1 YEAR WARRANTY

CE

User's Guide

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RH32 SERIES

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Vol.2 [Function Instructions]

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It is the policy of OMEGA Engineering, Inc. to comply with all worldwide safety and EMC/EMI regulations that apply. OMEGA is constantly pursuing certification of its products to the European New Approach Directives. OMEGA will add the CE mark to every appropriate device upon certification.

The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.
WARNING: These products are not designed for use in, and should not be used for, human applications.

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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M4818/1009

Request and notices

Please read this instruction manual for using this **"**Temperature/humidity meter**"** correctly and safely.

Request to instrumentation manufacturers, installation contractors, and sales agents

Make sure to deliver this instruction manual to the operator of this **"**Temperature/humidity meter**"**.

Request to the operator of this temperature/humidity meter

This instruction manual is necessary for maintenance, too.

Keep this manual with due care until this **"**Temperature/humidity meter**"** is discarded**.**

Notices

1. The descriptions of this manual are subject to change without notice.
2. If a question has arisen or if an omission was found in this manual, please contact your nearest OMEGA's agent.
3. We are not responsible for any results by operation of this **"**Temperature/humidity meter**"**.

■ Important notices

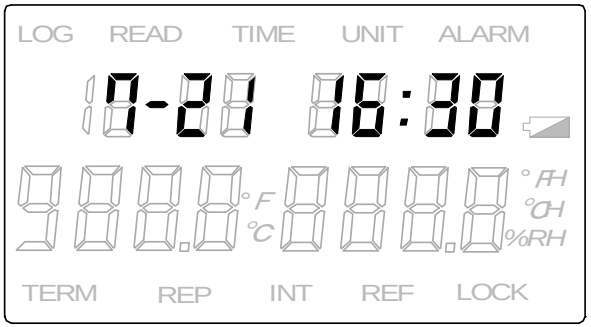
- The instruction manual for the RH32 series palm-sized temperature/humidity meter is consisted of Vol. 1 [Basic instructions] and Vol. 2 [Function instructions].

  This instruction manual is Vol. 2 [Function instructions].
  For clock adjustment, measurement unit selection, etc., refer to Vol. 1 [Basic instructions].

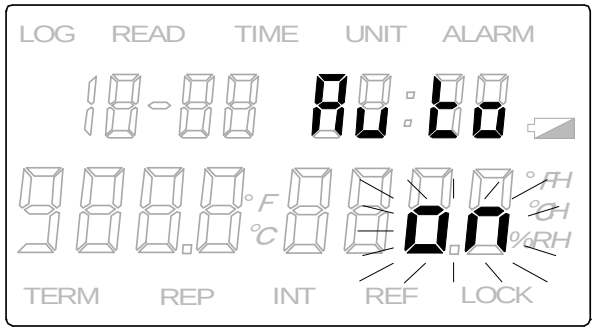
- **[Auto-power-off function]**
  For avoiding the comsumption of the batteries, the auto-power-off function of this **"**temperature/humiditymeter**"** has been set at ON (active) as a factory default setting. If no key is pressed for 1 minute, the continuous measurement will automatically stop and the mode will move to the clock mode.

  For setting of the auto-power-off function to OFF:
  Press DISP key to go to the continuous measurement mode (Ref. [1.1Continuous measurement] and then press DISP key again for about 2 seconds to go to the programming mode. In the programming mode, press DISP key several times to go to the auto-power-off selection mode with **"Auto"** lit in the sub display. In the auto-power-off selection mode, **"on"** (active) will flash in the main display 2. For releasing the auto-power-off function, select **"oFF"** (release) by pressing ∧ key or ∨ key. Press ENT key to retain **"oFF"** selected. The flashing of **"oFF "**will stop.

Clock mode



Auto-power-off selection mode



- For the RS-232C communications with Model RH32□-C2 (RS-232C communications type), the use of the AC power adapter (RH32-AC110 - sold separately) is recommended to avoid the consumption of the batteries.
- Also, for the RS-485 communications with Model RH32□-C4 (RS-485 communications type), make sure to use the AC power adapter (RH32-AC110 - sold separately) as the batteries will be consumed very rap-

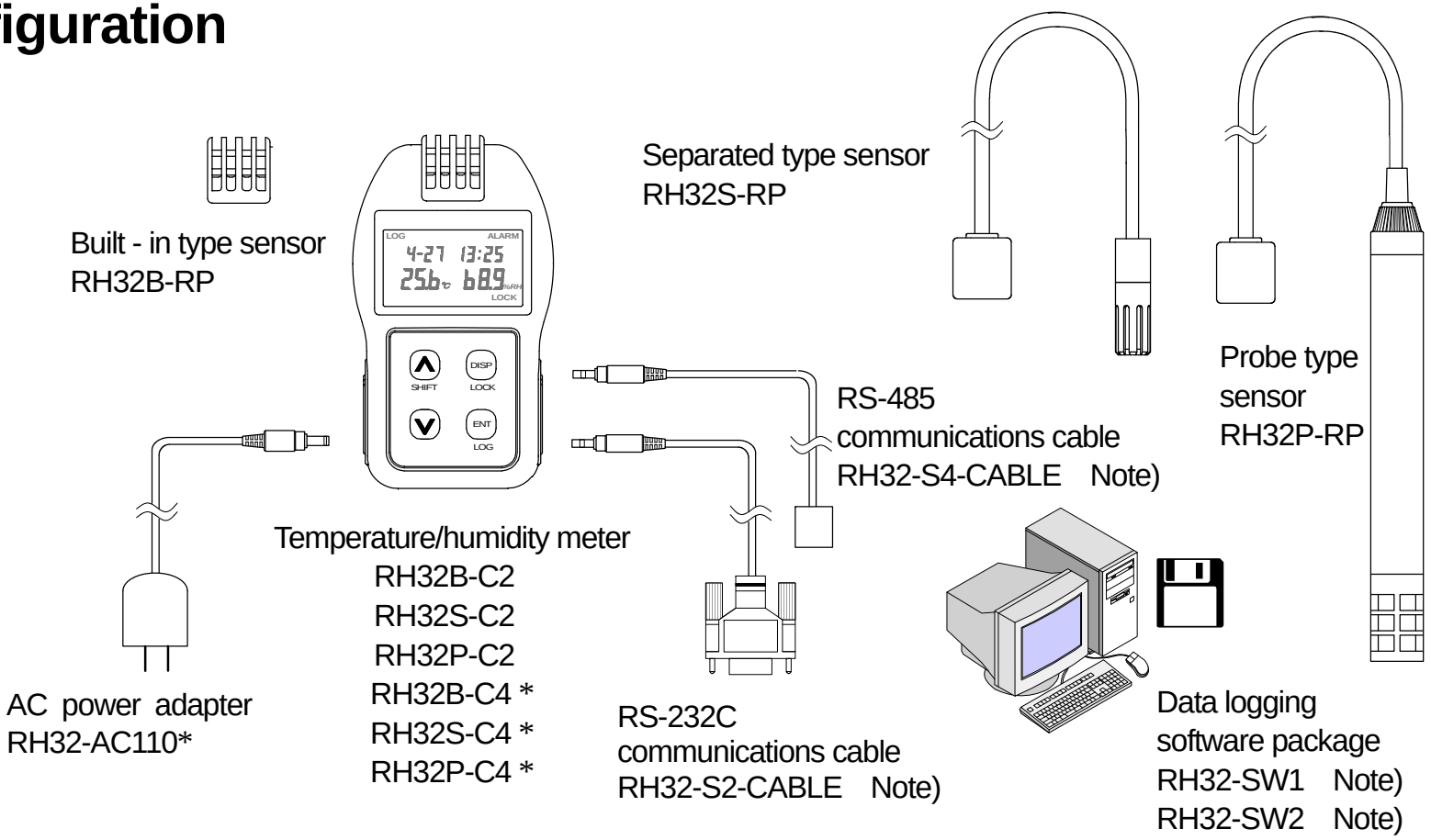
idly.

Warning and safety notices

Ensure the following instructions to use this meter correctly.

	Warning (For avoiding unexpected dangerous accidents of death or serious injury)
	◆ Don't use this meter in places where explosive gas exists.
	◆ If this meter is smoking, nasty smelling or abnormal noising, remove batteries from it or pull out an AC power adapter (RH32-AC110) (if used) from a receptacle as quickly as possible, and then contact your OMEGA's agent.
	◆ Don't throw out batteries in fire. Don't charge, short circuit, heat or disassemble them. It will cause a fire or an injury by blowing-out or heat.
	◆ For the AC power adapter, use the power voltage of 100 to 240V. Don't touch the AC power adapter or the receptacle by wet hands. It will cause an electric shock, a fire or a failure. Wipe out dusts from the AC power adapter to prevent fires.
	◆ Don't touch the inside of the case by wet hands.
	◆ Don't repair or modify it.
	◆ Check the specifications of batteries. Use AA (UM-3) batteries.
	◆ Don't use it under failed conditions.

Configuration



Caution

* For the RS-485 communications with Model RH32□-C4 (RS-485 communications type), make sure to use the AC power adapter (RH32-AC110- sold separately) as the batteries will be consumed very rapidly.

Note : Sold separately

▣ CE conformance

Palm-sized temperature/humidity meter

RH32B-C2, RH32P-C2, RH32S-C2,
RH32B-C4, RH32P-C4, RH32S-C4

Directive

89/336/EEC, 92/31/EEC amendment,
93/68/EEC amendment

Standard

EN61326+A1: Emission class B,
Immunity Table1
(Minimum immunity test requirements)

Conformance condition

RH32B-C4 : The connection cable is to be used indoor and within 30m.

RH32P-C4, RH32S-C4 : The connection cable is to be within 3m.

Stability under the test environment of EMC directive

Temperature ±0.5ºC

Relative humidity

±3%RH

AC power adapter

RH32-AC110

EMI standard

Meets the conduction limit of : FCC Class B EN61000-3-2
EN55022 B EN61000-3-3
VCCI II

EMS

EN50082-1
IEC801-2 Level3
IEC801-3
IEC801-4

Contents

1. Measurement and data storage

Reference

This paragraph describes "Measurement and data logging" of the RH32 series temperature/humidity meter.
For the exact operation, program parameters first in [4. Parameter programming].

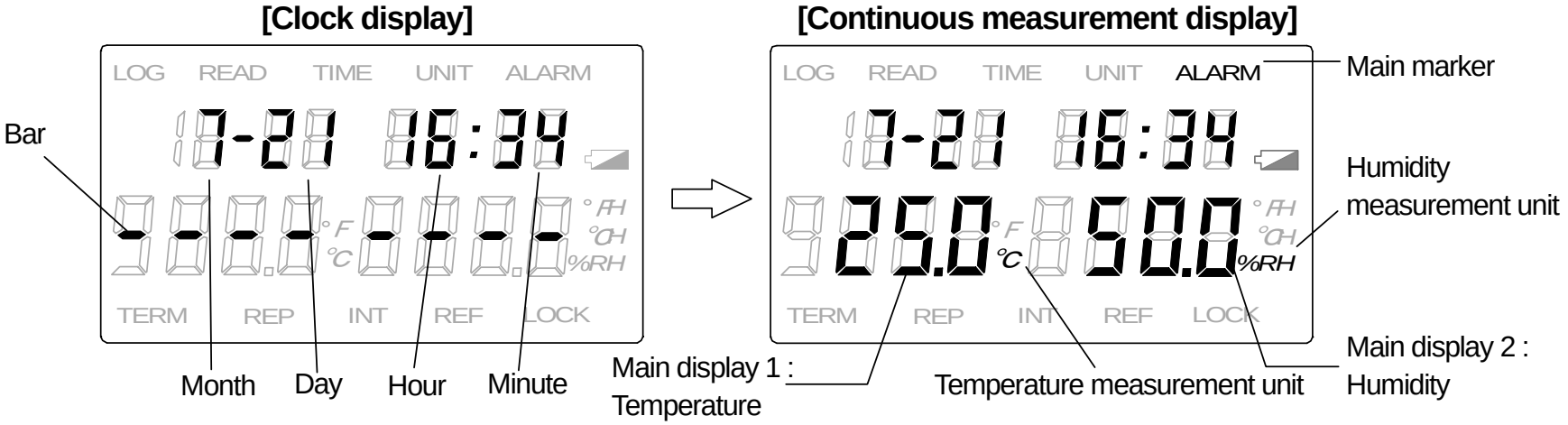
1.1 Continuous measurement

By pressing DISP key in the clock mode, the temperature/humidity measurement will start after bars are displayed for about 1 second. The measured temperature will be displayed in the main display 1 and the measured humidity will be displayed in the main display 2 together with the display of month, day, hour and minute at the measurement.

The temperature measurement unit and the humidity measurement unit being displayed are the units already selected.

For the selection of the measurement unit, refer to [5.3 Selection of measurement unit] in the separated instruction manual Vol. 1 <Basic instructions>.

If **"ALARM"** lights in the main marker, the measurement value has exceeded a high alarm set point or a low alarm set point. Check the set points and reprogram them if necessary. Refer to [4.2 High alarm set point] and [4.3 Low alarm set point].



Caution

If **"Er4"** for "low battery" or "meter abnormal" is displayed in the main display 2, replace the batteries first.
(Ref. [5.1 Loading of batteries] in the separated instruction manual Vol. 1 <Basic instructions>)
If **"Er4"** is still displayed by the above replacement of batteries, contact your OMEGA's agent.

1. Measurement and data storage

1.1.1 Measured temperature/humidity display range

Remarks

When the measured temperature is lower than the minimum limit, **"uFL"** will be displayed and, when it is higher than the maximum limit, **"oFL"** will be displayed.
When the measured humidity is 0%, 0% will be displayed but, when the measured humidity is higher than 100% (dew condensation), the value will be held at 100%.

Temperature	ºC	-40 to 80ºC
	ºF	-40 to 176ºF
Humidity	%RH	0 to 100%RH
	ºC	-60 to 80ºC
	ºF	-76 to 176ºF

When the clock is displayed after the measurement for about 1 minute, the auto-power-off function is **"on"** (active).
For continuing the continuous measurement, select the auto-power-off function to **"oFF"** (release).
(Ref. [4.6 Auto-power-off].

Caution

When the auto-power-off function is set to **"oFF"** (release) and the continuous measurement is executed, the batteries will be consumed very rapidly.
For the continuous measurement constantly executed, use the AC power adapter (RH32-AC110) sold separately.

1. Measurement and data storage

1.2 Storing (data logging) mode

This meter has a memory storing each maximum 8000 data of measured temperature and humidity.
The measured data are stored into an EEPROM and can't be erased even if the batteries are dead.
Two storing (data logging) modes of manual storage mode and automatic storage mode are available.

Storage mode	Content	Number of data
Manual storage mode	In the continuous measurement, the measured data is stored by pressing ENT key.	Temperature/humidity: Each 1700 data
Automatic storage mode	The measured data is stored at a storing interval programmed. The automatic storage can be started/stopped by the function keys or at the storage start/stop time programmed.	Temperature/humidity: Each 8000 data

1.3 Manual storage mode

The temperature measured value and the humidity measured value in the continuous measurement mode are stored by pressing ENT key with the time data of year, month, day, hour, and minute at the measurement.

1) Go to the continuous measurement mode. (Ref. [1.1 Continuous measurement])
2) Press ENT key for about 2 seconds. **"LOG"** will instantly light in the main marker, and the temperature measured value and the humidity measured value are stored with the time data of year, month, day, hour, and minute. Release ENT key once.
3) Repeat the procedure 2) for the next data storage.

Caution

The manual storage will be disabled during the automatic storage (with **"LOG"** lit in the main marker, Ref. [1.4 Automatic storage]) or in the memory full status (number of data: **"FuLL",** Ref. [3.1 Stored data number], or in the key lock active (with **"LOCK"** lit in the main marker, Ref. [1.6 Key lock]).

1. Measurement and data storage

1.4 Automatic storage mode

The measured temperature value and the measured humidity value are stored with the storing interval of minute or hour programmed in [1.5 Storing interval]. The automatic storage can be started/stopped by the function keys or at the storage start/stop time programmed. During the automatic storage, **"LOG"** will light in the main marker.

Caution

- The automatic storage will be disabled in the memory full status (number of data: **"FuLL",** Ref. [3.1 Stored data number].
- If the memory becomes full (number of data: **"FuLL",** Ref. [3.1 Stored data number] or if any hardware becomes abnormal during the automatic storage, the data storage will stop.

1.4.1 Automatic storage start/stop by function keys

The automatic storage, with the storing interval programmed in [1.5 Storing interval], of the temperature measured values, the humidity measured values and the time data of year, month, day, hour, and minute at the measurement starts and stops by the function keys.

1.4.1-1 Automatic storage start by function keys

1) Go to the continuous measurement mode. (Ref. [1.1 Continuous measurement])
2) Confirm **"LOG"** is not lit (not in storing data) in the main marker.
3) Press ENT (LOG) key while pressing ∧ (SHIFT) key. **"LOG"** will light in the marker and the automatic storage will start with the storing interval programmed. (Ref. [1.5. Storing interval]) **"**

1.4.1-2 Automatic storage stop by function keys

In the continuous measurement mode with **"LOG"** lit in the main marker, press ENT (LOG) key while pressing ∧ (SHIFT) key. **"LOG"** will go off and the automatic storage will stop.

Caution

- The automatic storage can't start/stop by the function keys in the key lock active (with **"LOCK"** lit in the main marker, Ref. [1.6 Key lock]).

Caution

When the storage stop time in the automatic storage has been programmed in [4.4.2 Storage stop time] and the automatic storage starts by the function keys, the automatic storage will stop at the storage stop time being programmed.

1. Measurement and data storage

1.4.2 Automatic storage start/stop at storage start/stop time

The automatic storage, with the storing interval programmed in [1.5 Storing interval], of the temperature measured values, the humidity measured values and the time data of year, month, day, hour, and minute at the measurement starts at the storage start time (year, month, day, hour, and minute) programmed in [4.4.1 Storage start time] and stops at the storage stop time (year, month, day, hour, and minute) programmed in [4.4.2 Storage stop time]. The storage repetition per day or week is available, too.
For the details of programming, refer to [4.4.1 Storage start time], [4.4.2 Storage stop time], and [4.4.3 Storage repetition].

1.4.2-1 Automatic storage start at storage start time

The automatic storage will automatically start at the storage start time programmed in [4.4.1 Storage start time].

1.4.2-2 Automatic storage stop at storage stop time

The automatic storage will automatically stop at the storage stop time programmed in [4.4.2 Storage stop time].

Caution

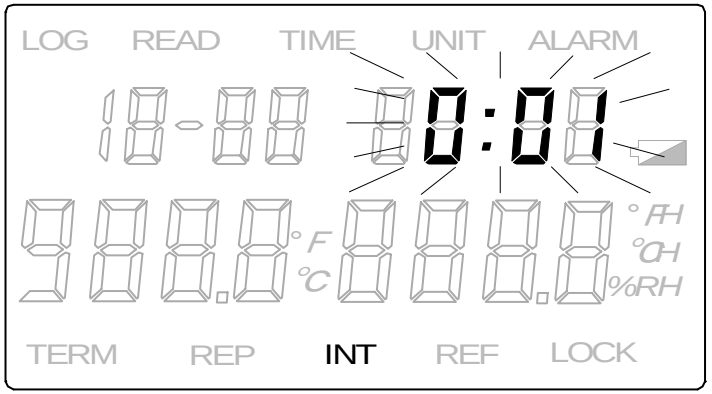
After the automatic storage starts at the storage start time programmed, the automatic storage can be stopped by the function keys. (Refer to [1.4.1-2 Automatic storage stop by function keys].)

1. Measurement and data storage

1.5 Storing interval

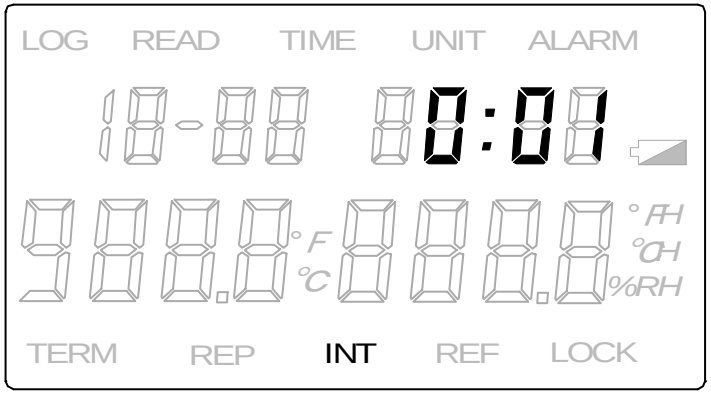
This is the programming mode for the storing interval for the automatic storage.

In the [4.4.3 Storage repetition] programming mode with **"REP"** lit in the main marker, press DISP key to go to the storing interval programming mode. In the storing interval programming mode, **"INT"** will light in the main marker and **"0:01"** will flash in the sub display.



Select the desired storing interval from 0.01 (1 minute) to 1.00 (1 hour) by pressing ∧ key or ∨ key.

By pressing ENT key, the storing interval selected will be retained and the flashing of the storing interval will stop.



Programming range	Default
0:01 (1 minute) to 1:00 (1hour)	0:01

Remarks

In the programming of the storing interval, the continuously pressing of ∧ key or ∨ key will make the value change rapidly.

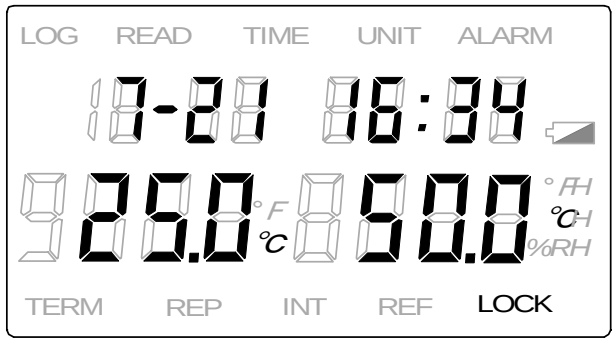
1. Measurement and data storage

1.6 Key lock

When you do not want to change parameters programmed, use the key lock not to function any keys.
The key lock will be required in some cases for the communications with the data logging software package (RH32-SW□: sold separately).
(For details, refer to the separate instruction manual for [Data logging software package].)

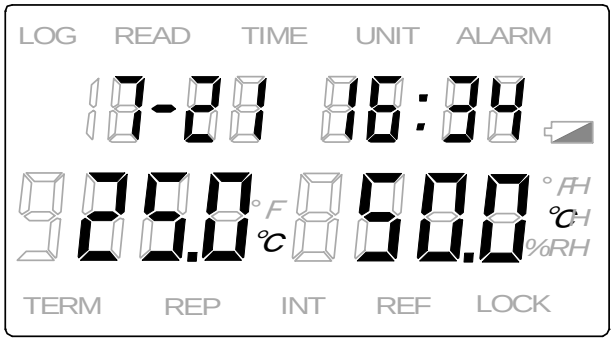
Caution When the key lock is active, the programming by the function keys will be disabled.

1) Key lock setting: In the continuous measurement mode with **"LOCK"** not lit (key lock - released) in the main marker, press DISP (LOCK) key while pressing △ (SHIFT) key. **"LOCK"** will light in the main marker and the key lock will become active.



[Key lock – active]

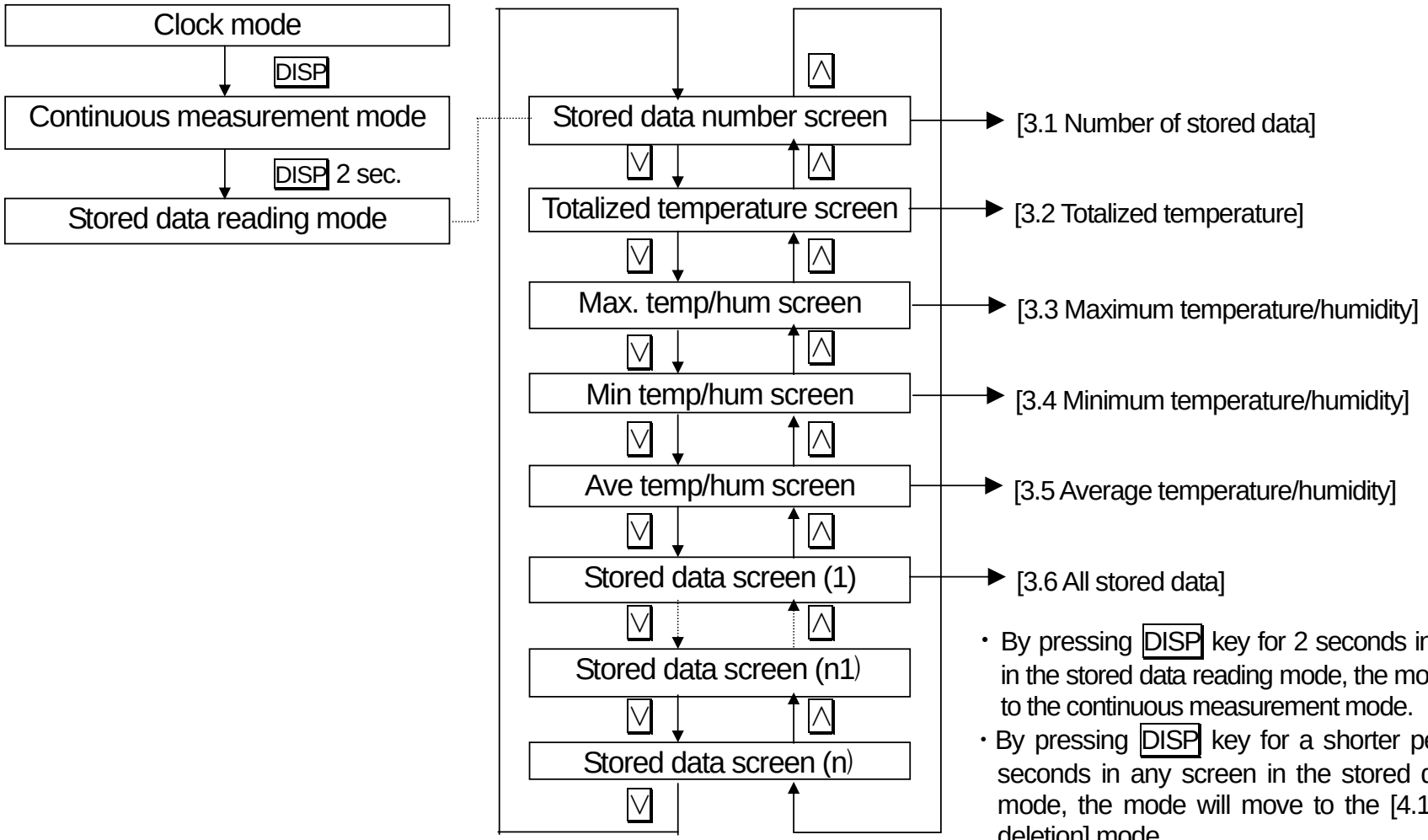
2) Key lock release: In the continuous measurement mode with **"LOCK"** lit (key lock - active) in the main marker, press DISP (LOCK) key while pressing △ (SHIFT) key. **"LOCK"** will go off in the main marker and the key lock will be released.



[Key lock – released]

2. Flow of stored data reading mode

The followings are the flow of the stored data reading mode.



- By pressing DISP key for 2 seconds in any screen in the stored data reading mode, the mode will move to the continuous measurement mode.
- By pressing DISP key for a shorter period than 2 seconds in any screen in the stored data reading mode, the mode will move to the [4.1Stored data deletion] mode.
- When the auto-power-off function is ON (active), if no key is pressed for 1 minute, the mode will automatically move to the clock mode.

3. Stored data reading mode

In the continuous measurement mode, press DISP key for 2 second to go to the stored data reading mode with **"READ"** lit in the main marker.

In the stored data reading mode, press ∧ (SHIFT) key or ∨ key to show 6 screens from the [3.1 Number of stored data] screen to the [3.6 All stored data] screen.

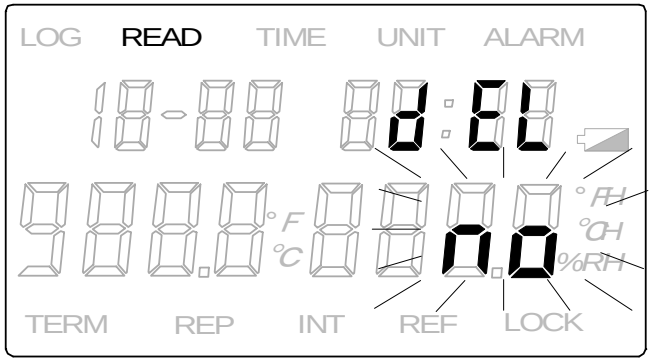
Remarks

By pressing DISP key for 2 seconds in any screen in the stored data reading mode, the mode will move to the continuous measurement mode.

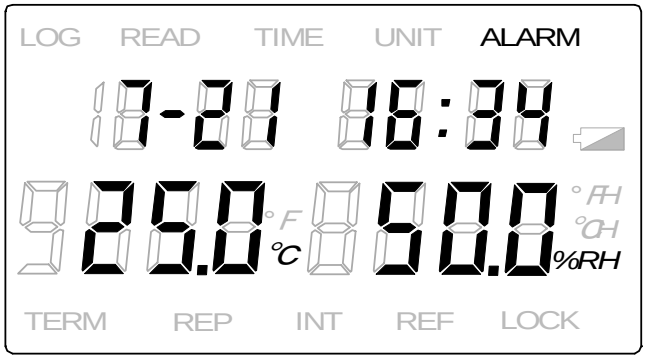
Caution

By pressing DISP key for a shorter period than 2 seconds in any screen in the stored data reading mode, the mode will move to the [4.1 Stored data deletion] mode (**"dEL"** lights in the sub display and **"no"** flashes in the main display 2.).

If the data deletion mode is not required, press DISP key for 2 seconds in this mode to go to the continuous measurement mode.



[Stored data deletion mode]



[Continuous measurement mode]

Reference

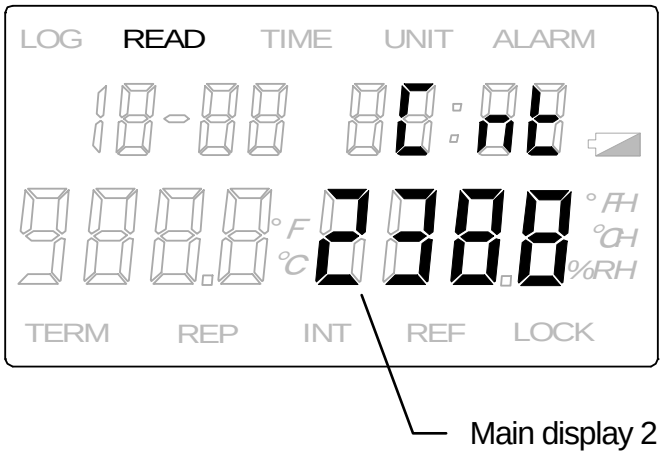
For avoiding the comsumption of the batteries, the auto-power-off function of this meter has been set at ON (active) as a factory default setting. If no key is pressed for 1 minute, the mode will automatically move to the clock mode.

3. Stored data reading mode

3.1 Number of stored data

This screen displays the number of stored data.

In the continuous measurement mode, press DISP key for 2 sends to go to the number of stored data screen (**"READ"** will light in the main marker and **"Cnt"** will light in the sub display.). In the number of stored data screen, the number of the stored data will be displayed in the main display 2.



Reference

If the memory is full (when the number of the stored data exceeds the maximum limit), **"FuLL"** will be displayed in the main display 2.

By pressing ∨ key, the screen will move to the [3.2 Totalized temperature] screen.
By pressing ∧ key, the screen will move to the [3.6 All stored data] screen.

3. Stored data reading mode

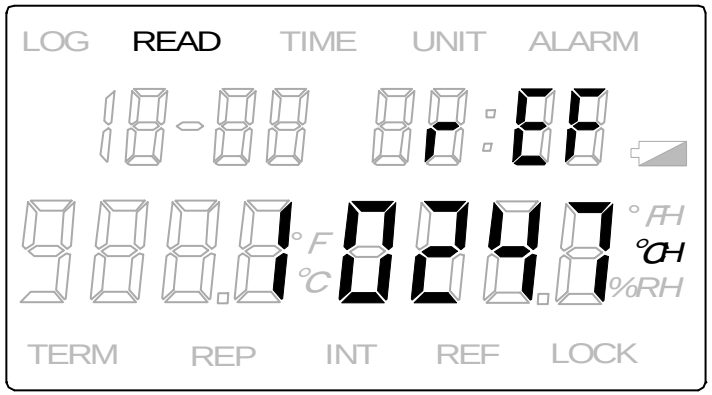
3.2 Totalized temperature

This screen displays the totalized temperature by a totalizing reference temperature programmed in [4.5.1 Totalizing reference temperature] and a totalizing direction programmed in [4.5.2 Totalizing direction].

In the [3.1 Number of stored data] screen with **"READ"** lit in the main marker, press ⋁ key to go to the totalized temperature screen (**"rEF"** ⋁ key will will light in the sub display.). In the totalized temperature screen, the totalized temperature (0 to 19999999) of the data stored by the storage mode just before the pressing of be displayed in the main display 2. (If the storage mode just before is the manual storage, the totalized temperature of 1 data stored manually will be displayed.)

"ºCH"or **"ºFH"** will light depending on the measurement unit at the data storage.

(Ref. [5.3 Measurement unit selection] in the separate instruction manual Vol. 1 <Basic instructions>)



By pressing ⋁ key, the screen will move to the [3.3 Maximum temperature/humidity] screen.
By pressing ⋀ key, the screen will move to the [3.1 Number of stored data] screen.

3. Stored data reading mode

<< Definition of totalized temperature>>

The totalized temperature is computed by the following formula.

1) H totalized temperature = (Measured temperature – totalizing reference temperature) x Hour
   Note: Computed only at
   Measured temperature – totalizing reference temperature > 0
2) L totalized temperature = (Totalizing reference temperature - measured temperature) x Hour
   Note: Computed only at
   Totalizing reference temperature - measured temperature > 0

Ex. 1) If the totalizing reference temperature is 0.0ºC and the measured temperature was 25.0ºC for 100 hours, the H totalized temperature is:
（25.0 - 0）x100 = 2500ºCH

Ex. 2) If the totalizing reference temperature is 10.0ºC, and the measured temperature was 25.0ºC for 100 hours, 15.0ºC for 50 hours and 5.0ºC for 100 hours, the H totalized temperature is:
(25.0 - 10.0) x 100 +(15.0 - 10.0) x 50 = 1555ºCH

Ex. 3) If the totalizing reference temperature is 10.0ºC, and the measured temperature was 25.0ºC for 100 hours, 15.0ºC for 50 hours and 5.0ºC for 100 hours, the L totalized temperature is:
(10.0 - 5.0) x 50 = 250ºCH

Remarks

The totalizing direction (H or L) and the totalizing reference temperature are programmed in [4.5Totalizing reference temperature/totalizing direction].
For the details, refer to [4.5Totalizing reference temperature/totalizing direction].

3. Stored data reading mode

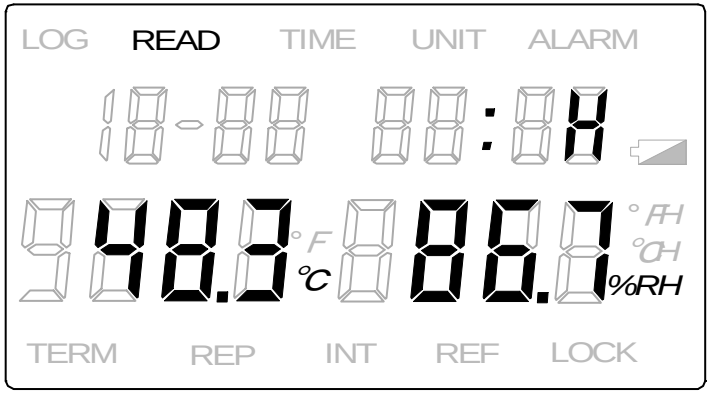
3.3 Maximum temperature/humidity

This screen displays the maximum temperature and the maximum humidity in the data stored in [1.2 Storing (data logging) mode].

By pressing ⋁ key in the [3.2 Totalized temperature] screen with **"READ"** lit in the main marker, or by pressing ⋀ key in the [3.4 Minimum temperature/humidity] screen, the screen will move to the maximum temperature/humidity screen (**"H"**will light in the sub display.). In the maximum temperature/humidity screen, the maximum temperature in the data stored by the storage mode just before the pressing of ⋁ key will be displayed in the main display 1 and the maximum humidity will be displayed in the main display 2. (If the storage mode just before is the manual storage, the data stored manually will be displayed.)

The temperature unit of ºC or ºF and the humidity unit of %RH, ºC or ºF will light depending on the measurement unit at the data storage.

(Ref. [5.3 Measurement unit selection] in the separate instruction manual Vol. 1 <Basic instructions>)



By pressing ⋁ key, the screen will move to the [3.4 Minimum temperature/humidity] screen.

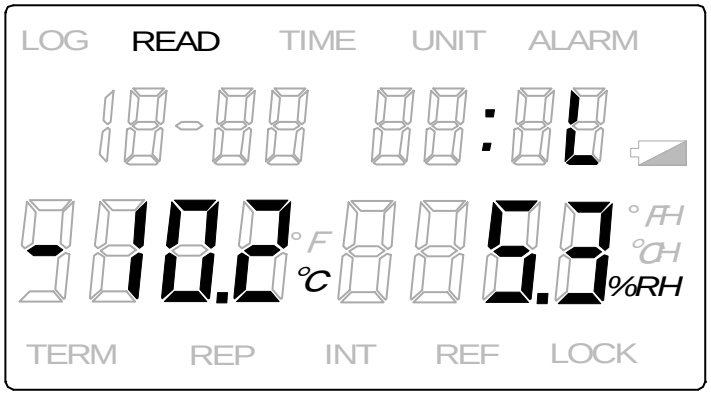
By pressing ⋀ key, the screen will move to the [3.2 Totalized temperature] screen.

3. Stored data reading mode

3.4 Minimum temperature/humidity

This screen displays the minimum temperature and the minimum humidity in the data stored in [1.2 Storing (data logging) mode].

By pressing ⋁ key in the [3.3 Maximum temperature/humidity] screen with **"READ"** lit in the main marker or by pressing ⋀ key in the [3.5 Average temperature/humidity] screen, the screen will move to the minimum temperature/humidity screen (**"L"** will light in the sub display.). In the minimum temperature/humidity screen, the minimum temperature in the data stored by the storage mode just before the pressing of ⋁ key will be displayed in the main display 1 and the minimum humidity will be displayed in the main display 2. (If the storage mode just before is the manual storage, the data stored manually will be displayed.)
The temperature unit of ºC or ºF and the humidity unit of %RH, ºC or ºF will light depending on the measurement unit at the data storage.
(Ref. [5.3 Measurement unit selection] in the separate instruction manual Vol. 1 <Basic instructions>)



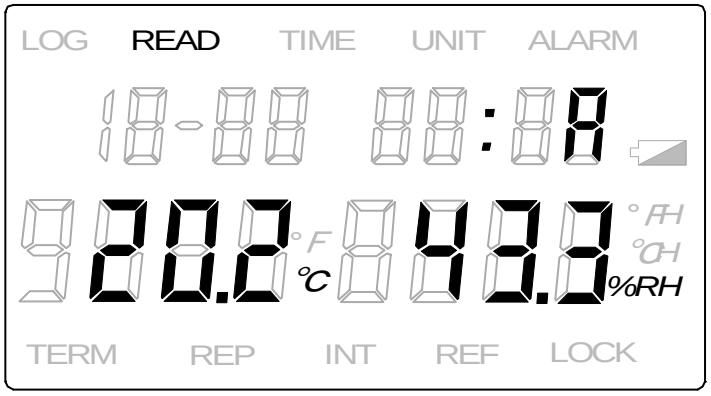
By pressing ⋁ key, the screen will move to the [3.5 Average temperature/humidity] screen.
By pressing ⋀ key, the screen will move to the [3.3 Maximum temperature/humidity] screen.

3. Stored data reading mode

3.5 Average temperature/humidity

This screen displays the average temperature and the average humidity in the data stored in [1.2 Storing (data logging) mode].

By pressing ⋁ key in the [3.4 Minimum temperature/humidity] screen with **"READ"** lit in the main marker or by pressing ⋀ key in the display of the oldest stored data in the [3.6 All stored data] screen, the screen will move to the average temperature/humidity screen (**"A "**will light in the sub display.). The average temperature in the data stored by the storage mode just before the pressing of ⋁ key will be displayed in the main display 1 and the average humidity will be displayed in the main display 2. (If the storage mode just before is the manual storage, the data stored manually will be displayed.)
The temperature unit of ºC or ºF and the humidity unit of %RH, ºC or ºF will light depending on the measurement unit at the data storage.
(Ref. [5.3 Measurement unit selection] in the separate instruction manual Vol. 1 <Basic instructions>)



By pressing ⋁ key, the screen will move to the [3.6 All stored data] screen.

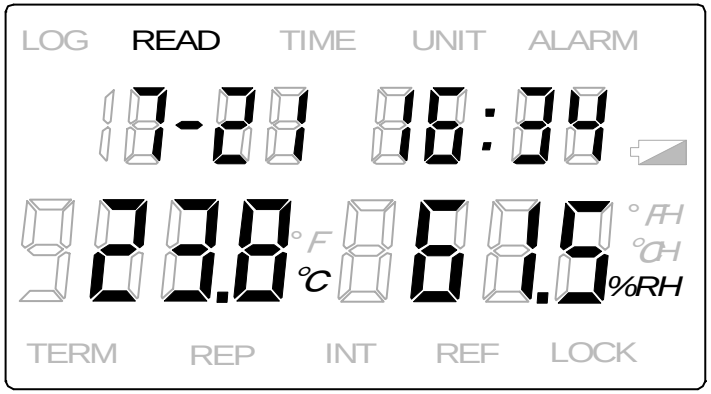
By pressing ⋀ key, the screen will move to the [3.4 Minimum temperature/humidity] screen.

3. Stored data reading mode

3.6 All stored data

This screen displays all stored temperature and humidity stored in [1.2 Storing (data logging) mode].

By pressing ⋁ key in the [3.5 Average temperature/humidity] screen with **"READ"** lit in the main marker or by pressing ⋀ key at the display of the oldest stored data in the [3.1 Stored data number] screen, the screen will move to the all stored data screen (**"month", "day", "hour"** and **"minute"** light in the sub display.). In the all stored data screen, the stored temperature will be displayed in the main display 1 and the stored humidity will be displayed in the main display 2.
The temperature unit of ºC or ºF and the humidity unit of %RH, ºC or ºF will light depending on the measurement unit at the data storage.
In addition, **"ALARM"** will light in the main marker if the alarm is activated.
(Ref. [5.3 Measurement unit selection] in the separate instruction manual Vol. 1 <Basic instructions> and [4.2 High alarm set point]/[4.3 Low alarm set point] in this manual)



Reference

When the screen moves from the [3.5 Average temperature] screen, the oldest stored data will be displayed.
When the screen moves from the [3.1 Number of stored data] screen, the newest stored data will be displayed.
If no stored data exists, 0 will be displayed in the data of month, day, temperature and humidity.

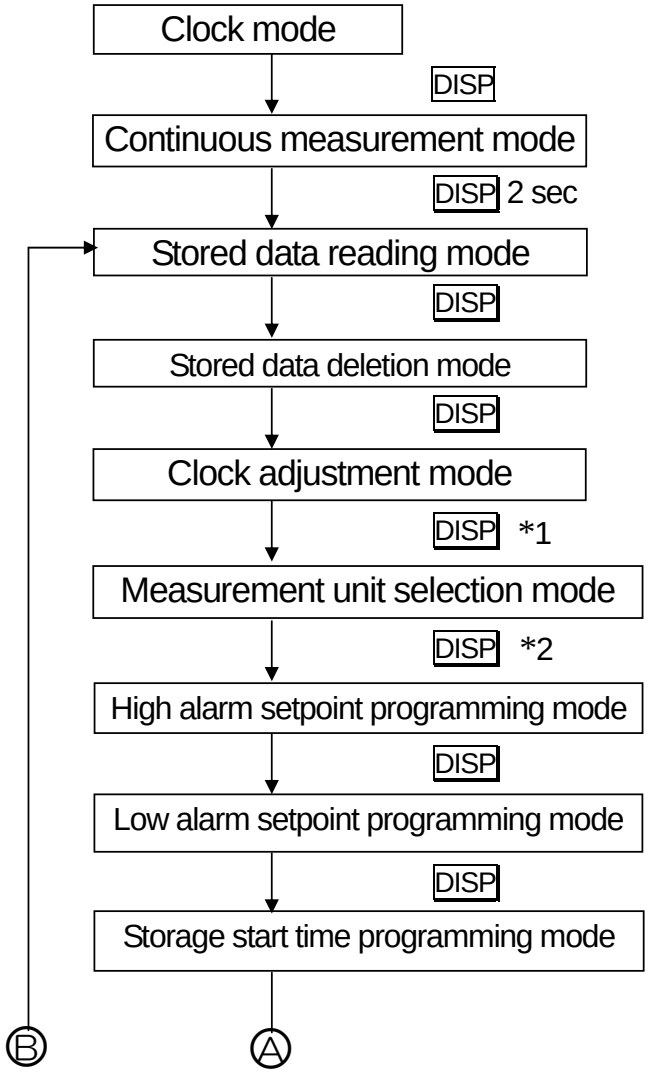
Remarks

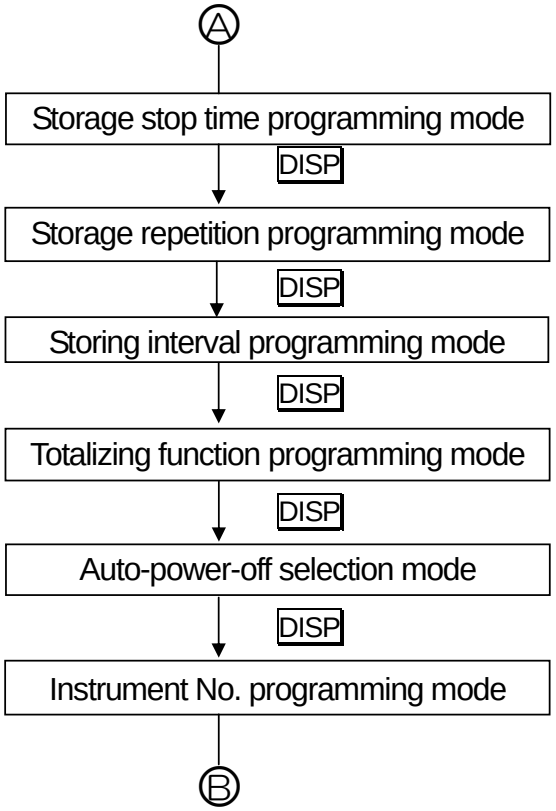
By pressing ⋀ key , the data will change to the older stored data one by one.
By pressing ⋁ key , the data will change to the newer stored data one by one.
The continuous pressing of ⋀ key or ⋁ key will make the displayed data change rapidly.

By pressing ⋁ key, the screen will move to the [3.1 Number of stored data] screen.
By pressing ⋀ key, the screen will move to the [3.5 Average temperature/humidity] screen.

4. Parameter programming

The followings are the flow of the parameter programming.





- By pressing DISP key for 2 seconds in any mode, the mode will move to the continuous measurement mode.
- By pressing DISP key for a shorter period than 2 seconds in any screen of the stored data reading mode, the mode will move to the stored data deletion mode.
- When the auto-power-off function is ON (active), if no key is pressed for 1 minute, the mode will automatically move to the clock mode.

Reference

*1: Refer to [5.2 Clock adjustment] in the separate instruction manual Vol.1 <Basic instructions>.

*2: Refer to [5.3 Measurement unit selection] in the separate instruction manual Vol.1 <Basic instructions>.

4. Parameter programming

In the parameter programming modes, the current parameter is displayed and its display flashes when the programming is enabled.
The parameter programmed by pressing [∧] key or [∨] key is retained by pressing [ENT] key.

Remarks

In the parameter programming modes, by pressing [DISP] key for 2 seconds, the mode will move to the continuous measurement mode.

Caution

By pressing [DISP] key for a shorter period than 2 seconds in any screen in the stored data reading mode, the mode will move to the [4.1 Stored data deletion] mode (**"dEL"** lights in the sub display and **"no"** flashes in the main display 2.).
If the data deletion mode is not required, press [DISP] key for 2 seconds in this mode to go to the continuous measurement mode.

Caution

The parameter programming will be disabled during the automatic storage (with **"LOG"** lit in the main marker, Ref. [1.4. Automatic storage]) or in the memory full status (number of data: **"FuLL",** Ref. [3.1 Stored data number], or in the key lock active (**"LOCK"** lights in the main marker. Ref. [1.6 Key lock]).
During the data being programmed is flashed, if [DISP] key is pressed for 2 seconds, the data being programmed becomes invalid.

Reference

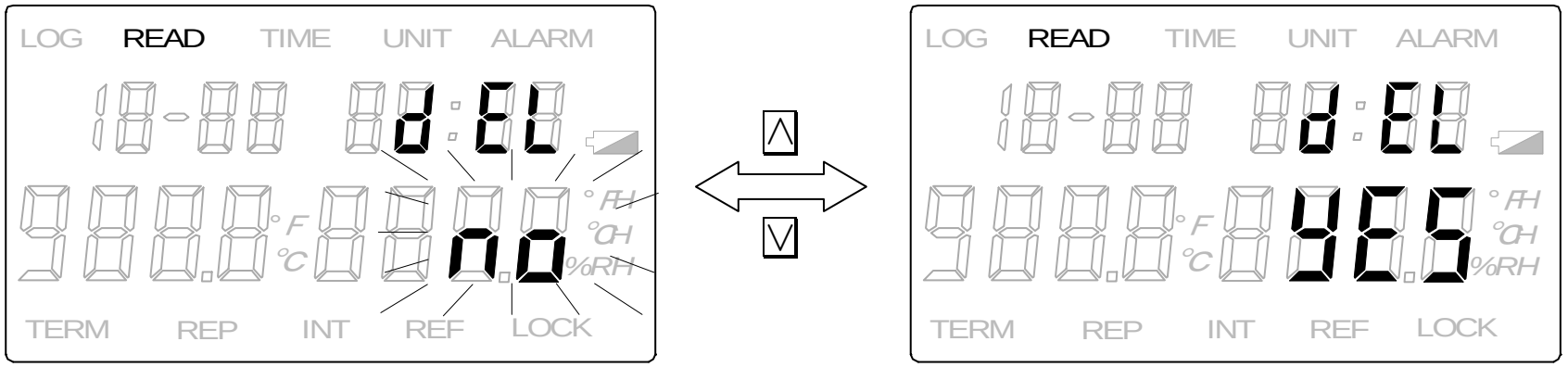
For avoiding the comsumption of the batteries, the auto-power-off function of this meter has been set at ON (active) as a factory default setting. If no key is pressed for 1 minute, the mode will automatically move to the clock mode.

4. Parameter programming

4.1 Stored data deletion

This is the mode for deleting the data stored in [1.2 Storing (data logging) mode].

In [3. Stored data reading mode] with **"READ"** lit in the main marker, by pressing DISP key, the mode will move to the stored data deletion mode (**"dEL"** will light in the sub display and **"no"** will flash in the main display 2.). In the stored data deletion mode, select **"no"** (deletion disable) or **"YES"** (deletion enabled) by pressing ∧ key or ∨ key and then press ENT key to retain it. The flashing of the function selected will stop.



Programming function	Default
no (deletion disabled), **YES**（deletion enabled）	**no** (deletion disabled)

Caution

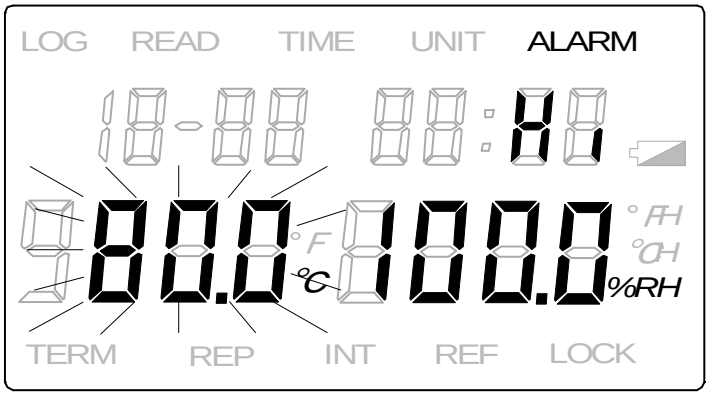
When **"YES"** (deletion enabled) is selected, all stored data will be deleted.
When the data storage for a long term is required, the data storage into a personal computer using the data logging software package (sold separately) is recommended.

4. Parameter programming

4.2 High alarm set point

This is the programming mode for the high alarm set point applied to the data stored in [1.2 Storing (data logging) mode].

In the measurement unit selection mode (Ref. [5.3 Measurement unit selection mode] in the separate instruction manual Vol. 1 <Basic instructions> with **"UNIT"** lit in the main marker, press DISP key to go the high alarm set point programming mode (**"ALARM"** will light in the main marker and **"Hi"** will light in the sub display.). In the high alarm set point programming mode, the temperature high alarm set point will flash in the main display 1.



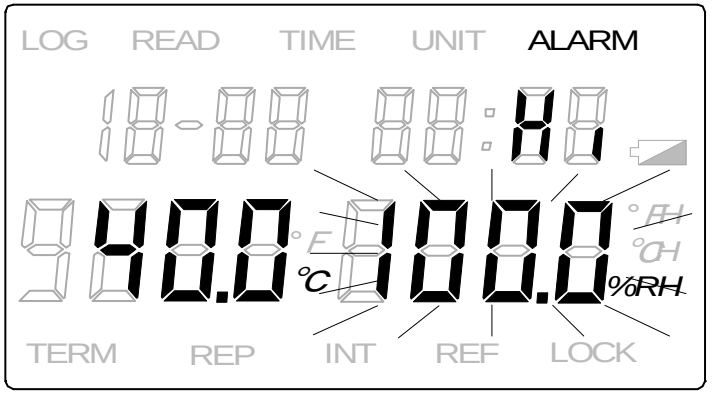
Reference

In the alarm set point programming mode, the continuous pressing of ∧ key or ∨ key will make the value change rapidly.

4.2.1 Temperature high alarm set point

Program the temperature high alarm set point by pressing ∧ key or ∨ key. The value changes in 0.1-increment (within the programming range).

Press ENT key to retain the programmed value. The flashing of the temperature high alarm set point programmed will stop and then the humidity high alarm set point will flash in the main display 2.

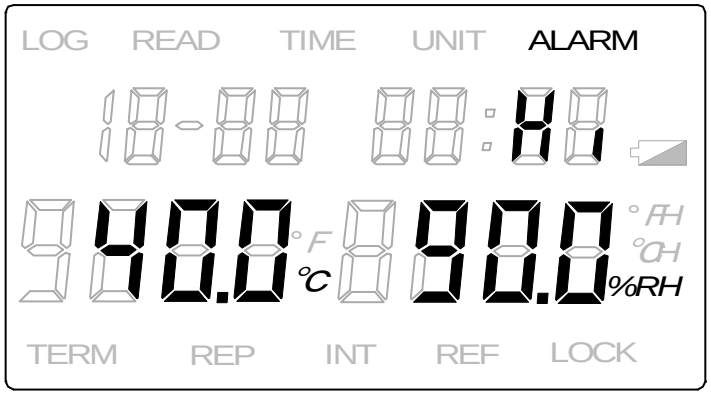


4. Parameter programming

4.2.2 Humidity high alarm set point

Program the humidity high alarm set point by pressing [∧] key or [∨] key. The value changes in 0.1-increment (within the programming range).

Press [ENT] key to retain the programmed value. The flashing of the humidity high alarm set point programmed will stop.



Remarks

When the temperature high alarm set point is only changed, the retaining of the humidity high alarm set point programmed by pressing [ENT] key is required.

Caution

When the measurement unit (Ref. [5.3 Measurement unit selection] in the separate instruction manual Vol. 1 <Basic instructions>) is changed, the alarm set points programmed will be initialized. Make sure to reprogram the alarm set points.

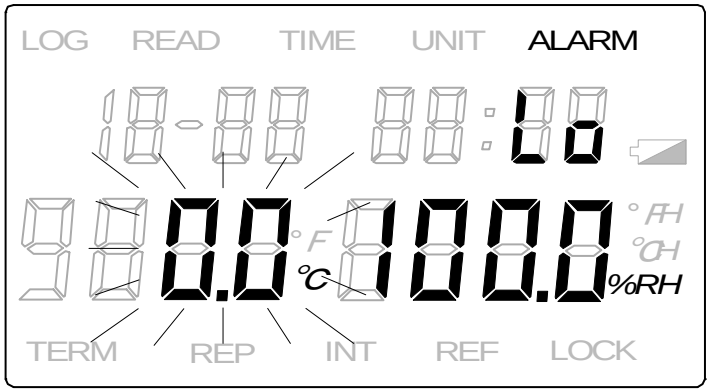
	Unit	Programming range	Default
Temperature	ºC	-199.9 to 199.9	80.0
	ºF		180.0
Relative humidity	%RH	-199.9 to 199.9	100.0
Dew point temperature	ºC		
	ºF		

4. Parameter programming

4.3 Low alarm set point

This is the programming mode for the low alarm set point applied to the data stored in [1.2 Storing (data logging) mode].

In the high alarm set point programming mode with **"ALARM"** lit in the main marker, press DISP key to go to the low alarm set point programming mode (**"ALARM"** will light in the main marker and **"Lo"** will light in the sub display.). In the low alarm set point programming mode, the temperature low alarm set point flashed in the main display 1.



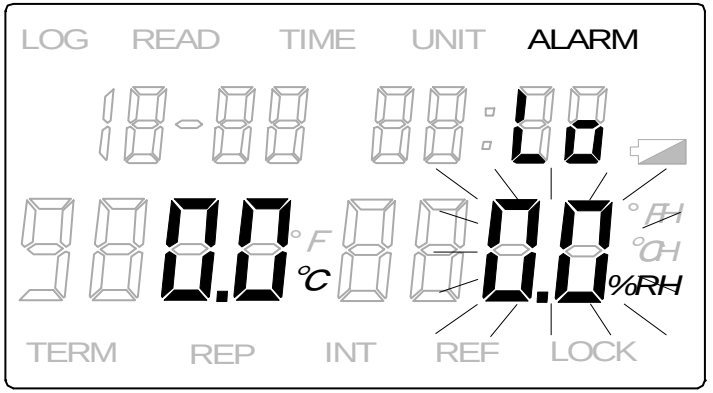
Reference

In the alarm set point programming mode, the continuous pressing of ∧ key or ∨ key will make the value change rapidly.

4.3.1 Temperature low alarm set point

Program the temperature low alarm set point by pressing ∧ key or ∨ key. The value changes in 0.1-increment (within the programming range).

Press ENT key to retain the programmed value. The flashing of the temperature low alarm set point programmed will stop and then the humidity low alarm set point will flash in the main display 2.

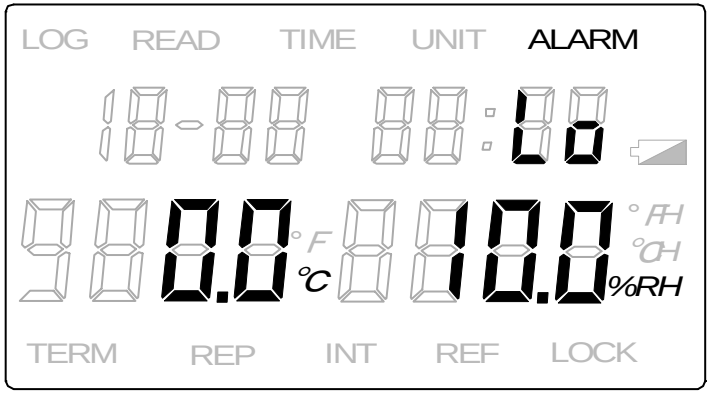


4. Parameter programming

4.3.2 Humidity low alarm set point

Program the humidity low alarm set point by pressing [∧] key or [∨] key. The value changes in 0.1-increment (within the programming range).

Press [ENT] key to retain the programmed value. The flashing of the humidity low alarm set point programmed will stop.



Remarks

When the temperature low alarm set point is only changed, the retaining of the humidity low alarm set point programmed by pressing [ENT] key is required.

Caution

When the measurement unit (Ref. [5.3 Measurement unit selection] in the separate instruction manual Vol. 1 <Basic instructions>) is changed, the alarm set points programmed will be initialized. Make sure to reprogram the alarm set points.

	Unit	Programming range	Default
Temperature	ºC	-199.9 to 199.9	-40.0
	ºF		-40.0
Relative humidity	%RH	-199.9 to 199.9	0.0
Dew point temperature	ºC		
	ºF		

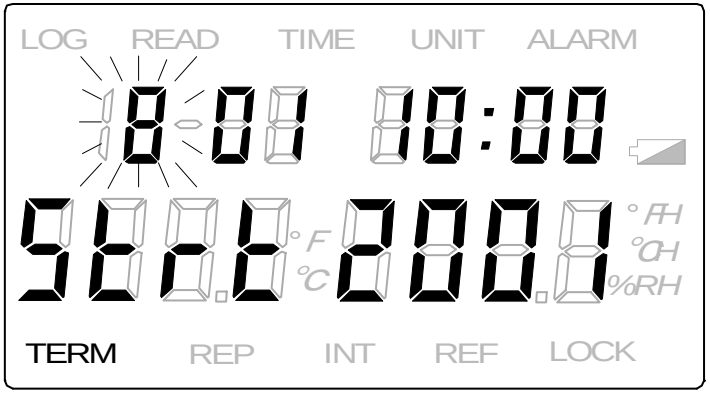
4. Parameter programming

4.4 Automatic storage

4.4.1 Storage start time

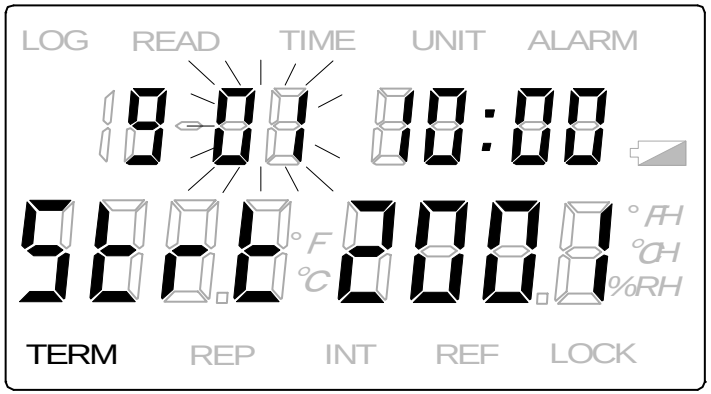
This is the programming mode for the storage start time.

In the [4.3.2 Humidity low alarm setpoint] programming mode with **"ALARM"** lit in the main marker, press DISP key to go to the storage start time programming mode (**"TERM"** will light in the main marker and **"Strt"** will light in the main display 1.). In the storage start time programming mode, "month" will flash in the display of "month/day".



4.4.1-1 Retaining of month

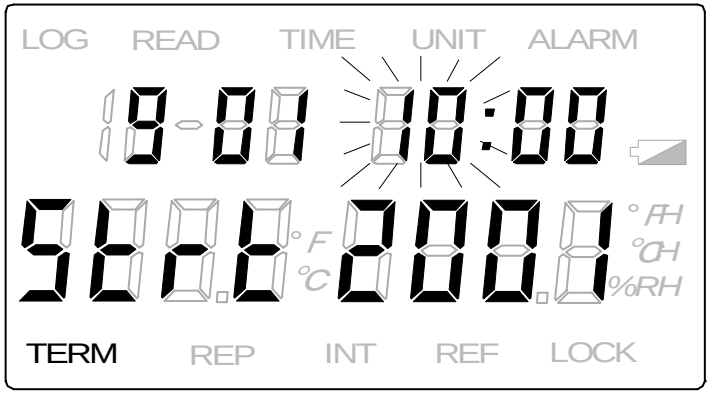
Select the month by pressing ∧ key or ∨ key.
By pressing ENT key, the month selected will be retained and "day" will flash.



4. Parameter programming

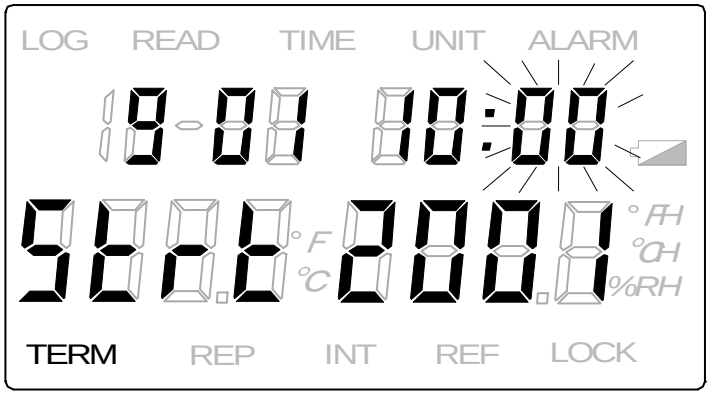
4.4.1-2 Retaining of day

Select the day by pressing [∧] key or [∨] key.
By pressing [ENT] key, the day selected will be retained and “hour” will flash.



4.4.1-3 Retaining of hour

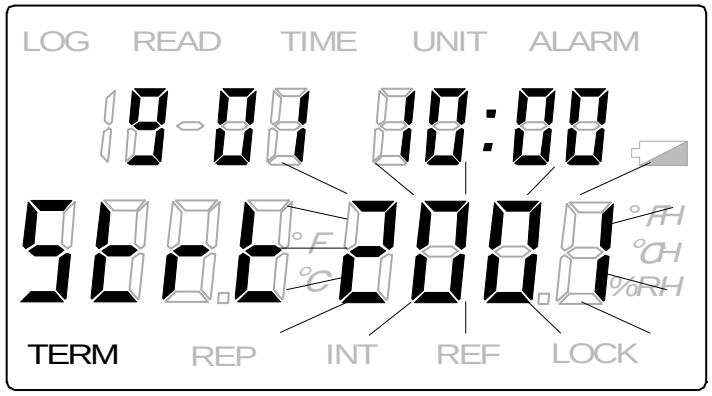
Select the hour by pressing [∧] key or [∨] key.
By pressing [ENT] key, the hour selected will be retained and “minute” will flash.



4. Parameter programming

4.4.1-4 Retaining of minute

Select the minute by pressing △ key or ▽ key.
By pressing ENT key, the minute selected will be retained and "year" will flash.



4.4.1-5 Retaining of year

Select the year by pressing △ key or ▽ key. (The year up to 2099 can be selected.)

4.4.1-6 Storing of storage start time

Press ENT key to retain the year selected. The flashing of the year selected will stop and the storage start time programmed will be stored.

Caution

- When the storage start time is changed, make sure to reprogram the storage stop time. If the storage stop time is not reprogrammed, it will be the same time as the storage start time changed and the automatic storage will be disabled.
- In addition, when the storage start time is changed, the storage repetition programmed in [4.4.3 Storage repetition] will be initialized. Make sure to reprogram the storage repetition
- When the batteries are replaced, the storage start time will be initialized. Make sure to reprogram the storage start time.
- When the clock is changed, the storage start time will be the same time as the clock changed. Make sure to reprogram the storage start time.

4. Parameter programming

Programming range of storage start time

	Programming range	Default
Month *	1 to 12	1
Day *	01 to 31	01
Hour	0 to 23	0
Minute	00 to 59	00
Year	2001 to 2099	2001

*Leap years are supported.

Reference

The time is based on 24-hour clock system. Program 14-hour for PM2 and 22-hour for PM10.
If DISP key is pressed before the retaining of year, the programmed data before it will not be stored.

Caution

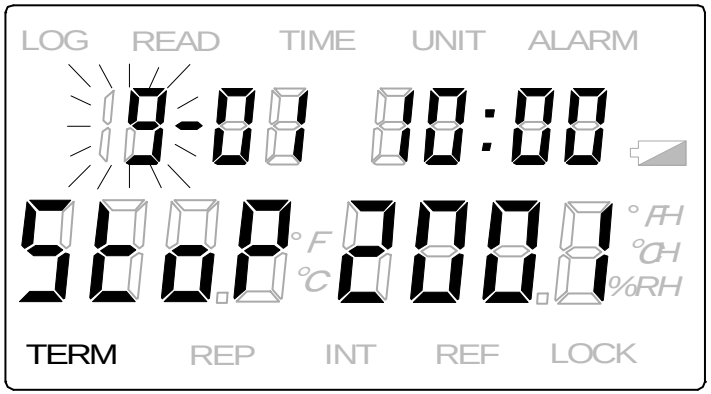
For the programming by ∧ key, when the value reaches to the maximum value of the programming range, it will not return to the default value even if ∧ key is pressed continuously. Use ∨ key to decrease the value.

4. Parameter programming

4.4.2 Storage stop time

This is the programming mode for the storage stop time.

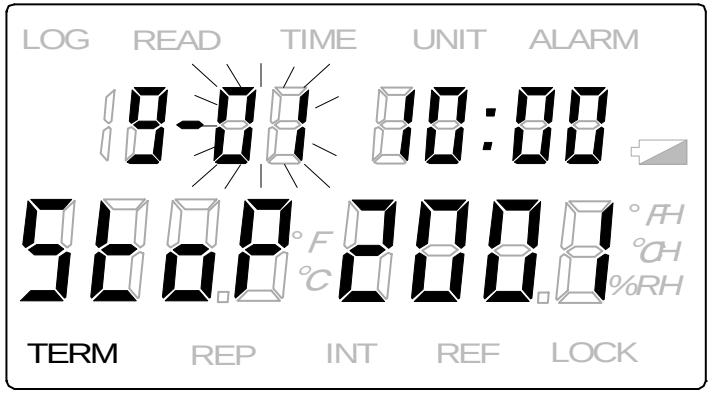
In the [4.4.1 Storage start time] programming mode with **"TERM"** lit in the main marker, press DISP key to go to the storage stop time programming mode (**"StoP"** will light in the main display 1.). In the storage stop time programming mode, "month" will flash in the display of "month/day".



4.4.2-1 Retaining of month

Select the month by pressing ∧ key or ∨ key.

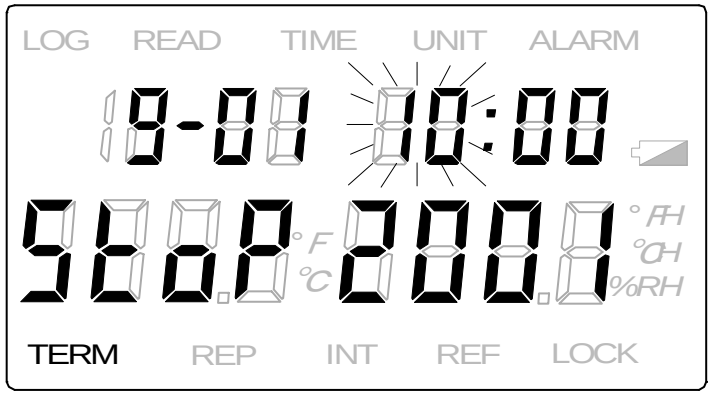
By pressing ENT key, the month selected will be retained and "day" will flash.



4. Parameter programming

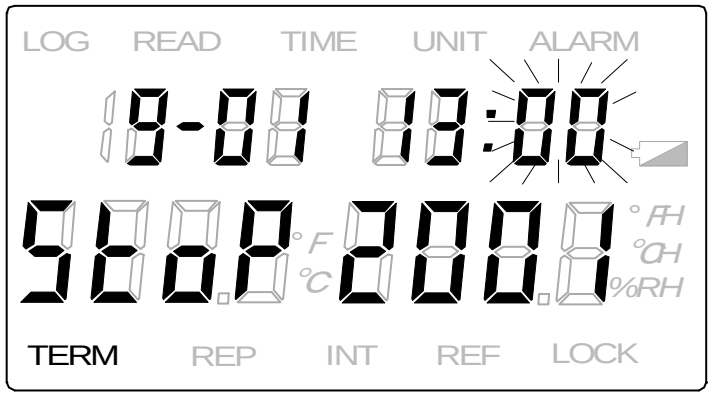
4.4.2-2 Retaining of day

Select the day by pressing ⋀ key or ⋁ key.
By pressing ENT key, the day selected will be retained and “hour” will flash.



4.4.2-3 Retaining of hour

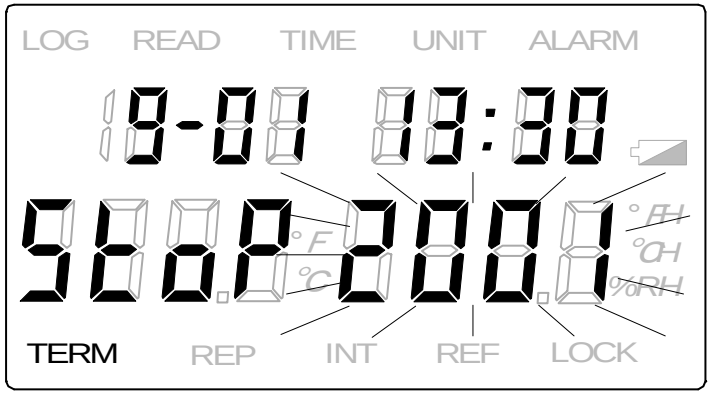
Select the hour by pressing ⋀ key or ⋁ key.
By pressing ENT key, the hour selected will be retained and “minute” will flash.



4. Parameter programming

4.4.2-4 Retaining of minute

Select the minute by pressing [∧] key or [∨] key.
By pressing [ENT] key, the minute selected will be retained and "year" will flash.



4.4.2-5 Retaining of year

Select the year by pressing [∧] key or [∨] key. (The year up to 2099 can be selected.)

4.4.2-6 Storing of storage stop time

Press [ENT] key to retain the year selected. The flashing of the year selected will stop and the storage stop time programmed will be stored.

Caution

- When the storage start time is changed, make sure to reprogram the storage stop time.
  If the storage stop time is not reprogrammed, it will be the same time as the storage start time changed and the automatic storage will be disabled.
- In addition, when the storage start time is changed, the storage repetition programmed in [4.4.3 Storage repetition] will be initialized. Make sure to reprogram the storage repetition
- When the batteries are replaced, the storage start time will be initialized. Make sure to reprogram the storage start time.
- When the clock is changed, the storage start time will be the same time as the clock changed. Make sure to reprogram the storage start time.

4. Parameter programming

Programming range of storage stop time

	Programming range	Default
Month *	1 to 12	1
Day *	01 to 31	01
Hour	0 to 23	0
Minute	00 to 59	00
Year	2001 to 2099	2001

* Leap years are supported.

Reference

The time is based on 24-hour clock system. Program 14-hour for PM2 and 22-hour for PM10.
If DISP key is pressed before the retaining of year, the programmed data before it will not be stored.

Caution

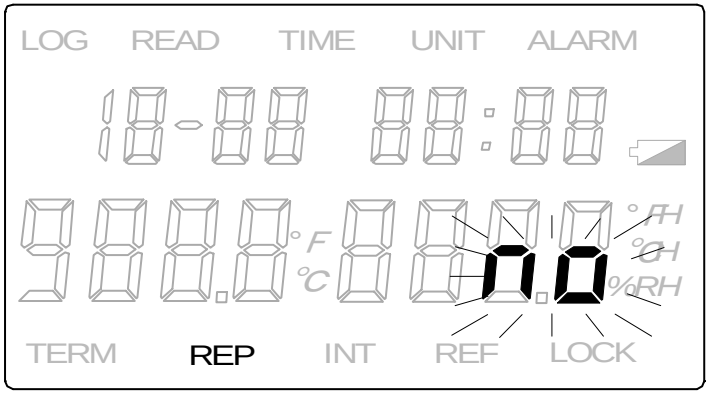
For the programming by ∧ key, when the value reaches to the maximum value of the programming range, it will not return to the default value even if ∧ key is pressed continuously. Use ∨ key to decrease the value.

4. Parameter programming

4.4.3 Storage repetition

This is the programming mode for the storage repetition.

In the [4.4.2-6 Storing of storage stop time] programming mode with **"TERM"** lit in the main marker, press DISP key to go to the storage repetition programming mode (**"REP"** will light in the main marker.). In the storage repetition programming mode, **"no"** will flash in the main display 2.



Select the desired repetition from **"no"** (repetition disabled), **"dAY"** (every day) or **"WEEk"** (every week) by pressing ∧ key or ∨ key.
Press ENT key to retain the repetition selected. The flashing of the repetition selected will stop.

Repetition		Default
"no"	Disable	**"no"**
"dAY"	Every day	
"WEEk"	Every week	

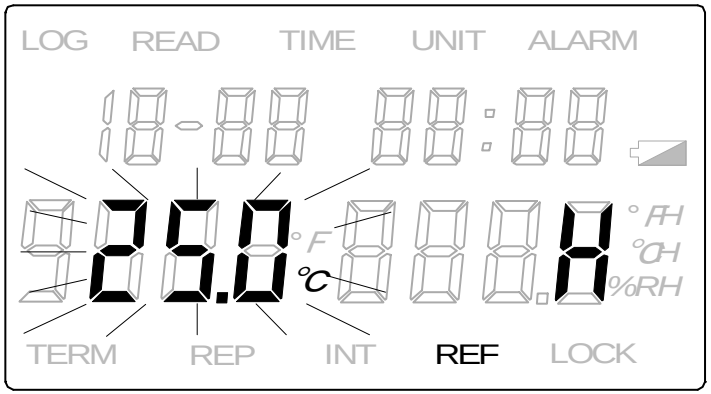
Reference

If the period from the storage start time to the storage stop time is longer than 7 days, **"no"** (repetition disabled) is only available.
If it is 24 hours or longer to 7 days or shorter, **"no"** (repetition disabled) or **"WEEk "**(every week) is available.
If it is shorter than 24 hours, **no** (repetition disabled), **dAY** (every day) or **WEEk** (every week) is available.

4. Parameter programming

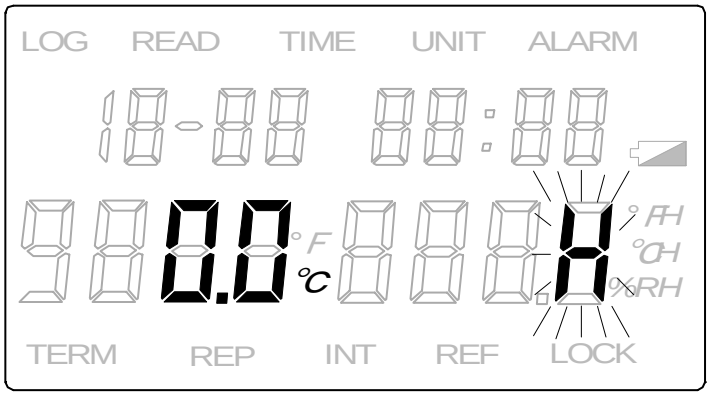
4.5 Totalizing reference temperature/totalizing direction

This is the programming mode for the totalizing reference temperature and the totalizing direction.
In the [1.5 Storing interval] programming mode with **"INT"** lit in the main marker, press DISP key to go to the totalizing reference temperature/totalizing direction programming mode (**"REF"** will light in the main marker and **"H"** will light in the main display 2.). In the totalizing reference temperature/totalizing direction programming mode, "totalizing reference temperature" will flash in the main display 1.



4.5.1 Totalizing reference temperature

Program the totalizing reference temperature by pressing ∧ key or ∨ key. The value changes in 0.1-increment (within the programming range).
By pressing ENT key, the totalizing reference temperature programmed will be retained and **"H"** will flash.



Reference

In the alarm set point programming mode, the continuous pressing of ∧ key or ∨ key will make the value change rapidly.

4. Parameter programming

4.5.2 Totalizing direction

Select **"H"** or **"L"** by pressing [∧] key or [∨] key.

Press [ENT] key to retain the totalizing direction selected. The flashing of the totalizing direction selected will stop.

		Programming range	Default
Totalizing reference temperature	ºC	-199.9 to 199.9	25.0
	ºF		75.0
Totalizing direction		H, L	H

Reference

Totalizing direction

Select H when the measured temperature is higher than the totalizing reference temperature.

Select L when the measured temperature is lower than the totalizing reference temperature.

For the details, refer to [3.2 <<Definition of totalized temperature>>].

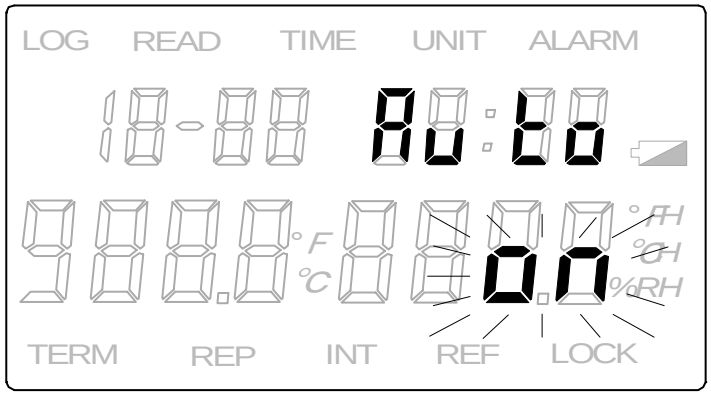
4. Parameter programming

4.6 Auto-power-off

The auto-power-off function is for avoiding the comsumption of the batteries. If no key is pressed for 1 minute, the continuous measurement will automatically stop and the mode will move to the clock mode.

In the [4.5.2 Totalizing direction] programming mode with **"REF"** lit in the main marker, press DISP key to go to the auto-power-off selection mode (**"Auto"** will light in the sub display.). In the auto-power-off selection mode, **"no"** (active) will flash in the main display 2.

For releasing the auto-power-off function, select **"oFF"** (release) by pressing ∧ key or ∨ key. Press ENT key to retain **"oFF"** selected. The flashing of **"oFF"** will stop.



Auto-power-off	Default
"on "(active)	**"on "** (active)
"oFF" (release)	

Reference

Auto-power-off function: on (active)
In the stored data reading mode and the parameter programming mode, if no key is pressed for 1 minute, the continuous measurement will automatically stop and the mode will move to the clock mode.

Auto-power-off function; oFF (release)
The continuous measurement will continue and any mode will not move to the clock mode.

Caution

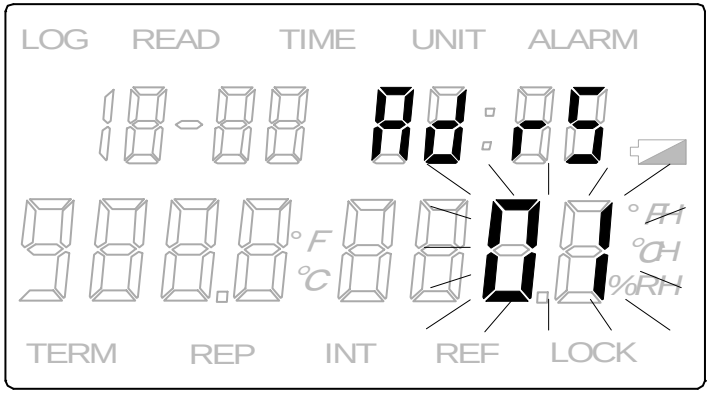
When the auto-power-off function is set to **"oFF"** (release) and the continuous measurement is executed, the batteries will be consumed very rapidly.
For the continuous measurement constantly executed, use the AC power adapter (RH32-AC110) sold separately.

4. Parameter programming

4.7 Instrument No.

This is the programming mode for numbering instrument Nos. when multiple RH32□-C2 are used.

In the [4.6 Auto-power-off] selection mode with **"Auto"** lit in the sub display, press DISP key to go to the instrument No. programming mode (**"AdrS"** will light in the sub display.). In the instrument No. programming mode, **"01"** will flash in the main display 2.



Select the instrument No. from 01 to 99 by pressing ∧ key or ∨ key. Press ENT key to retain the instrument No. selected. The flashing of the instrument No. selected will stop.

Programming range	Default
01 to 99	01

Reference

Instrument No.

For RH32□-C2 (RS-232Ccommunications)

When multiple RH32□-C2 are used, use the instrument No. for identifying the meters.

For RH32□-C4 (RS-485communications)

The instrument No. is used as an address in the communications.

Caution

For the programming by ∧ key, when the value reaches to the maximum value of the programming range, it will not return to the default value even if ∧ key is pressed continuously. Use ∨ key to decrease the value.

5. Troubleshooting

Phenomenon	Content	Countermeasure
1) **"Er1"** is displayed in the main display 1.	Temperature measurement can't be executed.	Check the connection of the temperature/humidity sensor. *1
2) The humidity value in the main display 2 is 100%RH. (The dew-point temperature value is same as the temperature measured value.).	100%RH has been measured in the humidity measurement.	Check if dew has been condensed in the temperature/humidity sensor. Measurement is possible after recovering from dew condensation.
		Check the connection of the temperature/humidity sensor. *1
	Interchangeability of the temperature/humidity sensor has not been obtained.	Press ▽ key while pressing △ key. *1
3) The humidity value in the main display 2 is 0%RH. (The dew-point temperature value is --60ºC.).	0%RH has been measured in the humidity measurement.	The humidity measurement from 0%RH is possible. Check if an object is not in absolute dry condition.
		Check the connection of the temperature/humidity sensor. *1
	Interchangeability of the temperature/humidity sensor has not been obtained.	Press ▽ key while pressing △ key. *1
4) **"Er1"** is displayed in the main display 2.	Humidity measurement can't be executed.	Check the connection of the temperature/humidity sensor. *1
5) **"Er2"** is displayed in the main display 2.	In the dew-point temperature display, the dew-point computation is not possible due to abnormal temperature data.	If **"Er1"** is displayed in the main display 1, check the connection of the temperature/humidity sensor. *1

*1 Refer to [7. Replacement of temperature/humidity sensor] in the separate instruction manual Vol. 1 <Basic instructions>.

*2 Refer to [5.1 Loading of batteries] in the separate instruction manual Vol. 1 <Basic instructions>.

5. Troubleshooting

Phenomenon	Content	Countermeasure
6) **"Er4"** is displayed in the main display. 2	The batteries are dead. If Er4 is still displayed after the battery replacement, this meter has been abnormal.	Replace the batteries to new ones *2 If **"Er4"** is still displayed after the battery replacement, contact your CHINO's agent.
7) Nothing including the clock is displayed.	No power has been supplied.	Replace the batteries to new ones. *2
8) None displayed	The batteries are dead	Replace the batteries to new ones. *2
9) Automatic storage can't be executed	Parameter not correct	Check parameters including clock.
	Memory is full.	1. Clear the memory. (Ref. [4.1 Stored data deletion]) All stored data will be deleted by the stored data deletion. 2. By the data logging software package (sold separately), program the storage function to "Endless". When the memory becomes full (8000 data), a new data overwrite the oldest data.
10) **"oFL"** is displayed in the main display 1.	Temperature measured value overflowed	Check the temperature measuring range. Check the connection of the temperature/humidity sensor. *1
11) **"uFL"** is displayed in the main display 1.	Temperature measured value underflowed	Check the temperature measuring range. Check the connection of the temperature/humidity sensor. *1

*1 Refer to [7. Replacement of temperature/humidity sensor] in the separate instruction manual Vol. 1 <Basic instructions>.

*2 Refer to [5.1 Loading of batteries] in the separate instruction manual Vol. 1 <Basic instructions>.