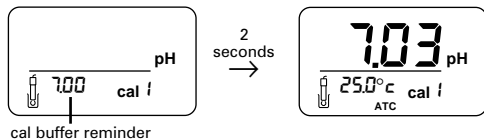
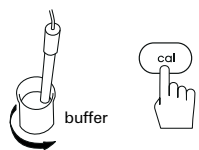
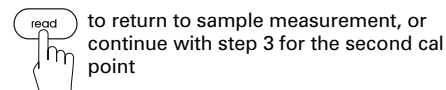
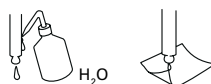


Calibrating

- 1-point calibration
Example

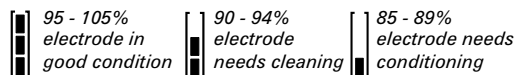


2. Rinse electrode and blot dry



3. 2-point calibration - repeat steps 1 and 2 using second buffer

auto or manual endpoint



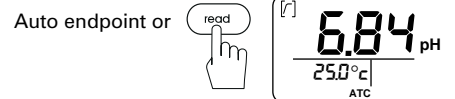
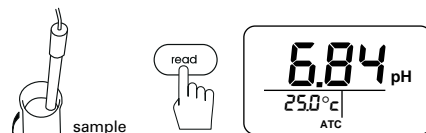
- When you press **cal** the pH buffer you selected for cal 1 (Program Menu) is displayed for 2 seconds, and then the MP120 starts measuring. If you want to use another buffer (choice of 3) press **cal** again. Press **cal** repeatedly to exit calibration routine.
- The decimal point flashes during cal measurement. When the electrode output has stabilized the stability indicator appears.
Manual endpoint - press **read** to endpoint
Auto endpoint - the MP120 automatically endpoints **A**
- When a 1-point calibration has endpointed you can press **mode** to display the absolute mV value and temperature of the buffer; the display reverts to buffer and E_0 values after 2 seconds.
- When a 2-point calibration has endpointed you can press **mode** to display the absolute mV value and temperature of the buffer; the display reverts to buffer and slope values after 2 seconds.

Measuring Samples

1. Select pH or mV mode



2. Measure sample
Example



3. Rinse, blot and store electrode



- If you press **mode** to select pH or mV, the MP120 begins measuring immediately, and you will not need to press **read** to start the sample measurement.
- The decimal point flashes during sample measurement. When the electrode output has stabilized the stability indicator appears.
Manual endpoint - press **read** to endpoint
Auto endpoint - the MP120 automatically endpoints **A**

Maintenance

General

The MP120 requires very little maintenance. Occasionally wipe the meter with a damp cloth. The casework is made of ABS/PC which is known to be affected by some organic solvents, including toluene, xylene and methyl-ethyl-ketone. It is good practice to wipe away any spillages as soon as they occur.

Every six months inspect and lightly grease the socket seals, and connector and battery 'O' rings with the grease supplied. Replace the 'O' rings if damaged.

CAUTION: To prevent permanent damage care should be taken to prevent liquid entering the MP120 when fitting electrodes or replacing batteries. If it does, remove the batteries and allow the meter to dry before using.

Replacing the Batteries

Replace batteries as soon as the low battery indicator appears. To prevent data loss always turn the MP120 off using the **mode** key before replacing the batteries. See the Installation section for details on installing batteries. Do not mix old and new batteries.

NOTE: Check the Program Menu settings after changing the batteries.

Electrode Maintenance

Refer to the electrode product insert for full details on maintaining your electrode.

Spares and Accessories

52000379	InLab 413 '3 in 1' pH Electrode (IP67)
51302026	Holster
51302029	Field Case
51302028	Wrist Strap
51302033	Instrument Sealing Kit
51302027	Neck Strap
51300047	Guide to pH Measurement
51302069	pH 4.01 Buffer Sachets, 30/pack
51302047	pH 7.00 Buffer Sachets, 30/pack
51302070	pH 9.21 Buffer Sachets, 30/pack
51302034	30K NTC Probe (IP67)
51302036	Spear 30K NTC Probe (IP67)
52000397	InLab 438 Low Cost pH Electrode

Problem Solving

Err 1 - offset value (E_0) out of range

Check correct buffer is used.

Check mV reading for pH 7 buffer is 0 ± 30 mV. If it is not, clean or replace the electrode.

Err 2 - slope out of range

Slope less than 85%, or not calculable.
+ Err 2 Electrode needs cleaning, conditioning or replacing. Check correct buffers are used.

Slope more than 105%. Check calibration buffers.

NOTE: Where 0 mV/pH unit = 0%, and 59.16 mV/pH unit = 100%

Err 3 - pH buffer outside temperature limits

pH buffers must be between 5°C and 50°C for accurate temperature compensation.

— . — — Displayed (measurement out of range)

Check electrode is connected and immersed in sample. Check wetting cap is removed.

Data Entry Errors

Entered temperature value changes to -5.0 or 105.0 - the MP120 will not accept temperatures outside this range.

Dashes displayed instead of buffer value during cal buffer set up - that buffer has already been selected for a cal point. Cal points must have different buffer values.

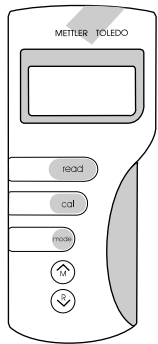
Display/Controls Inactive

Low battery power or batteries fitted incorrectly - remove batteries and replace correctly (with new batteries if necessary).

Operating Hints

- Remove the wetting cap from the end of the electrode and the rubber cap from the fill hole (if fitted) before using the electrode.
- Calibrate using buffers with values that bracket that of the sample. With a new electrode, or after maintenance, we recommend you use a buffer close to pH 7 for the first calibration point.
- For greatest accuracy, buffers and samples should be at the same temperature.
- Do not use buffers after the expiry date.
- When transferring the electrode from one solution to another, rinse it with distilled water and blot dry with tissue paper - do not wipe the electrode as this may cause polarization and slow response.
- When you select the pH calibration buffers (Program Menu), set the buffer you will use most frequently for 1-point calibrations as cal 1, and the buffer you will use most frequently for the second calibration point as cal 2.

MP120 pH Meter



Mettler-Toledo GmbH
Analytical
Sonnenbergstrasse 74
CH-8603 Schwerzenbach
Switzerland
Tel. (01) 806 77 11
Telefax (01) 806 73 50

Specifications

Measurement Ranges
pH 0.00 to 14.00
mV ± 1999
Temp. -5.0 to 105.0°C

Resolution
pH 0.01
mV 1
Temp. 0.1

Relative Accuracy*
pH ± 0.01
mV ± 2 mV
Temp. ± 0.2°C

Memory
10 memories

Isopotential Point
pH 7.00

Calibration Buffers
3 sets of 4 buffers

Calibration Points
2 of 3 selectable

Temperature Compensation
-5.0 to 105.0°C, automatic and manual

*± 1 least significant digit

Display
LCD
Auto Off
10 minutes from last keypress

Operating Conditions
Temperature 5 to 40°C
Humidity 5 to 80% (non condensing)

Size/Weight
3 1/4 x 7 3/4 x 1 3/4 inches
(85 x 200 x 45 mm)
1lb (0.45kg)

Batteries
4 x AA/LR6
alkaline 1.5V d.c.

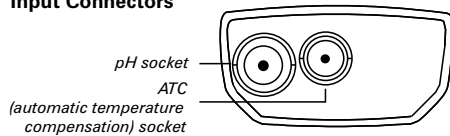
Regulatory Compliance
Complies with Part 15 of FCC Rules (Class A computing device) and European EMC Directives EN50081-1: 1992 and EN50082-1: 1992

Waterproof to IP67**
**when used as directed with electrodes with waterproof covers.

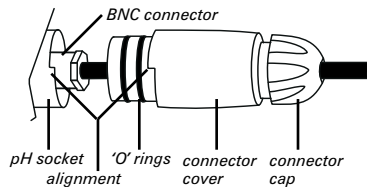
51709471 b697

Installation

Input Connectors



If you ordered an IP67 electrode with the MP120, connect it as follows, otherwise follow step 2:



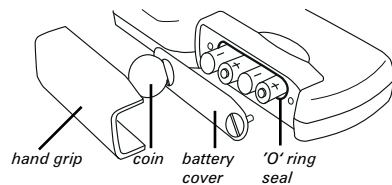
1. Make sure connector cap is loosened.
2. Connect the electrode BNC connector to the pH socket.
3. Lightly grease the 'O' rings with the grease supplied, then slide the waterproof cover over the socket. Make sure the cover is lined up correctly with the socket.

NOTE: Lightly greasing the cables will help removal of the connector cover in future.

4. Finger tighten the connector cap.
5. Repeat steps 1 - 4 connecting the phono connector to the ATC socket.

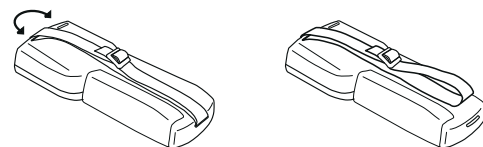
CAUTION: To avoid damaging the connectors always loosen the connector cap before removing the cover.

Installing the Batteries



1. Remove the hand grip, and unscrew the battery cover using a coin.
2. Insert the batteries, following the illustration.
3. Lightly grease the 'O' ring seal, and replace the battery cover and hand grip.

Fitting the Wrist Strap



Program Menu

The Program Menu allows you to set manual temperature compensation and pH calibration buffers. You can only enter the Program Menu if the current measurement has endpointed - press **read** if necessary.

Press and hold the **mode** key for 2 seconds to access the Program Menu - **prog** appears on the display.

Press **mode** to scroll through the options. Press **read** to exit the Program Menu at any time. If you press **read** when a value is flashing that value will not be entered.

MTC You can enter temperature manually using \wedge and \vee . The range is -5.0 to 105.0°C, with a preset temperature of 25°C. (An ATC probe will override manual compensation.) Press **mode** to enter the value and move on.

You can select three of four calibration buffers. The buffers are grouped in sets (b = 1, b = 2, b = 3); select your required set first using \wedge and \vee :

set 1 = 7.00, 4.00, 10.01, 1.68
set 2 = 7.00, 4.01, 9.21, 1.68
set 3 = 6.86, 4.01, 9.18, 1.68

Press **mode** to enter the set and move on.

NOTE: Check buffer set 2 is selected to use the buffers supplied.

Choose three buffers (cal 1, cal 2, cal 3) from the set for calibration. For ease of use, set the buffers in the order that you will use them.

cal 1 For example: Set 2 (factory settings)
cal 1 = 7.00, **cal 2** = 4.01 and **cal 3** = 9.21
cal 2 1.68 not selected.

These can be rearranged in any order using \wedge and \vee . Press **mode** to enter value and move on.

Press **read** to exit the Program Menu.

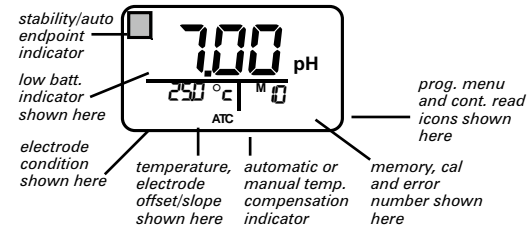
Controls

On: press any key. Off: from sample measurement press **mode** to step through to 'off'.



	starts/stops measurement	turns auto endpoint on/off	A
	starts calibration	no action	
	selects pH/mV/off. Displays mV and temperature of buffer after cal.	enters Program Menu	prog
	stores result in memory (up to 10). Changes value in Prog. Menu.	turns continuous measurement	
	recalls result from memory. Changes value in Prog. Menu.	no action	

Display



Using the Memory

Entering a Reading into Memory

The MP120 can store up to 10 endpointed results.

Press **M** when the measurement has endpointed.

M 1 is displayed (or M 2 to M 10 if readings have already been stored).

M $\bar{0}$ indicates the memory is full.

Recalling Memory

You can only recall stored memories if the current measurement has endpointed.

Press **R** - the last stored memory is displayed. Press \wedge or \vee to scroll through memories. RM 1 to RM 10 indicates which memory is being displayed. M $\bar{0}$ indicates no memories are stored.

Clearing the Memories

Press **R** then press \wedge or \vee until M C is displayed.

Press **mode** to clear the memories, M $\bar{0}$ indicates the memories have been cleared (press **read** to exit without clearing the memories).

Using Continuous Measurement

In normal mode, the MP120 will auto-off 10 minutes after the last key press, whether the unit is measuring or has endpointed. If you select continuous measurement mode, the MP120 will not auto-off.

To select continuous measurement mode press and hold **M** for 2 seconds.

Buffer Tables

The MP120 automatically corrects for temperature using the values shown in the table.

	1.68	4.00	4.01	6.86	7.00	9.18	9.21	10.01
5°C	1.67	4.00	4.01	6.95	7.09	9.39	9.45	10.25
10°C	1.67	4.00	4.00	6.92	7.06	9.33	9.38	10.18
15°C	1.67	4.00	4.00	6.90	7.04	9.27	9.32	10.12
20°C	1.68	4.00	4.00	6.88	7.02	9.22	9.26	10.06
25°C	1.68	4.00	4.01	6.86	7.00	9.18	9.21	10.01
30°C	1.68	4.01	4.01	6.85	6.99	9.14	9.16	9.97
35°C	1.69	4.02	4.02	6.84	6.98	9.10	9.11	9.93
40°C	1.69	4.03	4.03	6.81	6.97	9.07	9.06	9.89
45°C	1.70	4.04	4.04	6.83	6.97	9.04	9.03	9.86
50°C	1.71	4.06	4.06	6.83	6.97	9.01	8.99	9.83

METTLER TOLEDO