# DIY: Code M3 ZCP to M4 CS steering, differential, DSC, and EDC settings

https://f80.bimmerpost.com/forums/showthread.php?p=25207433#post25207433

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# Introduction

The document objective is to provide a step-by-step guide to configure M4 CS model settings for DSC, EDC, steering (EPS), and differential (GHAS). Since many people who desire these settings have older cars, flashing newer software versions to the ECUs is covered. The example vehicle is a 2017 M3 ZCP that had I-Step 16-11-502. All examples will assume the same vehicle and shipment I-Step level. Expect differences in I-Step level, type code, and stock vehicle order options with other F8X models and software versions. The example vehicle is a 6 speed, so DCT flash does not apply.

# Prerequisites

- Read the reference threads and documents. Reading the materials was required to get a basic understanding of the software used and procedures involved.
- An E-Sys installation with a token for FDL coding is used to enable TPMS and to perform final validations. Version 3.28.1 with E-Sys Launcher Premium 2.6.2.124 (via rearm script and date/time hack) was used in the examples.
- An E-Sys installation is used to update software and VO code. Version 3.33.4 was used in the examples.
- ISTA+ is used to clear ECU fault memory and to execute any service procedures required. Version 4.13 is used in the examples.
- Full psdzdata newer that March 2017 (ISTA+ 3.61.0/I-Step 17-03-502) is required to code. If updating software, use the latest full psdzdata available. The latest version validated with all option codes is June 2019 4.17.30 from ISTA+ 4.17.13.

# References

- Beginner's guide to ISTA+: https://www.bimmerfest.com/forums/showthread.php?t=936877
- GTS on ZCP coding example: https://f80.bimmerpost.com/forums/showthread.php?t=1431079
- ISTA+ 4.13 (August 2018) install information: https://cartechnology.co.uk/showthread.php?tid=38837
- Intro to coding: https://www.bimmerfest.com/forums/showthread.php?t=983245
- CS EDC coding thread: https://f80.bimmerpost.com/forums/showthread.php?t=1390938
- F8x software update tips thread: https://f80.bimmerpost.com/forums/showthread.php?t=1264746

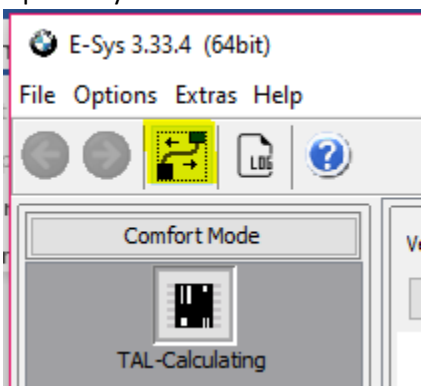
## Option Codes

Option codes were verified by decoding the VINs of 2017 M3 ZCP, 2018 M3 CS, 2019 M4 CS and 2016 M4 GTS vehicles using mdecoder.com and realoem.com. Use these option codes throughout the guide based on desired vehicle coding. The examples will use 2019 M4 CS option codes.

| Vehicle | Model Code | Type Code | Unique Editions/Packages |
|---|---|---|---|
| **2017 M3 ZCP** | F080 | 8M93 | 7MA (Competition Package), 7MN (M Competition Package) |
| **2018 M3 CS** | F080 | 8M93 | 7ME (M Drivers Package), 9MR (M Sport Factory) |
| **2019 M4 CS** | F082 | 3S73 | 7ME (M Drivers Package) |
| **2016 M4 GTS** | F082 | 4S93 | 7ME (M Drivers Package) |

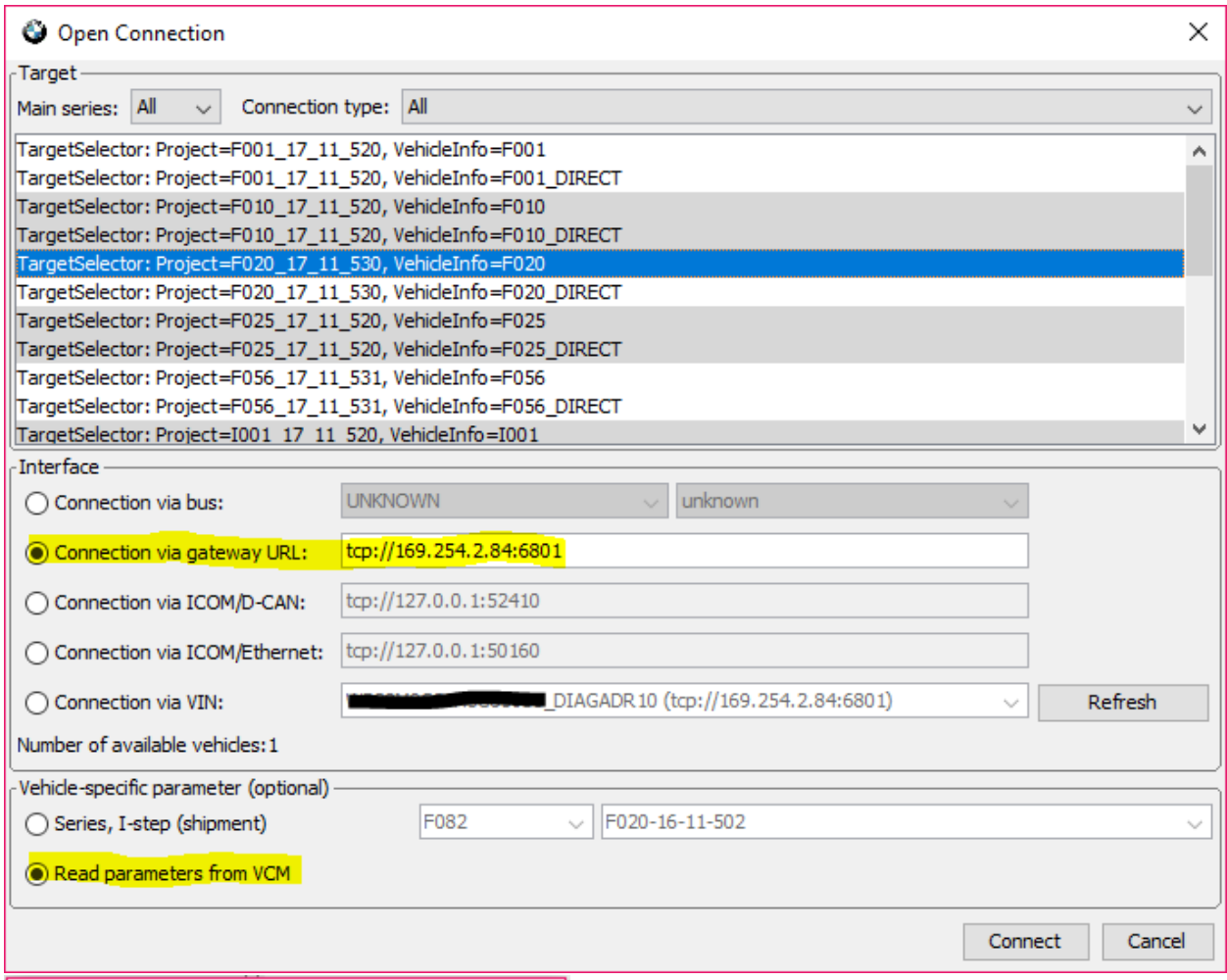
## Implementation

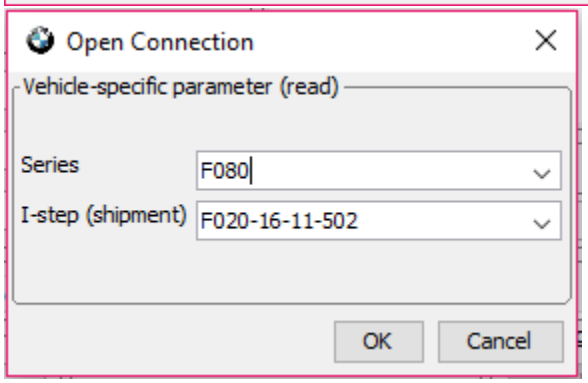
1. Connect to the vehicle using the flashing/VO coding E-Sys installation
    a. Open E-Sys and click the Connect button on the menu bar.




    b. Highlight “TargetSelector: Project=<full psdzdata I-Step level>, VehicleInfo=F020”, Select “Connection via gateway URL:”, replace the 127.0.0.1:6801 loopback address with the IP address and port values found in the Connection via VIN field, select Read parameters from VCM, and click Connect. Click OK when prompted by the Open Connection window that pops up showing series and shipment I-Step. Note the I-Step level.

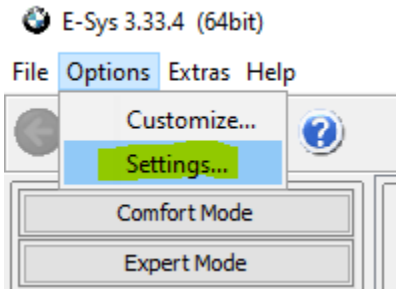
    ***Note: Some users state successful updates using Connection via VIN. The Connection via VIN method did not work for this vehicle and created SVTs with null reference exceptions for GHAS during TAL calculation. Connection via gateway URL was a mandatory option.



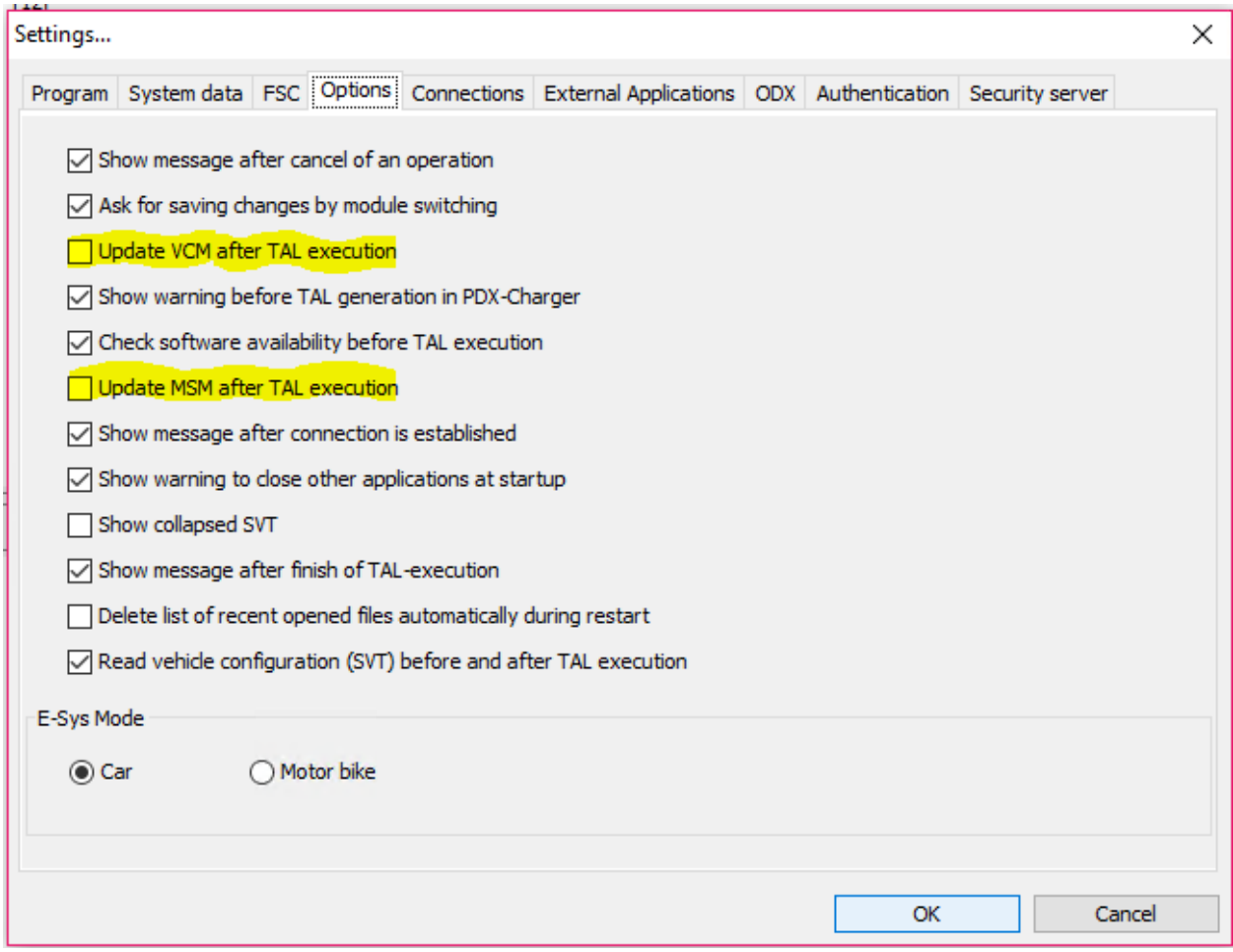




2. Configure E-Sys settings to prevent TAL execution errors

a. Click Options > Settings…



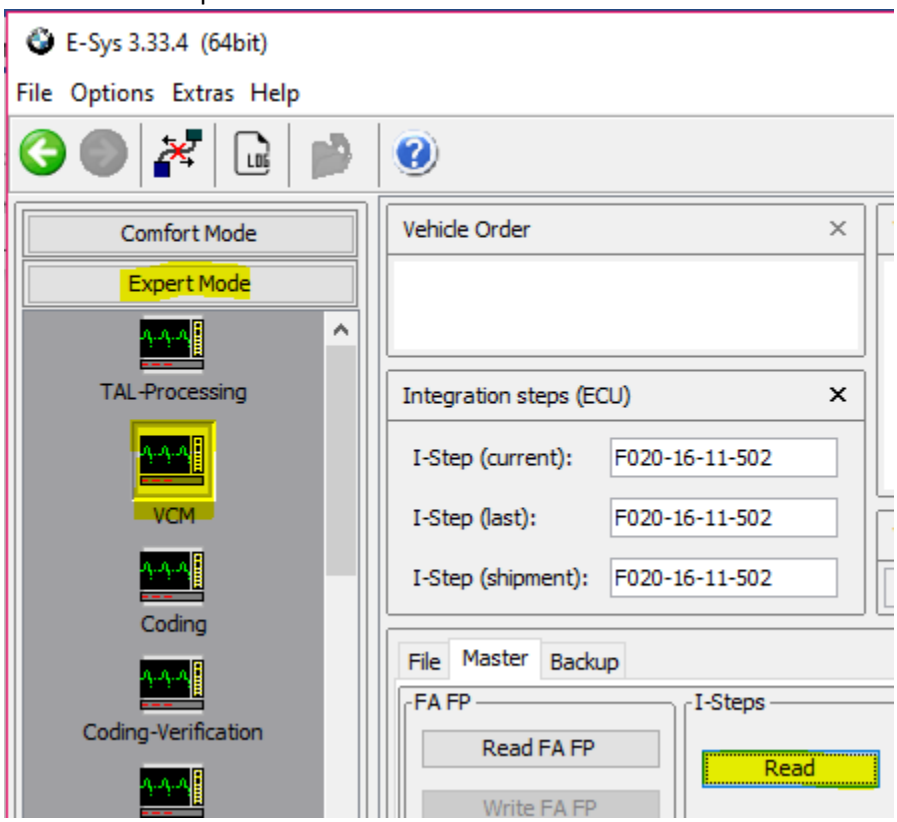

b. On the Options tab, uncheck Update VCM after TAL execution and Update MSM after TAL execution boxes, and click ok. The settings are unchecked to avoid writing modified FAs to the VCM.



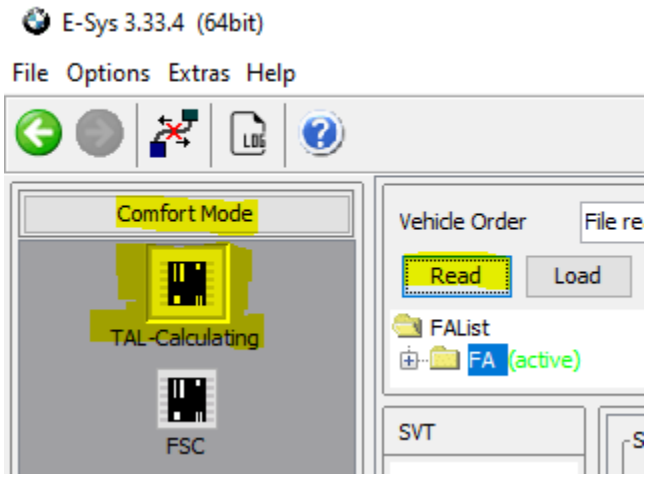

## 3. Check the current I-Step level

a. Click Expert Mode, VCM, Master tab, and Read I-Steps. Note the I-Step level. Through querying VCM during initial connection and now in Expert Mode, we can be confident

the current I-Step level is 16-11-502 for this car.

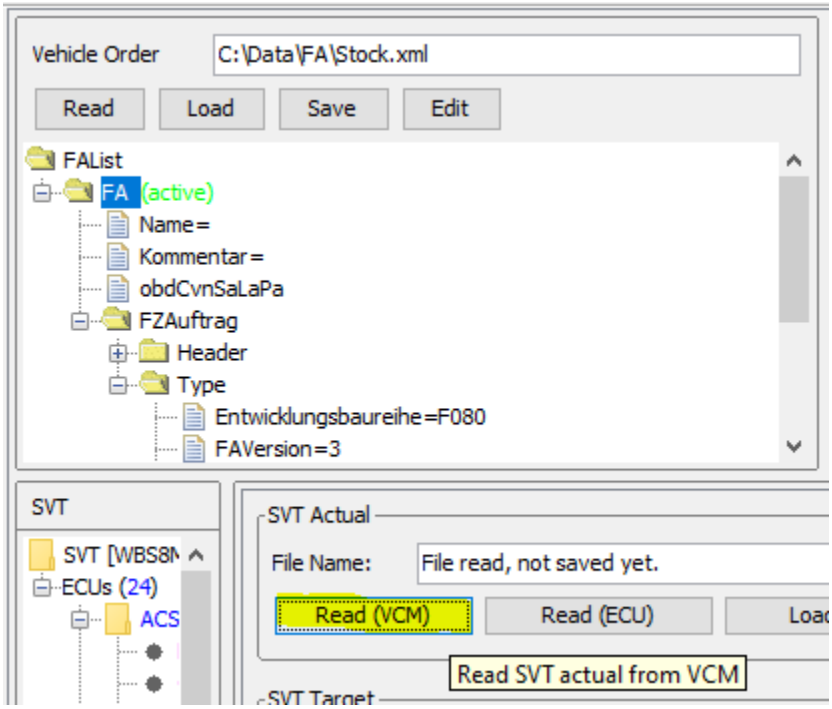



4. Update the ECUs you plan to upgrade if the I-Step level is older than 17-03-502, else disconnect, exit E-Sys, and skip to the VO coding step. This step assumes you have stock VO coding.
    a. Click Comfort Mode, TAL-Calculating, Read Vehicle Order



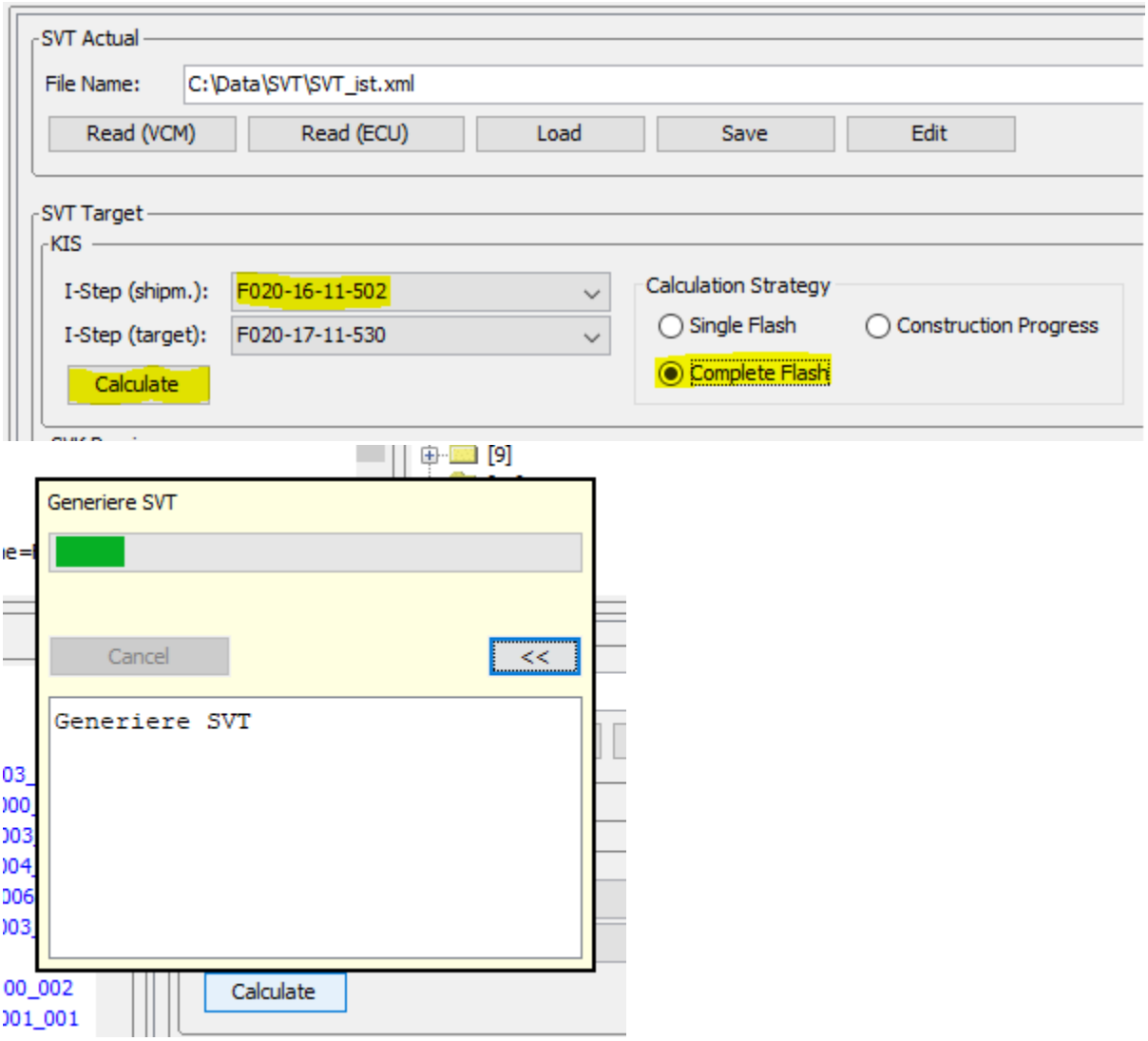

    b. Click save, and name the file Stock.xml.

c. Read SVT Actual from VCM



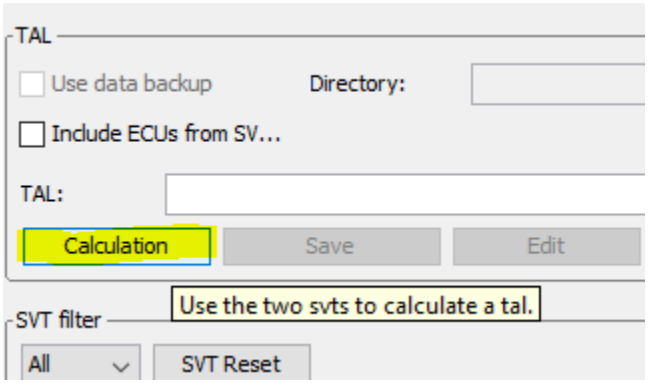

d. Save SVT Actual, and name the file SVT_ist.xml.

e. Calculate the SVT Target using the Complete Flash Calculation Strategy. Ensure the I-Step shipment level matches the current I-Step level. The I-Step target will match the full psdzdata version.



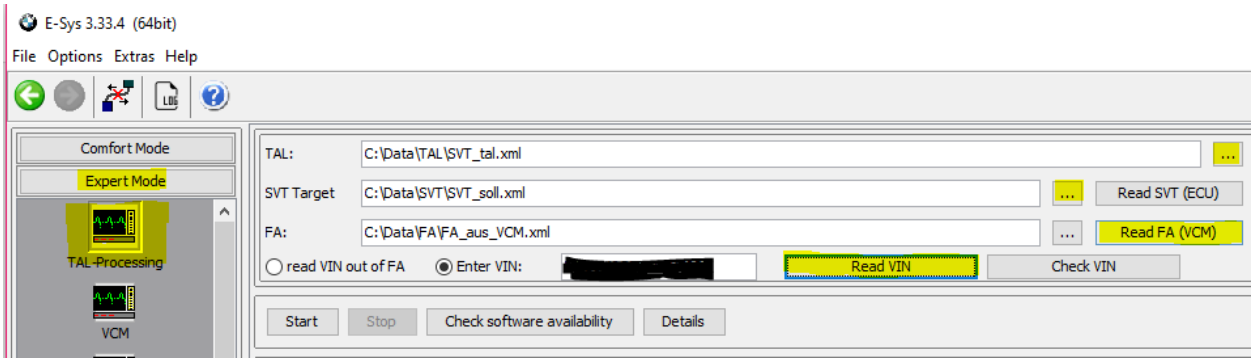

f. Click the Save button at the bottom of the SVT Target section, and name the file SVT_soll.xml.

g. Calculate the TAL.

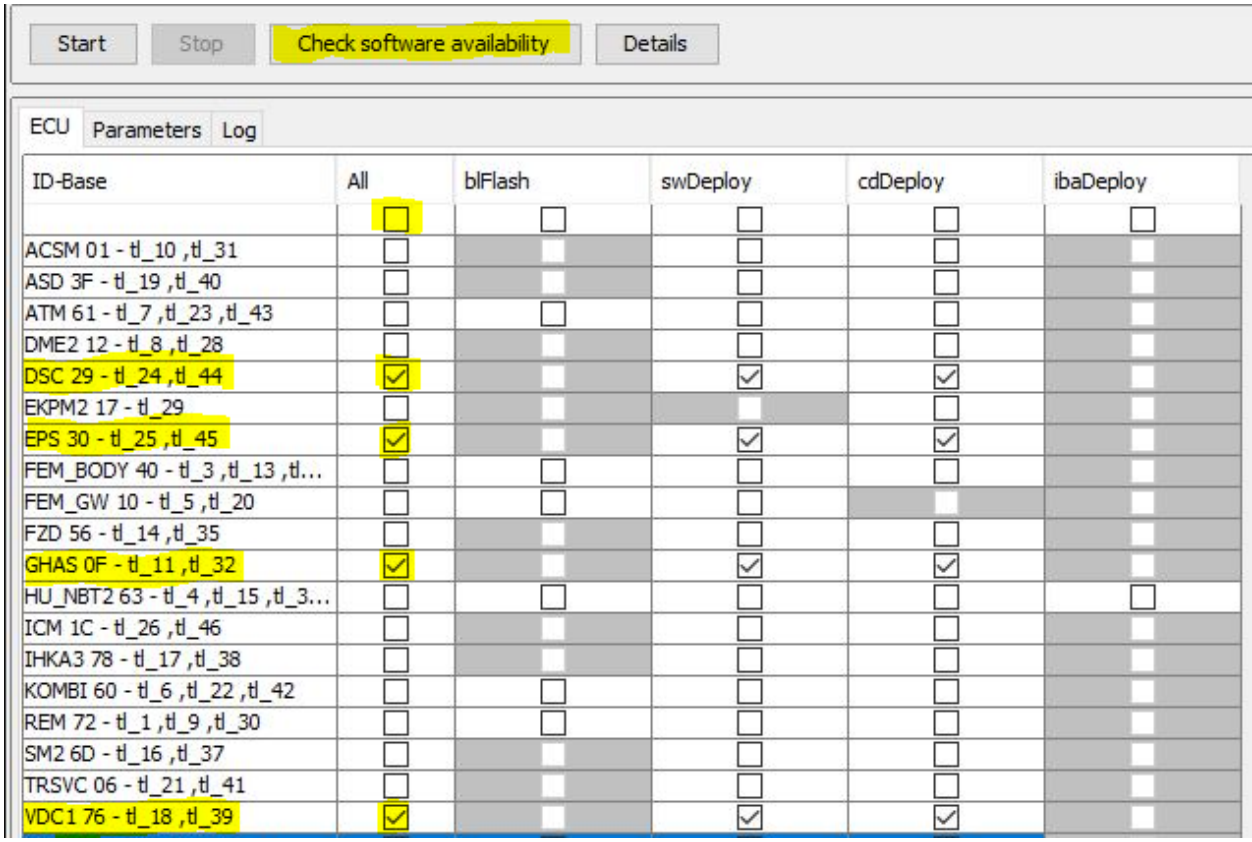



h. Click Save, and name the file SVT_tal.xml.

i. Click Expert Mode, TAL-Processing. Load the TAL and SVT targets saved in previous steps. Click Read FA (VCM). Click Read VIN.




j. Deselect all ECUs via the All column. Select the All column checkboxes for only DSC, EPS, GHAS, and VDC1 if they are present. Checkboxes in blFlash, swDeploy, cdDeploy, and ibaDeploy should show checked depending on ECU. Click Check software availability. Click ok on the information message indicating all software is available.




k. Ensure battery is fully charged and a power supply is attached before flashing. The process takes less than 5 minutes with 13.1A-18.7A constant load. Click Start, and allow time for the software update process to complete. Many warnings will appear in the log output, and many faults will trigger.

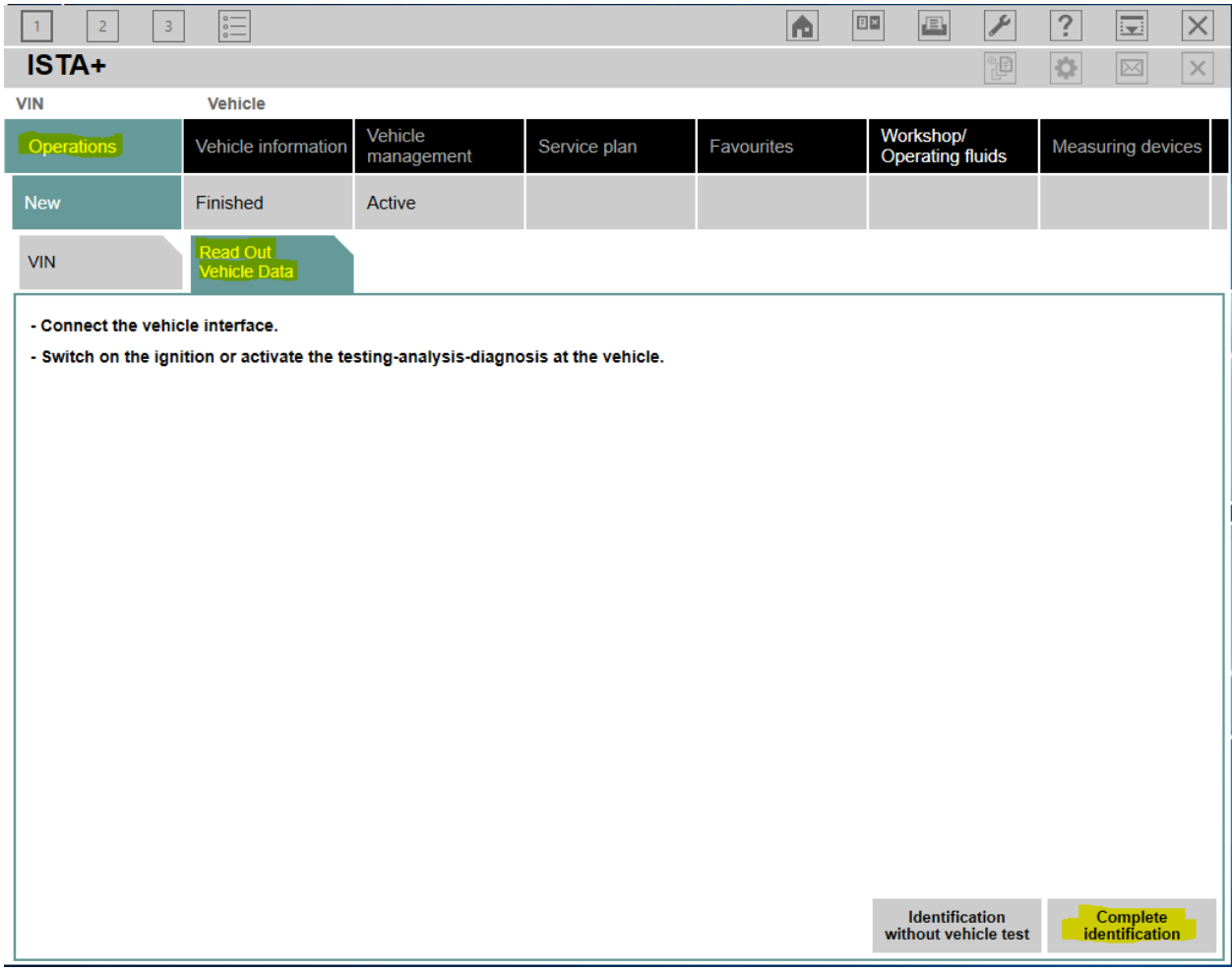
***Note: The vehicle was flashed with a power supply able to constantly deliver up to 30A at 13.26V. No ECUs except DSC, EPS, GHAS, or VDC1 should be updated if required.

Loss of coding, DME tunes, DCT flashes, or unforeseen circumstances can occur if guidance is not adhered to.

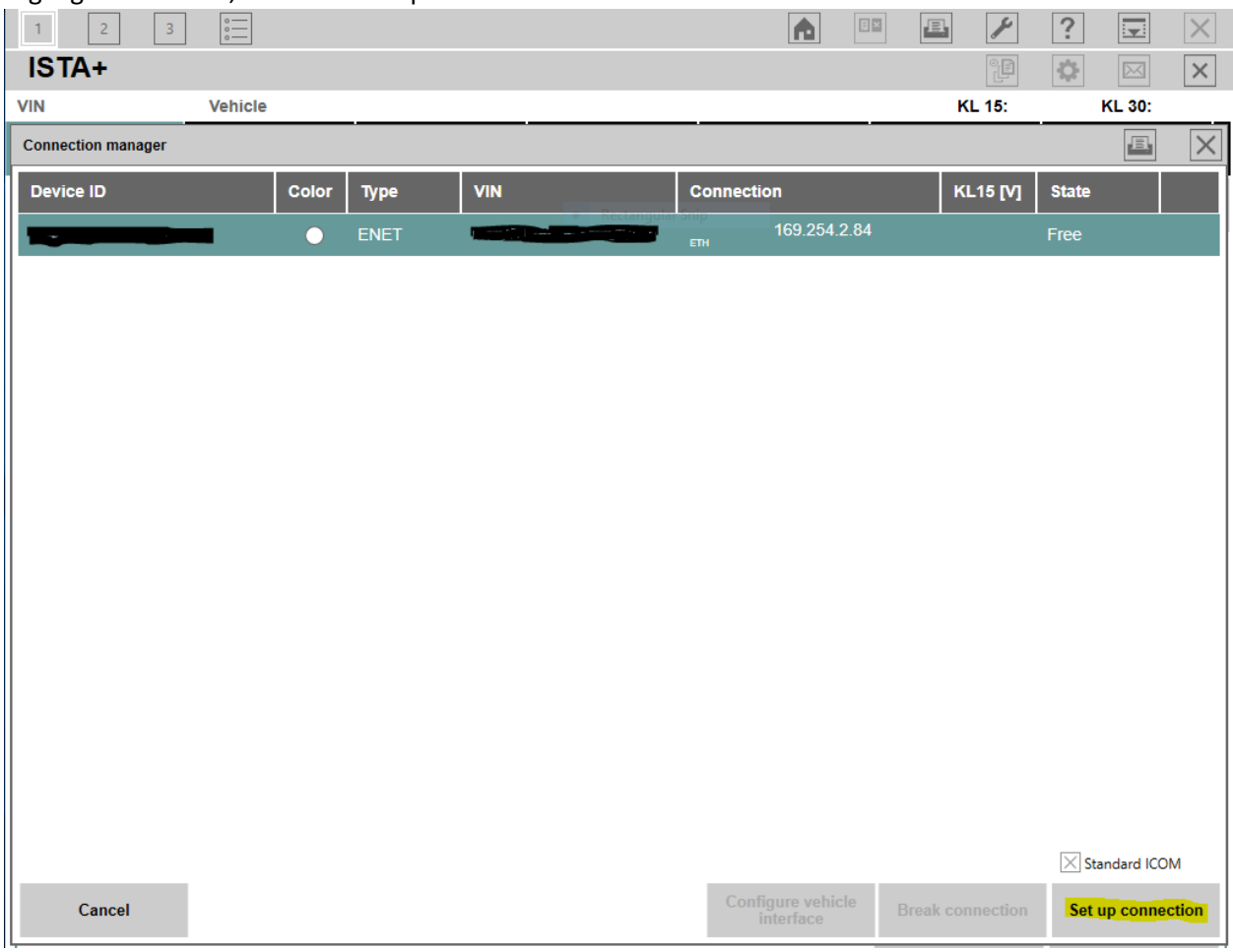
l. Disconnect and exit E-Sys.

5. Clear faults and perform start up procedures with ISTA+

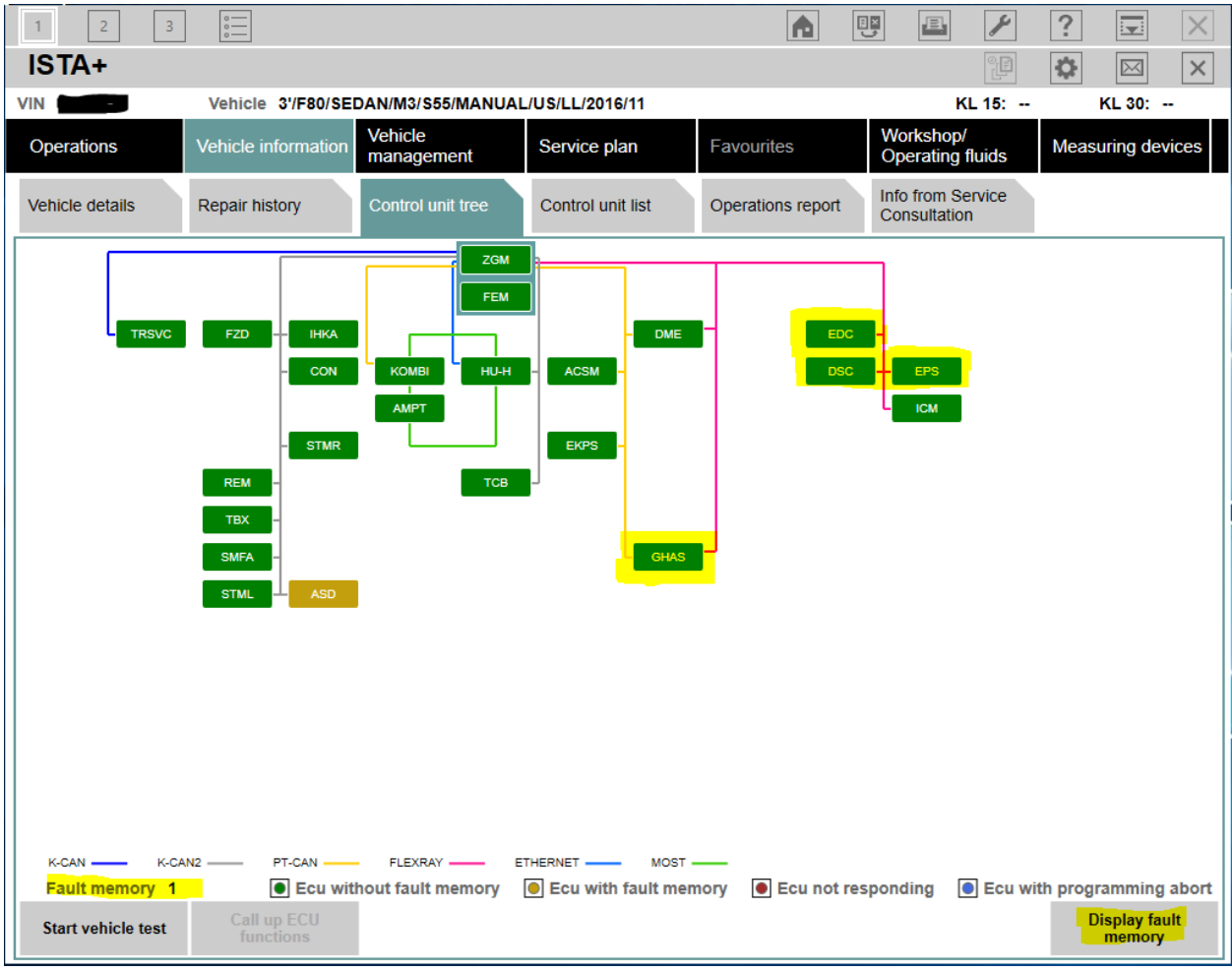
a. Click Operations, Read Out Vehicle Data, Complete identification. This will query all ECUs and detect faults.



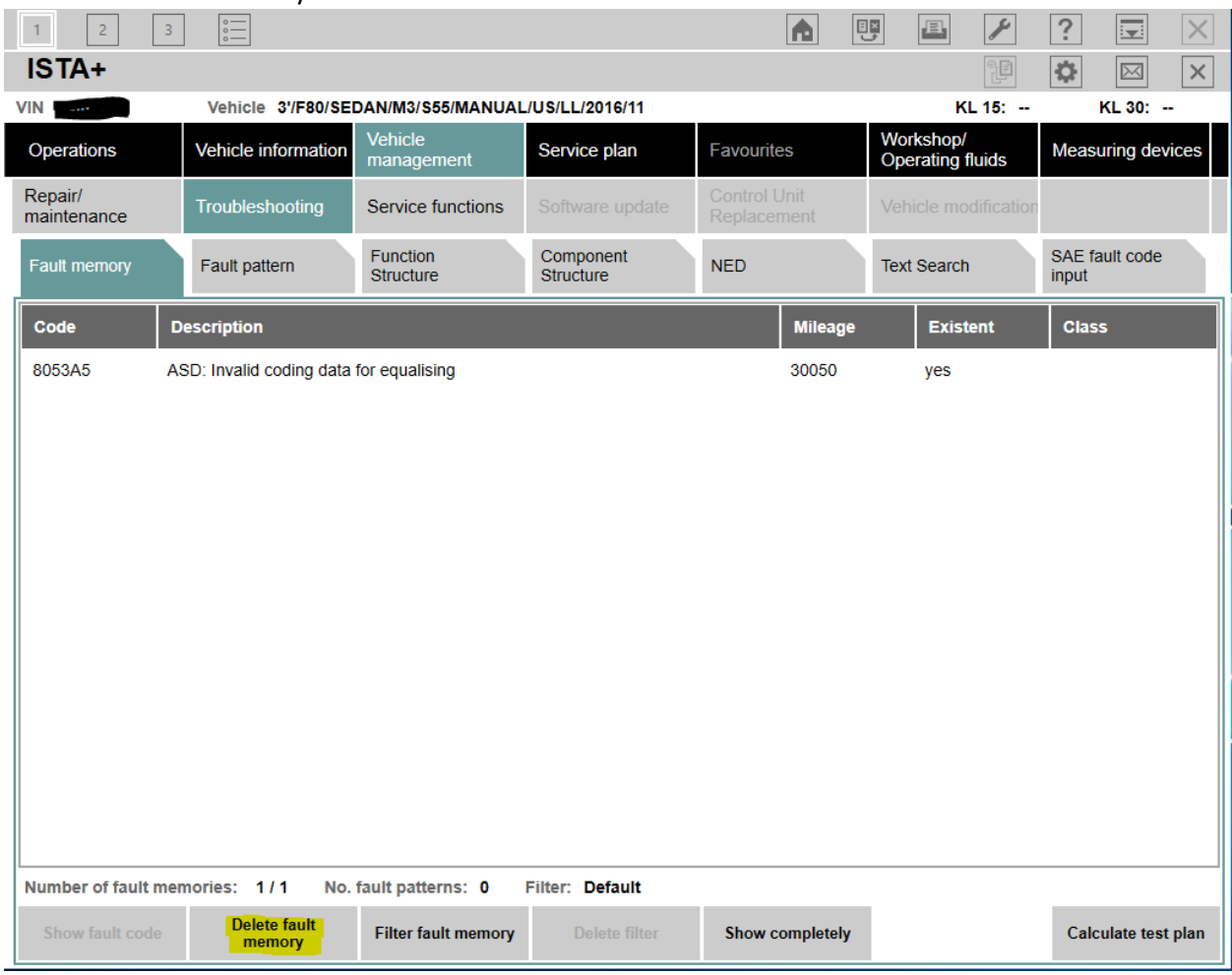
b. Highlight ENET row, and click Set up connection.



c. Observe the ECU fault memory information. Expect to see many faults for the ECUs. Click Display fault memory to begin the fault clearing procedure.



d. Click Delete fault memory.




e. Start Vehicle test again to ensure no faults persist. For any faults that do not clear, perform the recommended service functions to correct the faults.

***Note: The vehicle in the examples required EDC start up (Vehicle management > Service functions > Chassis and suspension > Electronic Damper Control > Start-Up of EDC) and GHAS repair (Vehicle management > Service functions > Power train > Regulated differential lock GHAS > Repair regulated differential lock > GHAS repair function).

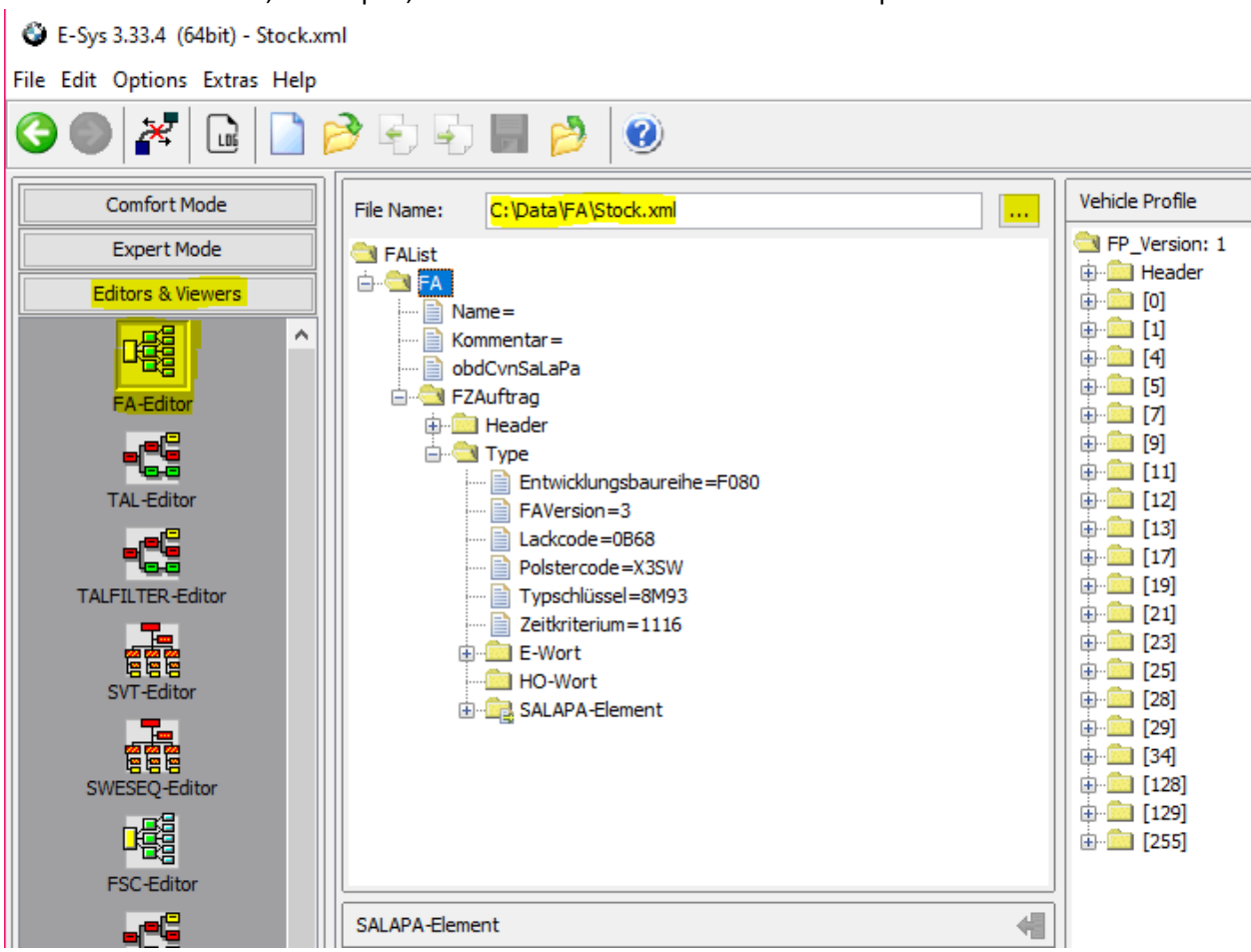
f. Exit ISTA+.

## 6. VO code options

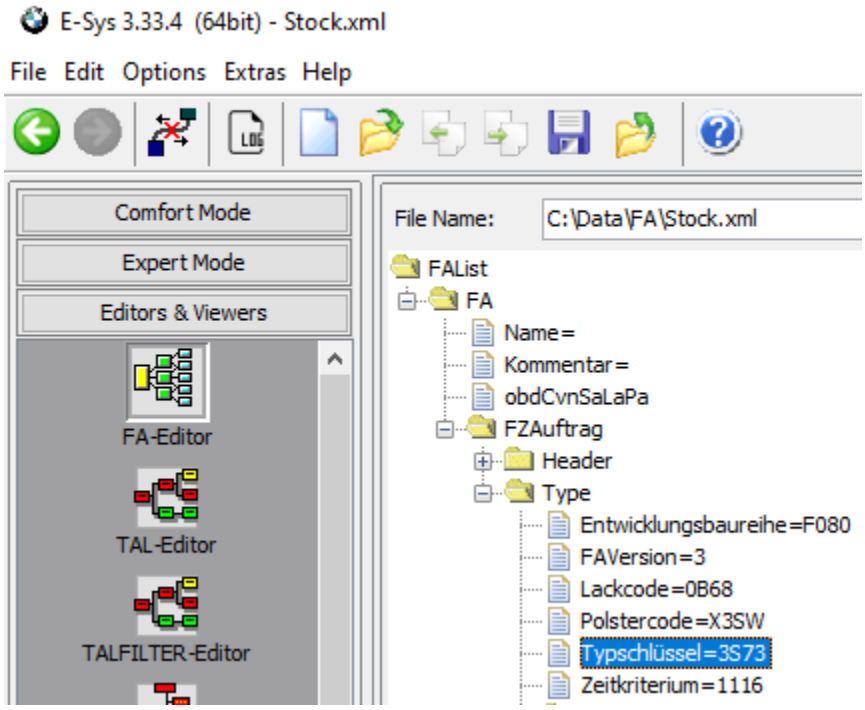
***Note: The example codes US M4 CS options. Refer to the Option Codes table if alternative options are desired.

a. Repeat step 1 to connect to the vehicle using the flashing/VO coding E-Sys installation.

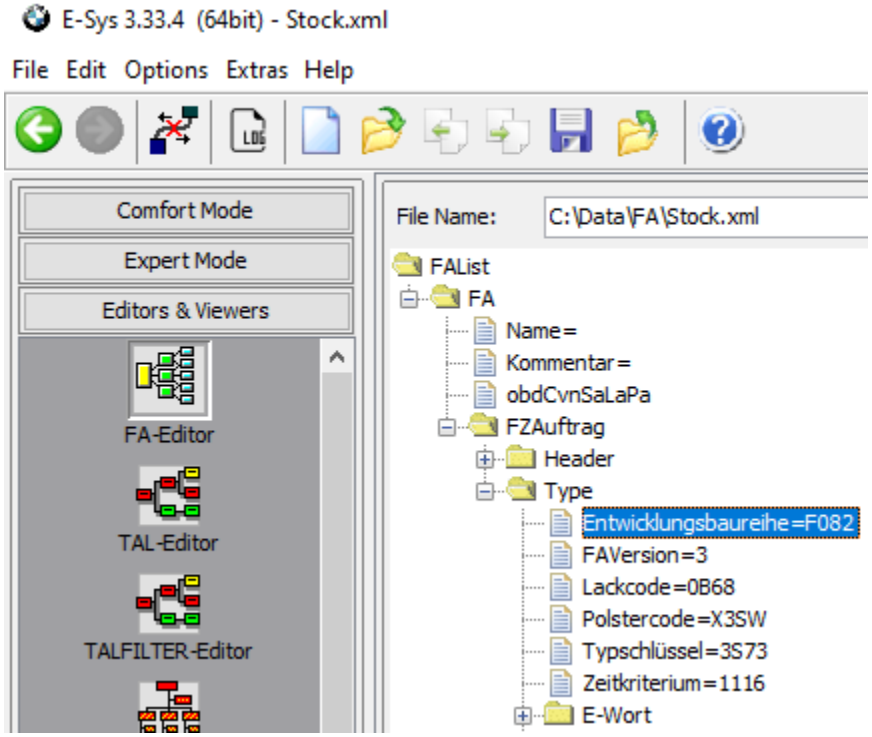
b. Click Editors & Viewer, the ellipsis, and load the Stock.xml FA file from step 4.b.



c. Set the FA > FC-Auftrag > Type > Typschlussel value to 3S73 for US M4 CS model code.

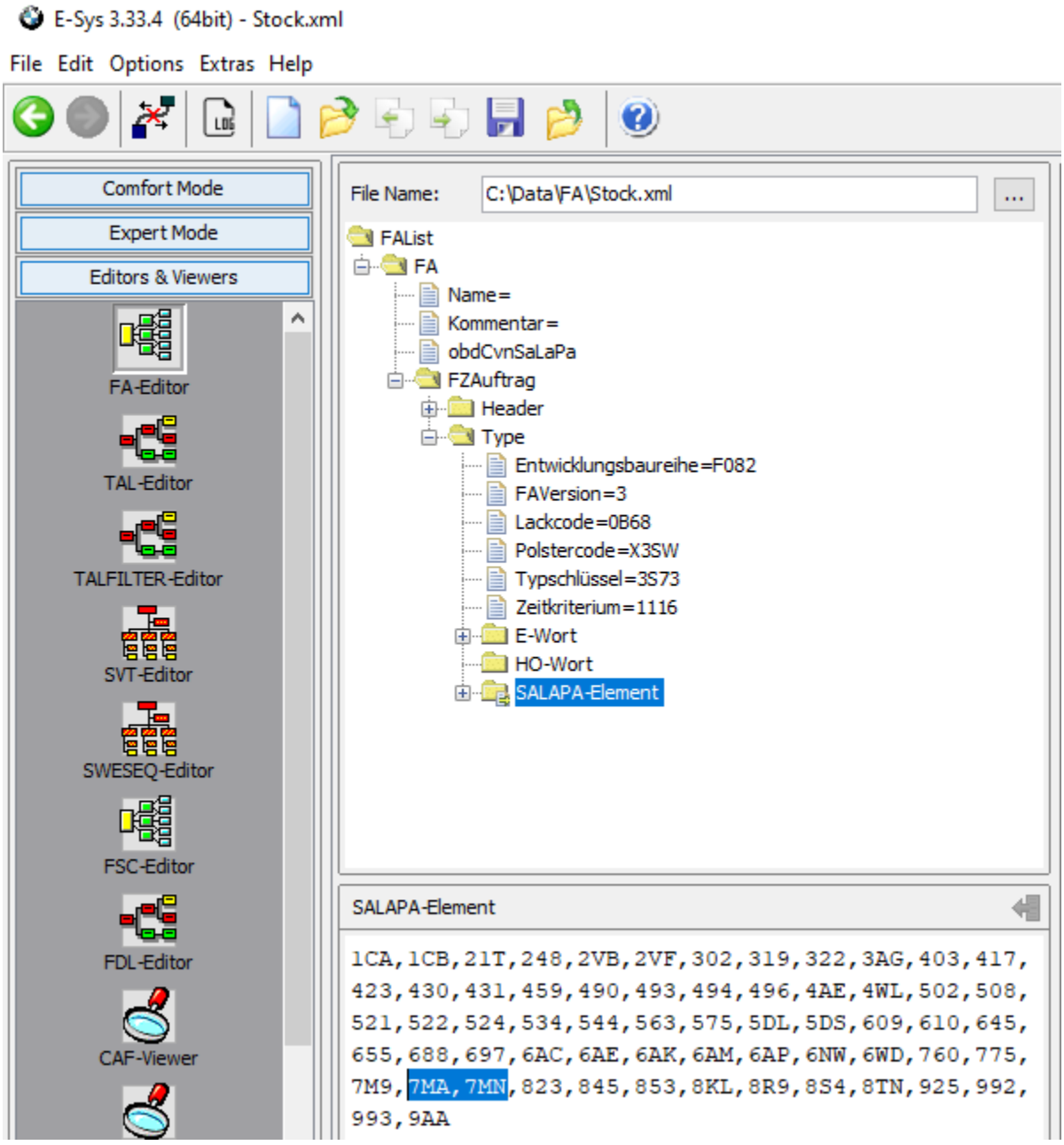



d. Set the FA > FC-Auftrag > Type > Entwicklungsbaureihe value to F082 for M4 chassis.

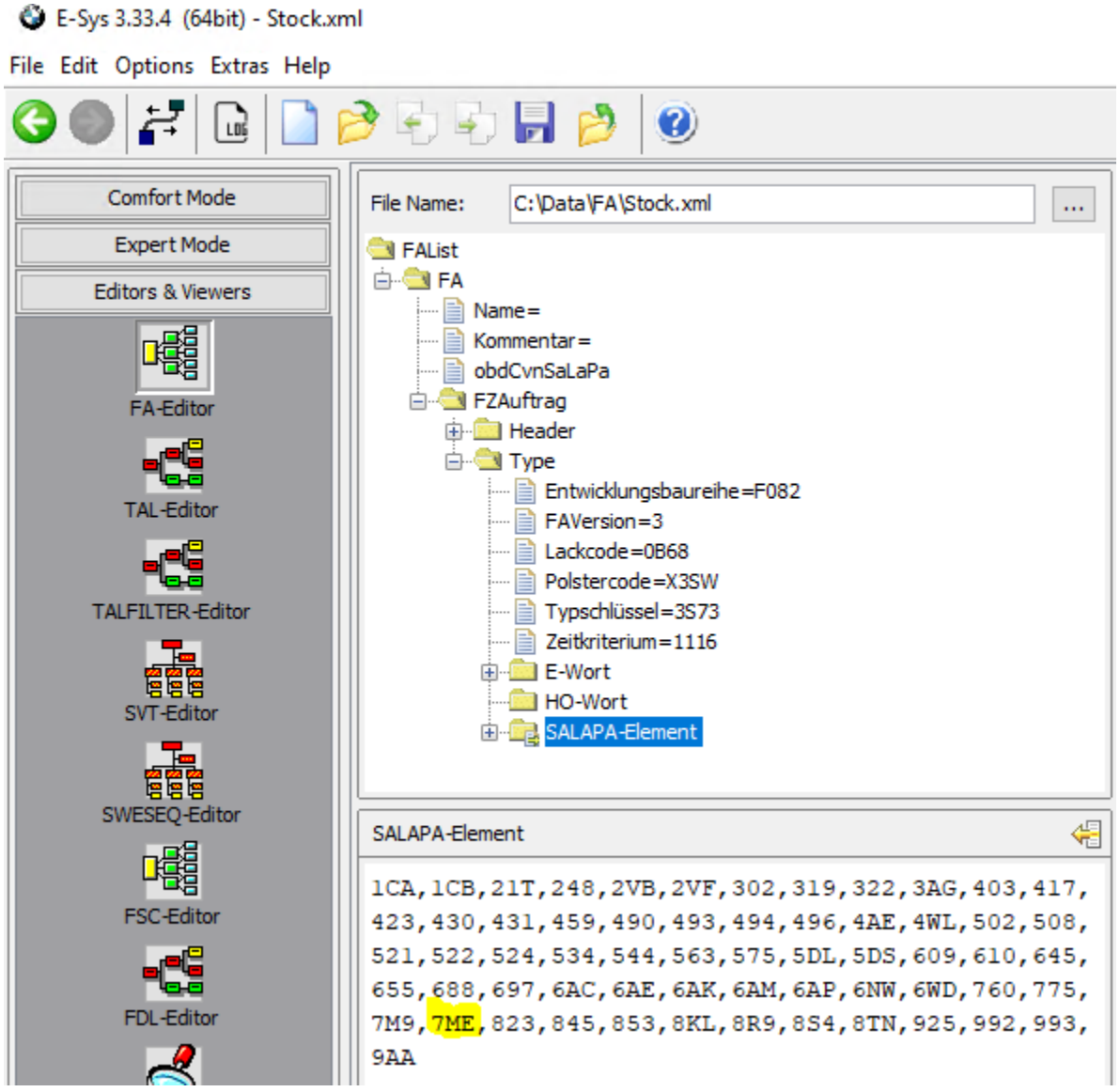



e. Remove ZCP options 7MA and 7MN from the SALAPA-Element list by highlighting and deleting the values. Other vehicles may have different options than the example. Do

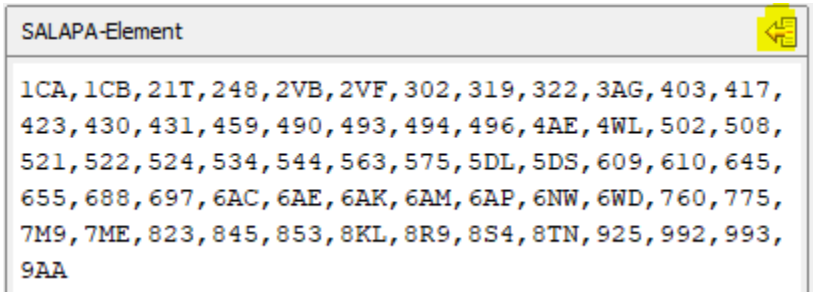
not delete other options.



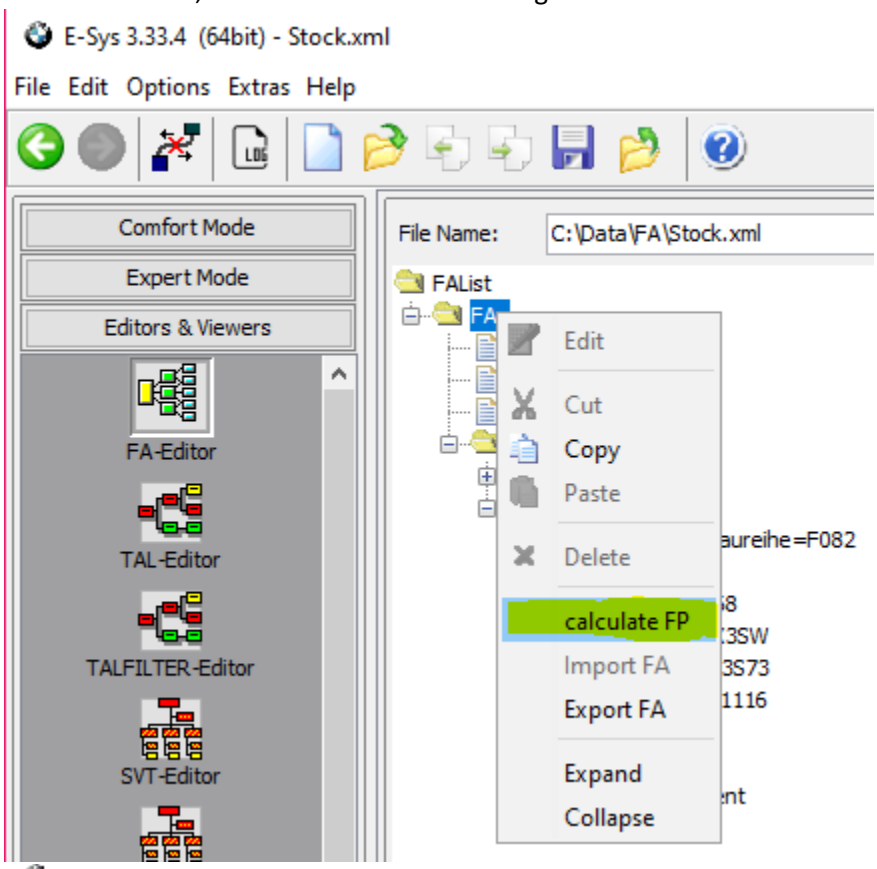
f. Add the M4 CS option 7ME (M Drivers Package) in the SALAPA-Element editor.

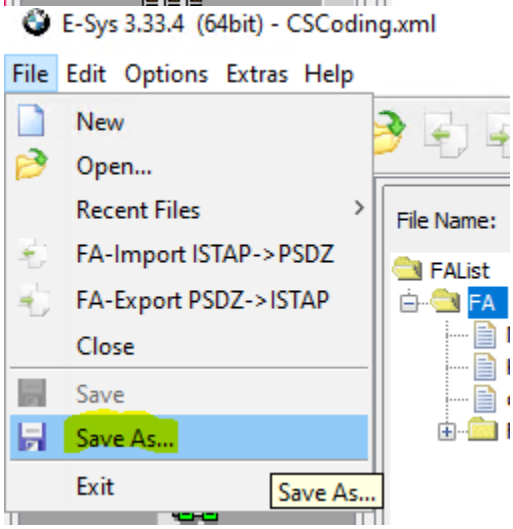



g. Click the save changes on the top right corner of the SALAPA-Element editor.

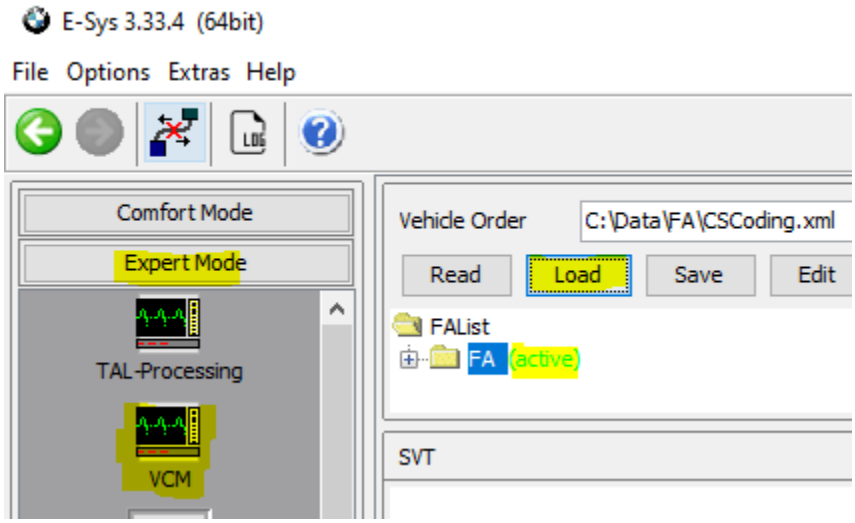


h. Calculate the FP, and save the FA as CSCoding.xml.

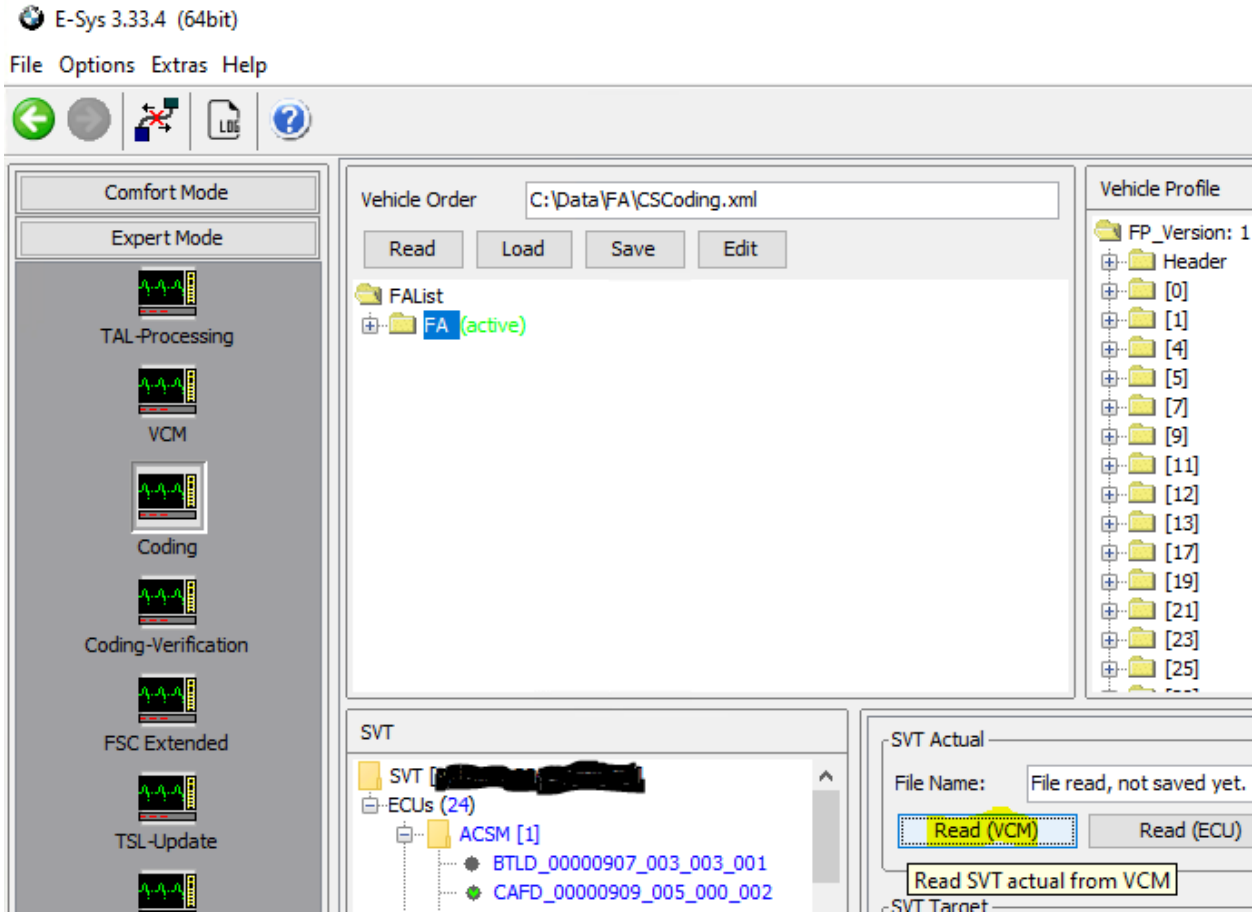


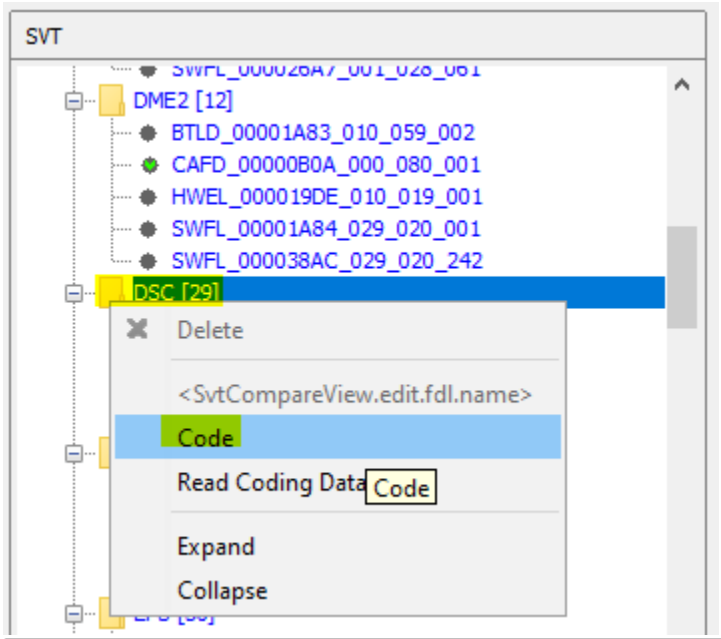
i. Click Expert Mode, Coding, load CSCoding.xml. The FA should show as active.

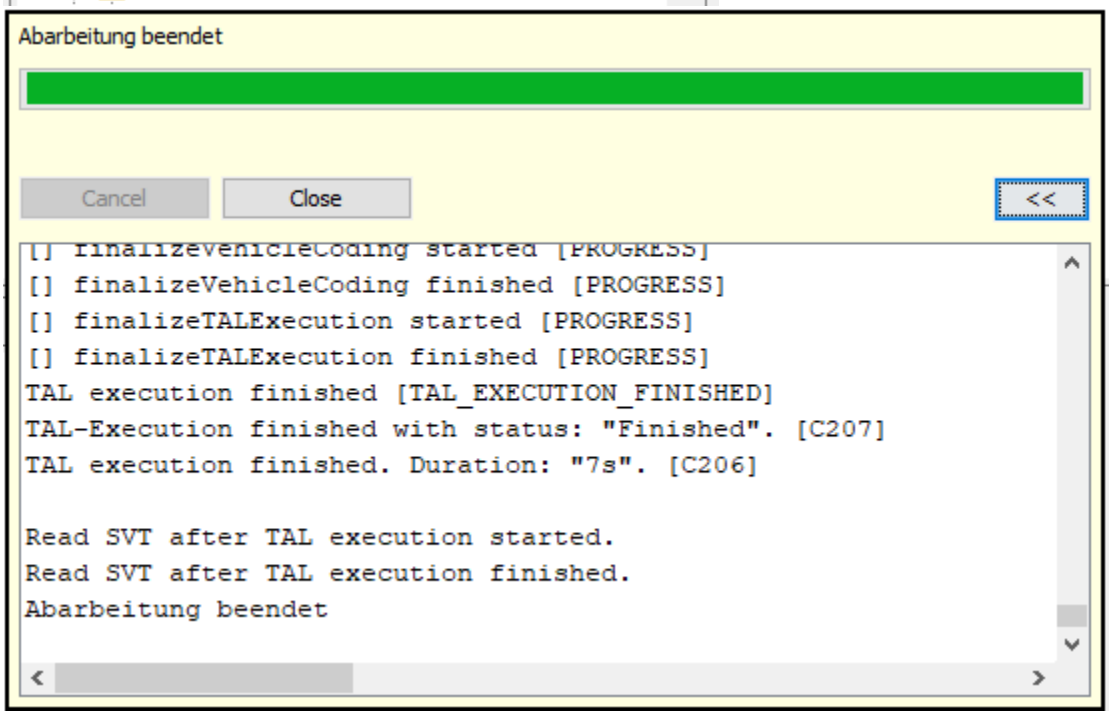



j. Read SVT Actual from the VCM.



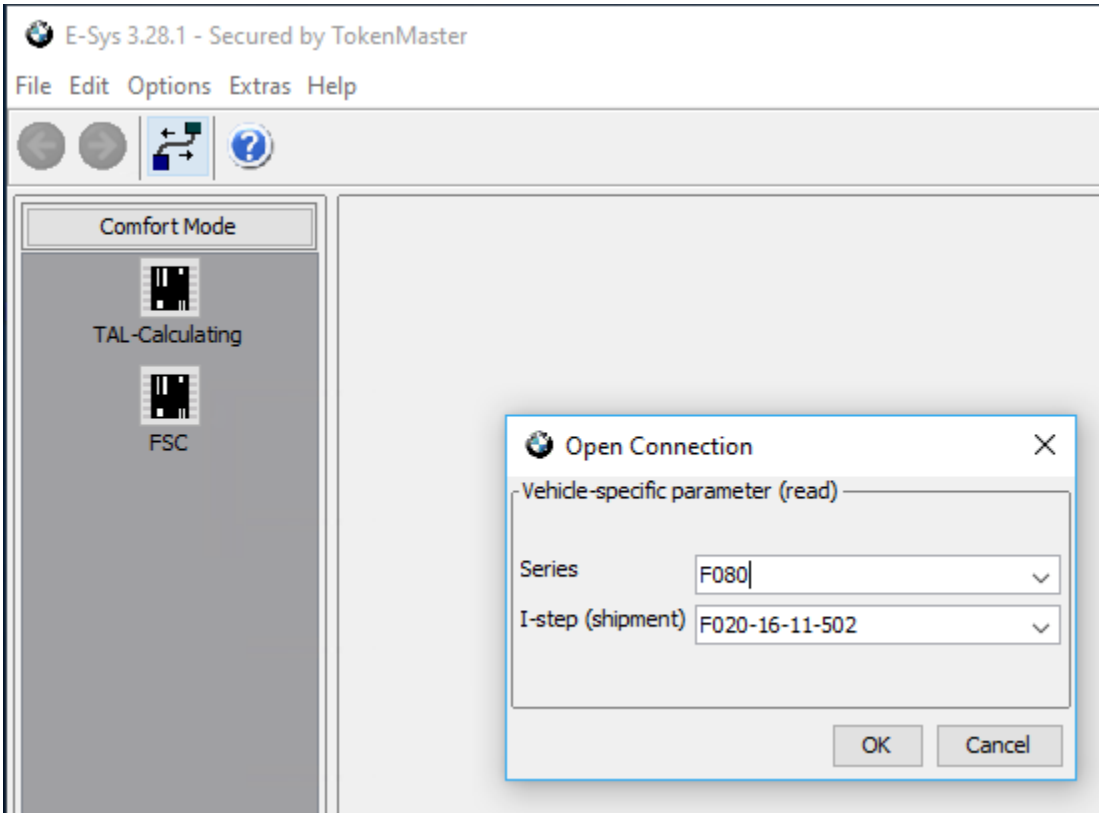
k. Right-click and code ECUs individually. Code DSC, EPS, GHAS, and VDC1.



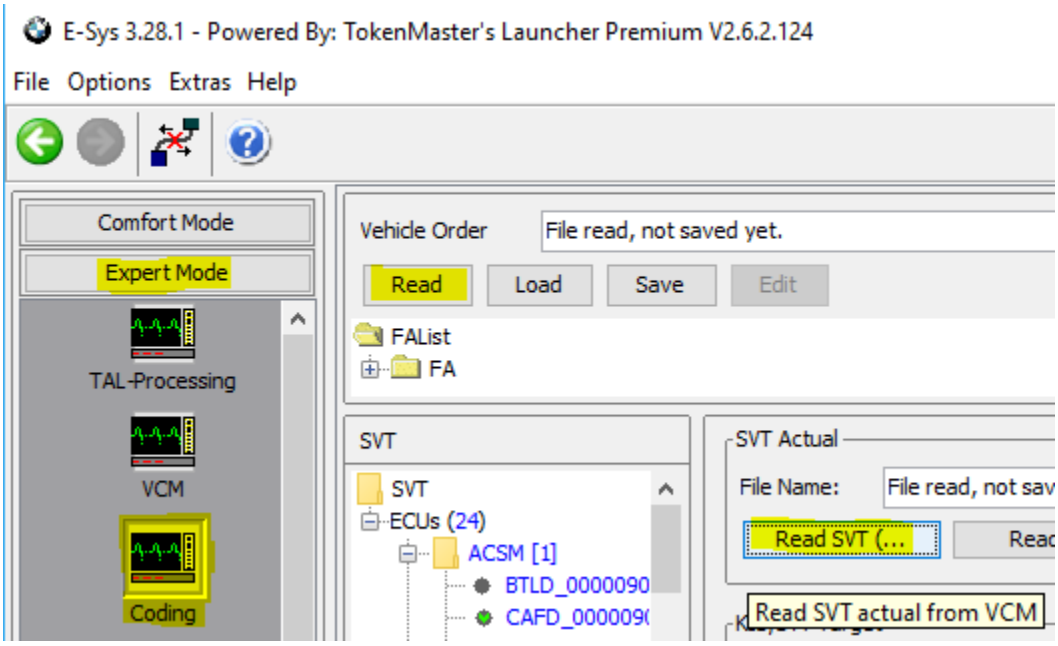

l. Disconnect and exit E-Sys.

7. Connect to the vehicle using the FDL coding E-Sys installation

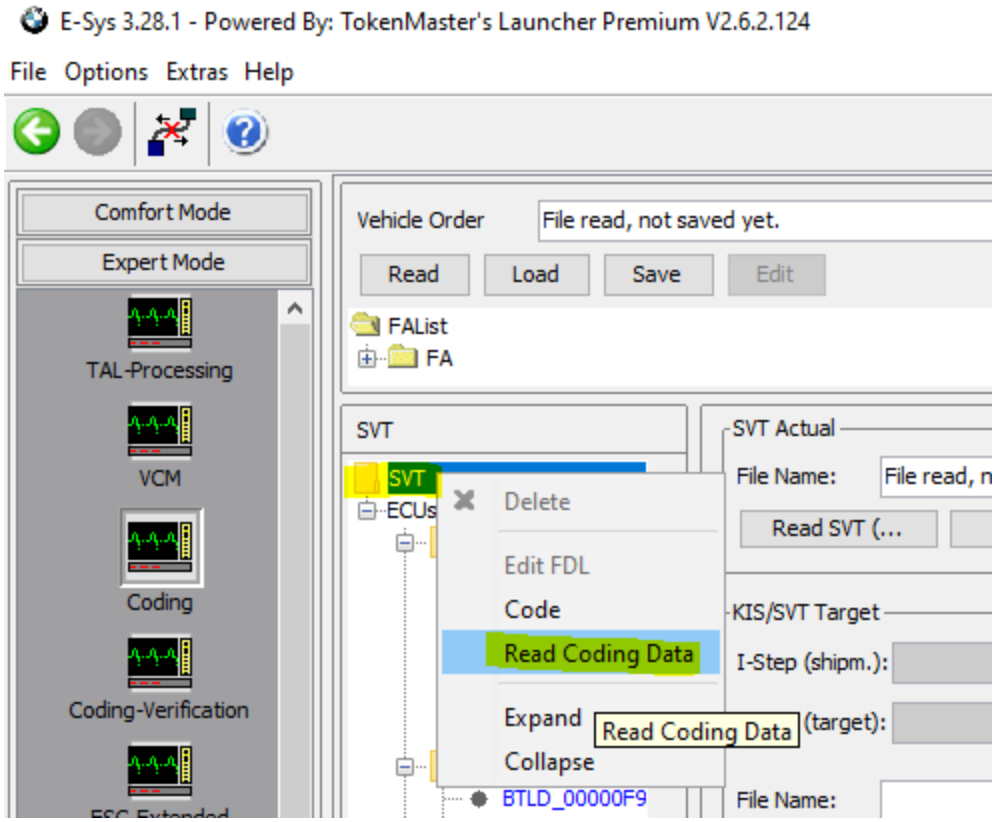


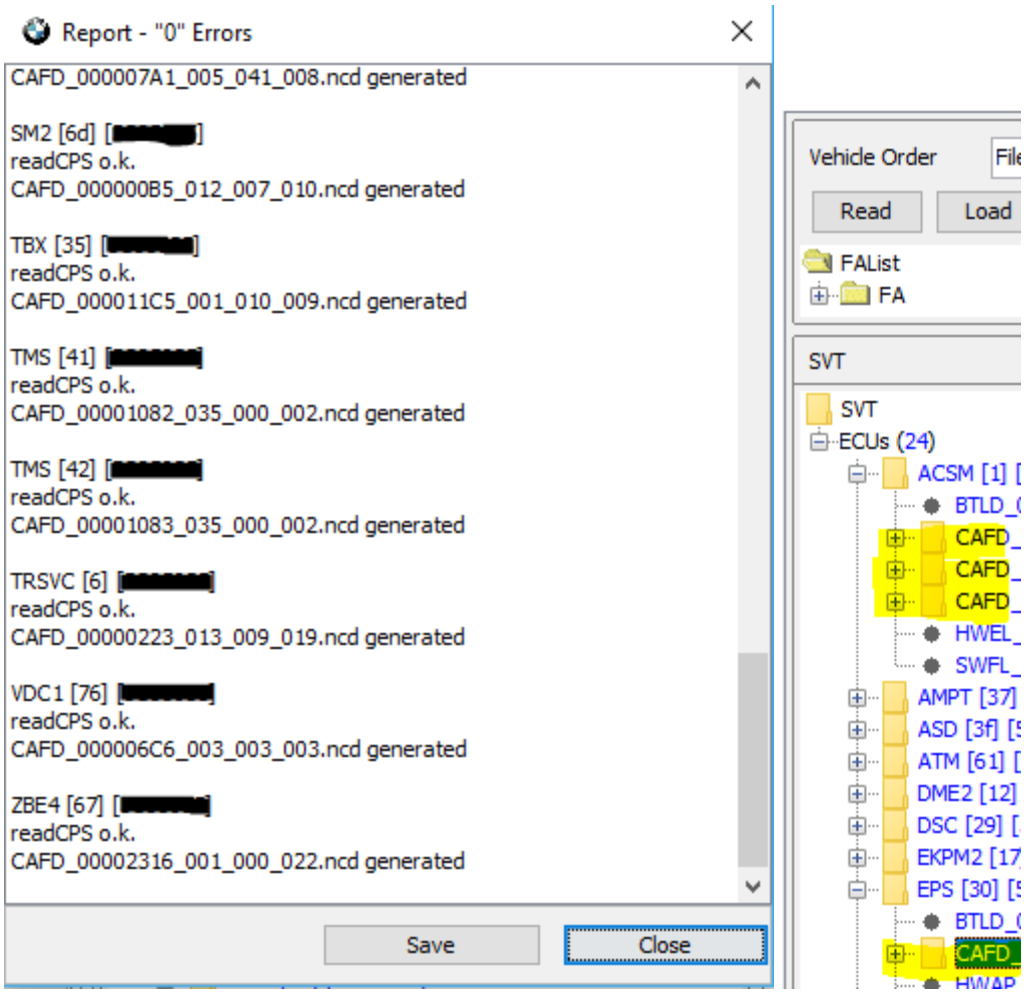

***Note: The I-Step shipment will remain the same as before, but the individually upgraded ECUs should have software versions that match the versions found in the target I-Step (all grey, no green or red text in SVT). A version of E-Sys capable of FDL coding is required from this step forward.

8. Enable TPMS sensors if VO coded to M4 CS, else skip to step 9.
    a. Click Expert Mode, Coding, Read Vehicle Order, and Read SVT.



b. Right-Click the SVT folder, and choose Read Coding Data. The ECU tree CAFD icons should change from dots to folders if read successfully.

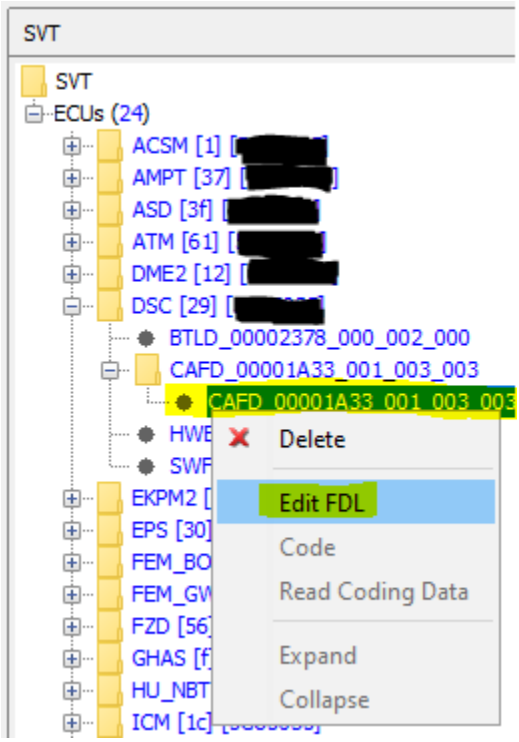

E-Sys 3.28.1 - Powered By: TokenMaster's Launcher Premium V2.6.2.124
File Options Extras Help
Comfort Mode
Expert Mode
TAL-Processing
VCM
Coding
Coding-Verification
Vehicle Order
File read, not saved yet.
Read
Load
Save
Edit
FAList
FA
SVT
SVT Actual
File Name:
Read SVT (...
KIS/SVT Target
I-Step (shipm.):
(target):
File Name:
ECUs
Delete
Edit FDL
Code
Read Coding Data
Expand
Collapse
Read Coding Data
BTLD_00000F9



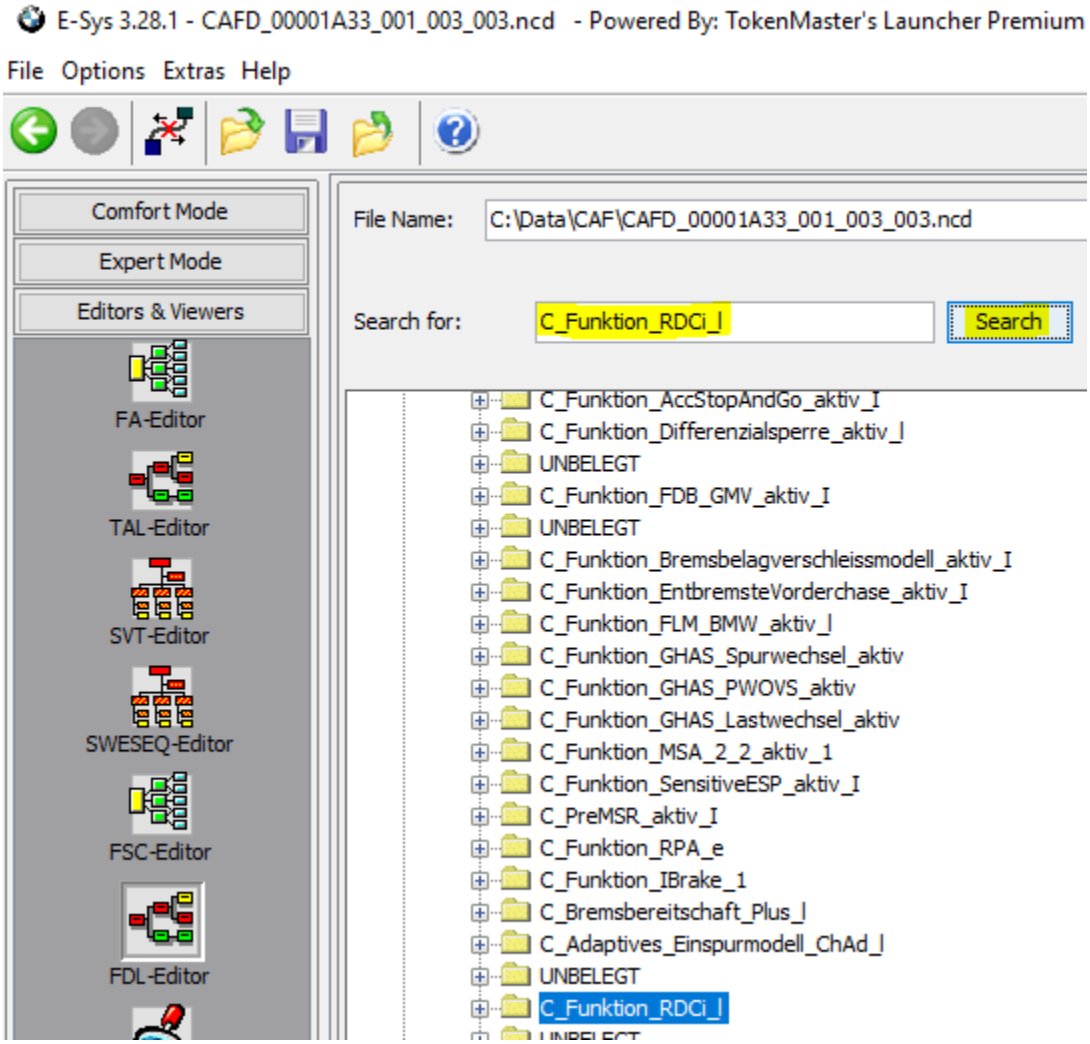

c. Save the FA as TPMSFix.xml and SVT as SVT_TPMSFix.xml.

d. Backup the CAFD directory. Copy C:\Data\CAF to a folder named like C:\Data\CAF_backup_YYYY_MM_DD.

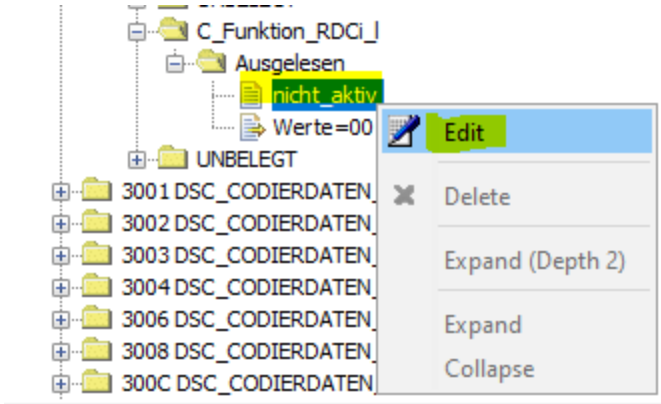
e. Right-click the SVT > ECUs > DSC > CAFD_00001A33_001_003_003 > CAFD_00001A33_001_003_003 file and select Edit FDL.

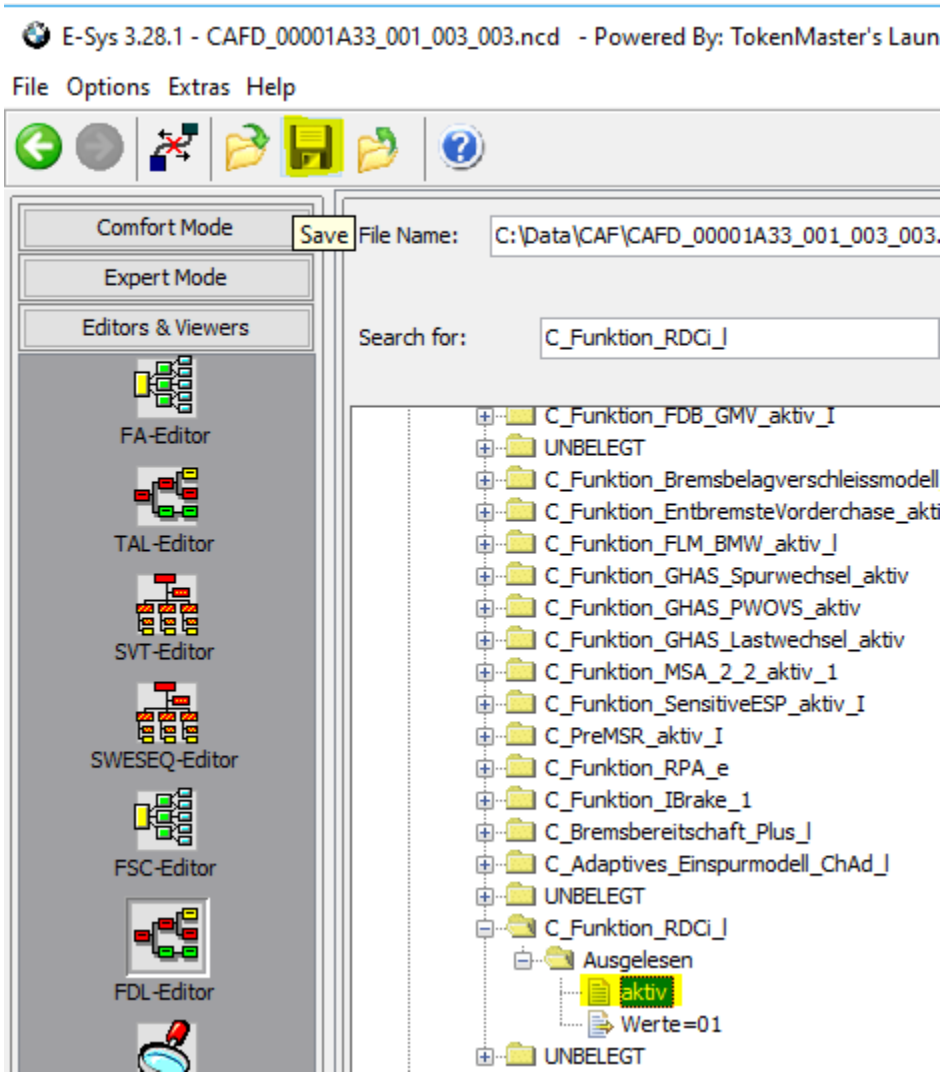


f. Search for C_Funktion_RDCi_I in the FDL editor window. Only one folder should match and be highlighted.

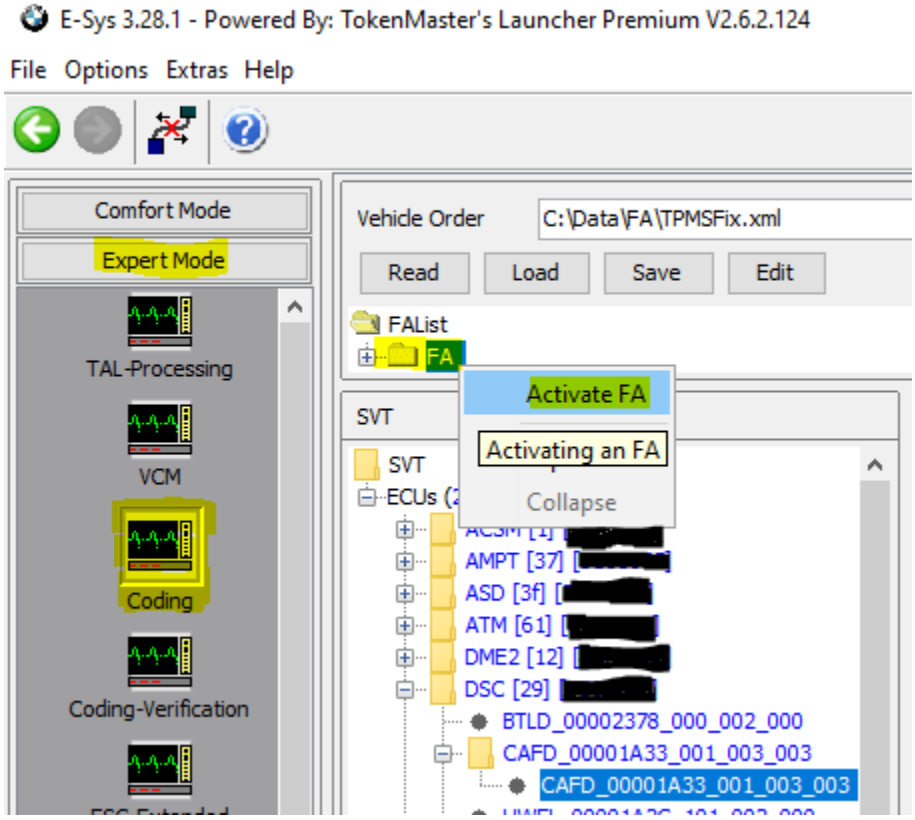



g. Expand C_Funktion_RDCi_I > Ausgelesen. Right-click on nicht_aktiv, and select Edit. Change the value to aktiv, and save the file.

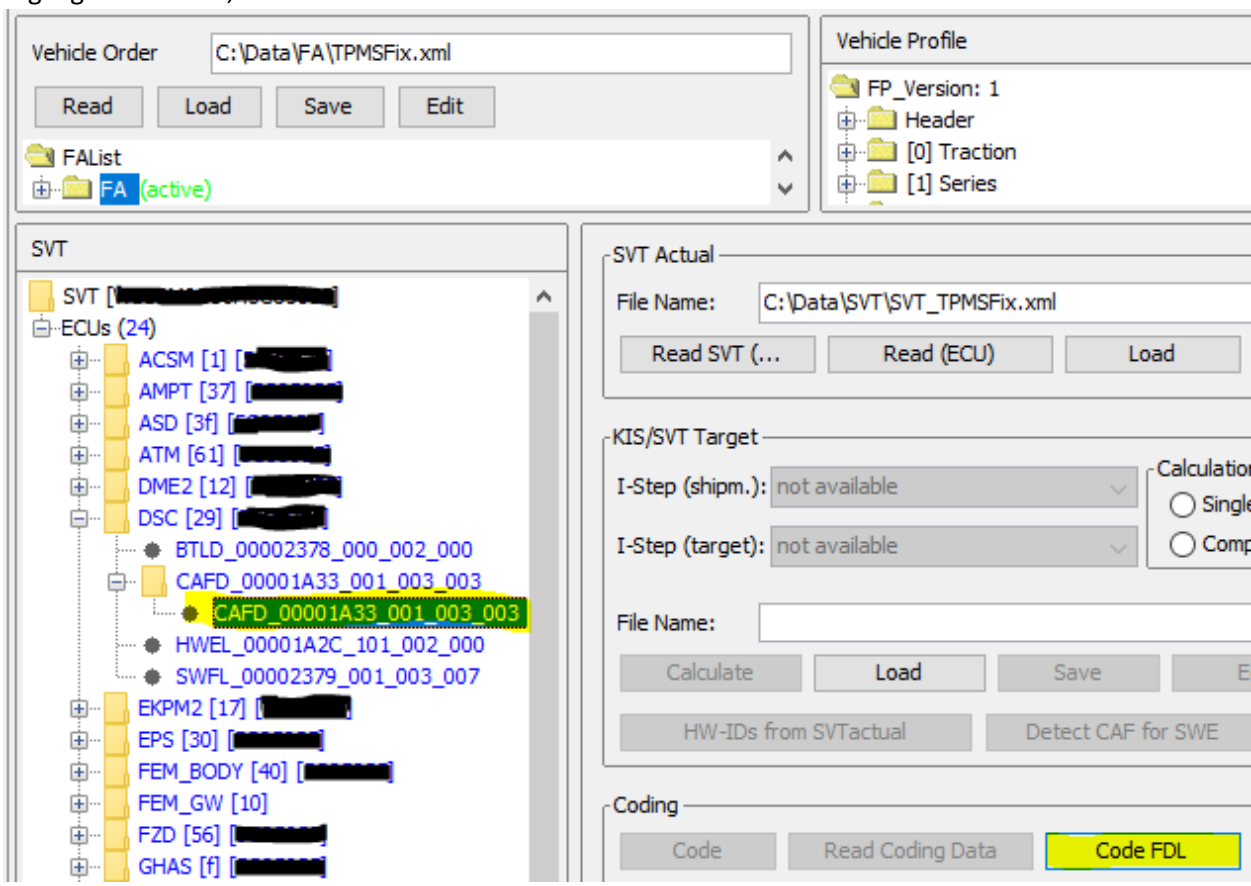

C_Funktion_RDCi_I
Ausgelesen
nicht_aktiv
Werte=00
UNBELEGT
3001 DSC_CODIERDATEN_
3002 DSC_CODIERDATEN_
3003 DSC_CODIERDATEN_
3004 DSC_CODIERDATEN_
3006 DSC_CODIERDATEN_
3008 DSC_CODIERDATEN_
300C DSC_CODIERDATEN
Edit
Delete
Expand (Depth 2)
Expand
Collapse

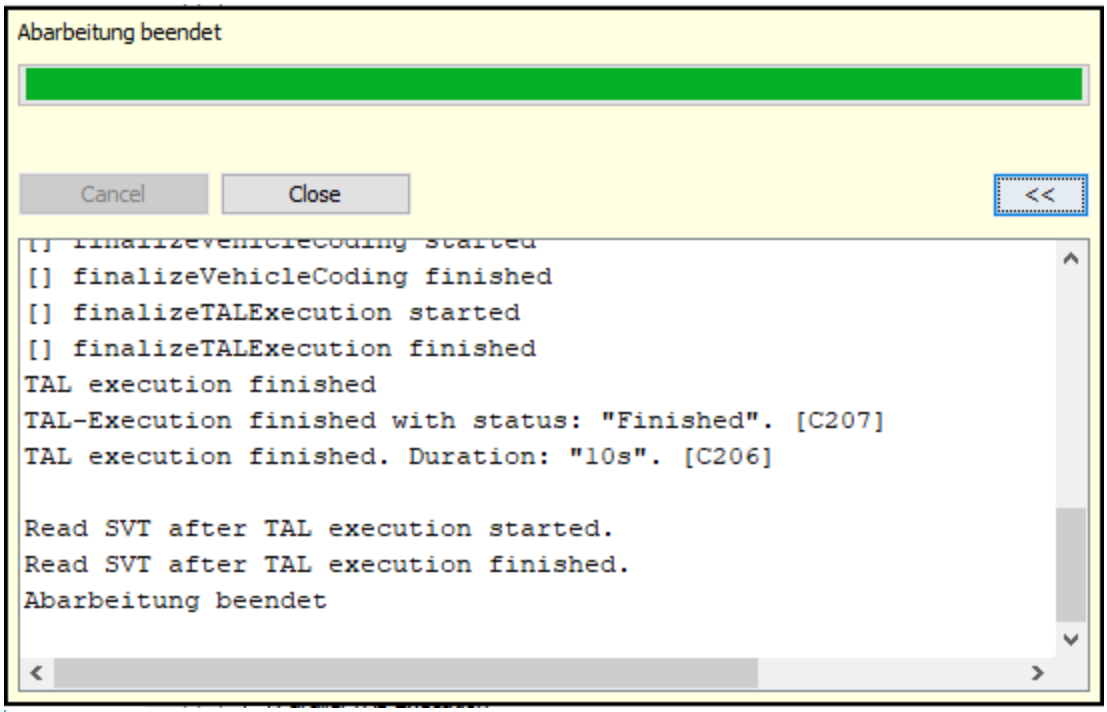

E-Sys 3.28.1 - CAFD_00001A33_001_003_003.ncd - Powered By: TokenMaster's Laun
File Options Extras Help
Comfort Mode
Expert Mode
Editors & Viewers
Save
File Name:
C:\Data\CAF\CAFD_00001A33_001_003_003.
Search for:
C_Funktion_RDCi_I
FA-Editor
TAL-Editor
SVT-Editor
SWESEQ-Editor
FSC-Editor
FDL-Editor
C_Funktion_FDB_GMV_aktiv_I
UNBELEGT
C_Funktion_Bremsbelagverschleissmodell
C_Funktion_EntbremsteVorderchase_akti
C_Funktion_FLM_BMW_aktiv_I
C_Funktion_GHAS_Spurwechsel_aktiv
C_Funktion_GHAS_PWOVS_aktiv
C_Funktion_GHAS_Lastwechsel_aktiv
C_Funktion_MSA_2_2_aktiv_1
C_Funktion_SensitiveESP_aktiv_I
C_PreMSR_aktiv_I
C_Funktion_RPA_e
C_Funktion_IBrake_1
C_Bremsbereitschaft_Plus_I
C_Adaptives_Einspurmodell_ChAd_I
UNBELEGT
C_Funktion_RDCi_I
Ausgelesen
aktiv
Werte=01
UNBELEGT

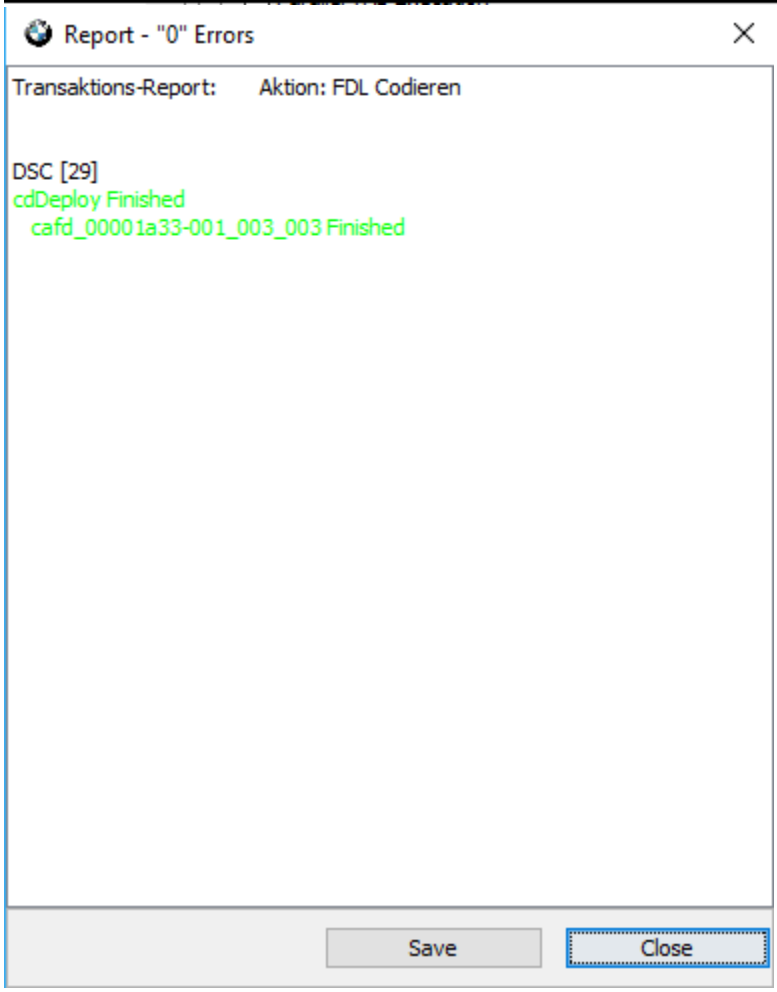
h. Click Expert Mode, Coding, right-click FA, and select Activate FA.



i. Highlight the CAFD, and select Code FDL





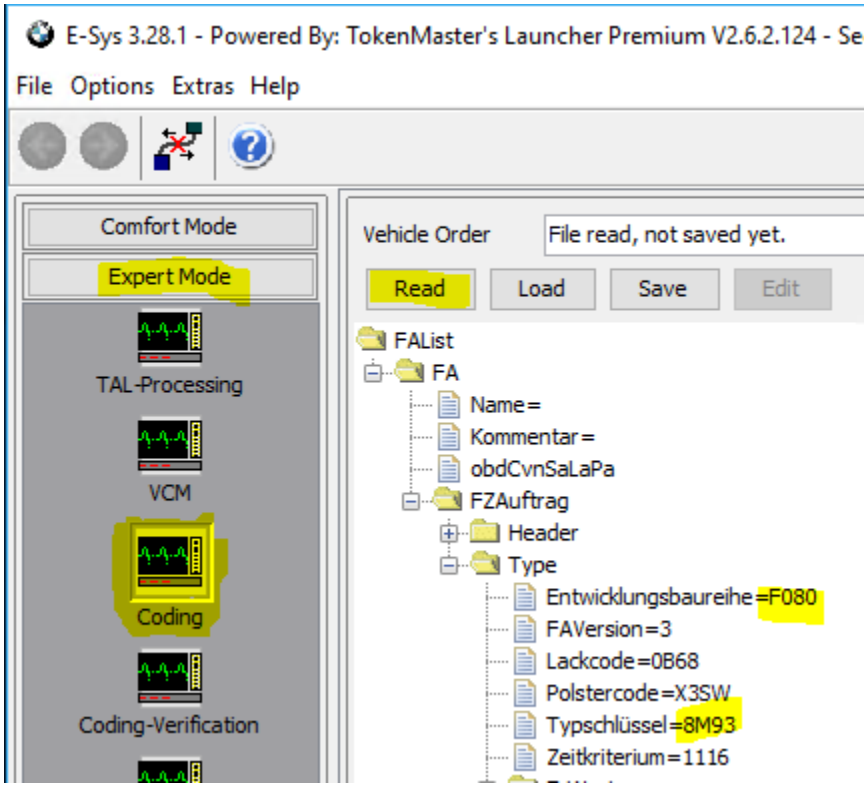

j. Disconnect and exit E-Sys.

9. Clear faults and perform start up procedures with ISTA+ if needed by repeating step 5.

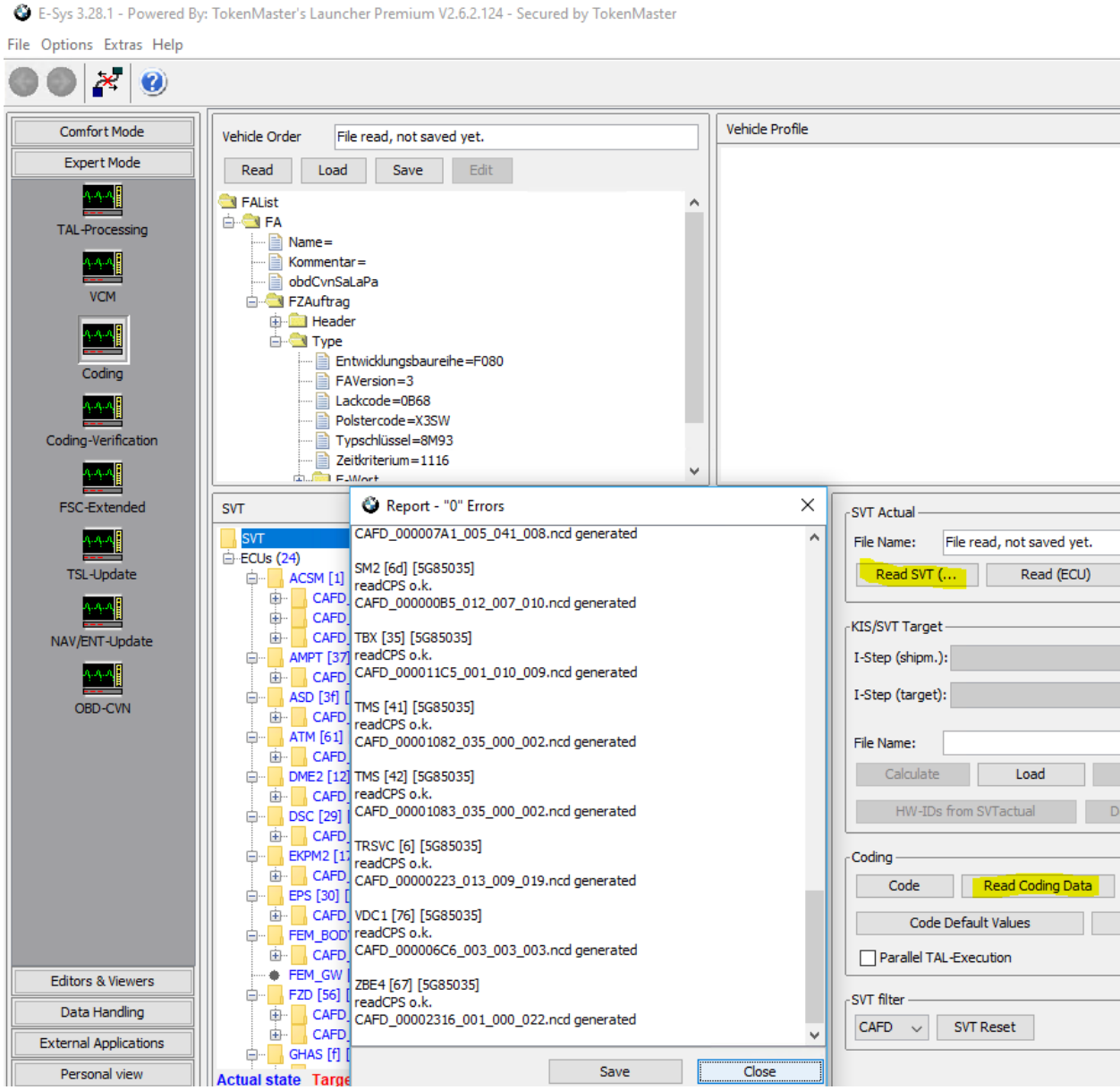
   ***Note: The example vehicle had RDC tire status (TPMS) fault that would not clear until after FDL coding performed in step 8. TPMS reset in vehicle using IDrive wouldn't execute the procedure. If you run into this, please make sure FDL coding in step 8 was successful.

# Validation

1. Connect to the vehicle using the FDL coding E-Sys installation
2. Verify coding
    a. Click Expert Mode, Coding, Read Vehicle Order, and verify the model, type code, and options read the same as stock showing a modified FA has not been written to VCM.



b. Click Read SVT and Read Coding Data.




c. Click Editors & Viewers, FDL Editor, open the ncd files for the upgraded ECUs one at a time, and confirm values for M4 CS coding are present. These are unlikely to be all of the values required but allow confirmation that both the VO and FDL coding processes were successful. Do not use these values as an authoritative list to exclusively FDL code M4 CS DSC, EPS, GHAS, and VDC1.

   i. DSC, CAFD_00001A33_001_003_003.ncd

      1. 3000 DSC_CODIERDATEN_ALLGEMEIN, 20 > Funktionen > C_Variante_Fahrzeug_e > Ausgelesen

         a. Stock M3 ZCP Coding = F80_CP

         b. M3 CS Coding = F82_GTS

         c. M4 CS Coding = F82_GTS

2. 3000 DSC_CODIERDATEN_ALLGEMEIN, 20 > Funktionen > C_Funktion_RDCi_I > Ausgelesen
    a. Stock M3 ZCP Coding = aktiv
    b. M3 CS Coding = aktiv
    c. FDL modified M4 Coding = aktiv

    ***Note: The actual value after M4 CS coding is nicht_aktiv. The value must be set to aktiv in order for TPMS to work and not throw faults on an F80 ZCP.

ii. EPS, CAFD_00001A2F_000_002_012.ncd
    1. 3011 EPS_VEHICLE_VAR, 10 > Funktionen > Variantcodierung Normal > Ausgelesen
        a. Stock M3 ZCP Coding = F80, F82, default
        b. M3 CS Coding = F82GTS
        c. M4 CS Coding = F82GTS

        ***Note: Some users have set this value to F87CS. This appears to be used for a different model like M2 Competition or perhaps the upcoming M2 CS. VO Coding to M4 CS will set F82GTS value just like the M4 GTS model.

iii. GHAS, CAFD_000007C3_015_001_001.ncd
    1. 3000 DataSetSelector, 10 > Funktionen > DSS TASC > Ausgelesen
        a. Stock M3 ZCP Coding = F080
        b. M3 CS Coding = F082GTS
        c. M4 CS Coding = F082GTS
    2. 3000 DataSetSelector, 10 > Funktionen > DSS IPM > Ausgelesen
        a. Stock M3 ZCP Coding = F080
        b. M3 CS Coding = F082GTS
        c. M4 CS Coding = F082GTS

iv. VDC1, CAFD_000006C6_003_003_003.ncd
    1. 3000 FAHRZEUGVARIANTE, 03 > Funktionen > Fahrzeugtyp > Ausgelesen
        a. Stock M3 ZCP Coding = F80_Comp
        b. M3 CS Coding = F86_Comp
        c. M4 CS Coding = F85_Comp
    2. 3001 AUSSTATTUNGEN, 04 > Funktionen > M_Competition / High > Ausgelesen
        a. Stock M3 ZCP Coding = aktiv
        b. M3 CS Coding = nicht_aktiv
        c. M4 CS Coding = nicht_aktiv