



# UCD-XP29D6WM User Manual

2026/1/20  
V1.1



# Outline

- Pcan Connection Method
- Environment Build
- Firmware Flash steps
- Update Success Confirmation
- Non-Critical Errors – safe to ignore

# Pcan Connection Method

## ■ DUT operating Environment information

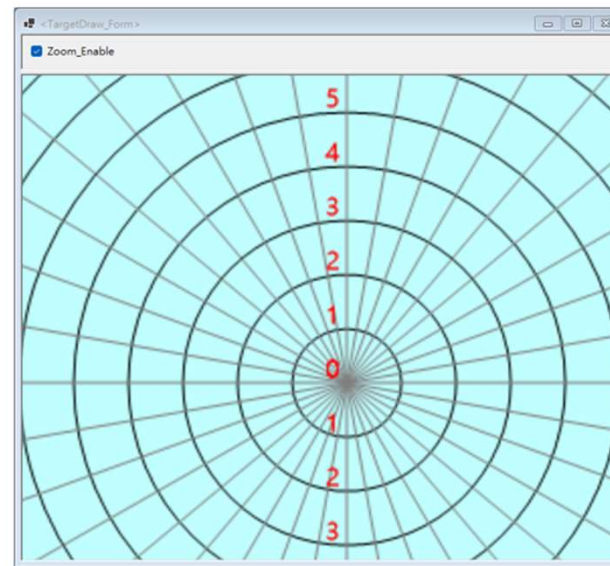
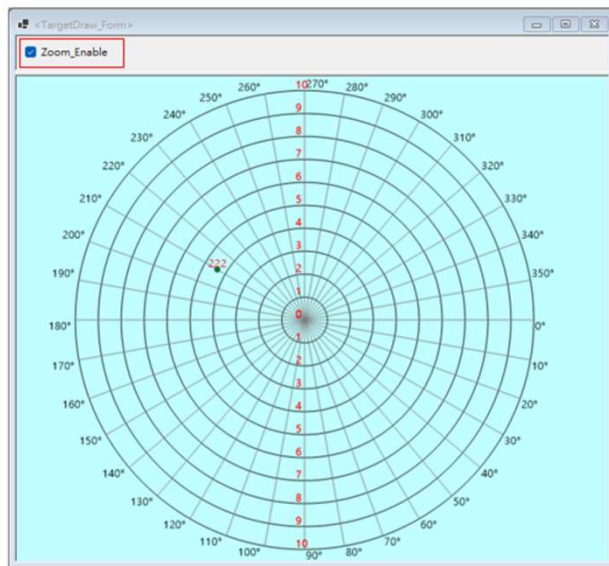
- Operating Voltage: Module functionality remains operational for a fixed voltage 12V.
- Operating Temperature : -40°C ~ 85°C
- Support Band : UWB Channel 9
- Spatial Multiplexing : 1T2R (PCB printed antenna)
- Support more PICS connect to make sure FOV meet customer requirement.
  - HFOV:100°
  - VFOV:90°
  - Note : Based on WNC ANT simulation and customer real sample test result.
- Installation location are on the outside.
- CAN Data Rate : Supports data rates of 110 kbit/s (HRP UWB), 850 kbit/s (HRP UWB), 6.8 Mbit/s (BPRF), 7.8 Mbit/s (HPRF)
- Working Frequency Range:7.74Ghz~8.25GHz/BW 500MHz

## ■ Insert the red-framed connector into the rear of the device



# User manual

- The UCD-XP29D6WM DUT serves as the UWB anchor, which needs to connect with the customer system by CAN cable connect. The distance measurement involves bidirectional communication between the key and the UWB anchor. The key, referred to as the verifier, connects to the UWB anchor, known as the prover. After receiving the verifier signal, the UWB anchor sends a response back, allowing the key to compute the distance.
- WNC can depending on the customer design. The UWB anchor can detect either a mobile phone's UWB or a UWB key fob.



# Environment Build

## ■ Firmware Programming Software Download

- Link: WNC\_SR14\_PcanUpdate\_v0.0.4

## ■ Unzip

| WNC_SR14_PcanUpdate_v0.0.4 |                    |              |      |  |
|----------------------------|--------------------|--------------|------|--|
| 名稱                         | 修改日期               | 類型           | 大小   |  |
| hex                        | 2025/6/19 上午 09:57 | 檔案資料夾        |      |  |
| output                     | 2025/6/19 上午 09:57 | 檔案資料夾        |      |  |
| SwupCanUpdate              | 2025/6/19 上午 09:57 | 檔案資料夾        |      |  |
| config.yaml                | 2025/6/18 上午 10:39 | Yaml 來源檔案    | 1 KB |  |
| PcanUpdate Tool.bat        | 2025/6/17 下午 05:39 | Windows 批次檔案 | 1 KB |  |

## ■ Python Environment Build

1. Open the Python Environment Build folder.
2. Install python-3.11.5-amd64.exe.
3. After installation, run install\_python\_onhost\_pip\_packages.bat.
4. When prompted, select y to install Python packages from requirements.txt.

# Firmware Flash steps(1/4)

## ■ Put hex file(HostifA/B.Hex / udp.Hex(ex.MACApp\_v0.1.3.hex))

into WNC\_SR14\_PcanUpdate\_v0.0.4\hex Folder

WNC\_SR14\_PcanUpdate\_v0.0.4 > hex >

| 名稱                     | 修改日期               | 類型     | 大小     |
|------------------------|--------------------|--------|--------|
| TransportKeys_v2p0     | 2025/6/19 上午 09:57 | 檔案資料夾  |        |
| MACApp_v0.1.2.hex      | 2025/6/4 上午 11:49  | HEX 檔案 | 599 KB |
| MACApp_v0.1.3.hex      | 2025/6/4 下午 12:26  | HEX 檔案 | 599 KB |
| SwupCanHostif_A_V1.hex | 2025/6/5 下午 05:07  | HEX 檔案 | 91 KB  |
| SwupCanHostif_A_V2.hex | 2025/6/3 下午 01:45  | HEX 檔案 | 91 KB  |
| SwupCanHostif_B_V1.hex | 2025/6/5 下午 05:06  | HEX 檔案 | 91 KB  |
| SwupCanHostif_B_V2.hex | 2025/6/4 下午 12:24  | HEX 檔案 | 91 KB  |
| SwupSpi6Hostif.hex     | 2025/4/11 下午 05:08 | HEX 檔案 | 57 KB  |
| SwupSwdHostif.hex      | 2024/8/7 下午 03:23  | HEX 檔案 | 12 KB  |
| WNCBinFile_4k.bin      | 2024/8/12 上午 11:00 | BIN 檔案 | 4 KB   |

## ■ Modify WNC\_SR14\_PcanUpdate\_v0.0.4\config.xml

– "Please follow the Config.xml modification rules on the next page.

```
1  udp:
2      udp_hex: ../../hex/MACApp_v0.1.3.hex
3      udp_version: 0.1.3
4      current_HostifA: ../../hex/SwupCanHostif_A_V1.hex
5      current_HostifB: ../../hex/SwupCanHostif_B_V1.hex
6
7  hostif:
8      New_HostifA: ../../hex/SwupCanHostif_A_V2.hex
9      New_HostifB: ../../hex/SwupCanHostif_B_V2.hex
10
11  ndp:
12      ndp: ../pkg/NCJ29D6_NDP_v21_0_1.pkg
```

# Firmware Flash steps(2/4) - YAML modification rules

## ■ UDP Update

- Only the udp: section is used.
- Required fields:
  - Udp\_hex: Path to the application HEX file
  - Udp\_version : Application version
  - Current\_HostifA/Current\_HostifB: Path to the application HEX file

## ■ Note

- Update proceeds only if the device's Hostif A/B HEX matches the YAML file
- udp\_version must be greater than or equal to the version on the device

## ■ Hostif Update

- Uses hostif: section is used (New\_HostifA/B hex's path)
- Also requires fields from udp: section:
  - udp\_hex, udp\_version
  - current\_HostifA / current\_HostifB
  - Post-Processing (after successful update):
    - New\_HostifA and New\_HostifB are cleared
    - Their paths are copied to current\_HostifA and current\_HostifB

## ■ NDP Update

- Uses ndp: section is used
- Also requires fields from udp: section:
  - udp\_hex, udp\_version
  - current\_HostifA / current\_HostifB

## • How to Set Up config.yaml

- WNC\_SR14\_PcanUpdate\_v0.0.4 contains corresponding pkg and hex folders
- Place the required files into the correct folders
- **Only update the file names in the YAML**
- Modifying the full path is not necessary

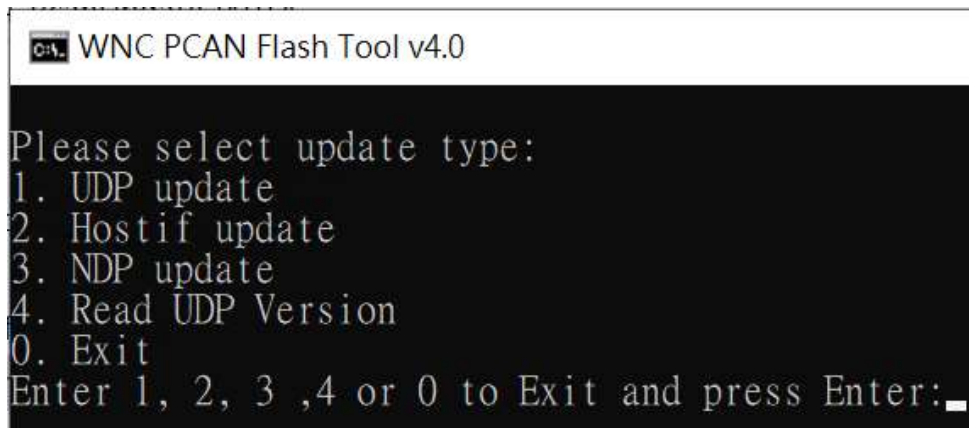
```
1  udp:
2    udp_hex: ../../hex/MACApp_v0.1.3.hex
3    udp_version: 0.1.3
4    current_HostifA: ../../hex/SwupCanHostif_A_V1.hex
5    current_HostifB: ../../hex/SwupCanHostif_B_V1.hex
6
7  hostif:
8    New_HostifA: ../../hex/SwupCanHostif_A_V2.hex
9    New_HostifB: ../../hex/SwupCanHostif_B_V2.hex
10
11 ndp:
12   ndp: ./pkg/NCJ29D6_NDP_v21_0_1.pkg
```

only update the filenames

## Firmware Flash steps(3/4)

### ■ Flash the SW

- Perform a power cycle and ensure that the USB-Pcan device is properly connected to the PC
- **Run “PcanUpdate Tool.bat”**



```
WNC PCAN Flash Tool v4.0

Please select update type:
1. UDP update
2. Hostif update
3. NDP update
4. Read UDP Version
0. Exit
Enter 1, 2, 3 ,4 or 0 to Exit and press Enter: _
```

- Choose the update option according to your requirement
  - The program automatically generates the pkg based on config.yaml
  - Perform pkg update on the device

## Firmware Flash steps(4/4)

- After selecting an option,
- a pkg will be generated. It takes about 3 seconds.
- A prompt will be shown during the process.

```
WNC PCAN Flash Tool v4.0

== Loaded Configuration(config.yaml) ==
udp_hex: ../../hex/MACApp_v0.1.3.hex
udp_version: 0.1.3
current_HostifA: ../../hex/SwupCanHostif_A_V1.hex
current_HostifB: ../../hex/SwupCanHostif_B_V1.hex
New_HostifA: ../../hex/SwupCanHostif_A_V2.hex
New_HostifB: ../../hex/SwupCanHostif_B_V2.hex
ndp: ./pkg/NCJ29D6_NDP_v21_0_1.pkg

==udp mode (generate udp.pkg)==
*****
Wait for pkg created (about 3 seconds)....
*****

"C:\Users\WNC\Documents\WNC_SR14_PcanUpdate_v0.0.4\output\pkg\4.WNC_Generate update_package_SR14p0_MAC_CAN_Paras.bat" "C:\Users\WNC\Documents\WNC_SR14_PcanUpdate_v0.0.4\output\yam\udp.yaml"
Software update package generator. Version: v3.5.0
Release date: 30 July 2024

Running in package generator mode.
Read descriptor...
AES Payload Key: Key imported (16 bytes).
CEK Key: Key imported (16 bytes).
ECDSA: Key imported (192 bytes).
Processing data...
Generating package...
Generate package Success!
```

- User must input CAN ID regardless of update
  - (ex. typeExample: enter CAN ID = 12)

```
Please select a CAN device id for swup:
0.0x2
1.0x4
2.0x6
3.0x8
4.0xa
5.0xc
6.0xe
7.0x10
8.0x12
9.0x61
Please select the device you want to update (Number):
```

- Each execution writes yaml in the output\yaml folder.

Udp->udp.yaml  
Hostif->appa1b1.yaml,  
appa2a1.yaml,appa2b2.yaml  
Ndp->ndp\_udp.yaml

WNC\_SR14\_PcanUpdate\_v0.0.4 > output > yaml

| 名稱                                  | 修改日期               | 類型        | 大小   |
|-------------------------------------|--------------------|-----------|------|
| appa1b1.yaml                        | 2025/6/24 下午 04:59 | Yaml 來源檔案 | 2 KB |
| appa2b2.yaml                        | 2025/6/24 下午 04:59 | Yaml 來源檔案 | 2 KB |
| appa2a1.yaml                        | 2025/6/24 下午 04:59 | Yaml 來源檔案 | 2 KB |
| ndp_udp.yaml                        | 2025/6/24 下午 04:36 | Yaml 來源檔案 | 2 KB |
| regular_update_package_SR14p0_MA... | 2025/6/17 下午 06:14 | Yaml 來源檔案 | 2 KB |
| udp.yaml                            | 2025/6/24 下午 06:04 | Yaml 來源檔案 | 2 KB |

- Each execution writes to log in the output\log folder.

WNC\_SR14\_PcanUpdate\_v0.0.4 > output > log

| 名稱                      | 修改日期               | 類型   | 大小    |
|-------------------------|--------------------|------|-------|
| log_20250624_164352.txt | 2025/6/24 下午 04:44 | 文字文件 | 10 KB |
| log_20250624_164453.txt | 2025/6/24 下午 04:45 | 文字文件 | 39 KB |
| log_20250624_165254.txt | 2025/6/24 下午 04:53 | 文字文件 | 11 KB |
| log_20250624_165756.txt | 2025/6/24 下午 04:58 | 文字文件 | 4 KB  |
| log_20250624_165822.txt | 2025/6/24 下午 04:59 | 文字文件 | 40 KB |
| log_20250624_165902.txt | 2025/6/24 下午 04:59 | 文字文件 | 11 KB |
| log_20250624_180458.txt | 2025/6/24 下午 06:05 | 文字文件 | 2 KB  |

- If there are any doubts about the execution,
- You can check the configuration and results
- via the output/yaml and output/log folders.

## Update Success Confirmation – UDP (1/2)

- When reading the Swup package, If it detects UDP, It indicates a correct read.

```
Reading SWUP package:
- Filename      = ../../../../output/pkg/udp.pkg
- Size          = 294912 bytes
- Origin ID     = 0x00000002
- Manifest version = ID: 0x0000: 3.5.0
- Generator version = ID: 0x0000: 3.5.0
- opcode        = UPDATE_BUNDLE (0x7C53)
- Found 4 SWUP components with a total of 71 segments
Component  ID      Version Segments
0          0xFAFB  2.4.0   1
1          0xFAF0  0.1.3  54
2          0xF00A  0.1.0   8
3          0xF00B  0.1.0   8
```

- If "end of NCJ29D6 CAN UCI SWUP HOST" appears,
- It indicates the flashing was successful.

```
Deactivate SWUP:
Transmitting command CMD_SWUP_DEACTIVATE:
[0x2F, 0x1B, 0x00, 0x00]
PCAN: OK
Receiving response to command:
No response from PCAN. Probably intended reset after successful update.
Deactivated SWUP and reset device

Execution stats:
Total time:          9.0 s
Transfer time:       0.2 s (2.2 %)
Payload size:        0.00 KB
Payload transfer rate (total): 0.00 KB/s
Payload transfer rate: 0.00 KB/s

*****
End of NCJ29D6 CAN UCI SWUP HOST!
*****
```

## Update Success Confirmation – UDP (2/2)

- If the hex file is changed and its version number is updated, You can enter **4** to read the UDP version.

```
WNC PCAN Flash Tool v4.0

Please select update type:
1. UDP update
2. Hostif update
3. NDP update
4. Read UDP Version
0. Exit
Enter 1, 2, 3 ,4 or 0 to Exit and press Enter: 
```

- User must input CAN ID
  - (ex. typeExample: enter CAN ID = 12)

```
Read version
Detected 1 PCAN device(s): [81]
Proceeding with the first device in the list with location = 81

Please select a CAN device id for swup:
0.0x2
1.0x4
2.0x6
3.0x8
4.0xa
5.0xc
6.0xe
7.0x10
8.0x12
9.0x61
Please select the device you want to update (Number 0-9): 
```

- You can view the current version number from the section below.

```
- CAN_DEVICE_ID = 0x00000012
Transmitting command CMD_GENERIC_RESET_CHECK:
[0x20, 0x02, 0x00, 0x00]
PCAN: OK
Receiving response to command:
[0x50, 0x02, 0x00, 0x3C, 0x00, 0x02, 0x00, 0x02, 0x00, 0x02, 0x00, 0x33, 0x00, 0x00, 0x00, 0xE3, 0x08, 0x52, 0x41, 0x4E, 0x47, 0x01, 0x00, 0x00, 0x00, 0x03, 0x00, 0x00, 0x00, 0xF0, 0xFA, 0x00, 0x00, 0x00, 0x00] ... [0x40, 0x02, 0x00, 0x30, 0xED, 0x09E, 0xEF, 0x10, 0x54, 0x38, 0x58, 0x34, 0x36, 0x33, 0x2D, 0x10, 0x02, 0x00, 0x00, 0x00, 0x04, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00] (4 fragments)
PCAN: OK, API: OK

UDP Version: 0.1.3

Press any key to continue...
```

# Update Success Confirmation – Hostif

- If "FOOB not verified" appears first, followed by transmission of 8 segments, it indicates correct behavior.

```
Transfer components:
Found 4 SWUP components with a total of 71 segments
Found 1 SWUP components with a total of 8 segments that are not verified
Component ID Version Segments Status
0 0xFAFB 2.4.0 1 Verified
1 0xFAFO 0.1.3 54 Verified
2 0xF00A 0.1.0 8 Verified
3 0xF00B 0.1.0 8 Not verified
Segment 8 of 8 (in component 3) - Receiving response to command - PCAN: OK, API: OK: 100%|#| 8/8 [00:01<00:0
```

- If "F00A not verified" appears again, followed by another 8 segments, it also indicates correct behavior and flashing is complete.

```
Transfer components:
Found 4 SWUP components with a total of 71 segments
Found 1 SWUP components with a total of 8 segments that are not verified
Component ID Version Segments Status
0 0xFAFB 2.4.0 1 Verified
1 0xFAFO 0.1.3 54 Verified
2 0xF00A 0.1.0 8 Not verified
3 0xF00B 0.1.0 8 Verified
Segment 8 of 8 (in component 2) - Receiving response to command - PCAN: OK, API: OK: 100%|#| 8/8 [00:01<00:0
```

- If a warning appears, please follow the instructions to check whether the Host if A/B's hex on the board matches config current\_hostif\_A/B.

```
WNC PCAN Flash Tool v4.0
[0x2F, 0x11, 0x00, 0x01, 0x03]
PCAN: OK
Receiving response to command:
[0x4F, 0x11, 0x00, 0x01, 0x02]
PCAN: OK, API: NOT OK: UCI_STATUS_FAILED
Verification failed
Verification attempted for all components
Transmitting command CMD_SWUP_GET_STATE:
[0x2F, 0x1D, 0x00, 0x00]
PCAN: OK
Receiving response to command:
[0x4F, 0x1D, 0x00, 0x01, 0x00]
PCAN: OK, API: OK
Receiving notification to command:
[0x6F, 0x1D, 0x00, 0x04, 0x09, 0x00, 0x00]
PCAN: OK
SWUP State: SWUP_STATE_TRANSFER
Check SWUP HIF over-write protection:
Current SWUP CAN HIF ID: 0xF00A
New SWUP CAN HIF IDs: ['0xF00A', '0xF00B']
Warning: Overwriting current SWUP HIF is invalid
Warning:
- Check if current_HostifA/B on the board matches config.yaml.
- You can also check output/log for the previous hex file name.
Exiting program...
Press any key to continue...
```

# Update Success Confirmation – NDP

- During NDP update, "buffer components" will appear.
- If the transmission completes without interruption, It indicates the NDP update was successful.

## Buffer components:

Found 4 SWUP components with a total of 54 segments

| Component | ID     | Version | Segments |
|-----------|--------|---------|----------|
| 0         | 0x9199 | 14.1.1  | 26       |
| 1         | 0xCAF8 | 2.7.1   | 6        |
| 2         | 0x583A | 12.2.6  | 16       |
| 3         | 0x1EDB | 3.0.0   | 6        |

Segment 54 of 54 (in component 3) - Receiving response to command

- PCAN: OK, API: OK: 100%|#| 54/54 [00:07<

- When reading the Swup package, If it detects ndp\_udp.pkg ,It indicates a correct read.

## Reading SWUP package:

```
- Filename = ../../output/pkg/ndp_udp.pkg
- Size = 294912 bytes
- Origin ID = 0x00000002
- Manifest version = ID: 0x0000: 3.5.0
- Generator version = ID: 0x0000: 3.5.0
- opcode = UPDATE_BUNDLE (0x7C53)
- Found 4 SWUP components with a total of 71 segments
Component ID Version Segments
0 0xFAFB 2.4.0 1
1 0xFAF0 0.1.3 54
2 0xF00A 0.1.0 8
3 0xF00B 0.1.0 8
```

- If "end of NCJ29D6 CAN UCI SWUP HOST" appears,
- It indicates the flashing was successful.

## Deactivate SWUP:

Transmitting command CMD\_SWUP\_DEACTIVATE:

[0x2F, 0x1B, 0x00, 0x00]

PCAN: OK

Receiving response to command:

No response from PCAN. Probably intended reset after successful update.

Deactivated SWUP and reset device

## Execution stats:

```
Total time: 30.9 s
Transfer time: 8.0 s (25.9 %)
Payload size: 221.18 KB
Payload transfer rate (total): 7.16 KB/s
Payload transfer rate: 27.60 KB/s
```

End of NCJ29D6 CAN UCI SWUP HOST!

## Non-Critical Errors – safe to ignore

*After reset, the firmware returns this message, which does not affect the execution and can be ignored.*

```
Resetting device:
Transmitting command CMD_GENERIC_RESET:
[0x20, 0x00, 0x00, 0x01, 0x00]
PCAN: OK
Receiving response to command:
[0x40, 0x00, 0x00, 0x01, 0x00]
PCAN: OK, API: OK
Device reset
[0x60, 0x01, 0x00, 0x01, 0x01]
PCAN: OK, API: NOT OK: UCI_STATUS_REJECTED
```

*Because the new pkg is to be updated, component1 will definitely be verified differently, so it can be ignored*

```
Transmitting command CMD_SWUP_VERIFY_COMPONENT for component 1:
[0x2F, 0x11, 0x00, 0x01, 0x01]
PCAN: OK
Receiving response to command:
[0x4F, 0x11, 0x00, 0x01, 0x02]
PCAN: OK, API: NOT OK: UCI_STATUS_FAILED
Verification failed
```

*Because pkg needs to be updated and component1 verification fails, it means that an update is required, so the following red box can be ignored*

```
Transfer components:
Found 4 SWUP components with a total of 63 segments
Found 1 SWUP components with a total of 53 segments that are not verified
Component ID      Version  Segments  Status
0             0xFAFB  2.4.0     1       Verified
1             0xFAF0  0.0.4     53      Not verified
2             0xABCD  1.0.0     1       Verified
3             0xF00B  1.0.0     8       Verified
Segment 53 of 53 (in component 1) - Receiving response to command
```

- PCAN: OK, API: OK: 100% 53/53 [00:07]

The image features a large, modern glass-walled building in the background, reflecting the sky. In the foreground, there are green leaves and a small white wind turbine. The WNC logo is prominently displayed in the center.

**WNC**

*WNC Corporation*

**Thank You!**