

TN-FC-6000 Battery Information

This article provides details of how the battery now behaves on new and updated FC-6000 Windows units. It also provides details on what to do if the battery is no longer detected or is at a reduced capacity on previous FC-6000 Windows (that have not yet been updated) and FC-6000 Android units. The sections of this article are as follows.

- OS and Firmware Update for FC-6000 Windows
- Best Practices to Extend Battery Life
- Additional Battery Status Information
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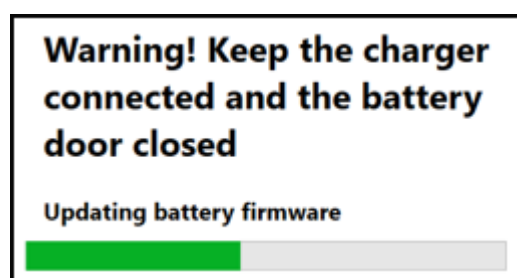
OS and Firmware Update

Warning: Once you have updated to the BIOS (UEFI) to version 1.48 and the EC (Embedded Controller) to version 1.28, **do not downgrade to older versions as it will lock up your device.** If you have tried to downgrade and you have a removable battery (no internal battery), you can recover your unit by removing the battery and keeping it out until the unit completes boot.

New units made after 11 November 2022 will have the new OS and firmware installed. To check which version of the OS and firmware you have, open the Device Info app.

Install UEFI 1.48 and EC 1.28, then install the OS 22292 Patch. The OS Patch will not install if the BIOS is older than 1.48.

After the UEFI, EC, and OS patch are updated, the battery firmware will begin updating automatically. You will see the following message:



It usually takes about 8 minutes to update one battery and only one battery will update at a time. The removable battery will update first, then the internal battery. If you have a spare battery, that can be swapped in to be updated as well.

After the first battery completes the update, the message shown above will disappear. If the unit has a second battery, the message will appear again to show the progress of the next battery update.

After the update is complete, go to the Device Info app to verify the batteries have the new 7A firmware.



If either of the batteries shows a version less than 7A or still shows as not present, reboot the device to update the battery again. If a battery update fails or is interrupted, that battery cannot power the device or be charged. However, you can recover it by rebooting the device and letting it run the update again. If the battery still is not present, then it most likely is beyond charge cycles life expectancy and will need to be replaced.

Best Practices to Extend Battery Life

- Charge at room temperature.
- If the battery will be idle for a short time, charge it to full then shut down the FC-6000. This provides the opportunity for the battery to maintain the cell balance.
- If the battery is not going to be used for more than 2 weeks:
 1. Charge or discharge the battery to 50%–70%.
 2. Shut down the FC-6000.
 3. Press and hold the power button for about 20 seconds (until the red LED stops blinking) then store at room temperature. When you are ready to use it again, charge the batteries all the way to full.
- Don't leave the device connected to the charger for extended periods of time.

Additional Battery Status Information

Charging Error

If the battery did not charge as expected or the battery detects internal damage, it may not be allowed to charge.

Troubleshooting options:

- If both batteries report a charging error, perform a restart.
- Remove the battery for a few seconds then re-insert it. If the error goes away, the battery may begin charging again.
- If the battery still shows this error, then reset the battery:
 1. Shut down the unit.
 2. Disconnect any chargers.

3. Press and hold the power button for about 20 seconds, until the red LED remains off.
4. Connect the charger again and boot up Windows.

If the battery still shows this error or operates normally for a short period before showing the error again, then the battery needs to be replaced.

Unbalanced

The individual cells inside the battery have different voltages affecting its overall capacity. The battery may be able to correct this in ideal conditions.

Troubleshooting Options:

- Charge, drain, and recharge the battery:
 1. Charge the battery to full.
 2. Remove the battery from the device, let it sit for a few days, then return it to the unit and let it discharge to empty.

Note: This can happen while it is still in the unit, but it is faster if there is no other drain on the battery. So, in a case where it is trying to make up a large difference, it is more likely to succeed when it is out of the unit.

3. Charge the battery to full again. If it is unbalanced, has a certain level of charge, and has rested long enough, the battery will slowly drain the high cell down to the lower cells.
- If the battery still shows this error, repeat the steps above a few more times.
 - If the battery continues to show this error, it needs to be replaced.

Reduced Capacity

If the overall charge capacity of the battery is significantly less than a new battery, the battery is worn out or the unit has severely unbalanced cells.

Troubleshooting Options:

- If the status reports the battery is unbalanced, follow the actions above to balance it.
- If the battery is worn out, you can continue to use it as normal, it will just need to be charged more often. To get the full run time, it will need to be replaced.

Battery No Longer Detected or at Reduced Capacity

Note: This information applies to units bought before November 2022 with any firmware earlier than BIOS 1.48 and EC 1.28 that have not been updated as described above.

The EC (Embedded Controller) firmware version 1.22 or later for FC-6000 Windows (or the Microcontroller firmware on FC-6000 Android) can better detect if the cells in a battery pack have been over-discharged or are unbalanced. If these battery conditions exist, it no longer allows that battery to be shown and used (which could have potentially caused further issues/risks with the battery).

With prior firmware versions, such a battery may appear to not charge to full or to deplete rapidly (units based on the FC-6000 Windows that originally shipped before Feb 2021 may need a specific hardware modification instead). The unit may still not even turn on until such a battery is removed (to then run-on charger or optional internal battery instead).

With the latest firmware, the description "Battery 1: Not shown as recognized" or "Battery not present" may appear in the battery details if a battery pack has been over-discharged or is unbalanced. Otherwise, the percent charge remaining or percent until full may be reduced. To explore potential causes, see [QG-FC-6000 Power and Battery Troubleshooting](#)

If everything in the Power & Battery Troubleshooting article has been corrected/validated, and a battery has been over-discharged (and is no longer being shown),

1. If possible, perform a full Power Off or Shut Down (Start > Power menu or hold the hardware Power button for a few seconds) and wait for the screen and then the red light to go out. If the unit will not even turn on, just proceed to step 2.
2. Leave the unit plugged in overnight to potentially recover the battery.

If you are using a separate spare battery charger,

1. Detach the charging cable.
2. Insert the battery.
3. Re-attach the cable.
4. Leave the device overnight to recover

If the battery cannot be recovered in the unit, and other batteries work in this unit, then using the unit serial number for reference the battery can be submitted to the service department for evaluation.

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