Sync Connect APIM & TCU Files/Programming/Activating.

Read this document fully before starting any actions. It is your responsibility to follow the instructions as outlined below.

NOTES:

- This tutorial is written specifically for most 2015 thru 2018 US Ford and Lincoln models that utilize CGEA 1.3 vehicle architecture. It is possible to retrofit other year and models of Ford and Lincoln vehicles as long as the vehicle utilizes CGEA 1.2/1.3 vehicle architecture. (Note: With CGEA 1.2, the feature set will be reduced to location services and WIFI hotspot, if the TCU is so equipped.)
- This tutorial does not include the installation of the TCU (Telematics Control Unit) as this will vary among vehicle models and year of production. See this thread for general instructions for US vehicles: Sync Connect Retrofit (in any Ford) - Ford F150 Forum.
- The FordPass feature set will be affected by the APIM vs TCU firmware versions and asbuilt programming. The APIM firmware versions should be at the 3.2/3.3 APIM Navigation Unit Firmware (Production Release 2018) level at a minimum, Sync 3.4 is recommended. If you cannot program the APIM firmware, accessibility to certain features will not be available. The TCU firmware version should be programmed to the latest indicated below for feature compatibility.
- Flashing the BCM with updated firmware is not required.
- SYNC Connect modems have base part number 14G087 and 14G229. They are identical and interchangeable.
- The vehicle shown in the Ford Pass App UI will be correct even if that model year never supported Sync 3.
- Sync 3 Hot Spot Menu can only be added to newer Sync 3 APIM's due to a firmware incompatibility. (MY18.5+) The donor vehicle VIN will be required to activate the WIFI hotspot feature, if so desired. See the Ford Owner website for information about this feature.
- The instructions will work with Ford vehicles featuring Sync 2 / MFT. Sync 2 (AKA My Ford Touch) Sync Connect compatibility has been tested and proven, although will have limited features.
- Canadian vehicles will use 754-05-xx (754G5G1/754G5G2) rather than 754-06-xx (754G6G1/754G6G2) for US models for Block 5 data. Canadian TCU's will not work in the US, and vice versa.

SAVE THE DONOR TCU ASBUILT!
Optional, and you will probably never need it again…as it will be wrong once you update the firmware.

Firmware Updates Required

- Use FORScan (or other capable application) to update the firmware on the APIM and TCU if necessary. You will need FORScan 2.4.3 or above and a paid license to update the firmware with the FORScan application.
- You must use an approved USB OBDII adapter as recommended by FORScan.
- DO NOT use a Bluetooth adapter to program firmware.
- The firmware updates may take some time and require vehicle power remain on and stable.
- The use of a battery charger capable of at least 10 Amps continuous is recommended.

APIM Firmware Update
Using FORScan 2.4.5 or higher, you will need to update the APIM firmware to the versions listed below as a minimum. Newer 'K' or '4' series APIM's should not need to be updated. If you have a 'G' model APIM, it is not advisable to perform this update, as the hardware is not 'officially' compatible for this application.
3.2/3.3 APIM Navigation Unit Firmware (Production Release 2018)
Secondary Boot Loader: GB5T-14G376-AA

Strategy (F188): 1U5T-14G374-DA
Calibration (F124) : 1U5T-14G375-DA
ECU Configuration/Sound Profiles (F10A): GB5T-14G379-AA
ECU Configuration/Illumination Strategy (F16B): JB5T-14G379-BA

TCU Firmware Update
Using FORScan 2.4.5 or higher, you will need to update the TCU firmware to one of the versions listed below for 'J' series TCU modules. 'K' series and above TCU's will not work correctly on vehicles older than 2019 without being downgraded to the firmware below due to the use of HS4-CAN and parameter mismatches. KT1T-14G087-xx can be used but the firmware will need to be downgraded to the latest available for the JL3T-14G087-xx units.

Note: The firmware listings below are specific to the Cal Level: JL3T-14G087-CF version module. Other modules will be similar.

Original Firmware (Example):
TCU - Telematic Control Unit Module
Part number: JL3T-14G087-CF
Cal Level: JL3T-14G087-CF
Hardware Number: JL3T-14G145-CA
Secondary Boot Loader: JL3T-14G141-AA
Strategy (F188): JL3T-14G139-CF
ECU Configuration (F10A): JL3T-14G144-CF

Latest Firmware: 2021-09-03
TCU - Telematic Control Unit Module
Part number: JL3T-14G087-CF
Cal Level: JL3T-14G087-CT
Hardware Number: JL3T-14G145-CA
Secondary Boot Loader: JL3T-14G141-AA
Strategy (F188): JL3T-14G139-CT
ECU Configuration (F10A): JL3T-14G144-CT

Vehicle Module As Built Settings Required
Make the appropriate FORScan settings in the following modules.

APIM, Sync 3.2+:
Instruct the APIM there is a TCU.
7D0-02-02 xxxx *xxx xxxx, from 8 to 9.

Instruct the APIM that the TCU is hotspot capable, if so equipped.
7D0-02-03 *xxx, from 0 to 4.

APIM, Sync 2:
Instruct the APIM there is a TCU.
7D0-02-02 xxxx *xxx xxxx, from 0 to 1.

BCM:
Vehicle must be equipped with and programmed for factory remote start.
Enable Remote Start:
726-22-02: xxx1 xxxx xxxx
Remote Start: 0=disabled, 1=enabled

Tracking and Blocking Module (TBM)
726-49-01 x*xxx xxxx xxxx
TBM Avail Cfg: 0=absent, 1=present

IPC:
Adds Remote Start menu to instrument cluster.
720-02-02: xxxx Axxx

Program the TCU As Built Data

Once the firmware has been updated, you can use this TCU asbuilt for US vehicles that contains the additional data lines for the updated firmware. Other vehicles will be similar but may have different settings for region and vehicle model. If the TCU donor vehicle is the same model, you may be able to modify the asbuilt accordingly. Canadian vehicles will use 754-05-xx (754G5G1/754G5G2) rather than 754-06-xx (754G6G1/754G6G2) for US models for Block 5 data. Canadian TCU's will not work in the US, and vice versa.

Asbuilt Cal Level: J***-14G087-CR

```
;Block 1
754G1G1B13200000040
754G1G2005E
;Block 2
754G2G103A001
;Block 3
754G3G17D7D7D7D7DD0
754G3G27D7D7D7D7DD1
754G3G37D7D7D7D7DD2
754G3G47D7D7D7D7DD3
754G3G57D7D7D7D7DD4
754G3G6001E7D7D7DF9
754G3G77D7D7D7D7DD6
754G3G87D7D7D7D7DD7
754G3G97D7D7D7D7DD8
754G3GA7D7D1E86
;Block 4
754G4G17C7C7C7C7CCC
754G4G27C7C7C7C7CCD
754G4G37C7C7C7C7CCE
754G4G47C7C7C7C7CCF
754G4G57C7C7C7C7CD0
754G4G67C7C7C7C7CD1
754G4G77C7C7C7C7CD2
754G4G87C7C0362
;Block 5
754G6G1000000780FE9
754G6G20277DC
```

INSTALL and SAVE the TCU ASBUILT!

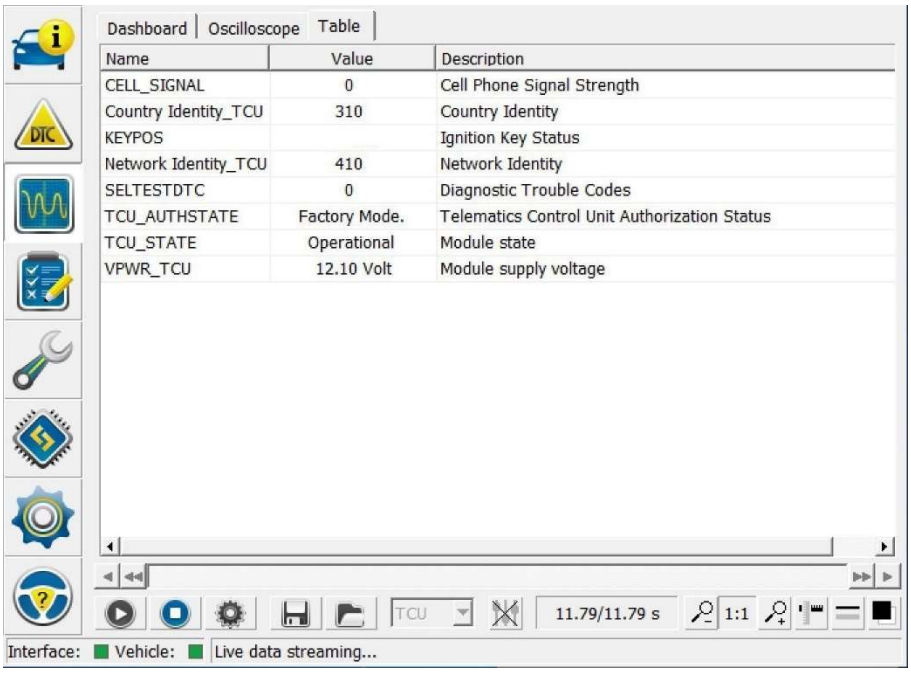
Authorize the TCU

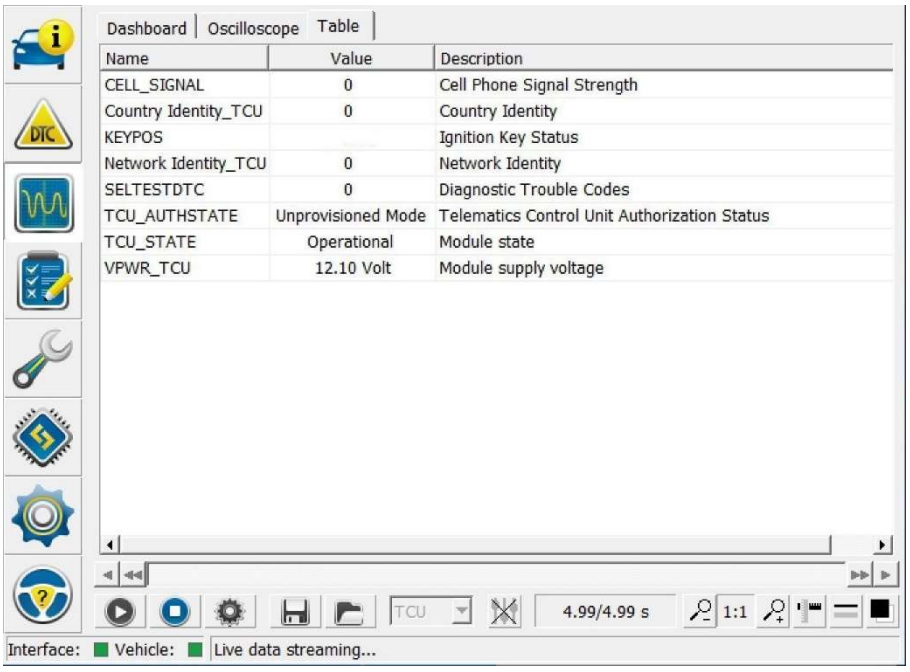
Important:
Remove the vehicle from FordPass. Delete the app on the phone to clear the app cache. It is best to do this the day before you try the rest of this, as this action needs to process through the Ford system. You will install the app later in this process. It is recommended to perform a Master Reset on the APIM beforehand and re-pair your phone as necessary. In some cases, it may be necessary to manually remove the vehicle from the Ford Owner account, especially if the vehicle was not equipped with FordPass Connect from the factory.

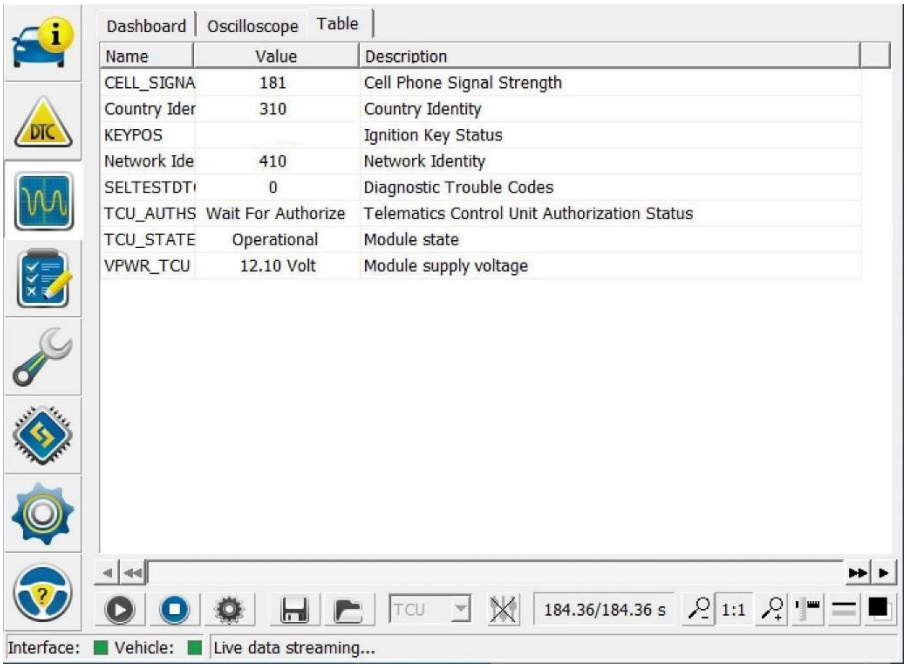
NOTES:

- The following activation process must be done with the vehicle running. Disconnect the vehicle battery charger when the vehicle is running.
- Setting up the TCU in FORScan for the authentication process requires your patience.
- Disregard the ignition status and FORScan version in the pictures below.

1. In FORScan set up the TCU monitoring as shown in the images below.
2. While monitoring the TCU PIDs in real time, there's a PID labeled 'TCU Authstate' which tells you the current authorization status of the module. To begin the process of activating or authorizing the TCU, change the value of 754-01-01 in FORScan to the value below:
   754-01-01: B100 0000 xx
   (Ignore the xx value and accept the write process. This is the checksum value FORScan will calculate automatically.)
   This changes the region to unconfigured, gas vehicle, OCS state to 'Not Configured'.
3. …wait a few minutes. Check that the TCU Auth state says, 'Factory Mode', then set it back to the original value. See the TCU asbuilt database for additional values.
   a. Gas powered:
      754-01-01 B132 0000 0040 for NA
      754-01-01 B138 0000 0046 for EU
   b. Diesel powered:
      754-01-01 B232 0000 0041 for NA
      754-01-01 B238 0000 0047 for EU
   c. Gas/Electric Hybrid (FHEV):
      754-01-01 B332 0000 0042 for NA
      754-01-01 B338 0000 0048 for EU
4. While monitoring the Authorization Status PID, it will progress through several stages as shown in the images below. (Factory Mode, Unprovisioned Mode, Waiting for Authorization Mode).


Dashboard
Oscilloscope
Table
Name
Value
Description
CELL_SIGNAL
0
Cell Phone Signal Strength
Country Identity_TCU
310
Country Identity
KEYPOS
Ignition Key Status
Network Identity_TCU
410
Network Identity
SELTESTDTC
0
Diagnostic Trouble Codes
TCU_AUTHSTATE
Factory Mode.
Telematics Control Unit Authorization Status
TCU_STATE
Operational
Module state
VPWR_TCU
12.10 Volt
Module supply voltage
TCU
11.79/11.79 s
1:1
Interface:
Vehicle:
Live data streaming...


Dashboard
Oscilloscope
Table
Name
Value
Description
CELL_SIGNAL
0
Cell Phone Signal Strength
Country Identity_TCU
0
Country Identity
KEYPOS
Ignition Key Status
Network Identity_TCU
0
Network Identity
SELTESTDTC
0
Diagnostic Trouble Codes
TCU_AUTHSTATE
Unprovisioned Mode
Telematics Control Unit Authorization Status
TCU_STATE
Operational
Module state
VPWR_TCU
12.10 Volt
Module supply voltage
TCU
4.99/4.99 s
1:1
Interface:
Vehicle:
Live data streaming...

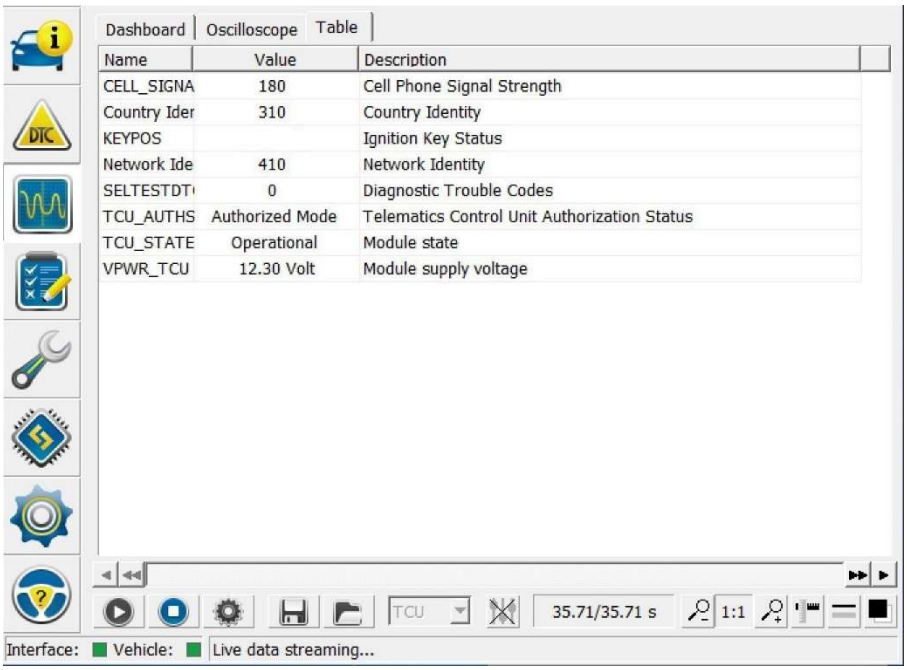


5. Once you are in the 'Waiting for Authorization' mode, install the FordPass app on your phone and add your vehicle. Once your vehicle is added successfully, **SIGN OUT OF THE APP** and quit the app on the phone to clear the app cache. Start the app again, log in, and check that your vehicle is present and that you can activate a vehicle.

6. Activate the vehicle now. DO NOT try to authorize the vehicle multiple times, this will just mess things up. Wait for the email or message in FordPass that says your authorization is pending. If you get a 'Unable to authorize' or 'Authorization not available' message, then the Ford servers have an issue and there is nothing you can do at this point. It usually takes a day for them to come back. (Weekends are the worst times for this.)

7. Once the message appears on the APIM to authorize, confirm you want to authorize. If the message takes more than about 5 minutes, turn off the vehicle and open and close the door to ensure that the APIM powers down. Restart the vehicle. Wait for the message… authorize the vehicle.

8. You should get an email or message in FordPass that the vehicle is now authorized. If you do not receive these emails then the process is failing on the FORD side, not the vehicle side. Sometimes the emails or message in FordPass will take several minutes. Once the vehicle authorizes, you will see the status in FORScan monitoring the TCU PID's.



Additional Information:

SSM 48279 - 2018-2019 Various Vehicles - Telematics Control Unit (TCU) - Vehicle Software Update Message - Service Tool Displays Factory Mode.
Some 2018-2019 Ford and Lincoln vehicles equipped with a telematics control unit (TCU) may exhibit a persistent message in the Ford Pass/Lincoln Way mobile app advising, “Your vehicles software is being updated. Vehicle controls will be unavailable for about 10 minutes while this update takes place.” This may be due to the TCU still in factory mode. Using the appropriate Ford diagnostic scan tool, check the TCU_AUTHSTATE PID status showing “Factory Mode”. To correct this condition, perform programmable module installation (PMI) on the telematics control unit (TCU). Once PMI is completed, ensure the TCU_AUTHSTATE PID in service tool no longer displays “Factory Mode”. If the concern is still present, follow normal diagnostics in Workshop Manual (WSM) section 415-00. For claiming, use causal part 14G229.