCLC-C6-**
2A	0-2A	007-DIBA-LELE-C6-**
3A	0-3A	007-DIBA-LJLJ-C6-**
5A	0-5A	007-DIBA-LSLS-C6-**
8A	0-8A	007-DIBA-MJMJ-C6-**
10A	0-10A	007-DIBA-MTMT-C6-**

For connection diagrams, refer to Figure 1.

- \* Other scalings are available.
- \*\* Specify power supply voltage according to power supply codes table located on page 22.
- \*\*\* Case types 007 use 10-32 UNF terminals.

## LED Digital | Analog Combination

### Product Codes - AC Ammeters Transformer Rated (40/70Hz)

Digital accuracy  $\pm 0.1\%$   $\pm 1$  counts, analog accuracy  $\pm 1\%$

Rating	Scaling*	Catalog number
5A	0-15A	007-DIBA-LSND-C6-**
5A	0-20A	007-DIBA-LSNG-C6-**
5A	0-25A	007-DIBA-LSNJ-C6-**
5A	0-30A	007-DIBA-LSNL-C6-**
5A	0-40A	007-DIBA-LSNP-C6-**
5A	0-50A	007-DIBA-LSNT-C6-**
5A	0-60A	007-DIBA-LSNW-C6-**
5A	0-75A	007-DIBA-LSPB-C6-**
5A	0-80A	007-DIBA-LSPD-C6-**
5A	0-100A	007-DIBA-LSPK-C6-**
5A	0-150A	007-DIBA-LSPZ-C6-**
5A	0-200A	007-DIBA-LSRL-C6-**
5A	0-250A	007-DIBA-LSRS-C6-**
5A	0-300A	007-DIBA-LSRX-C6-**
5A	0-400A	007-DIBA-LSSC-C6-**
5A	0-500A	007-DIBA-LSSF-C6-**
5A	0-600A	007-DIBA-LSSJ-C6-**
5A	0-750A	007-DIBA-LSSM-C6-**
5A	0-800A	007-DIBA-LSSN-C6-**
5A	0-1000A	007-DIBA-LSSS-C6-**
5A	0-1200A	007-DIBA-LSSU-C6-**
5A	0-1500A	007-DIBA-LSTC-C6-**
5A	0-1600A	007-DIBA-LSTE-C6-**

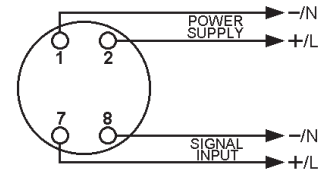
For connection diagrams, refer to Figure J.

- \* Other scalings are available.
- \*\* Specify power supply voltage, according to power supply codes table located on page 22.



**AC Ammeter**

**Fig. J** Models 007-DI2, 007-DIA, 007-DIB, 007-DIC, 007-DIN, 007-DIT, 007-DIV, 007-DIW LED Digital/Analog Meter



## LED Digital | Analog Combination

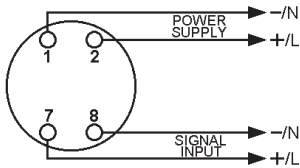
### Product Codes - DC Voltmeters - Direct Reading

Digital accuracy  $\pm 0.5\%$   $\pm 1$  counts, analog accuracy  $\pm 1\%$



#### DC Voltmeter

**Fig. K** Models 007-DI2, 007-DIA, 007-DIB, 007-DIC, 007-DIN, 007-DIT, 007-DIV, 007-DIW  
LED Digital/Analog Meter



Rating	Scaling*	Catalog number
200mV	0-200mV	007-DIVA-KAKA-**
250mV	0-250mV	007-DIVA-KDKD-**
500mV	0-500mV	007-DIVA-KMKM-**
1V	0-1V	007-DIVA-LALA-**
5V	0-5V	007-DIVA-LSLS-**
10V	0-10V	007-DIVA-MTMT-**
15V	0-15V	007-DIVA-NDND-**
30V	0-30V	007-DIVA-NLNL-**
50V	0-50V	007-DIVA-NTNT-**
75V	0-75V	007-DIVA-PBPB-**
80V	0-80V	007-DIVA-PDPD-**
150V	0-150V	007-DIVA-PZPZ-**
300V	0-300V	007-DIVA-RXRX-**
400V	0-400V	007-DIVA-SCSC-**
500V	0-500V	007-DIVA-SFSF-**
600V	0-600V	007-DIVA-SJSJ-**
150-0-150V	150-0-150V	007-DINA-RXRX-**
300-0-300V	300-0-300V	007-DINA-SJSJ-**
600-0-600V	600-0-600V	007-DINA-SUSU-**

For connection diagrams, refer to Figure K.

\* Other scalings are available.

\*\* Specify power supply voltage, according to power supply codes table located on page 22.

## LED Digital | Analog Combination

### Product Codes - DC Ammeters - Shunt Rated

Digital accuracy  $\pm 0.5\%$   $\pm 1$  counts, analog accuracy  $\pm 1\%$

Rating	Scaling*	Catalog number
50mV-4mA	Scaled to suit standard shunt ratings	007-DIAA-EY**-**
50-0-50mV-2-0-2mA		007-DICA-GB**-**
100-0-100mV		007-DICA-GM**-**
100-0-100mV-2-0-2mA		007-DICA-FM**-**

For connection diagram, refer to Figure L.

### Product Codes - DC Ammeters - Suppressed Zero

Digital accuracy  $\pm 0.5\%$   $\pm 1$  counts, analog accuracy  $\pm 1\%$

Rating	Scaling*	Catalog number
1-5mA	Scaled to suit standard shunt ratings	007-DIAA-GM**-**
4-20mA		007-DIAA-HG**-**
10-50mA		007-DIAA-HZ**-**

For connection diagram, refer to Figure L.

### Product Codes - DC Ammeters - Direct Reading

Digital accuracy  $\pm 0.5\%$   $\pm 1$  counts, analog accuracy  $\pm 1\%$

Rating	Scaling*	Catalog number
1mA	0-1mA	007-DIAA-FAFA**-**
2mA	0-2mA	007-DIAA-FGFG**-**
5mA	0-5mA	007-DIAA-FXFX**-**
10mA	0-10mA	007-DIAA-GZGZ**-**
20mA	0-20mA	007-DIAA-HFHF**-**
30mA	0-30mA	007-DIAA-HMHM**-**
50mA	0-50mA	007-DIAA-HYHY**-**
100mA	0-100mA	007-DIAA-JRJR**-**
200mA	0-200mA	007-DIAA-KAKA**-**
300mA	0-300mA	007-DIAA-KGKG**-**
500mA	0-500mA	007-DIAA-KMKM**-**
800mA	0-800mA	007-DIAA-KWKW**-**
1A	0-1A	007-DIAA-LALA**-**

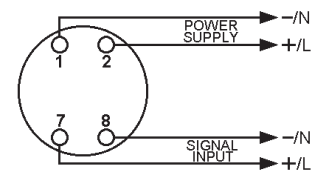
For connection diagram, refer to Figure L.

- \* Other scalings are available.
- \*\* Specify power supply voltage, according to power supply codes table located on page 22.



DC Ammeter

**Fig. L** Models 007-DI2, 007-DIA, 007-DIB, 007-DIC, 007-DIN, 007-DIT, 007-DIV, 007-DIW LED Digital/Analog Meter





## Switchboard Meter Options

### Product Codes - Power Supply



#### Power Supplies

A5-120 - 250V AC/DC	MU - 12V DC
PQ - 120V AC	BD - 24V DC
A2 - 12 - 48V DC	NR - 48V DC
	PR - 120V DC
	PS - 125V DC

### Scale - Options

Options	Option code
Red or colored line or mark (specify position)	SL
Colored zones or segments (specify limits and color(s))	SZ
Customer   user logo imprinted on dial	SM

### Construction - Options

Options	Option code
Anti-glare window	BR
Polychloroprene panel gasket	MG

The suffix option code is added at the end of the complete part number.



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### TE Energy

Customer Center  
8000 Purfoy Road  
Fuquay-Varina, NC 27526-9349  
T: 800-327-6996  
F: 800-527-8350

For more information and your country contact person, please visit us at:  
[cromptonusa.com](http://cromptonusa.com)  
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phone: 800-903-9870 440-378-6580

fax: 800-903-9590 440-238-0660

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