# [TriCore] SSWWAIT and Startup Behavior with Debugger Attached

2026-09-23 - Comments (0) - TriCore

This article applies only to the AURIX TC2xx and TC3xx series.

The TriCore Startup Software (SSW) can be configured to wait for an acknowledgment from the HSM before leaving the firmware. This behavior is controlled via **PROCONHSMCFG.SSWWAIT** in **UCB_HSMCOTP**.

For more details, refer to the HSM Subsystem Target Specification.

## Chip behavior when a debugger is attached

This behavior is affected if the debugger is attached especially in the following situations:

- When connecting via `SYStem.Up`
- When recovering the debug connection after hard resets or power cycles using:

  `SYStem.Mode StandBy` with `SYStem.Option.RESetBehavior Halt | RestoreGo`

  For details, see paragraph *Debugging through Resets and Power Cycles* in debugger_tricore.pdf.

## Options for correct HSM/TriCore0 startup synchronization

To achieve the expected synchronization when the debugger is attached, there are three approaches:

### 1. Use one of the following connection modes depending on the use case

- `SYStem.Mode Attach`
- `SYStem.Mode Go`
- `SYStem.Mode StandBy` with `SYStem.Option.RESetBehavior RunRestore`

See debugger_tricore.pdf for additional details about the various **SYStem.mode** options.

### 2. Configure the debugger to emulate SSWWAIT behavior

Set `SYStem.Option SSWWAIT ON` to emulate the normal SSWWAIT behavior.

This ensures a correct timing between TriCore and HSM if the HSM is running in the background (i.e., the HSM debug instance is not started): After `SYStem.Up`, the HSM runs in the background until it signals the boot software to release the host CPU, after which it is halted again.

Note

**`SYStem.Option SSWWAIT ON`** has no effect if the HSM debug instance is started.

### 3. Ensure manual synchronization

If the HSM debug instance is started, the user has to manage the sequencing to get the synchronization right.

- Setup SYnch to start TriCore and HSM independently (refer to documentation of SYnch command group in general_ref_s.pdf)
- Set a breakpoint to stop HSM just after acknowledgment to release TriCore0
- Run HSM until TriCore0 release acknowledgment
- Reconfigure SYnch to start TriCore and HSM synchronously