

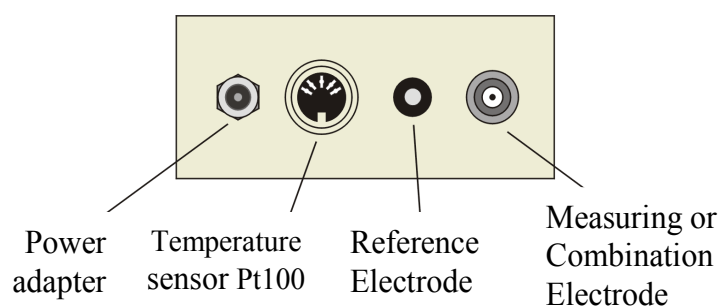
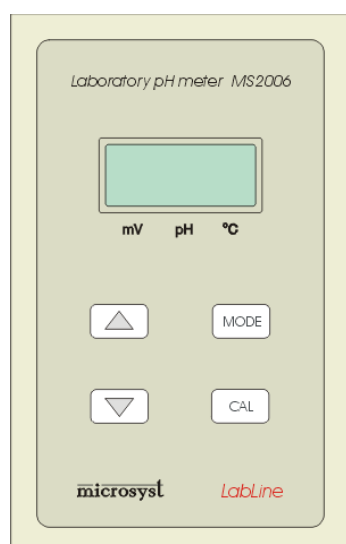
I. GENERAL DESCRIPTION

MS2006 is a microprocessor pH/mV/°C meter. It is designed to measure the activity of the hydrogen ions (pH) of a solution and its temperature. It can be used as a high resistance millivoltmeter.

II. TECHNICAL DATA

| | | |
|--|----|--|
| Measurement Ranges and Accuracy | pH | 0.00 ... 14.00 / ± 0.003 |
| | °C | 0.0 ... 100.0 / ± 0.1 |
| | mV | -700 ... 700 / ± 0.3 |
| Input Resistance | | > 10 ¹² Ω |
| Temperature Compensation | | Automatic (Pt100) or Manual |
| Calibration | | Automatic, stored on shut down |
| Buffer Recognition | | pH 1.68, 3.78, 4.01, 6.86, 9.18, 12.45 NBS (DIN 19266) - Automatic Manual |
| Accuracy of the temperature correction of the calibrating buffers for NBS standard | | ± 0.003 |
| Electrode System's ISO Potential | | 7 (±1) pH; 0 (±74.04) mV |
| Display | | LCD 3 ½ digits |
| Ambient Temperature | | 0 ... 50 °C |
| Ambient Humidity | | < 85 % RH |
| Power Supply | | AC adapter |
| Dimensions (WxHxL) | | 175 x 105 x 25 mm |
| Weight | | max 300 g |

III. FRONT PANEL, BACK PANEL AND BUTTONS





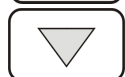
- Turns ON / Turns OFF the device
- Selects displayed value (pH, mV, °C)
- Cancels CALIBRATION MODE



- Starts CALIBRATION MODE
- Goes to the next step in CALIBRATION MODE
- Confirms made correction in CALIBRATION MODE



- Increases set point



- Decreases set point

IV. OPERATING INSTRUCTIONS

1. Common instructions

- 1.1. For better precision you have to observe all technological requirements for correct measurement
- 1.2. Storage, preparing for work and exploitation of the electrodes and the buffers, have to be done according to the requirements of the producer
- 1.3. Before usage, the device have to be set in nominal work conditions according to the technical characteristics described in its technical description

2. Work preparation

- 2.1. Fix the temperature electrode and the combination pH/reference electrode to a measuring easel
- 2.2. Connect the pH and temperature electrodes to the device
- 2.3. Use a 50 ml or 100 ml container for measuring the sample
- 2.4. Prepare the pH electrode according to its testing certificate
- 2.5. The temperature electrode doesn't require special preparation
- 2.6. Connect the power adapter to the pH meter and after that to the grid

3. Electrode cleaning

- 3.1. Clean the glass bulb and the outside surface of the pH electrode with plenty of aqueous distillate
- 3.2. Dry the pH electrode with filter paper ONLY outside. The spherical bulb mustn't be rubbed
- 3.3. Fill in a container about 5 ml of the solution (sample or buffer), which should be measured next
- 3.4. Dip the electrodes into the solution
- 3.5. Vigorously stir the electrode in the solution for 10 sec.

- 3.6. The electrode is ready for the new measurement. Throw out the polluted solution and fill in the container enough quantity of the sample to cover the pH electrode. Dip the electrode into the sample
 - 3.7. Wait for 30 sec. and read the data
- * For new measurements repeat steps 3.1. to 3.7.
 - * You may use special pulverizer with deionized water to clean the pH electrodes

V. TURN ON / TURN OFF



- Press to TURN ON the device
- Press and hold for 3 sec. to TURN OFF the device

VI. MEASUREMENT MODE



- Press this button to change the displayed value (pH /mV/ °C)

The format of the display is as follow:

XXXX - mV

XX.XX - pH

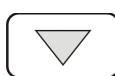
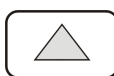
XX.X - °C

The decimal point shows, which is the displayed value.

VII. TEMPERATURE COMPENSATION

MS2006 provides automatic or manual temperature compensation. The device identifies whether Pt100 sensor is connected or not and changes the mode – automatic (with Pt100 sensor) or manual (without Pt100 sensor).

If there is a blinking decimal point of the temperature's value on the display, the device is in MANUAL TEMPERATURE COMPENSATION MODE. In this case, the user can set the temperature of the measured solution, using these buttons:



- Press these buttons to change the value of the temperature








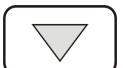

- Press to confirm the desired value

The device turns into MEASUREMENT MODE

VIII. BUFFER RECOGNITION


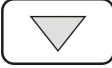
MS2006 provides automatic buffer recognition with NBS buffers (1.68, 3.78, 4.01, 6.86, 9.18, 12.45 pH).

MS2006 works with any buffers 0.00 ÷ 14.00 pH (“Free”), but the user should set their values.

| | |
|---|---|
|  | Press and hold this button |
|  | Press this button to turn on the device |
|   | Release the buttons |
|   | Choose a calibrating standard – nbS, Fre |
|  | Press this button to confirm your choice |

IX. SENSITIVITY, ASYMMETRY AND ERRORS

The device should be in MEASUREMENT MODE

| | |
|---|--|
|  | Press and hold this button to read sensitivity – SLP |
|  | Press and hold this button to read asymmetry – AST |

The values of these parameters should be within the following ranges:

$$30.0 < \text{SLP} < 65.0 \text{ mV/pH}$$

$$5.00 < \text{AST} < 9.00 \text{ pH}$$

A mistake could appear after the calculation of the sensitivity – SLP and the asymmetry - AST of the electrode system, if one of these parameters is out of range. In this case is displayed “---“.




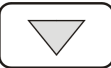



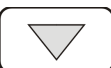


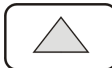
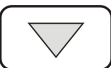
Probable reasons for the mistakes appearing:






There is no correspondence between the set value of the calibrating buffer and the sample in the container

Defective electrode system

Defective connection of the electrode system

X. CALIBRATION MODE

| Stage | Display | Buttons | Operation |
|----------|--------------|---|--|
| Stage 1 | |  | Press and hold for 3 sec |
| Stage 2 | bF1 | | Load the first calibrating buffer in the container (abide by IV. 3.) |
| Stage 3 | |  | Press to confirm |
| Stage 4 | XX.XX |   | Press the buttons to set the value of the first calibrating buffer |
| Stage 5 | |  | Press to confirm the set value |
| Stage 6* | °C |  | Press to confirm |
| Stage 7* | XX.X |   | Press the buttons to set the value of the temperature of the buffer |
| Stage 8* | |  | Press to confirm the set value |
| Stage 9 | | | Auto Read – Wait! Data calculation. The device passes automatic to the next stage |
| Stage 10 | bF2 | | Change the calibrating buffer (abide by IV.3.) |
| Stage 11 | |  | Press to confirm (Stage 3) |
| Stage 12 | XX.XX |   | Press the buttons to set the value of the second calibrating buffer |

| | | | |
|-----------|-------------|---|--|
| Stage 13 | |  | Press to confirm the set value (Stage 5) |
| Stage 14* | °C |  | Press to confirm (Stage 6*) |
| Stage 15* | XX.X |   | Press the buttons to set the value of the temperature of the buffer (Stage 7*) |
| Stage 16* | |  | Press to confirm the set value (Stage 8*) |
| Stage 17 | | | Auto Read – Wait! Data calculation. The device passes automatic to the next stage |

Attention!

* You can return to MEASUREMENT MODE before Stage 5, by pressing 

* If the temperature electrode is connected to the device, stages 6, 7, 8, 14, 15 и 16 fall down