OPERATION MANUAL

JENCO
MODEL 6230M/6230N/6231M/6231N
MICROCOMPUTER BASED
pH/mV/TEMP
PORTABLE METER

JENCO ELECTRONICS, LTD.
MANUFACTURER OF PRECISION INSTRUMENTS

Model	6230M	6230N	6231M	6231N
Storage	Yes	No	Yes	No
RS-232C	Yes	Yes	No	No

NOTES: 1. RS-232C interface operation is for **6230M** and **6230N** only.

2. The saving, recalling and erasing data functions are for **6230M** and **6231M** only.

3. **RECALL** mode and **ERASE** mode are for **6230M** and **6231M** only..

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.

GENERAL INTRODUCTION

The model **6230M**, **6230N**, **6231M** or **6231N** is a precise instrument for the measurement of **pH**, **mV**, and **temperature**. A built-in microcomputer is used to store, calculate, and compensate for all the relevant parameters relating to pH determinations. These include temperature characteristics of the pH electrode, buffer solutions and electrode slope deviations.

This instrument is made with a watertight case, which makes it splash resistant. The mechanical touch keys are highly reliable with tactile and audio feedback. This meter can be operated either with 6 AAA batteries or with an AC adaptor. Re-calibration is not required when power is restored again. The instrument also displays a "**LOBAT**" message when the batteries are in need of replacement.

The meter has a large LCD that displays the pH (mV) and temperature values simultaneously along with the user prompting features and mode indicators. The instrument prompts the user through the calibration and measurement procedures.

An **AUTOLOCK** feature is provided for both pH and mV measurements. This enables the instrument to automatically sense the end point and "**lock**" the display to indicate the end point value of a measurement. The meter can also be used in non-**AUTOLOCK** mode.

The **AUTOLOCK** and the user prompting features help eliminate virtually all human factors in the determination of pH and mV values, thus resulting in precise, repeatable and error free measurements.

The meter can use pH electrode, ORP electrode and **ATC** (Automatic Temperature Compensation) probe. One-point, 2-point or 3-point pH calibration can be used for this meter and user should select one from them.

The meter is also equipped with a non-volatile memory allowing the user to store 40 different sets of readings. This unit will assign a site number for each set of readings, so the user can review the data easily. (**See Note 2**)

Optional RS-232C can track all displayed values and interface the meter with recorders, printers, computers, etc. (**See Note 1**)

Other features include, low power consumption, percentage of power supply display, electrode offset recognition, electrode slope recognition, built-in buffer coefficients, automatic or manual temperature compensation, auto-saving pH calibration values, and high 50/60 Hz AC noise rejection. This meter is **USER FRIENDLY**, for field, industrial and laboratory applications.

SPLASH PROOF

The meter is splash resistant with a watertight case. The instrument should not be operated under water since the pH electrode is not waterproof. The splash proof feature is to prevent permanent damage to the instrument when accidentally splashed with non-corrosive solutions. Take the following measures immediately in the event that the instrument is dampened in any kind of solution:

1. Rinse the instrument thoroughly with distilled water. The connectors should be sprayed with a jet stream of water to remove all contamination that might create electrical leakage potential paths. This leakage path may reduce the impedance of the instrument and create polarization current between the pH and reference cells of the electrode.
2. Rinse the electrode and spray its connector in the same manner.
3. Wait for the instrument and probe to dry completely before resuming operation.
4. Replace the pH electrode if satisfactory operation is not resumed.
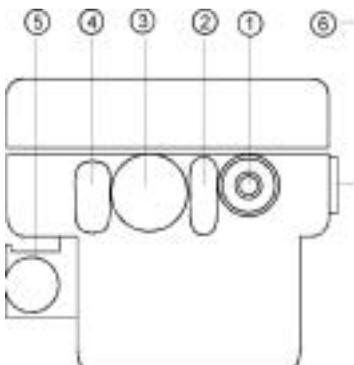
1. pH / ORP BNC CONNECTOR
2. REF. ELECTRODE INPUT CONNECTOR
3. ATC INPUT CONNECTOR
4. AC ADAPTOR INPUT CONNECTOR
5. ELECTRODE HOLDER
6. RS-232C CONNECTOR

FIGURE 1   TOP VIEW

CHANGING THE BATTERIES

When the **LOBAT** indicator is flashing, the user should check that whether the external AC adaptor is connected to the meter reliably, and if only internal batteries is used, the user should change the batteries. If the voltage of power supply is too low, the meter will display "**Sht**" and then shut down automatically.

1. Position the meter so that the left side of the meter is facing up. (**Refer to Figure 2**) With a coin, inset it in the closure slot on the side labeled **A**. With the coin tilted, thrust it upward to open the battery compartment and lift the cover up.

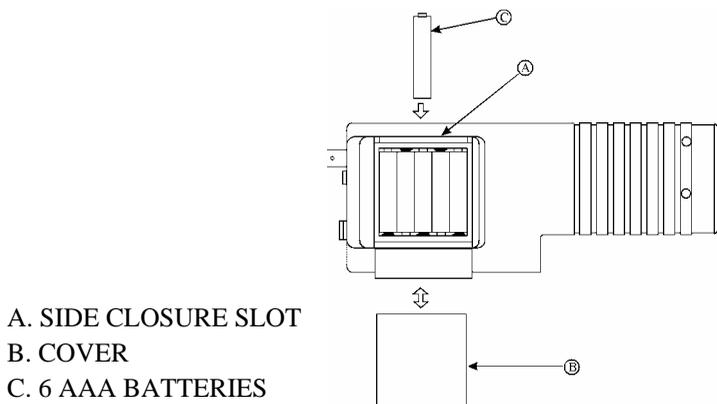2. Insert the batteries and ensure polarities are correct.

A. SIDE CLOSURE SLOT
B. COVER
C. 6 AAA BATTERIES

FIGURE 2   REAR VIEW (BATTERY COMPARTMENT)

TURN ON/OFF INSTRUMENT

Once the batteries are installed correctly and/or an AC adaptor is connected reliably, you can press **ON/OFF** key to turn on or turn off the unit. After the unit is turned on, it will display all segments of LCD for a few seconds then the buffer set will be shown. After a while the percentage of power supply will be measured and displayed, then the unit will go to the last mode that has been saved.

When the unit is not in use, press the **ON/OFF** key to turn off the unit for saving battery life. **Unplugging the AC adaptor from the unit or from the AC line does not turn off the unit. It would automatically switch to the internal batteries.**

When turning off, the last display mode will be auto-saved, except during **RECALL** and **ERASE** modes where it will default to **pH-AUTOLOCK** mode. Calibration data and the 40 different site readings are saved in non-volatile memory, and will be intact even if the user turns off the unit.

THE KEYPAD (See Notes 2 and 3)

1. **ON/OFF** key:
   The **ON/OFF** key turns the unit ON or OFF. *The pH calibration values will not be erased when the unit is turned off.*

2. **MODE** key:
   2.1. During normal operation, the **MODE** key will change the display mode sequentially to **pH-AUTOLOCK**, **mV-AUTOLOCK**, **pH**, **mV**, **RECALL** and **ERASE**. The calibration values will not be affected by changing the display modes.
   2.2. In pH calibration mode, the **MODE** key will exit the current calibration and go to the measurement.

3. **STAND** and **SLOPE** keys:
   3.1 The **STAND** and **SLOPE** keys are used for pH calibration of the instrument.
   3.2 Press and hold the **STAND** key while turning on the power to change the buffer set.

4. (**UP**) and (**DOWN**) keys:
   4.1 The   and   keys are used to manually enter the temperature value in manual (**MAN**) mode. These keys are inoperative when operating in **ATC** mode.
   4.2 In **RECALL** mode, the   and   keys will adjust the site number .

5. **MEASURE** key:
   5.1 The **MEASURE** key is used to bring the instrument out of the **AUTOLOCK** condition when operating in the **pH-AUTOLOCK** or **mV-AUTOLOCK** mode.
   5.2 During **pH-AUTOLOCK**, **mV-AUTOLOCK**, **pH**, or **mV** mode, pressing and holding the **MEASURE** key for about 2 seconds will save all the readings in the next available site number.
   5.3 During **RECALL** mode, pressing the **MEASURE** key will display the saved pH value and temperature value on the current site. Then pressing it again will display the mV value and temperature value on the same site. Press the **MEASURE** key one more time will go to the pH value and temperature value.

6. **CLEAR** key:
   During **pH-AUTOLOCK** and **pH** mode, the **CLEAR** key is used to clear all pH calibration values stored in the internal memory and set them to **default** (**ideal**) values. Under normal conditions, it will not be activated unless press and hold this key for about 2 seconds. By doing this, the unit is ready for measurements with **STAND** and **SLOPE** off and need not to be calibrated.

7. **MEASURE** and ▼ keys:

Pressing and holding this combination during **ERASE** mode for about 5 seconds will erase **ALL** data saved in the non-volatile memory. All 40 sites will be erased completely. Do not use this function until all recorded data has been reviewed or transcribed or downloaded.

THE LCD AND KEYPAD DESCRIPTION
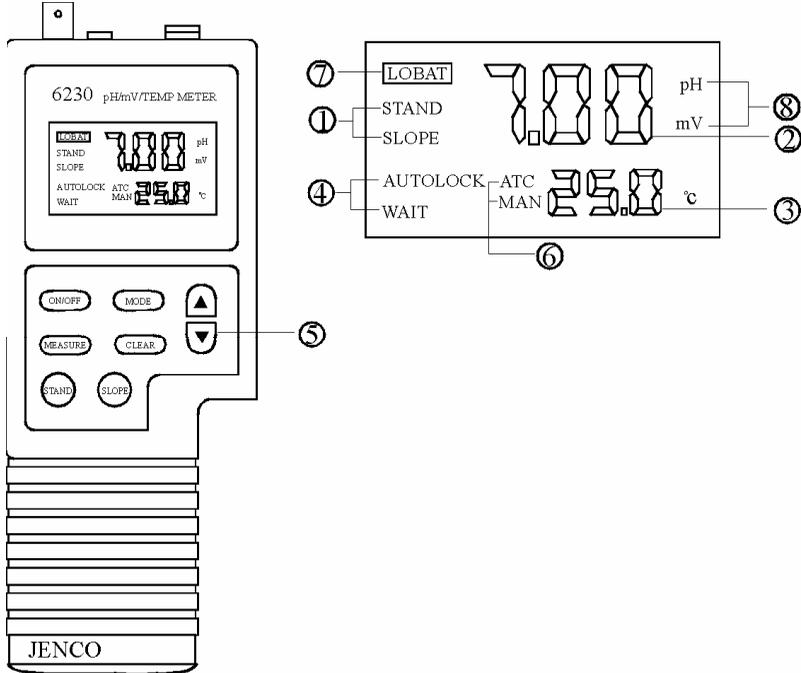
1. **STAND** & **SLOPE**: Calibration indicators.
2. Main display: for **pH** and **mV** values.
3. Secondary display: for **temperature** value and **site number**.
4. **AUTOLOCK** : AUTOLOCK mode indicator.
   WAIT: Displays while the unit waits for a stable reading or end port sensing.
5. All eight control keypads.
6. **ATC** & **MAN**: "**ATC**" displays if an ATC probe is connected. Otherwise "**MAN**" displays.
7. **LOBAT**: Low battery indicator.
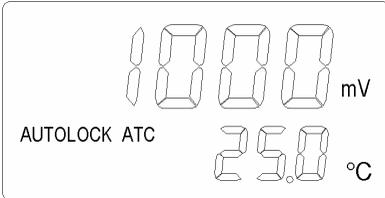8. **pH** / **mV**: Unit and mode indicators.

FIGURE 3   FRONT VIEW

MODES OF THE METER (See Notes 2 and 3)

7.00 pH
STAND
SLOPE
AUTOLOCK ATC
25.0 °C
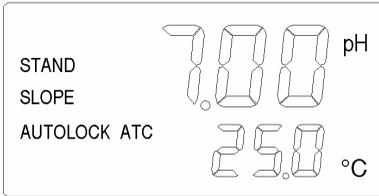
1. **pH-AUTOLOCK** mode:
The meter will display pH and temperature with both **pH** and **AUTOLOCK** on.
WAIT flashes until the unit detects a stable reading.

1000 mV
AUTOLOCK ATC
25.0 °C

2. **mV-AUTOLOCK** mode:
The meter will display mV and temperature with both **mV** and **AUTOLOCK** on.
WAIT flashes until the unit detects a stable reading .

7.00 pH
STAND
SLOPE
ATC
25.0 °C
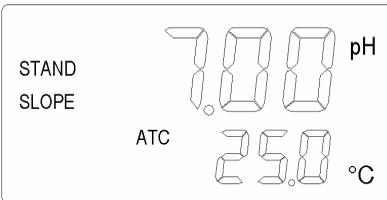
3.**pH** mode:
The meter will display pH and temperature with **pH** on but **AUTOLOCK** off.

1000 mV
ATC
25.0 °C
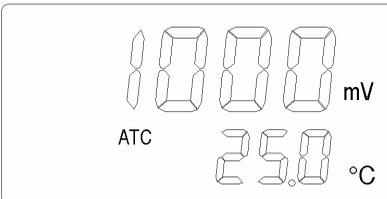
4.**mV** mode:
The meter will display mV and temperature with **mV** on but **AUTOLOCK** off.

rCL
40
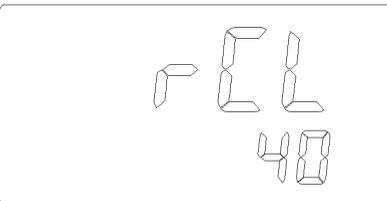
5.**RECALL** mode:
User can recall data saved in memory.

" " annunciator will flash.
Site number

ErA

6.**ERASE** mode:
User can erase **ALL** data saved in memory.

OPERATIONAL PROCEDURES

Before operation, you should turn on the unit.

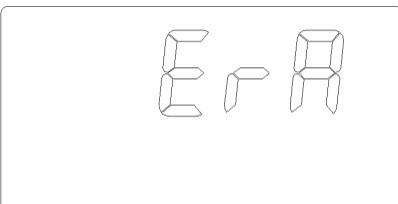## BUFFER TABLE SELECTION

This unit has two buffer sets: 4.01,**7.00**, 10.01pH and 4.00,**6.86**, 9.18pH. To change the buffer set, turn off the unit, then press and hold the **STAND** key while turning on the unit again. The user can select 1-point, 2-point or 3-point pH calibration. The first point must be 7.00/6.86 buffer. The second and the third will be either 4.01 or 10.01 when the first point is 7.00. If the first is 6.86 then the second and the third will be either 4.00 or 9.18.

pH CALIBRATION

1. **Calibration in the pH-AUTOLOCK mode.**

    1.1 Connect the pH electrode to the BNC connector and ATC/Temp probe to the ATC/Temp connector of the unit. The **ATC** will be on. Press the **MODE** key repeatedly until the unit displays **pH-AUTOLOCK** mode.

    1.2 Rinse the pH electrode and ATC/Temp probe in distilled water and immerse in the first buffer solution. The unit will display the buffer temperature.

    NOTE: If no ATC/Temp probe is connected, the **MAN** will be on, adjust the temperature reading (0.0 to 60.0   ) to that of the first buffer using the   and   keys.

    1.3 Press the **STAND** key to calibrate. The **pH** annunciator flashes until the unit exit pH calibration. The **STAND** annunciator will be on, and the **WAIT** annunciator flashes until the unit detects a stable reading. When a stable reading is reached, the **WAIT** annunciator will stop flashing and stay off. The **SLOPE** annunciator will start to flash. This means that the first point has been calibrated.

    You can press the **MODE** key to exit for one point pH calibration. The **pH** annunciator will stop flashing and be on, and the meter is ready for measurements with **STAND** on but **SLOPE** off. If dual or three points calibration is needed, go to 1.4.

    1.4 Remove the pH electrode and ATC/Temp probe from the buffer and rinse them in distilled water. After rinsing, immerse them in the second buffer solution.

    NOTE: If no ATC/Temp probe is connected, the **MAN** will be on, adjust the temperature reading (0.0 to 60.0   ) to that of the second buffer using the   and   keys.

1.5 Press the **SLOPE** key to calibrate. The **SLOPE** annunciator will stop flashing and stay on. And the **WAIT** annunciator flashes until the unit detects a stable reading. When a stable reading is reached, the **WAIT** annunciator will stop flashing and stay off. This means that the second point has been calibrated.

You can press the **MODE** key to exit for dual points pH calibration. The **pH** annunciator will stop flashing and be on, and the meter is ready for measurements with both **STAND** and **SLOPE** on . If three points calibration is needed, go to 1.6.

1.6 Remove the pH electrode and ATC/Temp probe from the buffer and rinse them in distilled water. After rinsing, immerse them in the third buffer solution.

NOTE: If no ATC/Temp probe is connected, the **MAN** will be on, adjust the temperature reading (0.0 to 60.0   ) to that of the third buffer using the and   keys.

1.7 Press the **SLOPE** key to calibrate. The **WAIT** annunciator flashes until the unit detects a stable reading. When a stable reading is reached, the **WAIT** annunciator will stop flashing and stay off. This means that the third point has been calibrated.

You can press the **MODE** key to exit for three points pH calibration. The **pH** annunciator will stop flashing and be on, and the meter is ready for measurements with both **STAND** and **SLOPE** on.

2. Calibration in the pH mode.

2.1 Connect the pH electrode and ATC/Temp probe to the top of the instrument. The **ATC** annunciator will be on. Press the **MODE** key repeatedly until the unit displays **pH** mode.

2.2 Rinse the pH electrode and ATC/Temp probe in distilled water and immerse them in the first buffer solution. The instrument will display the buffer temperature.

NOTE: If no ATC/Temp probe is connected, the **MAN** will be on, adjust the temperature reading (0.0 to 60.0   ) to that of the first buffer using the and   keys.

2.3 Allow sufficient time for the electrode and ATC/Temp probe to stabilize. Press the **STAND** key to calibrate. The **pH** annunciator flashes until the unit exit pH calibration. The **STAND** annunciator will be on and the **SLOPE** annunciator will flash, indicating that the first point has been calibrated.

You can press the **MODE** key to exit for one point pH calibration. The **pH** annunciator will stop flashing and be on, and the meter is ready for measurements with **STAND** on but **SLOPE** off. If dual or three points calibration is needed, go to 2.4.

2.4 Remove the pH electrode and ATC/Temp probe from the buffer and rinse them in distilled water. After rinsing, immerse them in the second buffer solution.

NOTE: If no ATC/Temp probe is connected, the **MAN** will be on, adjust the temperature reading (0.0 to 60.0   ) to that of the second buffer using the   and   keys.

2.5 Allow sufficient time for the pH electrode and ATC/Temp probe to stabilize. Press the **SLOPE** key to calibrate. The **SLOPE** annunciator will stop flashing and stay on. This means that the second point has been calibrated..

You can press the **MODE** key to exit for dual points pH calibration. The **pH** annunciator will stop flashing and be on, and the meter is ready for measurements with both **STAND** and **SLOPE** on. If three points calibration is needed, go to 2.6.

2.6 Remove the pH electrode and ATC/Temp probe from the buffer and rinse them in distilled water. After rinsing, immerse them in the third buffer solution.

NOTE: If no ATC/Temp probe is connected, the **MAN** will be on, adjust the temperature reading (0.0 to 60.0   ) to that of the third buffer using the   and   keys.

2.7 Allow sufficient time for the pH electrode and ATC/Temp probe to stabilize. Press the **SLOPE** key to calibrate. The third point has been calibrated.

You can press the **MODE** key to exit for three points pH calibration. The **pH** annunciator will stop flashing and be on, and the meter is ready for measurements with both **STAND** and **SLOPE** on.

pH MEASUREMENTS

1. Measurement in the pH-AUTOLOCK mode.

1.1 Connect the pH electrode and ATC/Temp probe to the unit. The **ATC** annunciator will be on.

1.2 Press the **MODE** key repeatedly until the unit displays **pH-AUTOLOCK** mode.

1.3 Rinse the pH electrode and ATC/Temp probe with distilled water and

immerse them in the sample to be measured.

1.4 Press the **MEASURE** key. The **WAIT** annunciator will flash until the unit determines a stable pH reading. When **WAIT** stops flashing and stays off, the reading is locked.

   NOTE: If no ATC/Temp probe is connected, the **MAN** will be on, adjust the temperature reading (-10.0 to 120.0   ) to that of the sample using the   and   keys.

1.5 For inherently unstable samples, the unit will not **AUTOLOCK**. Use the **pH** mode with **AUTOLOCK** off in this case.

2. Measurement in the pH mode.

2.1 Connect the pH electrode and the ATC/Temp probe to the unit. The **ATC** annunciator will be on.

2.2 Press the **MODE** key repeatedly until the unit displays **pH** mode.

2.3 Rinse the pH electrode and ATC/Temp probe with distilled water and immerse them in the sample to be measured.

2.4 Allow sufficient time for the display to stabilize. The unit will display the pH value of the sample at the displayed sample temperature.

   NOTE: If no ATC/Temp probe is connected, the **MAN** will be on, adjust the temperature reading (-10.0 to 120.0   ) to that of the sample using the   and   keys.

TEMPERATURE MEASUREMENTS

The meter can measure temperature independently with the ATC/Temp probe without using the pH electrode.

1. Place the ATC/Temp probe in the media to be measured. The measured temperature is displayed.

2. **OuE** or **Und** will be displayed if the temperature is out of the temperature measurement range of –10.0 to 120.0   .   Once the temperature is brought within range, **OuE** or **Und** will disappear and the correct temperature reading will be displayed.

mV MEASUREMENTS

1. Measurement in the mV -AUTOLOCK mode.

1.1 Connect the optional combination ORP electrode to the unit.

1.2 Press the **MODE** key repeatedly until the unit display **mV-AUTOLOCK** mode.

1.3 Rinse the electrode with distilled water and immerse it in the sample to be

measured.

1.4 Press the **MEASURE** key. The **WAIT** annunciator will flash until the unit determines a stable mV reading. When **WAIT** stops flashing and stays off, the reading is locked.

1.5 The ATC/Temp probe can be used to measure the sample temperature as required.

1.6 For inherently unstable samples, the unit will not **AUTOLOCK**. Use the **mV** mode with **AUTOLOCK** off in the case.

2. **Measurement in the mV mode.**

2.1 Connect the optional combination ORP electrode to the unit.

2.2 Press the **MODE** key repeatedly until the unit display **mV** mode.

2.3 Rinse the electrode with distilled water and immerse it in the sample to be measured.

2.4 Allow sufficient time for the display to stabilize. The unit will display the mV value of the sample.

2.5 The ATC/Temp probe can be used to measure the sample temperature as required.

SAVING, RECALLING AND ERASING DATA (**See Notes 2 and 3**)

1. **Saving readings to memory.**

1.1 While in **pH-AUTOLOCK**, **mV-AUTOLOCK**, **pH** and **mV** modes, press and hold the **MEASURE** key for about 2 seconds. The unit will display "**SAV"** and the site number for a brief moment to indicate a successful saving.

1.2 If it displays "**FUL"**, this means that all 40 sites are used up. You should export data from the unit as soon as possible. **Any subsequent saving of data will overwrite the existing data.**

2. **Recalling readings from memory.**

2.1 To recall the data, press the **MODE** key repeatedly until the unit displays **RECALL** mode. The " " annunciator flashes until the unit exit the **RECALL** mode.

2.2 Press Δ or ∇ keys to adjust / select the site number.

2.3 Press the **MEASURE** key to display the data that has been saved on the selected site number. The unit will display pH and temperature, and press the **MEASURE** key again to display mV and temperature. By pressing the **MEASURE** key, the meter will display these two sets of stored values alternately.

3. **Erasing data.**

3.1 To erase **ALL** the data stored in memory, press the **MODE** key repeatedly until the unit displays **ERASE** mode.

3.2 Press ⬤ and **MEASURE** keys simultaneously and wait for the secondary display to count down to zero. The meter will then display "**dOn**" to indicate successful erasure and will return to **pH-AUTOLOCK** mode automatically.

RS-232C INTERFACE OPERATION (See Note 1)

INTRODUCTION

The RS-232C interface feature can track all displayed values and interface your Jenco meter with recorders, printers, computers, etc. For example, the user can log all data simultaneously to an interfaced IBM PC/AT compatible computer.

This section assumes you are familiar with the basics of data communication, the RS-232C interface, programming with computer languages, like Delphi, VB, VC, etc. A simple program must be written in order to send command and receive data from the unit.

If you do not have that knowledge, you must have a rudimentary knowledge and a copy of the more popular Windows[®] 98 operating system or a later version of Microsoft's Windows[®] operating system capable of using COM port. In addition you must also have an interface cable of the DB-9 type (sometimes also called a Serial port connector) and that the wiring of that connector is wired to be compatible to the RS-232C standard for RxD, Receive Data and TxD, Transmit Data and Circuit Common.

To use the RS-232C interface, you must choose either to download on line from the Jenco website at http://www.jencoi.com/ a general Windows[®] compatible program that allows you to receive data from the Jenco meter as pre-programmed by that Windows[®] compatible program or you must custom write your own simple program to send the commands you want to the Jenco meter and to receive back the specific data sampled at the time intervals you specify in your custom written program.

PREPARATION

The Jenco unit communicates with a PC computer (IBM PC/AT compatibles) through a DB-9 interface connector. The DB-9 must be configured to be compatible with the RS-232C standard for TxD, RxD and Circuit Common. (Please see accompanying diagram.) After you have connected the cable, turn on both the Jenco unit and the computer, you are now ready for the software part of the operation.

DB-9 CONNECTOR CABLE

Below is the wiring diagram showing the DB-9 connector wired to be compatible to

the RS-232C standard for TxD, RxD and Circuit Common.

Note: The "Standard RS-232C" cable is a 25-Pin connector. The essential Circuit Common and TxD and RxD are shown here adapted to the DB-9 connector.

<div align="center">

DTE

Data Terminal Equipment

(Your computer or recorder, etc.)

DCE

Data Communications Equipment

(Your Jenco Meter.)
</div>

Transmit Data!	Pin 2	Pin 2	Receive Data?
Receive Data?	Pin 3	Pin 3	Transmit Data !
Circuit Common	Pin 7	Pin 7	Circuit Common
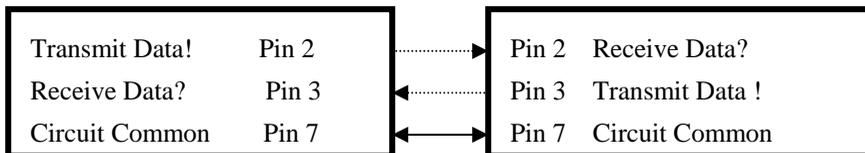
SOFTWARE

A demo program and the protocol are included in the accompanying CD. Using the demo, you can easily track or recall data from the Jenco meter. Please read the protocol to understand more about the procedure in detail. You may also choose to download from our website a pre-programmed Windows® compatible program but you will be limited to tracking and recalling data as preset in those programs.

ERROR INDICATIONS

Main Display	Second Display	Mode/ State	Reasons
OuE OuE	Out of 0 ~ 60 0 ~ 60	STAND calibration	Buffer temperature is out of the 0 to 60 ℃ range. pH electrode offset is greater/less than ±1.5pH. Buffer is not correct.
OuE OuE	Out of 0 ~ 60 0 ~ 60	SLOPE calibration	Buffer temperature is out of the 0 to 60 ℃ range. pH electrode slope is off by more than 30% of ideal slope. Buffer is not correct.
OuE/Und OuE	-10.0 ~ 120 OuE/Und	pH measurement	pH value is out of the –2.00 to 16.00 pH range. Temperature is out of the –10.0 to 120 ℃ range.
OuE/Und		mV measurement	mV value is out of the –1999 to 1999 mV range.

	OuE/Und	Temperature measurement	Temperature is out of the –10.0 to 120 range.
bAd	EEP		Failed to check or write EEPROM.

pH BUFFERS

The temperature characteristics of pH calibration buffers 4.00, 4.01, 6.86, 7.00, 9.18 and 10.01 are stored inside the instrument. The buffers used to calibrate the instrument must exhibit the same temperature characteristics as the stored values.

TEMPERATURE COEFFICIENT OF THE pH BUFFERS

°C	4.00	6.86	9.18	4.01	7.00	10.01
0	4.01	6.98	9.46	4.01	7.11	10.32
5	4.00	6.95	9.39	4.01	7.08	10.25
10	4.00	6.92	9.33	4.00	7.06	10.18
15	4.00	6.90	9.28	4.00	7.03	10.12
20	4.00	6.88	9.23	4.00	7.01	10.06
25	4.00	6.86	9.18	4.01	7.00	10.01
30	4.01	6.85	9.14	4.01	6.98	9.97
35	4.02	6.84	9.10	4.02	6.98	9.93
40	4.03	6.84	9.07	4.03	6.97	9.89
45	4.04	6.83	9.04	4.04	6.97	9.86
50	4.06	6.83	9.02	4.06	6.97	9.83
55	4.07	6.83	8.99	4.08	6.97	9.80
60	4.09	6.84	8.97	4.10	6.98	9.78

Table 1

The actual reading of the instrument can differ from the values shown by ±0.01 pH.

SPECIFICATIONS

Display	RANGE	ACCURACY	RESOLUTION
pH	-2.00 to 16.00 pH	±0.01 pH	0.01 pH
mV	-1999 to +1999 mV	±0.05% F.S.	1 mV
Temperature	-10.0 to 120.0	±0.3	0.1

pH BUFFER RECOGNITION	(4.01,**7.00**,&10.01) or (4.01, **6.86**, &9.18)
pH BUFFER TEMP. RANGE	0 to 60
pH ELECTRODE OFFSET RECOGNITION	±90 mV at pH 7.00 or 6.86
pH ELECTRODE SLOPE RECOGNITION	±30% at pH 4.00,4.01, 9.18, or 10.01
pH CALIBRATION	1 point / 2 points / 3 points
CALIBRATION VALUE BACK-UP	Yes
pH TEMP. COMPENSATION	AUTO / MANual, -10.0 to 120.0
AUTOLOCK	Yes
ATC PROBE	Thermistor (10kΩ at 25)
INPUT IMPEDANCE	$>10^{12}$
POWER SUPPLY: Batteries / Adaptor	6 AAA batteries/AC adaptor (Output: DC 9V)
AUDIO FEEDBACK	All Touch Keys
LCD SIZE: pH/mV: Temp.	12.5 mm: 7.5 mm High
STORAGE CAPABILITY	40 sets of readings (For 6230M / 6231M only)
COMMUNICATION	RS-232C Output (For 6230M / 6230N only)
AMBIENT TEMP. RANGE	0 to 50
RELATIVE HUMIDITY	Up to 95%
DIMENSIONS	86mm×241mm×72mm
WEIGHT (Batteries not included)	350gm

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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Manual in English					
	6230M/6230N/6231M/6231N				2003/12/11
	K6230M/6230N/6231M/6231N-01				2010-2-25
	02				2010-2-25

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