PHCbi

Operating Instructions
LabSVIFT Transmitter

MTR-IOTWE1

Please read the operating instructions carefully before using this product, and keep the operating instructions for future use.

CONTENTS

INTRODUCTION

■ Read the operating instructions carefully before using the product and follow the instructions for safe operation.

■ PHC Corporation takes no responsibility for safety if the product is not used as intended or is used with any procedures other than those given in the operating instructions.

■ Keep the operating instructions in a suitable place so that they can be referred to as necessary.

■ The operating instructions are subject to change without notice for improvement of performance or function.

■ Contact our sales representative or agent if any page of the operating instructions is missing or the page order is incorrect, or if the instructions are unclear or inaccurate.

■ No part of the operating instructions may be reproduced in any form without the express written permission of PHC Corporation.

■The operating instructions are only for LabSVIFT Transmitter MTR-IOTWE1 made by PHC Corporation.

IMPORTANT NOTICE

PHC Corporation guarantees this product under certain warranty conditions. However, please note that PHC Corporation shall not be responsible for:

  ● Any loss or damage to the contents of the monitored product

  ● Any indirect damage caused by data damage or loss

<Intended Use>

This equipment is designed for monitoring laboratory equipment.

Do not use for Medical device.

SAFETY PRECAUTIONS

Be sure to observe the operating instructions as they contain important safety advice.

For correct and safe use of the product, follow the precautions and procedures in this operating instruction carefully. Failure to do so could result in injury or damage to the product.

Precautions are illustrated in the following way:

⚠ **WARNING**

Warning indicates a potentially hazardous situation which, if not avoided, could result in serious injury or death.

⚠ **CAUTION**

Failure to observe CAUTION signs could result in injury to personnel and damage to the unit and associated property.

The following symbols are used in this document and some of them are attached to the unit.

🚫	**Actions are prohibited.** The illustration in the circle and the description adjacent to the symbol provide detailed information about the action which is prohibited.
❗	**Actions are mandatory.** The illustration in the circle and the description adjacent to the symbol provide detailed information about the action to be taken.
⚠	**Caution must be taken.** The description adjacent to the symbol provides detailed information about the caution to be taken.
📖	Read the operating instructions carefully before using the product.

⚠ WARNING

Installation

🚫
- **Do not use the unit outdoors.**
  Exposure to rain may cause an electric leakage and/or an electric shock.
- **Do not install the unit in a location where flammable or volatile substances are present.**
  Installing the unit in such a location may cause explosions and/or a fire.
- **Do not install the unit in a location where there are high levels of moisture or where it may be splashed with water.**
  This may cause the insulation to deteriorate, leading to an electric leakage and/or an electric shock.
- **Do not install the unit in a location where corrosive gases such as acids are present.**
  Deterioration of the insulation due to corrosion of the electric components may cause an electric leakage or an electric shock.
- **Do not leave the plastic bags used for packing in a place where they can be reached by small children.**
  This may result in unexpected accidents such as suffocation.
- **Do not use this device close to a pacemaker user.**
  Radio waves from this device may affect the operation of pacemakers.

❶
- **Before mounting various sensors to a refrigerator or an incubator, stop the operation of the refrigerator.**
  Accidental contact with electrical components inside the refrigerator may cause electric shock or injury.
- **Investigate the environment to use Transmitter beforehand.**
  It will effect to some other device or be affected by using the same frequency band with others. Refer to Page 45 for CHs which Transmitter uses.

⚠
- **Do not install equipment that can be a source of noise, such as electrical equipment using the ISM frequency band (2.4, 5.8 GHz), near the unit.**
  Radio waves from such equipment may cause malfunction.
- **This unit is not suitable for use where children may be present.**
  Unexpected accidents may occur.

SAFETY PRECAUTIONS

⚠ WARNING

AC Adaptor (When using AC Adaptor as Power supply)

🚫
- **Never damage the AC Adaptor (by breaking, adapting, placing near a source of heat, bending with force, twisting, pulling, adding weight, or binding).**
  The power plug may cause an electric shock, a short circuit, or a fire. Contact our sales representative or agent for repairing the cord and plug.
- **Do not place this unit or other equipment in a position where it is difficult to disconnect the AC Adaptor.**
  Failure to disconnect the AC Adaptor may cause a fire in the event of a problem or malfunction.
- **Do not plug or unplug the AC Adaptor with wet hands.**
  This may cause an electric shock.

❗
- **Remove dust from the AC Adaptor periodically.**
  Dust on the AC Adaptor may lead to an insulation failure due to moisture and thus cause a fire. Disconnect the AC Adaptor and wipe it with a dry cloth.
- **Make sure the power supply plug of the AC Adaptor is pushed fully in.**
  Faulty insertion of the power supply plug may cause an electric shock or a fire due to generation of heat. Never use a damaged power supply plug or loose power outlet.
- **Grip the AC Adaptor when disconnecting it from the outlet.**
  Pulling the cord of the AC Adaptor may cause an electric shock or a short circuit.
- **Disconnect the AC Adaptor when the unit is not in use for long periods.**
  Keeping the unit connected may cause an electric shock, an electric leakage, or a fire due to the deterioration of insulation.
- **Before proceeding with maintenance or checking the unit, disconnect the AC Adaptor.**
  Performing the work while power is still being supplied to the product or while the AC Adaptor is still connected may cause an electric shock and/or injury.

⚠ **WARNING**

When something is wrong with the unit

🚫
- **Never disassemble, repair, or modify the unit yourself.**
  Any work carried out by unauthorized personnel may result in an electric shock. Contact our sales representative or agent for maintenance or repair.

❗
- **Disconnect the power supply if something is wrong with the unit.**
  If the unit keeps running under such conditions, there may be a risk of an electric shock or a fire. Contact our sales representative or agent immediately for maintenance or repair. **(AC Adaptor or USB cable is selected for the power supply depending the insulation site.)**
- **Use designated parts for parts replacement.**
  Using an incorrect part may cause a fire.

When using the unit

🚫
- **Never insert metal objects such as pins and wires into any gap on the unit.**
  This may cause a malfunction.
- **Never splash water directly onto the unit.**
  This may cause an electric shock or short circuit.

When storing and disposing of the unit

❗
- **Ask a qualified contractor to carry out disassembly/disposal of the unit and do not leave the unit in a location that can be accessed by third parties.**
  This may result in unexpected accidents (e.g. the unit may be used for unintended purposes)
- **Before disposing of the unit with biohazardous danger, decontaminate the unit to the extent possible by the user.**

FCC/ISED/ICES Statements

(FCC)

"This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

(ISED)

This device contains licence-exempt transmitter/receiver that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

(ICES-003)

CAN ICES-003(B) / NMB-003(B)

Trademarks

Wi-Fi is a registered trademark of the Wi-Fi Alliance.

The official name of Windows® is Microsoft® Windows® Operating System.

Windows and Microsoft Edge are registered trademarks of Microsoft Corporation in the United States and other countries.

Required PC Environment for Settings

The screen may not be displayed correctly or may not be available depending on the settings of the browser or an environment other than the recommended environment.

(Recommended environment of a PC for settings)

PC OS: Windows 10

Web browser: Microsoft Edge

System Configuration Diagram

Laboratory equipment are classified into 3 groups according to the method of getting monitoring data.

Gen.3 : PHC products which support LabSVIFT transmitter (hereinafter referred to as
  Transmitter) functions and don't support RS-485 function.
  Example : MDF-DU503VH/DU703VH

Gen.2 : PHC products which have RS-485 functions and don't support Transmitter functions.
  Example : MPR-S500H/S500RH

Gen.1 : Products which don't support both Transmitter and RS-485 function.
  Example : MDF-U731M　Third party products

Transmitter uses appropriate configurations for each group product as following pages.

Transmitter gets monitoring data and transfer them to LabSVIFT WebSERVICE by Wi-Fi or LAN transmission.

🛈	● **The IT transmission Port and Protocol are necessary for transmission with the LabSVIFT WebSERVICE.** ・Port (Protocol): TCP 443 (HTTPS) or TCP 8883 (MQTT over TLS) must be enabled and used. ・NTP Server must be enabled and used. ● **About these details, contact a facility manager of the place where Transmitter is installed.　WebService operations, refer to the LabSVIFT Web Service instruction manual.**

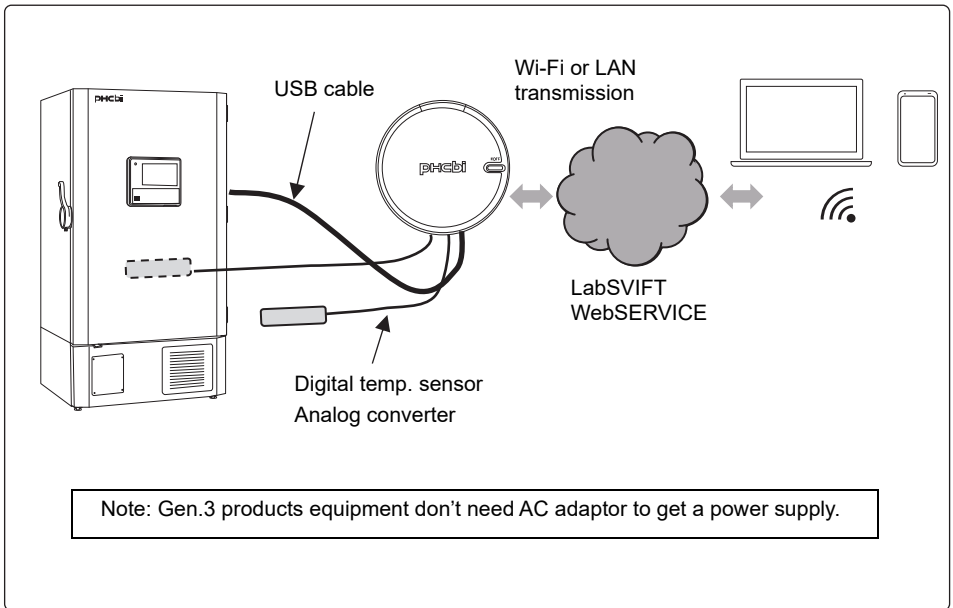|	
⚠	● **Wi-Fi or LAN transmission methods may cause communication errs due to those conditions. And in those cases, data transmission errs may happen.**

System Configuration Diagram

Gen.3 : Transmitter uses USB function to communicate with Gen.3 , and can get a power
supply via a connected USB cable from them.
It cannot communicate Gen.3 with RS-485 function.

With Gen.3 , Transmitter can get the following data. (these are examples)
 USB transmission   -> Getting equipment's data. (temperature, door open/close data, internal
                         setting data, mechanic condition data etc.)
Digital sensor   -> Getting the equipment's internal temperature or Ambient one.
Analog converter   -> Getting DC level from another measuring equipment.

The below is the example installation of Transmitter with MDF-DU503VH/DU703VH.

USB cable

Wi-Fi or LAN
transmission

LabSVIFT
WebSERVICE

Digital temp. sensor
Analog converter

Note: Gen.3 products equipment don't need AC adaptor to get a power supply.

Gen.2 : Transmitter uses RS-485 function to communicate with Gen.2.
        To use RS-485 function, MTR-480 is necessary, and that must be pre-installed in the
        Gen.2 equipment. And It is necessary to use a bundled AC adaptor to get a
        power supply, and to set it to the local mode and input Device ID. (Refer to page 21)
        Transmitter can communicate with Gen.2 using RS-485 transmission, but can not
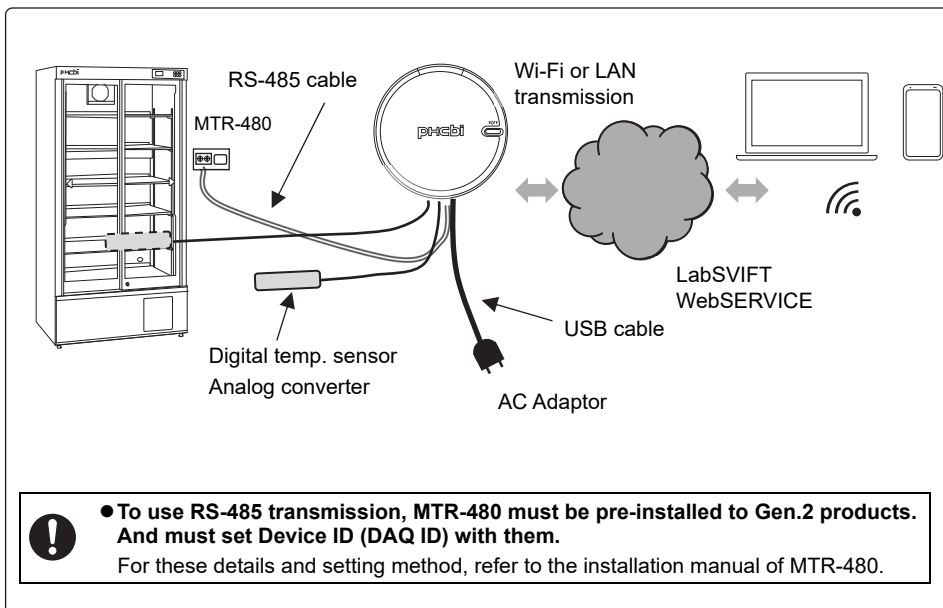   use USB transmission with Gen.2.

With Gen.2, Transmitter can get the following data. (these are examples)
RS-485 transmission -> Getting equipment's data. Ex) temperature, door open/close data etc.
Digital sensor   -> Getting the equipment's internal temperature or Ambient one.
Analog converter   -> Getting DC level from another measuring equipment.

The below is the example installation of Transmitter with MPR-S500H/S500RH.

⚠ ● **To use RS-485 transmission, MTR-480 must be pre-installed to Gen.2 products.**
    And must set Device ID (DAQ ID) with them.
    For these details and setting method, refer to the installation manual of MTR-480.

# System Configuration Diagram

Gen.1 : Transmitter doesn't have any communication methods with this group.
　　　　 It is necessary to use a bundled AC adaptor to get a power supply.

With Gen.1, Transmitter can get the following data. (these are examples)

Digital sensor　　　 -> Getting the equipment's internal temperature or Ambient one.

Analog converter　 -> Getting DC level from another measuring equipment.

The below is the example installation of Transmitter with MDF-U731M.
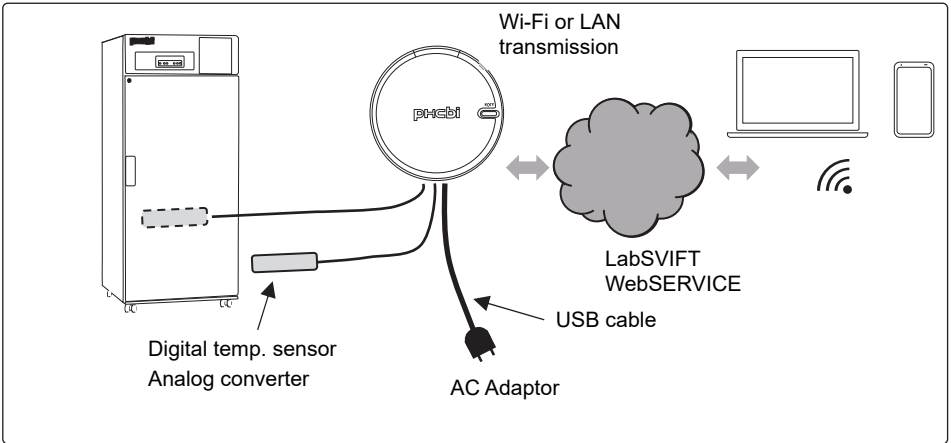
The below is the example installation of Transmitter with third party equipment.
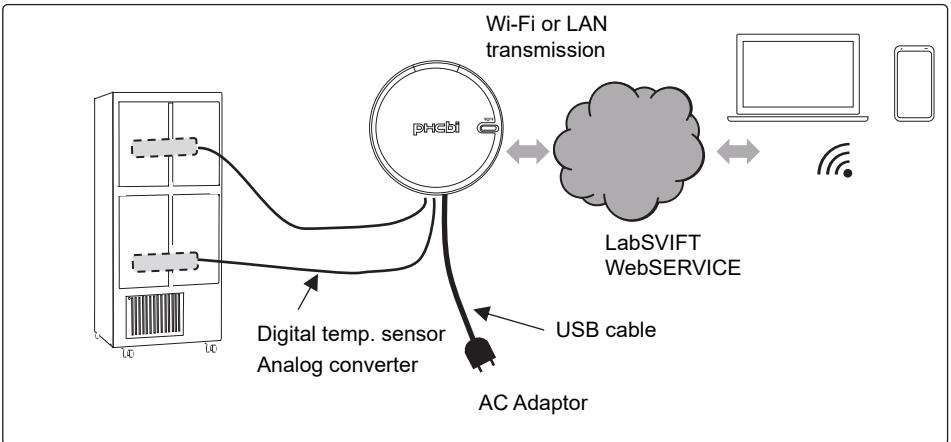
Unit Part Names of the Unit
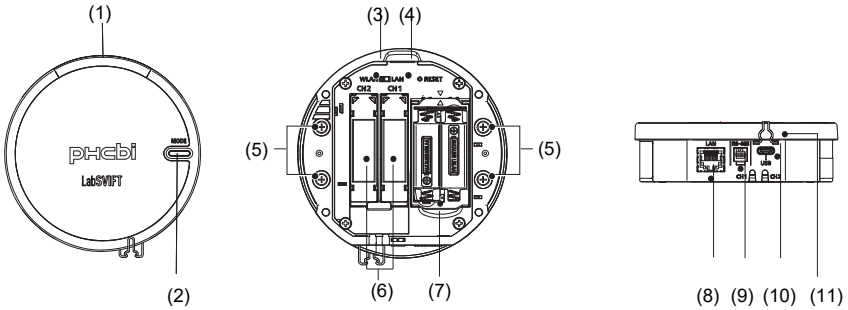
No	name	function
(1)	LED light (*)	LED displays several operating statuses. (Lit green: Connecting to the cloud / Lit red: Disconnecting from the cloud / Blinking red: Running on battery / Lit orange: AP mode)
(2)	MODE button	Press and hold for 5 seconds or more to set Transmitter on AP mode.
(3)	WLAN/LAN selector switch	Used to switch modes between Wi-Fi and a wired LAN.
(4)	Reset switch	Reset Transmitter. Press and hold for 5 seconds or more to restore factory settings.
(5)	Neodymium magnet	Used to fix Transmitter to laboratory equipment.
(6)	Optional device terminals (CH1/CH2)	Used to set optional modules with Transmitter. (Optional modules are not bundled)
(7)	battery box	Used to put batteries in.
(8)	LAN port	Used for a wired LAN connection
(9)	RS-485 port	Used for RS485 connection
(10)	USB port	Used for USB connection with Gen.3 (**) products. When connected to Gen.2 or 1 (**) devices, it is used for a connection with an AC adaptor.
(11)	USB cable clamp	Used to prevent the USB cable from being pulled out.

*: The LED of Transmitter displays several operating statuses (example: battery condition, transmission condition, etc.). But it does not indicate any abnormal conditions of monitoring equipment. Refer to Page 39 for details.
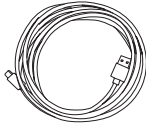
**: Refer to Page 9.
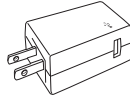
Bundled Items

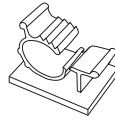The below items are bundled with Transmitter.
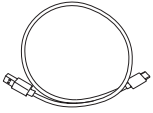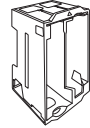

USB Cable 0.5 m (White)

USB Cable 3 m (Black)
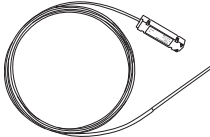
AC Adaptor

Clamp Type cable clamp (n=3)

Battery Box (*)

*: Batteries are not bundled.

Optional Items

Optional Digital PT sensor

Optional Digital Thermistor sensor

Optional Analog converter

Band type cable clamps (n=4) are bundled with each option.

Installation flow
Part 1 : Connect Transmitter to Power supply with AC Adaptor

When configuring network settings, Gen.2(*) and Gen.1(*) products require the bundled AC adaptor to get a power supply. (*: Refer to Page 9)

1. Open the back cover by pressing its claw. Then set the network selector SW to "LAN" or "WLAN" which is used for Network settings after Part 2.

Selector SW
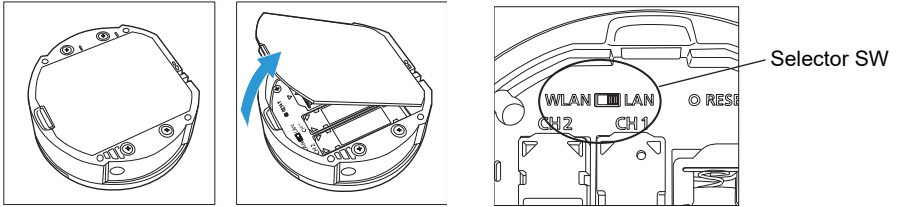
When using a wired LAN for settings, turn this to LAN.
When using a wireless LAN for settings, turn this to WLAN.

2. Connect the bundled USB cable （0.5 m or 3m） to Transmitter .
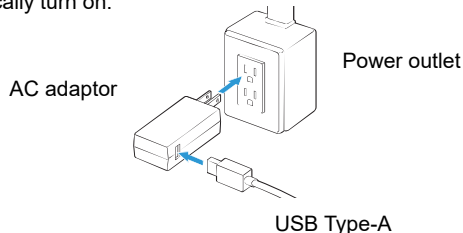3. Pull out the USB cable clamp and then fix it to the cable.
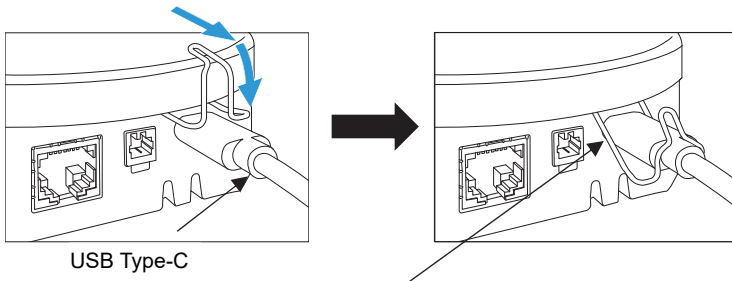
USB Type-C

After inserting the USB cable into the USB port, pull out and lower the USB cable clamp in the direction indicated by the arrow to fit it.

4. Connect the USB cable to the bundled AC adaptor and plug it into a power outlet.

Transmitter will automatically turn on.

Power outlet

AC adaptor

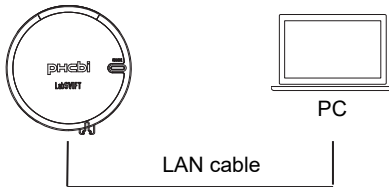USB Type-A

Part 2 : PC network settings of a PC

Part 2-1 : Network Settings for using a wired LAN

This section describes network settings with a wired LAN.

1. Prepare a PC for setting (hereinafter referred to as PC) and a LAN cable.
2. Set wired LAN network settings on the PC as follows:

<Wired LAN settings on PC for setting>
   IP address: 192.168.100.XX (XX: 2 ~ 254)
 * Except   192.168.100.10 (Don't use this IP)
      Subnet: 255.255.255.0

3. Connect them as follows.

PC

LAN cable

Note: About Re-setting method, refer to Page 38.
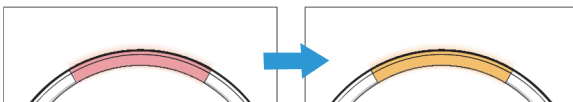
→ Proceed to Part 3.

Part 2-2 : Network Settings for using a wireless LAN

This section describes network settings with a wireless LAN.

1. Prepare a PC   (wireless LAN-enabled).
2. Set a wireless LAN network setting of the PC to DHCP.
3. Press and hold the Transmitter "MODE" button for 5 seconds to enter AP mode.
   (The LED goes off and then lights up in orange.)

Red LED   Orange LED

About 30 seconds after the LED lights up in orange, "LabSVIFTXXXXXXXX" is displayed in the network list of the wireless LAN of the PC. Then Select "LabSVIFTXXXXXXXX" of the displayed devices.

4. Input MAC_ID in the Security key field of the Network list for the PC.
   MAC_ID is printed on the name plate attached on the side of Transmitter.

   Note 1: On most types of PCs, clicking Wireless Mark on MENU will bring up a connecting
         network list. When the device is selected, the security key is required to
         connect it.

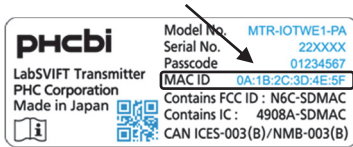   Note 2 : "XXXXXXXX" characters indicates "Serial No." on the name plate.

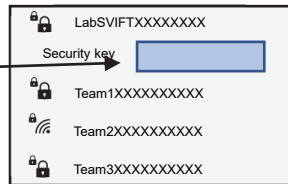When you input MAC ID, delete ":" of MAC ID
Example ID) OA:1B:2C:3D:4E:5F
-> INPUT DATA   0A1B2C3D4E5F

    * MAC ID is the below.
      (This is a sample ID.)

(12 characters, all capital letters, without ":")

Network list Example

PHcbi
LabSVIFT Transmitter
PHC Corporation
Made in Japan

Model No. MTR-IOTWE1-PA
Serial No.   22XXXX
Passcode   01234567
MAC ID   0A:1B:2C:3D:4E:5F
Contains FCC ID : N6C-SDMAC
Contains IC :   4908A-SDMAC
CAN ICES-003(B)/NMB-003(B)

🔒	LabSVIFTXXXXXXXX
	Security key
🔒	Team1XXXXXXXXXX
📶	Team2XXXXXXXXXX
🔒	Team3XXXXXXXXXX

→ Proceed to Part 3.

⚠ ● **Sensor data and temperature data are not retrieved while the LED light is orange.**

Part 3 : Transmitter network settings

Sign In

This section describes the sign in procedure for the Transmitter Setting screen.

Sign in requires "Serial No." and "Passcode" of Transmitter.
Refer to the name plate label attached on the side of Transmitter.

1. Enter http://192.168.100.10/ in your browser address bar to access Web Service Application on the PC.
2. On the "Sign in" screen, enter the Serial No. in the "Username" field and the name plate "Passcode"   in the "Password" field, and click the [Sign in] button.
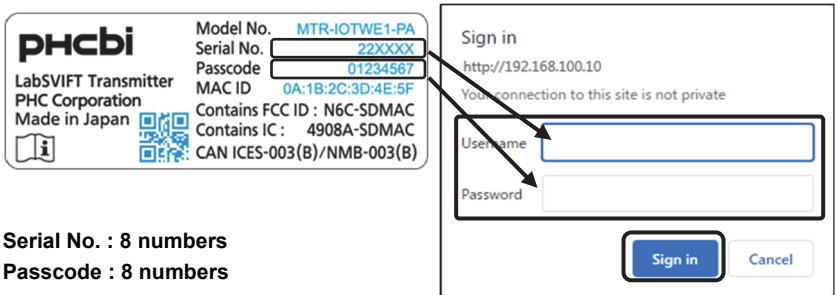
※ **Serial No. : 8 numbers**
※ **Passcode : 8 numbers**

NOTE:The password can be changed. Refer to "Change Password" on Page 22

"Network Setting" screen appears.
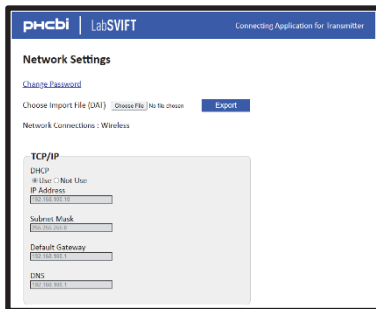
<table>
<tr><td rowspan="2">🚫</td><td>● **When there is an inquiry about the password of this system, do not reveal it.**
Service members never make inquiries about the password of this system.</td></tr>
<tr><td>● **Do not divulge the password used in this system or any information related to the password.**</td></tr>
<tr><td>❗</td><td>● **To prevent leakage or theft, set the password for this system according to the rules described in the instruction manual.**
● **If you feel that the password of this system has been leaked to others, change the password immediately.**
If you are unable to change the password for this system, contact service members.</td></tr>
</table>

Network Settings

This section describes the procedure of network settings for Transmitter.

1. Select "Use" or "Not Use" of the DHCP feature.
2. When "Not Use" is selected for the DHCP feature, enter the static IP address information.

TCP/IP

DHCP
○ Use ● Not Use
IP Address
192.168.100.10

Subnet Mask
255.255.255.0

Default Gateway
192.168.100.1

DNS
192.168.100.1

Proxy Settings

This section describes the procedure of Proxy server settings for Transmitter.

1. Select "Use" or "Not Use" of the Proxy server.
2. When "Use" is selected for the Proxy feature, enter the Proxy server information.

Proxy
○ Use ○ Not Use
Address

Port

User ID

Password

Part 3 : Transmitter network settings

Wireless LAN Settings

This section describes the procedure for wireless LAN settings for Transmitter.

Items	Contents
SSID	Enter the SSID.
Network Authentication	Select the encryption mode from the following: OPEN (WEP OFF), OPEN (WEP ON), WPA2-Personal, WPA2-Enterprise (PEAP), WPA2-Enterprise (EAP-TLS)
WEPKey	Input is enabled when OPEN (WEP ON) is selected. Enter the encryption key.
Pre-Shared-Key	Input is enabled when WPA2-Personal is selected. Enter the encryption key.
EAP-User ID	Input is enabled when WPA2-Enterprise (PEAP) or WPA2-Enterprise (EAP-TLS) is selected. Enter the User ID required for server authentication.
EAP Password	Input is enabled when WPA2-Enterprise (PEAP) is selected. Enter the Password required for server authentication.
CA Certificate	Selection is enabled when WPA2-Enterprise (PEAP) or WPA2-Enterprise (EAP-TLS) is selected. Register the CA certificate (in PEM format).
Client Certificate	Selection is enabled when WPA2-Enterprise (EAP-TLS) is selected. Register the client certificate (in PEM format).
Client Key	Selection is enabled when WPA2-Enterprise (EAP-TLS) is selected. Register the private key file (in PEM format) of the client certificate.
Client Key Password	Selection is enabled when WPA2-Enterprise (EAP-TLS) is selected. Enter the password of the private key file of the client certificate.

RS485 Communication Setting

This section describes the procedure for RS485 communication settings between Transmitter and Gen.2(*) products.

⚠ ●**For this communication, MTR-480 must be pre-installed to Gen.2(*) products.**
And must set it to the local mode and Device ID (DAQ ID).
For these details and setting method, refer to the installation manual of MTR-480.
Note: It is not necessary to set Device ID for Gen.3(*) products.

---

1. Enter the "Device ID" to be used for RS485 communication.

Device ID
* Enter the Device ID of the equipment. (1~199)
Device ID
1

SNTP Server Settings

This section describes the procedure of SNTP Server settings for Transmitter.

1. When using an SNTP server, enter "SNTP server address".

Complete Network Settings

Click "Submit" to complete Transmitter network settings.

Submit

Success.
OSS License

Copyright © PHC Corporation 2023

Sign Out

Click the [X] button in your browser to sign out.
After Sign out, turn off Transmitter by pulling out the USB cable from it.
And turn on it again by connecting the USB cable.

Part 3 : Transmitter network settings

Change Password

This section describes the procedure to change the password.

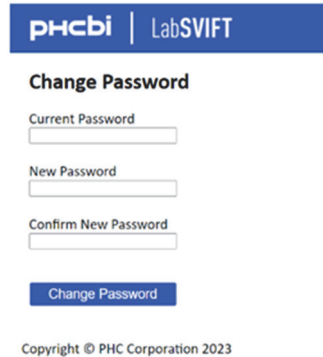> ⚠ ● **Be sure to change the password.**
> If you continue to use the "initial password", it may cause security and system problems.
> Be sure to change the password.

1. Click [Change Password].

2. Enter the requirements on the [Change Password] screen.

3. Click [Change Password].

> 🚫 ● **Do not register a new password that is the same as the current password.**
>
> ⚠ ● **The password after change must have a minimum of 8 characters up to a maximum of 20 characters, must contain letters, numbers and symbols.**

Part 4 : Install Transmitter on Laboratory equipment

This section describes some examples of installation configurations of Transmitter
and a monitored equipment. These are only reference configurations.
And these examples are described for Gen.1(*), Gen.2(*), and Gen.3(*) respectively.
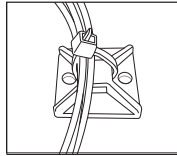(*: Refer to Page 9)

The below clampers are used to fix cables in installment examples.

Clamp Type
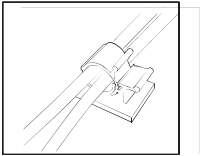
Band Type

Clamp type cable clamps are
bundled with Transmitter.

Band-type cable clamps are bundled
with the optional module.

Part 4 : Install Transmitter on Laboratory equipment

🚫
- ● **Do not install Transmitter upside down when installing it on the top surface of the equipment.**
  Batteries' liquid may leak and cause injury and damage to Transmitter.

- ● **Do not install Transmitter to on a heat-sensitive sterilizer or other equipment where the surface of the equipment is hot.**
  Transmitter may get damaged.

- ● **Do not install a wired LAN or temperature sensor when installing the unit on the front of the equipment.**
  When opening or closing the door, it may cause damage to the equipment or sensor.

❗
- ● **Install Transmitter within 2 m in height.**
  When It drops, it may cause injury.

- ● **Fix the RS-485 communication cable, optional cables and USB cables with a cable clamp (bundled with the Transmitter and optional modules).**

- ● **If a person or an object gets caught in the excess part of the cable, it may fall or be damaged, resulting in malfunction or injury.**

- ● **Before fixing the cable clamps, remove dirt from the mounting surface.**

- ● **Before fixing the cable clamps, check the position of the unit, each option and AC Adaptor beforehand to make sure that tension is not applied to the cables.**
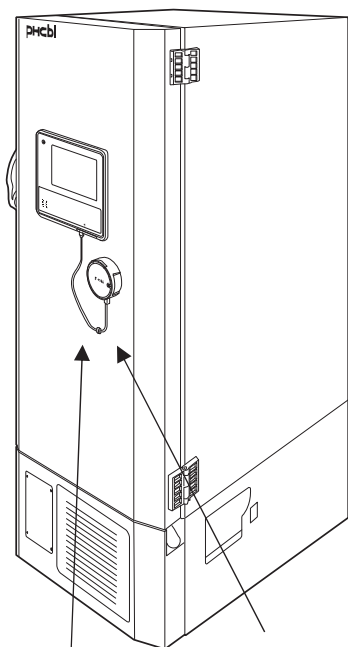
- ● **Make sure that the unit is securely fixed and installed. Failure to do so may cause it to fall off, resulting in damage to the equipment or injury.**

- ● **Do not install Transmitter on the top of the power supply section. Install it in a place where the operation of the equipment will not malfunction even if batteries leak.**

- ● **In the case of using Wi-Fi communication, install Transmitter in a position where it can be visually checked from the access point.**
  If the condition of Wi-Fi communication is wrong, Communication errs may happen.

① Case of installing on the front of products

This installation method is only for MDF-DU503VH/DU703VH.

Connect the USB port (Type-A) of the DU503VH/DU703VH control panel and the USB port (Type-C) of Transmitter with the bundled USB cable (0.5 m white)

USB cable (0.5 m white)

Fix the USB cable with Cable clamper (Clamp Type)

🚫 **Don't making following connections on the front of the products.**
- Installing Optional Digital PT sensor /Digital Thermistor sensor / Analog converter.
- RS-485 communication connection.
- Wired LAN connection.

If making these connections, Transmitter may fall off and result in malfunction. When making these ones, install Transmitter on the side or top of the products.
- In the case of installing on the side, refer to Page 26 and 27.
- In the case of installing on the top, refer to Page 28 and 29.

❗ **When installing Transmitter on the front of the product, use 0.5 m white USB cable.**

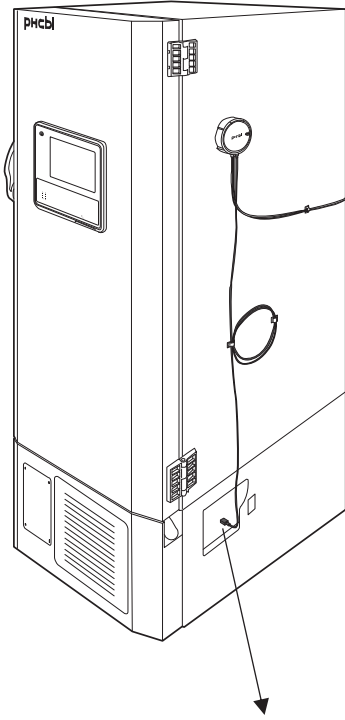🚫 • **Never install Transmitter on the front doors of product other than MDF-DU503VH/DU703VH.**
It may fall off and result in malfunction.

⚠️ • **Only MDF-DU503VH/DU703VH can have Transmitter installed on the front door.**

Part 4 : Install Transmitter on Laboratory equipment

② Case of Installing on the side of products
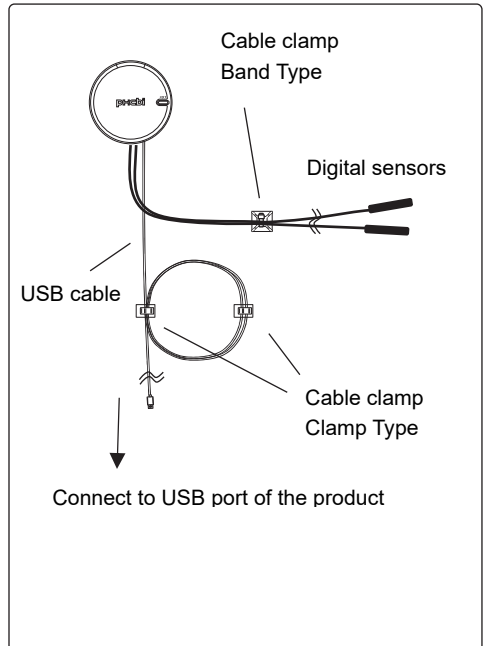

USB port of the product

Gen.3 products

Connect the USB port (Type-A) located on the side of the product and the USB port (Type-C) of Transmitter with the included USB cable (3 m black).

- Optional Digital PT sensor / Digital Thermistor sensor / Analog converter can be mounted.
- RS-485 communication is not available.
- Wired LAN connection is available.

(Installation sample diagram)
Each part scale is not real, only image.

Cable clamp
Band Type

Digital sensors

USB cable

Cable clamp
Clamp Type

Connect to USB port of the product

Note: About installing method of the optional modules (Digital PT sensor / Digital Thermistor sensor / Analog converter), refer to Page 41.
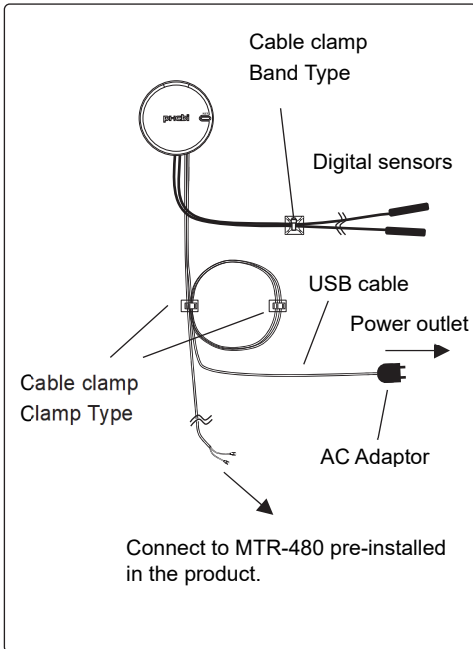
Gen.2 products

Connect the USB port (Type-C) of Transmitter to the bundled AC Adaptor.
Connect the AC Adaptor to the power source.

- Optional Digital PT sensor / Digital Thermistor Sensor / Analog converter can be mounted.
- RS-485 communication connection is available.
- Wired LAN connection is available.

(Installation sample diagram)
Each part scale is not real, only image.

Cable clamp Band Type

Digital sensors

USB cable

Power outlet

Cable clamp Clamp Type

AC Adaptor

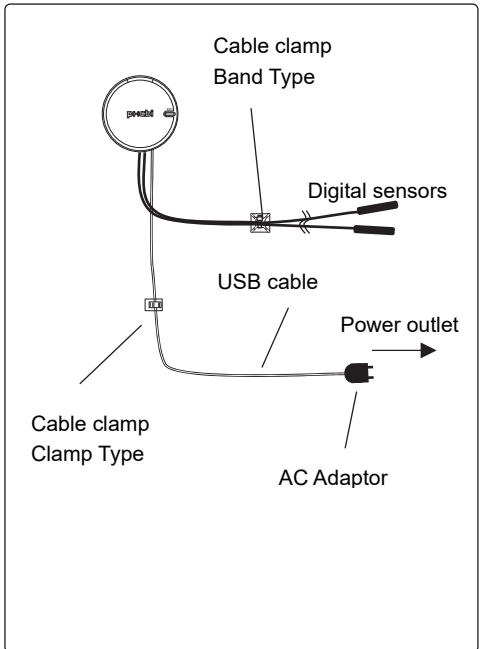Connect to MTR-480 pre-installed in the product.

Gen.1 products

Connect the USB port (Type-C) of Transmitter to the bundled AC Adaptor.
Connect the AC Adaptor to the power source.

- Optional Digital PT sensor / Digital Thermistor sensor / Analog converter can be mounted.
- RS-485 communication connection is not available.
- Wired LAN connection is available.

(Installation sample diagram)
Each part scale is not real, only image.

Cable clamp Band Type

Digital sensors

USB cable

Power outlet

Cable clamp Clamp Type

AC Adaptor

Note: About installing method of the optional modules (Digital PT sensor / Digital Thermistor sensor / Analog converter), refer to Page 41.

Part 4 : Install Transmitter on Laboratory equipment
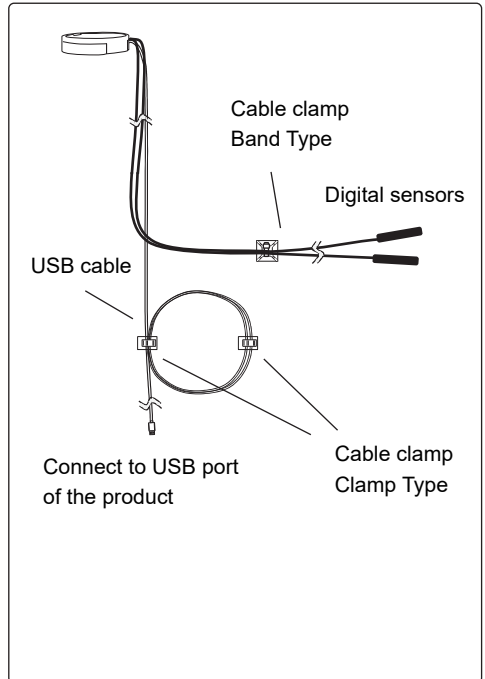
③ Case of installing on the top surface of products
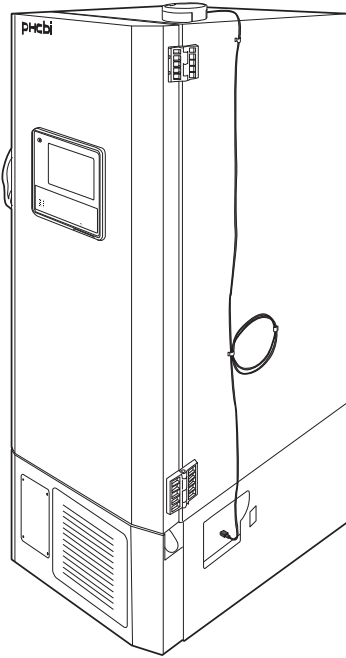
Gen.3 products

Connect the USB port (Type-A) located on the side of the product and the USB port (Type-C) of Transmitter with the included USB cable (3 m black).

● Optional Digital PT sensor / Digital Thermistor sensor / Analog converter can be mounted.
● RS-485 communication is not available.
● Wired LAN connection is available.

(Installation sample diagram)
Each part scale is not real, only image.

Cable clamp
Band Type

Digital sensors

USB cable

Connect to USB port
of the product

Cable clamp
Clamp Type

Note: About installing method of the optional modules (Digital PT sensor / Digital Thermistor sensor / Analog converter), refer to Page 41.

Gen.2 products
Connect the USB port (Type-C) of Transmitter to the bundled AC Adaptor. Connect the AC Adaptor to the power source.

Gen.1 products
Connect the USB port (Type-C) of Transmitter to the bundled AC Adaptor. Connect the AC Adaptor to the power source.

- Optional Digital PT sensor / Digital Thermistor sensor / Analog converter can be mounted.
- RS-485 communication connection is available.
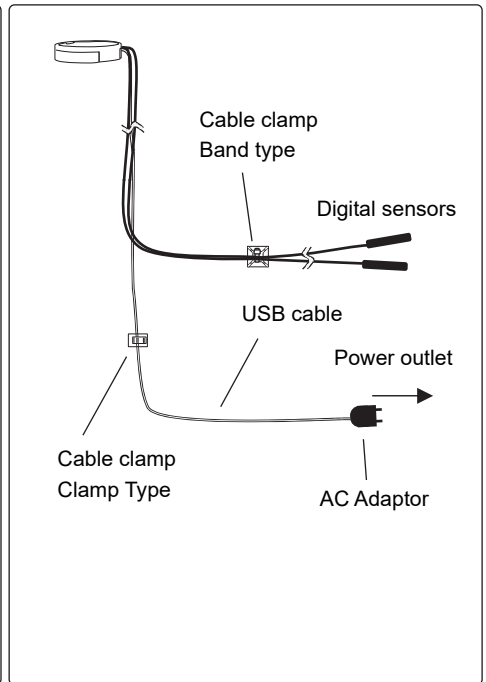- Wired LAN connection is available.

(Installation sample diagram)
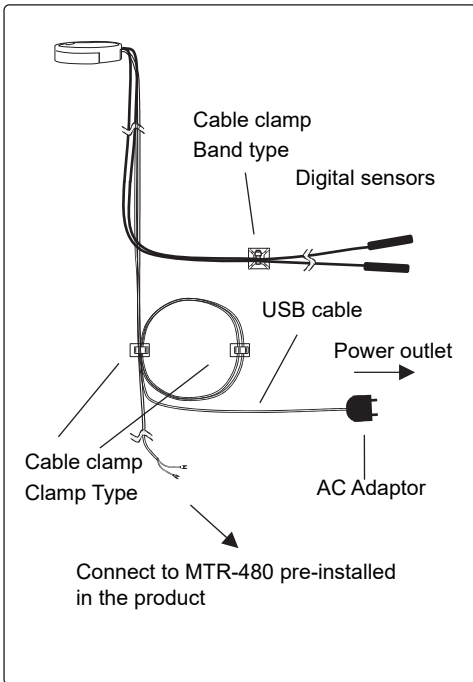Each part scale is not real, only image.

- Optional Digital PT sensor / Digital Thermistor sensor / Analog converter can be mounted.
- RS-485 communication connection is not available.
- Wired LAN connection is available.

(Installation sample diagram)
Each part scale is not real, only image.

Cable clamp
Band type
Digital sensors
USB cable
Power outlet
Cable clamp
Clamp Type
AC Adaptor
Connect to MTR-480 pre-installed in the product

Cable clamp
Band type
Digital sensors
USB cable
Power outlet
Cable clamp
Clamp Type
AC Adaptor

Note: About installing method of the optional modules (Digital PT sensor / Digital Thermistor sensor / Analog converter), refer to Page 41.

# Part 5 : Connect Transmitter to a power supply

(NOTE)
When connecting to product of a model other than Gen.3 with a USB port (Refer to Page 25), use "USB cable + AC adaptor" (power supply from the AC adaptor is required) as the power source.

If USB cable is already connected to Transmitter and it is connected to a power supply via AC adaptor (Gen.1, Gen.2 products) or Gen.3 product, it is possible to skip this Part 5.
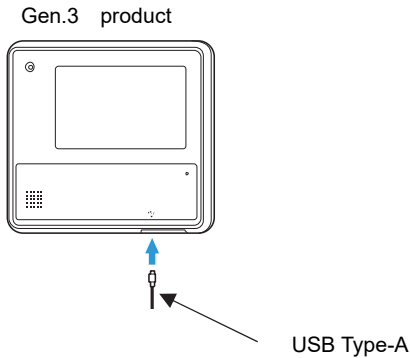
Case of Gen.3（*）product

1. Connect the bundled USB cable　（0.5 m white）to Transmitter .
2. Pull out the USB cable clamp and then fix it to the cable.
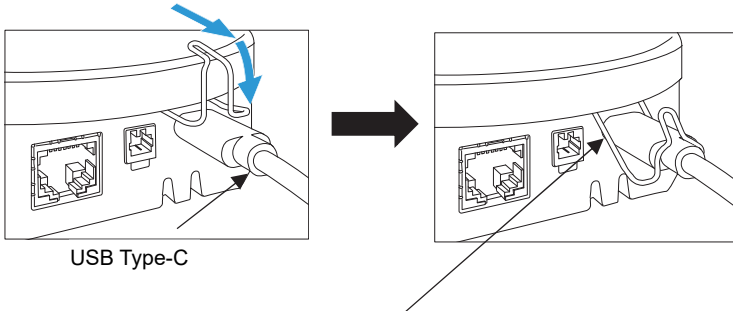
USB Type-C

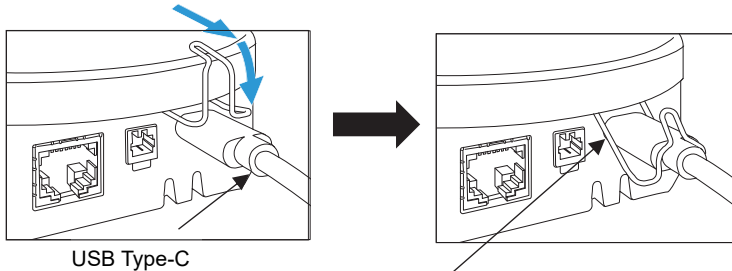After inserting the USB cable into the USB port, lower the USB cable clamp in the direction indicated by the arrow to fit it.

3. Connect the USB cable to the Gen.3　(*) product.

Gen.3　product

USB Type-A

(*) Refer to Page 9

Case of Gen.2 and Gen.1 (∗) product

1. Connect the included USB cable （3 m black）to Transmitter .
2. Pull out the USB cable clamp and then fix it to the cable.

USB Type-C

After inserting the USB cable into the USB port, lower the USB cable clamp in the direction indicated by the arrow to fit it.

3. Connect to the bundled AC adaptor and plug the AC adaptor into the power plug. Transmitter automatically turns on.

Power outlet

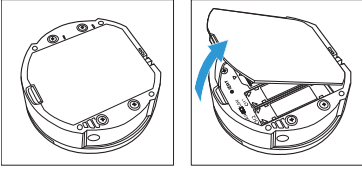AC adaptor

USB Type-A
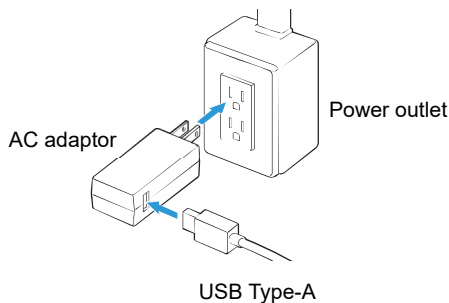
(∗) Refer to Page 9

⊘ ● **Do not use anything other than the bundled USB cable and AC adaptor. Transmitter does not work properly.**
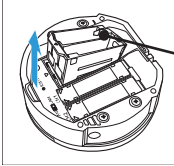
Part 6 : Insert batteries into Transmitter

Batteries are used for a power failure mode. (Refer to Page 40)
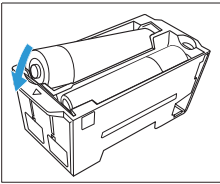
1. Open the back cover by pressing its claw.
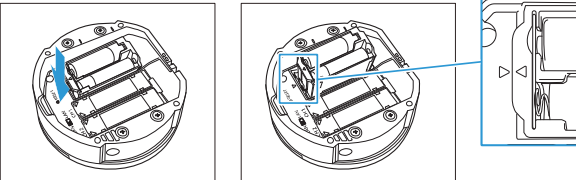

2. Take out the battery box.

3.

Battery box

4. Place batteries in the battery box paying attention to the direction (+ -) of the batteries.
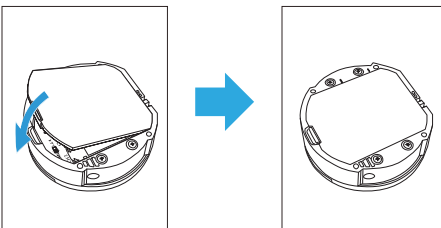

Use alkaline LR6AA (n= 4).

5. Align the ▽ marks and insert the battery box.

6. Push the back cover in the direction of the arrow to close it.

● **Do not misuse batteries.**

Misuse may cause leakage of liquid or gas, heat generation, ignition, explosion or injury. It may also cause failure or malfunction of the unit.

- ● **Do not disassemble, process (cut, solder, etc.) or pressurize batteries.**

- ● **Do not charge batteries.**

- ● **Do not set batteries with opposite positions of + and – position.**

- ● **Do not use different types of batteries or mix old and new batteries.**

- ● **Do not use batteries other than the alkaline LR6AA type, such as rechargeable batteries or manganese batteries.**
  The unit will not work properly. Also, the battery replacement notification will not work properly.

- ● **Do not install, use or leave batteries or the unit in a place where the temperature in the surrounding environment can be high.**

- ● **Do not install, use or leave batteries or the unit in a place where the surrounding environment has extremely low air pressure.**

- ● **Do not dispose of batteries in liquid and do not incinerate.**

● **If the batteries liquid leaks, do not touch it with bare hands.**

If the leaked liquid gets into your eyes, there is a risk of blindness. Do not rub eyes, wash immediately with clean water and consult a doctor. It may cause inflammation or injury.

● **Do not leave batteries in a place where they can be reached by children.**

If a battery is swallowed by mistake, it adversely affects the health. Consult a doctor immediately.

● **When replacing batteries, avoid wearing clothes such as sweaters that tend to accumulate static electricity.**

It may damage Transmitter by static electricity.

● **Batteries are not included. Transmitter operates normally without batteries. If it is necessary to continue data acquisition during a power failure, use batteries (refer to Page 40) for power failure mode, which continues data acquisition.**

● **Use the alkaline LR6AA type.**

● **Set batteries correctly taking care of + and – positions.**

● **Without batteries, monitoring data can be lost in the event of a power failure or unplugged the USB cable. Transmitter will continue to operate until the batteries run out, but the effective period of power failure mode is limited. And this period depends on various conditions and is not guaranteed.**

Part 6 : Insert batteries into Transmitter

- ● **Replace all 4 batteries at the same time.**
- ● **When a power failure occurs, replace batteries with new ones once power is restored it.**

  They may be exhausted and Transmitter may not work properly during a subsequent power failure.

- ● **Dispose of batteries according local rules.**
- ● **Remove exhausted batteries immediately.**
- ● **Remove batteries when the unit is not in use for a long time.**

  If the batteries are left inside Transmitter, they may cause leakage, heat generation, or explosion.

- ● **When using same batteries for a long time, replace them with new ones.**

  Old batteries may cause leakage of liquid or gas, heat generation, ignition, explosion or injury. They may also cause failure or malfunction of the unit.

Part 7 : Register Transmitter in Web Service Application

For the procedure to register Transmitter to be installed in Web Service Application refer to
" 6.5.1 Registering the Device" in the LabSVIFT Web Service instruction manual.
Registration requires the "Product Serial Number" and "Passcode" on the product name plate.

The name plate label attached on the side of the unit

| ⚠	● The firmware of Transmitter is not automatically updated. ● Failure to update the firmware of Transmitter for a long period of time will result in security risks.
❗	● Update information and vulnerability countermeasure information are displayed on the screen of LabSVIFT Web Service of this system to inform the user. Be sure to check the information and take any action if required. ● If this system is no longer supported, stop using this system or change to a supported product.

| ⚠	● The monitoring data of monitoring equipment collected by this system does not prove the specifications or performance of monitoring equipment.
🚫	● Do not unplug the power supply during an update of the firmware of Transmitter. Data may be damaged and it may not operate properly.

Part 8 : Other Items

Save and restore the network settings

When installing multiple Transmitters on the same network, it is possible to import the network settings set in one Transmitter to other Transmitters.

This makes it possible to reduce the effort required for network settings even when multiple Transmitters are installed.

PC

Network Settings

Store

Restore

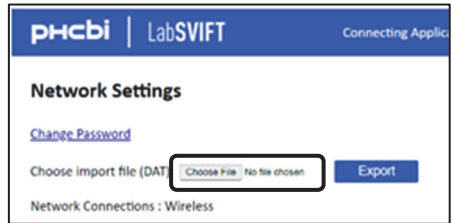LabSVIFT
WebSERVICE

Wi-Fi or LAN transmission
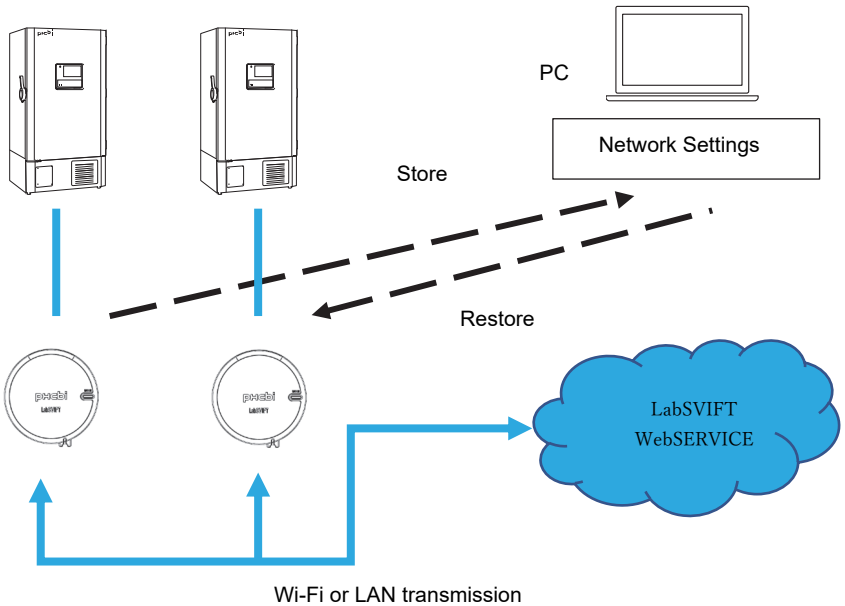
After configuring the network settings, the procedure to save is as follows.
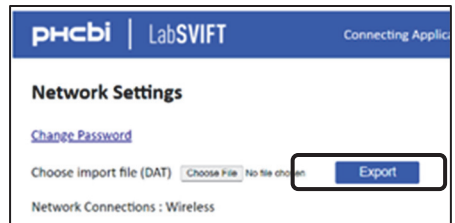
1. Select　[Export].

2. "The settings.dat" file will be downloaded to the PC.

   "The setting.dat" file includes the setting data for the connection.

The procedure to restore the saved network settings to another Transmitter is as follows.

1. Select [Import]

2. The file selection screen will be displayed.
   Select the "settings.dat" file which is downloaded in the described process.
3. The network setting information is reflected on the screen.
4. Check if the network setting information is correct.

⚠ ● **Among the network setting information, the following items are not subject to restoration, so please enter them as necessary after the restoration operation.**
   ・Password of Proxy
   ・WirelessLAN : WEP Key、Pre-Shared-Key、
     EAP Password、CA Certificate、Client Certificate、
     Client Key、Client Key Password

5. Select [Submit]
   The network setting information is saved in Transmitter.

Part 8 : Other Items

Re-setting with the wired LAN after the initial settings

1. Prepare a PC and a LAN cable
2. Set the wired LAN network settings on the PC as follows

> ＜Wired LAN settings on the PC ＞
> IP address ： Use other IP address than Transmitter on the same network
> Subnet Mask： Same subnet Mask with Transmitter
>   When the necessary IP address for setup is unknown, contact a facility manager
>   of the place where Transmitter is installed.

3. Connect as follows
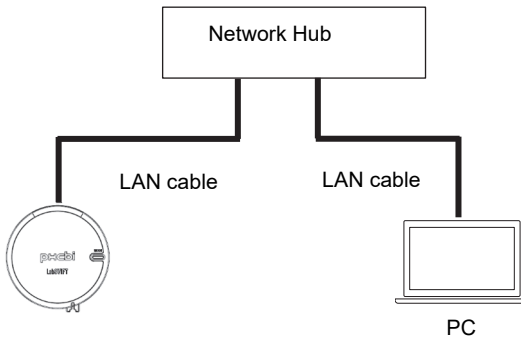
4. Enter http://(IP address of Transmitter)/ in the browser address to access the web app. (*)

5. On the "Sign in" screen, enter "Serial No." in the "Username" field and the name plate "Passcode" in the "Password" field, and click the [Sign in] button.

"Transmitter Setting" screen appears.
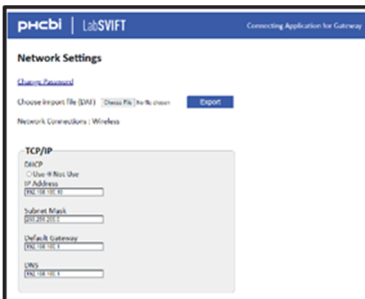
*: To get the IP address of Transmitter, refer to Web Service Application. If the IP address is not displayed on it, follow the steps in Part 2-2 Network settings for using a wireless LAN (Refer to Page 16). In this step, use IP Address http://192.168.100.10.. (Refer to Part 3 in Page 18)

The below is the menu of the LabSVIFT Web Service Application. For details, refer to its instruction manual.
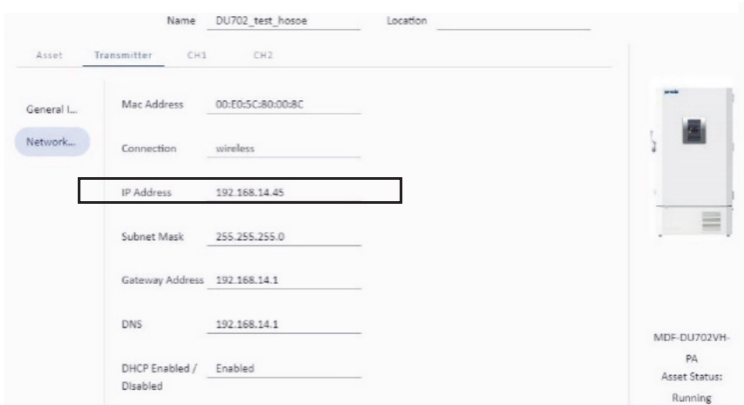
If you cannot connect via a wireless LAN, press and hold the Reset button (5s or more) to initialize the settings, then follow the initial setup procedure to connect. (Refer to Page 44)

LED Lighting Specifications

LED	Status	Motion
Green	Lighting	While functioning normally
Orange	Lighting	While AP Mode (Refer to Page 16)
Red	Blinking (slow, approx. once/5 sec.)	While battery-powered
	Blinking (fast, approx. once/1 sec.)	While low battery voltage
	Lighting	While connected to the network (disconnecting)

Notice for power failures

When batteries are installed, Transmitter changes its mode to power failure mode in the event of a power failure. Normal mode is restored after recovery from the power failure.

(Power failure mode)
 LED blink:
The red LED blinks slowly (approximately once every 5 seconds) during a power failure.
However, when the batteries' voltage drops, it blinks fast (approximately once per second).
Data communication:
In an event of a power failure, Transmitter tries to send data to the Web Service Application
via Wi-Fi or Wired LAN communication once per hour for a total of three times with new batteries.

⚠	●**If a communication error occurs in power failure mode, a retry of Wi-Fi communication is not performed. Wi-Fi communications may not be possible three times due to variations in the environment, such as radio wave conditions or room temperature, or variations of the batteries.**

Transmitter takes data of its Digital temperature sensor or Analog converter once every 5 minutes until the batteries run out.

⚠	●**The acquisition period may be shortened due to variations in the environment, such as radio wave conditions or room temperature, or variations of the batteries.**

When connected to Gen.3 products (refer to Page 9), data acquisition continues while the Gen.3 products are operated by its battery power.   However, data may not be acquired depending on the operating status.

|	
⚠	●**If a power failure occurs once, the batteries may be exhausted. Replace them with new ones.**

DISPOSAL OF UNIT (Decontamination of unit)

Before disposal of units with biohazardous danger, decontaminate the unit to the extent possible by the user.

Mount Digital PT sensor / Digital Thermistor sensor / Analog converter (Optional)

The three optional modules are basically mounted in the same way.
This section describes how to mount the Digital PT sensor as a representative example.

1. Turn off the power of Transmitter.
   If the USB cable is connected, remove it.

2. Open the back cover.
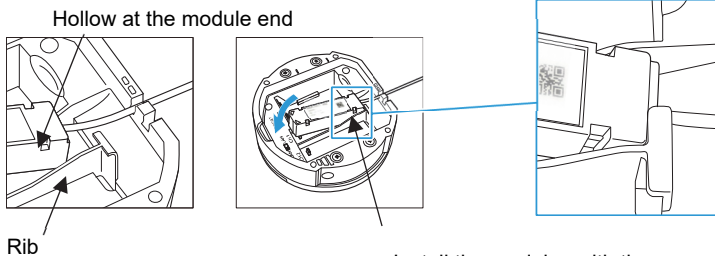   If the battery box is mounted, remove it.
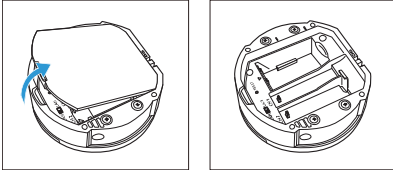
3. Mount the Digital PT sensor (hereinafter referred to as module) on the CH1 side.
   Feed the sensor cable into the groove shown.
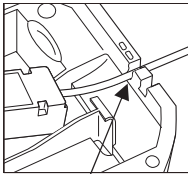
   Feed the sensor cable into the groove.

4. Mount the module so that the hollow at the end of the module passes under the rib as shown.
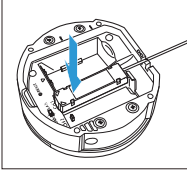
Hollow at the module end

Rib

Install the modules with the name plate facing up.

🚫　● **Do not remove the serial number label on the optional module cable.**
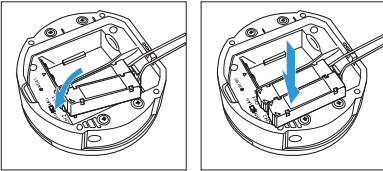

Mount Digital PT sensor / Digital Thermistor sensor / Analog converter (Optional)

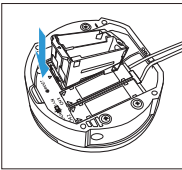5. Press and hold the below arrow point of the module until it clicks to fix it.

⚠ ● Confirm that the module clicks firmly in placed and cannot be easily removed.

6. Mount the other module on the CH2 side with the same way.

7. Mount the battery box (when using batteries for a power failure).

8. Close the back cover carefully so as not to pinch the sensor cable with the back cover.
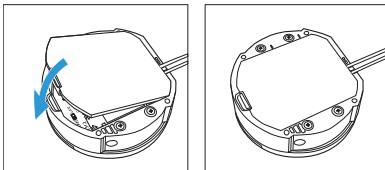
⚠ ● **Turn off the power (unplug the USB cable and remove the battery box) when mounting and removing the optional module.**

● **When measuring temperature using the Digital PT sensor / Digital Thermistor sensor, use the measuring object within the temperature range of each Digital temp. sensor. (refer to Page 46).**

● **Before setting optional modules to laboratory equipment, refer to their instruction manuals and confirm any notices for them.**

Installation Notice for Optional modules

Installation

⓵   ● **Use the access port to insert the sensor into our Pharmaceutical Refrigerator and Blood Bank Refrigerator. Use the sensor fixing screw for the self-recording temperature recorder to fix the sensor mounting position inside the refrigerator.**

● **Use the access port to insert the sensor into our upright type Ultra-Low Temperature Freezer and Medical Freezer. Use the sensor fixing screw for the self-recording temperature recorder to fix the sensor mounting position inside the freezer.**

● **Contact our sales office, when installing the sensor on products which are equipped the self-recording temperature recorder as standard.**

● **Contact our sales office for sensor installation on our chest type Ultra-Low Temperature Freezer.**

● **Contact the manufacturer of each company regarding sensor installation on products other than our products.**

Discrepancy

⚠   ● **Note that there may be a discrepancy between the temperature inside the refrigerator (displayed temperature) and the temperature of the attached sensor.**

Access Port

⓵   ● **For Pharmaceutical Refrigerator and Blood Bank Refrigerator, be sure to attach the cap and at the same time seal the access port on the outside with clay putty or silicon caulk so that there are no gaps.**

● **For Ultra-Low Temperature Freezer and Medical Freezer, be sure to seal the access port with silicone caulking so that there are no gaps.**

TROUBLE SHOOTING

| Trouble (Symptom)	Status	Countermeasure
Drop in battery capacity	Red LED blinks quickly.	Replace the batteries.
Cannot communicate with Wi-Fi during installation	Red LED lights up.	[1] Verify the network selector SW is "WLAN". [2] Verify that Wi-Fi settings are correct on the Transmitter settings screen. [3] Verify Wi-Fi reception intensity. (Using a smartphone)
Will not power on	LED does not light up.	[1] Check the USB cable connection (check the power source). [2] Press the Reset button.
Forgot information (IP/password) set in the Transmitter	---------	[1] Press and hold the Reset button (5s). [2] Try again following the instruction manual. (Refer to Page 16-21)
Will not enter AP mode	Press and hold the MODE button (5s). ➔ Orange LED does not light up.	[1] Check the USB cable. [2] Press the Reset button to try again.

* If it still does not work, contact service.

⚠ Monitoring data is not acquired during the following operations.
・AP mode (refer to P 16)
・Updating software (refer to the Web Service Application's instruction manual)
・Setting process to install optional modules (such as Digital PT sensor)

Factory settings

Transmitter restores the initial settings (factory settings) by pushing the reset button
as follows. In this case, stored monitoring data are initialized and erased.

1. Open the back cover.
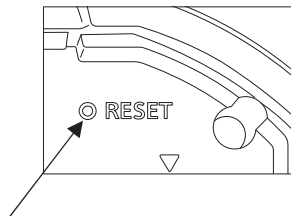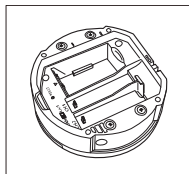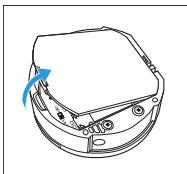
2. Power on Transmitter. (refer to Page 15)
3. Press the button for 5s or more through the little hole adjacent to "RESET" with a thin pin.
   Stop pressing it, LED starts blinking.
4. The green LED blinks for 3 seconds and Transmitter reboots.
   If the red LED blinks, turn off the power once, and then perform step 2 again.

SPECIFICATIONS

Product name		LabSVIFT Transmitter
Model No		MTR-IOTWE1-PA
Size [mm]		Dimension：120 mm× Hight：35 mm
Weight [g]		205 g (without Batteries)
Network specifications		Wireless LAN(Wi-Fi) ＋ Wired LAN
Wi-Fi protocol Used CH		IEEE802.11a/b/g/n　　2.4 GHz / 5 GHz 5GHz band 　W52(36,40,44,48) 　W53(52,56,60,64) 　W56(100,104,108,112,116,132,136,140) 　W58(149,153,157,158,161,165) 2.4GHz band 　1～11
Wi-Fi security	Network authentication	WPA2-Personal　　WPA2-Enterprise
	Encryption method	WEP ON/OFF（Open） AES (WPA2-Personal, WPA2-Enterprise)
	EAP authentication mode	PEAP, EAP-TLS (WPA2-Enterprise)
Interface	Digital input port (RS-485)	1
	LAN (RJ45 type)	1
	Digital temperature sensor port/Analog converter port	2 ports
	USB-C Port	1
Input Voltage/Current		DC 5 V 2 A
Maximum power consumption		2.5 W
Power Source		Gen.3　(*): Power supply via USB port Gen.2, 1 (*) AC adaptor Battery power (only for a power failure)
Environmental conditions		Ambient Temperature: 5 °C to 30 °C, Humidity: 80 %R.H. or less
Data storage period		14 days (in case of memory full, overwrite)
Connectable equipment via LabSVIFT Transmitter		1 unit
Battery specification to use (not bundled)		Alkaline LR6 AA × 4

SPECIFICATIONS

AC Adaptor (Bundled accessory)	Input Voltage	100 - 240 VAC
	Frequency	50 Hz / 60 Hz
	Output Voltage	5 V
	Maximum Power	MAX 10 W

Design or specifications are subject to change without notice.
*: Gen.3 , 2, and 1 are classified on Page 9.

Option : Digital PT sensor specifications

Product name: Digital PT sensor
Model No.: MTR-DPT-PW

Input Voltage	5 V DC : Connected to LabSVIFT Transmitter
Measurement range	- 200 °C～ 200 °C
Accuracy	Expressed with precision in square root of sum of squares.
	(Unit temp.; 20～30 °C)
	±0.4°C ± 1 digit (-100～100 °C)
	±0.6°C ± 1 digit (-200～-100、 100～200 °C)
	(Unit temp.; 0～20 °C, 30～35 °C)
	±0.5°C ± 1 digit (-100～100 °C)
	±0.6°C ± 1 digit (-200～-100、 100～200 °C)
Resolution	0.1°C

Option : Digital Thermistor sensor specifications

Product name: Digital Thermistor sensor
Model No.: MTR-DTM-PW

Input Voltage	5 V DC : Connected to LabSVIFT Transmitter
Measurement range	-40°C～85 °C
Accuracy	Expressed with precision in square root of sum of squares.
	(Unit temp. body; 0～35 °C)
	±0.3°C ± 1 digit (0～40 °C)
	±0.7°C ± 1 digit (-40～0、 40～85 °C)
Resolution	0.1°C

Option : Analog converter specifications

Product name: Analog converter
Model No.: MTR-ANACON-PW

|	
Input Voltage	5 V DC : Connected to LabSVIFT Transmitter
Measurement range	0-5 V
Accuracy	±0.003 V DC±0.1 %rdg
Resolution	0.001 V DC

OPEN SOURCE SOFTWARE on LabSVIFT Transmitter

The below is Open source software used in the Wi-Fi module on LabSVIFT Transmitter.

Name	Version	License
backports	4.4.2-1-0-gbec4037	GPLv2
buildroot	2017.02.2	GPLv2
busybox	1.26.2	GPLv2
dropbear	2017.75	MIT
ethtool	4.8	GPLv2
gpio	-	GPLv2
hostap (hostapd/wpa_supplicant)	2.1-devel sx 1.0.0.a08	BSD
iptables	1.6.1	GPLv2
iw	3.0 sx01	ISC
libnl	3.2.27	LGPLv2.1+
lighttpd	1.4.51	BSD
linux	4.1.15	GPLv2
net-snmp	5.7.3	Various BSD-like
openssl	1.1.1k	OpenSSL or SSLeay
pcre	8.42	BSD
u-boot	2016.03	GPLv2
uclibc	1.0.22	LGPLv2.1+
zlib	1.2.11	zlib license

Confirm OSS License

Click [OSS License].
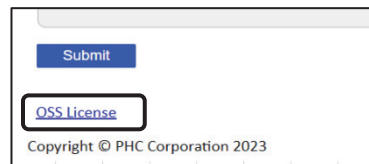
"Transmitter Setting screen"

Safety check sheet

1. Contamination of the unit and optional modules:
   No contamination: ☐Yes   ☐No
   Decontaminated: ☐Yes   ☐No
   Contaminated: ☐Yes   ☐No
   Others:

2. Status of the unit
   a) The unit and the optional modules are now safe to work on   ☐Yes   ☐No
   b) If the answer is "No,"
   Details on the danger: _____
   _____
   _____

   Measures we should take to reduce the danger:
   _____
   _____

   Date:
   Signature:
   Address, Division:
   Telephone:

Product name: LabSVIFT Transmitter	Model: MTR-IOTWE1	Serial number:	Date of Installation:

Please decontaminate the unit yourself before calling the service engineer.

MEMO

MEMO