

LAN WebSocket Printing Guide

This document explains how to test printing over a LAN WebSocket connection, and how to generate and install the certificate required for WSS (encrypted) connections.

1. Confirm WebSocket Support on the Printer

Print a self-test page first, then check the WebSocket Support information on that page:

- The default port is usually 8080 (unencrypted: ws://)
- The secure port is usually 8081 (encrypted: wss://)
- If the self-test page does not list a port, that capability is usually unsupported; if it is listed, it is supported.



2. Standard WebSocket Print Test (ws://)

- 1) Open the WebSocket development package and open a sample page (for example, index.html) in Chrome or Firefox.
- 2) Enter the printer IP in Address. On Windows, you may also enter the printer name.
- 3) Set Port to 8080.
- 4) Click Print to run the test.

Example:

Address: 192.168.1.223

Port: 8080

3. Encrypted WebSocket Print Test (wss://)

When testing an encrypted connection:

- Add the wss:// prefix to Address
- Change Port to 8081

Note: The newer printerlibs.js supports the wss:// prefix.

Example (by IP):

Address: wss://192.168.1.223

Port: 8081

Simple Print

Address	192.168.1.223	Port	8080	Print
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Image Print

Choose File	No file chosen
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Example (by printer name):

Address: wss://HS-C830ULWB-3E9C

Port: 8081

Simple Print

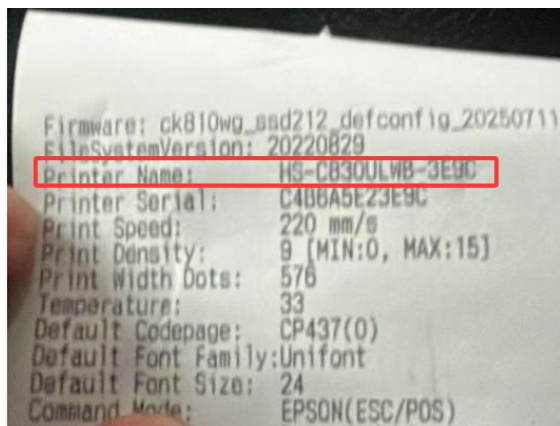
Address	HS-C830ULWB-3E9C	Port	8080	Print
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Image Print

Choose File	No file chosen
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Important: Encrypted connections require a certificate.

- Download the certificate to the printer
- Install the same certificate on the PC so the browser trusts it
- The hostname in the certificate (CN/SAN) must match the host used in the browser address: use an IP certificate for IP access, or a name certificate for printer-name access



4. Generate a Self-Signed Certificate (OpenSSL)

You can use OpenSSL to generate a test/self-signed certificate. It is recommended to create an IP certificate and a printer-name certificate separately.

4.1 Preparation

- 1) Make sure OpenSSL is installed and the openssl command works in a terminal.
- 2) Confirm the printer IP (example: 192.168.1.223) and printer name (example: HS-C830ULWB-3E9C; available on the self-test page).
- 3) Generated files:
 - .crt: certificate file (import on the PC and download to the printer)

- .key: private key file (usually provided together with the certificate to the printer setup tool)

4.2 Generate a Certificate for IP Access

Create the config file ip.cnf in the certificates directory (replace the IP with your printer IP):

```
[req]
default_bits = 2048
prompt = no
default_md = sha256
distinguished_name = dn
x509_extensions = v3_req

[dn]
CN = 192.168.1.223

[v3_req]
basicConstraints = CA:TRUE
keyUsage = digitalSignature, keyEncipherment, keyCertSign
extendedKeyUsage = serverAuth
subjectKeyIdentifier = hash
authorityKeyIdentifier = keyid:always,issuer
subjectAltName = @alt_names

[alt_names]
IP.1 = 192.168.1.223
```

Run:

```
openssl req -x509 -newkey rsa:2048 -nodes -keyout 192.168.1.223.key -out 192.168.1.223.crt
-days 3650 -config ip.cnf
```

Output: 192.168.1.223.crt and 192.168.1.223.key

On the page, set Address = wss://192.168.1.223 and Port = 8081

4.3 Generate a Certificate for Printer-Name Access

Create the config file name.cnf (replace the name with your actual printer name):

```
[req]
default_bits = 2048
prompt = no
default_md = sha256
distinguished_name = dn
x509_extensions = v3_req

[dn]
CN = HS-C830ULWB-3E9C

[v3_req]
```

```
basicConstraints = CA:TRUE
keyUsage = digitalSignature, keyEncipherment, keyCertSign
extendedKeyUsage = serverAuth
subjectKeyIdentifier = hash
authorityKeyIdentifier = keyid:always,issuer
subjectAltName = @alt_names
```

[alt_names]

DNS.1 = HS-C830ULWB-3E9C

DNS.2 = HS-C830ULWB-3E9C.local

Run:

```
openssl req -x509 -newkey rsa:2048 -nodes -keyout HS-C830ULWB-3E9C.key -out HS-C830ULWB-3E9C.crt -days 3650 -config name.cnf
```

Output: HS-C830ULWB-3E9C.crt and HS-C830ULWB-3E9C.key

On the page, set Address = wss://HS-C830ULWB-3E9C and Port = 8081

If the PC cannot resolve the printer name, edit the hosts file as Administrator and add:

192.168.1.223 HS-C830ULWB-3E9C

hosts path: C:\Windows\System32\drivers\etc\hosts

5. Install the Certificate on the Printer and PC

5.1 Download to the Printer

Use the printer setup tool to download the matching .crt and .key as the WebSocket secure-connection certificate. Steps:

1) Open the printer setup tool. Under Select Communication Port, choose NET, enter the printer IP (example: 192.168.1.223), and usually set the port to 9100.

2) Click Read Printer Parameters to confirm the tool is connected to the printer.

3) Open the WebSocket tab and configure WebSocket SSL:

- Click select server.crt and choose the certificate file (for example HS-C830ULWB-3E9C.crt or 192.168.1.223.crt)

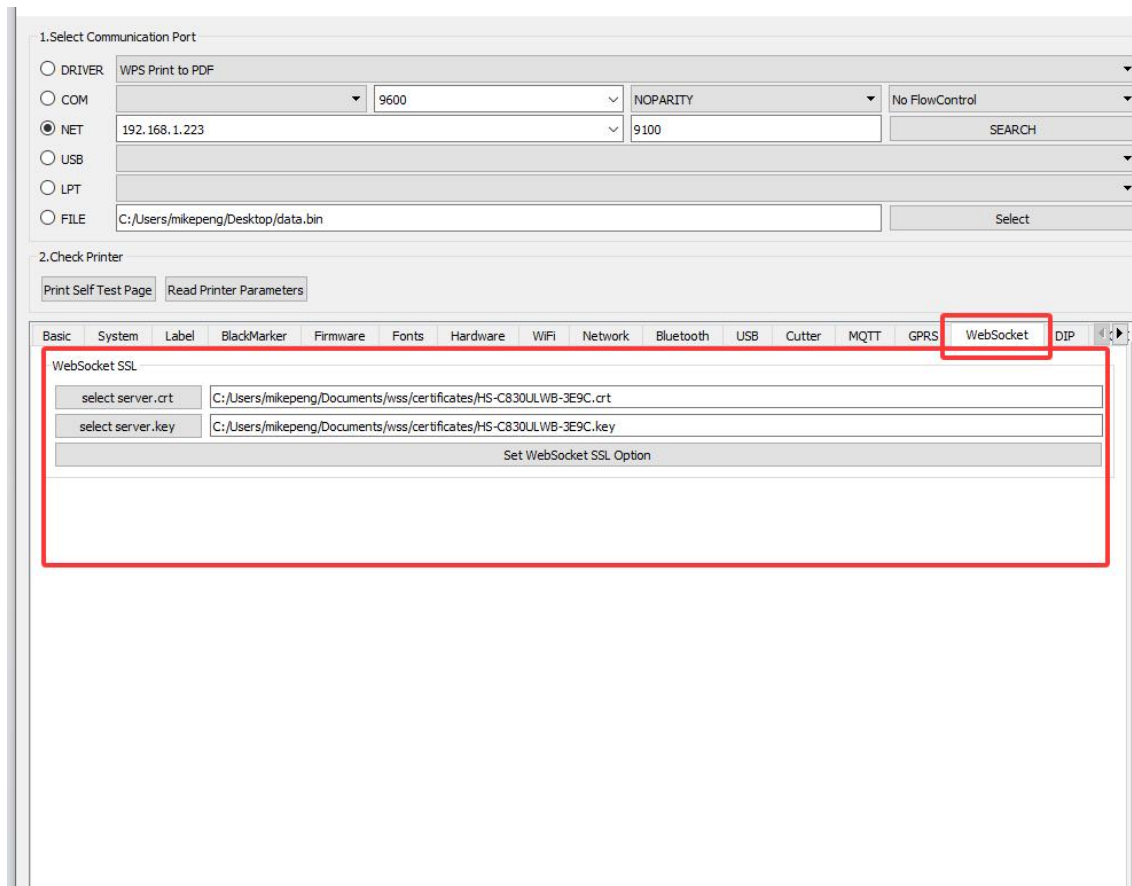
- Click select server.key and choose the matching private key (for example HS-C830ULWB-3E9C.key or 192.168.1.223.key)

- Important: the .crt and .key must be a matching pair, and must match how you will access the printer later (IP certificate for IP access, name certificate for printer-name access)

4) Click Set WebSocket SSL Option to download the certificate to the printer.

5) After a successful download, test encrypted printing with wss:// and port 8081.

UI example:



5.2 Install on the PC (Chrome / Windows)

On Windows, Chrome uses the system certificate store. Import the certificate as follows:

- 1) Double-click the .crt file → Install Certificate
- 2) Choose Current User or Local Machine
- 3) Select Place all certificates in the following store → Browse → Trusted Root Certification Authorities
- 4) Finish, and choose Yes on the security warning
- 5) Fully quit Chrome (close all windows) and reopen it

You can also open `chrome://certificate-manager/` to confirm the certificate was imported.

It is recommended to open `https://hostname-or-IP:8081` first and confirm there is no certificate error, then test WSS printing.

Note: Chrome usually does not show an "Add Exception" dialog for WebSocket (wss). You must import the self-signed certificate into Trusted Root Certification Authorities, or the connection will fail immediately.

[Insert screenshot: certificate import wizard]

5.3 Install the Certificate in Firefox (Optional)

Firefox → Settings → Privacy & Security → Certificates → View Certificates

- Authorities → Import → select the .crt file

- If needed: Servers → Add Exception → enter the address and port

6. Recommended Test Flow (Verified)

Example using the printer name (name certificate):

- 1) Generate HS-C830ULWB-3E9C.crt / .key with OpenSSL
- 2) Download the certificate to the printer with the setup tool
- 3) Import the .crt into Trusted Root Certification Authorities on the PC
- 4) Add to hosts: 192.168.1.223 HS-C830ULWB-3E9C
- 5) Restart Chrome
- 6) On the sample page, enter:

Address: wss://HS-C830ULWB-3E9C

Port: 8081

- 7) Click Print to test

If you prefer IP access, download the IP certificate to the printer, import the same IP certificate on the PC, and set Address to wss://192.168.1.223.

7. Troubleshooting

- 1) WebSocket connection failed / alert shows [object Event]

Usually the certificate is untrusted, or the certificate hostname does not match the address used.

- 2) The printer has a name certificate, but the page uses an IP (wss://192.168.1.223)

Hostname mismatch. Use the printer name, or download an IP certificate instead.

- 3) The certificate was downloaded to the printer only, not imported into the PC trust store

The browser still does not trust it, so WSS will fail.

- 4) The browser was not restarted after importing the certificate

Fully quit and reopen the browser, then test again.

- 5) Using the printer name, but it cannot be resolved

Check that hosts or LAN DNS points to the correct IP.

- 6) Printing works on 8080 but not on 8081

First confirm the self-test page lists 8081, then verify the certificate was downloaded correctly and trusted by the browser.

8. Related Files

- Sample page: index.html
- Library: js/printerlibs.js
- Certificate folder: certificates/
 - 192.168.1.223.crt / 192.168.1.223.key
 - HS-C830ULWB-3E9C.crt / HS-C830ULWB-3E9C.key