

Bug Advisory

Title	Usage Instructions for Internal 32kHz RC Oscillator Clock Source in ESP32-C6 and Precautions for Changing the System Slow Clock Source via OTA
Issue Date	2025/02/25
Advisory Number	AR2024-011
Serial Number	NA
Version	V1.0

Issue Summary

Issue 1: Unstable RC32K Clock Source at Low Temperatures

The internal 32kHz RC oscillator clock source of the ESP32-C6 series chips may fail to oscillate or fail to start at low temperatures. If used as the slow clock source, it can cause the system to freeze. It is not recommended for use in applications.

Issue 2: Loss of Slow Clock Source on First Boot After OTA in Certain ESP-IDF Versions

In some versions of ESP-IDF (see the table below for ESP-IDF Affected Versions), if the chip's slow clock source is changed, the ESP32-C6 series chip may lose the slow clock source on the first boot after completing OTA (re-powering the chip can restore functionality).

ESP-IDF Affected Versions

ESP-IDF Branch	Affected Commit IDs	Affected ESP-IDF Versions
release/v5.4	All commits before 569f6c02 (excluded)	No related release
release/v5.3	All commits before a24dc940 (excluded)	v5.3 - v5.3.1
release/v5.2	All commits before 1fc1cc44 (excluded)	v5.2 - v5.2.3

release/v5.1	All commits before 907337aa (excluded)	v5.1 - v5.1.5
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Affected Product Series:

ESP32-C6 series chips

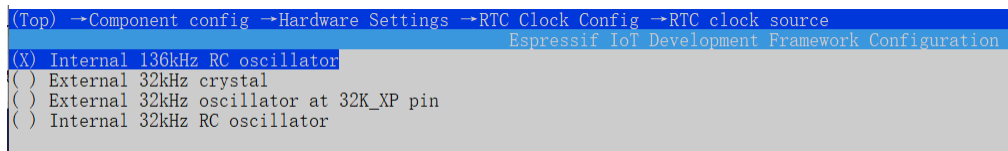
Note: ESP32-H2 and ESP32-P4 series chips do not support the 32kHz RC oscillator and should not use this feature.

Mitigation

For Issue 1:

1. For chips affected by Issue 1, the default slow clock source on power-up is the internal 136kHz RC oscillator. **If no additional configuration has been made in the application, this issue can be ignored.**

If the internal 32kHz RC oscillator has been used in ESP-IDF, it is recommended to choose another slow clock source as an alternative in the ESP-IDF configuration options (menuconfig).



If the internal 32kHz RC oscillator has not been used, it is not recommended to use this clock source.

In future versions of ESP-IDF, the internal 32kHz RC oscillator clock source will no longer be available.

2. In [ESP32-C6 Series Datasheet](#) and [ESP32-C6 Technical Reference Manual](#), the information regarding the internal 32kHz RC oscillator will be removed.

For Issue 2:

If you need to change the chip's slow clock source via OTA and the ESP-IDF version in use is affected by Issue 2 (as listed above), it is necessary to upgrade to the fixed ESP-IDF version (see the table below for ESP-IDF Patched Versions) when building the OTA firmware.

ESP-IDF Patched Versions

ESP-IDF Branch	Fixed Commit IDs	Fixed ESP-IDF Versions
release/v5.4	131609cf and 569f6c02	v5.4
release/v5.3	b840737e and a24dc940	v5.3.2
release/v5.2	5c07af3e and 1fc1cc44	v5.2.4
release/v5.1	3a24b91c and 907337aa	v5.1.6

Recommendations for Application Developers

If the internal 32kHz RC oscillator has been used as the slow clock source for affected chips in ESP-IDF, it is recommended to switch to another slow clock source.

If you need to change the chip's slow clock source via OTA and the ESP-IDF version in use is listed among the affected versions, it is recommended to upgrade to the fixed ESP-IDF version (see the above table).

For any issues, please contact [Espressif](#). We will handle related matters as soon as possible.