

# PrinterSDK User Manual (Windows / C++)

This manual documents **HS-POS PrinterSDK for Windows / C++**, aligned with Android **1.6.3**.

Version: **1.6.3-windows-cpp**

Platform: **Windows 10 / 11, C++17 (CMake / MSVC or MinGW)**

Namespace: `hspos`

Last updated: **2026-07-18**

Android counterpart PDFs: `PrinterSDK_User_Manual.pdf`, `PrinterSDK_使用说明书.pdf`

Companion docs: `PrinterSDK_API_Documentation.md`, `PrinterSDK_API_说明文档.md`,  
`PrinterSDK_Windows_CPP_API对照表.md`

**Important (C++):** `FeedPaper(conn, n)` feeds **dots** (ESC J). For **lines**, use `PrintAndFeedLines`.  
Prefer `FeedAndCutPaper` to finish receipts.

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## 1. Product Introduction

**PrinterSDK (Windows C++)** is a native C++17 implementation of HS-POS PrinterSDK, aligned with Android package `com.hspos.printerSDK` **1.6.3** and the Windows C# SDK. It supports **ESC/POS** receipt printing and **JPL** label printing through one façade class: `PrinterSdk`.

## Features

| Feature            | Description                                                                                                         |
|--------------------|---------------------------------------------------------------------------------------------------------------------|
| Multi-channel      | USB, Bluetooth SPP, TCP/IP (port 9100), Serial (COM), <b>Parallel (LPT)</b>                                         |
| Standard POS       | Text, 1D barcode, QR, PDF417, double QR, raster images, cut, cash drawer, beep, self-test                           |
| Page mode          | Coordinate drawing for text / barcode / QR / line / rectangle                                                       |
| Label mode         | JPL page begin/print, text, barcode, QR, PDF417, images, shapes                                                     |
| Encodings          | <code>PrintTextInUtf8</code> / <code>PrintTextInGbk</code> ; other encodings via <code>SetDoubleByteEncoding</code> |
| Status             | DLE EOT / GS r helpers: online, paper, cover                                                                        |
| No managed runtime | Pure native library (no .NET dependency)                                                                            |

## Core types

```
#include "hspos/HsposPrinterSdk.hpp"
using namespace hspos;

auto& sdk = PrinterSdk::GetInstance();
```

| Type                            | Role                                                                |
|---------------------------------|---------------------------------------------------------------------|
| <code>PrinterSdk</code>         | Singleton façade                                                    |
| <code>PrinterConstants</code>   | Shared constants ( <code>PrinterConstants::AlignmentCenter</code> ) |
| <code>IPrinterConnection</code> | Connection interface, held as <code>std::shared_ptr</code>          |

Naming vs Android: `PrinterSDK` → `PrinterSdk` ; camelCase → PascalCase; `PrinterConnection` → `shared_ptr<IPrinterConnection>` .

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## 2. System Requirements and Integration

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### 2.1 Requirements

| Item         | Requirement                                                     |
|--------------|-----------------------------------------------------------------|
| OS           | Windows 10 / 11 (x64)                                           |
| Language     | C++17                                                           |
| Build        | CMake 3.20+                                                     |
| Compiler     | MSVC (VS 2022) or MinGW-w64 (MSYS2 UCRT64)                      |
| Image decode | Windows WIC ( <code>windowscodecs</code> , <code>ole32</code> ) |

### 2.2 Build & link

```
cd "C:\Windows Project\PrinterAPI_CPP"
cmake -B build -G "MinGW Makefiles" -DCMAKE_BUILD_TYPE=Release -DHSPoS_BUILD_SHARED=OFF
cmake --build build -j
```

Artifacts: `libHspOs.PrinterSdk.a` (or DLL), `win_demo.exe` , `console_demo.exe` .

Also see `docs/如何编译.md` and `docs/如何运行.md` .

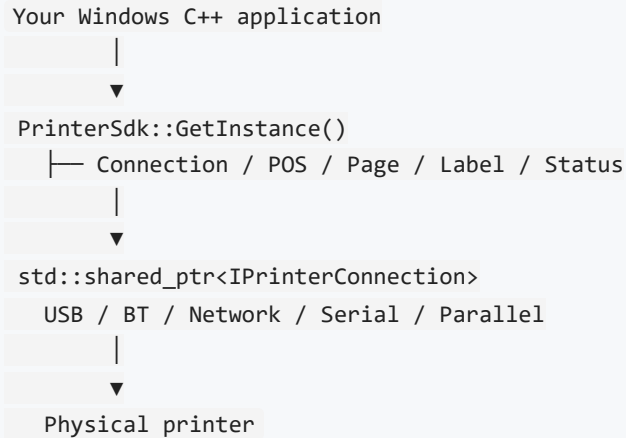
### 2.3 Source layout

```
PrinterAPI_CPP/
├─ include/hspos/          # public headers (HspOsPrinterSdk.hpp umbrella)
├─ src/                    # implementation
├─ samples/console_demo/   # CLI demos
├─ samples/win_demo/       # GUI test tool
└─ docs/                   # this manual + API handbooks
```

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### 3. SDK Architecture

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Always verify `connection && connection->IsConnected()` before printing.

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### 4. Quick Start

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```
#include "hspos/HsposPrinterSdk.hpp"
using namespace hspos;

int main() {
    auto& sdk = PrinterSdk::GetInstance();
    auto conn = sdk.ConnectNetworkPrinter("192.168.1.100", 9100);
    if (!conn || !conn->IsConnected()) return 1;

    sdk.InitPrinter(conn);
    sdk.SetChineseMode(conn);
    sdk.SetDoubleByteEncoding(conn, PrinterConstants::DoubleByteEncodingGbk);
    sdk.SetAlignment(conn, PrinterConstants::AlignmentCenter);
    sdk.PrintTextInGbk(conn, "Hello PrinterSdk\n");
    sdk.FeedAndCutPaper(conn);
    sdk.DisconnectPrinter(conn);
    sdk.Release();
    return 0;
}
```

### 5. Windows Runtime Environment

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Windows has **no Android-style runtime permission model**. Device access depends on drivers and Device Manager.

| Channel   | Notes                                                                                |
|-----------|--------------------------------------------------------------------------------------|
| Serial    | Match baud/parity/flow; confirm COM name in Device Manager                           |
| Parallel  | LPT1–3; usually write-only                                                           |
| USB       | USB printing support / vendor driver; reopen after SDK upgrades                      |
| Bluetooth | Pair in Windows Settings or <code>PairBluetoothDevice</code> ; discovery is blocking |
| Network   | Same LAN, TCP <b>9100</b> , firewall allow outbound                                  |

Android-only APIs **not present**: `hasUsbPermission` , `requestUsbPermission` , `onRequestPermissionsResult` , `getCommunicationManager` .

## 6. Printer Connection

Failed connects return an empty `shared_ptr` .

### 6.1 USB

```
auto devices = PrinterSdk::GetUsbDevices();
if (!devices.empty()) auto c = sdk.ConnectUsbPrinter(devices[0]);
auto c2 = sdk.ConnectUsbPrinter("USB001");
```

### 6.2 Bluetooth

```
auto paired = PrinterSdk::GetBluetoothPairedDevices();
auto found = PrinterSdk::DiscoverBluetoothDevices(true); // blocking
if (!paired.empty()) auto c = sdk.ConnectBluetoothPrinter(paired[0]);
PrinterSdk::StopBluetoothDiscovery();
```

### 6.3 Network

```
auto c = sdk.ConnectNetworkPrinter("192.168.1.100", 9100);
```

Async connect is **not** implemented yet; call from a worker thread in UI apps.

### 6.4 Serial

```
SerialPortSettings s;
s.portName = "COM3";
s.baudRate = 115200;
auto c = sdk.ConnectSerialPrinter(s);
auto ports = PrinterSdk::ListSerialPorts();
```

## 6.5 Parallel (Windows extra)

```
auto c = sdk.ConnectParallelPrinter("LPT1");
```

## 6.6 Disconnect

```
sdk.DisconnectPrinter(c);
```

# 7. Standard POS Printing

## 7.1 Init / reset

InitPrinter / ResetPrinter

## 7.2 Text

PrintText / PrintTextInUtf8 / PrintTextInGbk / PrintTextLineLeftRight

Magnification: SetTextScale(widthScale, heightScale) (0-7).

## 7.3 Format

Alignment, bold, underline, reverse, line spacing, Chinese mode / double-byte encoding, print area width/margin.

## 7.4 Barcodes & QR

PrintBarcode / PrintQrCode / PrintQrCodeStandard / PrintPdf417 / PrintDoubleQrCode

## 7.5 Raster images

PrintRasterImageFromPixels / FromFile / FromData (GS v 0; WIC for files).

Widths: PaperWidth58Mm (384) / PaperWidth80Mm (576).

## 7.6 Feed & cut

| API                  | Unit / meaning                                   |
|----------------------|--------------------------------------------------|
| FeedLine             | LF                                               |
| FeedPaper(n)         | <b>dots</b> (ESC J)                              |
| PrintAndFeedLines(n) | <b>lines</b> (ESC d)                             |
| CutPaper             | CutPartial = ESC m , CutFull = ESC i             |
| FeedAndCutPaper      | feed then one partial cut ( <b>recommended</b> ) |

## 7.7 Peripherals & raw

`OpenCashDrawer` / `Beep` / `SelfTest` / `SendCommand`

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## 8. Page Mode Printing

Flow: `SelectPageMode` / `SelectPageModeEx` → draw → `PagePrintPage` → `ExitPageMode` .

Includes UTF-8/GBK text, centered/right/left-right helpers, barcode (+ centered HRI), QR, line, rectangle, estimators.

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## 9. Label Mode Printing

Flow: `EnableLabelMode` → `LabelPageBegin` → draw → `LabelPagePrint` → `DisableLabelMode` .

Supports text, barcode, QR, PDF417, images, lines, rectangles, boxes, back-paper.

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## 10. Status Query and Device Control

| API                                                                             | Role           |
|---------------------------------------------------------------------------------|----------------|
| <code>QueryRtStatus</code>                                                      | DLE EOT        |
| <code>QueryTransmitStatus</code>                                                | GS r           |
| <code>GetPrinterStatus</code>                                                   | Combined flags |
| <code>IsPrinterOnline</code> / <code>HasPaper</code> / <code>IsCoverOpen</code> | Convenience    |

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## 11. Constants Reference

See `PrinterConstants.hpp` and the API handbook constants section (alignment, cut, paper widths, barcode/QR, status bits, encodings, page directions, raster modes).

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## 12. Complete Examples

### Network receipt

```
auto& sdk = PrinterSdk::GetInstance();
auto c = sdk.ConnectNetworkPrinter("192.168.1.100", 9100);
sdk.InitPrinter(c);
sdk.SetAlignment(c, PrinterConstants::AlignmentCenter);
sdk.PrintTextInGbk(c, "收银小票\n");
sdk.PrintQrCodeStandard(c, "https://example.com", 6, 1, PrinterConstants::QrEccLevelM);
sdk.FeedAndCutPaper(c);
sdk.DisconnectPrinter(c);
```

### Label

```
sdk.EnableLabelMode(c);
sdk.LabelPageBegin(c, 0, 0, 400, 300, 0);
sdk.PrintLabelTextGbk(c, "标签", 20, 20);
sdk.PrintLabelQrCode(c, "ABC123", 20, 80);
sdk.LabelPagePrint(c, 1);
sdk.DisableLabelMode(c);
```

Demos: win\_demo.exe , console\_demo.exe receipt58 <ip> 9100 .

## 13. FAQ and Troubleshooting

| Symptom                 | Hint                                                  |
|-------------------------|-------------------------------------------------------|
| Garbled Chinese         | GBK mode + <code>PrintTextInGbk</code>                |
| Cut too close           | <code>FeedAndCutPaper</code> ; cutter offset ~10–20mm |
| Cut twice               | Send only one cut command                             |
| USB status wrong        | Reopen read/write; reconnect                          |
| BT discovery freezes UI | Use a worker thread                                   |

## 14. API Quick Reference

- English API: PrinterSDK\_API\_Documentation.md
- Chinese API: PrinterSDK\_API\_说明文档.md
- Coverage gaps: Android\_API覆盖对照.md

## 15. Platform Differences vs Android / C

| Topic               | Android           | C# Windows                  | C++ Windows                            |
|---------------------|-------------------|-----------------------------|----------------------------------------|
| Runtime             | ART + permissions | .NET 8                      | Native C++17                           |
| Handle              | PrinterConnection | IPrinterConnection          | shared_ptr<IPrinterConnection>         |
| FeedPaper           | see Android docs  | often <b>lines</b> overload | <b>dots</b> (ESC J)                    |
| Parallel port       | ✗                 | ✓                           | ✓                                      |
| Async network       | ✓                 | ✓                           | ✗ (pending; documented as placeholder) |
| USB permission APIs | ✓                 | N/A                         | N/A                                    |

**API completeness:** Implemented methods are in PrinterSDK\_API\_Documentation.md. Android APIs not yet in C++ (and Android-only APIs) are listed there under **Not Yet Implemented / Android-only** placeholders with planned signatures and workarounds. See also Android\_API覆盖对照.md.

## 16. API Reference Links

Aligned with Android PDFs under `PrintertestAPP\DOC\` :

| Doc                             | Language       |
|---------------------------------|----------------|
| PrinterSDK_使用说明书.md             | ZH user manual |
| PrinterSDK_User_Manual.md       | EN user manual |
| PrinterSDK_API_说明文档.md          | ZH API         |
| PrinterSDK_API_Documentation.md | EN API         |

## Appendix: Version History

| Version           | Date       | Notes                                                                            |
|-------------------|------------|----------------------------------------------------------------------------------|
| 1.6.3-windows-cpp | 2026-07-18 | First Windows C++ docs/SDK package aligned with Android 1.6.3 handbook structure |