

Pre-Case creation for 725.0 Transmissions

Topic number	LI27.00-P-075630
Version	1
Function group	27.00 - General
Date	2/9/23
Validity	725.0 TRANSMISSION
Reason for change	

Complaint

To insure vehicle down time is kept at a minimum and all required information is available when case is escalated, as well as assist technicians with checks that may help lead in resolving issue without case creation.

THIS LI IS NOT TO BE USED AS A REASON FOR CASE CREATION BUT AS A GUIDE IF A CASE IS NEEDED

Cause

There are, at times, additional steps workshops can do to help diagnose and rectify transmission complaints.

Remedy

When opening a case for transmissions a EEPROM, Quick Test, and VGS CUL are absolutely necessary

Please also check for any relevant LI's before opening case.

Also, recommend having customer fill out Transmission Drivability Diagnostic Worksheet especially if complaint is hard to reproduce or intermittent

(Work sheet Location: Xentry Portal >> Local Contents >> Diagnostic Info>> Diagnostic Worksheets)

If a previous repair attempt or visit was made for the same concern please include the date, mileage, and case number if applicable of that repair/visit with a short description of what was done.

725 Transmission:

Follow IPR: all IPR suggestions are covered by warranty and there is no need for cases to confirm IPR. Complete IPR suggestions and close out IPR process. If complaint is not fixed and IPR still suggests the same repair once closed out and run again, then a case may be needed.

Transmission Health page is a good indicator of issues within transmission if clutch or brake pack stays NOK after adaptations and unable to be made to a green OK then an internal fault is present. Proceed with replacing affected clutch pack.

IF more than 3 are red and NOK replace transmission (include printout with warranty claims)

**** FOR 167 chassis with M264 engine B08 may be red and NOK, IGNORE this, B08 is still okay ****

XENTRY TIPS

Shift complaints:

Note: AMG variants are known to have a harsher shift see LI27.60-P-075147

It is always worth comparing to a like vehicle if possible to see if shift is uncharacteristic

Perform standstill adaption

Drive adaption if necessary:

Drive C mode keep RPM between 2-2200rpm and lightly let off pedal to force shift wait 2-3 sec then roll on throttle to rpm back up to 2-2300 rpm repeat for gears 1-3

*For gears 4-8 allow rpm up to 2700 and let off slightly to force upshift = repeat x 10

*For downshift - highest gear possible 8 or 9 - allow decel with light brake drag (allow at least 5s between downshifts for trans to adapt. Go down to 2nd and repeat x10

*Change to sport mode and repeat process again

*Lock car to allow sleep at least 10min and restart and road test for quality.

After adaption a new EEPROM should be recorded and included with the original if opening a case

Understand shift complaints need to be reproducible to address. If needed drive with client to reproduce the complaint.

If shift complaint is intermittent a CAN trace of the issue occurring will be useful (see attached instructions)

Jolting:

If the vehicle is AWD: unplug AWD control unit or drive vehicle in dyno mode to see if transfer case is causing the jolt/harsh shift

If located from transfer case check fluid and perform a flush if needed to try to rectify the issue.

Vibrations:

NVH trace is needed, what level vibration is being experienced and where is it located?

Is the Vibration felt in neutral? Dyno mode? Does it change with speed? Etc.

Noise complaint:

Isolate the noise location using chassis ear.

MUST attach a sound recording or video of the noise.

Describe when the noise is present:

Does it change with gear or speed?

Does it occur with vehicle in neutral or in glide mode?

Does operating temperature effect noise?

Does incline/decline or steering angle effect noise?

Is the noise reproducible on lift in dyno mode?

XENTRY TIPS

Etc.

Pan Debris:

If during diagnosis process the pan is dropped use Xentry Blue book, compare condition to pictures and follow recommend instructions.

(Pictures will need to be submitted with warranty claim)

Attachments	
File	Description
Instruction_XENTRY CAN Tool KIT3_EN_V2 Star 3 Model 223.pdf	Star3 Models (223, 206...) CAN Trace Instructions
Instruction_XENTRY+CAN+Tool_EN_V4.pdf	CAN Trace Instructions

Symptoms
Overall vehicle > Complete vehicle > Modified to

Operation numbers/damage codes				
Op. no.	Operation text	Time	Damage code	Note

Instruction for the Xentry-CAN Tool (KIT 3)

Taking CAN-FD measures (successor of SDSCAN for STAR3 vehicles).

For taking CAN-FD measures you require the below described parts and additionally the following XENTRY Versions / AddOns:

1. W 000 589 00 21 00 Break-Out-Box Kit



2. W 223 589 01 63 00 Adapter Cable for vehicles with STAR3



3. XENTRY with AddOn
 - a) XENTRY 03/2021 with AddOn 19516
 - b) XENTRY 06/2021 with AddOn 19604
 - c) XENTRY 09/2021 without AddOn

Instruction for the Xentry-CAN Tool (KIT 3)

- For Xentry 03/2021 and Xentry 06/2021, you will also need a K-Matrix, to be requested by TIPS-Case. File - **TCM_CAN_223_2021.kmx** – needs to be copied into the folder „C: ProgramData > Mercedes-Benz > UserData > data > CANTool > matrix“.
With XENTRY 09/2021 this step could be ignored.

Preparation on Vehicle

Connection on Xentry Diagnosis Pad

1. Install AddOn according the related XENTRY Version
2. Multiplexer (VCI) needs to be updated
3. Copy K-Matrix **TCM_CAN_223_2021.kmx**
4. The measurement equipment has to be mounted in a way that it is possible to perform a test drive with the vehicle.



Image 1: Measurement Cable OBD-Plug

- Connect clamp 30 to pin 154 and clamp 31 to pin 118 of the wiring system of the vehicle and socket box 1.
- Connect the adapter cable to the OBD connector and connect the **HS CAN H** to pin 217 and **CAN L** to pin 218 of socket box 2.

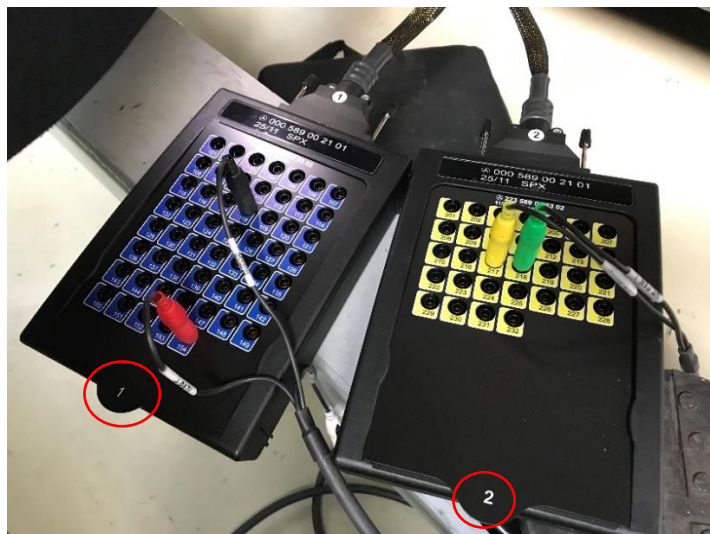


Image 2: Socket box 1 and 2

Instruction for the Xentry-CAN Tool (KIT 3)



Image 3: Installation CAN-FD Model 206



Image 4: Installation CAN-FD at CPC3 of Model 223

Instruction for the Xentry-CAN Tool (KIT 3)

Important for Vehicles with NAG3M (725.1) Transmission to active FCM Signals

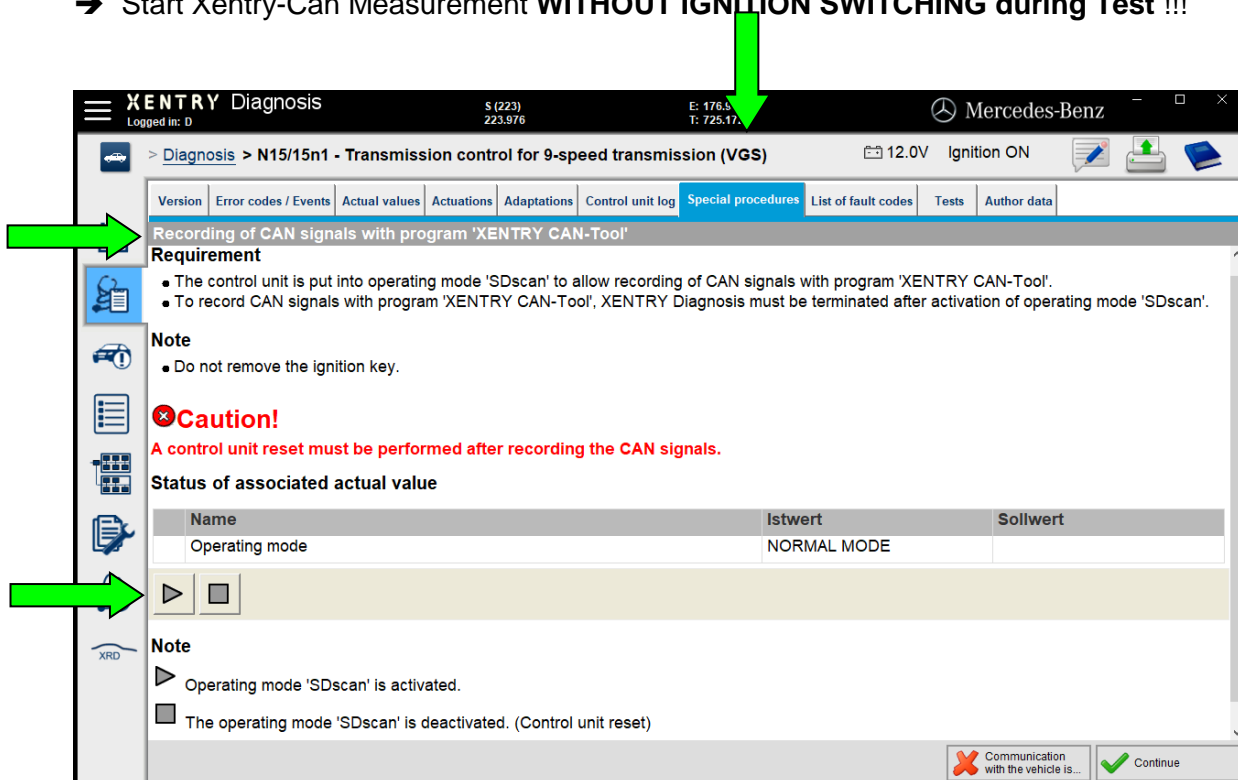
What are FCM messages?

XD-Scan requested. FCM means „free configurable message“. During the ignition sequence 42 additional signals of the transmission control will be routed on the CAN-Bus.

How to activate?

Before starting XD-Scan measurement activate the service in the XENTRY-Menu.

- ➔ Enter into VGS
- ➔ “Special Procedures”
- ➔ Recordings of CAN signals with the program "Xentry-CAN-Tool"
- ➔ Activate Operating Mode
- ➔ Start Xentry-Can Measurement **WITHOUT IGNITION SWITCHING during Test !!!**



Instruction for the Xentry-CAN Tool (KIT 3)

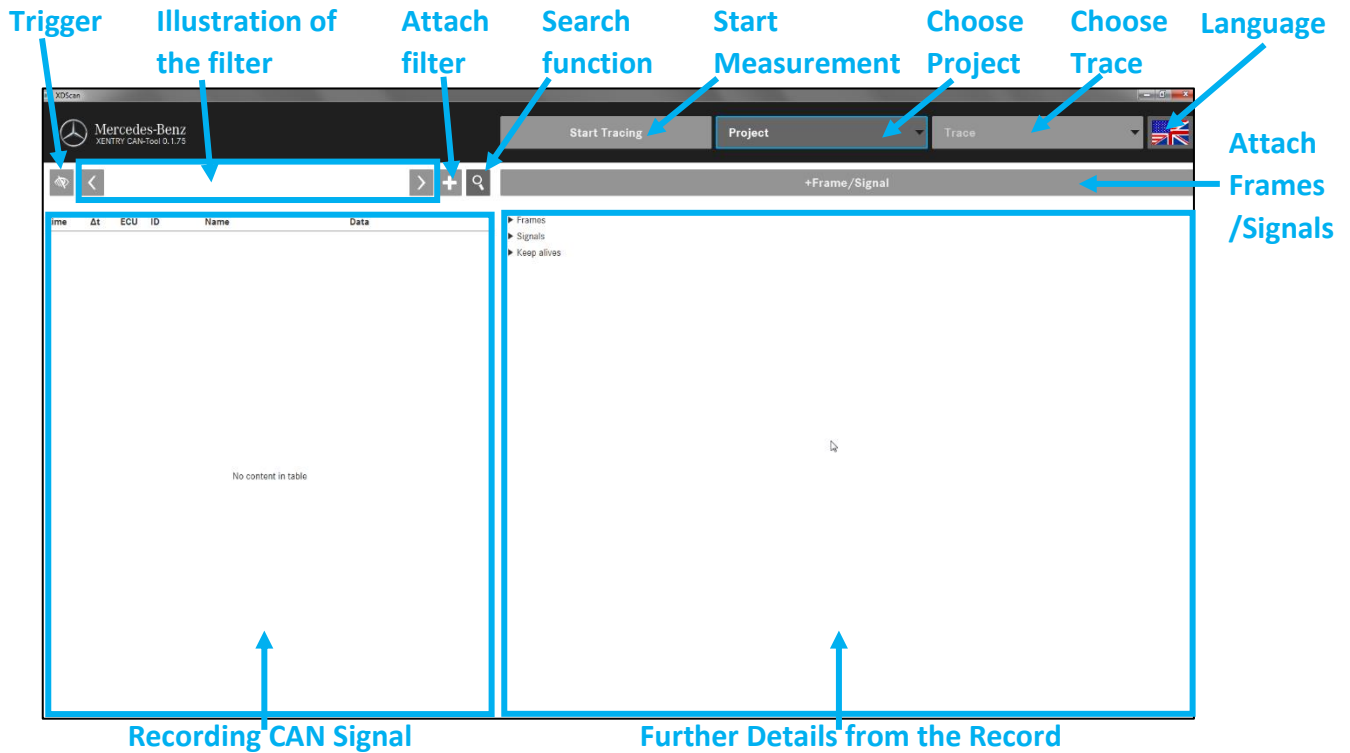
Procedure Xentry CAN tool with KIT3

1. XENTRY CAN tool start program.

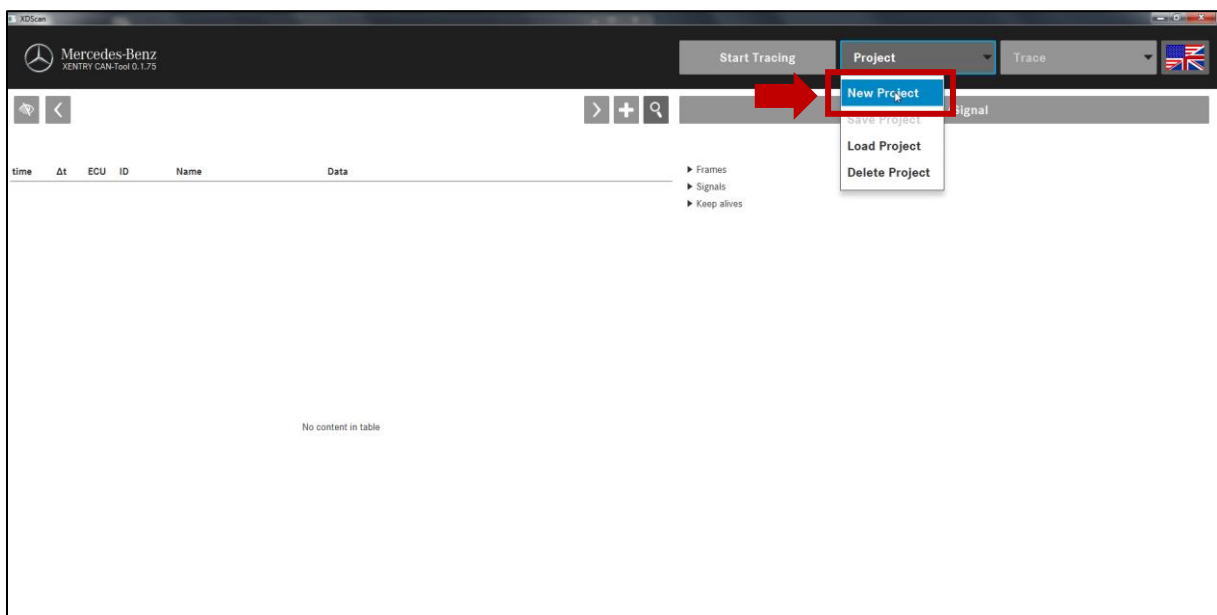
XENTRY CAN-Tool Start



2. Structure of the user interface.



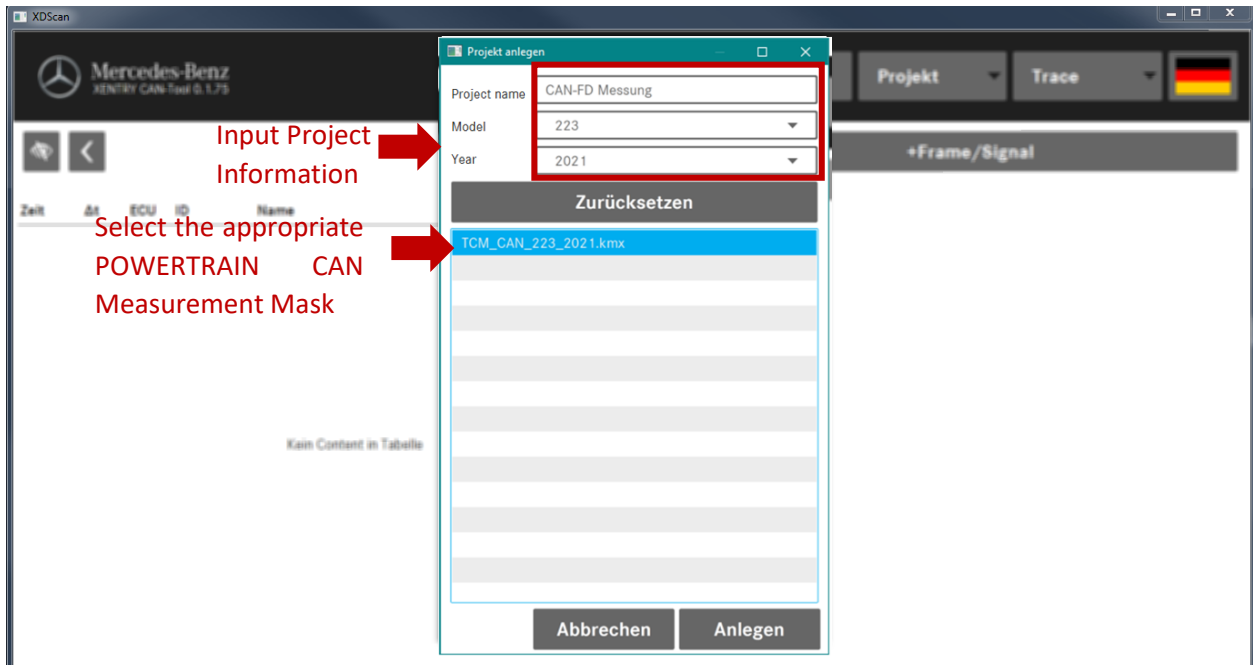
3. Create New Project



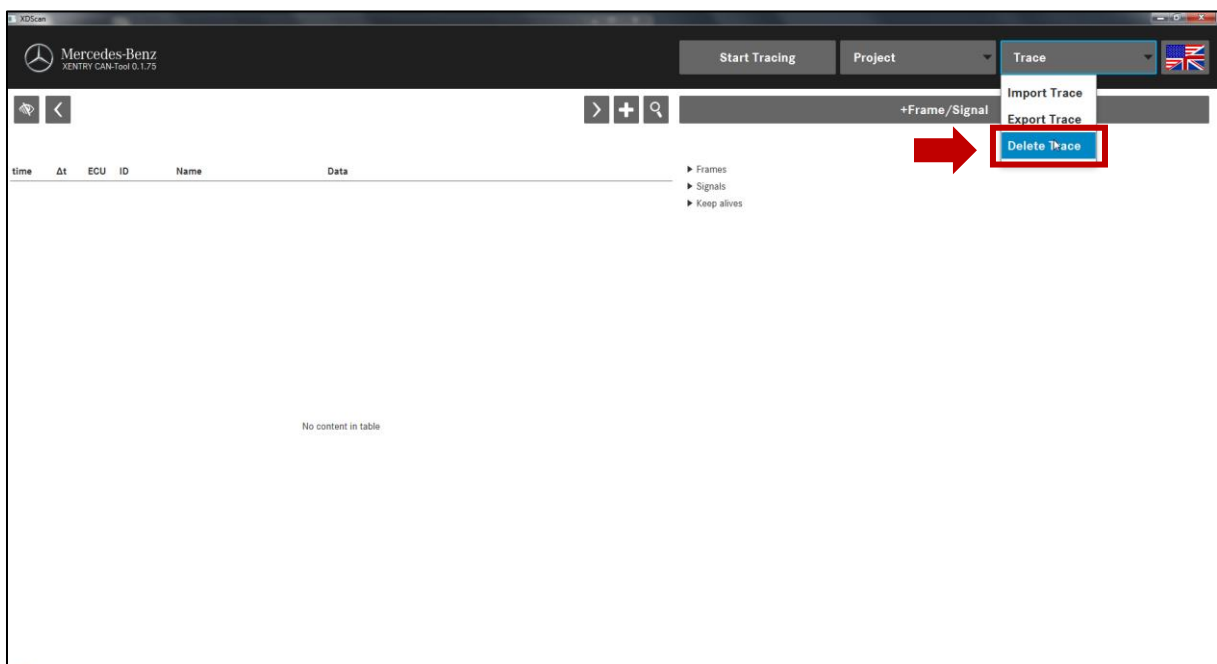
Instruction for the Xentry-CAN Tool (KIT 3)

4. Input Project Information:

- **Input „Project name“:** e.g. CAN-FD Messure
- **Select „Model“** select Carline 223
Remark: Star3: Carline 223 is also valid for 206, 213, 238, 257 ... with NAG3M
- **Select „Year“**



5. Always delete the old trace memory before a new measurement



Instruction for the Xentry-CAN Tool (KIT 3)

6. Begin with "Start Tracing" and select "CanLogger" mode. Then start measurements with "Start".

1. Begin with "Start Tracing" →

2. Select Mode „CanLogger“ →

3. Start Measurement with „Start“ ←

The screenshot shows the Xentry-CAN Tool interface. The top bar contains the Mercedes-Benz logo, the text 'Mercedes-Benz XENTRY CAN-Tool 0.1.75', and buttons for 'Start Tracing', 'Project', and 'Trace'. The 'Start Tracing' button is highlighted with a red box. Below the top bar, there is a search bar and a list of frames/signals. The main area displays a table with columns: time, Δt, ECU, ID, Name, and Data. The table is currently empty, showing 'No content in table'. A 'Tracing' dialog box is open, showing 'Mode' set to 'CanLogger' and 'Start' button highlighted with a red box.

7. Carry out a test drive until the complaint occurs. Then stop measurement with „Stop Tracing“.

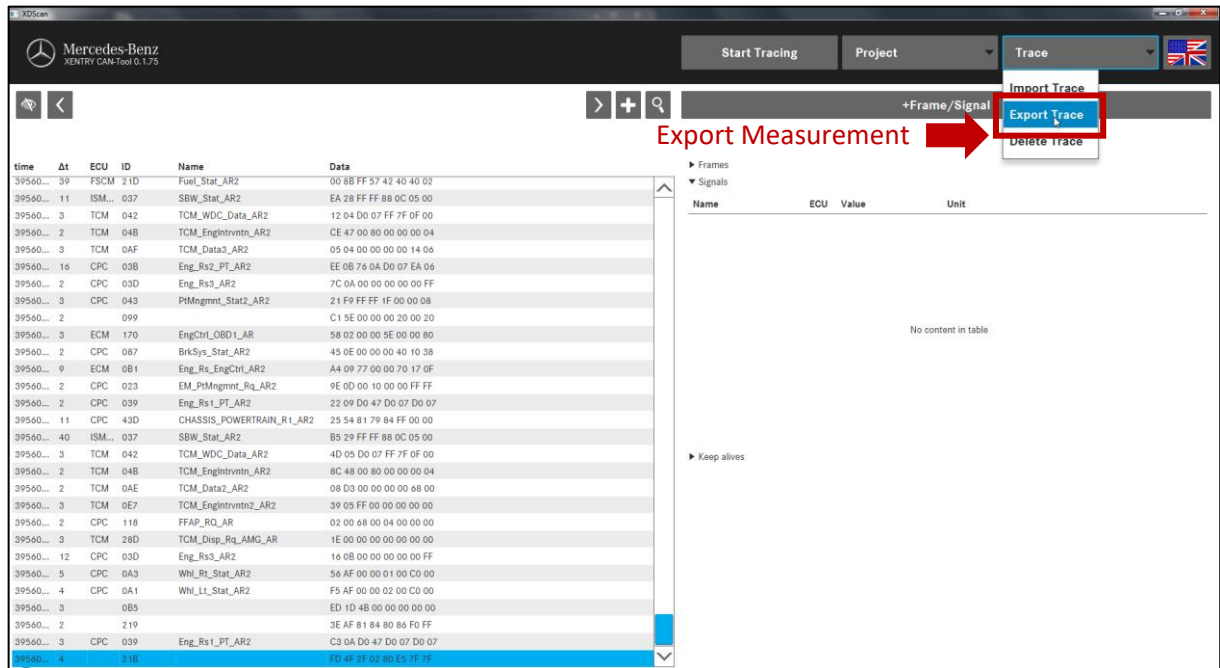
Stop measurement →

The screenshot shows the Xentry-CAN Tool interface after a test drive. The top bar contains the Mercedes-Benz logo, the text 'Mercedes-Benz XENTRY CAN-Tool 0.1.75', and buttons for 'Stop Tracing', 'Project', and 'Trace'. The 'Stop Tracing' button is highlighted with a red box. Below the top bar, there is a search bar and a list of frames/signals. The main area displays a table with columns: time, Δt, ECU, ID, Name, and Data. The table contains 36 rows of captured CAN frames. The last row is highlighted in blue.

time	Δt	ECU	ID	Name	Data
38097...	2	OB5			C0 19 4B 00 00 00 00 00
38097...	3	ECM	428	EngCtrl_Eng_Stat_AR	FF 0F 41 00 00 00 00 FF
38097...	6	ECM	0B1	Eng_Rs_EngCtrl_AR2	87 02 77 00 00 70 17 0F
38097...	2	CPC	039	Eng_Rs1_PT_AR2	01 02 D0 47 D0 07 D0 07
38097...	3	ISM...	037	SBW_Stat_AR2	77 21 FF FF 88 0C 05 00
38097...	2	TCM	042	TCM_WDC_Data_AR2	8F 0D D0 07 FF 7F 0F 00
38097...	2	TCM	04B	TCM_EngIntrvntn_AR2	4E 40 00 80 00 00 00 04
38097...	3	TCM	0AE	TCM_Data2_AR2	AB DF 00 00 00 00 68 00
38097...	2	TCM	0E7	TCM_EngIntrvntn2_AR2	3F 01 FF 00 00 00 00 00
38097...	3	TCM	2C7	SBW_DrvPosn_Disp_Rq_TCM_AR2	02 03 50 00 00 20 20 38
38097...	7	FSCM	21D	Fuel_Stat_AR2	00 8B FF 57 42 40 40 02
38097...	6	CPC	43D	CHASSIS_POWERTRAIN_R1_AR2	A1 74 81 79 84 FF 00 00
38097...	20	CPC	0A3	Whl_Rt_Stat_AR2	37 AB 00 00 01 00 C0 00
38097...	3	CPC	0A1	Whl_Lt_Stat_AR2	94 AB 00 00 02 00 C0 00
38097...	2		219		11 AB 80 84 80 86 F0 FF
38097...	3		21B		48 4B 2F 02 80 DF 7F 7F
38097...	22	CPC	118	FFAP_RQ_AR	02 00 68 00 04 00 00 00
38097...	2	CPC	03B	Eng_Rs2_PT_AR2	14 05 75 0A D0 07 EA 06
38097...	2	CPC	03D	Eng_Rs3_AR2	6A 04 00 00 00 00 00 FF
38097...	3	CPC	043	PMngmnt_Stat2_AR2	82 F3 FF FF 1F 00 00 08
38097...	2	ECM	170	EngCtrl_OBD1_AR	67 02 00 00 5E 00 00 80
38097...	13	ISM...	037	SBW_Stat_AR2	96 22 FF FF 88 0C 05 00
38097...	2	TCM	042	TCM_WDC_Data_AR2	6E 0E D0 07 FF 7F 0F 00
38097...	3	TCM	04B	TCM_EngIntrvntn_AR2	11 41 00 80 00 00 00 04
38097...	2	CPC	023	EM_PtMngmnt_Rq_AR2	1E 0A 00 10 00 00 FF FF
38097...	2	CPC	039	Eng_Rs1_PT_AR2	5E 03 D0 47 D0 07 D0 07
38097...	3	TCM	0AF	TCM_Data3_AR2	DA 01 00 00 00 00 14 06
38097...	36		099		FF 5B 00 00 00 20 00 20
38097...	3	CPC	06T	BrkSys_Stat_AR2	78 08 00 00 00 40 10 36

Instruction for the Xentry-CAN Tool (KIT 3)

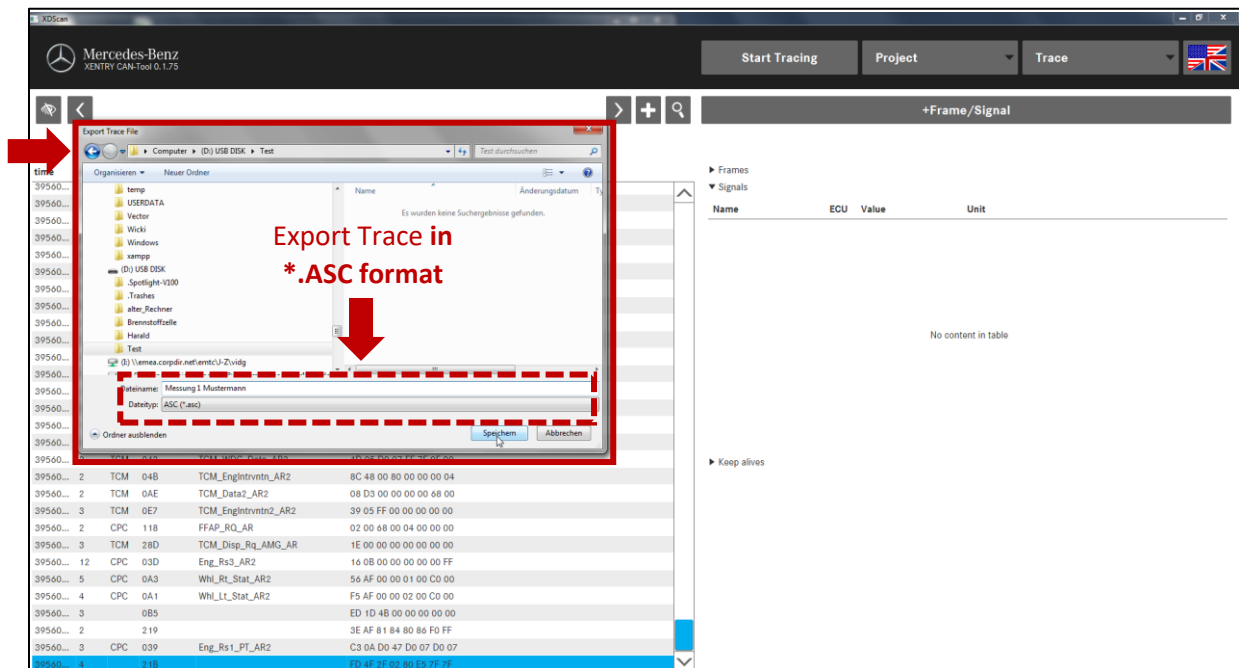
8. Export Trace in *.ASC format after recording the measurement



Save the measurement file in ***.ASC format** either into a USB stick or in a folder and then attach them to the TIPS case. Please check if files are larger than 1 KB otherwise no data is recorded.

Please note: Attachments to the TIPS case should not be larger than 5 MB.

Remark: Please always delete the old trace memory after export the Trace file.



Instruction for the Xentry-CAN Tool

Preparation on Vehicle

Connection on Xentry Diagnosis Pad

The measurement equipment has to be mounted in a way that it is possible to perform a test drive with the vehicle.



Image. 1: Measurement Cable OBD-Plug

- Connect clamp 30, 15 and 31 at the wiring system of the vehicle → if necessary, depending on vehicle type, remove the carpet of the passenger foot space.
- Connect the adapter cable to the OBD connector and connect the **HS CAN H** and **CAN L** to the POWERTRAIN CAN Bus.

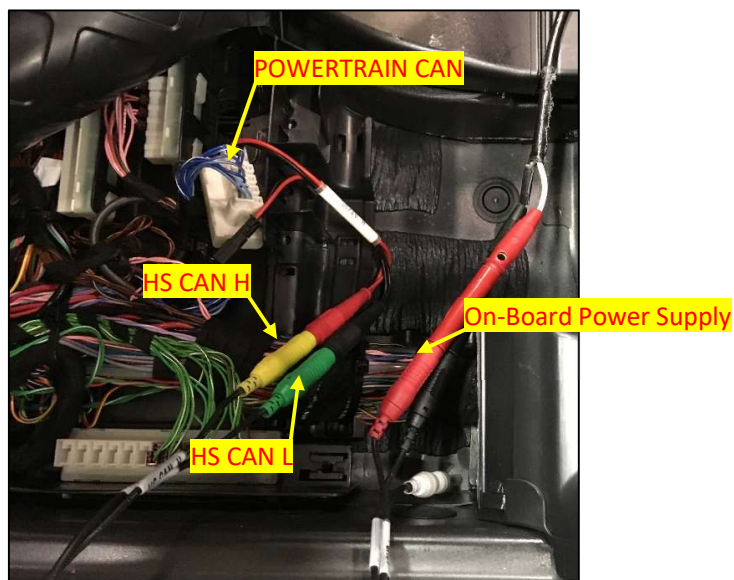


Image. 2: Example Powertrain-CAN Connection in Carline 213

Instruction for the Xentry-CAN Tool

Important for Vehicles with NAG3 Transmission to active FCM Signals

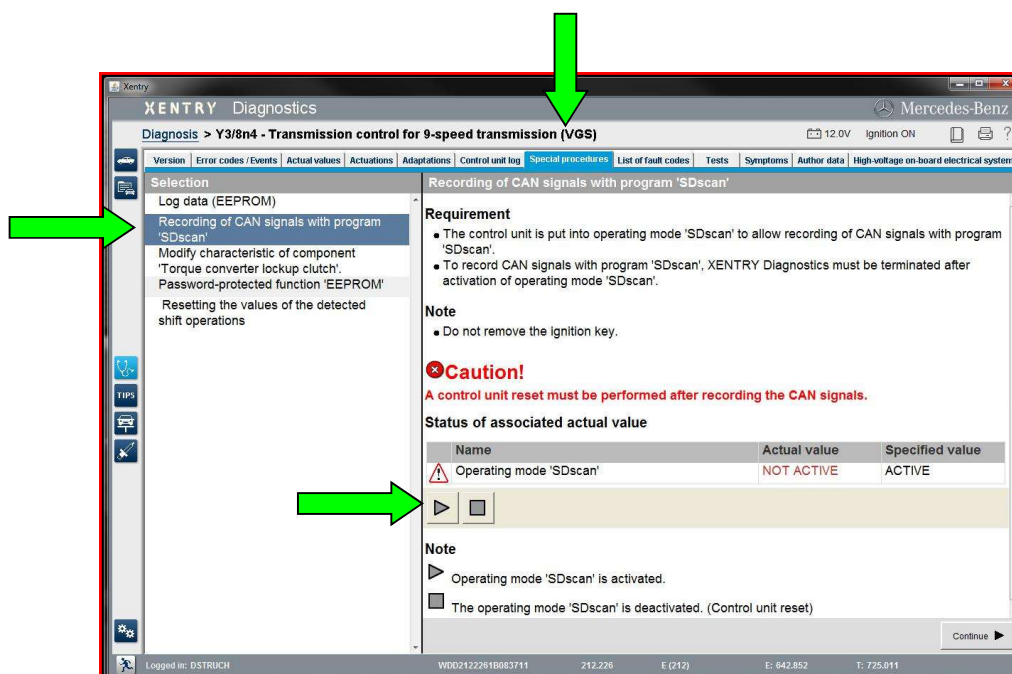
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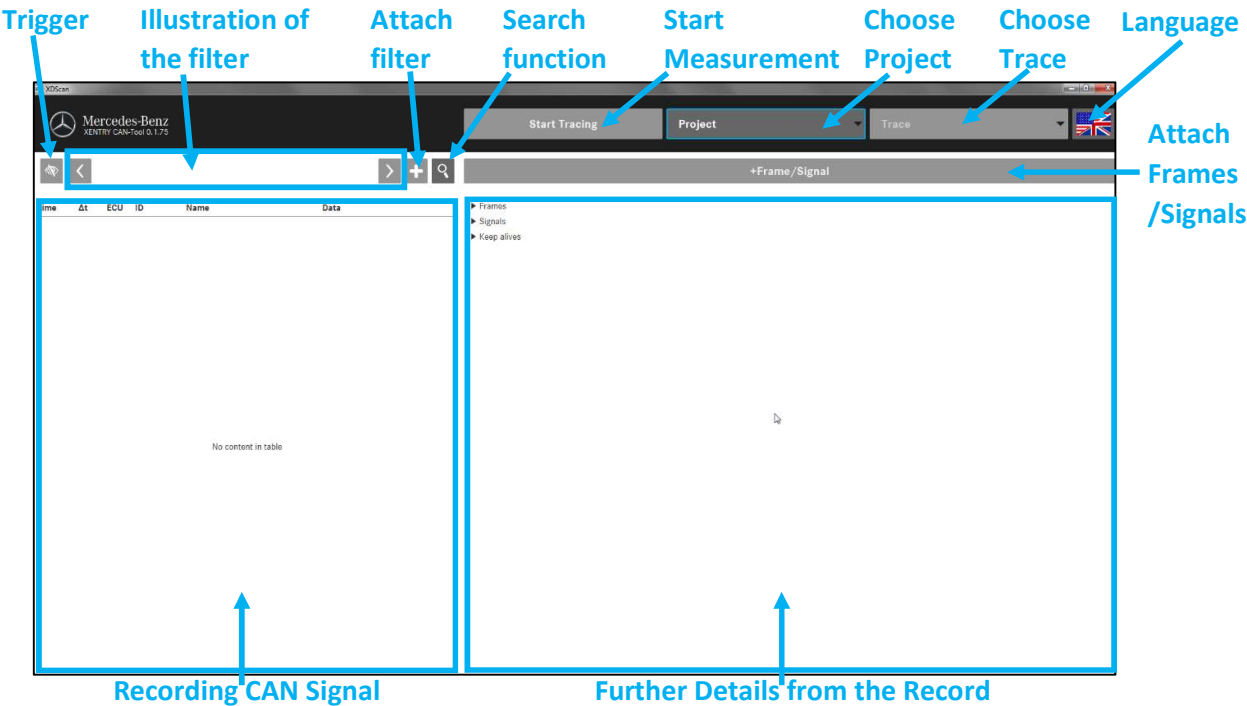
Procedure Xentry CAN tool

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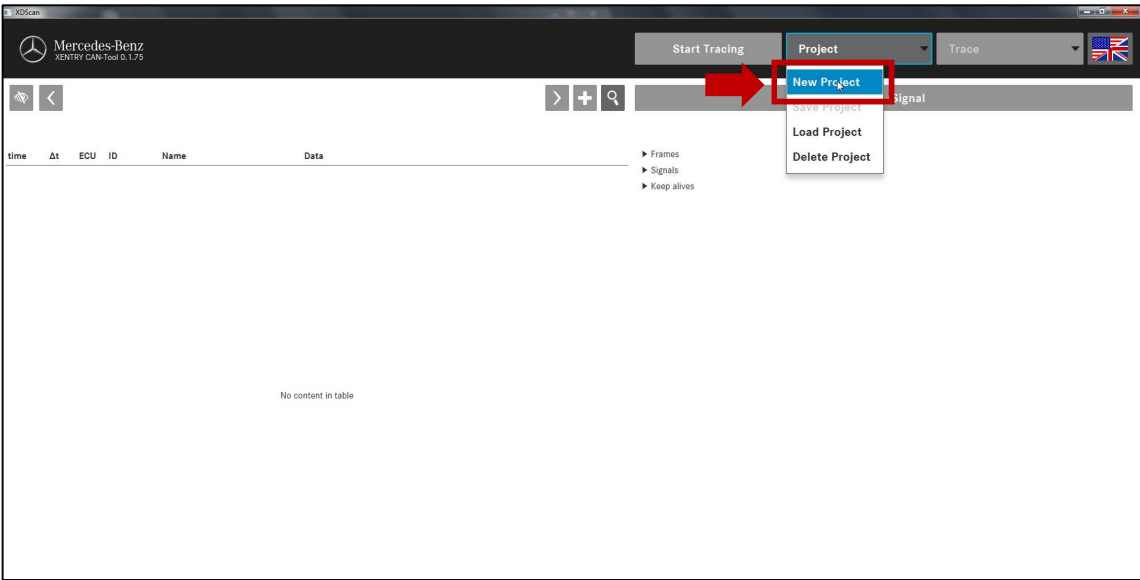
XENTRY CAN-Tool Start



2. Structure of the user interface.



3. Create New Project



Instruction for the Xentry-CAN Tool

4. Input Project Information:

Input „Project name“: e.g. Max Mustermann

Select „Model“ (Carline) from:

Star0: Carline 172/197/204/207/212/218/231

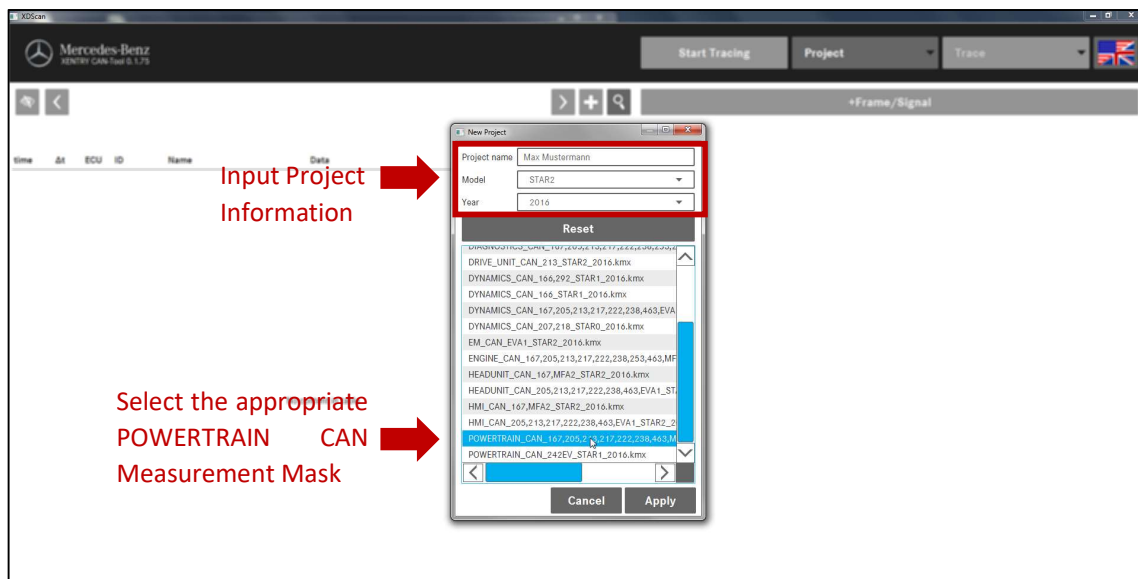
Star1: Carline 117/156/166/176/242/246/292

Star2: Carline 222/217/205/253/213/238/167/463/MFA2

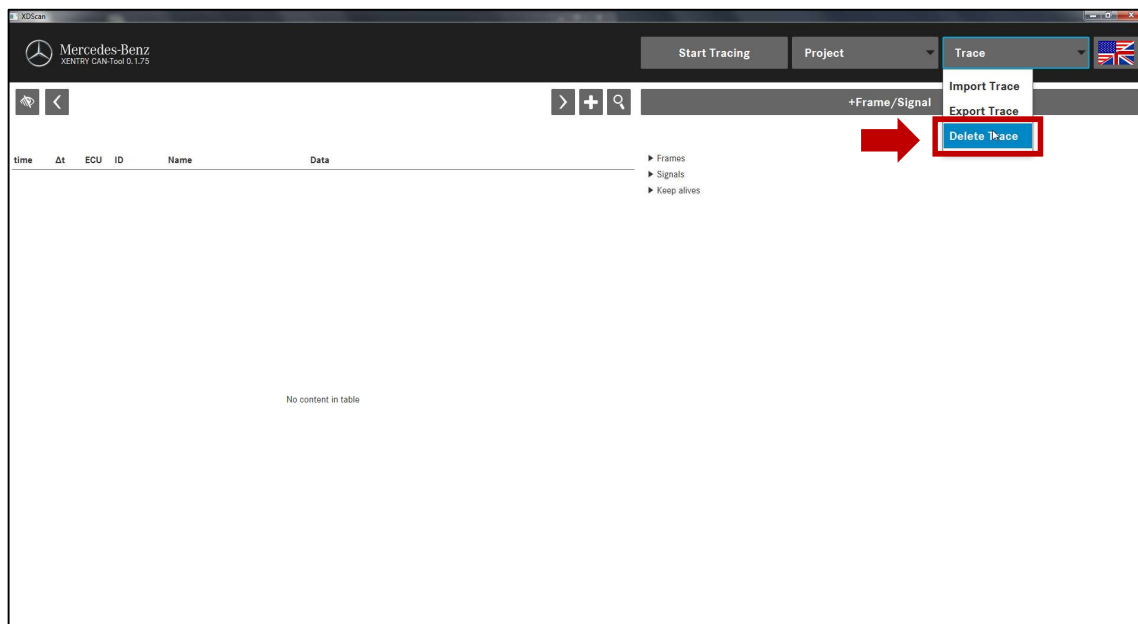
Star3: Carline 223/206/192/232/297

If the desired series is not available in the selection, Please contact Product Support.

Select „Year“

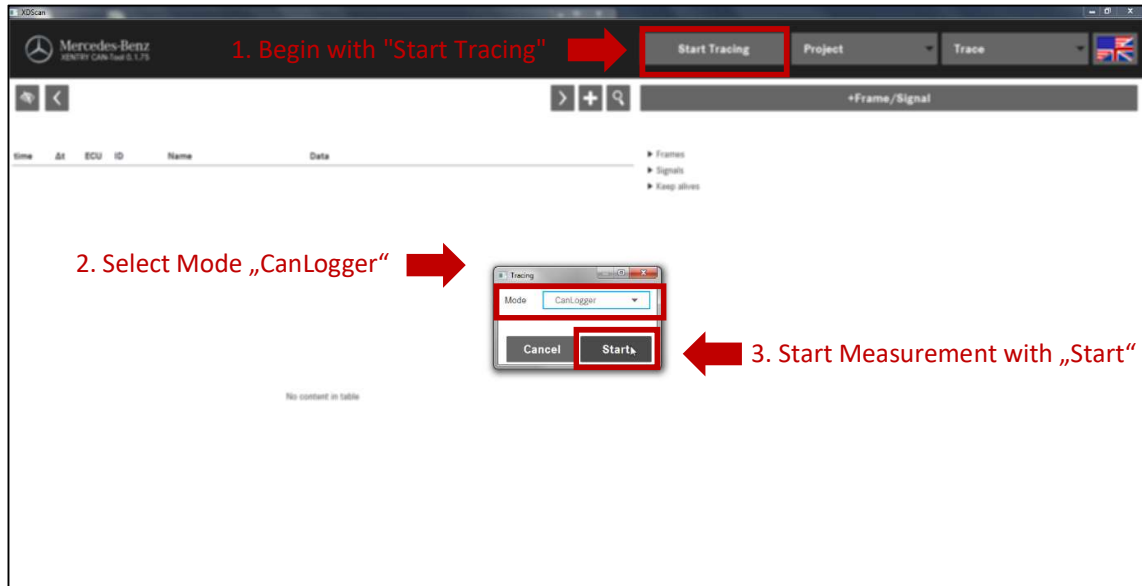


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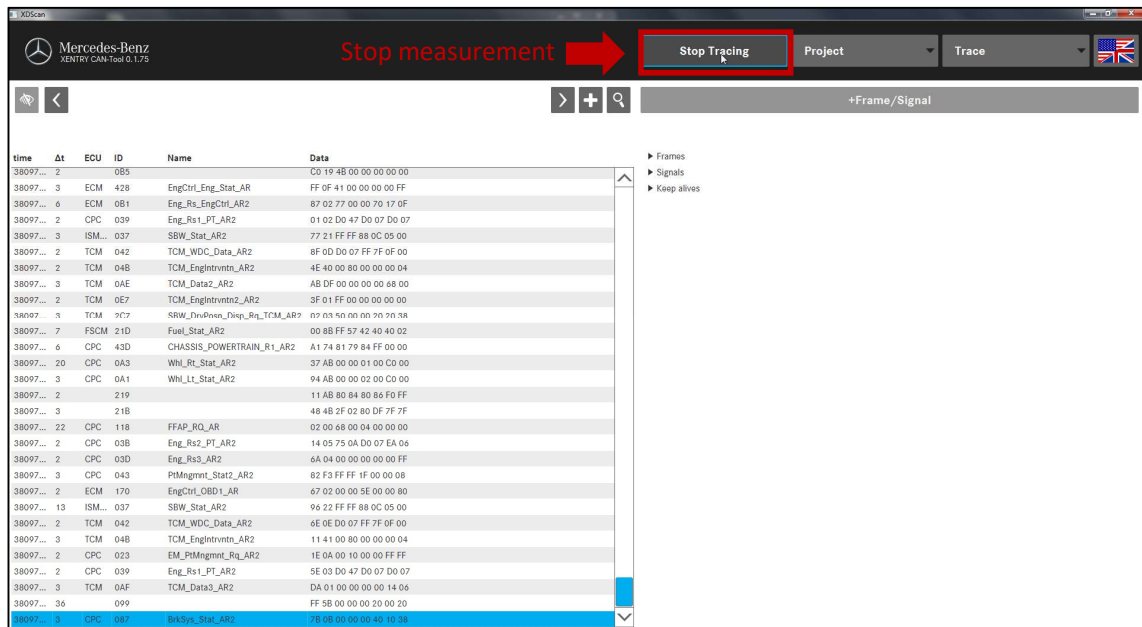


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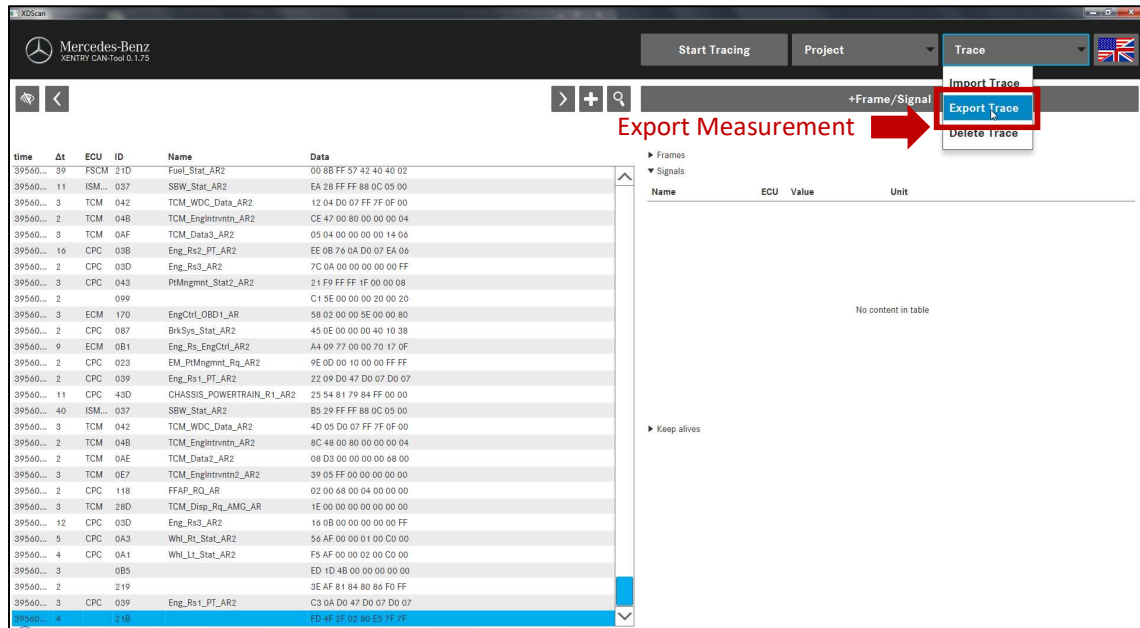


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