

LINEEYE®

**PC-connectable Protocol Analyzer
for Developing and Testing
USB 2.0 Drivers and Firmware**

480 Mbps Support!

Large 256 MB Memory

**Simple Operation
and Reasonable Price**

Expandable FPGA Structure

USB2.0 Protocol Analyzer

The LE-620HS is a USB protocol analyzer especially designed for monitoring and use in connection with a PC.

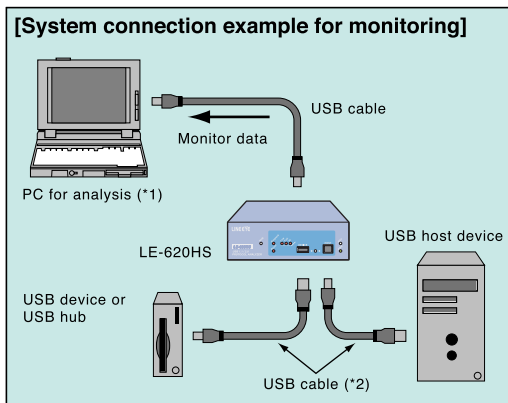
It continuously records USB 2.0/1.1 communications on a PC hard disk in real-time and enables that data to be displayed on the computer screen in an easy-to-understand fashion.

Japanese Version **LE-620HS**
English Version **LE-620HS-E**



HIGH/FULL/LOW Auto Speed Detection

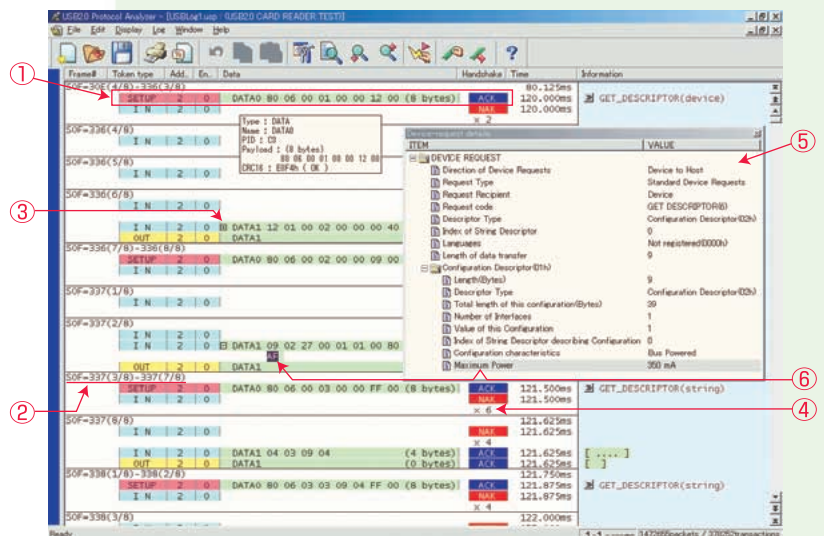
Without affecting the communication line carrying data between the analyzer and target devices, the LE-620HS internally records large amounts of data and simultaneously transfers it to a connected PC via USB. The LE-620HS automatically detects the speed of the target devices (480/12/1.5 Mbps), so a speed setting is unnecessary. And, if the device is connected through a hub of differing speed, measurement can be started by simply pressing the space bar of the PC.



(*1) PC on which the included analysis software has been installed. If the target host device is a PC that supports the OS of the LE-620HS, the PC can also be used for analysis.
(*2) It is recommended to keep two cables within the maximum cable length specified in USB.

Clearly Detailed Monitor Display

USB packets are clearly displayed by transaction. It is possible to identify PING at high speed and the split transactions. Standard requests and descriptors are translated and displayed in detail, therefore the difficult-to-understand USB protocol can be intuitively understood. And, the LE-620HS supports a wide range of device-specific descriptors.



- Multiple packets are grouped and displayed on a single line by transaction.
- Displays the SOF (Start Of Frame) frame number. At high speed, microframes are displayed as (1/8)-(8/8). Elapsed time can be calculated from the SOF frame number.
- Only the first 8 bytes of data packets are displayed. Clicking on the [+] mark displays all data.
- Visibility of continuous NAK packets is improved by displaying only those cycles.
- Clicking on the [>] mark displays a detailed translation window of the device request. Descriptors are displayed as trees to show their hierarchical structure.
- When a device request item is selected for translation, the corresponding data in the data packet is highlighted.

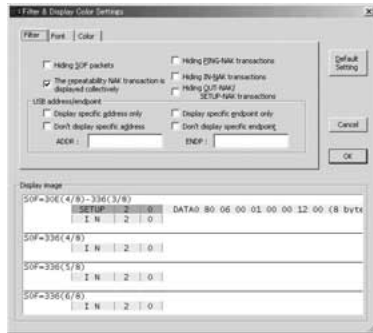
Max. 2 GB of Continuous Recording

Up to 2 GB of measured data can be continuously recorded on the hard disk of the PC. The measured data log can be displayed and scrolled during measurement, therefore the LE-620HS is effective for the extended analysis of communication troubles of rarely occurring unidentifiable conditions.

USB 2.0 Protocol Analyzer LE-620HS

Upgraded Offline Analysis Features

Data can be easily found amongst the huge volume of recorded data by using the filter and search features. Development efficiency is boosted to a higher level by using color-coded customization features for packet types and mark/jump features.



[Filter condition setting window example]



[Search condition setting window example 1]



[Search condition setting window example 2]

Use of Measured Data

Developers can copy, paste and save selected ranges of measured data as compact text files. Data can be attached to reports or sent by e-mail to developers in a remote area. If the remote PC has the analysis software, recorded data can be sent to it and analyzed in detail.



Expandable Firmware

Because the LE-620HS adopts FPGA, not only the analysis software but also the firmware of the analyzer itself can be easily updated. New functions and improved versions of firmware are available for downloading from LINEEYE's website, so that developers can always work with the most up-to-date tools.

Specifications

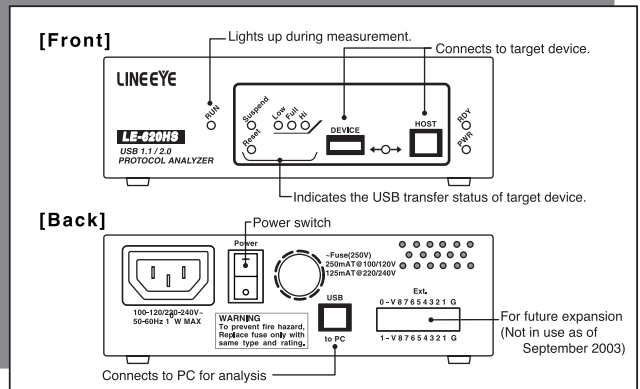
Standard	USB 2.0/1.1
Connectors for measurement	USB standard A/B receptacles: 1 each
PC connector	USB B receptacle: 1 Connected to the USB port of the PC on which the included analysis software has been installed. (*1)
Speed	HIGH (480Mbps) / FULL (12Mbps) / LOW (1.5Mbps) Automatically judged and selected.
Storage capacity	LE-620HS: Capture memory 256 MB PC: Hard disk Max. 2 GB (Can be specified in 1 MB increments.)
Recording method	By byte including Sync pattern (*2) Data is recorded on the built-in capture memory or on the hard disk of a PC.
LED	PWR (power): 1, RDY (ready): 1, Hi/Full/Low (USB speed): 1 each, Suspend: 1, Reset: 1, Data LED (target data): 1, RUN (measuring): 1
Packets	SOF, IN, OUT, SETUP, DATA0, DATA1, ACK, NAK, STALL, PRE, DATA2, PING, MDATA, SPLIT, ERR, NYET and Unknown (undefined).
Error check	CRC error
Elapsed time display	At HIGH speed: at resolution of 125usec/ At FULL speed: at resolution of 1 msec
Color display customization	SOF, IN, OUT, SETUP, DATA0, DATA1, ACK, NAK, STALL, DATA2, PING, MDATA, SPLIT, ERR, NYET, Unknown (undefined), SetupDetail and CRC-Error can be color-coded separately.
Detailed display	Standard requests, standard descriptors and descriptors by class (HUB, Audio, HID, other (*3)) can be displayed in detail.
Filter function	Shows and hides SOF, NAK, specific addresses and specific end points.
Search function	SOF, IN-Token, OUT-Token, SETUP-Topken, DATA-Packet, PING, ACK, NAK, STALL, NYET, Unknown, CRC-Error, specific address, specific end-point, and idle status more than the specified value can be searched.
Mark/jump functions	Up to 99 marks can be set at specific packets in the recorded data. Jump to the specified mark is possible
Save	Allows raw data or text data to be saved. Copy/paste via the clipboard. Saved data can be accompanied by comments.
Power supply	100 to 240 V AC (50/60 Hz) Max. 10 W
Ambient temperature	In operation: 5 to 40°C / In storage: -10 to 50°C
Ambient humidity	10 to 90% (No condensation)
Dimensions and weight	145 (W) x 190 (D) x 45(H) mm Approx. 950 g
Accessories	analysis software CD, USB cable (x 2), AC cable, carrying bag, instruction manual(LE-620HS:Japanese/LE-620HS-E:English), warranty

Note *1: USB 2.0 port supporting high-speed transfer is recommended. In case of slower USB port, data may not be recorded continuously on the hard disk of PC. In such a case, only the data recorded on the built-in capture memory will be guaranteed.
*2: Waveforms of USB bus signal or change of USB device status (reset, suspend, resume, etc.) are not recorded.
*3: More classes are to be supported by future versions of analysis software.

System Requirements

O	S	Windows® XP/2000
P	C	PC/AT-compatible machine with USB ports
	CPU	Pentium 500MHz or faster (Pentium 2GHz or faster is recommended.)
	Memory	Min. 256 Mbytes
	USB port	USB 2.0 port supporting high-speed transfer is recommended. Use the Microsoft EHCI driver as the host controller driver for USB 2.0 port. USB 2.0 host controller driver provided with the PCI card or PCMCIA card may not work properly. In such a case, obtain the Microsoft EHCI driver from the Microsoft Windows Update website.
	Hard disk	Required free bytes: 5MB for installing the analysis software + area for recording communications log
	Display	1024 x 768 or better resolution recommended.

Description of Switch, LEDs and Connectors



SAFETY WARNING
Read the instruction manual provided with the product before using and use the product as explained in that manual. Using the product in ways not guaranteed in the manual, connecting it to systems outside of the specified ranges and remodeling can all cause trouble and damage. LINEEYE CO., LTD. will assume no responsibility whatsoever for trouble or damage arising because of unauthorized ways of use.

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