Innova VCI Service

Source code of this service content in folder: innova-vci-service

1. Author

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```

2. Revision

Version: 1.0

Version Date: Jun 15,2019

Version Notes: First Release for Innova VCI Service

Version: 1.2RC1

Version Date: Jul 21,2019

Version Notes:

```
# Update
getVersion
getBatteryVoltage
obd2RetriveData : read service 9
# report method obd2
getVehReport_YMME_PROFILE
getVehReport_OBD2_LD_SID1_BUFF
getVehReport_OBD2_FF_SID2_BUFF
getVehReport_OBD2_DTC_SID37A_BUFF
getVehReport_OBD2_SPECIALTEST_SID568_BUFF
getVehReport_OBD2_VEHINFO_SID9_BUFF
getVehReport_OBD2_RECORED_LD_BUFF
```

Version: 1.3

Version Date: August 02,2019

Version Notes:

```
# Update
add link_OBD2_SPECIALTEST_SID5
add link_OBD2_SPECIALTEST_SID6
add link_OBD2_SPECIALTEST_SID8
add getVehReport_OBD2_SPECIALTEST_SID5_BUFF
add getVehReport_OBD2_SPECIALTEST_SID6_BUFF
add getVehReport_OBD2_SPECIALTEST_SID8_BUFF
remove getVehReport_OBD2_SPECIALTEST_SID568_BUFF
Update ofm features, MIL Status and Drive Cycle
```

Version: 1.4

Version Date: Oct 01,2019

Version Notes:

```
# Update
add features using screen form (Special Test and Actuator Test)
add erase OBD2
```

Version: 1.5

Version Date: Oct 22,2019

Version Notes:

```
# Update
add features using screen form (Oil Reset, Battery Reset, Steering Angle Sensor Calibration, Electric Parking Brake, ABS
Bleeding)
update new response of nwscan_LinkSystem
add nwscan_getdtcdef to get dtc definition
update live data functions
add tool setting
```

Version: 1.6

Version Date: Nov 11,2019

Version Notes:

```
# Update
Update introduction of USB serial and bluetooth
Update progress bar process
Update command get information of Live Data item (Max val, Min Val, and Unit)
```

Version: 1.7

Version Date: Dec 07,2019

Version Notes:

```
# Update
Update itemlist of OBD2, ABS, SRS LiveData
Update Hybrid LiveData
Update enable and disable DTC trigger function
```

Version: 1.8

Version Date: Jan 08,2020

Version Notes:

```
# Update
Update service reset functions, battery alternator health check
```

Version: 1.8RC2

Version Date: Jan 20,2020

Version Notes:

```
# Update
Update OBD2 readable functions
getVehReport_YMME_String
getVehReport_MonitorIconStatus
getVehReport_FreezeFrameDTCInfo
getVehReport_FreezeFrameLDInfo
getVehReport_OBD2_DTC_Info
getVehReport_OBD2_DTC_Def
getVehReport_OBD2_VehicleInfo_SID9
```

Version: 1.9

Version Date: Feb 12,2020

Version Notes:

```
# Update
Update Fast Cancel
```

Version: 1.10

Version Date: Apr 29,2020

Version Notes:

```
# Update
Update Doc
```

Version: 1.10RC2

Version Date: Jun 03,2020

Version Notes:

```
# Update
Update obd2QuickRetriveData, obd2QuickLink
```

Version: 1.11

Version Date: Jul 20,2020

Version Notes:

```
# Update
Update readGUID, writeGUID in OBD Tool
```

Version: 1.12

Version Date: Aug 17,2020

Version Notes:

```
# Update
Update check ECU Voltage to break OBD2Query
```

Version: 1.12RC1

Version Date: Sep 06,2020

Version Notes:

```
# Update
Update VCI Logging Data functions
```

Version: 1.12RC2

Version Date: Oct 06,2020

Version Notes:

```
# Update
Update doc GUI process with keep alive and finish response from VCI
```

Version: 1.14

Version Date: Oct 08,2020

Version Notes:

```
# Update
Update ECM Live Data
```

Version: 1.15

Version Date: Jan 28 2021

Version Notes:

```
# Update
Support Live Data with up to 1000 Pids . Please see the new update in R&D app tab7.page.ts
```

Version: 1.16

Version Date: Apr 16 2021

Version Notes:

```
# Update
Fix issue get_itemval using livedata v2 support 1000 pids
```

Version: 1.16RC1

Version Date: May 07 2021

Version Notes:

```
# Update
Add productid ST VCI FS 0x2D5
```

Version: 1.16RC2

Version Date: Sep 16 2021

Version Notes:

```
# Update
Update new gui_set_key_option in GUI using new command gui_set_key_with_index:21
```

Version: 1.16RC3

Version Date: Jan 18 2022

Version Notes:

```
# Update
Update document for YMME manual selection
```

Version: 1.16RC4

Version Date: Apr 20 2022

Version Notes:

```
# Update
Update Erase DTC support negative response return result Error Code
Add retreiveFFDTCMonData, retreiveDTCData, obd2FFDTCMonLink, obd2DTCLink
```

Version: 1.16RC6

Version Date: Jun 23 2022

Version Notes:

```
  # Update
add Smog Check I/M program function: getting_ledstatus, getting_smogcheckstate, getting_smogcheckcountry
add get fuel type & get vehicle type function: getting_vehtype, getting_fueltype
```

---

3. Scope

Handle USB Communication. This service will handle Vehicle communication via USB

Support Handle process :

```
OBD2 Auto link
OEM Pid (Odometer , Fuel Level ... )
Network Scan
Service Reset
Live Data
```

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4. Dependency

```
"devDependencies": {
    "buffer": "^5.2.1",
    "lodash": "^4.17.11",
    "@ionic-native/serial": "^5.3.0"
    "@ionic-native/bluetooth-serial": "^5.15.0",
}
```

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5. OBD Tool

5.1. Methods

5.1.1. getVersion

```
@input : none
@return : Promise<{productid,main,boot,apiVersion}>
```

Example:

```
return json as format {"productid":720,"main":"V01.12.03","boot":"V01.07.01","apiVersion":"1.2"}
```

5.1.2. getBatteryVoltage

```
@input : none
@return : Promise<{BatteryVoltage,Unit}>
```

Example:

```
read battery voltage , return json format {"BatteryVoltage":11.91,"Unit":"V"}
```

5.1.3. cancel_process

> **TIP** Use this function to fast cancel processing

```
@input : none
@return : none
```

5.1.4. readGUID

> **TIP** Function to read GUID

```
@input : none
@return : string of GUID
```

5.1.5. writeGUID

> **TIP** Function to write new

```
@input : string of new GUID
@return : boolean true if write ok, otherwise is false
```

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6. OBD2

6.1. Methods

6.1.1. obd2Query

> **TIP** Use to query OBD2 Protocol , user can feed callback function to get process info. When OBDII not unplug, VCI not continue query.

```
obd2Query(cb?: ({ percent, index, total, message, isfinish }: {
       percent: any;
       index: any;
       total: any;
       message: any;
       isfinish: any;
    }) => any): Promise<enumProtocol>
```

```
@param cb — use to notify linking info when OBII Cable plugging
@returns — linked protocol
```

6.1.2. obd2RetriveData

> **TIP**
>
> Use to get obd2 data :
>
> - Monitor Icon
> - Freeze Frame
> - DTC
> - Vin Number
> - Read Service 9
> - Get report command , (Raw Data Format)

```
    obd2RetriveData(cb?: ({ message }: {
        message: any;
    }) => any): Promise<any>
    Reading of full obd2 : Monitor Icon , FF , DTC , VIN and Get Report
```

```
@param cb
@returns — Message getting Monitor icon, FF, Dtc, VIN, full report
```

```
        obd2QuickRetriveData(cb?: ({ message }: {
            message: any;
        }) => any): Promise<any>
        Reading VIN
```

```
@param cb
@returns — message getting VIN
```

```
        retreiveFFDTCMonData(cb?: ({ message }: {
            message: any;
        }) => any): Promise<any>
        Reading: FF, DTC, MonitorIcon.
```

```
@param cb
@returns — message getting FF, DTC, MonitorIcon
```

```
        retreiveDTCData(cb?: ({ message }: {
            message: any;
        }) => any): Promise<any>
        Reading DTC only
```

```
@param cb
@returns — message getting DTC
```

6.1.3. obd2AutoLink

> **TIP**
>
> This method will call query protocol , then if detected protocol , it will involve obd2RetriveData

6.1.4. obd2FFDTCMonLink

> **TIP** Same as obd2AutoLink but only retrive FF & DTC & Monitor Icon

6.1.5. obd2DTCLink

> **TIP** Same as obd2AutoLink but only retrive DTC

6.1.6. getVehReport_YMME_PROFILE

```
@input : none
@return : Promise<Array<{bufferIndex:Number,data:[]}>>
```

Example:this method read current ymme profile in device

```
[{"bufferIndex":0,"data":"[aa 31 46 4d 35 4b 37 46 38 32 4a 47 41 32 38 32 32 39 00 03 00 26 00 0c 00 0a 00 ff ff ff ff 1a 00
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```

6.1.7. getVehReport_OBD2_LD_SID1_BUFF

```
@input : none
@return : Promise<Array<{bufferIndex:Number,data:[]}>>
```

Example:This method use to read LD Buff ECU and TCU return

```
[{"bufferIndex":0,"data":"[aa be 3f a8 13 00 07 e5 e5]"},{"bufferIndex":1,"data":"[aa 98 18 80 13 81 04 00 00]"}]
```

6.1.8. getVehReport_OBD2_FF_SID2_BUFF

```
@input : none
@return : Promise<Array<{bufferIndex:Number,data:[]}>>
```

Example:This method read raw data of buffer freeze frame ecu and tcu return

```
[{"bufferIndex":0,"data":"[aa 26 00 00 02 00 00 04 aa 20 02 04 00 04 aa 40 02 08 00 04 aa 01 02 0c 00 04 aa 02 02 10 00 02 aa
03 02 12 00 00 aa 04 02 12 00 00 aa 05 02 12 00 00 aa 06 02 12 00 00 aa 07 02 12 00 00 aa 0b 02 12 00 00 aa 0c 02 12 00 00 aa
0d 02 12 00 00 aa 0e 02 12 00 00 aa 0f 02 12 00 00 aa 10 02 12 00 00 aa 11 02 12 00 00 aa 15 02 12 00 00 aa 1f 02 12 00 00 aa
2c 02 12 00 00 aa 2e 02 12 00 00 aa 2f 02 12 00 00 aa 30 02 12 00 00 aa 31 02 12 00 00 aa 32 02 12 00 00 aa 33 02 12 00 00 aa
34 02 12 00 00 aa 3c 02 12 00 00 aa 41 02 12 00 00 aa 42 02 12 00 00 aa 43 02 12 00 00 aa 44 02 12 00 00 aa 45 02 12 00 00 aa
46 02 12 00 00 aa 47 02 12 00 00 aa 49 02 12 00 00 aa 4a 02 12 00 00 aa 4c 02 12 00 00 aa 00 00 00 00 00 00 00 00 00 00 00 00
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00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00]"}]
```

6.1.9. getVehReport_OBD2_DTC_SID37A_BUFF

```
@input : none
@return : Promise<Array<{bufferIndex:Number,data:[]}>>
```

Example: read dtc of 2 buffer ECU and TCU OBD2

```
[{"bufferIndex":0,"data":"[00 00 02 00 01 1d 00 e8 07 00 00 1c 09 02 f0 09 04 01 21 05 01 23 05 07 06 05 07 07 05 12 33 05 21
01 05 02 28 05 01 06 08 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 aa 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 aa]"},{"bufferIndex":1,"data":"[01 00 03 00 01 1d 00 e9 07 00 00 1c 01 02 f0 09 05 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 aa 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 aa]"}]
```

6.1.10. linkVehReport_OBD2_SPECIALTEST_SID5

TIP | This function to link OBD2 Service 5 in Special Test O2 Sensor

```
@input : none
@return : Promise<Array<{result:String}>>
```

Example: link and get service 5 data store in sid5_buff

```
Success: {"result": "OK"}
No Response: {"result": "Sent"}
```

6.1.11. getVehReport_OBD2_SPECIALTEST_SID5_BUFF

TIP | This function to get data of OBD2 Service 5 buffer which is gotten from link_OBD2_SPECIALTEST_SID5

```
@input : none
@return : Promise<Array<{}>>
```

Example: get buffer of sid 05 with json format

```
//TODO
```

6.1.12. linkVehReport_OBD2_SPECIALTEST_SID6

TIP | This function to link OBD2 Service 6 in Special Test OBD Monitor

```
@input : none
@return : Promise<Array<{result:String}>>
```

Example: link and get service 6 data store in sid6_buff

```
Success: {"result": "OK"}
No Response: {"result": "Sent"}
```

6.1.13. getVehReport_OBD2_SPECIALTEST_SID6_BUFF

TIP | This function to get data of OBD2 Service 6 buffer which is gotten from link_OBD2_SPECIALTEST_SID6

```
@input : none
@return : Promise<Array<{}>>
```

Example: get buffer of sid 06 with json format

```
{"Exhaust Gas Sensor Monitor Bank 1 - Sensor 1 ($01)":[["$7E8","HO2S11 Heater Current ($81)2)","0.000 (Amp)","0.000
(Amp)","0.000 (Amp)","OK"],["$7E8","UEGO11 Rich to Lean Response Time ($87)mp)","0.000 s(0 min,0 s)","0.000 s(0 min,0 s)","0.000
s(0 min,0 s)","OK"],["$7E8","UEGO11 Lean to Rich Response Time ($88)mp)","0.000 s(0 min,0 s)","0.000 s(0 min,0 s)","0.000 s(0
min,0 s)","OK"]],"Exhaust Gas Sensor Monitor Bank 1 - Sensor 2 ($02)":[["$7E8","HO2S12 sensor switch-point voltage
($01)p)","0.000000 (V)","0.000000 (V)","0.000000 (V)","OK"],["$7E8","HO2S12 Fuel Shut off Rich to Lean Response Rate ($85)
(V)","0 (mV/s)","0 (mV/s)","0 (mV/s)","OK"],["$7E8","HO2S12 Fuel Shut off Rich to Lean Response Time ($86)(V)","0.000 s(0 min,0
s)","0.000 s(0 min,0 s)","0.000 s(0 min,0 s)","OK"]],"Catalyst Monitor Bank 1 ($21)":[["$7E8","Bank 1 index-ratio and max. limit
($80)nse Time ($86)(V)","0.0000000","0.0000000","0.0000000","OK"]],"EGR Monitor Bank 2 ($33)":[["$7E8","Component ID:
$82","0.000000","0.000000","0.000000","OK"]],"VVT Monitor Bank 1 ($35)":[["$7E8","Camshaft Advanced Position Error Bank 1
($80)00","0.00 (Angle)","0.00 (Angle)","0.00 (Angle)","OK"],["$7E8","Camshaft Retarded Position Error Bank 1 ($81)00","0.00
(Angle)","0.00 (Angle)","0.00 (Angle)","OK"]],"EVAP Monitor $7E8":[["$7E8","Phase 2 0.040â cruise leak check vacuum bleed-up and
test limits ($80)le)","0.00 (inH2O)","0.00 (inH2O)","0.00 (inH2O)","OK"]]," (0.040â) ($3B)nk 1 - Sensor 2 ($02)tor General Data
($A1)":[["$7E8","Blocked Evap System Line - Screening test ($80)-up and test limits ($80)le)","0.00 (inH2O/s)","0.00
(inH2O/s)","0.00 (inH2O/s)","OK"],["$7E8","Blocked Evap System Line - Fault confirmation test ($81)est limits ($80)le)","0.00
(inH2O)","0.00 (inH2O)","0.00 (inH2O)","OK"],["$7E8","Vapor Blocking Valve Performance ($82)rmation test ($81)est limits
($80)le)","0.00 (inH2O)","0.00 (inH2O)","0.00 (inH2O)","OK"]],"nsor 2 ($02)tor General Data ($A1)":[["$7E8","Total engine
misfire and catalyst damage misfire rate ($80) limits ($80)le)","0.000000 (%)","0.000000 (%)","0.000000 (%)","OK"],
["$7E8","Total engine misfire and emission threshold misfire rate ($81)mits ($80)le)","0.000000 (%)","0.000000 (%)","0.000000
(%)","OK"],["$7E8","Highest catalyst-damage misfire and catalyst damage threshold misfire rate ($82)00000 (%)","0.000000
(%)","0.000000 (%)","0.000000 (%)","OK"],["$7E8","Highest emission-threshold misfire and emission threshold misfire rate
($83)$82)00000 (%)","0.000000 (%)","0.000000 (%)","0.000000 (%)","OK"],["$7E8","Inferred catalyst mid-bed temperature ($84)sion
threshold misfire rate ($83)$82)00000 (%)","-40.0 (degree F)","-40.0 (degree F)","-40.0 (degree F)","OK"]],"Inferred catalyst
mid-bed temperature ($84)sion threshold misfire rate ($83)$82)00000 (%)":[["$7E8","EWMA misfire counts for last 10 driving
cycles ($0B)shold misfire rate ($83)$82)00000 (%)","0 (counts)","0 (counts)","0 (counts)","OK"],["$7E8","Misfire counts for
last/current driving cycle ($0C))shold misfire rate ($83)$82)00000 (%)","0 (counts)","0 (counts)","0 (counts)","OK"],
["$7E8","Cylinder X misfire rate and catalyst damage misfire rate ($80)ire rate ($83)$82)00000 (%)","0.000000 (%)","0.000000
(%)","0.000000 (%)","OK"],["$7E8","Cylinder X misfire rate and emission threshold misfire rate ($81) rate ($83)$82)00000
(%)","0.000000 (%)","0.000000 (%)","0.000000 (%)","OK"]],"ssion threshold misfire rate ($81) rate ($83)$82)00000 (%)":
[["$7E8","EWMA misfire counts for last 10 driving cycles ($0B)re rate ($81) rate ($83)$82)00000 (%)","0 (counts)","0
(counts)","0 (counts)","OK"],["$7E8","Misfire counts for last/current driving cycle ($0C))re rate ($81) rate ($83)$82)00000
(%)","0 (counts)","0 (counts)","0 (counts)","OK"],["$7E8","Cylinder X misfire rate and catalyst damage misfire rate ($80)81)
rate ($83)$82)00000 (%)","0.000000 (%)","0.000000 (%)","0.000000 (%)","OK"],["$7E8","Cylinder X misfire rate and emission
threshold misfire rate ($81) rate ($83)$82)00000 (%)","0.000000 (%)","0.000000 (%)","0.000000 (%)","OK"]],"81) rate
($83)$82)00000 (%)":[["$7E8","EWMA misfire counts for last 10 driving cycles ($0B)re rate ($81) rate ($83)$82)00000 (%)","0
(counts)","0 (counts)","0 (counts)","OK"],["$7E8","Misfire counts for last/current driving cycle ($0C))re rate ($81) rate
($83)$82)00000 (%)","0 (counts)","0 (counts)","0 (counts)","OK"],["$7E8","Cylinder X misfire rate and catalyst damage misfire
rate ($80)81) rate ($83)$82)00000 (%)","0.000000 (%)","0.000000 (%)","0.000000 (%)","OK"],["$7E8","Cylinder X misfire rate and
emission threshold misfire rate ($81) rate ($83)$82)00000 (%)","0.000000 (%)","0.000000 (%)","0.000000 (%)","OK"]],"000000 (%)":
[["$7E8","EWMA misfire counts for last 10 driving cycles ($0B)re rate ($81) rate ($83)$82)00000 (%)","0 (counts)","0
(counts)","0 (counts)","OK"],["$7E8","Misfire counts for last/current driving cycle ($0C))re rate ($81) rate ($83)$82)00000
(%)","0 (counts)","0 (counts)","0 (counts)","OK"],["$7E8","Cylinder X misfire rate and catalyst damage misfire rate ($80)81)
rate ($83)$82)00000 (%)","0.000000 (%)","0.000000 (%)","0.000000 (%)","OK"],["$7E8","Cylinder X misfire rate and emission
threshold misfire rate ($81) rate ($83)$82)00000 (%)","0.000000 (%)","0.000000 (%)","0.000000 (%)","OK"]]}
```

6.1.14. linkVehReport_OBD2_SPECIALTEST_SID8

TIP This function to link OBD2 Service 6 in Special Test OBD Monitor

```
@input : none
@return : Promise<Array<{result:String}>>
```

Example: link service 8

```
Success: {"result": "OK"}
No Response or Negative Response: {"result": "Sent"}
Not Support: {"result": "Not support"}
```

6.1.15. OBD2_erase_Dtcs

TIP This function is used to erase OBD2 Dtcs

```
@input : none
@return : Promise<Array<{result:String}>>
```

Example: Erase DTCs

```
Success: {"result": "OK"}
No Response: {"result": "Sent"}
Negative Response: {"result": "<Error Code>"}
ERASE_ERR_CODE = {
            0x00: "OBD2_ERASE_STT_NONE",
            0x01: "OBD2_ERASE_STT_SUCCESS",
            0x02: "OBD2_ERASE_STT_NEGATIVE",
            0x03: "OBD2_ERASE_STT_NO_RESPONSE",
            0x04: "OBD2_ERASE_STT_NEGATIVE_22",
            0xFF: "OBD2_ERASE_STT_UNKNOWN"
        }
```

6.1.16. getVehReport_YMME_String

TIP This function is used to get string of the current YMME

```
@input : none
@return : Promise<{}>
```

Example: response of function under object

```
{
  "year": "2015",
  "make": "Chevrolet",
  "model": "Equinox",
  "engine": "V6, 3.6L (VIN 8th = 3)"
}
```

6.1.17. getVehReport_MonitorIconStatus

TIP This function is used to get monitor icon status

```
@input : none
@return : Promise<{}>
```

Example: response of function under object

```
{
  "MIL": "On",
  "Complete": [
    "Misfire Monitor",
    "Fuel System Monitor",
    "Comprehensive Component Monitor (CCM)"
  ],
  "Incomplete": [
    "Catalyst Monitor",
    "EVAP System Monitor",
    "Oxygen Sensor Monitor"
  ]
}
```

6.1.18. getVehReport_FreezeFrameDTCInfo

TIP This function is used to get FreezeFrame DTC Information

```
@input : none
@return : Promise<Array<{}>>
```

Example: response of array object

```
[
  "P0136", //DTC code
  "Stored", // status
  "Oxygen Sensor Circuit (Bank 1 Sensor 2)" // definition
]
```

6.1.19. getVehReport_FreezeFrameLDInfo

> **TIP** This function is used to get FreeFrame LiveData Information

```
@input : none
@return : Promise<Array<{}>>
```

Example: response of array object

```
[
  [
    "Fuel Sys 1",
    "N/A"
  ],
  [
    "Fuel Sys 2",
    "N/A"
  ],
  [
    "Calc Load",
    "0.0 (%)"
  ],
  [
    "ECT",
    "-40 (Â°F)"
  ],
  [
    "STFT B1",
    "0.0 (%)"
  ],
  [
    "LTFT B1",
    "0.0 (%)"
  ],
  [
    "STFT B2",
    "0.0 (%)"
  ],
  [
    "LTFT B2",
    "0.0 (%)"
  ],
  [
    "MAP",
    "3 (inHg)"
  ],
  [
    "Eng RPM",
    "0"
  ],
  [
    "Veh Speed",
    "0 (mph)"
  ],
  [
    "Spark Adv",
    "11.0 (Â°)"
  ],
  [
    "IAT",
    "-40 (Â°F)"
  ],
  [
    "MAF",
    "0.00 (lb/min)"
  ],
  [
    "TPS",
    "100.0 (%)"
  ],
  [
    "Run Time",
    "0 (sec)"
  ],
  [
    "Command EVAP",
    "0.0 (%)"
  ],
  [
    "Fuel Level",
    "0.0 (%)"
  ],
  ],
  [
    "Warm-up DTC Clr",
    "0"
  ],
  [
    "Clr Dist",
    "0 (miles)"
  ],
  [
    "EVAP_VP",
    "7.5 (InH2O)"
  ],
  [
    "BARO",
    "27 (inHg)"
  ],
  [
    "CAT Te 11",
    "32 (Â°F)"
  ],
  [
    "CAT Te 21",
    "32 (Â°F)"
  ],
  [
    "ECU Volts",
    "11.529 (V)"
  ],
  [
    "LOAD Value",
    "0.0 (%)"
  ],
  [
    "EQ Ratio",
    "0.245"
  ],
  [
    "Rel TPS",
    "87.5 (%)"
  ],
  [
    "Ambient",
    "32 (Â°F)"
  ],
  [
    "TPS B",
    "100.0 (%)"
  ],
  [
    "ACC Pedal D",
    "0.0 (%)"
  ],
  [
    "ACC Pedal E",
    "0.0 (%)"
  ],
  [
    "Command TAC",
    "0.4 (%)"
  ]
]
```

6.1.20. getVehReport_OBD2_DTC_Info

TIP This function is used to get DTC information including code and status of DTCs of each module ECM or TCM

```
@input : none
@return : Promise<Array<{}>>
```

Example: response of array object

```
[
  {
  "ModuleName": "ECM",
  "Dtcs": [
      [
        "P0136",
        "Stored"
      ],
      [
        "P0480",
        "Stored"
      ],
      [
        "P0200",
        "Pending"
      ],
      [
        "P0200",
        "Permanent"
      ]
    ],
  "InvalidDTC": 0
  }
]
```

6.1.21. getVehReport_OBD2_DTC_Def

TIP This function is used to get DTC information including code and status of DTCs of each module ECM or TCM

```
@input : (moduleindex,index) ECM module index =0, TCM module index =1
@return : Promise<Array<{}>>
```

Example: the response when called this function is under object ["P0136", "Stored", "Oxygen Sensor Circuit (Bank 1 Sensor 2)"]

6.1.22. getVehReport_OBD2_VehicleInfo_SID9

TIP This function is used to get vehicle info including VIN, Module, CalID, CVN, IPT

```
@input : none
@return : Promise<Array<{}>>
```

Example: the response when called this function is under object { "VIN": "2GNFLGE35F6274995", "Module": ["$7E8"], "CalID": ["12644447", "12663232", "12663230", "12638535", "12654294", "12654299", "12654305", "12654300"], "CVN": ["00 00 D6 B1", "00 00 07 A5", "00 00 FA 52", "00 00 98 99", "00 00 E2 8A", "00 00 3D 6E", "00 00 72 F5", "00 00 33 02"], "IPT": [["OBDCOND", "3815"], ["IGNCNTR", "12009"], ["CATCOMP1", "5851"], ["CATCOND1", "3622"], ["CATCOMP2", "5850"], ["CATCOND2", "3622"], ["O2SCOMP1", "3312"], ["O2SCOND1", "3622"], ["O2SCOMP2", "3313"], ["O2SCOND2", "3622"], ["EGRCOMP", "6572"], ["EGRCOND", "3815"], ["AIRCOMP", "0"], ["AIRCOND", "0"], ["EVAPCOMP", "613"], ["EVAPCOND", "690"], ["SO2SCOMP1", "3535"], ["SO2SCOND1", "3622"], ["SO2SCOMP2", "3563"], ["SO2SCOND2", "3622"]] }

6.1.23. setting_smogcheckstate

TIP This function to set Smog check State

```
setting_smogcheckstate(sate_enum)=>Promise<boolean>
```

```
@input : enum state
@return : true or false
```

{ Arizona: 0x01, California: 0x02, Colorado: 0x03, Connecticut: 0x04, DC: 0x05, Delaware: 0x06, Georgia: 0x07, Idaho: 0x08, Illinois: 0x09, Indiana: 0x0A, Louisiana: 0x0B, Maine: 0x0C, Maryland: 0x0D, Massachusetts: 0x0E, Missouri: 0x0F, Nevada: 0x10, NewHampshire: 0x11, NewJersey: 0x12, NewMexico: 0x13, NewYork: 0x14, NorthCarolina: 0x15, Ohio: 0x16, Oregon: 0x17, Pennsylvania: 0x18, RhodeIsland: 0x19, Tennessee: 0x1A, Texas: 0x1B, Utah: 0x1C, Vermont: 0x1D, Virginia: 0x1E, Wisconsin: 0x1F, NoIMProg: 0x20, };

6.1.24. setting_smogcheckcountry

TIP This function to set Smog check Country

```
setting_smogcheckstate(country_enum)=>Promise<boolean>
```

```
@input : enum state
@return : true or false
```

{ Cache: 0x01, Davis: 0x02, SaltLake: 0x03, Utah: 0x04, Weber: 0x05, Ada: 0x06, Canyon: 0x07, NoProgram: 0x08, };

6.1.25. getting_ledstatus

TIP This function to get Led status

```
setting_smogcheckstate()=>Promise<{}>
```

```
@return example : {"Led Status": "Red"}
```

6.1.26. getting_fueltype

TIP This function to get Fuel Type

```
setting_smogcheckstate()=>Promise<{result:String}>
```

```
@return example : {result:"GAS"}
```

6.1.27. getting_vehtype

TIP This function to get Veh Type

```
setting_smogcheckstate()=>Promise<{result:String}>
```

```
@return example : {result:"Hybrid"}
```

7. Network Scan

7.1. Methods

7.1.1. setYmmeProfile

TIP This function to set Ymme Profile

```
setYmmeProfile(ymmeprofile ?= {
  manufacture_enum: any,
  year_enum: any,
  make_enum: any,
  model_enum: any,
  engine_enum: any,
  trim_enum: any,
  option_enum: any,
  transmission_enum: any
})=>Promise<boolean>



@input : YMME Profile
@return : true or false
```

7.1.2. getYMMEProfile

> **TIP** This Function to get the current YMME

```
@input : none
@return : Promise<any> buffer storing structMFRVinProfile
```

7.1.3. nwscan_getSupportSystem

> **TIP** This function is used to get the list of system and subsystem supported

```
@input : none
@return : Promise<any> buffer storing system, subsystem and module_name
```

Example: List of system, subsystem and module_name in json format

```
{"raw":null,"data":[{"System":1,"SubSystem":65535,"ModuleName":"PCM - Powertrain Control
Module","InnovaGroup":16,"groupName":"PCM"},{"System":2,"SubSystem":65535,"ModuleName":"ABS - Anti-Lock Brake / Traction Control
Module","InnovaGroup":2,"groupName":"ABS"},{"System":31,"SubSystem":65535,"ModuleName":"RCM - Restraint Control
Module","InnovaGroup":4,"groupName":"SRS"},{"System":77,"SubSystem":65535,"ModuleName":"GEM/SJB - Generic Electronic Module /
Smart Junction Box","InnovaGroup":64,"groupName":"TPMS"},{"System":84,"SubSystem":65535,"ModuleName":"IPC - Instrument Panel
Control Module","InnovaGroup":64,"groupName":"TPMS"},{"System":39,"SubSystem":65535,"ModuleName":"4X4M - 4X4 Control
Module","InnovaGroup":255,"groupName":"All"},{"System":16,"SubSystem":65535,"ModuleName":"ACM - Audio Control
Module","InnovaGroup":255,"groupName":"All"},{"System":76,"SubSystem":65535,"ModuleName":"APIM - Accessory Protocol Interface
Module","InnovaGroup":255,"groupName":"All"},{"System":71,"SubSystem":65535,"ModuleName":"DSP - (Audio) Digital Signal
Processing Module","InnovaGroup":255,"groupName":"All"},{"System":78,"SubSystem":65535,"ModuleName":"FCIM - Front Controls
Interface Module","InnovaGroup":255,"groupName":"All"},{"System":79,"SubSystem":65535,"ModuleName":"FDIM - Front Display
Interface Module","InnovaGroup":255,"groupName":"All"},{"System":90,"SubSystem":65535,"ModuleName":"GPSM - Global Positioning
System Module","InnovaGroup":255,"groupName":"All"},{"System":75,"SubSystem":65535,"ModuleName":"HVAC - Heating Ventilation Air
Conditioning","InnovaGroup":255,"groupName":"All"},{"System":63,"SubSystem":65535,"ModuleName":"OCS - Occupant Classification
System Module","InnovaGroup":255,"groupName":"All"},{"System":28,"SubSystem":65535,"ModuleName":"PAM - Parking Aid
Module","InnovaGroup":255,"groupName":"All"},{"System":80,"SubSystem":65535,"ModuleName":"PSCM - Power Steering Control
Module","InnovaGroup":255,"groupName":"All"},{"System":96,"SubSystem":65535,"ModuleName":"SODL - Side Obstacle Detection Control
Module - Left","InnovaGroup":255,"groupName":"All"},{"System":97,"SubSystem":65535,"ModuleName":"SODR - Side Obstacle Detection
Control Module - Right","InnovaGroup":255,"groupName":"All"},{"System":67,"SubSystem":65535,"ModuleName":"TBM - Tracking and
Blocking Module","InnovaGroup":255,"groupName":"All"}]}
```

7.1.4. nwscan_LinkSystem

```
@input : {System, Subsystem}
@return : Promise<{}> array
```

Example: this function return the buffer in json format

```
If system link successfully, we have two types of response
1. Available (Query success but cannot read Dtcs)
  {"data":{"system":1,"subsystem":65535,"modulename":"MFI/GDI/DIESEL","Dtcs":[],"InvalidDTC":true}}
2. Can read dtcs
  {"data":{"system":1,"subsystem":65535,"modulename":"MFI/GDI/DIESEL","Dtcs":[{'P0110','Stored'},
{'P0301','Pending'}],"InvalidDTC":false}}



If Error, json respone
[{"error":{"system":4,"subSystem":3,"modulename":"SRS - Supplemental Restraint System","Status":"Fail"}}]
```

```
If Need recycle Key
[{"error":{"system":4,"subSystem":3,"modulename":"SRS - Supplemental Restraint System","Status":"Need Recycle Ignition Key"}}]
```

7.1.5. nwscan_getdtcdef

```
@input : {System, Subsystem, index of dtc}
@return : Promise<{}> array
```

Example: if we want to get dtc P0110 in the above example we set index zero { code:"P0110", type:"Stored", def:"def"}

7.1.6. nwscan_eraseSystem

TIP | this function is used to erase the profile with system and subsystem input

```
@input : {System, Subsystem}
@return : Promise<{Erase_Dtc:Status}
```

Example: this function return of status of erase system

```
Erase OK : {Erase_Dtc:"OK"}
Erase no repsonse : {Erase_Dtc:"Sent"}
```

---

8. Odometer, Service Check, Warning Light, TPMS

8.1. Methods

8.1.1. Get support list of profile ID functions

There are 3 functions with the same format to get Odometer, Service Check, Warning Light, TPMS

- getodometer_pidsupport
- getservicecheck_pidsupport
- getwarninglight_pidsupport
- gettpmspid_pidsupport

TIP | These functions are used to get the profile_id supported list. Each profile_id in list is get value using getofmprofileid_value

```
@input: none
@output: Promise<{}>
```

Example: These functions return array

```
{"num_profile":2,"list":[{"ofm_item":1036,"profileid":139},{"ofm_item":1035,"profileid":140}]}
```

8.1.2. getofmprofileid_value

```
@input: profileid
@output: Promise<{}> {pid:profileid, value:val, unit:unit}
```

_Example: This function returns value under json format

```
{pid:139, value:"ON", unit:"null"}
{pid:140, value:"ON" , unit:"null"}
{pid:312, value:"4.6" , unit:"psi"}
```

8.1.3. ofm_getitemname

```
@input: ofm_item index get from 8.1.1
@output: String name of ofm_item
```

---

9. MIL Status

9.1. Methods

9.1.1. getVehReport_MIL_Status

```
@input: none
@output: Promise<{MilStatus:status}>
```

Example: This function to get the status of MIL, the response is in json format

```
{"MilStatus":"OFF"} if MIL Off
{"MilStatus":"ON"} if MIL On
```

---

10. Drive Cycle

10.1. Methods

10.1.1. getVehReport_DriveCycle_Mon_List

TIP This function get list of Drive Cycle Monitor Complete and InComplete

```
@input : None
@output: Promise<{}> {"Complete":{itemstring:id},"Incomplete":{itemstring:id}}
```

Example: Function return the data list of drive cycle

```
{"Complete":{"Misfire Monitor":14,"Fuel System Monitor":10,"Comprehensive Component Monitor (CCM)":4},"Incomplete":{"EGR System
Monitor":7,"Catalyst Monitor":3,"EVAP System Monitor":9,"Oxygen Sensor Monitor":16,"Oxygen Sensor Heater Monitor":13}}
==> Complete
====> Misfire Monitor: textid--> 14 ...
```

10.1.2. getVehReport_DriveCycle_Mon_Text

TIP This function get text of id

```
@input : textid
@output: Promise<{}>
```

Example: the response of "Comprehensive Component Monitor (CCM)" which has textid is 4 following format

```
[{"Opt":"","Note":"","Cond":"","Proc":"1. Pre-Conditioning Requirements:\n A. Cold soaks the vehicle for 8 hours.\n B. No DTC
Code(s) present.\n C. Fuel Fills between 15% and 85 %.\n2. Driving Procedure.\n A. Start the vehicle and idle for four (4)
minutes.\n B. Idle the vehicle in drive for 40 seconds (neutral for M/T).\n C. Accelerate to 45 mph, using Â¼ to Â½ throttle
(M/T stay in second gear for at least 5 seconds). Accelerate for at least 10 seconds and shift through to 5th gear.\n D. Drive
with a steady throttle at 45 mph for 30 seconds.\n E. Stop the vehicle and idle in drive or neutral for 40 seconds.\n F. Drive
at speeds between 25 mph and 45 mph for 15 minutes.\n Note: Uses 25% to 50% throttle accelerations. Include the following
conditions:\n a. At least 5 stops with ten seconds of idle time.\n b. At least 3 steady speed sections of 1 Â½ minutes
duration.\n G. Drive the vehicle between 45 mph and 60 mph for 8 minutes (use high gear).\n H. Keep a steady speed between 45
mph and 60 mph for 5 minutes.\n I. Drive the vehicle between 45 mph and 60 mph for 8 minutes (use high gear).\n J. Stop vehicle,
idle for 40 seconds."}]
```

11. Features using GUI VCI

> **TIP**
>
> There are some features using the GUI VCI process to get screen info and handle processes, such as:
>
> - Special Test
> - Actuator Test
> - …(update in next release)
>
> The response received from VCI is screen info which is divided into some screen form
>
> There are two types of items; one is LiveData item, one is option key items

11.1. Screen From

11.1.1. softkey

```
{
  "softkeyform": [
      "sofkey1",
      "",
      "sofkey2"
    ]
}
```

Example:

```
{"softkeyform":["Back","","Exit"]}
```

11.1.2. progressbar

```
{
    "progressbar":[
     percentage, //0->100
     "text display"]
}
```

Example:

```
{"progressbar":[0,"12 s"]}
```

11.1.3. infovalform

json format:

```
    {
      "infovalform": {
        "hdr": [
          "Title",
          "Description1",
          "Instruction",
          "Body",
          "Subbody",
          "Description2",
          "Footer"
        ],
        "hl": 1,
        "tt": 4
      }
    }
```

Example:

```
{
  "infovalform":
    {
      "hdr":[
        "Engine Speed Control","","","","",""],
        "items":["Engine Speed":"2000 RPM","Increase":"","Decrease":""],
        hl:1,
        tt:100,
    }
}
```

11.1.4. menuform

json format:

```
{
      "menuform": {
        "hdr": [
          "Title",
          "Instruction",
          "Body",
          "Footer"
        ],
        "items":[
          "item_1":"",
          "item_2":"",
          ...
          "item_n":""
        ]
        "hl": 1,
        "tt": 4
      }
    }
```

Example:

```
{
  "menuform":
  {
    "hdr":["System Test","","Please select function","","",""],
    "items":["Oil Life Reset":"","Engine Speed Control":""],
    "hl":0,
    "tt":123
  }
}
```

11.1.5. textform

json format:

```
{
      "textform": {
        "str": [
          "Title",
          "Instruction",
          "Body",
          "Footer"
        ],
        "hl": 1,
        "tt": 4
      }
    }
```

Example:

```
{
    "textform":
      {
        "str":["System Test","","One moment please...",""],
        "hl":0,"tt":123
      }
}
```

11.1.6. inputtextform

json format:

```
    {
      "inputtextform": [
          "Title",
          "Desc1",
          "Instruction",
          "Desc2",
          "Footer"
        ]
    }
```

Example:

```
{
    "inputtextform":
      {
        ["Oil Life Reset","","Please input the new value, then press Perform",""]
      }
}
```

11.1.7. finish

TIP issue this response when vci notice feature ending

json format:

```
    {"Finish": ""}
```

11.1.8. keepalive

TIP this response notice from vci to let tablet know vci still works in GUI

json format:

```
    {"KeepAlive": ""}
```

11.2. Methods

TIP

Please follow the step below

- call initGUIProc()
- subscribe event 'user:gui_info'(using import { Events } from '@ionic/angular';). This event listens the screen info mentioned above under object type
- call function enter process (Ex: spectest_enter_proc, actuatortest_enter_proc)
- when exit feature function, please unsubscribe and call deinitGUIProc();

11.2.1. initGUIProc

TIP

this function should be called first, after that call function enter process below

```
@input: none
@output: none
```

11.2.2. specialtest_enter_proc

TIP

This function is used to enter proc special test. This function should be called to run special test

```
@input: none
@output: none
```

11.2.3. actuatortest_enter_proc

TIP

This function is used to enter proc actuator test. This function should be called to run actuator test

```
@input: none
@output: none
```

11.2.4. battery_health_check_enter_proc

TIP

This function is used to enter proc battery alternator healthy check. This function should be called to run battery alternator healthy check

```
@input: none
@output: none
```

11.2.5. dpf_enter_proc

TIP

This function is used to enter proc Diesel Particular Filtering Reset. This function should be called to run Diesel Particular Filtering Reset (one of Service Reset functions)

```
@input: none
@output: none
```

11.2.6. oil_reset_enter_proc

TIP

This function is used to enter proc Oil Reset. This function should be called to run Oil Reset (one of Service Reset functions)

```
@input: none
@output: none
```

11.2.7. battery_reset_enter_proc

TIP This function is used to enter proc Battery Reset. This function should be called to run Battery Reset (one of Service Reset functions)

```
@input: none
@output: none
```

11.2.8. epb_enter_proc

TIP This function is used to enter proc Electric Parking Brake. This function should be called to run Electric Parking Brake (one of Service Reset functions)

```
@input: none
@output: none
```

11.2.9. sas_enter_proc

TIP This function is used to enter proc Steering Angle Sensor. This function should be called to run Steering Angle Sensor Calibration (one of Service Reset functions)

```
@input: none
@output: none
```

11.2.10. tpms_reset_enter_proc

TIP This function is used to enter proc TPMS Relearn. This function should be called to run TPMS Relearn (one of Service Reset functions)

```
@input: none
@output: none
```

11.2.11. service_reset_proc_enter

TIP This function is used to enter proc Service Reset (including Oil Reset, Battery Reset, DPF Reset, TPMS Relearn,…). This function should be called to run Service Reset. If this function is called, we dont need call another reset functions such as oil_reset_enter_proc, tpms_reset_enter_proc, battery_reset_enter_proc, …

```
@input: none
@output: none
```

11.2.12. deinitGUIProc

TIP This function is used when exit the feature process

```
@input: none
@output: none
```

11.2.13. gui_set_key_option

TIP This function is used when user click in the item

```
@input: id:number the order in response of option key item (first option key items is 0)
@output: none
```

11.2.14. gui_set_input_val

TIP This function is used to write the user input in "inputtextform" screen

```
@input: input_val:string user input under string type
@output: none
```

11.2.15. gui_set_softkey

TIP This function is used to notice VCI when user click on softkey

```
@input: type:string softkey type under string ("left" or "right")
@output: none
```

12. Live Data

12.1. Method

12.1.1. ld_obd2_get_itemlist

TIP This function is used to get list item id and item name of OBD2

```
@input:  none
@output: Promise<{}>
```

Example:

```
{
 "Group":1,
 "ListItem":[
      [
         1,
         "Fuel Sys 1",
         "N/A",
         "N/A",
         "N/A"
      ],
      [
         2,
         "Fuel Sys 2",
         "N/A",
         "N/A",
         "N/A"
      ],
      [
         3,
         "Calc Load,
         "100.0",
         "0.0",
         "%"
      ],
    ]
  }
```

12.1.2. ld_srs_get_itemlist

TIP This function is used to get list item id and item name of SRS

```
@input:  none
@output: Promise<{}>
```

Example: the same as OBD2

12.1.3. ld_abs_get_itemlist

TIP This function is used to get list item id and item name of ABS

```
@input:  none
@output: Promise<{}>
```

Example: the same as OBD2

12.1.4. ld_ecm_get_itemlist

TIP This function is used to get list item id and item name of ECM/PCM

```
@input:  none
@output: Promise<{}>
```

Example: the same as OBD2

12.1.5. ld_obd2_get_ListItem_Val

TIP This function is used to get list of value of OBD2 LiveData from start index to end index

```
@input:  start index, end index
@output: Promise<{}>
```

Example:

```
{
   "Group":1,
   "ListValue":[
        [
           1,
           "OL"
        ],
        [
           2,
           "OL"
        ],
        [
           3,
           "0.0 (%)"
        ],
      ]
    }
```

12.1.6. ld_srs_get_ListItem_Val

TIP This function is used to get list of value of SRS LiveData from start index to end index

```
@input:  start index, end index
@output: Promise<{}>
```

Example: the same as OBD2

12.1.7. ld_abs_get_ListItem_Val

TIP This function is used to get list of value of ABS LiveData from start index to end index

```
@input:  start index, end index
@output: Promise<{}>
```

Example: the same as OBD2

12.1.8. ld_ecm_get_ListItem_Val

TIP This function is used to get list of value of ECM/PCM LiveData from start index to end index

```
@input:  start index, end index
@output: Promise<{}>
```

Example: the same as OBD2

12.1.9. ld_obd2_get_itemval

TIP This function is used to get value of OBD2 LiveData using item_id

```
@input:  item_id
@output: Promise<{}>
```

Example:

```
 {
"Group":1,
"ListValue":[
     [
        1,
        "OL"
     ],
   ]
 }
```

12.1.10. ld_abs_get_itemval

TIP This function is used to get value of ABS LiveData using item_id

```
@input:  item_id
@output: Promise<{}>
```

Example: the same as OBD2

12.1.11. ld_srs_get_itemval

TIP This function is used to get value of SRS LiveData using item_id

```
@input:  item_id
@output: Promise<{}>
```

Example: the same as OBD2

12.1.12. ld_ecm_get_itemval

TIP This function is used to get value of ECM/PCM LiveData using item_id

```
@input:  item_id
@output: Promise<{}>
```

Example: the same as OBD2

12.1.13. ld_obd2_get_iteminfo

TIP | This function is used to get information of OBD2 LiveData using item_id

```
@input:  item_id : get from function get item list
@output: Promise<{}>
```

Example:

```
// Item has Max-Min Val and Unit
{
"Group":1,
"Item":5,
"MaxValue":"99",
"MinValue":"-100",
"Unit":"%"
}


 // Item doesnt have Max-Min Val and Unit
 {
"Group":1,
"Item":1,
"MaxValue":"N/A",
"MinValue":"N/A",
"Unit":"N/A"
 }
```

12.1.14. ld_abs_get_iteminfo

TIP | This function is used to get information of ABS LiveData using item_id

```
@input:  item_id : get from function get item list
@output: Promise<{}>
```

12.1.15. ld_srs_get_iteminfo

TIP | This function is used to get information of SRS LiveData using item_id

```
@input:  item_id : get from function get item list
@output: Promise<{}>
```

12.1.16. ld_ecm_get_iteminfo

TIP | This function is used to get information of ECM/PCM LiveData using item_id

```
@input:  item_id : get from function get item list
@output: Promise<{}>
```

12.1.17. ld_hybrid_get_info

TIP | This function is used to get information of Hybrid LiveData, and determine the Type of Hybrid LiveData. There are two types of Hybrid LiveData; the first one is Hybrid Cell Voltage, the other is Hybrid Livedata

```
@input:  none
@output: Promise<{}>
```

Example:

```
Json of Hybrid Cell Voltage, this type should be displayed as Bar Chart
{
  "Function Group":"Hybrid Cell Voltage",
    "ListVaue":[
    [
      1,
      "17.09 (V)"
    ],
    [
      2,
      "17.12 (V)"
    ],
    [
      3,
      "17.16 (V)"
    ],
    [
      4,
      "17.10 (V)"
    ],
    [
      5,
      "17.15 (V)"
    ],
    [
      6,
      "17.46 (V)"
    ],
    [
      7,
      "17.14 (V)"
    ],
    [
      8,
      "17.08 (V)"
    ],
    [
      9,
      "17.15 (V)"
    ],
    [
      10,
      "17.14 (V)"
    ],
    [
      11,
      "17.18 (V)"
      ],
    [
      12,
      "17.15 (V)"
    ],
    [
      13,
      "17.10 (V)"
    ],
    [
      14,
      "17.06 (V)"
    ]
  ]
}
Json of Hybrid Livedata is the same with OBD2, ABS, SRS LiveData
{
  "Function Group":"Hybrid Livedata",
  "ListItem":[
  [
  832,
  "HV DC voltage in the SLE",
  "13107",
  "0",
  "V"
  ],
  [
  833,
  "SLE Power Factor Corrector voltage",
  "13107",
  "0",
  "V"
],
[
834,
"SLE AC input voltage",
"13107",
"0",
"V"
],
[
835,
"HV voltage in the DC/DC converter",
"13107",
"0",
"V"
],
[
836,
"HV voltage in the inverter",
"13107",
"0",
"V"
],
[
847,
"Raw signal HV DC voltage inverter.",
"4294967.50",
"0.00",
"V"
],
[
856,
"Indication SOC of the HV battery",
"127.5",
"0.0",
"%"
],
[
878,
"SOC of first support point",
"655.35",
"0.00",
"%"
],
[
880,
"SOC of second support point",
"655.35",
"0.00",
"%"
],
[
882,
"SOC of third support point",
"655.35",
"0.00",
"%"
],
[
884,
"SOC of fifth support point",
"655.35",
"0.00",
"%"
],
[
886,
"SOC of fifth support point",
"655.35",
"0.00",
"%"
],
[
887,
"Current SOC of HV battery",
"655.35",
"0.00",
"%"
]
]
}
```

12.1.18. ld_enable_dtc_trigger

TIP this function to enable check dtc trigger. When we enable dtc trigger the response json of ListValue add one more parameter to notify the dtc is triggered

TIP This function is used to get information of Hybrid LiveData, and determine the Type of Hybrid LiveData. There are two types of Hybrid LiveData; the first one is Hybrid Cell Voltage, the other is Hybrid Livedata

```
@input:  none
@output: Promise<{}>
```

Example:

```
{
"Group":1,
"ListValue":[
    [
       1,
       "OL"
    ],
  ],
"DTCTrigger":"P1000" --> when dtc is triggered, this object is added
}
```

12.1.19. ld_disable_dtc_trigger

TIP this function shoulded be used in case of reading not recording LiveData or recording Manually mode

```
@input:  none
@output: Promise<{}>
```

12.1.20. ld_abs_get_numbersupporteditem

TIP This function is used to get number supported items of systems belong to ABS Group

```
@input:  none
@output: Promise<{}>
```

Example:

```
{
      "Group":2, //ABS
      "Number":100 // 100 Pids supported
}
```

12.1.21. ld_srs_get_numbersupporteditem

TIP This function is used to get number supported items of systems belong to SRS Group

```
@input:  none
@output: Promise<{}>
```

Example:

```
{
    "Group":4, //SRS
    "Number":100
}
```

12.1.22. ld_ecm_get_numbersupporteditem

TIP This function is used to get number supported items of systems belong to ECM Group

```
@input:  none
@output: Promise<{}>
```

Example:

```
{
    "Group":16, //ECM PCM
    "Number":100
}
```

12.1.23. ld_system_subsystem_numbersupporteditem

TIP This function is used to get number supported items of systems belong to system and subsystem of module

```
@input:  system, subsystem --> system enum value and subsystem  enum value
@output: Promise<{}>
```

Example:

```
{
    "Group":255, //group of system and subsystem belong to
    "Number":100
}
```

12.1.24. ld_abs_get_listinfo

TIP This function is used to get list info with start and stop index of Group ABS

```
@input: start index, end index
@output: Promise<{}>
```

Example:

```
{
    "Group":2,
    "ListItem":[
        [1,ItemName, Max, Min, Unit],  //itemid (not index), item name, max, min and unit
        [2,ItemName, Max, Min, Unit]
    ]
}
```

12.1.25. ld_ecm_get_listinfo

TIP This function is used to get list info with start and stop index of Group ECM

```
@input:  start index, end index
@output: Promise<{}>
```

Example:

```
{
    "Group":16,
    "ListItem":[
        [1,ItemName, Max, Min, Unit],  //itemid (not index), item name, max, min and unit
        [2,ItemName, Max, Min, Unit]
    ]
}
```

12.1.26. ld_srs_get_listinfo

> **TIP** This function is used to get list info with start and stop index of Group SRS

```
@input:  start index, end index
@output: Promise<{}>
```

Example:

```
{
    "Group":16, //hroup of system and subsystem belong to
    "ListItem":[
        [1,ItemName, Max, Min, Unit], //itemid (not index), item name, max, min and unit
        [2,ItemName, Max, Min, Unit]
    ]
}
```

12.1.27. ld_others_get_listinfo

> **TIP** This function is used to get list info with start and stop index of current module system

@input: start index, end index @output: Promise<{}>

Example:

```
{
    "Group":255,
    "ListItem":[
        [1,ItemName, Max, Min, Unit], //itemid (not index), item name, max, min and unit
        [2,ItemName, Max, Min, Unit]
    ]
}
```

---

13. Tool Setting

> **TIP** Tool setting is stored in tootsetting_vci_0x1720.ts in common folder

Example:Features setting under format

```
{
  //Features belongs to OBD2 SID1,2,37,5,6,7,8,9
  'name':'OBD2', //string of feature
  'enable':true, // already support in FW and vci-api
  'Manufacturer':[ //list of manufacturers
    'Generic', //Dont care Manufacturer
  ]
},
{
  //Read / Erase DTC and Livedata for ABS system
  'name':'ABS',
  'enable':true,
  'Manufacturer':[
    'GM',
    'Ford',
    'Chrysler',
    'Honda',
    'Toyota',
    'Nissan',
    'Hyundai',
    'Kia',
    'BMW',
    'Volkswagen',
    'Audi',
    'Mercedes-Benz',
    'Volvo',
    'Mazda',
    'Subaru',
    'Jaguar Land Rover'
  ]
},
```

14. USB Serial and Bluetooth

TIP This part introduces the methods of USB serial and bluetooth serial

NOTE

install plugin serial.

```
ionic cordova plugin add cordovarduino
npm install @ionic-native/serial
```

install plugin bluetooth serial

```
ionic cordova plugin add cordova-plugin-bluetooth-serial
npm install @ionic-native/bluetooth-serial
```

14.1. Methods

14.1.1. initialize

TIP This function initializes the USB serial connection and register the notification

```
@input:  {(NotifyDataType) => any} [cb=null] : register notify process
@output: {Promise<boolean>}
```

Example:

```
initialize((t) => {
  // process notification here
}).then(async isok => {
  //isOK == true if initialize OK, otherwise there is not USB serial connection
})
```

14.1.2. initialize_bt

TIP This function initializes the Bluetooth connection and register the notification

```
@input:  {(NotifyDataType) => any} [cb=null] : register notify process
@output: {Promise<boolean>}
```

Example:

```
initialize_bt((t) => {
  // process notification here
}).then(async isok => {
  //isOK == true if initialize OK, otherwise there is not support bluetooth
})
```

---

15. Data Logging

> **TIP** This part introduces the methods to start, stop and get VCI communication data between VCI and vehicle which is logged and stored in VCI.

15.1. Methods

15.1.1. StartLog

> **TIP** This function is used to start VCI data logging, after calling this function VCI will start storing Vehicle data.

```
@input:  none
@output: {Promise<boolean>}
```

15.1.2. StopLog

> **TIP** This function is used to stop VCI data logging, after calling this function VCI will stop storing Vehicle data which started before.

```
@input:  none
@output: {Promise<boolean>}
```

15.1.3. GetLog

> **TIP** This function is used to get the data of vehicle which is stored when calling start and stop function.

```
@input:  none
@output: {Promise<any>}
```

Example:

Get Log will return Logging data as the below. And we should save this data under json string.

```
[{"index":0,"payload":
[8,94,31,13,199,64,247,192,1,160,134,69,128,35,55,15,98,84,168,77,11,81,193,217,240,198,253,114,169,24,89,4,206,177,175,37,194,4
2,13,86,214,234,237,231,21,25,35,212,238,224,183,198,189,142,217,49,206,129,240,167,183,242,111,213,102,146,120,141,34,165,13,88
,168,77,8,37,55,97,9,192,38,48,166,29,60,153,196,111,41,69,22,111,76,230,139,206,211,117,221,166,167,21,23,61,171,212,102,62,230
,207,186,243,87,187,245,195,248,10,86,214,189,39,46,192,13,165,188,239,122,252,156,31,189,217,120,78,14,159,175,130,253,34,85,23
8,100,123,129,188,113,161,26,204,82,136,241,239,119,13,185,10,98,84,168,77,11,81,193,217,240,198,253,114,169,24,89,4,218,48,0,85
,174,250,206,81,159,27,218,106,47,212,196,29,238,224,183,198,189,142,217,49,206,129,240,167,183,242,111,213,125,109,218,92,45,21
2,78,187,52,250,56,0,106,242,209,210,116,55,221,123,168,169,107,136,119,127,231,182,207,135,239,7,166,179,177,83,31,59,4,232,15,
141,29,85,191,219,97,110,207,234,13,211,240,227,123,14,58,193,138,147,24,227,187,210,233,229,132,109,109,16,163,44,94,235,42,82,
209,73,95,228,2,146,90,245,14,67,235,166,160,187,0,119,200,150,204,11,40,16,103,80,51,71,242,11,213,41,54,209,136,193,115,198,20
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5,207,157,132,235,91,191,119,153,7,106,143,226,72,216,163,36,109,203,32,72,103,46,132,149,150,177,115,28,178,34,174,65,225,135,1
26,131,134,160,214,175,128,112,84,122,126,191,55,252,7,36,160,177,143,29,18,250,245,65,166,61,0,102,27,245,35,222,160,172,75,0,2
11,151,79,40,8,36,201,143,227,40,254,128,67,153,68,120,46,100,219,88,85,152,204,98,21,85,194,71,251,155,55,244,43,96,222,122,3,5
9,250,202,234,215,251,142,184,210,160,116,232,158,39,255,229,222,135,23,229,21,77,17,26,159,254,208,104,38,245,128,95,66,33,152,
224,70,55,142,150,118,88,239,178,20,92,42,235,210,110,42,44,94,246,119,15,11,226,53,145,122,7,153,173,157,182,226,12,105,228,230
,187,69,192,147,145,2,109,69,244,183,240,168,131,139,244,165,49,33,91,20,78,141,220,225,3,17,125,177,230,225,42,139,203,213,139,
222,149,78,34,212,246,97,145,222,10,146,49,195,200,97,65,85,124,70,3,193,90,167,94,241,198,48,67,242,214,244,141,24,58,87,90,20,
29,246,241,170,234,85,200,70,155,168,131,195,190,134,59,193,172,124,138,145,76,175,138,32,205,249,202,170,162,70,211,205,39,146,
9,62,28,233,85,4,233,103,83,247,26,243,100,133,221,145,14,220,20,40,182,44,24,88,169,11,88,38,174,218,25,202,60,99,97,11,134,138
,203,119,134,20,52,167,183,105,58,121,90,162,154,72,86,48,197,153,204,129,55,115,2,82,129,90,174,36,177,249,209,218,147,76,75,67
,255,172,73,166,115,219,46,133,252,210,23,98,3,203,91,229,151,156,176,14,78,226,38,47,169,95,109,204,195,182,65,232,123,88,250,2
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0,28,181,193,216,69,58,222,89,122,174,115,239,212,16,81,173,163,229,215,129,20,189,227,150,129,30,56,211,184,195,150,12,179]},
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198,189,142,217,49,206,129,240,167,183,242,111,213,244,228,119,51,231,236,253,188,251,176,182,189,115,140,127,213,126,218,166,10
1,162,53,174,198,230,83,145,91,13,165,225,74,211,117,221,166,167,21,23,61,171,212,102,62,230,207,186,243,87,187,245,195,248,10,8
6,214,189,39,46,192,13,165,188,239,122,252,156,31,189,217,120,78,14,159,175,130,253,34,85,238,100,123,129,188,113,161,26,204,82,
136,241,239,119,13,185,10,20,222,157,55,96,235,132,226,16,39,105,72,99,14,107,3,218,115,6,189,221,68,221,29,84,89,131,229,207,19
6,184,129,127,122,15,133,3,117,172,231,74,182,174,103,146,111,234,132,223,238,193,145,171,72,188,191,212,243,47,134,133,161,211,
246,61,139,244,95,1,200,0,216,71,172,186,97,213,131,97,183,174,227,179,146,89,227,53,105,97,101,7,50,108,44,172,41,9,113,65,121,
243,130,63,254,47,145,108,10,240,251,34,94,21,131,80,154,124,97,239,6,144,230,67,127,183,220,189,219,231,56,233,13,129,105,65,20
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,253,54,86,219,179,252,139,123,114,206,4,83,197,77,186,49,108,85,75,162,207,234,13,211,240,227,123,14,58,193,138,147,24,227,187,
210,90,60,188,237,189,115,99,165,153,40,16,200,147,61,82,240,156,65,231,115,192,27,228,25,120,242,236,242,174,101,226,22,244,113
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45,183,97,60,0,155,125,16,155,226,238,35,83,29,249,159,8,21,203,178,173,78,66,45,229,140,40,19,143,4,10,236,152,34,7,166,191,55,
252,7,36,160,177,143,29,18,250,245,65,166,61,0,220,17,255,22,170,26,47,149,66,21,87,194,43,15,221,109,14,17,59,208,185,217,89,66
,12,49,95,190,75,17,175,83,146,233,178,10,163,207,242,167,216,100,222,102,142,25,196,79,42,44,94,246,119,15,11,226,53,145,122,7,
153,173,157,182,209,213,179,182,90,138,181,116,30,66,193,177,6,200,84,104,20,222,157,55,96,235,132,226,16,39,105,72,99,14,107,3,
112,178,223,54,4,134,49,46,215,57,178,166,97,168,21,206,238,224,183,198,189,142,217,49,206,129,240,167,183,242,111,213,73,158,22
5,56,234,185,151,225,17,188,33,78,59,123,239,169,206,136,51,72,118,81,40,46,53,185,79,154,185,238,174,114,148,122,201,92,13,241,
118,199,182,251,170,192,132,22,223,123,105,246,167,212,156,182,74,183,74,116,131,248,211,142,208,201,220,87,20,216,172,46,154,57
,109,56,166,219,24,145,58,184,22,34,10,108,142,21,21,41,203,178,31,196,246,75,65,240,91,213,239,26,205,244,71,135,135,65,151,180
,39,153,23,193,53,78,23,130,30,216,75,51,46,102,229,60,7,216,167,216,180,167,61,153,192,81,121,15,91,21,216,122,222,186,138,210,
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9,142,217,49,206,129,240,167,183,242,111,213,147,128,123,242,52,114,96,237,107,95,140,205,8,6,88,12,206,136,51,72,118,81,40,46,5
3,185,79,154,185,238,174,114,235,226,181,255,201,41,178,29,188,251,181,209,168,170,161,102,105,246,167,212,156,182,74,183,74,116
,131,248,211,142,208,201,94,170,56,102,160,154,44,244,110,232,14,86,124,139,156,160,22,34,10,108,142,21,21,41,203,178,31,196,246
,75,65,240,206,217,133,240,19,146,164,89,12,75,82,244,131,225,203,222,53,78,23,130,30,216,75,51,46,102,229,60,7,216,167,216,207,
139,19,27,188,135,59,251,65,123,182,196,128,237,171,133,241,83,168,201,176,53,35,49,146,234,24,86,156,54,173,231,157,130,116,132
,250,124,102,4,124,201,47,113,90,171,114,59,13,243,29,66,136,94,240,48,208,129,71,214,182,116,85,201,152,246,167,125,192,127,128
,75,132,173,41,207,222,137,170,4,114,214,0,170,9,250,114,185,53,46,242,230,200,65,179,153,63,73,15,126,97,41,200,115,238,192,169
,69,59,168,234,92,11,253,6,139,93,92,140,19,117,84,92,217,67,84,210,156,240,167,245,164,50,107,18,151,93,104,118,141,70,12,85,92
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,1,200,0,216,71,172,186,97,213,131,97,183,83,212,57,12,231,249,114,122,187,183,144,146,127,114,136,70,133,178,181,2,103,24,215,8
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3,193,90,167,94,51,115,80,208,82,166,48,22,214,90,225,246,201,123,105,114,146,130,52,220,55,138,234,38,234,132,168,75,210,134,11
3,220,135,98,207,234,235,235,20,176,132,222,11,251,194,33,103,145,154,28,30,62,214,16,75,133,39,171,65,245,189,71,240,153,142,14
9,15,112,3,197,109,169,10,180,236,179,88,41,107,216,174,77,60,214,85,192,232,184,113,200,36,241,241,208,126,138,87,187,245,195,2
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,104,105,52,45,74,2,56,31,113,106,6,234,221,36,252,249,248,101,226,143,237,89,101,153,155,232,56,112,84,225,159,20,10,244,121,16
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199,142,90,32,224,195,227,66,190,17,103,44,172,255,67,63,168,33,5,201,182,82,171,17,55,147,34,182,120,181,32,21,214,76,51,172,43
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,142,217,49,206,129,240,167,183,242,111,213,174,228,25,220,151,52,180,211,12,87,230,239,49,178,244,37,166,149,61,213,116,37,191,
149,120,140,225,133,208,102,46,99,88,193,161,175,44,38,237,11,142,81,163,33,179,59,123,93,178,117,240,225,9,108,218,97,219,114,2
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34,92,11,253,6,139,93,92,140,19,117,84,92,217,67,84,210,156,71,226,111,232,164,15,163,151,72,247,88,157,127,203,184,27,57,88,36,
72,66,50,119,45,50,59,30,8,180,162,164,16,151,60,66,225,48,195,14,65,127,181,3,87,111,130,210,140,61,139,244,95,1,200,0,216,71,1
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157,104,54,130,80,244,129,226,33,147,236,227,193,76,48,179,67,46,7,45,180,252,181,63,9,13,198,4,216,144,61,170,29,34,78,43,49,11
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119,64,192,9,103,95,250,206,215,206,115,156,109,2,60,226,210,1,23]}]
```

16. YMME

16.1. Methods

16.1.1. ymme_init

> **TIP** This function is used to for the first initialization of YMME

```
@input:  none
@output: {Promise<any>}
```

Example:The response of ymme_init is the list of year:

```
{
  "vehinfo": "",
  "field": "Select Year",
  "options": [
    "1996",
    "1997",
    "1998",
    "1999",
    "2000",
    "2001",
    "2002",
    "2003",
    "2004",
    "2005",
    "2006",
    "2007",
    "2008",
    "2009",
    "2010",
    "2011",
    "2012",
    "2013",
    "2014",
    "2015",
    "2016",
    "2017",
    "2018",
    "2019"
  ]
}
```

16.1.2. ymme_get

> **TIP** This function is used to set the id of user selection and get the next ymme list

```
@input:  id of user selection
@output: {Promise<any>}
```

Example:Given the above year list, user selects 2019 we have return if ymme still need to be selected

```
{
  "vehinfo": "2019 ",
  "field": "Select Make",
  "options": [
    "Acura",
    "Alfa Romeo(FCA)",
    "Audi",
    "BMW",
    "Buick",
    "Cadillac",
    "Chevrolet",
    "Chrysler",
    "Daewoo",
    "Dodge",
    "Eagle",
    "Fiat(FCA)",
    "Ford",
    "Geo",
    "GMC",
    "Honda",
    "Hummer",
    "Hyundai",
    "Infiniti",
    "Isuzu",
    "Jaguar",
    "Jeep",
    "Kia",
    "Land Rover",
    "Lexus",
    "Lincoln",
    "Mazda",
    "Mercedes-Benz",
    "Mercury",
    "Mini",
    "Mitsubishi",
    "Nissan",
    "Oldsmobile",
    "Plymouth",
    "Pontiac",
    "Porsche",
    "Ram",
    "Saab",
    "Saturn",
    "Scion",
    "Smart",
    "SRT",
    "Subaru",
    "Suzuki",
    "Toyota",
    "Volkswagen",
    "Volvo",
    "Not Listed"
  ]
}
```

Otherwise, ymme selection is dont, need confirm the response will be

```
{
  "vehinfo": "2019 BMW 2 Series 230i F22 L4, 2.0L (B46) Manual",
  "field": "Done",
  "options": []
}
```

16.1.3. ymme_confirm

TIP This function is used when the response is "Done" and user confirm the current vehicle

```
@input:  none
@output: {Promise<any>}
```

16.1.4. ymme_back

TIP This function is used when user want to reselect the previous options. The return is the same structure as ymme_get and ymme_init

```
@input:  none
@output: {Promise<any>}
```

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