LINEEYE

MULTI PROTOCOL ANALYZER

LE-8600X
LE-8600XR

Quick Start Guide

Thank you for your purchase of LE-series.
This booklet tells you only the basic operation. For more detailed information, please refer to the instruction manual (PDF) in the utility CD attached to the product.

When you unpack the product, make sure you have all following items

□	Protocol Analyzer	1
□	Interface Sub-board [SB-10GE] (attached to the analyzer)	1
□	Hand strap (Already mounted)	1
□	Wide input AC adapter (Input :AC100 ～ 240V/ Output :DC9V)	1
□	LAN cable	1
□	USB cable (Type A - Type-C)	1
□	External signal I/O cable [LE-4TG]	1
□	Utility CD	1
□	Quick Start Guide (this booklet)	1
□	Carrying bag [LEB-01]	1
□	Warranty	1

Please let us know if you find any damage to the product or accessories lacking.

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Outline

The LE-8600X/LE-8600XR are equipped with two measurement ports compatible with SFP/SFP+ modules and are handy type Ethernet LAN analyzer that supports high-speed LAN measurement tests that use single-mode or multi-mode optical fiber cables as a single unit. You can log the data automatically to the built-in 500GB SSD. As it has the online monitor function, packet generate (PG) function, statistical analysis function etc. you can use the analyzer according to the test situation. It can be widely used for communication systems, communication device development, inspection, and failure diagnosis.

USER LIMITATION

This product has not been developed for the use that needs exclusively high reliability and safety: aerospace apparatus, trunk communication apparatus, nuclear control apparatus, medical apparatus related with life maintenance etc. Therefore, do no use for those purposes.
LE-series models with Wi-Fi function (IEEE 802.11b/g/n) emit radio wave. Please do not use it near a medical device, microwave, high-level electronics, TV, radio, wireless station for mobile communication, or specified low power radio station. To use LE-series in the place where an administrator limits the use of radio devices, follow the instruction of the administrator.
The Wi-Fi module used for the LE-series conforms to SRRC(China), FCC (USA), CE (EU), TELEC (Japan), KCC (Korea), ISED (Canada), NCC (Republic of China), however, as its product (LE-series) the Wi-Fi function is available only in Japan, USA, Canada, and EU nations in compliance with RE directive (2014/53/EU).
To use the product other than above countries, order LE-series without Wi-Fi function. Please contact the sales department for more details.

Representation of the Operating Procedure

- Key operation is described in [ ].
- Continuous key operation is described as follows.
  ex) Press [MENU] and then [0] → [MENU],[0].
- Screen display is described in “ ”.
- Reference page is displayed in (Pxxx).

It is prohibited to reprint or duplicate any part of this manual without prior permission of LINEEYE.
The content of this manual and specification of the product is subject to change without any notice

Safety Information

Please do not use the line monitor in the following conditions.
〔Description of the symbol and mark〕

⚠ Warning: There is a possibility of getting hurt, such as a death or a serious injury.

⚠ Caution: There is a possibility of getting injured or damaging the product.

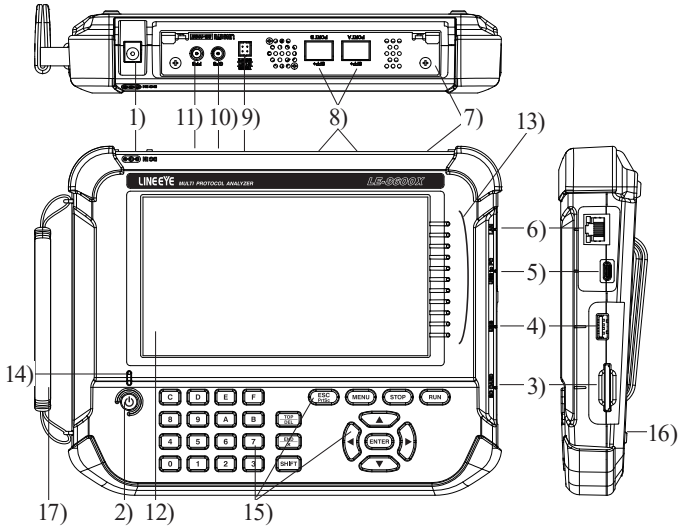
⚠ Warning

- Do not disassemble, modify or repair the line monitor
  This may result in an injury, electric shock, and ignition.
- Turn off the power of analyzer and unplug the cables immediately when emanating smoke, odor or sound.
  Continuous use may result in an electric shock, injure or ignition.
- Do not use the line monitor if there is inflammable gas.
  This may result in ignition and explosion.
- Turn off the power and unplug the line monitor immediately when liquid or foreign substance gets into the line monitor.
  Continuous use may result in ignition, electric shock and malfunction.
- Do not touch the line monitor with wet hand.
  This may result in an electric shock and malfunction.
- Do not use the battery other than attached Lithium ion battery.
  Do not short the electrode of the battery. Do not modify, decompose or heat the battery.
  It may cause the ignition and explosion.

⚠ Caution

- Do not give a strong impact to the line monitor.
- Do not place the line monitor in following conditions.
  - Not flat or vibrated place.
  - Temperature or humidity is above the specification.
  - Change the temperature rapidly. ・Have a direct sun or near the fire.
  - Magnetic field. Have static electricity.
- Do not use the line monitor near the following devices.
  - Medical device, such as a heat pacemaker.
  - Automatic control devices easily affected by radio waves.
  - Devices controlled by the radio waves.

Nomenclature



Name		Function
1)	AC adapter plug	Connects the AC adapter, which serves as a battery charger.
2)	Power Switch	Press it for more than 1 sec to turn on/off the analyzer.
3)	SD Card Slot	The inlet for a SD/SDHC card.
4)	USB Host Port	USB Type-A connector Connect the USB flash drive or Printer.
5)	USB Device Port	USB Type-C connector connected to a PC or battery charger.
6)	LAN port	RJ-45 connector. A LED for linking (right) and a LED for 1000BASE (left). Use it for connecting the LAN cable from the PC.
7)	Interface Sub -Board	The interface sub-board (SB-10GE) for measuring of 10GbE is inserted. Able to exchange to the optional interface sub-boards.
8)	PORT A, B	Insert SFP/SFP+ modules for various measurement.
9)	External Input Terminal	Input/output port for trigger signal at TTL level. Connect the attached external signal input/output cable.
10)	Connector for GPS antenna	SMA (female) connector. Connect the optional GPS antenna to have the time synchronous by GPS.
11)	Connector for PPS signal	SMA (female) connector Input/output the PPS time synchronous signal at TTL level.
12)	7 Inch Color Display	Touch panel of electrostatic capacity.
13)	Line State LED	Display the status of measuring interface.
14)	Power LED	Lighting in green when using. Blinking in red when charging battery.
15)	Keypad	Entering commands and other operation.
16)	Battery Cover	Open/close when replacing the battery.
17)	Hand strap	Use to hold the product.

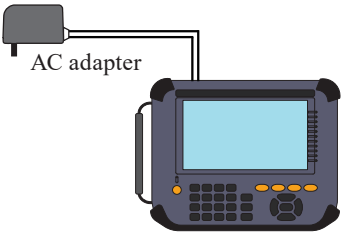
Power Supply and Battery

This analyzer runs by attached AC adapter, or built-in rechargeable battery.

■ Power Source

This analyzer runs by attached AC adapter, or built-in Lithium Ion battery.

- The battery running time is approx. 2 hours. (The running time is different by the usage of analyzer.)
- It does not run by the bus power from the USB device port.



■ Charge the Battery

Built-in Lithium Ion battery is charged while the power is supplied by the AC adapter. It is also chargeable by the bus power from the USB device port.

Power supply	Analyzer	Status	Charge Time	Power LED blinking
AC adapter	OFF	–	About 3.5 hours	Approx.1sec cycle
	ON	Stop measuring	Max. 6 hours *1	Approx.4sec cycle
		Measuring	No charge	No charge
USB bus power	OFF	Use attached USB cable	Max. 6 hours *1	Approx. 4 sec cycle
		Use Type-C battery charger etc. *2	About 4.5 hours	Approx.1.5 sec cycle
	ON	–	No charge	No blinking

*1 : This will not be full charging because of the small amount of current (approx. 160mA).

*2 : It will be the same when it connects to the PC with a USB port in Type-C connector.

- This analyzer is not charged in full before shipping. To use the analyzer at the first time, charge it full.
- Charge the analyzer under the temperature of 5 to 40 ℃. It will not start charging below 5 ℃.
- If you are not going to use it for a long term, charge the battery in full. After that, try to charge the battery every 6 months.

■ Replacement of battery

If the analyzer can no longer drive by the battery, or the service time after charging becomes extremely short, replace the battery.
Refer to the instruction manual for more details of replacement of battery.

- Old battery has to be handled in an appropriate manner.

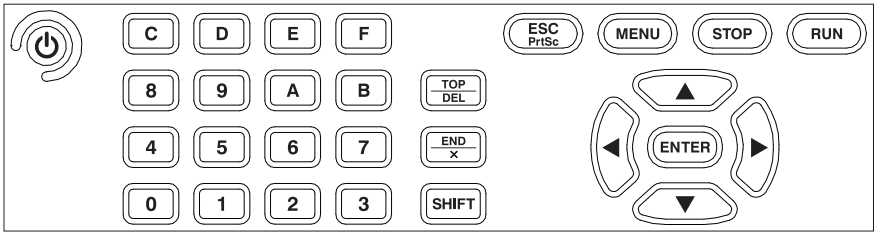
⚠Warning < Notice for battery >

- Do not short the terminal of the battery.
- Use the battery and battery charger specified by LINEEYE.
- Do not disassemble or modify the battery.
- Do not use the analyzer near the heater or leave it in the place with high temperature.

It can cause heat, fire, explosion, electric shock, liquid spill and malfunction.

Key operation

There is a keyboard to input data and operate commands.



■ Keys

Operations	Function
[⏻]	Turn ON/OFF the power. Press it for more than 1sec.
[RUN]	Start monitoring, measuring or testing operation.
[STOP]	Stop monitoring, measuring or testing operation.
[MENU]	Return to the top menu.
[ESC]	Return to the previous display. Return to the data display from configuration.
[▲] , [▼]	Scroll one data line. Move the cursor on the condition setting.
[◀] , [▶]	Scroll one character of data. Change the setting on the condition setting.
[ENTER]	Apply selected settings.
[0] ～ [F]	Enter numerical values.
[TOP/DEL]	Delete the entry indicated by the cursor.
[END/X]	Enter the data of “Don't Care”.
[SHIFT]	Press to use the expanded alternate function of each key.
[SHIFT]+[TOP/DEL]	Jump to the top of data.
[SHIFT]+[END/X]	Jump to the end of the screen.
[SHIFT]+[ESC]	Save the screen image. / Hardware copy.
[SHIFT]+[MENU]	Display/hide the description of LEDs.
[SHIFT]+[RUN]	Brighter the LCD back light.
[SHIFT]+[STOP]	Darker the LCD back light.

* [X]+[Y] indicates the operation of pressing [X] and [Y] together at the same time.

Shortcut keys are available from [MENU] and [0] ～ [F].

To go back the factory setting, press “ System Settings” -> “ Version”-> “ Factory reset”

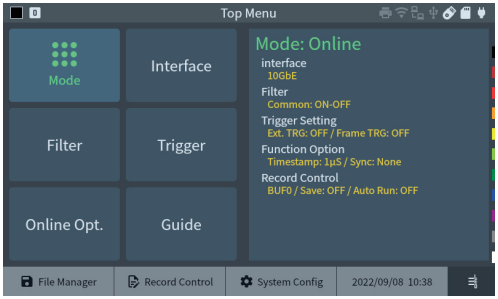
→「Version」(P7)

Initial Settings

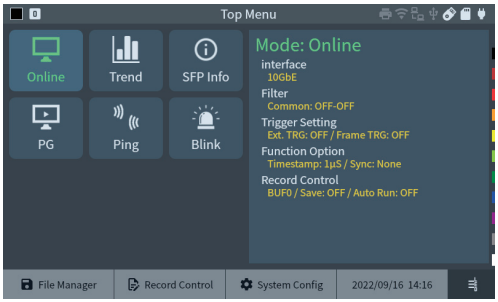
To turn on the power, press [⏻] for a second. After displaying the opening screen for about 15 seconds, it will start running.
Select the language at the first time using the analyzer. If it is selected already, it displays the top menu.

Both LE-8600XR and LE-8600X models are displayed as “LE-8600X”.

To set each configuration, touch the configuration menu or select by [▲],[▼],[◀],[▶] keys and then press [ENTER].



You can select the measurement function by touching “Mode”. Also, set the measurement settings for each function with “- Opt.”.
To set each items, touch the item or select by arrow keys or [0] ～ [F] keys.

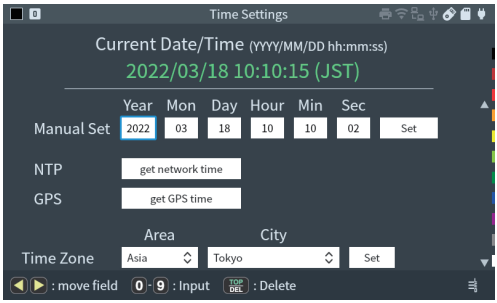


To set the current time, touch the current time on the right bottom of the screen.

Shortcut key [MENU] , [D]

The current time is displayed in the order of Year/Month/Day, Hour: Minute: Second (24hour).

If using the GPS antenna, received time from GPS is displayed.



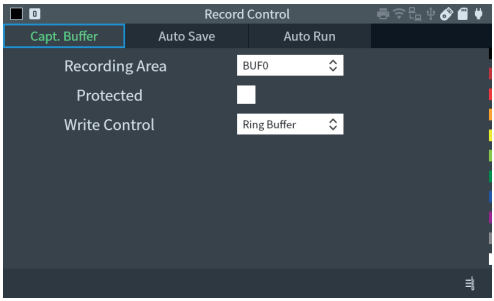
Information of time and date is used for time stamp and Auto start/stop. Make sure to input the current time and date precisely.

Record Control

Touch “Record Control” from top menu and set the record conditions of measured data.

Shortcut key [MENU] , [B]

Touch “Capt. Buffer” on the left upper or press [SHIFT] + [▶] or [SHIFT] + [◀]



☐ Capture Buffer

Recording area :

Select the recording area of buffer memory from full size (BUF0) or half size (BUF1/BUF2).

Protected :

Select whether or not protect data in the capture buffer to prohibit overwriting.

Write Control :

Select Ring buffer (endless recording) or Full stop when the capture buffer is full.

☐ Auto save

Auto save function saves monitored data in the memory card automatically. Set “Auto backup” function which saves data when it ends the measurement.

→「Auto Save」(P20)
→「Auto back-up function」(P21)

☐ Auto run

Start measuring automatically at the specific period of time.

→「Auto Run Function」(P22)

System Setting and Version

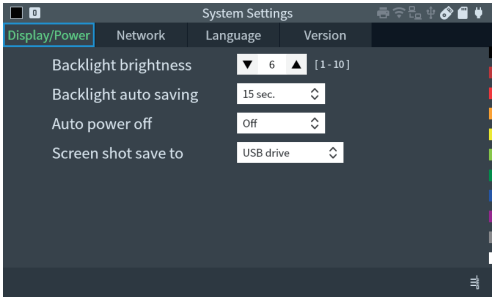
Touch “System Settings” from top menu.

Shortcut key [MENU] , [C]

Touch each tab or press [SHIFT]+[▶] , [SHIFT]+[◀]

☐ Display / Power

Set backlight brightness, automatic dimming for power saving, auto power off function, screenshot, and printer settings.

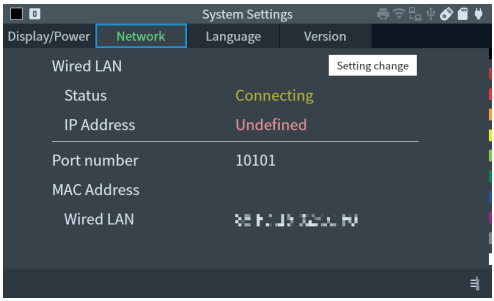


🗎 Auto Power Off function does not work during measurement.

☐ Network

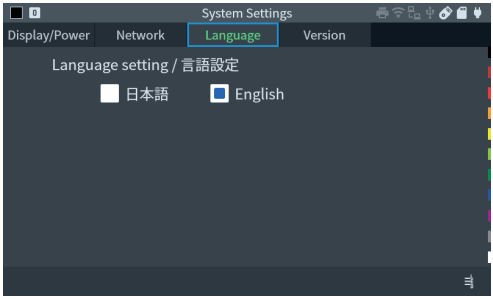
Set each setting for wired LAN and wireless LAN. As a factory setting, wireless LAN is turned off. To change the setting of wireless LAN, touch “Setting change” and select “station mode” or “access point mode”.

LE-8600X does not have thewireless function.



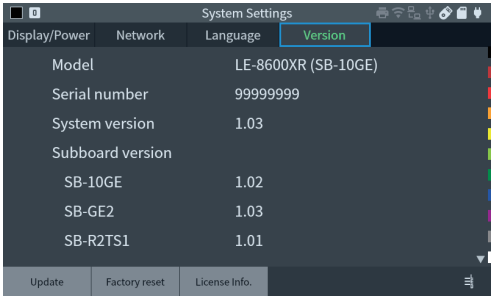
☐ Language

Select language from Japanese or English.



☐ Version

Serial number and firmware version are displayed.
It is able to update the firmware and reset the firmware.

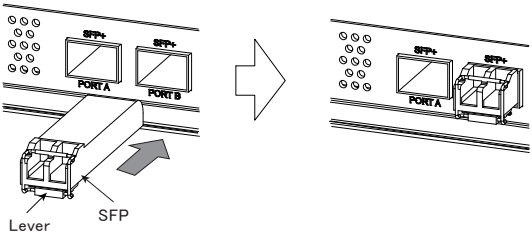


SFP module

SFP modules (sold separately) must be installed in order to perform measurements with this unit. We have the following as optional items.

Type	Model	
1000BASE-SX SFP module	LE-1G-SX-85	Wave length: 850nm, maximum transfer distance: 550m (LC)
1000BASE-LX/LH SFP module	LE-1G-LX-31	Wave length: 1310nm, maximum transfer distance: 20km (LC)
1000BASE-T SFP module	LE-1G-BT-45	Maximum transfer distance: 100m (RJ45)
10GBASE-SR SFP+ module	LE-10G-SR-85	Wave length: 850nm, maximum transfer distance: 300m (LC)
10GBASE-LR SFP+ module	LE-10G-LR-31	Wave length: 1310nm, maximum transfer distance: 10km (LC)
10GBASE-T SFP+ module	LE-10G-BT-45	Maximum transfer distance: 30m (RJ45)
2.5GBASE-T SFP module	LE-2G5-BT-45	Maximum transfer distance: 30m (RJ45)

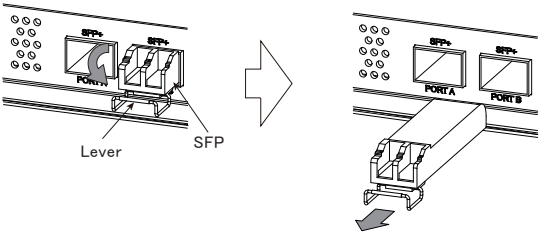
■ Installing an SFP module



Firmly insert the SFP module as far as it will go.

* Detailed information on the SFP module can be displayed by selecting “SFP Info” from “Mode” on the top menu screen and pressing [RUN].

■ Remove the SFP module



Keep in mind that the lever is down when you remove the SFP module.

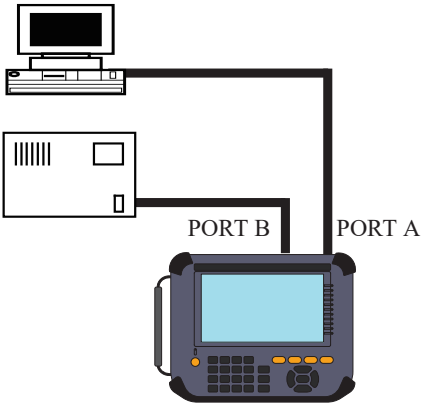
- Some SFP modules may become hot during use. Be careful not to burn yourself when removing.
- Use the SFP module of the same speed set on the Interface screen.
- Do not connect or disconnect the SFP module during measurement. It cannot capture data correctly.
- Please note that correct operation using SFP modules other than our optional products is not supported.

■ Online Monitor Function

Touch “Mode” from top menu and select “Online”.

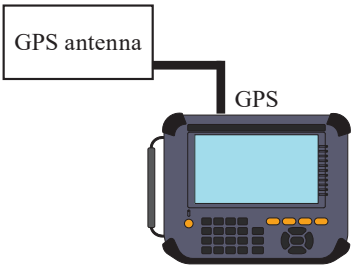
□ Connection

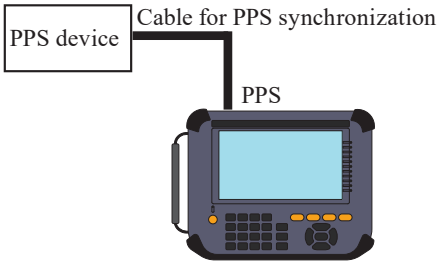
Connect the cables (in which the communication data between the target devices run) with each port as follows. When you need additional cables for branch connection, use the attached LAN cable or a straight cable of the category 5e or later.



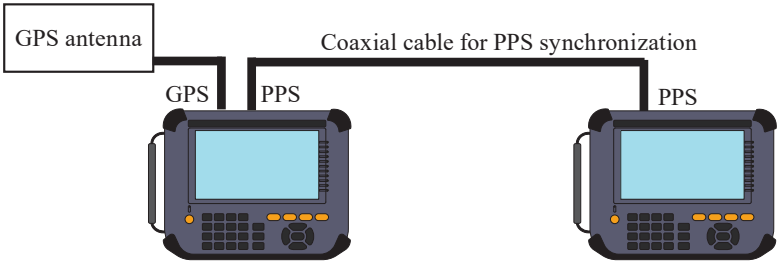
Delay is occurred when it passes through the TAP circuit in the analyzer.

Time stamp information can be synchronized with PPS signal from GPS or external PPS device.





To use one GPS active antenna and synchronize 2 sets of LE-8600X/LE-8500X, connect devices as following.



☐ Interface setting

Touch “Interface”. Set each setting of port A/B individually.

Shortcut key [MENU] ,[1]

☐ Filter setting

Touch “Filter”. It is able to set “Tx” and “Rx” individually.

Shortcut key [MENU] ,[0]

→「Filter function」(P17)

☐ Trigger setting

Touch “Trigger”. It is able to generate triggers by external signal, frame condition and so on.

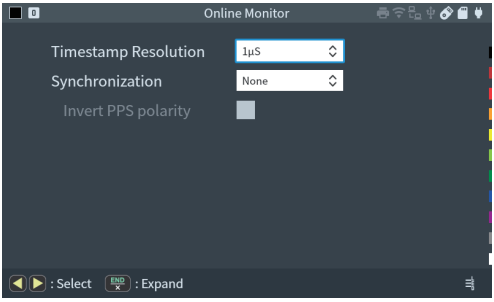
Shortcut key [MENU] ,[2]

→「Trigger Setup」(P19)

☐ Online Monitor setting

Touch “Online Opt.”. Set the resolution and time stamp.

Shortcut key [MENU] ,[3]



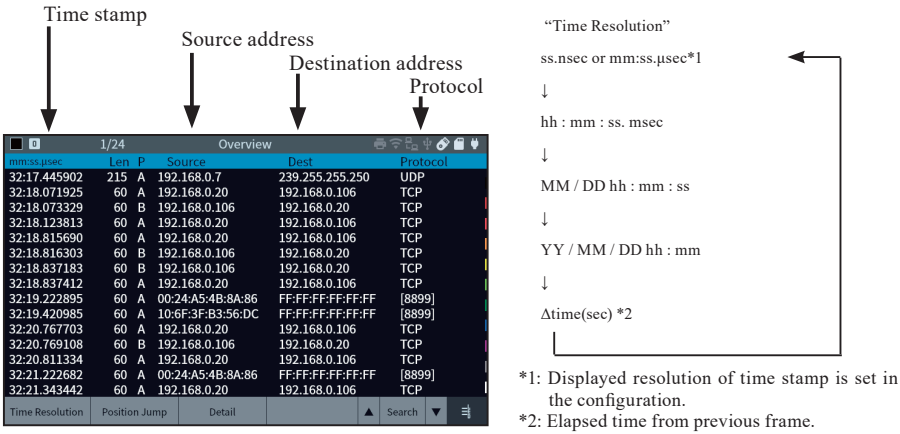
☐ Start and Stop measurement

Press [RUN] to start monitoring. Measured data is displayed at real time and recorded in the capture memory.

Press [STOP] to finish measuring.

☐ Frame display

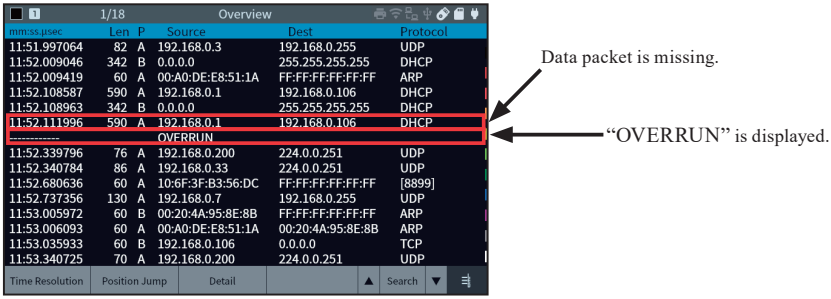
It displays the LAN frames with the time stamp information on the screen.
Scroll data by [▲] [▼] keys or swipe the screen.
Press [ENTER] to display more details.



*1: Displayed resolution of time stamp is set in the configuration.
*2: Elapsed time from previous frame.

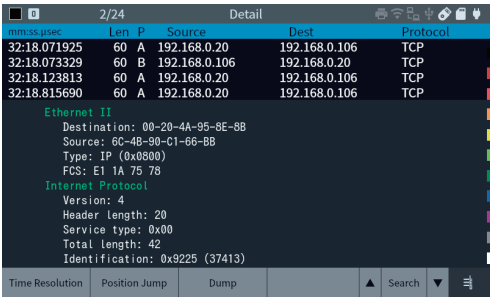
Press [SHIFT] + "Relative Time" to start the time stamp from zero when it starts measuring.

"OVERRUN" is displayed at locations where the unit could not capture packets, such as when a large number of short packets were sent continuously or when packets were sent in both directions at a high load at the same time.



☐ Detailed display

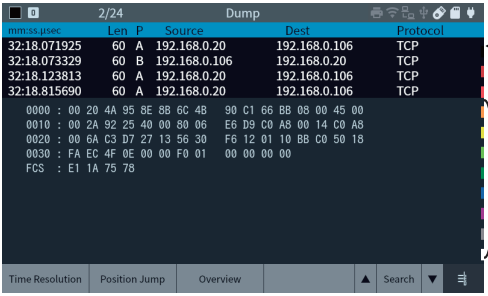
Display the details of the frame, which is displayed on the top of the Frame Display.
Press [ENTER] to change the display to frame display.



Refer to specification of each protocol for more details.

・HEX dump view

Touch “Dump” in the detailed display.



The target frame for dump view.

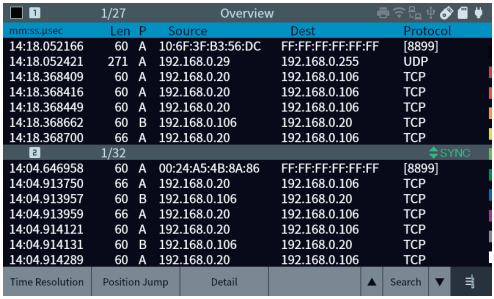
It is able to scroll data by swiping the screen.

Dump display of Ethernet frame.

Scroll frames by [▲] [▼] keys.

☐ Split Display

Display saved data of BUF1 and BUF2 at the same time. It is useful to compare two data for finding problems by press [SHIFT]+ “ Split Display”. To scroll two data synchronously, enable “SYNC”



☐ Position Jump

Touch “Position Jump” to display specified frame number.

☐ Mark & Jump

Mark and name the frame where the cursor is pointing by [SHIFT]+[1]-[9].

Marked frames are named as M1 to M9.

To rename the frame, use different number.

To delete the marking, type the same number again.

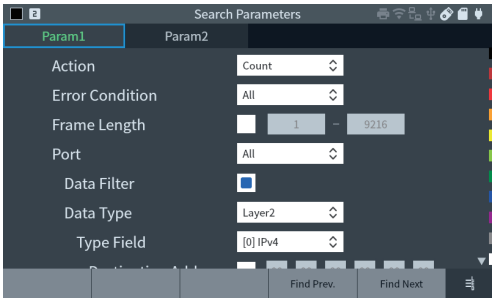
To display (jump) the marked frame, touch [1]-[9].

Press [0] to display previous frames

☐ Search

Touch “Search” to find the specific errors and frames which matched with the specified conditions.

Display matched data or count the number of frames.



■ SFP module information display function

Displays detailed information of the SFP module inserted in the unit.
Tap “Mode” on the top menu screen and select “SFP Info.”

☐ Information display

Press [RUN] to obtain and display the information. Tap “Transceiver” and “Diagnostic” to display its screens.
End the information acquisition by [STOP].

■ Statistic Function

Touch “Mode” at top menu and select “Trend”.

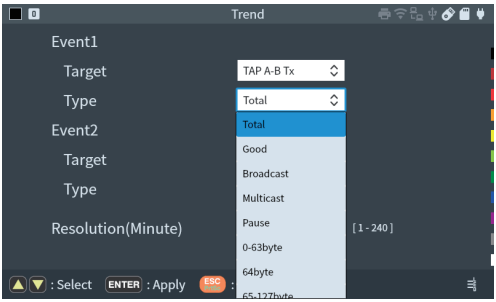
☐ Connection

Connect the target network to the port A/B of analyzer.
Refer to the manual of “Connection” for On-line monitor function

→「Online Monitor Function」(P9)

☐ Statistic setting

Touch “ Trend Opt.” Set the target signal line, counter, and measurement cycle.



☐ Start and Stop Measurement

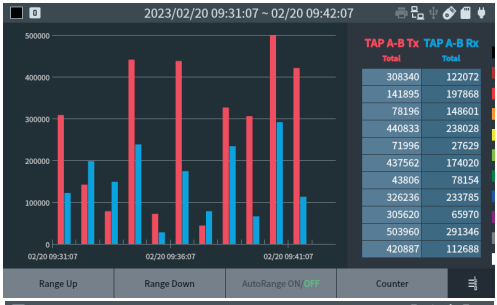
Press [RUN] to start measuring and [STOP] to end measuring.

☐ Result

Display the results in bar graph or counts the numbers.

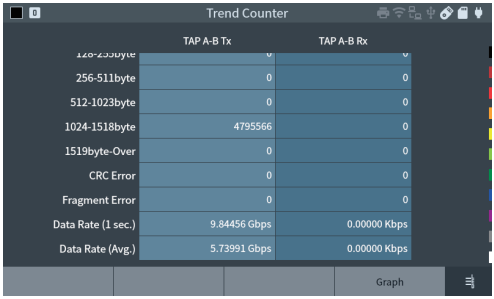
- Bar graph

Display the results in bar graph. Each bar is made when it passes the specified time range.



- Counter display

Display the total number of items for each port.
“Data Rate” item displays the data rate.

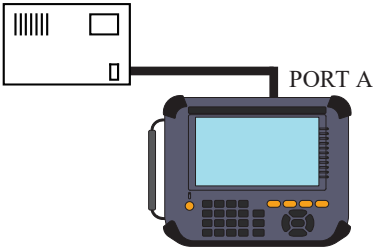


■ Packet Generator Function

Touch “Mode” at top menu and select “PG”

☐ Connection

Connect the target device and analyzer using the LAN cable.

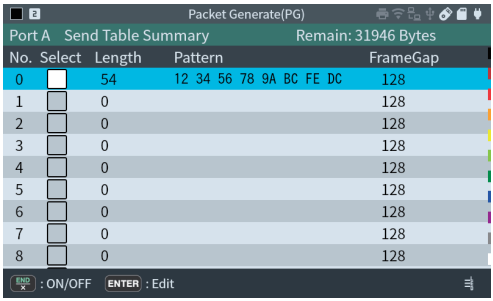


☐ PG setting

Touch “ PG Opt.” and set the transmission packets and conditions.

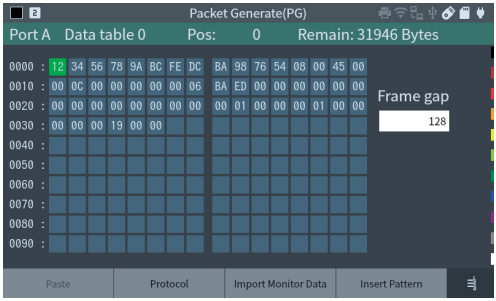
☐ Edit send packets

Touch “ Edit send table” from PG setting. Select enable/disable of 16 send tables. Touch selected table or press [ENTER] to edit the contents of the table.



- Edit table

Input the send packets in HEX. Maximum 32000 bytes of packets for total 16 tables can be input.



Input the packets without FCS.

Set the frame gap as well.

While typing the data, press [ENTER] or touch the screen longer to cut/copy/paste data.

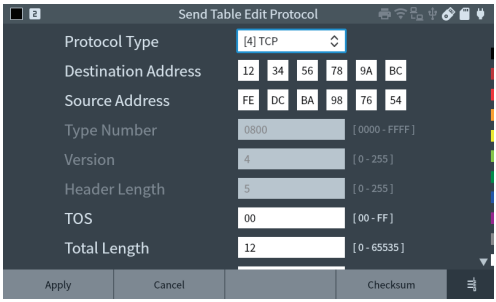
Touch “Protocol” and select protocol type etc.

・Edit protocol

Select the protocol type from Ethernet, IPv4, ARP, ICMP, TCP, UDP and set the appropriate header following the specification of each protocol.

Touch “Apply” to apply the setting and return to the data send table.

For more information of each protocol, refer to the specification of each protocol.

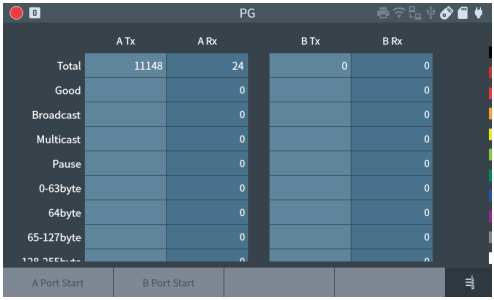


☐ Start and Stop Measurement

Press [RUN]. If the linking toward the selected transmission port is ready, “Transmit C Port” or “Transmit D Port” is displayed. Touch the button or [C]/[D] key to send the enabled transmission tables. When the transmission reaches to the selected times or press [STOP], the measurement stops.

☐ Test Result

The result of packet transmission is displayed on the screen.

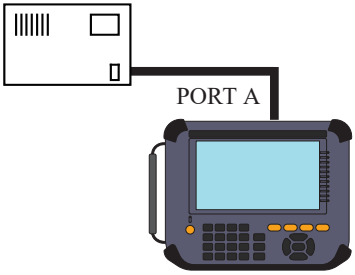


■ Ping Function

Touch “Mode” at top menu and select “Ping”.

☐ Connection

Connect the target device and analyzer using the LAN cable.



☐ Ping Setup

Touch “ Ping Opt.”. Set the send address and interval.

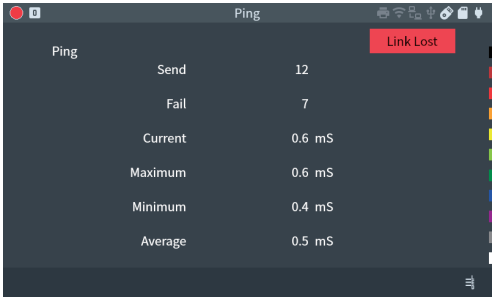
☐ Start and end measuring

Press [RUN] to start the ping test from selected port.

It ends the test when it reaches to the 30000 times or press [STOP].

☐ Test Result

Display the results on the screen.
If it cannot send the ping command, it displays the reason on the upper right on the screen.

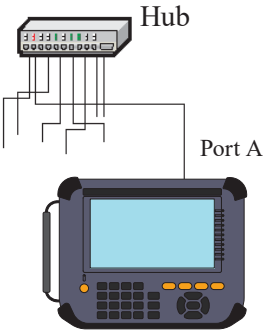


■ Port Blink Function

Touch “Mode” at top menu and select “Blink”

☐ Connection

Plug the LAN cable connected to the HUB into the Port A.



☐ Start and end measuring

Press [RUN] to repeat linking/unlinking from the PORT A to the port of the hub to which PORT A is connected.

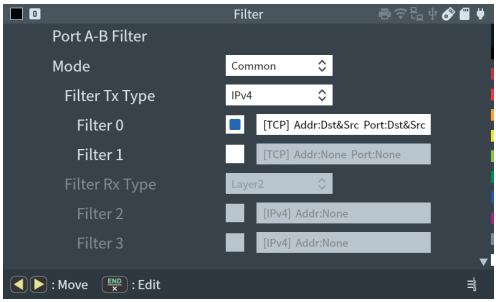
The blinking cycle can be changed between 2 and 16 seconds by pressing [▲] [▼].

It will help you finding the connected cable by blinking the link LED of HUB.

■ Filter function

Filter function captures specific frames measured by on-line monitor function.
It is able set 2 filters.
Touch “Filter” from on-line monitor function.

Shortcut key [MENU] ,[0]

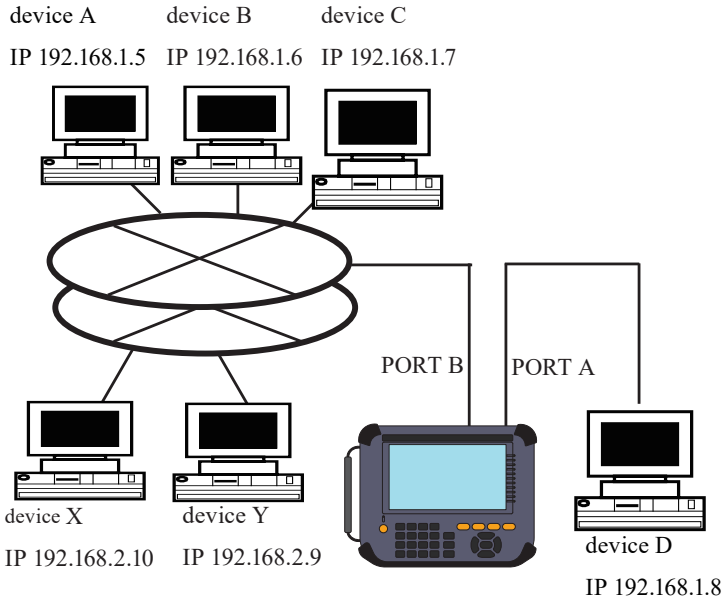


☐ Mode
If selecting “Common”, the setting on Tx is applied on Rx as well. If selectin “Separate” it is able to set Tx and Rx separately.

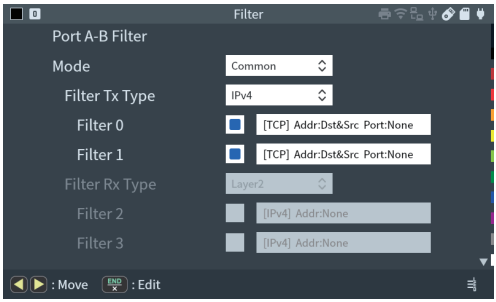
☐ Type
Select from Layer 2 or IPv4.

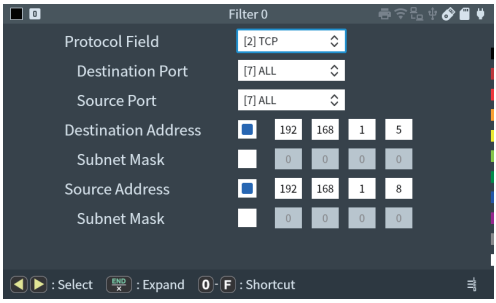
☐ Filter
Select valid/invalid of filter function. Select valid and set the details of filter setting.

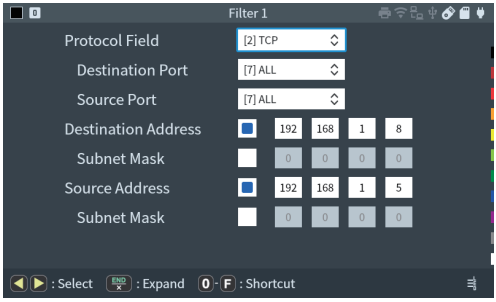
☐ Example of filter setting



- Monitoring example of TCP/IP frames between Device A and D by filtering.

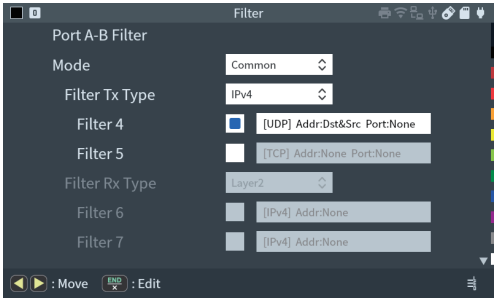


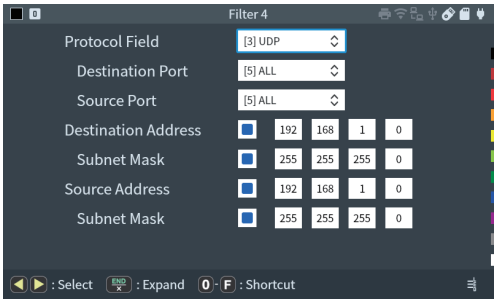




The filter 0 is configured to monitor TCP frames sent from the device D to device A and the filter 1 is configured to monitor TCP frames sent from the device A to device D. Configures this setting between port A-B.

- An example of the configuration to monitor only the UDP protocol communication between the devices X and Y which belong to the network address “192.168.1”





It is configured by filter 4 to monitor only the frames of UDP protocol which have "192.168.1" for the network address part of both source IP and destination IP.

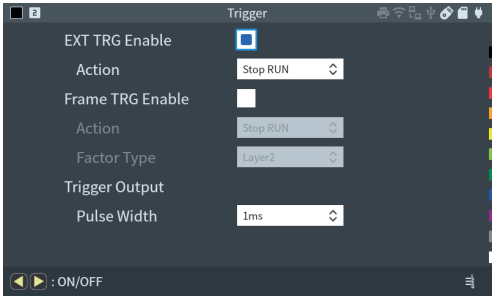
■ Trigger Setup

Specific conditions or input from external terminal become the trigger factors, and outputs external signal or stops measuring.
Touch "Trigger" from on-line monitor function.

Shortcut key [MENU] ,[2]

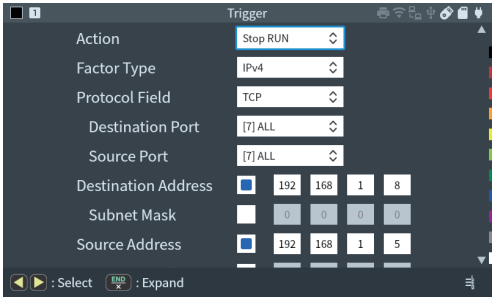
☐ External signal trigger
Low lever (TTL level) of the terminal signal connected to the external input terminal (IN1) becomes the trigger factor.

☐ Frame trigger
When the frame is matched with the specified condition, it stops measuring or counts the matched times.



☐ Output external signal
When the trigger condition is matched, low lever (TTL level) of pulse is output to the external terminal (OUT1).

☐ Example of trigger
When TCP communication is captured from "192.168.1.5" to "192.168.1.8", it stops measuring.



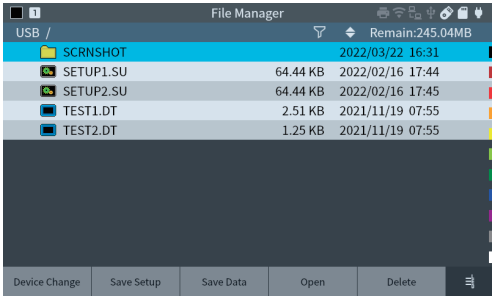
■ Save and Load of the Data

An SD/SDHC card or USB flash drive can be used as a storage device, and measurement data and setting data can be saved to it.
Tap “File Manager” to go to the file management screen.
(If the printer management screen appears, tap “File Manager” again.)

Shortcut key [MENU] ,[A]

Storage device has to be formatted as “FAT32”.

Touch “Device Change” to change the storage device (SD card or USB memory). Press[ ] to change the order of files, and [ ] to use the filter function (display only selected file type). Double click the folder to display the contents of files.

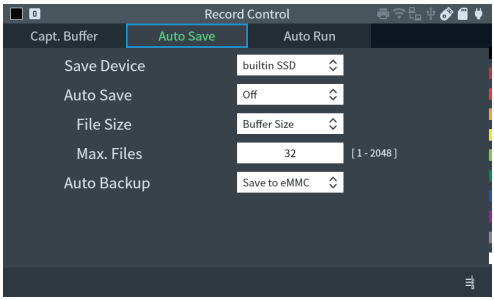


■ File output

Measurement data can be output to txt, csv, or pcapng files.
If you tap [SHIFT]+"Export" on the file management screen,a dialog will appear, so select an output method and output.

■ Auto Save

While measurement, communication data is automatically saved as a measurement log file in the built-in SSD or optional SD card or USB memory. It is useful to find a problem which rarely happens.
Touch “Record Control” at top menu and set “Auto Save” settings.



Save Device :

Select the storage device to save data.
If you select SD card or USB memory, insert the storage device into the unit.

Auto save :

Restart	Continuous ring recording up to the maximum number of files.
Max-stop	Saves up to the maximum number of files and stops measurement.
Append	Continuous ring recording from the continuation of the existing auto save file.

- The files saved by auto save function will be deleted if selecting other than “Append”.
- Set the inner memory to be the ring buffer.
  → Set “Record Control” at top menu, go to “Capt. Buffer” -> “Write Control”.

File size :

Set the size of the communication log file to be automatically saved.

Max. Files :

Set the maximum number of files to be recorded.

The communication log file name is # XXXXXXX.DT (XXXXXXX is a sequential number that increases by 1 from 0000000)

When you start the measurement by [RUN], a confirmation message for overwriting the file will be displayed. Tap [RUN] or “Continue” to start measurement. If you do not want to lose the communication log file and want to save it to another device, press [STOP] and save it to a PC or other device.

If there is not enough power while using the auto save function, it will damage the files or storage device. To use that function, insert the AC adapter to the analyzer and secure the power supply.

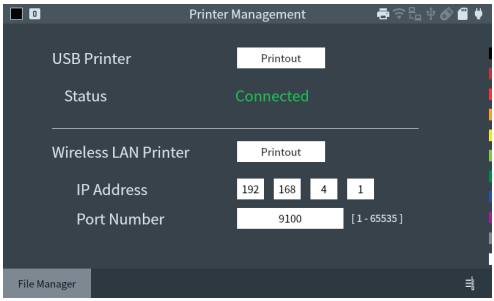
■ Auto back-up function

Captured data will be deleted when it turns off the power of analyzer.
As a factory setting, measured data (latest 16M byte of data) will be saved in the inner eMMC automatically.
To save all measured data or to delete all data, change the setting of Auto back-up.

Auto Backup :

Off	No automatic backup.
Save to eMMC	Save about 16 Mbytes of the latest data into internal eMMC.
Save to File	Save all the measurement data to the storage device

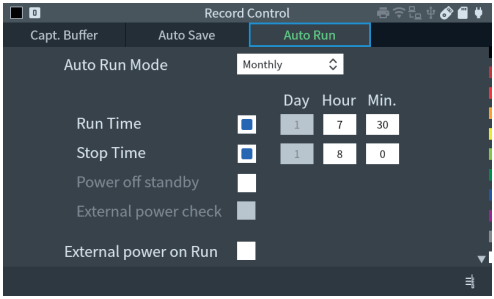
■ Printout function



You can print the measurement data or print a hard copy (the screen display image).
Tap "File Manager" to move to the printer management screen.
(If the file management screen is displayed, tap "Device Change" several times.)
Operate on the printer management screen to print the measurement data.
When you tap the print of the connection method you want to output, a dialog will appear, so specify any number and output.
For hard copy printing, select "USB printer" or "WLAN printer" for "Screen shot save to" on the Display/Power tab,
and press [SHIFT]+[ESC] on any screen.

■ Auto Run Function

By specifying the date and time for the start and end of measurement, it automatically executes measurement for the specified period.
Touch “Record Control” at top menu and go to “Auto Run”.



Auto Run mode :

Select the repeat condition for automatic measurement.
Touch ■ to activate the checked item.

Set the automatic measurement period for “Run time” and “Stop time”

With the settings on this screen, measurement starts at 7:30 every day and ends automatically at 8:00.

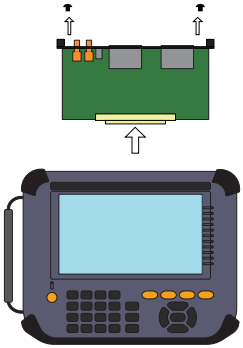
If you want to start the measurement in conjunction with the power on of the target line, check “External power on Run”.

Measurable Interface Expansion

By using the option for measurement expansion, you can expand the communication target to be measured.

■ Exchange the board

Remove the standard interface sub board and replace it with the optional interface sub board.



■ Firmware

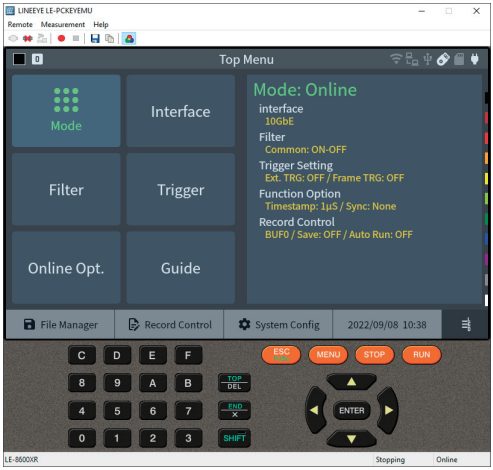
To use the optional expansion board, install the firmware from attached CD.
When using the optional expansion board at the first time, finish installation and copy the firmware which saved in the external storage.

PC Link Function

Using the attached utility software, you can perform remote operation while displaying the screen of the analyzer, transfer online monitored data to a PC, and convert it to Wireshark format.
Connect the analyzer to a computer via USB, LAN or Wi-Fi (supported models only).

■ Remote control of this analyzer

The key emulation software that performs operations such as key operations and screen taps on a PC.

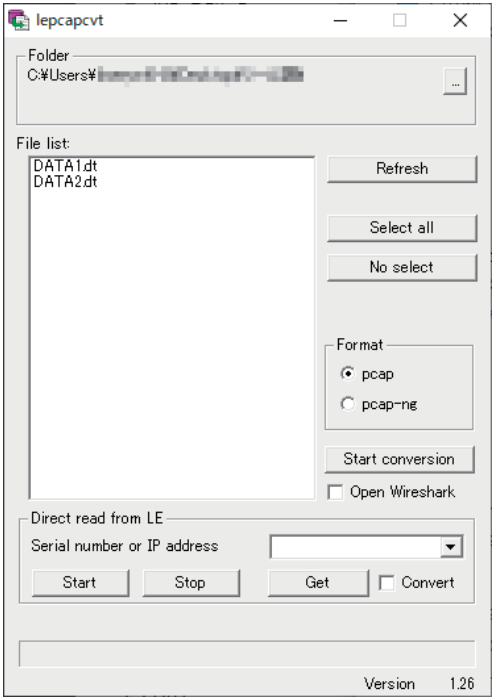


- Run setup.exe in the lepckeyemu folder to install the software.
- Open the remote settings dialog in its toolbar and specify the LE-8600X/LE-8500X series to connect to.
  When connecting via USB, specify the serial number printed on the back of the analyzer, and when connecting via LAN or Wi-Fi (supported models only), specify the IP address.
- Start the connection with in the toolbar.
- To finish it, disconnect with in the toolbar.

While the analyzer is remotely connected you cannot control the analyzer physically by the buttons or touch panel. Please disconnect the remote connection for the operation.
For details on how to use it, go to "Help" "Contents" in the drop-down menu to display online help.

■ Transfer of online monitored data to a PC

Using the utility software that converts the communication data of the analyzer into a format that can be handled by Wireshark, you can transfer the online monitored data in the memory to a PC.



- Copy lepcapcvt.exe in the lepcapcvt folder to an appropriate folder on your computer and execute it.
- Specify the connection destination.
  When connecting via USB, specify the serial number printed on the back of the analyzer, and when connecting via LAN or Wi-Fi (supported models only), specify the IP address.
- It executes start/stop measurement and import of the data.

For details on how to use the software, see readme.txt in the CD-ROM attached to the product.

Wireshark must be installed to handle pcap and pcapng format files.

Specifications of Function and Hardware

Item	
Interface	SFP+ 2ports. A and B (optional SFP/SFP+ modules to be connected) 10Gbe such as 10GBASE-T/SR/LR/ER, 1GbE and 2.5GbE.
Memory/Internal Storage	Capture memory: 1Gbyte (96byte to 12320byte for 1 frame) Internal storage: 500Gbyte
On-line Monitor Function	Recording and real-time display of Ethernet frames flowing between SFP+ ports A and B
Frame Size	60byte to 9Kbyte
Capture performance	About 10Gbps[*1]
Time stamp	The reception time is added as timestamp data for each received frame. Resolution: 8n seconds / 1u seconds / 10u seconds can be selected
Data display/ operation	2Scroll display, 2-split comparison display, jump operation to specified screen, mark jump operation
Translation	Supported protocols: IPv4, ARP, ICMP, TCP, UDP, DHCP, EtherCAT, IPv6, ICMPv6
Filter Function	Can monitor only the specific frames that match one or two specified conditions.
Trigger Function	Condition: When the specified frame is received or when the external TTL signal changes. Action: Automatically stops the monitor, counts the number of matching conditions, outputs an external TTL signal
Search Function	From the measured data, it can search, cue, and count only the specific frames that match the specified conditions.
SFP Module Information Display Function	Displays detailed information of the SFP/SFP+ module inserted to the measurement port
Statistical Analysis Function	It takes statistics of two frame counter values at specified intervals (2 to 240 seconds, 1 to 240 minutes) and can display the graph display, all frame counter values, and data rate in real-time.
PG Function	From the SFP+ port A and B it can output arbitrary packet set in 16 transmission data tables (total 32k data) of each port at arbitrary wire rate.
Ping Function	Can issue a PING command from SFP+ port A to display the number of responses and response time (current value, maximum value, minimum value, average value).
Port Blink Function	SThe connection destination of the cable can be confirmed by periodically blinking the link LED of the hub port to which the cable of SFP+ port A is connected.
Auto save Function	The contents of the capture memory (monitored data) can be automatically saved as a communication log file to the built-in SSD or to a storage device such as USB memory / SDHC card[*2]
Additional Functions	Time synchronization function by PPS signal of GNSS or external PPS signal, auto backup function, time specified automatic RUN/STOP function, power-on automatic RUN function. Printout function. Measured data can be converted and saved as pcapng/csv/txt format file.
Display	7 inch TFT color LCD with capacitive touch panel
Line Status LED	11 LEDs always display the connection status of SFP+ port A and B
LAN Port	RJ45 connector, 1000BASE-T Ethernet: IEEE 802.3 for PC connection
USB Device Port	TType-C connector, SuperSpeed transfer supported. For PC connection.
USB Host Port	Standard A connector, SuperSpeed transfer supported. For external storage (USB memory/SSD).

SD Card Slot	For standard size SD / SDHC memory cards, compliant with SD Association standard
External I/O terminal	4-pin connector for TTL level trigger input/output signals
GPS Antenna Connector	SMA (female) connector
PPS Signal Connector	SMA (female) connector
Wi-Fi interface*3	IEEE802.11b/g/n frequency range: 2412MHz to 2484MHz ・Transmission power 802.11b: +18.5dBm, 802.11g: +18.0dBm 802.11n: +17.0dBm
Power	Attached AC adapter or lithium-ion secondary battery (model number: P-26LW2) Battery drive time: 2 hours*4
Ambient Temperatures	In operation : 0 to 40 degree Celsius, In storage : -20 to 50 degree Celsius
Ambient Humidity	20 to 85%RH (No condensation)
Standard	CE (class A)
Size & Weight	234(W) x 186(D) x 44(H)mm, about 990g

* 1 Capture loss may occur if a large number of short packets are continuously sent to the target line of capturing or if packets are sent simultaneously in both directions with a high load.
* 2 For high-traffic lines, part of the communication frame is not recorded in the storage and capture loss may occur.
* 3 LE-8600XR only. For PC connection. The "Wi-Fi module" used for the product conforms to SRRC(China), FCC (USA), CE (EU), TELEC (Japan), KCC (Korea), ISED (Canada), NCC (Republic of China), however, as the "product" the Wi-Fi function is available only in Japan, USA, Canada, and EU nations in compliance with RE directive (2014/53/EU).
* 4 According to our test conditions assuming a normal usage situation

Memo

Memo

For any technical issues

Read "FAQ" in our website or email us.
https://www.lineeye.com/html/contactus.html

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Printed in Japan

M-7586XQE/LE