# ■8372S, 海水版盐度计

感谢您购买本公司笔型测量仪器。请您于开始使用此仪器前,详细阅读 本说明书,并妥善保存,供日后使用之参考。使用前请先将感应棒浸润 30 分钟, 尤其当感应棒久未使用, 务必执行此步骤。

- 产品特色: ● IP65 防水外壳
- ●测量范围宽并多种测量单位可选,符合各行各业不同的应用需求 • 双读值显示具温度补偿功能
- ●读值暂留功能
- 笔型设计,轻巧易携带
- ●低电量显示
- 自动关机功能
- C/F 温度单位切换
- 简易更换 LR44 电池
- 多点校正设计
- 一按键即自动更正

### 产品配备

- 配备包含: ✓笔型水质计
- ✓ LR44 钮扣电池四颗
- ✔ 使用说明书 彩盒或
- ✔ 白盒

#### 电源供应

水质计由 4 颗 LR44 钮扣电池供应电源 当有如下情形时,请检查电池状况:

- 1. 第一次使用时
- 2. 低电量显示出现在屏幕上时
- 3. 无法开机时
- 装置电池:
- 关闭电源
- 2. 以逆时针方向打开电池盖(注意勿丢 弃黑色垫圈)
- 3. 更换 4 颗新的 LR44 钮扣电池
- 4. 装入电池并确定磁极都正确
- 5. 盖上电池盖及黑色电圈并以顺时针方 向锁紧

# 屏幕显示 &功能键说明



- -上方数值表示量测之读值 -下方数值表示温度读值
- -ppt, S.G. 或 % 为盐度单位 -C 或 F 为溶液的温度单位
- 门为低电量显示



注意: 当不使用本仪器超过一个

月, 请不要将电池留在机器中,

如此 可延长本机寿命。



# 产品规格

Model	8372S
Salinity range 0.0~42.0 ppt or 0.0%~4.2% or	
0.950	~1.080(S.G) based on SEA WATER
Salinity accuracy	+/-1%F.S +/- 1 digit
Salinityresolution	0.1 ppt or 0.1% or 0.001(S.G)
Temp. range	-5~60.0°C
Temp. accuracy	+/-0.5°C
Temp. resolution	0.1
ATC	ATC
LCD size	30(H)x18(W)mm

Operatingtemp 0~50°C Humidity<80% Operating RH% 0~60C Storagetemp. Storage RH% Humidity < 90% Sensor life time >6 months (with good maintenance) 165(L)x35(W)x32(H)mm Dimension Battery LR44 x 4pcs Standard Package Meter/Battery/Manual/Paper box

- 1. 按 "♀"键开机,全屏幕将会显示数秒后进入正常模式。
- 2. 每次开机, 仪器均被设置为自动量程切换状态。自动量程切换功能可 自动侦测量测范围,并提供您最准确的分析与测量值。本水质计无法手
- 3. 使用本仪器之前,请用蒸馏水或去离子水清洗电极,以清除电极表面 附着的污染物。若是长时间没有使用本仪器,请在使用前将电极浸泡 30 分钟,以消除电极的惰性效应。
- 4. 将电极浸入待测溶液中,并确保电极表面没有气泡附着。您可在空气 中甩晃本仪器然后再浸入溶液,重复几次来消除表面气泡。测棒浸入溶 液时,注意电极须完全覆盖至待测溶液中,包含温度感测的部位。



- 5. 轻摇晃浸入溶液中的仪器,可帮助获得一个较精确的测量值。 几秒钟后, 仪器的温度读值和溶液的温度将会一致。 (十五分钟后,读值趋于稳定。)
- 6. 按"HOLDICAL"键可以暂留目前的读值。此时屏幕中会出现" H "字样, 再按一次"HOLDICAL"即可退出暂留模式。

8372是海水盐度测量仪器,具有三种显示单位: ppt 或 % 和比重 (Specific Gravity, S.G.). 按" 🚓 "键切换不同盐度单位.

- 8. 按" ♀"键关机
- 9.电极维护:
- a)请确保电极是干净的!
- b)请小心存放电极。每次使用前,请以去离子水小心清洗电极。使用 完毕后,请晾干,保存置于0~50℃的环境温度中存放。
- 10.准确度&气泡: 电极若测量时有空气泡附着会影响其准确度。若有发 现要尽量用掉。甩动湿的测棒约五次可移除气泡,沾溶液>甩气泡>沾溶液>甩掉气泡...

## 自动关机(睡眠模式)

本仪器在 20 分钟未操作后会自动关机。若使用者需长时间操作,可以

n

35.U ppt

P3<u>5</u>

ρųς

在开机之前,同时按" \$\bigg\ '' + 'holokal''键,直到 屏幕出现"n"后再放开按键

解除睡眠模式的设定将在每次关机后失效。

即可回复到正常模式。

本仪器具有便捷的参数设定方式,让您能够依照自己的需求来设定各

当您需要变更参数时,在测量模式下,长按"♣"键超过 2 秒,仪器则入参数设定模式。

### P3.0: 查看校正讯息: (CAL)

按键后选择 P3.0。有一种校正范围可选,即为 P3.5。此处只供"查看" 校正讯息,并非用来校正笔型水质计。

P3.5: 范围 3 校正讯息:

在 P3.0 时,按 " Q " 马上进入 P3.5 并且可以看到上次校正浓度。

按下" Д " 回到 P3.0。

在重新校正时,前次的校正数据将会被取代。

#### P4.0 电导常数 (查看)

1.按键后选择 P4.0。有一种范围可选,即是 P4.5 按"♀"进入P4.5。

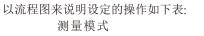
2.再按"**①** "键回到 CEL P4.0 银幕。

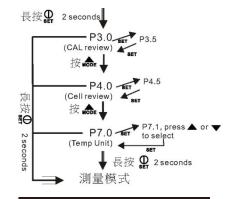
# P7.0: 温度单位设定: (unt)

P7.1: 改变温度单位 (tUt): 校当笔型水质计在测量模式,按" $\mathbb{Q}$ "2秒进入设定模式,按键选择P7.0,再按" $\mathbb{Q}$ "进入单位设定。

按" 🚓 "或" ▲ "选择 C /F。 按" ♀ "确认单位并回到 P7。

在 P7.0 时,按 ② "2 秒来返回测量模式。





# 校正程序 (CAL)

#### 校正准备

- 校正前需准备及注意事项:
- 1. 何谓正确的校正标准?
- 2. 何时该校正?

#### 选择校正标准

使用过的校正溶液请勿重复使用。因为溶液中的污染物会影响到仪器的校正和准确度。每次校正时,请使用新的标准溶液。

最好的是选择 35ppt 的海水缓冲液作为校正使用。

该海水用盐度计中, 可校正范围如下:

Cond. Range value Range 3 (P3.5) 0.0~42.0 ppt

<u>本仪器需</u>要定期的校正

- -如果您的测量溶液的测量值是在中间范围,请每月至少校正一次。在校正或测 量之前,浸润测棒约 15 分钟,可以湿润测棒表面并清除附着于测棒上的杂
- -如果测量时的环境温度过高或过低,或是测量值在下表所列范围内,请至少每 星期校正一次,以确保准确度。

请依照下列步骤进行海水盐度校正。请在室温下进行校正。

- 1. 将电极部份浸入蒸馏水或者去离子水中约30分钟。
- 2. 离选择适当的电导率标准来执行校正。
- 3. 将标准溶液注入至两个干净的容器内直至 3cm 高。
- 4. 开机
- 5.将电极部分浸入其中任意一个容器内,小心的搅拌清洗电极 6.浸润洗过的测棒至其它容器。清确认电极处没有气泡。 生思动测棒可轻易的移除气泡只要。只要浸润及甩动测棒药
- 7.棒均匀的搅拌及等待15分钟,使测棒稳定至溶液温度。
- 8.按"www."键超过2秒后,仪器开始校正。LCD上的盐度值会开始闪 如果溶液是35ppt,正好会是预设值。
- 例:标准值=35ppt;测量值=27ppt,可调的范围为<u>+</u>7ppt (35\*20%) 若超过以上的情况表示数值已经超过20%。表示可能需要清洁或更换
- 10.当 测量的缓冲液已经足够稳定,水质计会于15秒内自动记录校正料,或按"♀ "确认数值,将会看到"SA"显示于银幕,表示校正成功。
- 11.若 要不储存就结束校正模式,可于步骤 9 按 ♀ "2 秒来结束,将不会 看到"SA"显示于银幕,这可让水质计于目前的范围保留前次的校正资

- ✓请确保感应棒是干净的。在每次测量后,应以去离子水清洁感应棒 若感应棒已暴露于非亲水性的溶剂时,应以酒精等溶液清洗之后,再
- ✔ 请小心存放感应棒。收藏前请用去离子水清洁干净并于储存时 保持干燥。

### 疑难解答

- ◆ 开机后无显示
- 1. 未正确按下电源键
- 2. 未装电池或电池没有安装正确

### 解决方法:

- 1. 确定按开机键的时间至少有 0.3 秒以上。 2. 检查电池是否已放妥、接触良好且磁极正确。或取下电池超过 十分钟再重新装入一次。

# ▲ 低电量图示

1.电池电量太低无法提供准确读值

#### 解决方式:

### ◆ 不准确的读值

1.电极周围容易产生气泡。此情况下 准确度将会受影响。





减少气泡的放法:短暂的将电极浸润入溶液中,并拿出甩掉气泡。

若气泡仍无法完全消除,请将仪器从溶液取出 并将气泡吹除。

浸润电极并取出甩掉气泡, 重复约五次来去除气泡。

- 2.溶液的温度与浓度可能不均匀,造成不稳定的读值。
   3.测棒浸润至样品溶液的深度不够,请确认电极与温度传感器完全浸润 全溶液中。
- 4. 测棒太脏需要清洁维护
- 5. 测棒已经损毁。
- 6. 测量环境的无线电波与电磁场干扰太强
- 7. 低温样品也会产生较慢的反应。

1. E02 解表示读值低于指定范围

# ▲错误码

错误码 E02/E03

2. E03 解表示读值高于指定范围

# 解决方法:

1. 将测棒放于室温的自来水中,等待30分钟来消除 E02/E03

2. 如果无法消除错误码,请校正仪表。

### 1. E04 表示原始资料错误 解决方法:

1. 解检查是否测量温度超过范围,如果超过,请范围将测棒放于 室温的自来水中,等待30分钟来消除E04错误码

### 错误码 E16

1. E16 表示 电导常数值已 超标

#### 解决方法:

1. 重开机数次来取消错误码的显示

2. 重新校正测棒来取消 E16 错误码读

## 1.E31 表示仪表测量电路硬体错误 解决方法:

1. 重复开关机数次来修正

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### Accuracy, the Zenith of Measuring/TestingInstruments!

#### More products available!

2023/05 v02

# **INSTRUCTION** ■ 8372S, Salinity pen for

Remove battery from instruments

in instrument.

month or more. Do not leave battery

8372S

LR44 x 4pcs Meter/Battery/Manual/Paper box

#### INTRODUCTION

Congratulations on your purchase of this pen type meter. Please read the manual completely before using this meter. Filing and keeping the manual for future reference. Recommended to soak the electrode for at least 30 min. before using to clear up the lazy effect.

#### Features:

- IP65 Waterproof housing.
- Dual display with ATC
- Data hold to freeze readings.
- Pen size, easy to fit into pocket. • Low battery indicator.

- Auto power off.
- C/F unit switchable
- Powered by 4pcs LR44 batteries.
- Multi points calibration.
- One touch only for calibration.

## MATERIAL SUPPLIED

This package contains:

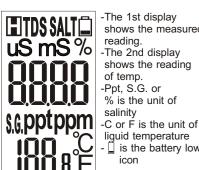
- √ The meter x 1
- ✓ LR44 button battery x 4
- ✓ Operation manual ✓ Color box or plain box

#### **POWER SUPPLY**

The meter is powered by 4 pcs LR44 batteries. To check the battery when: 1. First time use

- 2. The battery symbol appears on LCD
- 3. The meter can not power on To install the batteries:
- 1. Turn off the meter.
- 2. Loose the battery cover in counter clockwise direction. (DON'T discard the that you do not plan to use for a black washer!)
- 3. Replace the old batteries with four new button cells Lr44.
- 4. Make sure the batteries are in place and the polarity is correct.
- 5. Put back the battery cover and turn it tightly in clockwise direction.

# LCD DISPLAY & KEYPAD



Temp. accuracy

Temp. resolution

ATC

LCD size

-The 1st display shows the measured reading shows the reading

of temp. -Ppt, S.G. or % is the unit of salinity

liguid temperature

is the battery low icon

#### **SPECIFICATION** 8372S Salinity range 0.0~42.0 ppt or 0.0%~4.2% Operating tem 0~50°C or 0.950~1.080(S.G) based on Humidity<80% 0~60°C Operating RH% SFA WATER +/-1%F.S +/- 1 digit Salinity accuracy Storage RH% Humidity < 90% Salinity resolution 0.1 ppt or 0.1% or 0.001(S.G) Temp. range -5~60.0°C Dimension 165(L)x35(W)x32(H)mm

# **OPERATION**

ATC

30(H)x18(W)mm

- 1. Press " To power on the meter. Full LCD will be displayed for some seconds and then enter normal display.
- 2. The meter is designed as auto-ranging since powered on. Auto-ranging determines and selects a range which gives you the greatest resolution and accuracy. There is no manual-ranging function in this water pen. 3. Rinse the probe with deionized or distilled water before use to remove any impurities adhering to the electrode. If the meter is not used for a long time, please soak the probe more than 30 minutes to clear up the lazy
- 4. Dip the probe into the sample till the temperature sensor point is also immersed into water. Make sure there are no air bubbles trapped on the probe. To remove air bubbles, insert the probe into liquid and then swing in air to get rid of water. Repeat this procedure many times till you can't see air bubble attached on probe.

5. Stir the probe gently in the sample to create a homogenous sample. Allow a few seconds to reach temp. equilibrium. (Wait about 15 minutes can get a stable reading)

6. Salinity Measurement:

8372 is designed for salinity measurement with 3 different display unit: ppt, % and specific gravity.

press " to switch to different salinity unit

7. Turn off the meter by pressing " Q ".

8. Electrode Maintenance:

- a) Make sure your electrode is clean!
- b) Store the electrode carefully!

Before storage, rinse it carefully in deionised water and store dry and store the meter under 0~50°C.

Too many bubbles

9.Accuracy & Air bubbles:

The air bubbles are easy to adhere around the electrode and will affect the accuracy a lot. By swing wet probe in air can get rid of bubble easily, just need to repeat this procedure about 5 times:

Dip in water -> Swing to get rid of bubble-> Dip in water -> Swing to get rid of bubble....

#### **AUTO POWER OFF (SLEEP FUNCTION)**

This meter will shut off automatically 20 minutes of inactivity. For operating longer time, you can disable the sleep mode.

To disable the auto power off:

Before power on, pressing " + " + " + " + keys simultaneously

until a "n" appeared on the screen and then release keys to return to normal mode. NOTF:

The disable sleep mode will be invalid after every power off.



The advanced setup mode lets you customized your meter's preferences and defaults.

To change the parameters, you can press "  $\Phi$  " more than 2 sec. to enter setup mode when the meter is in measurement mode.

### P3.0: Review Calibration Info.: (CAL)

Press key to select P3.0. For special sea water testing pen, there is only ONE calibration ranges so what you can find is P3.5 here. This section is for you to "review" the calibration information. Not for you to calibrate the pen.

P3.5: Range 3 calibration info.:

In P3.0, press " **Q** " to enter P3.5 and you can see the last calibration concentration.

Press " momentarily to return to P3.0.

In this calibration range, the previous calibration data will be replaced after re-calibration.

### P4.0 Cond. Cell Constant (Review)

P4.0 is used to review the current cell constant. This value should be between 0.8 to 1.2. This is an indicator to remind you if it is necessary to purchase a new pen.

1. Press key to select P4.0. There is ONE range so you can find P4.5 here.

2.Using "\$\mathbb{Q}\$" to enter to P4.5 to view constant. Press "\$\mathbb{Q}\$" again to return to CEL P4.0 screen.

## P7.0: temperature unit setting: (unt)

### P7.1: Change temperature unit (tUt):

When meter is in measurement mode, press " more than 2 sec to enter setup mode. Press key to select P7.0, then press " momentarily again to enter unit setting.

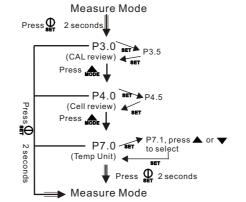
Press " to select C /F. Press " F " momentarily to confirm the unit and return to P7.0

While in P7.0, press " or more than 2 seconds to return to measurement mode.



P3<u>5</u>

To be summarized, the operation procedure of setting up function is:



# **CALIBRATION MODE (CAL)**

### PREPARATION FOR CALIBRATION

Selecting a calibration standard

Two issues need to be prepared and considered before operation. First, what is the right calibration standard?

Second, when should you calibrate?

DO NOT reuse the calibration solution. Contaminants in the solution will affect the calibration and the accuracy. Be sure to use fresh solution

This pen is designed for sea water measuring so it is suggested to use 35ppt salinity buffer for calibration purpose.

There is only one calibration range in this sea water saiinity pen . Cond. Range value

Range 3 (P3.5) 0.0~42.0 ppt

## When should you do the calibration?

Calibration is necessary and should be done regularly.

-If you are measuring the mid-ranges, calibrate the meter at least once a month Soak the probe for 15 mins before calibration or measurement can saturate the probe surface and minimize drift.

-If measure at the extreme temperatures or in very low/very high concentration, calibrate the meter at least once a week to get specified accuracy.

### **SALINITY CALIBRATION**

Please follow up below steps to proceed the conductivity calibration. It is strongly suggested to do the calibration in room temperature.

- 1. Insert the probe into demineralized water or distilled water for about 30 minutes to rinse the probe
- 2. Select the proper conductivity standard for calibration.
- 3. Pour 3 cm height of the solution into two separate clean containers. 4. Power on the meter.
- 5. Rinse the probe into one of above containers. Gently stir the probe.
- 6. Dip the rinsed probe into the other container. Please make sure there is no air bubbles attached on electrode. Swing the probe in air can get rid of the bubble easily. Just repeat dip & swing this procedure for about 5 times.
- 7. Gently stir and let the probe stabilize to the solution temperature by waiting about 15 mins.
- 8. Press "MINION" more than 2 seconds to begin calibration. The detected conductivity value of solution will blink on LCD. If your solution is or closed to 35ppt, 35ppt will be displayed as default.
- 9. Press "and " and " to change the value in order to match the displayed value to the buffer you are using now

You can adjust the salinity reading up to +20% from the detected value. However, if your detected value and standard value differs by more than ±20%, it means cleaning or replacing meter is needed. For example:

Standard: 35ppt; Detected value:

27ppt, Adjustable range: +7ppt (35\*20%)

In above situation, the values already differed over 20%. Means the meter is no longer good for use.

- 10 When the detected buffer condition is stable enough, meter will auto save calibration data in 15 seconds or you may also press "  $\Phi$  " to confirm the value. You will see "SA" appear on LCD to indicate the calibration is successfully done.
- 11. To exit calibration mode without saving, you can press "  $\ ^{\circ}$  " in step9 more than 2 seconds to quit. You won't see "SA" by doing this. This lets
  Proof of purchase is required for warranty repairs. Warranty is void if the you retain the previous calibration data for the current range.

# MAINTENANCE

 $\checkmark$  Make sure the electrode is clean! Between measurements, rinse the electrode with deionised water. If the eletrode has been exposed to a solvent immiscible with water, clean it with a solvent miscible with water e.g. Ethanol and rinse carefully with water.

✓ Store the electrode carefully! Before storing, rinse it carefully in de-ionised water and store dry.

### **TROUBLESHOOTING**

#### ◆ Power on but no display

- 1. Didn't press the power key properly
- 2. Batteries are not installed or are not installed properly

#### Solution:

- 1. Press power key for more than 0.3 seconds to turn on the device.
- 2. Check whether batteries are in good contact and correct polarity. You can also remove the batteries >10 mins and then install the batteries again.

#### Low Battery icon

1.Battery power is too low to provide accurate reading

#### Solution: 1. Remove all old batteries > 10 mins and then install new batteries with

correct polarity and good contact. Please don't mix new and old batteries since it is easy to cause battery

electrolyte leakage.

#### Unstable reading

1.The air bubbles adhered around electrode will seriously affect the reading.





To reduce the air bubbles, dip the electrode completely and swing in air to get rid of bubble

If above method are not working, remove the electrode out of solution and blow the electrode may also remove the air bubbles from electrode

Immerse electrode and then swing in air to get rid of air bubble. Repeat above 5 times to remove bubbles

2. The sample solution is possible asymmetric to cause unstable reading

- 3. The probe isn't immersed deep enough in the sample solution. Please make sure both electrode and temperature sensor are immersed in solution.
- 4. The probe is too dirty and need maintenance
- 5. The probe is broken
- 6. The RF interference from field is too strong.
- 7. The low sample temperature will also cause slow response ◆Error code

Error code E02/E03

1. E02 means the measured value is lower than specified range 2. E03 means the measured value is higher than specified range

Solution: 1. Put the probe in normal tap water at room temp. for 30 mins to cancel

E02/E03 from display. 2. If above is not working, please try to do calibration

Error code E04 1. E04 means the original data error are in error

1. Check whether the measured temp, is over range. If ves, leave the probe in normal tap water at room temp. for 30 mins to cancel E04 from display.

Error code E16

1. E16 means Cell constant is out of the range

Solution:

Solution:

1. Re-turn on meter several times to cancel the error code from display. 2. Try to calibrate the conductivity probe to cancel E16 from display

Error code E31 1.E31 means the measuring circuit of device hardware failure. Solution:

1. Power on/off several times to fix.

#### WARRANTY

The meter is warranted to be free from defects in material and workmanship for a period of one year from the date of purchase. This warranty covers norma operation but does not cover battery, misuse, abuse, alteration, tampering, neglect, improper maintenance, or damage resulting from leaking batteries. meter used to be taken apart.

#### RETURN AUTHORIZATION

2019/07 v01 Authorization must be obtained from the supplier before returning items for any

reason. When requiring a RA (Return Authorization), please include data regarding the defective reason, the meters are to be returned along with good packing to prevent any damage in shipment and insured against possible 6 damage or loss