

SECTION 4

Meter Relays (Analog)

- Beede
- Crompton
- Simpson
- Triplett (LFE)



METER RELAYS

MR2 and MR4 Mechanical Specifications

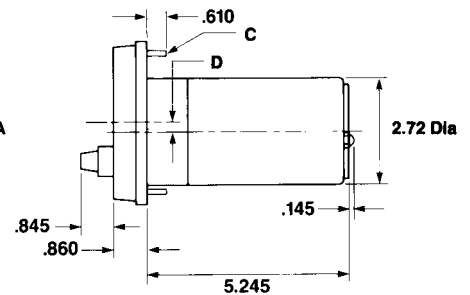
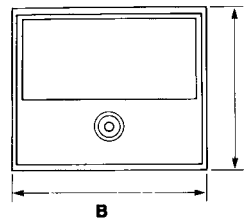
BEEDE



MR2

Surface Mount –
Also Available in 4"
Behind Panel Mount
Available Only in
Centurion Case

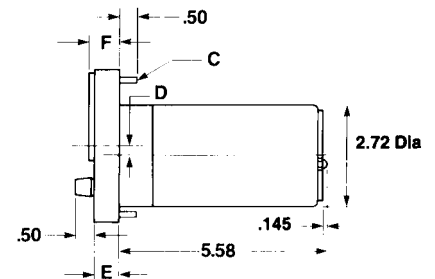
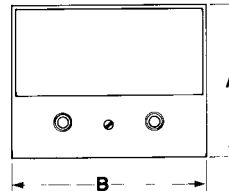
	3 in.	4 in.
A	3.13	4.21
B	3.24	5.03
C	#4-40	#6-32
D	.00	.24



MR4 QA Case

(Surface Mount)

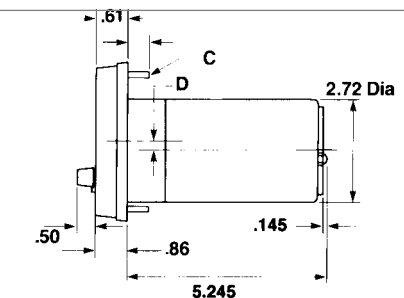
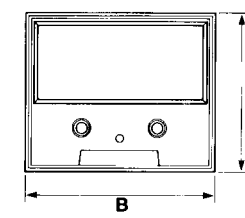
	3 in.	4 in.
A	2.90	4.07
B	3.73	5.19
C	#4-40	#6-32
D	.00	.24
E	.64	.68
F	.78	.83



MR4 Centurion Case

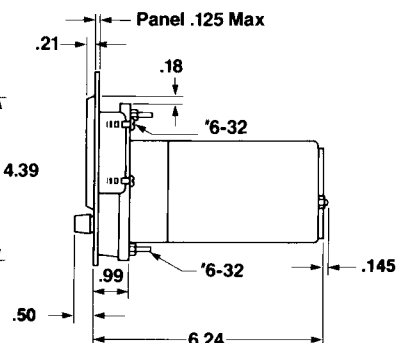
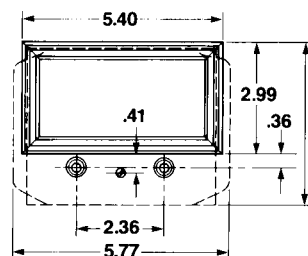
(Surface Mount)

	3 in.	4 in.
A	3.13	4.21
B	3.24	5.03
C	#4-40	#6-32
D	.00	.24

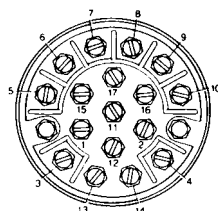


MR4 Centurion Case

(Behind Panel Mount – Available in
4" Version Only)



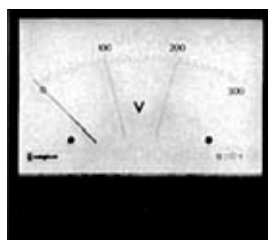
Standard Electrical Connections



- SINGLE SETPOINT**
1. Meter+
 2. Meter-
 3. Power, 115V
 4. Power, Common
 5. NC
 6. C } Load Relay
 7. NO
 8. NC
 9. C } Load Relay
 10. NO
 11. } Latch
 12. } Latch
 13. } Not used
 14. } Not used
 15. 230V
 16. } Not used
 17. } Not used

- DOUBLE SETPOINT**
1. Meter+
 2. Meter-
 3. Power, 115V
 4. Power, Common
 5. NC
 6. C } High Load Relay
 7. NO
 8. NC
 9. C } Low Load Relay
 10. NO
 11. } High Latch
 12. } High Latch
 13. } Low Latch
 14. } Low Latch
 15. 230V
 16. } Not used
 17. } Not used

Meter Relays 239 Series



**Meter Relay with
Two Setpoints
Applications**

✓ See individual models

Series 239 meter relays combine a highly accurate indicator with High and Low set point relays. The relays can operate alarm and control devices when the monitored signal value moves outside the chosen set point limits shown by adjustable red index pointers. A single compact case houses the unit which requires only the input signal and power supply thus saving space and installation time.

Features

- ✓ Monitors and controls any variable which can be converted in to an AC or DC signal.
- ✓ Rugged shock and vibration resistant design
- ✓ Indicator, relays and power unit in one housing.
- ✓ Control function continues if the indicator becomes damaged.
- ✓ Stable electronic switching circuit does not use lamps, photocells, inductors or capacitors.
- ✓ Taut band, fluid damped indicator.
- ✓ Isolated input signal
- ✓ LED relay state indicators

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METER RELAYS FLANGE	41/2" SQUARE CATALOG N°
239-302A Typical applications: High and Low alarm, High alarm plus shut down. Two relays, two set points mid band de-energised, outside band energised.	239-302A-****-...-++
239-301A Typical application: High alarm. One relay, one set point, upscale energised, downscale de-energised.	239-301A-****-...-++
239-307A Typical application: Low alarm. One relay, one set point, upscale de-energised, downscale energised.	239-307A-****-...-++
239-300A Typical applications: Liquid level control, load shedding & power factor correction. One relay, two setpoints,upscale de-energised, down scale energised.	239-300A-****-...-++
239-305A Typical application: Frequency monitoring. Two relays, two set points, both upscale de-energised,downscale energised.	239-305A-****-...-++
239-30TA Typical application: Temperature indication / control. Two relays, two set points, midband de-energised, outside band energised. Operates from thermocouple input. Cold junction compensation and thermocouple break protection are standard features.	239-30TA-****-...-++
239-30RA Typical application: Temperature indication / control. Two relays, two set points, midband de-energised, outside band energised. Operates from from 2, 3 or 4 wire resistance temperature detector (RTD).	239-30RA-****-...-++
239-303A Typical application: High alarm plus shutdown. Two relays, two setpoints, both upscale energised, downscale de-energised	239-303A-****-...-++
239-304A Typical application: High alarm plus shutdown. Two relays, two setpoints, high and low midband energised, outside band de-energised. No time delay.	239-304A-****-...-++

- **** Specify input & scale
 •• Specify power supply voltage
 ++ Specify input frequency or DC



Meter Relays 239 Series

SPECIFICATIONS

Input signal ratings

Frequency monitoring:	45/65Hz or 55/65Hz 100/125 V, 200/250V 380/440V or 480V system via transducer
DC Voltage:	10mV to 800V - 10 Ω /V
DC Current:	1 μ A to 15A - 20mV drop 4/20mA
AC Voltage:	10V to 500V - 10K Ω /V or 100K Ω /V
AC Current:	1A - 15A suitable for motor start application 5A CT operation - 0.5VA
Thermocouples:	Standard outputs minimum 10mV Span
RTD operation:	10 Ω Copper 100 Ω Platinum 0 to 200°C, 0 to 150°C (32° to 392°F, 32 ° to 302°F) or 20 to 140°C (68° to 284°F)
Overloads:	1.2 x continuous, up to 200V or 100mA - 10 x for 10 seconds.
Indicator Accuracy:	Maximum error 1.5%
Damping time:	1 second
4" Scale:	100° deflection
Set point accuracy:	Maximum error 1.5%
Repeatability:	0.5%
Differential:	1% of span
Operating time:	250m sec to 10 sec adjustable

Set-point Adjustments: Single - 100% of scale
Double - 98% of scale

Color: Red

Minimum span: 2% between setpoints

Time delay: 0.3 / 20 seconds

Output relay: Mounted internally

Operation: SPDT contacts on each
setpoint.
Optional latching on either or
both relays (077-301, 077-302
or 077-307 only)

Contact rating: 5A, 250V, 1000W non-inductive

Ambient Temperature

Range: -10° to +60°C (+14° to 140°F)

Standard calibration: 20°C (68°F)

Panel material: Ferrous or non-ferrous

Dielectric test: 2600V r.m.s. for 1 minute

Auxiliary power requirement

AC: Dual rating - 100/125V,
200/250V, 50/60Hz

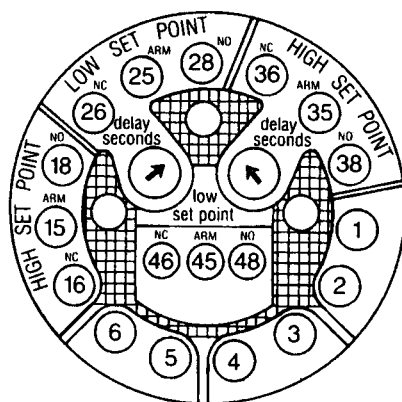
DC: 12V, 24V, 48V or 125V DC

Burden: 3W maximum



Meter Relays 239 Series

Standard Electrical Connections

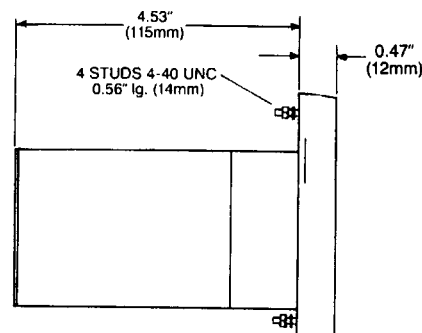
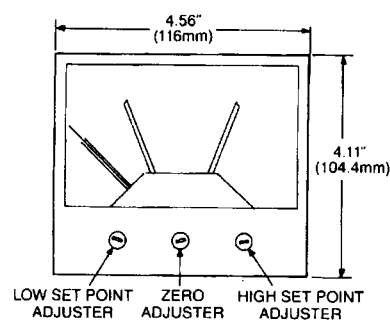


Measuring Input

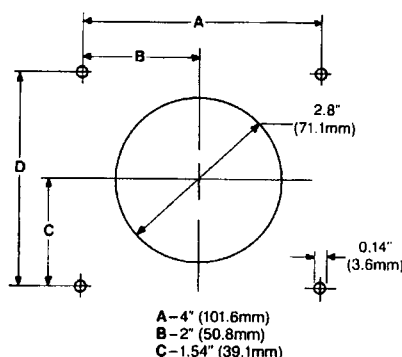
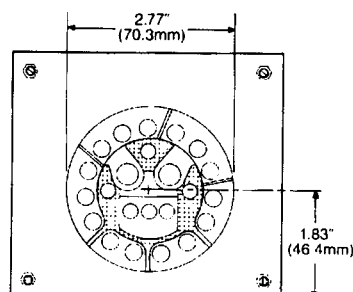
Terminal

1. Meter N or -VE
2. Meter L or +VE
- 3, 4. RTD or Thermocouple input
5. Auxiliary Supply Neutral (-ve if D.C.)
6. Auxiliary Supply Live (+ve if D.C.)
4. Auxiliary supply tap for dual supply models

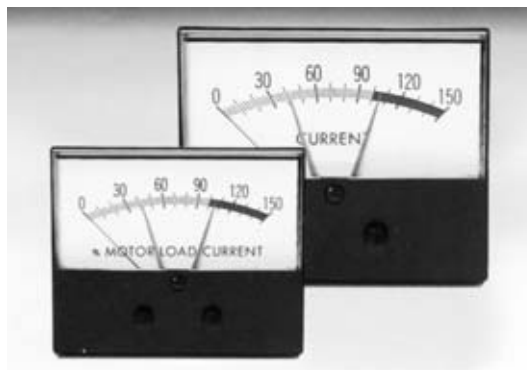
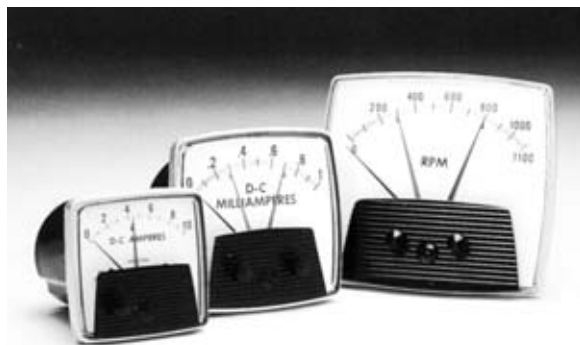
Dimensions



Panel Cutout



Optical Meter-Relays/Rear Mount Control Module - 195 & 196 Series



195 Series

Models: 1952 (2 1/2"), 1953 (3 1/2"), 1954 (4 1/2")

- ▲ Plug-in control module
- ▲ Long life lamp operation
- ▲ Plastic front and base
- ▲ Proven optical setpoints
- ▲ On/Off or alarm control

196 Series

Models: 1963 (3 1/2"), 1964 (4 1/2")

- ▲ Modern rectangular appearance
- ▲ Plug-in control module
- ▲ Proven optical setpoints
- ▲ Available with mounting bezels (Models 1965 & 1966)
- ▲ Limit lights & manual reset switches optional (Model 1967)

The 195 and 196 Series Meter-Relays contain an exclusive light sensitive transistor switch that provides the ultimate in control simplicity and reliability. This switch controls the load relays. There are no pointer contacts or mechanical interference in the meter mechanism. The controllers are supplied with a plug-in control module that mounts directly on the rear of the Meter-Relay or may be remotely mounted with an accessory cable.

Optical Meter-Relays - 195 & 196 Series Specifications					
Specifications		DC Ranges		AC Ranges (Rectifier Type)	
		Current	Voltage	Current	Voltage
Accuracy		±2%	±2%	±3%	±3%
Balance		±1%	±1%	±1%	±1%
Repeatability		±2%	±2%	±2%	±2%
Resistance Tolerance		±20%	±5%	—	< 10V ±20% ≥ 10V ±5%
Overload Capacity	1 Second	1000%	≤ 100V 1000% > 100V 200%	150%	150%
	Continuous	150%	120%	150%	150%
Calibration Frequency		N/A	N/A	60 Hz	60 Hz
Overshoot (maximum)		20%	20%	20%	20%
Response Time (maximum)		3 sec	3 sec	3 sec	3 sec

Supply Power: 120 VAC 50/60Hz 7VA MAX
Load Relay Rating: DPDT 5A @ 120VAC Relative (Model 1967 - SPDT only)

Effects of shock, vibration, humidity and temperature are equal to or better than ANSI C39.1-1981.
 Safety (dielectric test, leakage and other hazards): instruments are equal to or better than ANSI C39.5-1974.
 The above tolerance limits apply to the standard ranges listed in this bulletin. Special instruments may vary from these limits.
 Rated circuit to ground voltage = 800 Vrms (1100 Peak).



DC Ranges	
DC Microamperes	50 to 1000
DC Milliamperes	1 to 1000
DC Amperes	1 to 50
DC Millivolts	20 to 1000
DC Volts	1 to 750

Process Ranges	
DC Milliamperes	1-5 4-20 10-50
DC Volts	1-5, 0-10

AC Ranges (Rectifier Type)	
AC Microamperes	100 to 1000
AC Milliamperes	1 to 50
AC Amperes	5
AC Millivolts	None
AC Volts	1 to 500

195 Series Dimensions				
Model	Height	Width	Depth*	Depth w/ Module*
1952 (2 1/2")	2.70	2.70	3.222	N/A
1953 (3 1/2")	3.50	3.50	2.897	6.745
1954 (4 1/2")	4.85	4.85	2.897	6.745

196 Series Dimensions				
Model	Height	Width	Depth*	Depth w/ Module*
1953 (3 1/2")	3.006	3.756	2.897	6.745
1954 (4 1/2")	3.756	4.632	2.897	6.745

Dimensions are in inches.
 * Depth = front of panel to end of terminals.
 See price sheet for part numbers.
 Contact Factory for more information & dimensional drawings.