

OPERATION MANUAL

JENCO MODEL 603A pH Meters

JENCO ELECTRONICS, LTD.
MANUFACTURER OF PRECISION INSTRUMENTS

General Introduction

The model 603A is a high performance, low cost, general purpose laboratory instrument for the measure of pH and mV.

The model 603A uses a 5 2/1 inch analog meter with a mirror scale to increase readability to 0.02 pH and 2 mV.

Recorder output is provided for Karl Fischer and other polarized electrode titration applications.

INITIAL INSPECTION

Carefully unpack the instrument and accessories. Inspect for damages made in shipment. If any damage is found, notify your Jenco Representative immediately. All packing materials should be saved until satisfactory operation is confirmed.

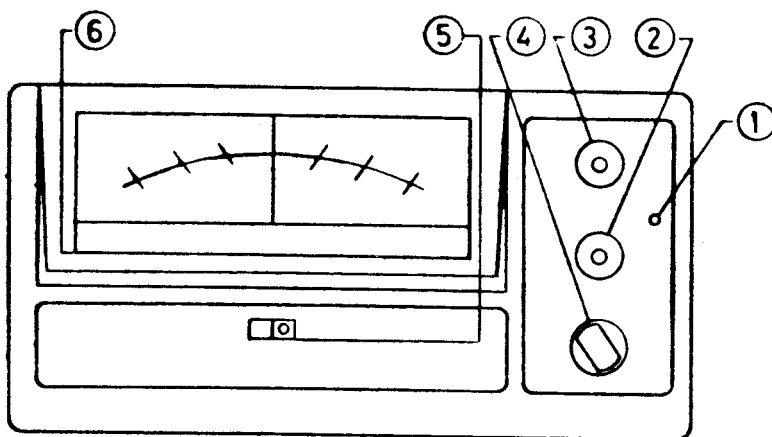


Figure 1 Front View

- | | | |
|-----------------|---------------------------|-----------------|
| 1.Slope control | 2.Standardization control | 3.Temp. control |
| 4.Mode switch | 5.On/Off switch | 6.Meter scale |

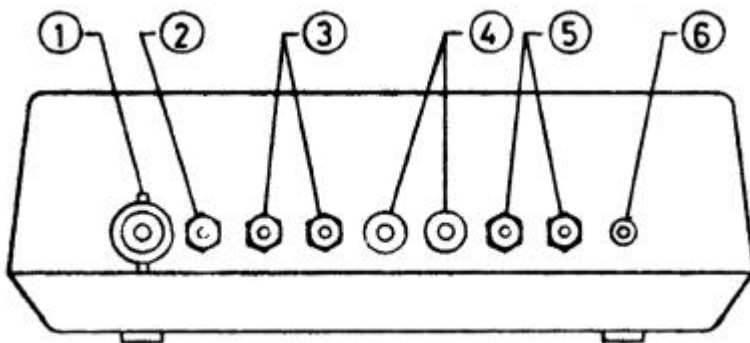


Figure 2 Rear View

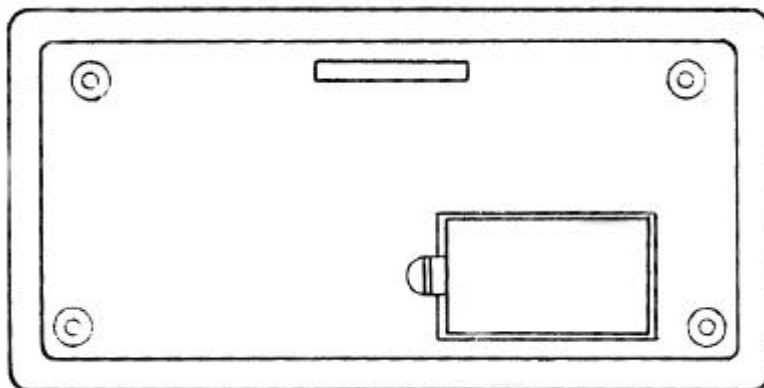
- 1.pH/mV electrode inpput connector
- 2.Ref. electrode input connector
- 3.Karl Fischer current output
- 4.Recorder output
- 5.ATC/Temp. probe input connector
- 6.AC adaptor inpput connector

AC line voltage

The model 603A can be used with 117 VAC or 234 VAC AC adaptors. Check the labels on the AC adaptor supplied with instrument to make sure that the AC line voltage is correct. If the wrong AC adaptor is supplied, notify your JENCO Electronics,ltd.co distributors immediately . Don't use the instrument with AC line .Operate with batteries only.

Battery replacement

- 1.Set the Mode switch to BAT. CHK. Replace batteries when meter pointer is outside of the green area.
- 2.Remove the battery cover.Refer to figure 3.
- 3.Replace all six type AA batteries.



4. Replace battery cover.

Figure 3 Battery compartment

Turn off instrument

When the instrument isn't in use, set the ON/OFF switch to Off. Unplugging the AC adaptor from the instrument or AC line doesn't turn off the instrument. It would switch in the internal batteries.

Operational procedures

The MODE switch should be set to the STA.BY position whenever the pH or ORP electrode aren't immersed in liquid, to avoid damage to the meter pointer.

pH Measurements

1. Standardization with ATC/Temp. probe

1.1) Connect the pH electrode and ATC/Temp. to the rear of the instrument .Refer to Figure 2.

1.2) For AC line operations, connect the AC adaptor to the AC line ,make sure that the correct AC adaptor is used.Refer to Figure 3.

1.3) Rinse the pH electrode and probe ATC/Temp. probe in distilled water and immerse in pH buffer 7.00.

1.4) Set the Mode switch to ATC .Adjust the STANDARDIZE control for the instrument to read the buffer value at the temperature of the buffer. Refer table 1.Be sure to allow sufficient time for the pH electrode and ATC/Temp. probe equilibrium with the buffer.

1.5) Remove the pH electrode and ATC/Temp. probe from buffer 7.00.Rinse with distilled water and immerse in pH buffer 4.00 or 10.01.

1.6) Adjust the SLOPE control for the meter to indicate the value of the buffer 4.01 or 10.01,corresponding to the buffer temperature.Refer to Figure 2 and table 1. Be sure to allow sufficient time for the pH electrode and ATC/Temp. probe equilibrium with the buffer 4.00 or 10.01.

1.7) Buffers other than 4.01 and 10.01 can be used to slope the instrument.

1.8) Rinse the pH electrode and probe ATC/Temp with distilled water. The 603A is dual point standardized and ready for measurements.

2. Standardization without ATC/Temp. probe

2.1) Connect the pH electrode to the rear of the instrument .Refer to Figure

2.2) For AC line operations .connect the AC adaptor to AC line,make sure that the correct AC adaptor is used. Refer to Figure 3.

2.3) Rinse the pH electrode in distilled water and immerse in pH buffer 7.00.

2.4) Set the Mode switch to pH. Set the TEMPERATURE control on the front panel to that of the buffer 7.00.

2.5) Adjust the STANDARDIZE control for the instrument to read the buffer value at the temperature of the buffer set in 2.4. Refer to table 1. Be sure to allow sufficient time for the pH electrode to reach temperature equilibrium with the buffer.

2.6) Remove the pH electrode from buffer 7.00. Rinse with distilled water and immerse in buffer 4.01 or 10.01. Set the TEMPERATURE control to the temperature of the buffer 4.01 or 10.01.

2.7) Adjust the SLOPE control for the meter to indicate the value of the buffer 4.01 or 10.01, corresponding to the temperature set in 2.6. Refer to Figure 2 and Table 1. Be sure to allow sufficient time for the pH electrode to reach temperature equilibrium with the buffer 4.01 or 10.01.

2.8) Buffers other than 4.01 and 10.01 can be used to slope the instrument..

2.9) Rinse the electrode with distilled water. The 603A is dual point standardized and ready for measurements.

3. pH measurement with ATC/Temp. probe

3.1) Immerse the pH electrode and probe ATC/Temp probe into the sample to be measured . Be sure to allow sufficient time for the pH electrode and ATC/Temp. probe to reach equilibrium with the sample under test.

3.2) Set the MODE switch to ATC. The instrument will indicate the pH

value of the sample at the temperature of the sample.

4. pH measurement without ATC/Temp. probe

4.1) Immerse the pH electrode into the sample to be measured . Be sure to allow sufficient time for the pH electrode to reach equilibrium with the sample under test.

4.2) Set the TEMPERATURE control to the temperature of the sample.

4.3) Set the MODE switch to pH. The instrument will indicate the pH value of the sample at the temperature set in 4.2.

mV measurement

1.Connect the working electrode to BNC connector and the reference electrode to the reference pin connector ,refer to Figure 2.

2. Set MODE switch to mV.

3.Rinse both electrode in distilled water.

4. Immerse both electrodes into the sample solution. The readout will indicate the absolute millivolt reading.

KARL FISCHER AND OTHER POLARIZED ELECTRODE TITRATIONS

1.Short one of the Karl Fischer outputs to the center pin of one of the input connectors.

2.Connect a platinum electrode to the second Karl Fischer output pin.

3.Connect a second platinum electrode to reference input.

4.Rinse both electrodes with distilled water and immerse into the sample to be measured.

5.Set the MODE switch to mV. The model 603A is ready for Karl Fischer and other polarized electrode titrations.

6.The reading measured are relative values. For absolute potential measurement , the two platinum electrodes are to be shorted outside of the sample. The millivolt value indicated by the instrument in this condition is the true zero potential point.

Recorder output

Recorder output voltage is measured from the positive,red,terminal to negative,black,terminal.

1.The recorder output voltage is ± 10 mV at pH 14.00, 0mV at pH 7.00 and -10 mV at pH 0.00.

2. .The recorder output voltage is ± 10 mV at $+700$ mV, 0mV at 0 mV and -10 mV at -700 mV.

Temperature coefficient of the pH buffers

Buffers

	10.01	7.00	4.01
0	10.32	7.11	4.00
5	10.25	7.08	4.00
10	10.18	7.06	4.00
15	10.12	7.03	4.00

	10.01	7.00	4.01
20	10.06	7.01	4.00
25	10.01	7.00	4.01
30	9.97	6.98	4.02
35	9.93	6.98	4.02
40	9.89	6.97	4.03
45	9.86	6.97	4.04
50	9.83	6.97	4.06
55	9.80	6.97	4.07
60	9.78	6.98	4.10

Specifications for the model 603A

Range

pH	0 to 14
mV	-700 to 700

Resolution

pH	0.1
mV	10
ATC	0.1

Readability

pH	0.02
mV	2.0

Accuracy

pH	± 0.03
mV	± 3.0
ATC	± 0.03

Temperature compensation

Auto	0 to +100
Manual	0 to +100

Recorder output 5 1/2 inch with mirror scale
 Meter Greater than $10^{12} \Omega$
 Input impedance 10 μA
 Karl fischer output 117 VAC, 234 VAC $\pm 15\%$,6
 Power internal type AA batteries

Battery life 40 hours typical
 Dimensions 280mm X 200mm X 120mm

Weight 1.45 kg

-10 to 10 mV full scale

WARRANTY

Jenco Instruments, Ltd. Warrants this product to be free from significant deviations in material and workmanship for a period of 1 year from date of purchase. If repair or adjustment is necessary and has not been the result of abuse or misuse, within the year period, please return-freight-prepaid and the correction of the defect will be made without charge. If you purchased the item from our Jenco distributors and it is under warranty, please contact them to notify us of the situation. Jenco Service Department alone will determine if the product problem is due to deviations or customer misuse.

Out-of –warranty products will be repaired on a charge basis.

RETURN OF ITEMS

Authorization must be obtained from one of our representatives before returning items for any reason. When applying for authorization, please have the model and serial number handy, including data regarding the reason for return. For your protection, items must be carefully packed to prevent damage in shipment and insured against possible damage or loss. Jenco will not be responsible for damage resulting from careless or insufficient packing. A fee will be charged on all unauthorized returns.

NOTE: Jenco Instruments, Inc reserves the right to make improvements in design, construction, and appearance of our products without notice.

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