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User Manual
HT16Ew WIRELESS RH/T TRANSMITTER

CONTENTS

(1). INTRODUCTION

Model HT16Ew is state of the art wireless Transmitter to measure, display and transmit Relative Humidity and Temperature with high accuracy, the data is streamed wirelessly over Zigbee network at set interval. The unit is low power, operates on pair of 2 X AA Lithium cells and is housed in an elegant wall mount enclosure.

At the heart of the Transmitter is the built-in RH & Temperature sensor chip, highly accurate with excellent long term stability, the measurements are displayed on a custom built LCD display with engineering units and 0.1 resolution, besides the real time values the unit also captures and displays statistical Min and Max values.

The custom built display of HT16W indicates the RH and Temperature values along with Battery status & wireless signal strength.

The Data transmission is based on ZigBee protocol, the preferred protocol for low power devices, and the transmission frequency is on the license free 2.4 GHz, the transmission range is 90 meters typically without line of sight, the data is pushed by the individual Transmitters to the logger/PC at set interval, Routers/Repeaters can be used to increase the network range.

Model HT16Ew is designed as a low power device for battery operation and typically gives a battery life of 2 years while transmitting at 15 min intervals, the USB port gives the option of using with USB adaptor where mains power is available.

(2). FEATURES

- ZigBee wireless RH/T transmitter with Integral display
- Operates License free band of 2.4GHz
- Low Power Battery operated with long Battery life
- Max and Minreadings
- Hi/Lo Alarms with LED status
- Battery Status and Signal strength indication
- USB port for Mains Adaptor
- Custom built LCDdisplay
- Can operate both in Star & Mesh network
- Configurable by front keypad
- Supported by Masibus wireless logger & PC software

(3). APPLICATIONS

- Pharmaceutical Industry
- Clean Rooms & Warehouses
- Food Industry
- Building Automation
- HVAC Systems
- Cold Storages

- Energy Management
- Vehicle Monitoring

(4).TECHNICAL SPECIFICATIONS

MODEL	HT16Ew
Measuring Range: Temperature	0 to 60°C
Measuring Range: Humidity	0 to 100% RH
Resolution - Temperature	0.1°C
Resolution - Humidity	0.1% RH
Accuracy - Temperature	±0.3°C Typical, ±0.4°C Max
Accuracy - Humidity	±2% RH (0-80%), ±4% RH (80-100%)
Battery backup - @ 1 Min sample rate	24 months with exception based protocol
Data storage capacity - Nos of sample readings	64Mbits(Up to 400000)(Date/ Time/ Temperature/ Humidity/ Alarms Status/ Battery Status/ RF Signal Strength)
Display type	Segment LCD
Display Character Size	7 segments with symbols (character size 10 * 5mm)
MOC -Enclosure	Self-extinguishing ASA UL 94 V0, White gray color (90(H) x 130(W) x 25(D))mm
Mounting size and arrangement	Wall mount plastic bracket (45*65 mm)
Radio signal frequency	ISM 2.4 GHz ZigBee
Signal Range - Meters	Line of sight Range (outdoors) - 3000 m typically Indoor Range - 90 m typically
Communication type	Wireless (IEEE 802.15.4 standard)
Alarm facility	Yes, at receiver end.
Communication open protocol - type	ZigBee (IEEE 802.15.4 standard)
Sensors	Internal or external(optional)
USB Port	Mains Power Adaptor/Battery
Battery Type	4 X AA Lithium cell
Weight	Approx. 300g
Environment	
Operating Temperature	0 to 60°C
Storage Temperature	-10 to 70°C
Humidity	0 – 100 % RH.

(5). HT16Ew INTERNAL BLOCK DIAGRAM
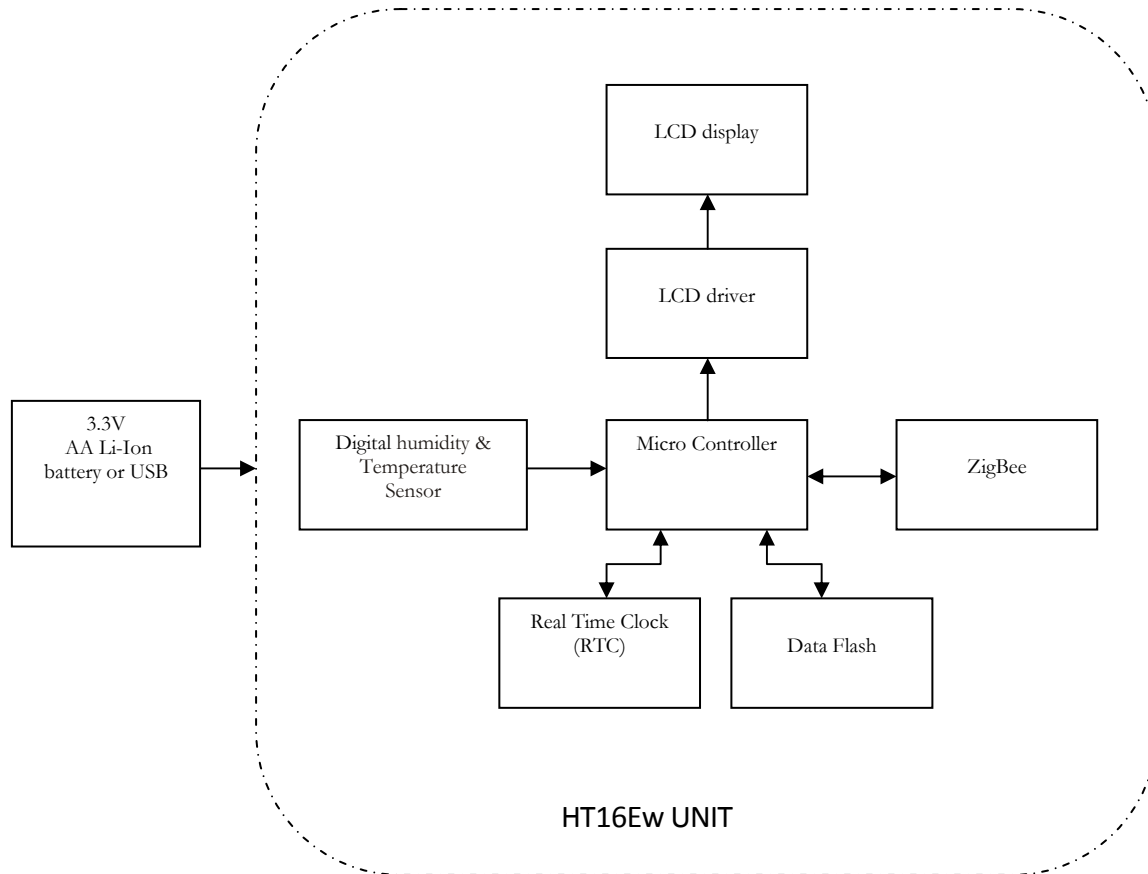
Fig 1: Block Diagram of HT16Ew

(6). HT16Ew APPLICATION DIAGRAM

Transmitter can PUSH directly to receiver or through routers

HT16Ew-Router
With power adaptor

HT16Ew Transmitter

HT16Ew Transmitter

HT16Ew Transmitter

Logger

Radio

85XX⁺-W
Receiver/Logger

HT16Ew Transmitter

HT16Ew Transmitter

HT16Ew Transmitter

Ethernet

Radio

Ethernet

Common 21 CFR SCADA Station

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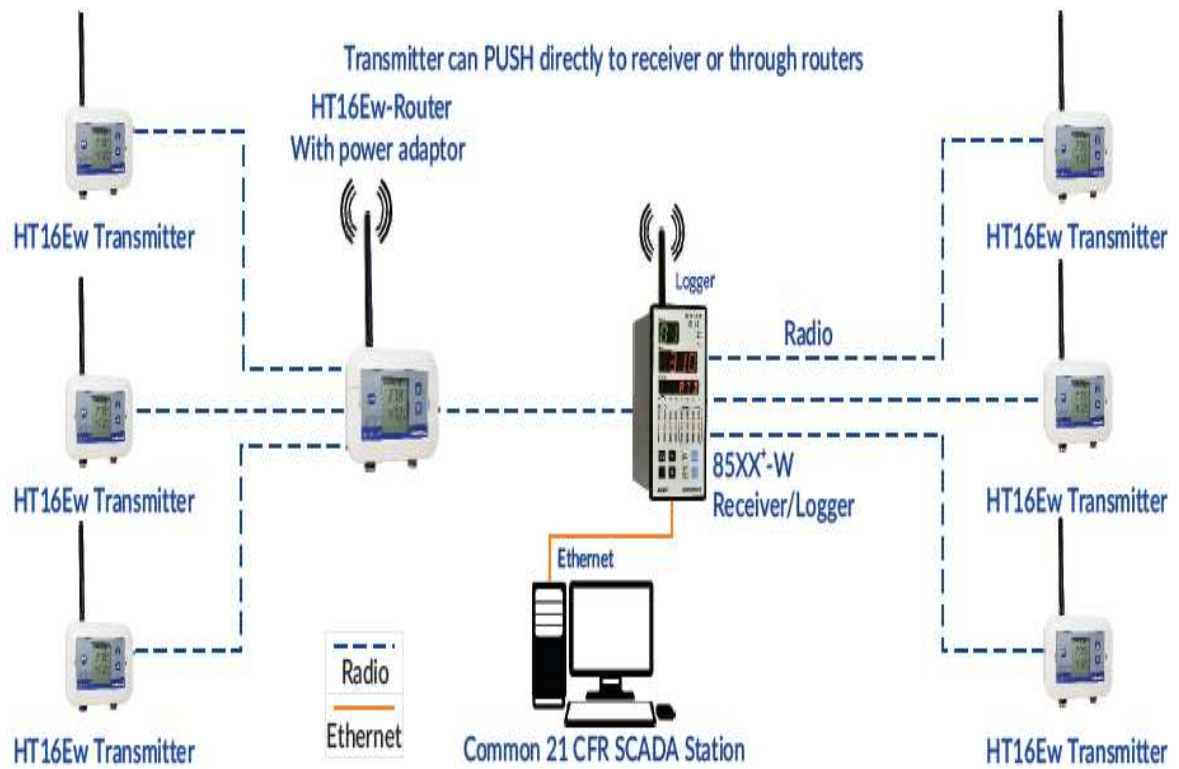
(7). HT16Ew MOUNTING

7.1 Installation with Back plate wall mount diagram:

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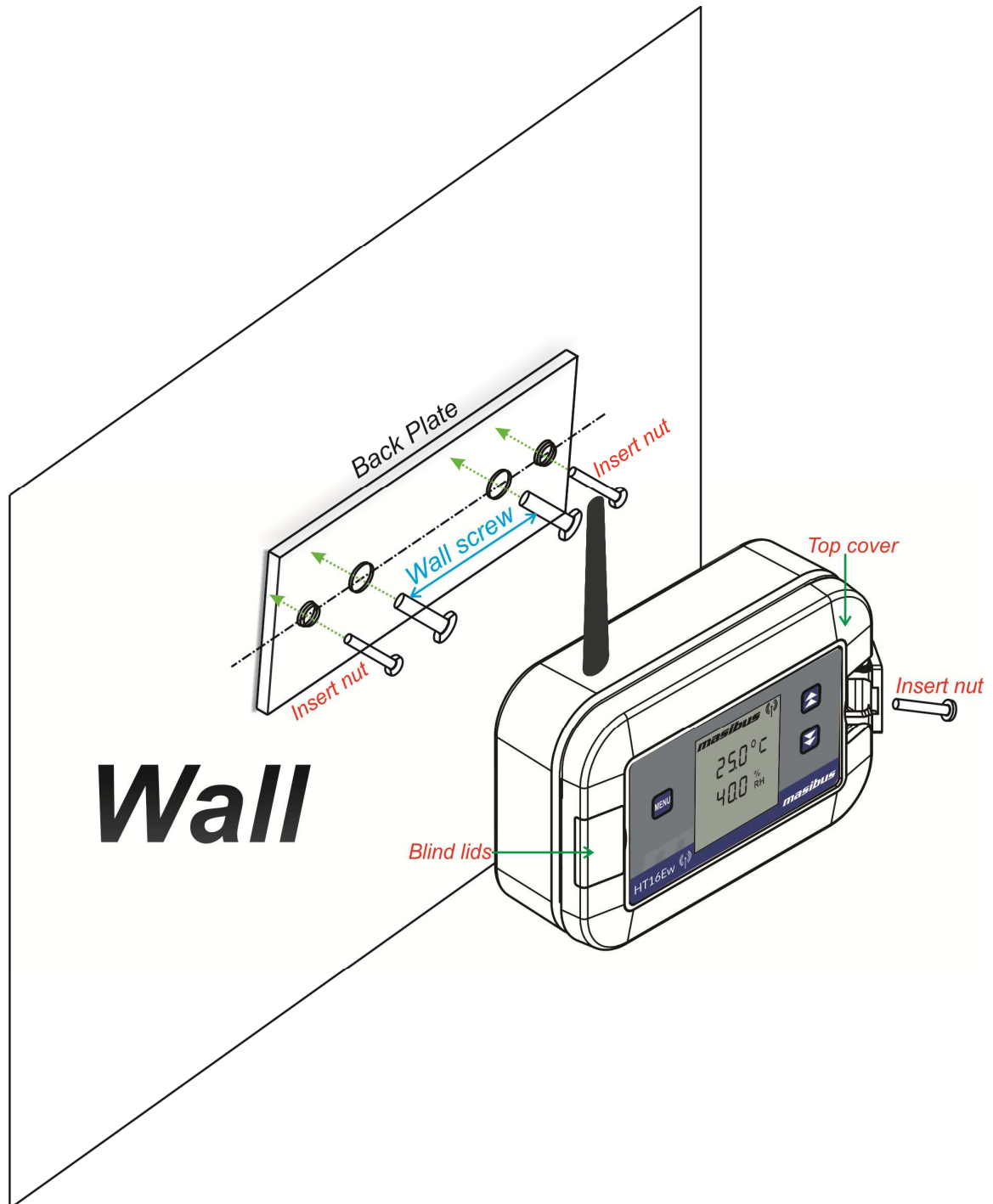
7.2 Installation with wall mount bracket diagram:

Fit &Slide

Suspension hook

Wall

Fit & Slide

4-Φ3.5 hole
for
wall mounting

Mounting base

Mounting base

Suspension hook

45

29

65

49

28

44

20

2.5

4−⌀3.5

*Hole layout for fixing
suspension hook*
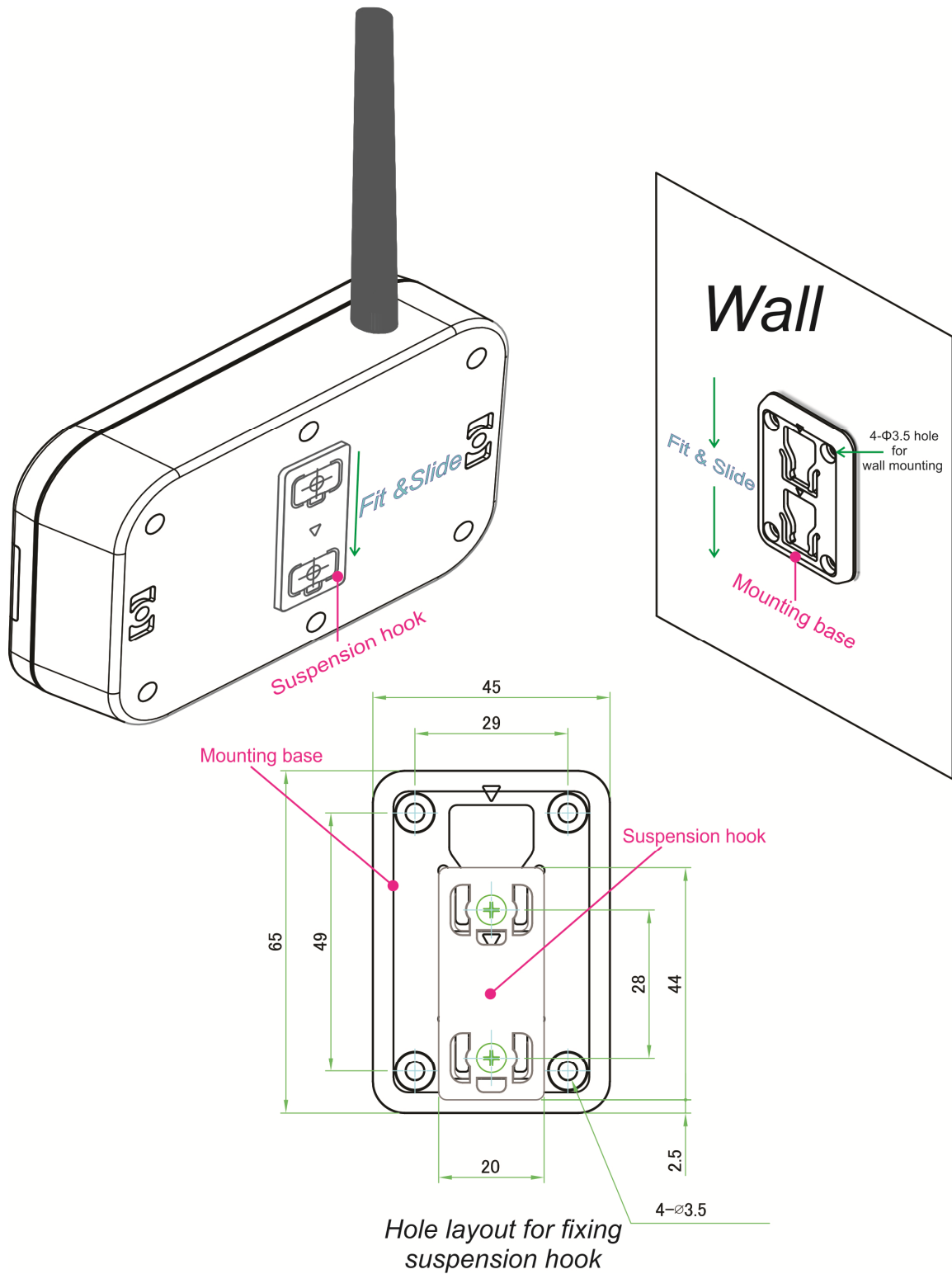
(8). HT16Ew Menu Operation Flowchart

Main Menu:
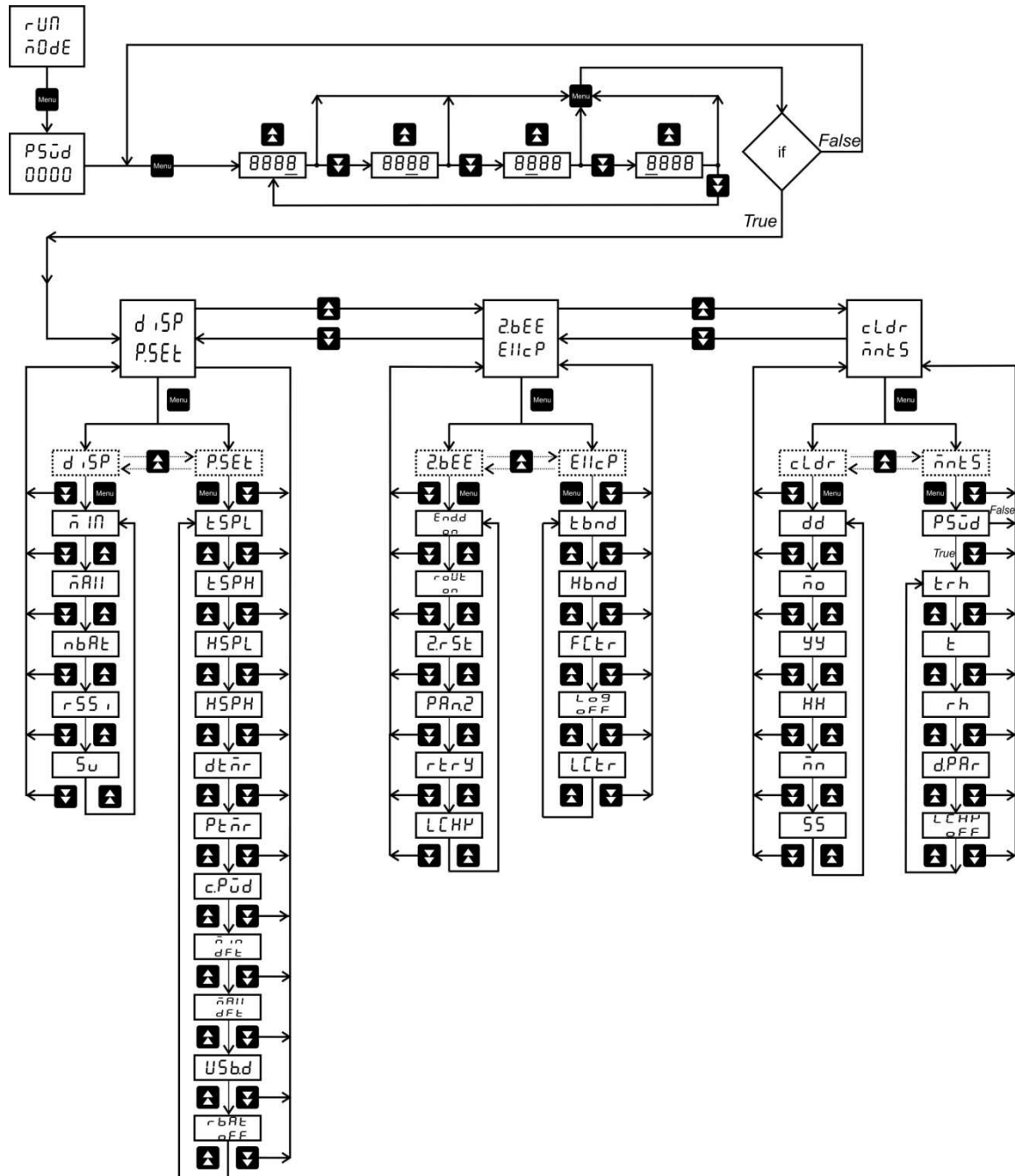
Main menu is divided in main six categories:

(1) d iSP (display parameters)

(2) P .SEE (parameter set)

(3) HbEE (XbeeRadio menu)

(4) EHcP (exception parameters)

(5) cLdr (calendar parameters)

(6) ñnE5 (maintance& special mode parameters)

```
         d iSP  ←[Menu]←  rUN
         P.SEt              āOdE
           │
         [Menu]
           │
           ▼
         ┌───────┐
         │ d iSP │
         │ P.SEt │
         └───────┘
     ←[▼] [Menu]
           │
           ▼
         25.0°c
         40.0 %RH
          MIN
     ←[▼] [▲]
           │
           ▼
         50.0°c
         80.0 %RH
          MAX
     ←[▼] [▲]
           │
           ▼
         nbAt         nbAt = non-rechargeable battery
         90           rbAt = rechargeable battery
     ←[▼] [▲]
           │
           ▼
         r55 i
         90
     ←[▼] [▲]
           │
           ▼
         5u
         6.5
     ←[▼] [▲]
           │
           ▼
         25.0°c
         40.0 %RH
          MIN
```
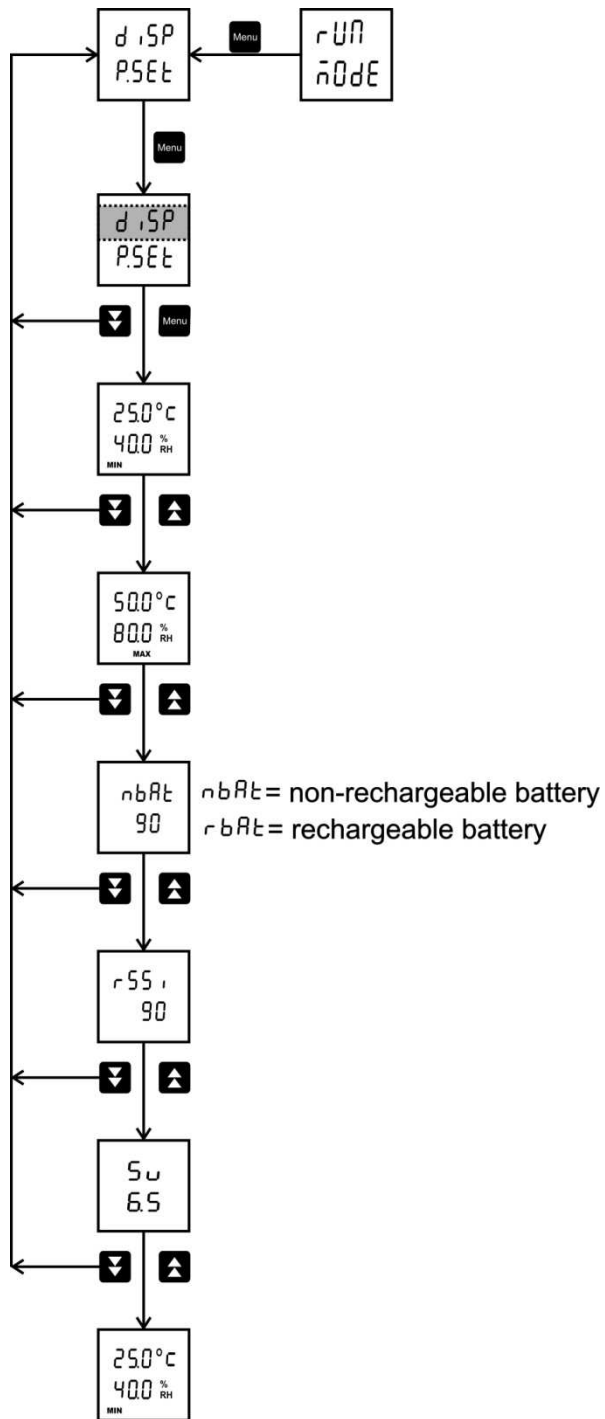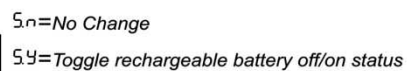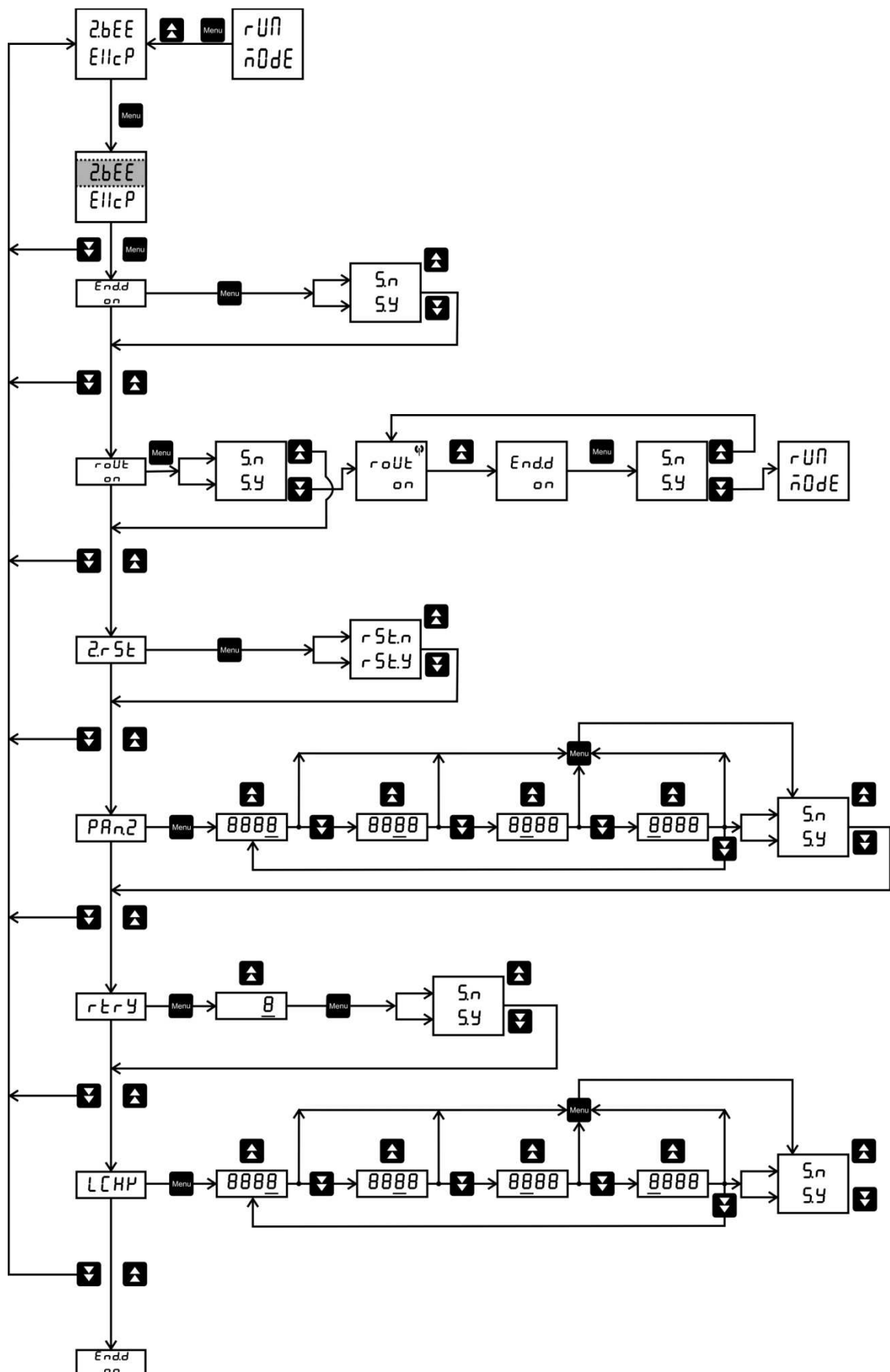
S.n = No Change

S.Y = Toggle rechargeable battery off/on status

Sn=*No Change*
Sy=*Clear Frame Counter*

Sn=*No Change*
Sy=*Toggle Log-Status*

Sn=*No Change*
Sy=*Delete Logs*

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S.n = *No Change*

S.Y = *Factory Default Parameter*

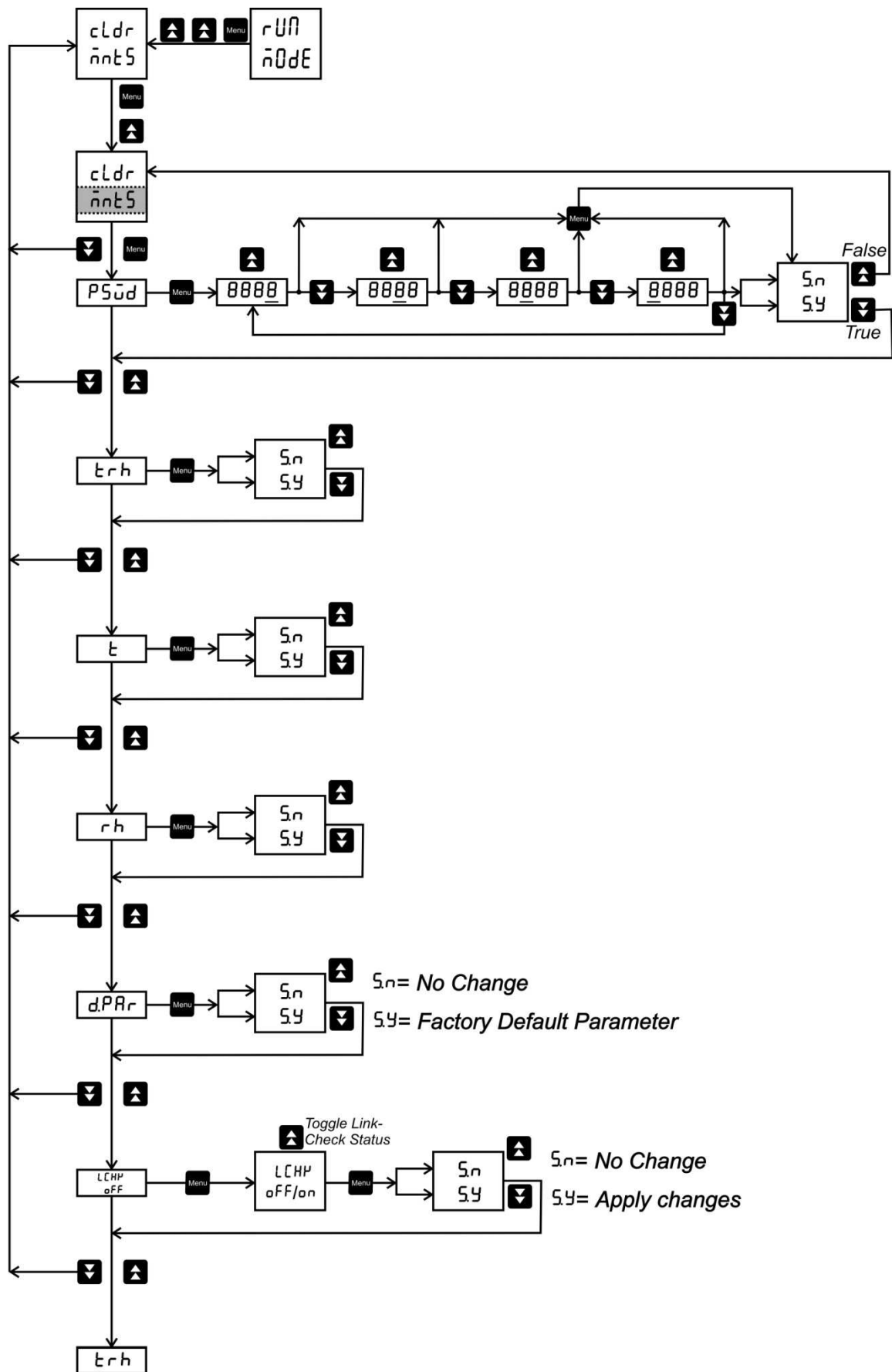S.n = *No Change*

S.Y = *Apply changes*

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8.1 Run mode description:

(1) RUN Mode:

After powering on the device, unit will display **Temperature and Humidity** measured by Sensor. Device also displays battery status bar &wireless symbol when wireless packet is being transmitting to CDU/85xx+.

When device stay inactive or user doesn't press any key during menu configuration, timeout signal force menu screen to jump into RUN MODE and enter in sleep to save power.

During RUN mode when increment key pressed for 5 second continuously at the same moment press and release of menu key will send temperature & humidity data to logger Device this is called manual frame transmission, doesn't matter whether push-time on or not.

When wireless communication established between HT16Ew & CDU/85xx+, wireless symbol appear on top right corner of LCD, if by chance communication link break then this symbol disappear.

In addition to that when HT16Ew transmitting Log-data, small 'ᶫ' symbol appear on LCD screen.

```
RUN MODE  ←——  🕒 Time-Out
```
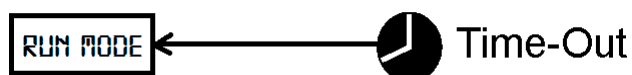
HT16W unit equipped with 3 push button key labeled as menu key, increment key& decrement key.

⏫ IncrementKey (INC)

Menu Menu Key(MENU)
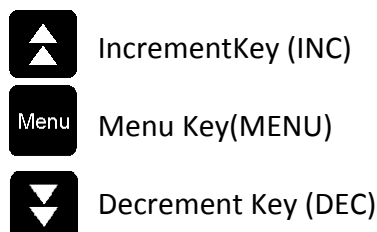
⏬ Decrement Key (DEC)

Increment Key (INC): shift to next menu/set particular digit/S.n(don't apply changes)
Menu Key (MENU):enter in main menu/sub menu/apply changescreen(S.Y/ S.n)
Decrement Key (DCR):shift to previous main menu/ shift cursor to next digit/ S.Y(apply changes)

PSᴗd(Password):

HT16Ew menu is password protected user can restricts unwanted access of unit with the help of password. When user press menu key during run mode password screen will appear. Factory default password value is 3131,User can further change new password in **P.SET/c.pwd** menu later on.

8.2 dיSP (Display Parameters description):

It displays various non-editable status only parameters like battery, rssi, min & max value of temperature and humidity. This menu further divided in sub categories mention as below:

(1) mῐln Mode:
It displays minimum value of measured**Temperature and Humidity** from last records.

(2) mῐAll Mode:
It displays maximum value of measured**Temperature and Humidity** from last records.

(3) bAt Battery Mode:
This mode is specially designed to display estimated battery capacity of unit. Battery digits shows approximated battery level based on discharge curve of battery type. When battery needs to be updated, unit displays single battery bar followed by min & max symbols. Prefix before bAt shows type of battery selected from menu. If nbAt then non- rechargeable & rbAt then rechargeable battery selected. During run mode battery level can be identified by following table.

Non- Rechargeable Battery Voltage	Battery level	Indication
3.3V to 3.08V	100 to 75	3 Bar
3.07V to 2.709V	74 to 20	2 Bar
2.70V to 2.5v	19 to 0	1 Bar,MIN MAX

(4) rSSי RSSI Mode:
This mode is specially designed to display qualityof received signal strength of communication frame. It's simply measure and displays received signal strength of last received packet.Assume display digit in decibel (dB). RSSI <70 dB can be considered as good signal strength, RSSI>70 dB is poor signal strength. Poor signal strength results in more power-usage & more packet loss.

(5) Su Mode(software version):
This mode display current firmware version of HT16Ew unit.

8.3 P.SEt (Parameter set)

It let the user to configure parameters like password, display timer, push-timer ,temp& hum set point values.Parameter set menu further divided in sub categories mention as below:

(1) tSPL (Temperature Set point Low) Mode:
tSPL stands for Temperature Set Point Low. It is user input menu, user can simply enter 2 Digit Temperature Set Point Low value followed by 1 decimal point value with the help of menu key, increment key and decrement key. If Actual Temperature goes low below TSPL set value then it will send Temperature low alarm indication on Zigbee to CDU/85xx+. Temperature Low Alarm indication appear as symbol 'L' ahead of temperature reading during run-mode.

(2) tSPH (Temperature Set Point High) Mode:

ᴸSPH stands for Temperature Set Point High. It is user input menu, user can simply enter 2 Digit Temperature Set Point High value followed by 1 decimal point value with the help of menu key, increment key and decrement key. If Actual Temperature goes high above TSPH set value then it will send Temperature High alarm indication on Zigbee to CDU/85xx+. Temperature High Alarmindication appear as symbol 'ʰ' ahead of temperature reading during run-mode.

(3)HSPL (Humidity Set Point Low) Mode:

HSPL stands for Humidity Set Point Low. It is user input menu, user cansimply enter 2 Digit Humidity Set Point Low value followed by 1 decimal point value withthe help of menu key ,increment key& decrement key. If Actual Humidity goes low below HSPL set value then it will send Humidity low alarm indication on Zigbee to CDU/85xx+.HumidityLow Alarm indication appear as symbol 'ᴸ' ahead of humidityreading during run-mode.

(4)HSPH (Humidity Set Point High) Mode:

HSPH stands for Humidity Set Point High. It is user input menu, user can simply enter 2 Digit Humidity Set Point High value followed by 1 decimal point value with the help of menu key,increment key& decrement key. If Actual Humidity goes high above HSPH set value then it will send Humidityhigh alarm indication on Zigbee to CDU/85xx+. HumidityHigh Alarm indication appear as symbol 'ʰ' ahead of humidityreading during run-mode.

(5)dtⁿ̄r (Display UpdateTimer)Mode:

dtⁿ̄ris LCD-Display update Timer mode. It is user input menu, user can simply enter 3 Digit second timer value ranging from 000 to 999 with the help of operating keys.At defined dtⁿ̄rinterval it will measure & updates temperature & humidity values on LCD display.

Factory default dtⁿ̄rvalue is 0 I5 seconds.

(6)Ptⁿ̄r (Push Timer)Mode:

Ptⁿ̄ris for Pushtimer minute. User can set the Ptⁿ̄rminute value with INC key. Device will transmits frame at regular interval which is defined by Ptⁿ̄r value. At every hour HT16Ew transmits one communication frame to CDU/85xx+ irrespective of Ptⁿ̄r value. User can only configuredPtⁿ̄r value from belowset:

{1,5,10,15,30,60,120,180,240,360,480,720,1440,2880} this values are in minutes.

Factory default Ptⁿ̄rvalue is 000 I minutes.

(7)c .Pⁿ̄d (change password)Mode:

c .Pⁿ̄duse to change unit password ranging from 0000 to 9999with the help of operating keys.

Once left most digit is set, on the press of MENU key, save Yes/ save No (5 .Y/ 5 .n) screen will appear for saving new changed password. If user will press "5 .n" (INC Key) then it will discards new changes. If user will press "5 .Y" (DCR Key) then it will set new change password.

(8) ⁿ̄ ⁱn dFt Minimum Value Reset (Default) Mode:

ⁿ̄ ⁱn dFtstands for Minimum Value Reset mode. It is user input menu.

On the press of MENU key, saveYes/ saveNo(5 .Y/ 5 .n)screen will appear for saving new changed minimum reset value. If user will press "5 .n" (INC Key) then it will not

reset minimum value. If user will press "**5 .Y**" (DCR Key) then it will reset minimum value to default.

(9) ā̄ Rll dFt Maximum Value Reset (Default) Mode:

ā̄Rll dFt stands for Maximum Value Reset mode. It is user input menu.

On the press of MENU key, save Yes/ save No (**5 .Y/ 5 .n**) screen will appear for saving new changed maximum reset value. If user will press "**5 .n**" (INC Key) then it will not reset maximum value. If user will press "**5 .Y**" (DCR Key) then it will reset maximum value to default.

(10) U5b .d USB configuration Mode:

This mode is specially designed to configure device type of HT16Ew via USB configuring cable&mCRM Tool. Unit can be configured as either T+RH, T or RH.

To configure device type of HT16Ew unit user has to 1st go in **U5b .d** menu. On the press of MENU key, save Yes/ save No (**5 .Y/ 5 .n**) screen will appear. If user will press "**5 .n**" (INC Key) then it skip current mode. If user will press "**5 .Y**" (DCR Key) **U5b .d on** screen will appear which shows unit is ready to communicate with mCRM Tool.

After that connect HT16Ew configuration cable to laptop and select appropriate COM port. User can set/get configuration as shown in below screen:
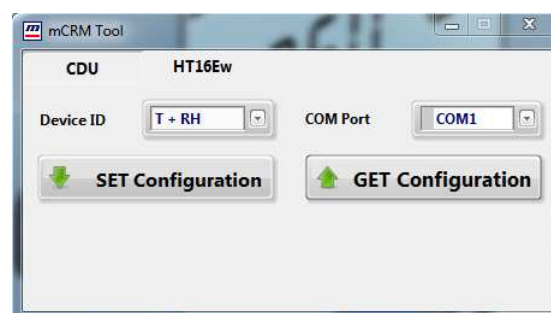
Once configuration is over user may exit **U5b .d on** mode as mention in menu-layout. If unit stays inactive or idle in this mode then after 90sec device will resume to run-mode automatically and communication with mCRM tool is terminated.

(11) rbRt on/oFF Battery Type Selection Mode:

Based on batteries used inside HT16Ew user have to select appropriate mode. If rechargeable NiMH battery used then user have to select **rbRt on** and if non-rechargeable batteries used then user have to select **rbRt oFF** . Make sure to install masibus recommend battery only.

8.4 IIbEE (Xbee Radio menu):

It is user configurable radio menu use for setting various radio network parameters like network id, device type etc.

(1) End .d on (End device Enable) Mode:

End .d on mode used to configure transmitter unit as "end device (Sleeping Device)".

On the press of MENU key, save Yes/ save No (5 .9/ 5 .n)screen will appear for saving new change. If user will press "5 .n" (INC Key) then it will discard the new changes. If user will press "5 .9" (DCR Key) then it will set unit as "end device" device.

(2)roUt on(Router Enable)Mode:

roUton mode used to configure Transmitter unit as "Router". Basic purpose of providing this mode is that, it will let the user to extend the wireless range between end device and logger device using router.

On the press of MENU key, save Yes/ save No (5 .9/ 5 .n) screen will appear for saving new change. If user will press "5 .n" (INC Key) then it will discard the new changes. If user will press "5 .9" (DCR Key) then it will set unit as "router" device.

Once device configured as router mode, even though power failure device stays in router mode when it power on again.

(3)2 .rSt(Xbee reset)Mode:

2 .rSt mode is radio reset mode, when radio link broken in HT16Ew means unit not transmitting data frame from last long hours, this mode does radio reset.

On the press of MENU key, reset Yes/ reset No (rSt .9/ rSt .n)screen will appear for saving new change. If user will press "rSt .n" (INC Key) then it will discard the new changes. If user will press "rSt .9" (DCR Key) then it will reset xbee.

(4)PAn .2 (Xbee PAN ID) Mode:

PAn .2 is xbeePAN(Personal Area Network) ID. It is user input menu, user can simply enter 4 Digit PAN ID ranging from 0000 to 9999 with the help of 3 operating keys. After setting PAnZ value device will lock toPAn .2 value.Make sure enter PAN ID must match with PAN ID of CDU/85xx+ unit. In short if PAN ID doesn't match then HT16Ew unit can not communicate with CDU/85xx+.

After setting left most digit, on the press of MENU key, save Yes/ save No (5 .9/ 5 .n)screen will appear for saving new changed PAn .2value. If user will press "5 .n" (INC Key) then it will not store new changed PAn .2value. New changed PAn .2 value can be stored in memory by Pressing "5 .9" (DCR Key).

(5) rtrY (Retry Number) Mode:

When HT16Ew doesn't receive any acknowledgment of transmitted frame, it try to re-established communication link with CDU/85xx+, by re-transmitting same frame again to CDU/85xx+. rtrY number can be set between I to 5. It shows number of time HT16Ew try to re-established communication link.

After setting retry digit, on the press of MENU key, save Yes/ save No (5 .9/ 5 .n) screen will appear for saving new changed rtrYvalue. If user will press "5 .n" (INC Key) then it will not store new changed rtrYvalue. New changed rtrYvalue can be stored in memory by Pressing "5 .9" (DCR Key).

Factory default value of rtrY is " I".

(6) ᒪᒧᕼᕓ (Link Check Timer) Mode:

ᒪᒧᕼᕓis for ensuring communication link between HT16Ew & CDU/85xx+ remains healthy. User can set the ᒪᒧᕼᕓminute value with INC key. Devicewill transmits frame at regular interval which is defined by ᒪᒧᕼᕓvalue. At every Link-Check Timer HT16Ew transmits one communication frame to CDU/85xx+ irrespective of ᕓᙏᕓᑲ value& exception. User can only configured ᒪᒧᕼᕓvalue from below set:

{1,5,10,15,30,60,120,180,240,360,480,720,1440,2880} this values are in minutes.

Factory default ᒪᒧᕼᕓ value is ᑑᑑᕼᑑ minutes.

8.5 ᙓᙏᒧᕓ(Exception menu):

It let the user to configure exception protocolparameters. Exception is defined as pre-defined band of temperature and humidity. Using this band transmitter will only transmit the frame if value of temperature or humidity crosses the band at particular PTMR interval. If end user set this band according to his requirement, the battery life will increase according and this will be the benefit for end user. This menu further divided in sub categories below,

(1) ᕓᕓᕓᕓ (Temperature Band) Mode:

Tbnd mode used to configure temperature band for exception protocolof transmitter unit. Suppose Tbndis set to 0.5then frame will only transmits when current temperature deviate ±0.5 °C from last measured temperature.

On the press of MENU key, screen will appear which will show the temperature bandfor exception protocol. To change the date user first press MENU key, the first digit will blink. Now using INC key user can change first digit. Now if user press the DCR key, cursor moves to second digit.Now using INC key user can change second digit.

On the press of MENU key again, save Yes/ saveNo (ᕓ .ᕓ/ ᕓ .ᕓ) screen will appear for saving new change. If user will press "ᕓ .ᕓ" (INC Key) then it will discard the new changes. If user will press "ᕓ .ᕓ" (DCR Key) then it will set unit as day.

Factory default valueofᕓᕓᕓᕓvalue is ᑑ .ᕓ ℃ .

If user press DCR key in between, it will shows the main menu screen.

(2) ᕼᕓᕓᕓ (Humidity Band) Mode:

ᕼᕓᕓᕓ mode used to configure Humidity band for exception protocol of transmitter unit.Suppose ᕼᕓᕓᕓ is set toᕓ .ᑑ then frame will only transmits when current measured humidity deviate ±ᕓ .ᑑ **%RH**from last measured humidity.

On the press of MENU key, screen will appear which will show the Humidity band for exception protocol. To change the date user first press MENU key, the first digit will blink. Now using INC key user can change first digit. Now if user press the DCR key, cursor moves to second digit.Now using INC key user can change second digit.

On the press of MENU key again, save Yes/ save No (5 .Y/ 5 .n) screen will appear for saving new change. If user will press "5 .n" (INC Key) then it will discard the new changes. If user will press "5 .Y" (DCR Key) then it will set unit as day.

Factory default value of Hbnd is 2 .0 **%RH**.

If user press DCR key in between, it will shows the main menu screen.

(3) FCtr (Frame Counter) Mode:

FCtr counts numbers of frame that are delivered to CDU/85xx+. If frame counts is greater than 9999 then FCtr resets to 0000 automatically. In between user can reset FCtr.

On the press of MENU key, save Yes/ save No (5 .Y/ 5 .n) screen will appear for saving new change. If user will press "5 .n" (INC Key) then it will not reset FCtr. If user will press "5 .Y" (DCR Key) then it will reset FCtr to 0000.

If user press DCR key in between, it will shows the main menu screen.

(4) Lo9 oFF/on (Log Active Status) Mode:

In case of communication break with CDU/85xx+, HT16Ew start logging data itself in flash memory. When communication re-established then HT16Ew transmits all log-data stored in flash memory. Log active status can be changed by this mode.

On the press of MENU key, save Yes/ save No (5 .Y/ 5 .n) screen will appear for saving new change. If user will press "5 .n" (INC Key) then it will not save any new changes. If user will press "5 .Y" (DCR Key) then it toggle Log Active Status.

Factory default Log Active Status is Lo9 oFF.

(5) LCtr (Log Counter) Mode:

LCtr counts numbers of Log data stored inside memory during communication break. If Log counts is greater than 9999 then LCtr resets to 0000 automatically. In between user can reset LCtr.

On the press of MENU key, save Yes/ save No (5 .Y/ 5 .n) screen will appear for saving new change. If user will press "5 .n" (INC Key) then it will not reset LCtr. If user will press "5 .Y" (DCR Key) then it will delete all log-data stored in flash memory &reset LCtr to 0000.

8.6 cLdr (Calendar Mode):

At every frame transmission HT16Ew receives current time-stamp as acknowledgment from CDU/85xx+. HT16Ew will automatically locked to current time-stamp once it receives acknowledgment from CDU/85xx+.Using this mode end user can see current date and time of transmitter unit, end user also change the date and time of transmitter unit. This menu further divided in sub categories as below,

(1) dd (day) Mode:

This mode shows the current date. End user can also change the date for unit.

On the press of MENU key, screen will appear which will show the day for current time .To change the date user first press MENUkey, the first digit will blink. Now using INC key user can change first digit. Now if user press the DCR key, cursor moves to second digit.Now using INC key user can change second digit.

On the press of MENU key again, save Yes/ save No (5 .Ꙩ/ 5 .ი)screen will appear for saving new change. If user will press "5 .ი" (INC Key) then it will discard the new changes. If user will press "5 .Ꙩ" (DCR Key) then it will set unit as day.

If user press DCR key in between, it will shows the main menu screen.

(2)m̄ი(month) Mode:
This mode shows the current month. End user also change the month for unit.

On the press of INC key, screen will appear which will show the month for current time .To change the date user first press MENU key, the first digit will blink. Now using INC key user can change first digit. Now if user press the DCR key, cursor moves to second digit.Now using INC key user can change second digit.

On the press of MENU key again, save Yes/ save No (5 .Ꙩ/ 5 .ი)screen will appear for saving new change. If user will press "5 .ი" (INC Key) then it will discard the new changes. If user will press "5 .Ꙩ" (DCR Key) then it will set unit as month.

If user press DCR key in between, it will shows the main menu screen.

(3) �ароꙐ (year) Mode:
This mode shows the current year. End user also can change the year for unit.

On the press of INC key, screen will appear which will show the year for current time .To change the date user first press MENU key, the first digit will blink. Now using INC key user can change first digit. Now if user press the DCR key, cursor moves to second digit.Now using INC key user can change second digit.

On the press of MENU key again, save Yes/ save No (5 .Ꙩ/ 5 .ი)screen will appear for saving new change. If user will press "5 .ი" (INC Key) then it will discard the new changes. If user will press "5 .Ꙩ" (DCR Key) then it will set unit as year.

If user press DCR key in between, it will shows the main menu screen.

(4) ΗΗ(hour) Mode:
This mode shows the current hour. End user also can change the hour for unit.

On the press of INC key, screen will appear which will show the hour for current time .To change the date user first press MENU key, the first digit will blink. Now using INC

key user can change first digit. Now if user press the DCR key, cursor moves to second digit.Now using INC key user can change second digit.

On the press of MENU key again, save Yes/ save No (5 .Ч/ 5 .∩)screen will appear for saving new change. If user will press "5 .∩" (INC Key) then it will discard the new changes. If user will press "5 .Ч" (DCR Key) then it will set unit as hour.

If user press DCR key in between, it will shows the main menu screen.

(5) m̄∩(minute) Mode:
This mode shows the current minute. End user can also change the minute for unit.

On the press of INC key, screen will appear which will show the minute for current time .To change the date user first press MENU key, the first digit will blink. Now using INC key user can change first digit. Now if user press the DCR key, cursor moves to second digit.Now using INC key user can change second digit.

On the press of MENU key again, save Yes/ save No (5 .Ч/ 5 .∩)screen will appear for saving new change. If user will press "5 .∩" (INC Key) then it will discard the new changes. If user will press "5 .Ч" (DCR Key) then it will set unit as minute.

If user press DCR key in between, it will shows the main menu screen.

(6) 55(second) Mode:
This mode shows the current second. End user can also change the second for unit.

On the press of INC key, screen will appear which will show the second for current time .To change the date user first press MENU key, the first digit will blink. Now using INC key user can change first digit. Now if user press the DCR key, cursor moves to second digit.Now using INC key user can change second digit.

On the press of MENU key again, save Yes/ save No (5 .Ч/ 5 .∩)screen will appear for saving new change. If user will press "5 .∩" (INC Key) then it will discard the new changes. If user will press "5 .Ч" (DCR Key) then it will set unit as second.

If user press DCR key in between, it will shows the main menu screen.

8.7 ᾱ∩Ɛ 5 (Maintenance Mode

This mode is not user accessible mode which is use for factory setting purpose,which is password protected by masibus factory.

(9).Battery installation guide:
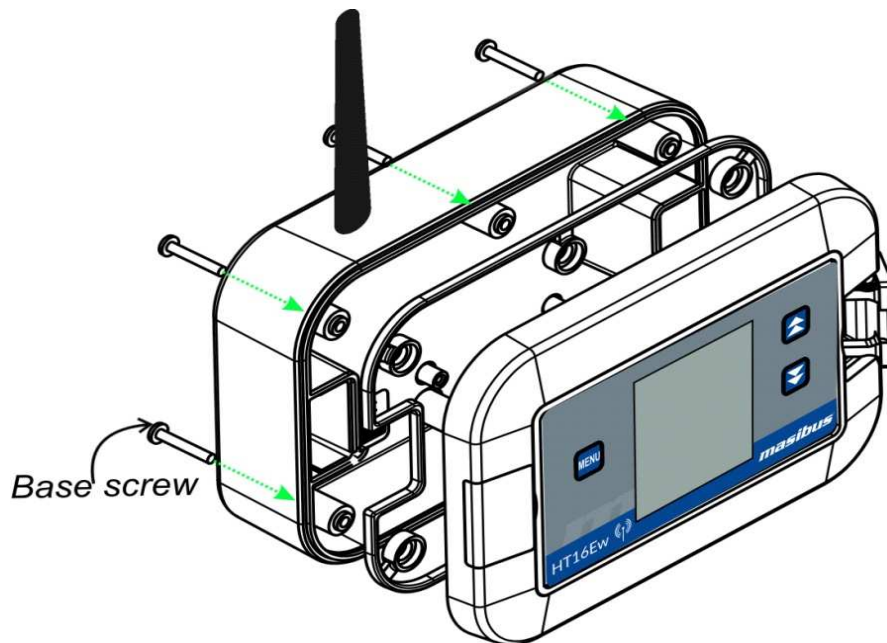
Boxing/unboxingof unit

Step-1 Beforeapplying new batteries check low battery status on display. Low battery status indicated by single battery bar followed by min max status.
Step-2 First of all remove HT16Ew unit from wall mount base by sliding it to upwards.After that remove all 6 base screws from unit &turn off switch no. 1 before applying new batteries. Make sure display is off while inserting new battery.
Step-3 After inserting new batteries turn on switch no. 1 re-pack unit.

masibus®
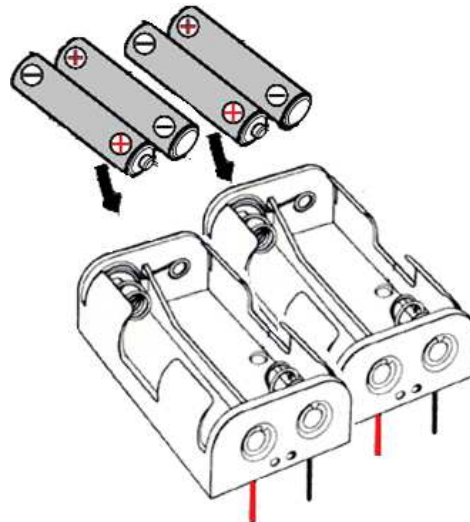
Step-4 Make sure battery polarity match with respective battery holder before insertingnew battery. Switch on unit after inserting new battery.Make sure device onproperly by looking display parameters.follow reverse procedure do boxing and mounting of unit on back-plate.

Note: Battery used for End device (Sleeping Device) only
For Router device, user has to give 5V USB charger for continuous power.

(10). Communication:

Transmitter is communicating on Wireless RF 2.4 GHz Zigbee Protocol with central Logger Unit. Transmitter is battery operated low power unit which is sending data on Push time interval defined by user to Logger unit. Time interval should be 1 min, 5 min, 10 min and in hours.

After every data Push on intervals it will go in deep sleep mode till next interval which will save power for long battery life.

In one network, all transmitters and one Logger unit should be configure with same PAN ID.

CONTACT DETAIL OF SERVICE DEPARTMENT

Masibus Automation & Instrumentation Pvt. Ltd.
B/30, GIDC Electronics Estate,
Sector-25, Gandhinagar-382044, Gujarat, India
☎+91 79 23287275-79 📠+91 79 23287281-82
Email: support@masibus.com
Web: www.masibus.com