

Technical Note

Texas Instruments TMS570: AJSM Unlocking

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A **TASKING** Company

This Technical Note describes how to unlock the Texas Instruments TMS570 device with the AJSM unlock key in winIDEA for temporary debug access.


Tool requirements:

- ✓ winIDEA 9.21.117 or newer
- ✓ BlueBox iC5700, iC5000

The Hercules platform includes the Advanced JTAG Security Module (AJSM) as support for managing debug access on deployed devices. AJSM can be used to program a unique access key to the OTP Flash memory. Subsequent debug accesses must unlock the AJSM with the correct key sequence to gain access to the JTAG-based debug, trace, and calibration logic. An error in unlocking the AJSM results in no error response and no access to the debug logic.

When the device is programmed with a defined 128-bit key and ECC, it is locked from debug access after the next power-on-reset.

Upon debug session initialization, winIDEA detects if the device is locked, which is indicated in the Progress window: **Debug TAP present but not accessible. Device SECURED!**



```

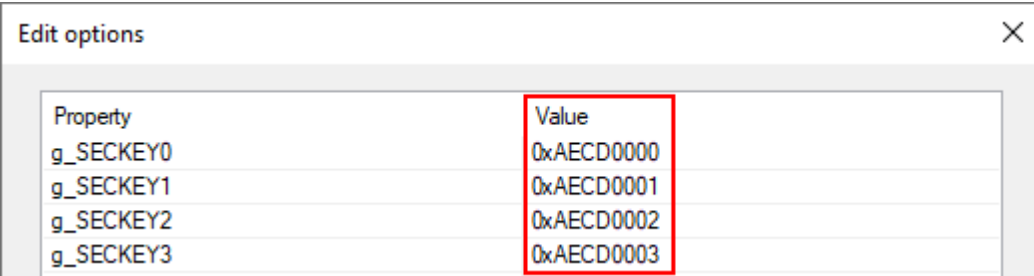
Progress
I 01B : SoC released from RESET
I 01B :
I 01B : ICEPick initialization...
W 01B : Debug TAP present but not accessible. Device SECURED! > E:\ISYSTEM_TEMP\JP3
I 01B : Temporary device unsecure...
I 01B : Add TAP2 (AJSM) into JTAG chain
  
```

When the device is secured or locked, winIDEA automatically attempts to perform a temporary unlock (the device is unlocked until the next power-on-reset) procedure before continuing with debug session initialization.

winIDEA Configuration

For this unlock to succeed, you must configure the workspace with the correct unlock key. This key is entered as a parameter in the *Before Program - Connect to SoC* dialog.

1. Open *Hardware menu / CPU Options / Reset*.
2. Click the *Default* button in *Initialization before Programming / Connect*.
3. Select *Custom* from the dropdown menu.
4. Select script via the arrow button in the *Script* field.
5. Click on the arrow button to select parameters via the *Edit options* dialog.



Property	Value
g_SECKEY0	0xAECD0000
g_SECKEY1	0xAECD0001
g_SECKEY2	0xAECD0002
g_SECKEY3	0xAECD0003



Unlock key is stored as a part of the winIDEA workspace configuration file in a plain text format. Sharing the winIDEA workspace file also shares this unlock key.

6. Make sure to set the same script parameters for all Initialization modes. Check options *Same as Programming* in *Initialization before Debug session* and *Initialization at Attach*.

7. Progress Window logs the procedure.



Using the AJSM procedure, the device can be permanently locked without the option to temporarily unlock. In this case, debugging of such a target is not possible. Unlocking the target device will not succeed.

See Texas Instrument online documentation for more information on AJSM (Un)Locking.