

D-PDU API

Add-on for the Ixxat VCI Driver

INSTALLATION GUIDE

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Important User Information

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1 User Guide

Please read the manual carefully. Make sure you fully understand the manual before using the product.

1.1 Target Audience

This installation guide describes the installation of the D-PDU API Add-on for the Ixxat VCI driver and is intended for software and application developers who are familiar with the D-PDU API, the MVCI concept and the applicable standards of ISO 22900. The contents of the manual must be made available to any person authorized to use or operate the product.

1.2 Related Documents

Document	Author
Installation Guide VCI Driver	HMS

1.3 Document History

Version	Date	Description
1.0	June 2020	First release
1.1	September 2020	Minor corrections

1.4 Trademark Information

Ixxat® is a registered trademark of HMS Industrial Networks. All other trademarks mentioned in this document are the property of their respective holders.

1.5 Conventions

Instructions and results are structured as follows:

- ▶ instruction 1
- ▶ instruction 2
 - result 1
 - result 2

Lists are structured as follows:

- item 1
- item 2

Bold typeface indicates interactive parts such as connectors and switches on the hardware, or menus and buttons in a graphical user interface.

```
This font is used to indicate program code and other
kinds of data input/output such as configuration scripts.
```

This is a cross-reference within this document: [Conventions, p. 5](#)

This is an external link (URL): www.hms-networks.com

Safety advice is structured as follows:



Cause of the hazard!
Consequences of not taking remediate action.
How to avoid the hazard.

Safety signs and signalwords are used dependent on the level of the hazard.



This is additional information which may facilitate installation and/or operation.



This instruction must be followed to avoid a risk of reduced functionality and/or damage to the equipment, or to avoid a network security risk.



Caution

This instruction must be followed to avoid a risk of personal injury.



WARNING

This instruction must be followed to avoid a risk of death or serious injury.

2 Scope of Delivery

The D-PDU API Add-on is delivered as dynamically loadable library in different variants for Microsoft Windows.

Additionally to internal software structures the following is included in the scope of delivery:

- D-PDU API Add-on library *pduapi.dll/pduapi64.dll* (32 and 64 bit DLL for Microsoft Windows)
- Ixxat Diagnostic Connector Selection (*ChannelSelect.exe*) to select the Ixxat CAN hardware interfaces to be used
- *PduapiLicenseRequest.exe* to create a licence request file
- Configuration files RTF, MDF, CDF (standardized D-PDU API configuration files)

3 Software Description

This manual describes the installation of the D-PDU API Add-on for the Ixxat VCI driver. To use an Ixxat interface the Ixxat VCI driver is necessary. With the D-PDU API Add-on for the Ixxat VCI driver Ixxat interfaces can be accessed with the D-PDU API and can be used for vehicle communication according to ISO 22900.

The D-PDU API (Diagnostic Protocol Data Unit Application Programming Interface) is an interface according to ISO 22900-2 for vehicle communication using VCIs (Vehicle Communication Interfaces). Developments according to the ISO 22900 allow to use and combine components of different manufacturers.

3.1 Architecture of Software and Hardware Components

The architecture of the software and hardware components allows to access one Ixxat CAN interface with up to eight CAN channels with the D-PDU API.

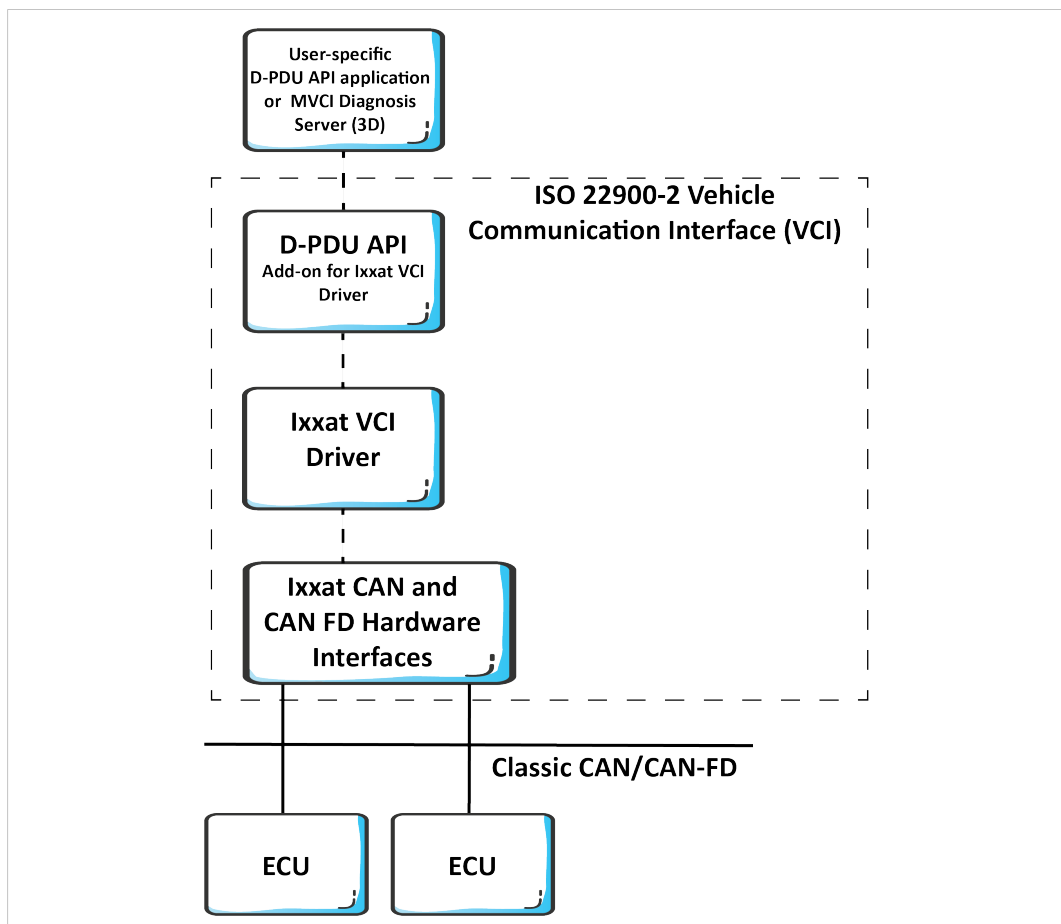


Fig. 1 Architecture of software and hardware components

3.2 Supported CAN Protocols

The Ixxat D-PDU API Add-on supports the following CAN protocols:

- ISO 11898 raw protocol
- UDS protocol
- KWP2000 protocol



CAN J1939 and CAN OBD protocol are available on request.

3.3 Supported Ixxat CAN Interfaces

The following Ixxat interfaces are supported by the D-PDU API Add-on:

- USB-to-CAN FD automotive
- CAN-IB600/PCIe



Further Ixxat PCI and PCIe interfaces as well as further Ixxat USB-to-CAN products are available on request.



FRC-EP 170 and FRC-EP 190 embedded platforms are also supported. To use an FRC-EP with the D-PDU-API contact Ixxat support.

3.4 Cable Description File (CDF)

Included in the D-PDU API Add-on package is a cable description file (CDF) that is automatically installed when installing the D-PDU API Add-on package.

In the CDF the CAN connectors of the configured VCI (Vehicle Communication Interface) are defined.

Pin Allocation Defined in CDF		
CAN	High	Low
CAN 1	1	65
CAN 2	2	66
CAN 3	3	67
CAN 4	4	68
CAN 5	5	69
CAN 6	6	70
CAN 7	7	71
CAN 8	8	72

4 Installation

4.1 Requirements

4.1.1 System

The following features are needed on the target platform to install and use the HMS D-PDU API Add-on:

- Windows 10
- .NET framework 4.6.1 or newer
- Ixxat VCI driver V4.0.875.0 or newer

4.1.2 License

For the D-PDU API a license is mandatory.

To purchase the license the following steps are necessary:

- Order the D-PDU API from HMS.
- Download and install the software package from www.ixxat.com (see *Installing the Driver and the D-PDU API, p. 9*).
- Create a license request file and send the file to HMS (see *Licensing the D-PDU API, p. 9*).
- License the D-PDU API with the license file received from HMS (see *Licensing the D-PDU API, p. 9*).

4.2 Installing the Driver and the D-PDU API

- ▶ Download and install the Ixxat VCI driver from www.ixxat.com (see Installation Guide *VCI Driver* for more information).
- ▶ Download and install the D-PDU API Add-on for the Ixxat VCI setup from www.ixxat.com.
- ▶ Follow the instructions of the installation program.
 - By default the package is stored in `c:\Program files\HMS\Ixxat VCI Add-on D-PDU API`.
- ▶ To be able to use the D-PDU API, license the D-PDU API (see *Licensing the D-PDU API, p. 9*).

4.3 Licensing the D-PDU API

For the D-PDU API a license is mandatory. The license file is valid for one PC. Only on the licensed PC the D-PDU API can be executed.

- ▶ Make sure, that the Ixxat VCI driver and the D-PDU API Add-on for the Ixxat VCI are installed (see *Installing the Driver and the D-PDU API, p. 9*).
- ▶ In the D-PDU API installation directory right-click on *PduapiLicenseRequest.exe* and select **Run with administrator rights**.
 - Command line is opened.
 - The program creates an **.lrq* file in the same directory.



If the program is run without administrator rights, the creation of the license file fails without an error message.

- ▶ To request a license file, e-mail the license request file **.lrg* to *automotive_sales@hms-networks.de* with the order number (see invoice) as subject.
 - HMS provides an offer for a D-PDU API license file.
 - After purchase HMS provides the license file.
- ▶ Store the license file in the same folder like *PduapiLicenseRequest.exe* and the *pduapi.dll* (with administrator rights).



Do not change the name of the D-PDU API license file.

- ▶ Activate the D-PDU API (see [Activating the D-PDU API, p. 10](#)).

4.4 Activating the D-PDU API

- ▶ Make sure, that the Ixxat VCI driver and the Ixxat VCI Add-on D-PDU API setup are installed (see [Installing the Driver and the D-PDU API, p. 9](#)).
- ▶ Make sure, that the D-PDU API is licensed (see [Licensing the D-PDU API, p. 9](#)).
- ▶ Connect the Ixxat CAN interface to be used (see [Supported Ixxat CAN Interfaces, p. 8](#)).
- ▶ In Windows start menu start **Ixxat Diagnostic Connector Selection**.
 - **Diagnostic Connector Selection** is opened.

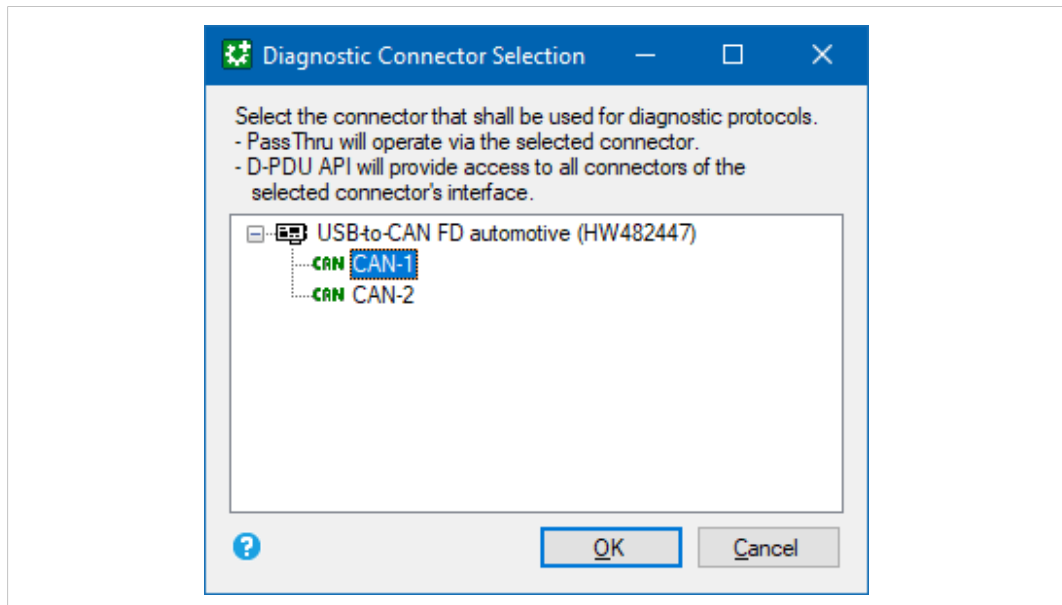


Fig. 2 Diagnostic Connector Selection

- ▶ Select the CAN interface to be used by the D-PDU API (e.g. CAN-1 for using the test application) and click button **OK**.
- ▶ To verify if the D-PDU API is successfully installed, execute the test application (see [Test Application, p. 11](#)).

5 Test Application

With the test application and the Ixxat canAnalyser3 Mini the installation of the D-PDU API can be checked.

- ▶ Make sure, that the Ixxat VCI driver and the Ixxat VCI Add-on D-PDU API setup are installed (see [Installing the Driver and the D-PDU API, p. 9](#)).
- ▶ Make sure, that the D-PDU API is licensed (see [Licensing the D-PDU API, p. 9](#)) and activated (see [Activating the D-PDU API, p. 10](#)).
- ▶ Connect a supported Ixxat CAN interface with two CAN channels (see [Supported Ixxat CAN Interfaces, p. 8](#)).
- ▶ Bridge CAN1 and CAN2 with one bus termination on each end.
- ▶ In Windows start menu start **Ixxat Diagnostic Connector Selection**.
 - **Diagnostic Connector Selection** is opened.

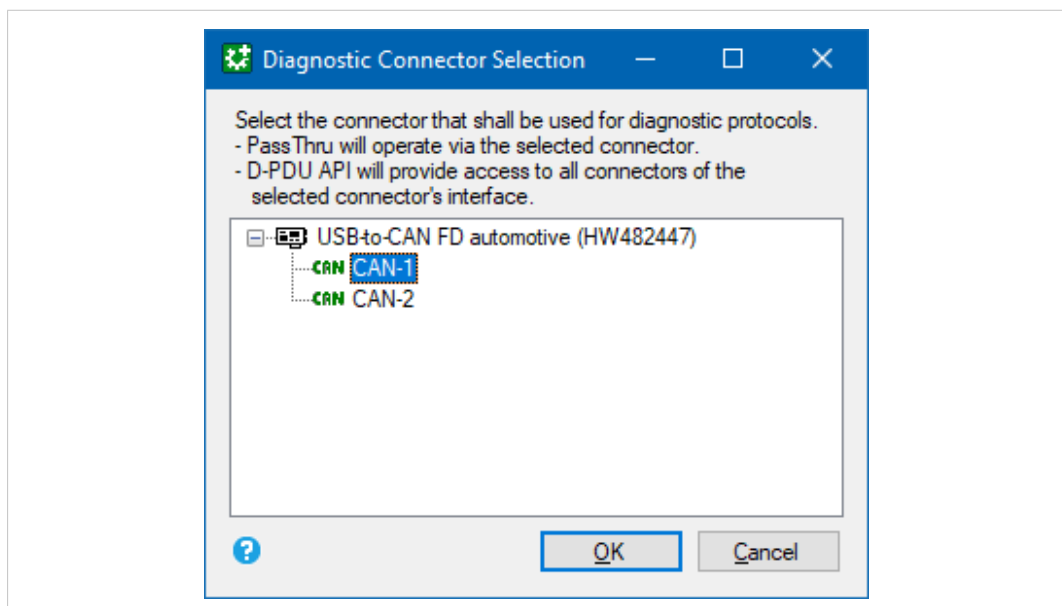


Fig. 3 Diagnostic Connector Selection

- ▶ Select the CAN interface CAN-1 and click button **OK**.
- ▶ Start the Ixxat canAnalyser3 Mini (included in the Ixxat VCI driver installation).

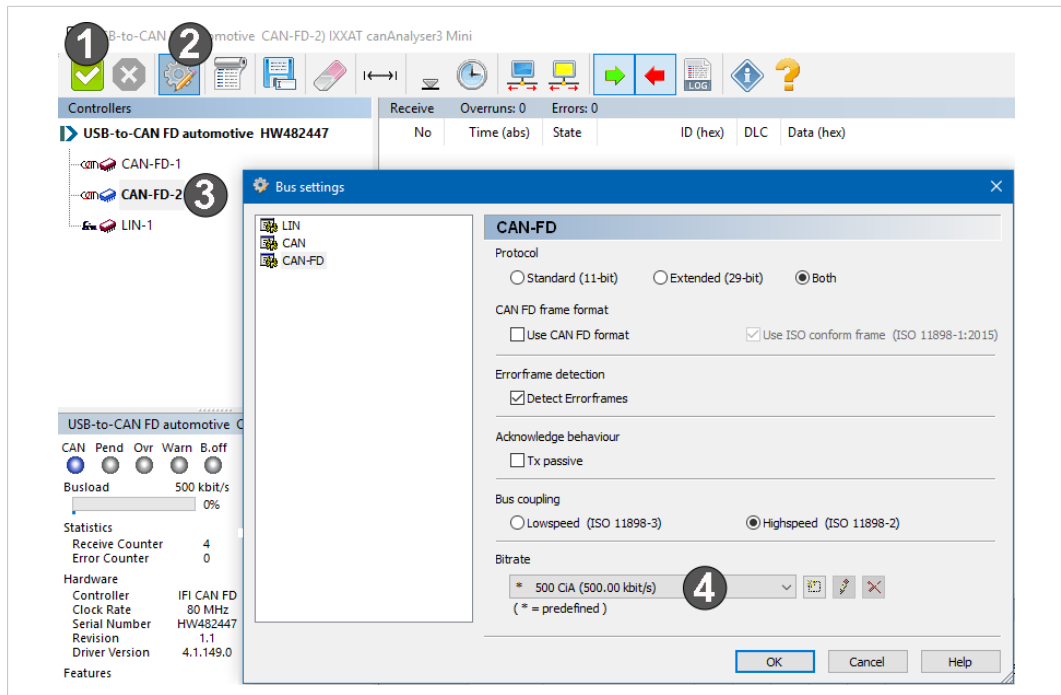


Fig. 4 Ixxat canAnalyser3 Mini with connected USB-to-CAN FD automotive

- ▶ Double-click on CAN-FD-2 (3).
 - Icon for CAN-FD-2 changes to blue.
- ▶ If icon for CAN-FD-2 is blue, select CAN-FD-2 (3) and click button **Bus settings** (2).
- ▶ Select the bitrate 500 CiA (4).
- ▶ Click button (1), to start the canAnalyser communication.
- ▶ Go to folder *Program Files\HMS\Ixxat VCI Add-on D-PDU API\D-PDU* and call the *DPduDemo.exe*.
 - Output of *DpduDemo.exe*:

```
1: MVCIFriendlyName='USB2CANFD'
VendorName='HMS Technology Center Ravensburg GmbH'
Interface='tcp:127.0.0.1:5116[1]'
BoardId='482447',
HardwareType='USB2CANFD'
FirmwareVersion='4.1.149.0'
IPAddress='127.0.0.1'
Port='5116'
ConnectionType='Unknown'
SerialNumber='482447'
HwGenerationType='VCI5 compatible'
HwInterfaceId='1'
```

- ▶ To select the module, type 1.
 - Output of *DpduDemo.exe*:

```
-> Status event 0x00008011 for CoP 5
-> Status event 0x00008012 for CoP 5
-> Completed CoP 5
-> Status event 0x00008011 for CoP 6
-> Error event for CoP 6: ErrorCodeId is 0x00000103,
    ExtraErrorInfoId is 0x00030103
-> Status event 0x00008012 for CoP 6
-> Completed CoP 6
```



The error message **Error event for CoP6...** indicates that the program expects a response message that is not generated. This does not affect the installation check.

- ▶ Check the receive messages in the canAnalyser3 Mini.
 - If the following messages are shown, the installation is ok.

The screenshot shows the canAnalyser3 Mini software interface. The title bar reads "(USB-to-CAN FD automotive CAN-FD-2) IXXAT canAnalyser3 Mini". The interface includes a toolbar with various icons for control and logging. On the left, a "Controllers" tree shows "USB-to-CAN FD automotive HW482447" expanded, with sub-items "CAN-FD-1", "CAN-FD-2", and "LIN-1". The main area displays a table of received messages with the following data:

Receive	Overruns: 0	Errors: 0					
No	Time (abs)	State	ID (hex)	DLC	Data (hex)	ASCII	
1	00:00:11.695		7DF	8	02 3E 80 55 55 55 55 55	..UUUUU	
2	00:00:11.698		7E0	8	02 10 01 55 55 55 55 55	...UUUUU	
3	00:00:12.695		7DF	8	02 3E 80 55 55 55 55 55	..UUUUU	
4	00:00:13.696		7DF	8	02 3E 80 55 55 55 55 55	..UUUUU	

Fig. 5 canAnalyser receive messages

