

General Specifications AC Meters

Power

7.5VDC to 12VDC @ 180mA.
6VAC to 10VAC, 60Hz @ 180mA.

Environmental

Operating Temperature: 0 to +60°C.
Storage: -40 to +85°C.

Signal

Differential input, sine wave from 30Hz to 5kHz. See tables for input ranges and impedance. CMR >100dB at 60Hz with 1kΩ imbalance. NMR >60dB at 60Hz. Maximum potential from signal to panel is 300 V (500V with larger clearance around input terminals).

Scalable Ammeter with Set Points: 2VAC signal into impedance 10MΩ.

Accuracy

3 1/2 - Digit: At 25°C, within 0.1% full scale, ±1 count.

4 1/2 - Digit: At 25°C, within 0.01% full scale, ±1 count.

Stability

0.005% of full scale ±0.005% of reading/°C.

Response Time

0.05 seconds full scale step.

Scalable AC Voltmeter: 5 seconds for full scale step from 0.0 to near full-scale reading on meter.

Sample Rate

2.5 samples per second.

Display

0.56" (14 mm) height, 7 segment LED. 3 digit plus dummy zero or 4 digit.

Negative polarity (-) sign included. Overrange: All digits flash.

Selectable decimal point.

Controls and Adjustments

Under access door. DIP switches to select decimal points, polarity indication and dummy zero. Voltmeters have multi-turn potentiometers for coarse and fine gain adjustment. Scalable voltmeters also have potentiometers for common mode adjustments.

Options

62: +5VDC power only.

90: NEMA 4X cover.

Support Modules (Include Screw Terminals)

SM90105: 120VAC Power.

SM90107: 12VDC Power.

SM90107-SP0234: SM90107 with 2 - 10VDC Output.

SM90112: 120VAC Power, 2 - 28VDC Output.

Accessories

Five female tab terminals.

Door labels.

120VAC to 6VAC transformer.

Current-to-Voltage Transformers

96100: 200mA 50Hz - 2kHz 200mV.

96101: 2A, 50Hz - 2kHz 2V.

96102: 5A, 50Hz - 2kHz 2V.

96103: 20A, 50Hz - 2kHz 2V

Current-to-Current Transformer

96002: 200A:5AAC

AC Meters with Set Points

General Specifications apply

Set Points

Horizontal segment above polarity indicator lights when set point A output (Pin 3) is on; horizontal segment below polarity indicator lights when set point B output (Pin 4) is on.

Set Point Accuracy

Trip point varies considerably less than 1 count from set value. Hysteresis is typically 6 counts.

Control Inputs

Invert set point A output, invert set point B output, set point A latch enable, set point B latch enable. Closure to ground (M) enables function. These inputs are internally pulled up to +5V through a 10 kΩ resistor. They can hold off up to 50V.

Controls and Adjustments

Under access door. DIP switches to select decimal points and dummy zero, multi-turn potentiometer for gain adjustment, set point A and set point B. AC Ammeter and Scalable Meters also have socketed scal-

ing resistor for changing ranges; polarity resistor lead can be clipped to eliminate polarity indication.

Outputs

Limit: Two open collector transistor switches for each of the two set points. For each set point, one transistor switch turns on and the other turns off when the limit is exceeded. Maximum voltage at any output pin not to exceed 50 V. ON is transistor switched to ground. Maximum load capability is 100 mA resistive. With a 100 mA current, voltage at the output is < 1.1V. Maximum dissipation is 350mW per output. OFF is transistor switch off. Maximum leakage at 50 V is 50 mA.

Options

Support Modules (Include Screw Terminals)

SM90106: 120VAC Power, Open Collector.

SM90108: 12 VDC Power, Open Collector.

SM90108-SP0234: SM90108 with 2 - 10VDC Output.

SM90109: 120 VAC Power, Relays.

SM90111: 12 VDC Power, Relays.

SM90111-SP0234: SM90111 with 2 - 10 VDC Output.

SM90113: 120 VAC Power, 2 - 28 VDC, Oper Collector.

SM90114: 120 VAC Power, 2 - 28 VDC, Relays.

AC Meters with Parallel BCD Outputs

General Specifications Apply

Power

+5VDC @ 150mA.

Inputs

Control Inputs: Inputs whose closure to ground enables meter functions. Ground is <0.6V. Open or positive voltage condition is >3V. All control inputs are internally pulled up through a 10kΩ resistor to +5V. Open or positive voltage cannot exceed 50V.

Digit Enable: One pin for each data digit. Closure to ground enables data outputs. Open or positive voltage turns data outputs off.

Hold: Closure to ground inhibits updating of BCD outputs and display. Open or positive voltage permits free running.

BCD/BCD Complement: Open or positive voltage for positive true BCD data format (off true). Closure to ground for BCD complement or negative true BCD data format (on true).

Outputs

Open collector transistors. Maximum voltage at any output pin not to exceed 50V. ON is transistor switched to 5V ground. Maximum load capability is 100mA. With a current of 100mA, voltage at the output is < 1.1V. Maximum dissipation is 100mW per digit. OFF is transistor switch off. Maximum leakage current is 50μA @ 50V.

Data: Open collector 8421 BCD data that is full parallel, positive or negative true, buffered and latchable with the hold input. Data updates 2.5 times each second in free run mode. Depending on pull-up resistor values, these outputs are compatible with CMOS, TTL and other input voltage levels up to 50V.

Polarity: On indicates negative data; off indicates positive data.

Overrange: On when full scale reading is exceeded.

Data Ready: Off when data is valid, turns on during conversion and updating of data outputs.

Inverted Data Ready: On when data is valid, turns off during conversion and updating of data outputs.

Stability

AC Voltmeters: Maximum drift is 0.005% of full scale 0.005% of reading per °C of ambient.

AC Ammeters: No current drift.

Response Time

5 seconds for full scale step from 0.0 to near full scale reading on meter.

Accessories

Latching ears for 50-pin connectors.

Door labels.

Options

90: NEMA 4X cover.

Support Modules (Include Screw Terminals)

SM90100: 5VDC Power.

SM90101: 120VAC Power.

SM90102: 120VAC Power, 2 - 28VDC output.

SM90103: Optically Isolated, 120 VAC Power, 12 VDC Output

AC Meters

AC Voltmeter 3-1/2 Digit					
P/N	P/N	P/N			
No Outputs	Setpoints	BCD Outputs**	Input Signal	Display Range	Input Impedance
7812	-	2530	199.9 mV	199.9	> 200 kΩ
7813	-	2531	1.999 V	1.999	> 200 kΩ
7814	7337	2532	19.99 V	19.99	> 2 MΩ
7815	7335	2533	199.9 mV	199.9	> 2 MΩ
-	7336	-	1.999 V	1.999	> 2 MΩ
-	7338	-	199.9 V	199.9	> 20 MΩ
AC Voltmeter 4-1/2 Digit					
-	-	2130	199.99 mV	199.00	> 200 kΩ
-	-	2131	1.9999 V	1.9999	> 200 kΩ
7235	-	-	199.99 mV	199.99	> 2 MΩ
7236	-	-	1.9999 V	1.9999	> 2 MΩ
7237	-	2132	19.999 V	19.999	> 2 MΩ
7238	-	-	199.99 V	199.99	> 20 MΩ
Scaleable AC Voltmeter 3-1/2 Digit					
7900	-	-	10 mV		> 200 kΩ
7901	-	-	100 mV	Adjustable 199 – 1999	> 200 kΩ
-	7342	-	199.9 mV		> 200 kΩ
-	7343	-	1.999 V		> 200 kΩ
-	7344	-	19.99 V		> 2 MΩ
-	7345	-	199.9 V		> 2 MΩ
7902	-	-	1 V		> 200 kΩ
7903	-	-	10 V		> 2 MΩ
7904	-	-	100 V		> 2 MΩ
7905	-	-	200 V		> 2 MΩ

Scaleable AC Voltmeter 4-1/2 Digit					
P/N	P/N	P/N			
No Outputs	Setpoints	BCD Outputs**	Input Signal	Display Range	Input Impedance
7242	-	-	199.99 mV		> 200 kΩ
7243	-	-	1.9999 V	Adjustable 1999 – 19999	> 200 kΩ
7244	-	-	19.999 V		> 2 MΩ
AC Ammeter 3-1/2 Digit					
No Outputs	Setpoints	BCD Outputs**	Input Signal	Display Range	Current Trans. Part No.
7829	7373	2627	199.9 mA*	199.9	96100
7830	7374	2628	1.999 A*	1.999	96101
7831	7375	2629	19.99 A*	19.99	96103
7832	7376	2630	199.9 A*	199.9	96102 96002
AC Ammeter 4-1/2 Digit					
7273	-	2227	199.99mA*	199.99	96100
7274	-	2228	1.9999 A*	1.9999	96101
7275	-	2229	19.999 A*	19.999	96103
7276	-	2230	199.99 A*	199.99	96102 96002
Scaleable AC Ammeter 3-1/2 Digit					
7835	-	-	0 – 2 V AC*	199 – 1999	96102
-	7379	-	5 A*	Adjustable 199 – 1999	96102
Scaleable AC Ammeter 4-1/2 Digit					
7279	-	-	0 – 2 V AC*	2000 – 2000	96102

*Includes Current-to-Voltage Transformer
**For Tristate contact factory.



AC METERS	CUTOUT	REAR VIEW CONNECTIONS	FRONT VIEW ADJUSTMENTS
No Outputs	23	18	1
Setpoints	23	18	1
BCD Outputs**	23	19	1

SEE FIGURES ON PAGE 44. SOME CONTROLS SHOWN IN THE DRAWINGS ARE NOT AVAILABLE ON ALL UNITS.