# Instruction Sheet – WPC APEX w/2000 FW Ref

## Major Differences When Using New WPC APEX Board

The WPC Apex control running 2000 mode firmware functions identically to the actual WPC 2000 control. The WPC Apex board is the same physical size/footprint and the I/O connector terminal assignments are identical to the WPC 2000, with the exception of terminal 37 (TB104) which is no longer +24 V. Therefore, any field wiring or designs using this terminal must be adjusted accordingly when using the Apex with 2000 mode firmware.

> **NOTICE**
>
> Terminal 37 is repurposed for another function when using the full featured firmware with the WPC Apex control.

There is also a set of 4 new connectors (See Figure 1) on the WPC Apex board where there were none before on the WPC 2000. These 4 connectors (TB 110 – 113) are essentially inactive and are not-to-be wired when running WPC Apex with 2000 mode firmware.

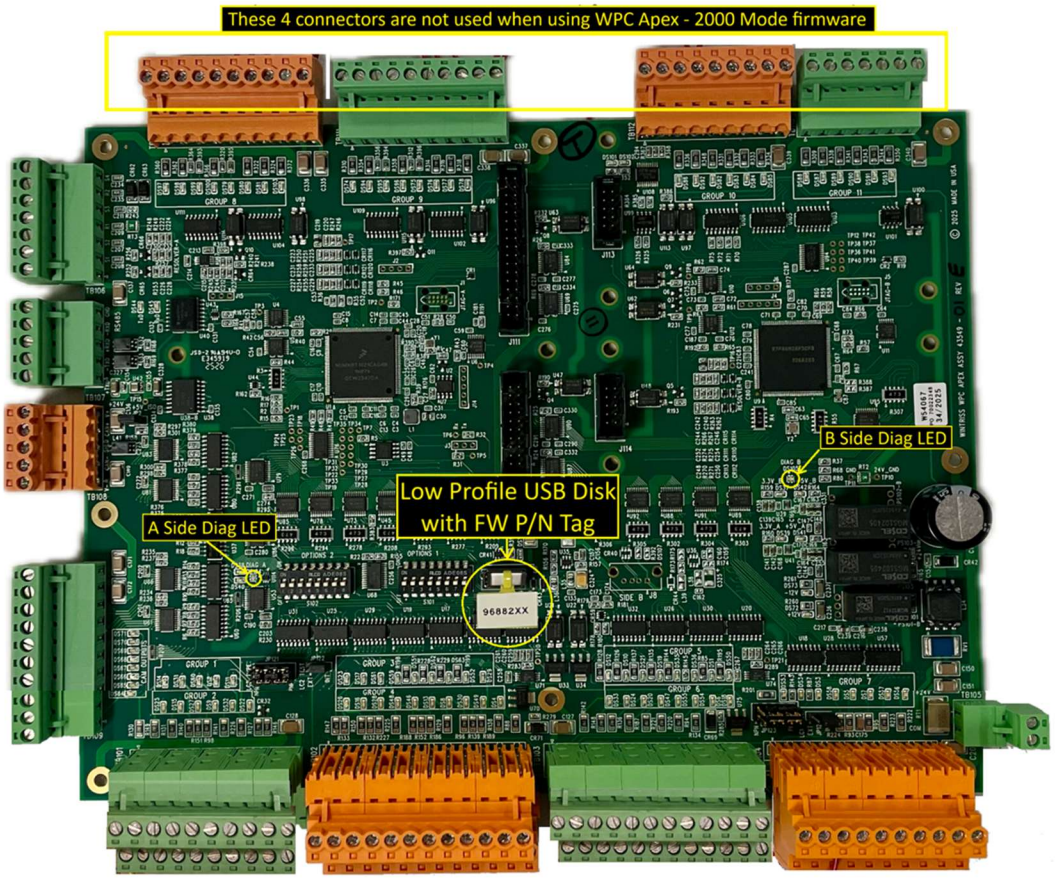


**Figure 1.** *WPC Apex Control Processor Board Highlighting Primary Differences to the WPC 2000.*

The other minor connector differences from the WPC 2000 is with the WPC Apex's orange color connectors (TB102, TB104, TB108), such that although they have the same pinout assignments, they are a different mating style from the WPC 2000's which are square edged whereas for the Apex, they are scalloped.

There are no longer any low/high speed jumps since the Apex processors are capable of reading full resolution from the resolver at any speed.

Also, the Apex has the benefit of CAM output LEDS as shown in Figure 2 below.

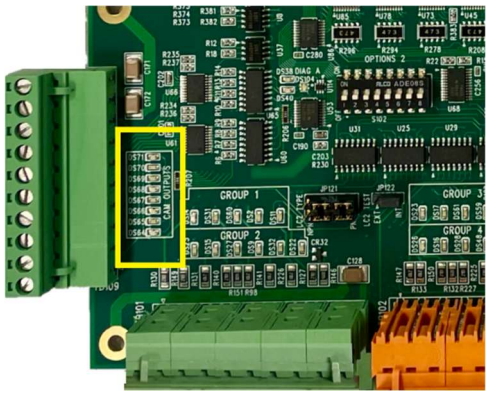


**Figure 2.** *WPC Apex Control Processor Board Cam Output LED Indicators*

## New Diagnostic LEDs

While again referring to Figure 1, notice that each microcontroller has its own multi-color diagnostic LED in which its colors/states indicate the following:

- Not Lit (Off) = Suspect Microcontroller condition or code execution halted.
- Blinking Green (1/sec) = Production code executing normal (No Fault).
- Blinking Blue (1/sec) = Boot Loader code executing normal.
- Blinking Red (1/sec) = Production code executing normal With Fault.
- Any solid color On = Suspect code execution error or halted.

Other than the aforementioned differences, the WPC 2000 Wintriss Clutch/Brake Control Manual can be referenced when using the WPC Apex running 2000 mode firmware.

1128500R_WPC2000_Manual.book

**NOTICE**

The WPC Apex 2000 mode firmware part numbers all consist of a '2' in the third to last number and their version numbers will all begin with 20 thru 29. For example, P/N 96882XX version 20.xx

# Firmware Update Instructions

Unlike the WPC 2000 (which uses physical EPROM chips for the A & B side firmware), WPC Apex's firmware resides within the program memory space inside each of the microcontrollers. To perform an update, a USB port was designed into the processor board (refer to Figure 1). All WPC Apex boards ship with a low-profile USB disk drive which contains its currently loaded firmware as .hex files as well as the press parameter values for use during board swaps.

**CAUTION**

**DAMAGE TO BOARD FROM STATIC DISCHARGE**

Ground yourself before touching circuit boards or chips by touching a large metal object such as the press. Static electricity can destroy electronic components.

**Failure to comply with these instructions could result in property damage.**

Notice in Figure 1 that the firmware part number is tie-wrapped onto its resident USB disk. This is different from the WPC 2000's EPROMs, which indicated both the part number and the version number via a printed label on the chips. With the more versatile Apex, the firmware can be updated by copying the A & B .hex files (solely provided by Wintriss) to the root USB disk and by following the steps below:

1. Making sure you are statically discharged, carefully unpack the replacement PC board and remove it from its anti-static bag
2. Verify that the board has not been damaged during shipment. If damage has occurred, contact Wintriss Tech Support immediately.
3. From the email sent by Wintriss, use the link provided to download and extract the .zip file. Note that if there are any prior downloads (in the Downloads folder) of the same name, then a copy number will be appended to the filename in parentheses and will need to be removed.
4. Power down the press control system and unplug/retrieve the USB disk from the Apex board.
5. Plug the Apex USB disk into the computer that did the download and copy both hex files (e.g. A9688XXX.hex and B9688XXX.hex) from inside the unzipped folder from step 1 onto the root of Apex's USB disk.
6. With the system still powered off, insert the USB disk back into the Apex board's USB receptacle, which is the one next to the dip switches (ref S101).
7. Power up the system and the WPC Apex A-side processor should detect that the USB disk has different firmware from what's in its flash then begin loading the firmware. During this phase, the A side's diagnostic LED will go solid blue for a moment which indicates its processing the files on the USB disk. First it loads the A firmware and then the B, all of which should take less than 30 seconds.
8. When the firmware load process is completed, both A and B processor diagnostic lights will blink green or if there's an issue then they will blink red.

9. If this is on a SmartPAC 2/Pro integrated system, then the Apex firmware update should be finished by the time the SmartPAC finishes booting up its UI.
10. When the system finishes booting up, do a power cycle.
11. After the system is finished starting up, then for the case of systems integrated with a SmartPAC, go into its Installed Option screen and confirm the WPC 2000 firmware line indicates the 2X.XX range which is a telltale that it's a WPC Apex system, running in 2000 mode.
12. Done.

## Board Swap Instructions

1. Power down the press control system and unplug/retrieve the USB disk from the existing Apex board.
2. Plug the Apex USB disk into the replacement Apex board. This will ensure that the replacement board inherits the firmware from the existing board as well as its press parameter values while powering up the first time.
3. Remove the existing Apex board by carefully unplugging all its connectors followed by unscrewing the mount screws.
4. Install the replacement Apex board and screw it down followed by plugging in all the connectors for it.
5. Double check that all connectors are properly in place and that the USB disk (from step 2) is also in place.
6. Power up the system and confirm the firmware loads by noting the ~ 30 second period while the processor diagnostic lights blue and then blink green when complete.
7. Confirm the press control operates successfully.
8. Send the board that was replaced back to Wintriss per the RMA process.
9. Done.