

Sealed and Ruggedised Indicators

078/080/087 Series 240° Scale

The Crompton Instruments 078/080/ 087 series of heavy duty sealed instruments are designed to comply with the most stringent industrial, marine and military specifications.

This metal cased range offers bezel sizes of 57mm, 83mm and 110mm all fitted with toughened glass. Indicators comply with Ministry of Defence specification DEF STAN 66.7. and operate efficiently in the most adverse environments where extreme conditions of shock, vibration, dirt, humidity and temperature variation are present.

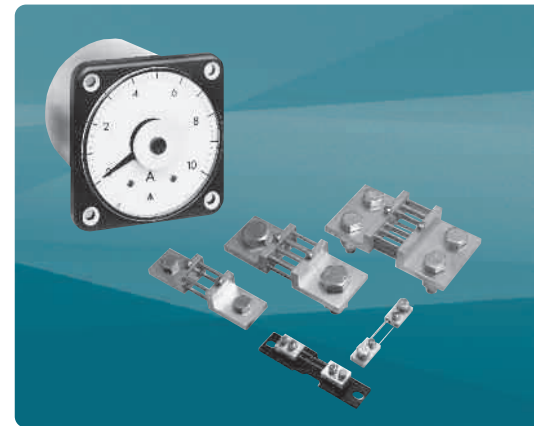
Description

Indicators have metal cases with bezel sizes of 50 x 57mm (083), 83mm Ø (084) and 110mm x 100mm (078/087). All indicators are fitted with toughened glass windows. The standard black matte finish can be replaced with options ranging from light admiralty grey to BS3181C No:697. To prevent fogging, all indicators have been dried, evacuated and filled with dry nitrogen during manufacturing. The case interior retains a constant pressure of at least 94kPa above the exterior with leakage not above the equivalent of 1.33 Pa ml/s of air. Except on model 083, panel sealing gaskets are standard equipment.

Standard instrument dials are finished in acrylic white matte with black printing and a parallel pointer. Scales form a true arc with zero on the left hand-side. Options include dial illumination, a centre, off-set or suppressed zero, colour index lines, bands, zones or segments, a black dial with white printing, and customer logo.

Specifications

Performance:	BS EN60051 (IEC51) DEF STAN 66-7 on request (087 only)
Accuracy:	Refer to Product Range table
Scaling:	BS89, BS3693 or DEF STAN 66-7 and 66-9
Dielectric test:	2kV r.m.s to BSEN61010-1
Overloads:	x 1.2 rated current for 2 hours x 10 rated current for 5 seconds x 1.2 rated voltage for 2 hours x 2 rated voltage for 5 seconds
Enclosure code:	IP67 (NEMA 6 and 6P)
Case:	Black matte metal filled with dry nitrogen
Bezel:	Black matte metal. Optional admiralty grey No. 697
Bezel window:	Toughened glass
Operating temp:	-40°C to +70°C (-40°F to +158°F)
Storage temp:	-55°C to +85°C (-67°F to 185°F)
Standard calibration:	23°C (73°F)
Approvals:	EMC and LVD DEF 66.7 Intrinsically safe option to EEx ia 11C T4



Features

- Designed specifically for stringent industrial, marine and military specifications
- An extensive range of high accuracy measuring instruments in 3 case sizes
- Rugged Hi-Q taut-band suspension
- Bump, shock and vibration proof

Benefits

- Complies with BS EN 60051 (IEC51)
- IP67 (NEMA 6 and 6P) protection
- Dial illumination option
- Parallax error-free platform dials for 078/087. Optional for 083/084

Applications

- Switchgear
- Distribution systems
- Generator sets
- Control panels
- Utility power monitoring
- Process control
- Motor control
- Marine
- Military

Approvals

- DEF STAN 66.7
- Intrinsically safe options to EEx ia 11C T4

Product Range – 078/080/087 Series 240° Scale

Type of instrument	Ranges	Accuracy class	Burden VA	Case code depth behind the bezel				Product code
DC ammeter shunt operated	50, 60, 75, 100, 150mV	2.5	See T118***	57	-	-	-	083-05A
DC ammeter shunt operated	50, 60, 75, 100, 150mV	1.5	See T118***	-	59	-	-	084-05A
DC ammeter shunt operated	50, 60, 75, 100, 150mV	1.5	See T118***	-	-	86	-	078-05A
DC ammeter shunt operated	50, 60, 75, 100, 150mV	1.5	See T118***	-	-	-	86	087-11A
DC ammeter	200µA-30A	2.5	See T118***	57	-	-	-	083-05A
DC ammeter	200µA-30A	1.5	See T118***	-	59	-	-	084-05A
DC ammeter	200µA-30A	1.0	See T118***	-	-	86	-	078-05A
DC ammeter	200µA-30A	1.0	See T118***	-	-	-	86	087-11A
DC ammeter suppressed zero	4/20mA	2.5	See T118***	57	-	-	-	083-05R
DC ammeter suppressed zero	4/20mA	1.5	See T118***	-	59	-	-	084-05R
DC ammeter suppressed zero	4/20mA	1.5	See T118***	-	-	86	-	078-05R
DC ammeter suppressed zero	4/20mA	1.5	See T118***	-	-	-	86	087-11R
DC voltmeter	50mV-600V	2.5	See T118***	57	-	-	-	083-05V
DC voltmeter	50mV-600V	1.5	See T118***	-	59	-	-	084-05V
DC voltmeter	50mV-800V	1.5	See T118***	-	-	86	-	078-05V
DC voltmeter	50mV-800V	1.0	See T118***	-	-	-	86	087-11V
DC voltmeter suppressed zero	1/5V	1.5	See T118***	-	-	86	-	078-05S
DC voltmeter suppressed zero	1/5V	1.5	See T118***	-	-	-	86	087-11S
AC rectified ammeter	200µA-1A	2.5	See T118***	57	-	-	-	083-05B
AC rectified ammeter	200µA-1A	2.5	See T118***	-	59	-	-	084-05B
AC rectified ammeter	200µA-30A	1.5	See T118***	-	-	86	-	078-05B
AC rectified ammeter	200µA-30A	1.5	See T118***	-	-	-	86	087-11B
AC rectified voltmeter	15-600V 25Hz/3kHz	2.5	See T118***	57	-	-	-	083-05W
AC rectified voltmeter	15-600V 25Hz/3kHz	2.5	See T118***	-	59	-	-	084-05W
AC rectified voltmeter	15-600V 25Hz/3kHz	1.5	See T118***	-	-	86	-	078-05W
AC rectified voltmeter	15-600V 25Hz/3kHz	1.5	See T118***	-	-	-	86	087-11W
Elapsed time meter	50 or 60Hz, 100-400V*			57	-	-	-	083-155 or 156
Elapsed time meter	12, 24V DC			57	-	-	-	083-151
Elapsed time meter	50 or 60Hz, 100-400V*			-	59	-	-	084-155 or 156
Elapsed time meter	12, 24V DC			-	59	-	-	084-151
Elapsed time meter	50 or 60Hz, 100-400V*			-	-	86	-	078-155 or 156
Frequency meter	50/60/400Hz 100-440V*	0.5%	4	57	-	-	-	083-41S
Frequency meter	50/60/400Hz 100-440V*	0.5%	4	-	59	-	-	084-41S/089-41S
Frequency meter	50/60/400Hz 100-440V*	0.5%	4	-	-	86	86	078/087-41L
Temperature indicator	RTD	1.5	See T118***	-	-	86	-	078-45 R
Wattmeter or VArmeter	0.2-10A/100-440V*	Balanced	Current	-	-	132	132	078/087-21 or 31
Transducer operated indicator	1, 5, 10, 20 or 4/20mA	1.0	See T118***	57	-	-	-	083-05
Transducer operated indicator	1, 5, 10, 20 or 4/20mA	1.0	See T118***	-	59	-	-	084-05
Transducer operated indicator	1, 5, 10, 20 or 4/20mA	1.0	See T118***	-	-	86	-	078-05
Transducer operated indicator	1, 5, 10, 20 or 4/20mA	1.0	See T118***	-	-	-	86	087-11

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

** Using transformer box 855-954.

*** The T118 technical sheet is available on request. For specification and connection diagrams, please refer to equivalent models in the 240 Series DIN Panel Meter section. Replace 244 with 078 etc., e.g. 244-210 becomes 078-210.

080 Series 90° Scale

A range of metal case, sealed instruments for industrial and military applications involving extreme shock, vibration, temperature, dirt and humidity. Bezel sizes 32mm, 45mm, 57mm, 83mm comply with Ministry of Defence specification DEF STAN 66-7 or DEF STAN 66-9 for all standard ratings. Bezel size 89mm complies with MIL-M-10304 dimensions.

Description

Five bezel sizes of 32mm Ø (081), 45mm Ø (082), 57 x 57mm (083), 83mm Ø (084) and 89mm Ø (089) with barrel diameters of 26mm (081), 37mm (082), 53mm (083), and 67mm (084 and 089) and toughened glass windows are used throughout the series. To avoid fogging they are dried, evacuated and filled with dry nitrogen. Panel sealing gaskets are provided as standard with the exception of Model 083. The smaller cases on Models 081 and 082, are made from nickel-plated brass and anodised aluminium alloy. Single hole fixing is made with threaded clamp ring which screws onto the barrel, they also have ceramic insulated terminals and no zero adjuster is fitted. Models 083, 084 and 089 have steel cases with fixing holes in the flange. Sealed zero adjusters are provided. Standard instrument dials are finished in a white matte with black printing and parallel pointer. The scales form a true arc with zero on the left.

Options

Available options include dial illumination, a centre, off-set or suppressed zero, colour index lines, bands, zones or segments, a black dial with white printing and customer logo. Instruments operated by separate transducers indicate watts, VAR, frequency, phase angle, current, voltage and other physical/mechanical parameters are also available. Illumination options as follows:

Model 081: Through-dial, white or red bulb, 12 or 24V illumination.

Models 081/082: Betalite through-dial, 12 or 24V, illumination.

Models 082/083/084/089: Through-dial, red or clear LED, 12 or 24V illumination.

Models 083/084/089: Edge, white or red bulb, 12 or 24V, illumination.

Specifications

Performance:	BS EN60051 (IEC51) for models 081 to 084 DEF STAN 66-7 and 66.9 on request (081/084 and 089)
Accuracy:	Model 081: Class 5. Others: Class 2.5 Frequency meter 0.5% of mid frequency (083, 084, 089)
Scaling:	To BS89, BS3693 or DEF STAN 66-7 and 66-9 (081 to 084)
Dielectric test @ 50 Hz:	750V RMS (081); 1kV RMS (082); 2kV RMS (083/084/089); <50V 500V RMS All for 1 minute
Overloads:	x 1.2 rated current or voltage for 2 hours x 10 rated current for 5 seconds x 2 rated voltage for 5 seconds
Burden:	AC ammeter: 1VA maximum AC voltmeter: 3VA maximum
Frequency meter:	4VA maximum
Elapsed time meter:	2.5VA maximum
Enclosure code:	083/084/089: to IP67 (NEMA 6 and 6P) 081/082: to IP68
Case:	081/084 and 089: Black matte metal filled with dry nitrogen 081 and 082: Nickel-plated brass and anodised aluminium alloy
Bezel:	Black matte metal
Bezel window:	Toughened glass
Operating temp:	Model 081 to 084: -40°C to +70°C (-45F to +158°F) Model 089: -55°C to 65°C (-67°F to +185°F)
Standard calibration:	23°C (73°F)
Approvals:	EMC and LVD DEF 66.7 and 66.9



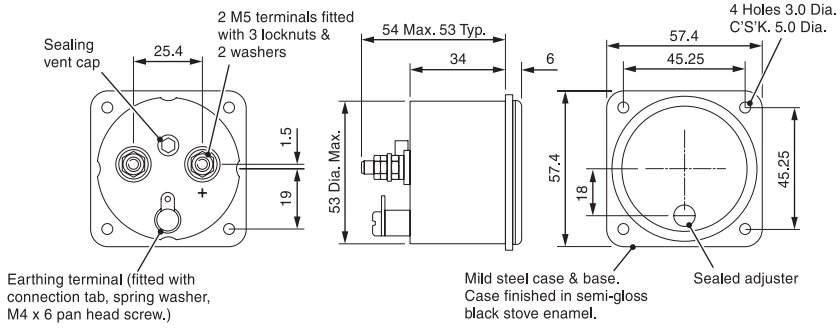
Product Range – 078/080/087 Series 240° Scale

Type of instrument	Ranges	Case code			Product code
		083	084	089	
DC ammeter shunt operated	50, 60, 75, 100, 150mV	✓	-	-	083-80A
DC ammeter shunt operated	50, 60, 75, 100, 150mV	-	✓	-	084-80A
DC ammeter	50μA-30A	✓	-	-	083-80A
DC ammeter	50μA-30A	-	✓	-	084-80A
DC ammeter suppressed zero	4/20mA	✓	-	-	083-80R
DC ammeter suppressed zero	4/20mA	-	✓	-	084-80R
DC voltmeter	50mV-300V, 1000ff/V	✓	-	-	083-80V
DC voltmeter	50mV-300V	-	✓	-	084-80V
DC voltmeter suppressed zero	1/5V	-	✓	-	084-80S
AC rectified ammeter	100μA-500mA.25Hz/3kHz	✓	-	-	083-80B
AC rectified ammeter	100μA-500mA.25Hz/3kHz	-	✓	-	084-80B
AC rectified voltmeter	15-600V, 900ff/V	✓	-	-	083-80W
AC rectified voltmeter	15-600V	-	✓	-	084-80W
Elapsed time meter (99999.9)	12 or 24V DC	✓	✓	-	082/083/084-151
Elapsed time meter (99999.9)	50Hz/100-440V*	✓	✓	-	083/084-155
Elapsed time meter (99999.9)	60Hz/100-440V*	✓	✓	-	083/084-156
Frequency meter	50 or 60 or 400Hz/100-440V*	✓	-	-	083-41S
Frequency meter	50 or 60 or 400Hz/100-440V*	-	✓	-	084-41S
Transducer indicator speed	1, 5, 10, 20, and 4/20mA	-	✓	-	084/802
Transducer indicator frequency	1, 5, 10, 20, and 4/20mA	-	✓	-	084/803
Transducer indicator phase angle	1, 5, 10, 20, and 4/20mA	-	✓	-	084/804
Transducer indicator watts	1, 5, 10, 20, and 4/20mA	-	✓	-	084/805
Transducer indicator VArS	1, 5, 10, 20, and 4/20mA	-	✓	-	084/806
Transducer indicator VA	1, 5, 10, 20, and 4/20mA	-	✓	-	084/807

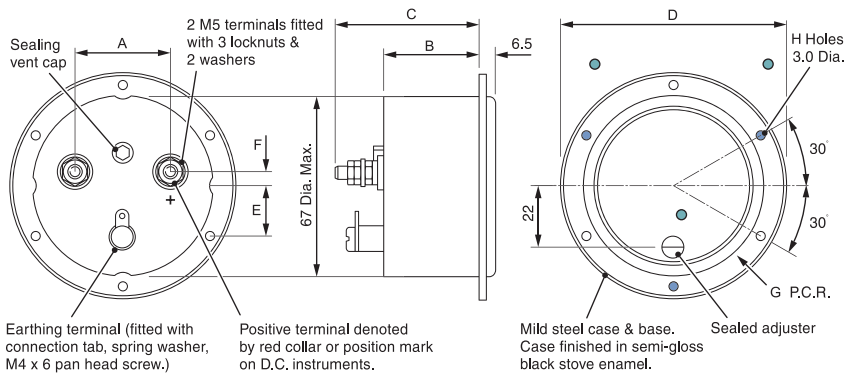
*100-440V – (100/125 or 200/250 or 380/440).

Dimensions

Model 083



Model 084



*When fitted with terminal shunt for ranges above 20 amps.



	A	B	C	D	E	F	G	H
084-80	35	33.5	59	82.5	20	5	36.5	6 off
084-75	35	38	64	82.5	20	5	36.5	6 off

Panel Cut out 68.3ø - Holes 3.8ø
 These ● holes on 084 only.