



AMP-SENTRY AMPERE HOUR/MINUTE TOTALIZER

OPERATION AND
SERVICE GUIDE
O-1255B
NOVEMBER 1995

120V/1/50-60	56-0182
240V/1/50-60	56-0182A

Refer to Bulletin A-104.

1. PRODUCT DESCRIPTION

This unique Ampere Hour/Minute Totalizer module is designed for use with plating rectifier systems to record total direct current amperes passing through a series connected shunt over a period of time. The module is field programmed by the user for the shunt output (50, 100, or 200 millivolts), shunt full scale current rating, and totalizer units of either ampere hours or ampere minutes. Input power is 120 VAC, 50/60 hertz (optional 240 VAC, 50/60 hertz.) Two indicator lights show power is on and totalizing action is occurring. The module is self contained in a 5" x 5" x 2" NEMA 4X PVC enclosure equipped with two lugs for wall mounting. The totalizer readout is a six digit electromechanical non-reset type.

2. INSTALLATION

Install the module in a vertical position for ease of reading within distance to a source of power and connection to the rectifier shunt. Ten (10) feet of cable for connection to the shunt is supplied. However, a longer length cable can be used. Refer to the diagram for proper connection. The black lead is negative and the white is positive. The shunt lead shield should be connected to earth mechanical ground to reduce stray electrical noise pickup. The connections to the shunt should be secure and tight. Connecting the black and white wires incorrectly to the shunt will not cause any damage but the unit will not operate correctly. Do not plug the unit into power until the range pre-setting operation described in the next section has been completed.

3. RANGE SETUP: AMP-Hours or AMP-Minutes

Disconnect the AC power input and remove the four screws securing the gasketed cover. Refer to the range setup diagram and position the millivolt jumper for the shunt millivolt output rating of either 50, 100, or 200. A small needlenose pliers can be used to position the jumper plug to the desired location. Next, position the five rotary switches for the desired totalized readout of either ampere hours or ampere minutes for the selected shunt size. Use a small flat blade screwdriver to clockwise turn the rotary switches. The range setup diagram illustrates the switches and the "MSD" (most significant digit) and "LSD" (least significant digit.) For example, if the rotary switch setting is 54321, the "MSD" is 5 and the "LSD" is 1. Do not rotate or adjust the zero and span calibration controls. Upon setting the range jumper and rotary switches replace the cover with gasket using the four cover screws. Do not over-tighten the cover screws or the cover may become warped and allow moisture to the enclosure. Mark cover "AMP-Hours or AMP-Minutes".

Erratic operation will result if the five rotary switches are simultaneously set on zero.

4. RANGE SETUP TABLES

A. AMPERE HOUR READOUT

ROTARY SWITCH SETTING =
 $600,000 \div \text{SHUNT SIZE IN AMPERES}$
TYPICAL SETTINGS FOR STANDARD SHUNTS

SHUNT SIZE (AMPS)	ROTARY SWITCH SETTING
10	60000
20	30000
25	24000
50	12000
100	06000
200	03000
250	02400
500	01200
1000	00600
2000	00300
2500	00240
5000	00120
10000	00060
20000	00030
25000	00024
50000	00012

B. AMPERE MINUTE READOUT

ROTARY SWITCH SETTING =
 $10,000 \div \text{SHUNT SIZE IN AMPERES}$
TYPICAL SETTINGS FOR STANDARD SHUNTS

SHUNT SIZE (AMPS)	ROTARY SWITCH SETTING
1	10000
10	01000
20	00500
25	00400
50	00200
100	00100
200	00050
250	00040
500	00020
For shunt sizes greater than 500 ampere use ampere hour settings.	

C. SHUNT OUTPUT JUMPER POSITION

SHUNT OUTPUT	JUMPER POSITION
50 MILLIVOLT	JP101
100 MILLIVOLT	JP103
200 MILLIVOLT	JP105

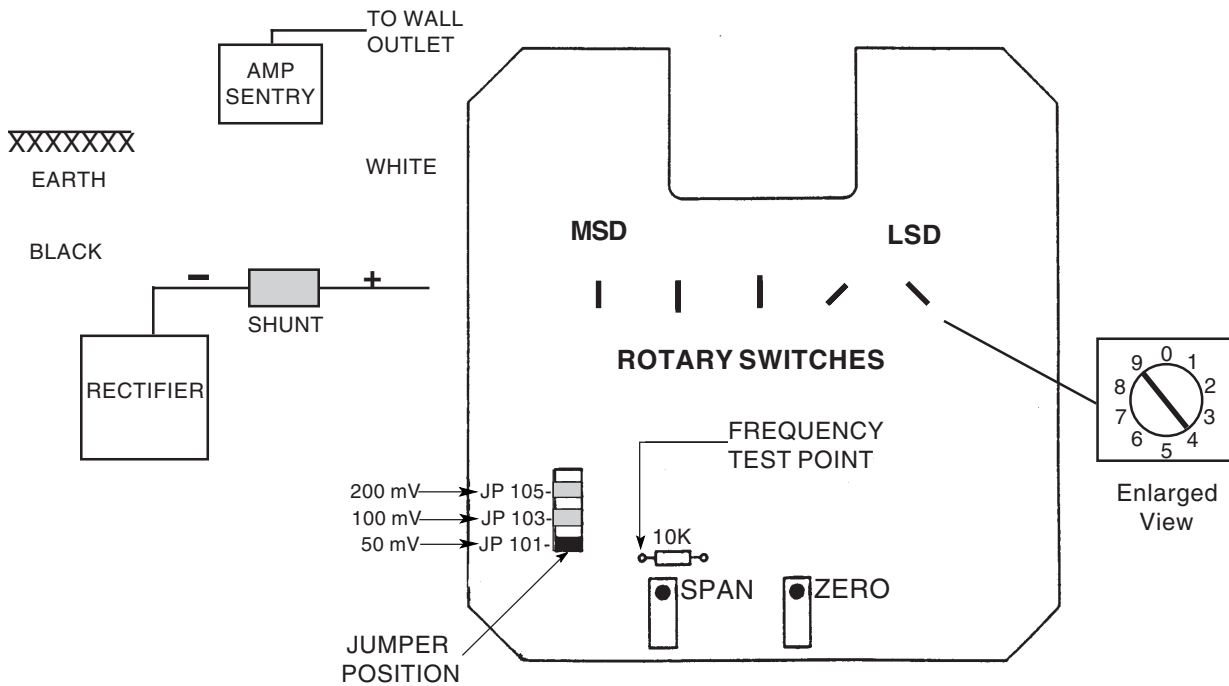
5. OPERATION

Plug the module into a source of AC power. The red power indicator light should operate showing AC power is on. Without current output from the rectifier the green totalizing light will remain dark but will start flashing at a rate dependent upon the current through the shunt. The flashing rate will increase to an almost constant on condition when the full rated current is passing through the shunt. The totalizer will start registering the ampere time supplied by the rectifier. Since the totalizer is a non-reset type, it will be necessary to manually record the start and stop readings if records are necessary.

6. MAINTENANCE/CALIBRATION

Maintenance requirements for the totalizer module are minimum. The front cover/label should be cleaned using non-organic solvents or abrasives to allow easy reading. The electrical terminals at the shunt should be inspected on occasions to assure good connection for accurate operation.

Calibration can be verified with a known source of voltage such as a millivolt calibrator connected to the input leads. Refer to the range setup diagram and locate the point to connect a frequency meter. The second connection is to black or DC ground. With power applied and zero millivolts input or with the input leads shorted together, the zero adjust should be adjusted so the green totalizing light does not flash. To adjust, turn the zero control clockwise until flashing starts, then slowly turn counter clockwise until the flashing stops-- turn no further. If the green totalizing light flashes during no load current conditions when connected to the shunt, the zero calibration control needs slight adjustment in the counterclockwise direction. Next, apply 50 millivolts (0.050 volts) DC to the shunt input and adjust the span control for a frequency of 2666.667 hertz at the test point. When complete, replace the cover with gasket and secure with four screws. Do not over-tighten the cover screws or the cover may become warped and leak in the presence of moisture.



Front View With Cover Off

Illustration shows switch positions at 00024.

Jumper shown on JP 101, 50 mV.
100 mV & 200 mV positions shown gray.



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