

# PROFISHARK 1G+

INSTALLATION AND CONFIGURATION MANUAL



**PROFITAP**

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# *INSTALLATION*

## *1. UNPACKING*

Carefully unpack all the items supplied with the **ProfiShark 1G+** and retain the packaging for later use:

- ◉ 1 x ProfiShark 1G+ main unit
- ◉ 1 x GPS/GLONASS antenna
- ◉ 1 x Ethernet cat5e cable (2 m)
- ◉ 1 x USB 3.0 cable (1,8 m)
- ◉ 1 x USB key (Software, Drivers, Documentation)
- ◉ Quick Start Guide

► **NOTE:** Please contact the supplier if any part is missing or damaged.

## 2. HARDWARE OVERVIEW

The ProfiShark 1G+ is an integrated network TAP providing safe access to the network for monitoring purposes. It is a non-intrusive monitoring device, undetectable to the network, leaving the original data traffic unaltered with no extra packets being inserted.

ProfiShark 1G+ provides the full feature set of ProfiShark 1G, with additional Advanced Timestamping features. Advanced Timestamping combines hardware (GPS/GLONASS, PPS) and software features, allowing greater control over timestamp synchronization, for use in a variety of scenarios.

In a gigabit network, the ProfiShark 1G+ negotiates with both attached devices for the highest common speed. If no common speed can be achieved, or if one of the devices is disconnected, the TAP disconnects the line to the other attached device, allowing a redundant path to be activated in the network route node.

As it is based on USB 3.0 (5 Gbps), the ProfiShark 1G+ manages full-duplex gigabit capturing at wirespeed, without the bottleneck of an aggregator tap. It also surpasses all standard NICs in capture mode, as it catches any tags and encapsulation without altering the frames.

When the TAP becomes unpowered, it activates its bypass circuits, connecting the two attached devices directly. The ProfiShark 1G+ integrates a high performance fast failover circuit and a proprietary algorithm, reducing the unavailability of the network path down to approximately 1-2 seconds.

The ProfiShark 1G+ is powered directly from the USB 3.0 port. A dedicated power adapter can be used to prevent failover when disconnecting the USB 3.0 port. The unit can be managed by the ProfiShark Manager application, found on the supplied USB key or downloadable from the Profitap Resource Center.

## FEATURES:

- ◉ 10/100/1G monitoring on USB 3.0
- ◉ USB 3.0 powered, no adapter required
- ◉ Hardware aggregation
- ◉ 8 ns hardware timestamping for accurate latency testing
- ◉ GNSS (GPS/GLONASS) UTC timestamping
- ◉ PPS synchronization (input/output)
- ◉ Real time statistics
- ◉ Compatible with all industry standard analyzers
- ◉ Fail-safe monitoring
- ◉ Low delay, low jitter
- ◉ Low level error and bandwidth monitoring
- ◉ CRC error capture
- ◉ Direct capture to disk
- ◉ In-Line and SPAN (Dual NIC) capture modes
- ◉ Very low CPU usage
- ◉ Invisible to the network
- ◉ PoE passthrough

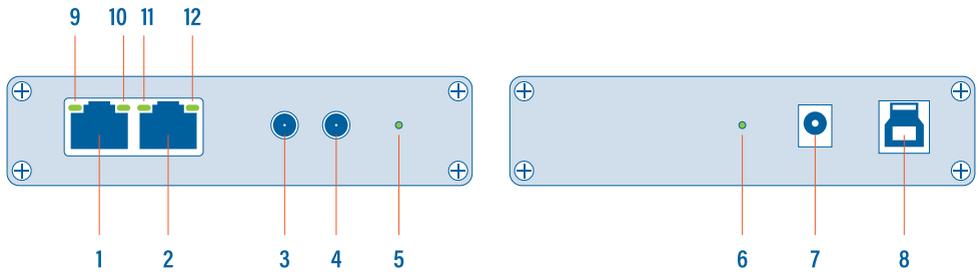
- **NOTE:** The fast failover relies on the network setup. In case the fast failover cannot be performed, the devices connected to ports A and B have to renegotiate the link. This operation takes about 2-4 seconds.

## 2.1 Technical and Electrical Specifications

- Powered from USB 3.0 port or optional 5V 1A DC adapter
- Active bypass and fast failover circuits
- PPS-in characteristics: Rising edge active, TTL, 50Ω internally terminated, V<sub>th</sub>: ~1.2V, ESD protection: ±15kV

<b>SYSTEM REQUIREMENTS</b>	<b>MAXIMUM NETWORK LATENCY</b>
Dual Core Processor 4 GB memory USB 3.0 port	1 Gbps: 370 ns 100 Mbps: 660 ns 10 Mbps: 6600 ns
<b>LEDS</b>	<b>POWER CONSUMPTION (FULL TRAFFIC)</b>
2 x Speed 2 x Link Activity 1 x Sync, 1 x Power	1 Gbps: 600 mA 100 Mbps: 450 mA 10 Mbps: 520 mA
<b>CONNECTORS</b>	<b>ACCESSORIES</b>
2 x RJ45 8 pins 1 x USB 3.0 1 x 5V DC (center positive) 2 x SMA female (PPS, GPS)	1.8 m USB 3.0 cable 2 m Ethernet cat5e cable GPS/GLONASS Antenna USB key
<b>DIMENSIONS (WxDxH)</b>	<b>SUPPORTED OS</b>
105 x 124 x 26 mm 4.13 x 4.88 x 1.02 in	Windows 7 / 8 / 10 (32/64-bit) / 11 Linux, macOS High Sierra
<b>CAPTURE PERFORMANCE</b>	
3.2 Gbps	
<b>WEIGHT</b>	<b>STORAGE TEMPERATURE</b>
280g — 0.62 lb	-40 to +80 °C — -40 to 176 °F
<b>RELATIVE HUMIDITY</b>	<b>OPERATING TEMPERATURE</b>
10 to 95%, non-condensing	0 to +50 °C — 32 to 122 °F
<b>COMPLIANCE</b>	<b>ORDER REFERENCE</b>
RoHS — CE	C1AP-1G2

## 2.2 Visual Description



<b>1, 2</b>	RJ45 Ethernet ports A and B
<b>3</b>	PPS input/output (SMA female)
<b>4</b>	GNSS (GPS/GLONASS) antenna input (SMA female)
<b>5</b>	Sync LED
<b>6</b>	Power indicator LED
<b>7</b>	Optional DC power input (5V, 1A, center positive)
<b>8</b>	USB 3.0 port type B
<b>9, 12</b>	Link/Activity LEDs
<b>10, 11</b>	Speed LEDs

## 2.3 LED Functionality

LED	STATE	MEANING
LED 5	ON	Internal timestamp synchronized with the configured time system (GPS, NTP, etc.) with an accuracy of $\pm 16$ ns
LED 6	OFF	No USB cable nor power cable are connected
	ON	USB cable and/or power cable are connected
	BLINKING	Constant synchronization between system time and hardware timestamp (blink ON every even second, blink OFF every odd second)
LED 10	ON	ProfiShark 1G+ is operating at 10 Mbps speed
LED 11	ON	ProfiShark 1G+ is operating at 100 Mbps speed
LED 10 + LED 11	ON	ProfiShark 1G+ is operating at 1 Gbps speed
	BLINKING	ProfiShark 1G+ is not connected or is trying to connect
	ALTERNATING BLINKING	ProfiShark 1G+ cannot find a common speed between the connected devices
LED 9, LED 12	ON	The port is linked
	BLINKING	The port is linked and has RX/TX activity (traffic is passing through)

## 3. CONNECTING POWER AND START-UP

In order for the ProfiShark 1G+ to be ready for analyzing traffic, the following steps have to be taken:

1. Install the ProfiShark Manager.
2. Launch the ProfiShark Manager.
3. Launch the software network analyzer.
4. Tap the line that will be monitored by interconnecting the ProfiShark 1G+ in between, using Ethernet cables.

- ▶ **NOTE:** The link must be connected to the **unpowered** ProfiShark 1G+ at first. Make sure the link is active before powering the ProfiShark 1G+.

5. Connect the ProfiShark 1G+ to a computer, using the supplied USB 3.0 cable.

- ▶ **NOTE:** Connecting to a USB port of lower specification than USB 3.0 will result in data drops, due to bandwidth limitations.
- ▶ **NOTE:** Connecting the ProfiShark 1G+ to a different USB port than the one used during the installation requires a reboot of the computer (with the ProfiShark connected) for automatic driver installation for this USB port, and proper handling of the interface by Windows.

6. Optional: Connect a dedicated power supply to the ProfiShark 1G+ to ensure maximum fail-safe operation at all times. In the absence of a dedicated power supply, the ProfiShark 1G+ is powered through the USB 3.0 cable.
7. Connect the GPS antenna to the unit in order to benefit from GPS-linked timestamp synchronization. Position the antenna outside or near a window for the best results.

To install the ProfiShark Manager on Windows, launch the setup utility located in the “\Windows\Installer\” folder of the USB flash drive. Uninstall any previous version of the ProfiShark Manager before starting the setup utility.

1. Allow the installation to proceed when prompted by Windows User Account Control, and follow the on-screen instructions.

2. When prompted, disconnect and reconnect the ProfiShark 1G+.
3. Wait for the installation to complete.
4. Click Launch.

► **NOTE:** The setup utility will create a launch icon in your start menu.

To install the ProfiShark Manager on Linux or macOS, follow the instructions in the *Installation.txt* file located on the USB key or in the latest “ProfiShark USB key” release located in the Resource Center at [www.profitap.com/resource-center/](http://www.profitap.com/resource-center/)

## **4. ANALYZER INSTALLATION**

All industry standard analyzers are supported and can be used to perform the analysis. A comprehensive list of compatible analyzers are listed on the ProfiShark 1G+ product page at: [www.profitap.com](http://www.profitap.com)

Wireshark is recommended, and can be downloaded at: [www.wireshark.org](http://www.wireshark.org)

To start capturing network data, launch the preferred network analyzer and select the new network interface named “ProfiShark 1G+ GPS Device”.

# ***MONITORING GUIDE***

## ***1. PROFISHARK MANAGER***

ProfiShark Manager is a standalone application designed and developed by Profitap. It provides means for statistical analysis of a network prior to a deeper investigation using an analyzer. It also provides options for port diagnostic, port control, timestamping, and traffic capture.

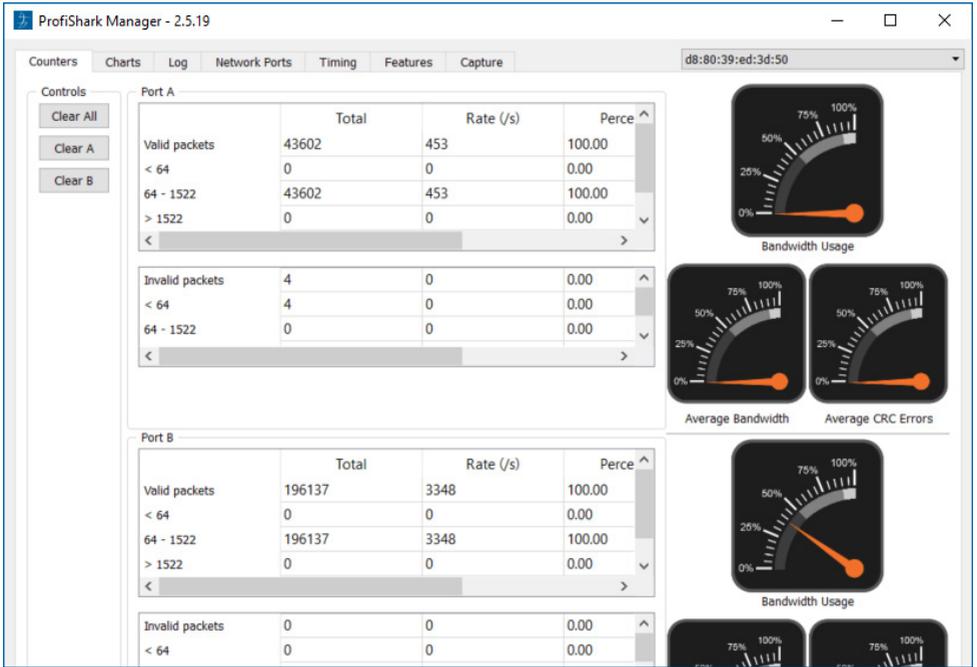
A built-in utility allows flashing the firmware and updating the device online or using a locally stored file. ProfiShark Manager can be used simultaneously with a software network analyzer, without the need to interrupt data capture.

ProfiShark Manager functionalities are grouped in the following tabs:

- ◉ Counter Tab
- ◉ Charts Tab
- ◉ Log Tab
- ◉ Network Ports Tab
- ◉ Timing Tab
- ◉ Features Tab
- ◉ Capture Tab

### ***1.1 Counters Tab***

The *Counters* tab displays all the ProfiShark 1G+ built-in counters for both Ethernet ports. These 64-bit hardware counters are cleared at hardware startup and link reconnection.



<b>VALID PACKETS</b>	Representing the number of valid packets (of any size) passing through the port.
<b>INVALID PACKETS</b>	Representing the number of CRC error packets (of any size) passing through the port.
<b>&lt; 64</b>	Representing the number of packets (valid/invalid), not exceeding 64 bytes in size.
<b>64 - 1522</b>	Representing the number of jumbo packets, also known as jumbo frames (valid/invalid) with a size between 64-1522 bytes.
<b>&gt; 1522</b>	Representing the number of packets (valid/invalid) exceeding jumbo packet specifications of 1522 bytes in size.

There are also 6 graphical meters (3 for each port), displaying current bandwidth usage, average bandwidth usage, and average CRC error rate for each port.

## 1.2 Charts Tab

The *Charts* tab offers inspection of the same statistical information as the *Counters* tab, plotted over time, offering a better overview of the data flow.



Depending on the type of packets or events selected in the left side of the screen, the statistical data is plotted accordingly for either port A or B. Refresh rate can also be selected using the drop-down list on the top left, further tuning the displayed information.

All data can be expressed either in number of packets per second, or in a percentage of the total number of packets:

- By selecting *packets/s*, each data type displays the corresponding number of packets per second, except for the bandwidth usage which is displayed in bytes per second.
- By selecting *percentage*, each data type is displayed as a percentage of the total number of packets, except for the bandwidth usage which is displayed in percentage of the total bandwidth.

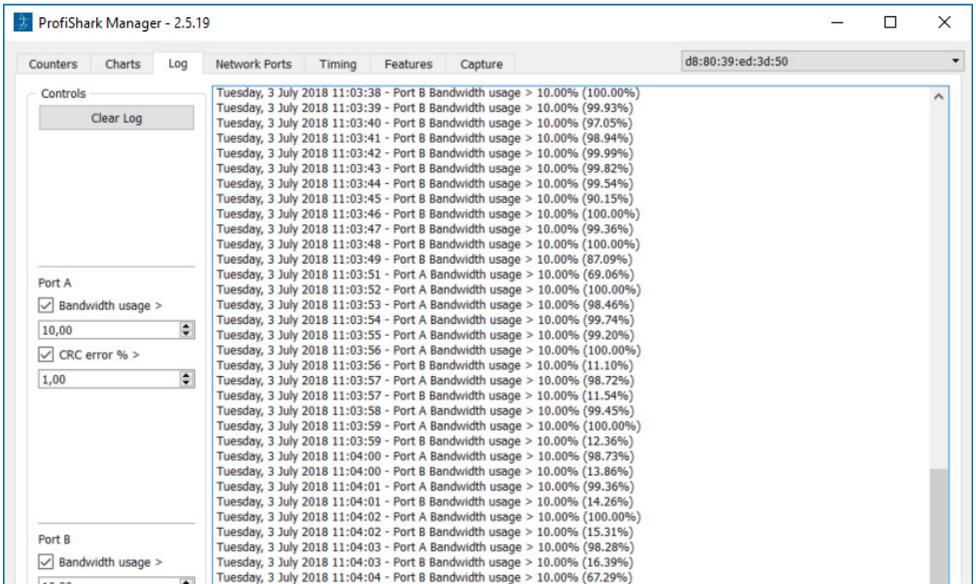
The plotted statistical data can be reset by clicking the *Clear All* button.

Disconnecting the ProfiShark 1G+ also resets the plotted statistical data.

### 1.3 Log Tab

The *Log* tab allows the user to monitor bandwidth usage and CRC error rate on either port A or port B. Every time the threshold is exceeded, a log entry is added, allowing to easily identify the type, date, and port of the event.

A certain degree of filtering can be applied on the logs, only displaying events matching the specified percentage.

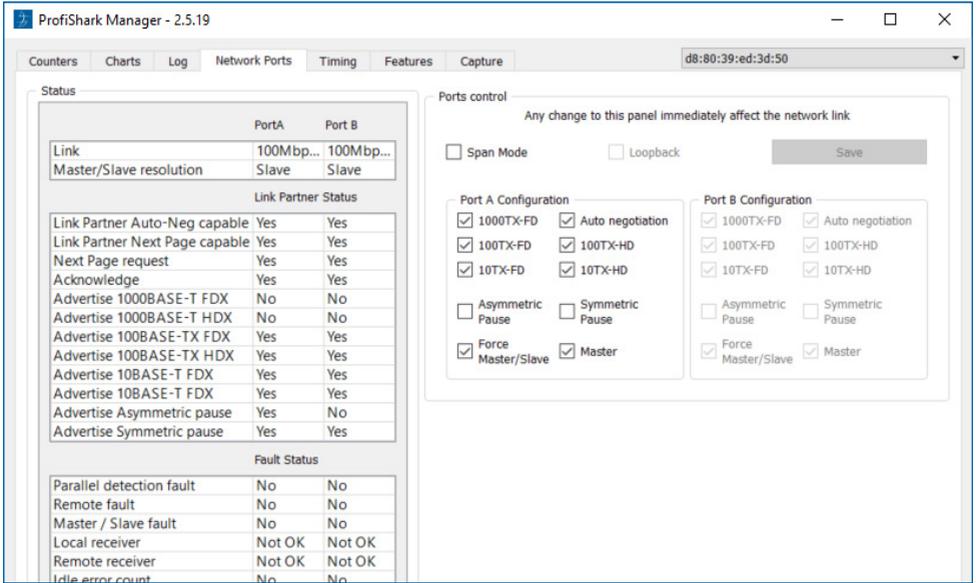


**BANDWIDTH USAGE:** Select this option to only log traffic events exceeding the set value. This value represents a percentage of the total 1 Gbps bandwidth. For instance, a value of 5.5 will result in only logging traffic events exceeding 56.32 Mbps ( $1024 * 0.055$ ).

**CRC ERROR:** Select this option to only log CRC error events exceeding the set value. This value represents a percentage of the traffic passing through the port. For instance, a value of 5.5 will result in only logging traffic events with a CRC fault rate exceeding 5.5% of the traffic passing through the port.

## 1.4 Network Ports Tab

The *Network Ports* tab allows the customization of ports settings for the ProfiShark 1G+, and offers an overview of the ports' status and link capabilities.



The ProfiShark 1G+ ports are set to *In-Line Mode* by default (*SPAN Mode* option unchecked), meaning that devices connected through ports A and B can communicate. In this case, both Ethernet ports are controlled at the same time. Enabling *SPAN Mode* tells the ProfiShark 1G+ to intercept two separate data streams, and the communication between the devices connected to ports A and B is severed. In this case, the Ethernet ports can be controlled independently in terms of speed, duplex mode, and autonegotiation.

### PORTS CONTROL VIEW

#### SPAN MODE

Checking this option tells the ProfiShark 1G+ to intercept a separate data stream for each port. Each port can be controlled independently. Unchecking the option sets the ProfiShark to *In-Line Mode*.

<p><b>LOOPBACK</b></p>	<p>This feature is only available for ProfiShark 10G.</p>
<p><b>AUTO NEGOTIATION</b></p>	<p>This feature tries to link the two network devices on the highest possible speed out of those selected for each port (1000TX-FD, 100TX-FD/HD, 10TX-FD/HD). Enabling this feature also allows to select flow control features (Asymmetric/Symmetric Pause) and establish or force the Slave/Master device.</p> <ul style="list-style-type: none"> <li>▶ <b>Note:</b> This option is required for 1 Gbps speeds.</li> </ul>
<p><b>1000TX-FD/HD, 100TX-FD/HD, 10TX-FD/HD</b></p>	<p>If the <i>Auto negotiation</i> feature is enabled, multiple speeds can be selected in this section (1000, 100 or 10 in Full or Half Duplex mode) and a link will be attempted at the highest possible speed. If the <i>Auto negotiation</i> feature is disabled, only one speed can be selected in this section (10/100 in Full or Half Duplex mode) forcing the link to be established at the selected speed.</p> <ul style="list-style-type: none"> <li>▶ <b>Note:</b> If no common speeds are selected for port A and B (only in SPAN Mode) a link cannot be established.</li> </ul>
<p><b>ASYMMETRIC/ SYMMETRIC PAUSE</b></p>	<p>These features are flow control related, regulating traffic in cases of buffer overflow situations.</p> <ul style="list-style-type: none"> <li>▶ <b>Note:</b> Only available if the <i>Auto negotiation</i> feature is enabled.</li> </ul>
<p><b>FORCE MASTER/ SLAVE</b></p>	<p>Enabling this feature signals to the negotiation process that the network device connected to this port is desired to be the Slave device.</p> <ul style="list-style-type: none"> <li>▶ <b>Note:</b> Only available if the <i>Auto negotiation</i> feature is enabled.</li> </ul>
<p><b>MASTER</b></p>	<p>Enabling this feature signals to the negotiation process that the network device connected to this port is forced to be the Master device.</p> <ul style="list-style-type: none"> <li>▶ <b>Note:</b> Only available if the <i>Auto negotiation</i> feature is enabled.</li> </ul>

**FORCE  
MASTER/SLAVE  
& MASTER**

Enabling both features signals to the negotiation process that the network device connected to this port is forced to be the Master device.

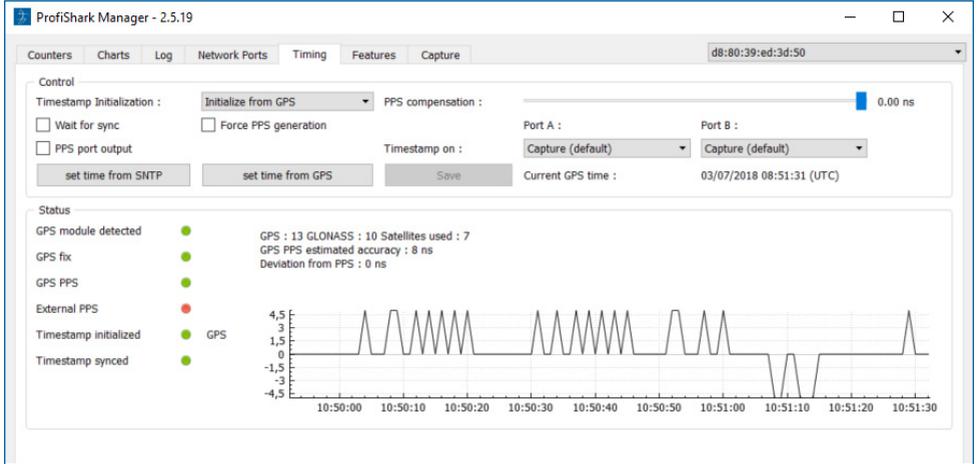
- ▶ Note: Only available if *Auto negotiation* feature is enabled.

A comprehensive status of network capabilities is displayed on the left side panel, depending on the customization done in Port A Configuration / Port B Configuration.

Status		
	PortA	Port B
Link	100Mbps...	100Mbps...
Master/Slave resolution	Slave	Slave
Link Partner Status		
Link Partner Auto-Neg capable	Yes	Yes
Link Partner Next Page capable	Yes	Yes
Next Page request	Yes	Yes
Acknowledge	Yes	Yes
Advertise 1000BASE-T FDX	No	No
Advertise 1000BASE-T HDX	No	No
Advertise 100BASE-TX FDX	Yes	Yes
Advertise 100BASE-TX HDX	Yes	Yes
Advertise 10BASE-T FDX	Yes	Yes
Advertise 10BASE-T HDX	Yes	Yes
Advertise Asymmetric pause	Yes	No
Advertise Symmetric pause	Yes	Yes
Fault Status		
Parallel detection fault	No	No
Remote fault	No	No
Master / Slave fault	No	No
Local receiver	Not OK	Not OK
Remote receiver	Not OK	Not OK
Idle error count	No	No
100BASE-TX lock error	No	No
100BASE-TX receive error	No	No
100BASE-TX transmit error	No	No
100BASE-TX SSD error	No	No
100BASE-TX ESD error	No	No
1000BASE-T lock error	No	No

## 1.5 Timing Tab

The *Timing* tab displays the settings and information related to the advanced timestamping features.



### CONTROL

<b>TIMESTAMP INITIALIZATION</b>	Sets the source for timestamping at startup: GPS / RTC / System time. The timestamp process can also be turned off.
<b>WAIT FOR SYNC</b>	If checked, the traffic capture is allowed only after timestamp synchronization has been completed.
<b>PPS PORT OUTPUT</b>	If checked, the PPS port will be set to output mode, sending out a PPS signal if the GPS is synchronized.
<b>FORCE PPS GENERATION</b>	Forces the generation of a PPS signal from the internal RTC (real-time clock). ► Note: Only active if "PPS port output" is also checked.
<b>SET TIME FROM SNTP / GPS</b>	Sets the source for timestamping to either GPS or an online time service (SNTP).

<p><b>PPS COMPENSATION</b></p>	<p>The PPS compensation slider tells the PPS to compensate for latency. For instance, 1 meter of cable adds 3 ns of latency, in which case the slider should be set to -3 ns (-15 ns for 5 meters, -30 ns for 10 meters, etc.).</p>
<p><b>TIMESTAMP ON PORT A / PORT B</b></p>	<ul style="list-style-type: none"> <li>◉ <b>Capture:</b> timestamps are set to the packets at the moment they are captured within the device.</li> <li>◉ <b>Ingress:</b> timestamps are adjusted to account for latency to simulate timestamping at port ingress.</li> <li>◉ <b>Egress:</b> timestamps are adjusted to account for latency to simulate timestamping at port egress.</li> </ul> <p>Example: Set one port to egress on a first ProfiShark and one to ingress on a second ProfiShark to measure the latency between both ports.</p>

<p><b>STATUS</b></p>	
<p><b>GPS MODULE DETECTED</b></p>	<p>If green, the GPS antenna has been detected by the ProfiShark 1G+.</p>
<p><b>GPS FIX</b></p>	<p>If green, the GPS connection is stable. If yellow, the GPS connection is close to being stable.</p>
<p><b>GPS PPS</b></p>	<p>If green, the GPS link is stable enough for the PPS chip to start the synchronization.</p>
<p><b>EXTERNAL PPS</b></p>	<p>If green, an external PPS is detected, bypassing the internal PPS. If red, no external PPS has been detected.</p>

<b>TIMESTAMP INITIALIZED</b>	Indicates the method by which the time data has been obtained: GPS, SNTP, System clock, or RTC.
<b>TIMESTAMP SYNCED</b>	Indicates that the internal timestamping is synchronized with the UTC time.
<b>SATELLITES STATUS</b>	Indicates the number of GPS and GLONASS satellites found in range, and the number of satellites used for timestamping.
<b>DEVIATION FROM PPS</b>	Indicates the instant deviation of the GPS synchronization from the internal PPS.
<b>GRAPH</b>	The graph section displays the GPS synchronization status and its deviation from the internal PPS over time.

## 1.6 Features Tab

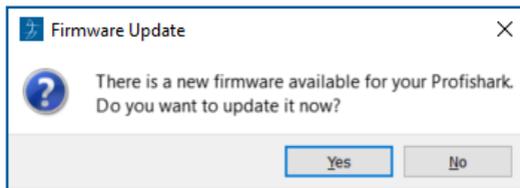
The *Feature* Tab is divided into 3 sections:

- **The *Status* section**, displaying firmware, hardware and network status for the connected ProfiShark 1G+.

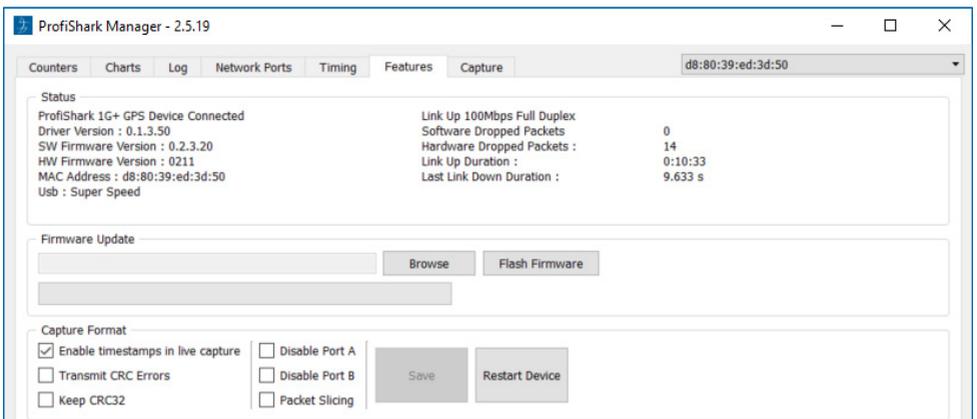
<b>STATUS</b>	
<b>SOFTWARE DROPPED PACKETS</b>	Represents the number of packets dropped by the driver in Live Capture mode.
<b>HARDWARE DROPPED PACKETS</b>	Represents the number of packets dropped due to low USB bandwidth, for example when connecting the ProfiShark 1G+ to a USB 2.0 port and attempting a 1 Gbps capture.

- **The *Firmware Update* section**, allowing users to flash the firmware of the connected ProfiShark 1G+ with a locally stored version. The ProfiShark 1G+ is unavailable during the firmware update process, which can take up to several minutes to complete. Once finished, the ProfiShark 1G+ may need to be replugged for the new firmware to take effect. Do not disconnect the USB port or shut the computer down during the update process. The latest firmware can be downloaded from the Resource Center at: [www.profitap.com/resource-center/](http://www.profitap.com/resource-center/)

▶ **Note:** The ProfiShark Manager will search for a new firmware release online every time it starts, allowing a new revision to be downloaded and installed, without the need of a locally stored update.



- **The *Capture Format* section**, allowing users to enable or disable capture-related features. Additional customization of the capturing process is available in the *Capture* tab.



## CAPTURE FORMAT

<b>ENABLE TIMESTAMPS IN LIVE CAPTURE</b>	If checked, a Unix formatted timestamp is appended in the header of the packet data. This timestamp can be interpreted by the Profitap Wireshark dissector in <i>Live Capture</i> mode. For more information, see page 23.
<b>TRANSMIT CRC ERRORS</b>	If checked, the ProfiShark 1G+ will include packets with CRC errors in the capture. These packets are usually filtered out by network interfaces.
<b>KEEP CRC32</b>	If checked, the CRC32 information (32-bit Frame Check Sequence) located at the end of the packets will be kept in the capture. FCS can be interpreted in Wireshark (Edit \ Preferences \ Protocols \ Ethernet \ Assume packets have FCS).
<b>DISABLE PORT A</b>	If checked, frames from port A will not be captured.
<b>DISABLE PORT B</b>	If checked, frames from port B will not be captured.
<b>PACKET SLICING</b>	Enabling this feature will result in dropping the payload of every frame captured, keeping only the header information (the first 128 bytes) up to the application layer.

## 1.7 Capture Tab

### 1.7.1 Direct Capture Mode

ProfiShark 1G+ can capture traffic without the need for third-party capture software. This *Direct Capture* is performed at the driver level, prior to all network stacks and frame processing. *Direct Capture* provides the best performance, enabling small packet capture at wire speed. The *Capture* tab contains the controls for the *Direct Capture* feature. The captured data is saved to a PCAP Next Generation file (.pcapng) with hardware-generated packet timestamps.

Counters Charts Log Network Ports Features Capture

Direct Capture to File

Output Capture File :  PCAP-NG

Capture full frames :

Maximum Capture File Size (MB) :

Number of files to use :   Loop

Maximum file duration :

Buffer size :  2.17 GBytes

Written to File : 0 Bytes  
Dropped : 0 Bytes  
Current buffer usage : 0 Bytes

Stream to Cloudshark

Upload pcap-ng files to Cloudshark

 Appliance URL

API Token

Display filter

<p><b>OUTPUT CAPTURE FILE</b></p>	<p>Specify the name and location of the capture file. Name extension will be added to the specified name: (_#####_YYYYMMDDHHMMSS).</p>
<p><b>CAPTURE FULL FRAMES</b></p>	<p>Enable this option to capture the entire L1 Ethernet frames, which include the preamble (0x55), the SMD, and the CRC. This can be useful for TSN (Time-Sensitive Networking) capture.</p>
<p><b>MAXIMUM CAPTURE FILE SIZE</b></p>	<p>Sets the maximum file size allowed for storing the captured data. When the file size reaches this value, the capture either continues in a new file, or stops, depending on the other options.</p>
<p><b>NUMBER OF FILES TO USE</b></p>	<p>After reaching the configured maximum duration or file size, the captured traffic will be saved to a new file, until the number of files set here is reached.</p>
<p><b>MAXIMUM FILE DURATION</b></p>	<p>Sets the maximum duration for storing the captured data. When this value is reached, the capture either continues in a new file, or stops, depending on the other options.</p>

<b>LOOP</b>	Enabling this option makes the capture overwrite the same file (or files, depending on the "Number of Files to Use" option) after reaching the configured maximum duration or file size.
<b>BUFFER SIZE</b>	In high bandwidth utilization scenarios, a bigger buffer size accommodates more data to be temporarily stored into the computer's memory before being saved to the file, helping to avoid captured data being dropped.
<b>STATISTICS</b>	<ul style="list-style-type: none"> <li>◦ <b>Written to File</b> - Performance statistics. Displays the amount of data currently written in the output file, helping users determine the best buffer size.</li> <li>◦ <b>Dropped</b> - Dropped bytes. Indicates the amount of data dropped during the capture, due to performance issues or buffer overflow.</li> <li>◦ <b>Current buffer usage</b> - If dropped packets start to appear ("Dropped" statistic), increase the <i>Buffer Size</i> value.</li> </ul>
<b>UPLOAD PCAP-NG FILES TO CLOUDSHARK</b>	Enable this option to upload capture files to Cloudshark automatically.
<b>APPLIANCE URL</b>	Set the appropriate URL of the Cloudshark server on which to upload the capture files.
<b>API TOKEN</b>	Set the appropriate token for the Cloudshark server set above.
<b>DISPLAY FILTER</b>	Optional display filter for the capture files uploaded to Cloudshark. Regular Cloudshark/Wireshark display filters can be set here. See: <a href="https://wiki.wireshark.org/DisplayFilters">https://wiki.wireshark.org/DisplayFilters</a>

- **Note:** The amount of dropped data depends on the data storage throughput and the amount of allocated memory buffer. Disk arrays or SSDs can drastically improve capture performance.

## 1.7.2 Live Capture Mode

ProfiShark 1G+ can also be used to capture network traffic and send it unaltered to a dedicated capture software. The process is transparent for packet size, packet type, and protocol. All tags and encapsulation are preserved (e.g. VLAN, MPLS, GRE).

- ▶ **Note:** Capturing traffic at 1G line rate is extremely CPU intensive and can cause software packet drops. For better performance, Direct Capture mode is recommended.

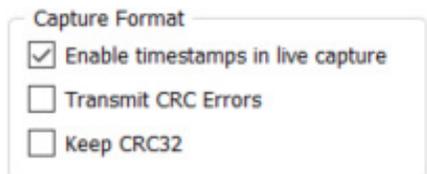
## 1.7.3 Live Capture Mode with Hardware Timestamping

The hardware timestamping feature can be used in both Live Capture and Direct Capture modes. It enables timestamp accuracy to the nanosecond, as opposed to the microsecond accuracy of software timestamping.

When using this feature in Live Capture mode, the ProfiShark Dissector for Wireshark must be installed for the hardware timestamping information to be properly interpreted by Wireshark.

The dissector files can be found on the provided USB key, or in the Resource Center at [www.profitap.com/resource-center/](http://www.profitap.com/resource-center/)

Hardware timestamping can be enabled from the **Features Tab**, by selecting "Enable timestamps in live capture"



## 2. ADVANCED TIMESTAMPING

The ProfiShark 1G+ offers multiple advanced timestamping features. The GPS chip can retrieve the UTC time, and synchronize it with the internal PPS, with a typical\* precision of  $\pm 32$  ns. The ProfiShark 1G+ can also retrieve the time via SNTP, or use the internal RTC (real-time clock), and synchronize it via an external PPS signal. A PPS output is possible, for synchronization with another ProfiShark device, or with any other device accepting a PPS input.

These features can be combined in different ways, providing multiple possible options for accurate and precise timestamping of packets.

The settings and information related to advanced timestamping are located in the **Timing Tab**. This tab is only available when a ProfiShark 1G+ is connected.

**\*Note:** For the best results, the GPS antenna should be set up outside, or near a window. Other factors can affect results, such as weather, cloudiness, and geographical location in regards to satellite availability. The GPS can take a minute to synchronize the UTC time with the internal PPS. The stability of the synchronization increases over time and may take up to 15 minutes to reach its peak.

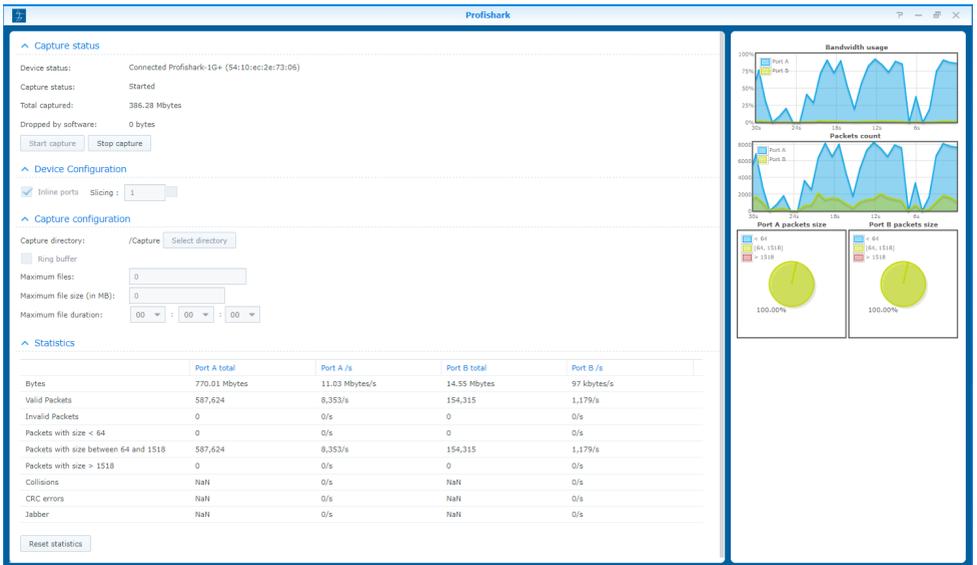
# 3. LONG TERM CAPTURE

The long-term capture feature expands the number of use cases for ProfiShark 1G+. By combining the capture capabilities of ProfiShark 1G+ with the storage capabilities of a NAS, it becomes possible to capture traffic for extended periods of time, making it easier to catch intermittent network problems in the act.

The ProfiShark USB key package (included with the product, and also available at [profitap.com/resource-center/](http://profitap.com/resource-center/)) provides packages for various Synology architectures.

Install the package corresponding to your Synology NAS. See the image file included in the packages folder for information on the type of CPU used in your Synology NAS.

For optimal capture results, an Intel-equipped Synology NAS is recommended.



<b>DEVICE STATUS</b>	Displays the connected TAP and its MAC address.
<b>CAPTURE STATUS</b>	Specifies whether the capture process is in progress.
<b>TOTAL CAPTURED</b>	Displays the total amount of data captured.
<b>DROPPED BY SOFTWARE</b>	Displays the amount of packets dropped due to performance issues or buffer overflow.
<b>INLINE PORTS</b>	By default, the ProfiShark 1G+ ports are set to In-Line Mode, meaning that devices connected through ports A and B can communicate. In this case, both ports are controlled at the same time. Unchecking "Inline ports" enables SPAN mode, setting the ProfiShark to intercept two separate data streams. In this case, communication between devices connected to ports A and B is severed, and ports A and B can be controlled independently in terms of speed, duplex mode, and autonegotiation.
<b>CAPTURE DIRECTORY</b>	Allows users to select the destination folder of the capture file.
<b>RING BUFFER</b>	If enabled, overwrites old data, using the circular buffer method of storing new data at the beginning of an existing data file.
<b>MAXIMUM FILES</b>	After reaching the configured maximum file duration or size, the captured traffic will be saved in a new file, until the number of files configured here is reached.
<b>MAXIMUM FILE SIZE</b>	This option sets the maximum file size allowed for storing the captured data. Exceeding this value will result in stopping the capture or storing the capture data in a new file.
<b>MAXIMUM FILE DURATION</b>	This option sets the maximum duration for storing the captured data. Exceeding this value will result in stopping the capture or storing the capture data in a new file.
<b>STATISTICS</b>	Displays ongoing and total traffic data for both port A and port B.

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PROFITAP HQ B.V. — High Tech Campus 84  
5656AG Eindhoven — The Netherlands

[sales@profitap.com](mailto:sales@profitap.com)  
[www.profitap.com](http://www.profitap.com)

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