

# User Guide

## *ReXgen1 - Manual*





## ABOUT THIS MANUAL

This document provides a brief idea of the usage, safety precautions, installation procedures and operation of the Influx ReXgen1. This document is intended for professional engineers and academic researchers, allowing them to understand the concept of operating the device and integrate this knowledge into systems with components of other manufacturers.

## DISCLAIMER

Translation of the original Product Manual ReXgen1.

Version	Date	Remarks
1.0	26-10-2022	First official version

*Table 1: Version Details*

## COPYRIGHT & LICENSE AGREEMENT

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## CONTACT ADDRESS

### **Influx Technology Ltd**

Office 22, Building 03, Millbrook Proving Ground

Bedford, MK45 2JQ, United Kingdom

Telephone: +44 (0) 1525 842504,

Sales: [sales@influxtechnology.com](mailto:sales@influxtechnology.com)

Support: [support@influxtechnology.com](mailto:support@influxtechnology.com)

[www.influxtechnology.com](http://www.influxtechnology.com)



## SAFETY INSTRUCTIONS

- Ensure that the device is installed, connected, and commissioned by a qualified professional following all safety norms.
- Disconnect the device completely before handling it and disconnect any independently supplied output load circuits.
- Do not connect the housing to the Ground externally. This will suspend the reverse voltage protection of the power supply. Applying a reverse voltage, in this case, will destroy the supply circuits.
- Provide all the device connectors with plugs and any protection caps required to ensure protection class IP65.
- Never immerse the device in water or other liquids.
- The manufacturer must only repair the device.
- Keep substances that contain solvents away from the type label.

The following formatting and symbols will help you recognise the purpose of each paragraph:

**WARNING** ⚠

Severe injury or death. Probability: Possible

**CAUTION** ⚠

Slight or medium injury. Probability: Possible

**ATTENTION!** ⚠

Property damage

Notes

- Important usage instructions/notes/limits.



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## 1. OVERVIEW OF THE DEVICE

This chapter overviews the ReXgen1 device and explains its operating procedures, functions, and intended use in detail.

**RE**liable **X**GEN<sup>eration</sup>  
ne**X**t  
data computing



Along with the free, user-friendly configuration software, the standalone ReXgen1 pass-thru device and logger comes with the following advantages:

- Supports 1xCAN bus.
- Functions as an interface device and supports J2534 (Pass-thru).
- Supports live CAN monitoring RAW CAN signals, SAE J1939.
- Secure data storage with an 8 GB internal eMMC.
- Sleep modes with wake-up on CAN, with low power consumption.
- Encrypts data logs using Advanced Encryption Standard (AES).
- Enables Locking of the device using RSA data security.
- Open Libraries for logger management and data conversion.
- XML-based configuration, Schema provided.
- Supported Data formats ASAM MDF4, MATLAB (.mat), CSV, ASC, BLF, TRC\*.
- Advanced trigger & filter conditions.
- Advanced CAN-Bit timing configuration.
- x1 LEDs indication to show the status of logging.
- Tolerable to harsh environments with an IP65 rating.
- Easy mounting.



- Free powerful graphic interface application tool ReXdesk provided.
- Micro USB 2.0 PC interface.
- CAN error logging.
- An extreme level of compactness – pocket size.

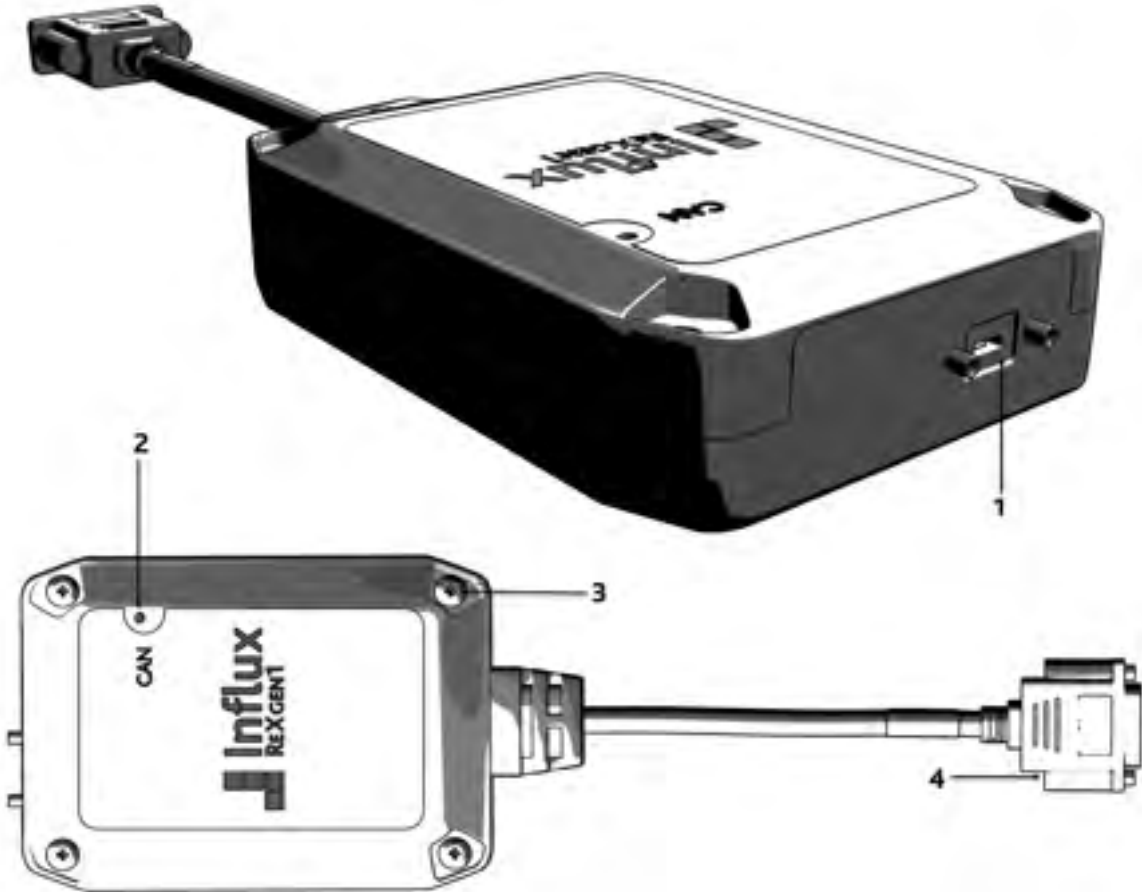
## Available Models

Model	eMMC Storage	CAN
INF2109	8 GB	1



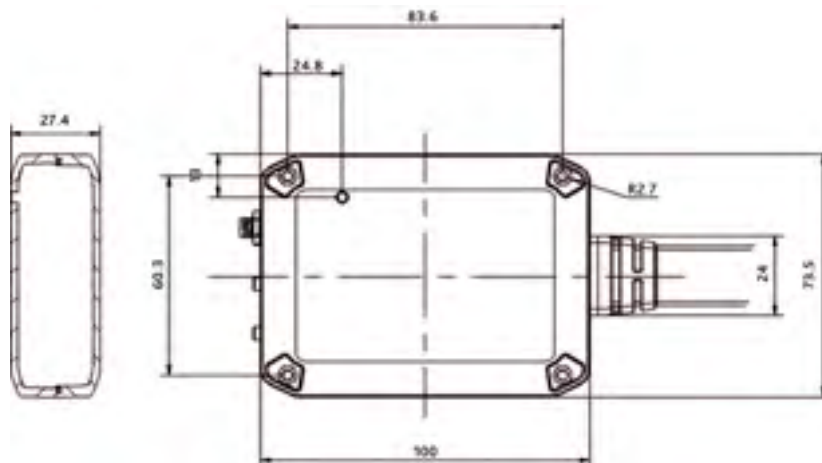
# 1.1 GENERAL INFORMATION

## 1.1.1 DEVICE ELEMENTS



1 – Micro USB connector.	3 – Mounting Holes.
2 – CAN LED.	4 – Channel Connector.

## 1.1.2 PRODUCT DRAWINGS





### 1.1.3 TECHNICAL SPECIFICATION

Functions	ReXgen 1
CAN Interfaces	1 x CAN ISO 11898-1: Compliant with CAN (up to 1 Mbit/s) Conforms to CAN protocol version 2.0 – part A, B Max 20000 mps Meets the requirements of ISO 11898-2:2016 & ISO 11898-5:2007 physical layer standards
PC Interfaces	Rugged Micro USB 2.0 (Datalogger mode and J2534)
Data Storage Capability	8 GB Inbuilt eMMC storage
Supported Protocols	CAN Monitoring (RAW CAN signals, SAE J1939 support)
LEDs	1
Triggering	Trigger on a CAN ID Trigger on Parameter Value Trigger on DM1 J1939 counter.
Data Storage Format	FAT32, Log files accessible via ReXdesk Software and API
File Format Supported	ASAM MDF (.mf4), CSV, MATLAB, ASC, BLF
Data Logger Configuration	Supplied with Influx ReXdesk configuration software, XML based

### 1.1.4 ELECTRICAL DATA

BUS & Signals	Operating Voltage
Power supply - OBD	+4.5 to +31V
Power supply - USB	+4.5 to +5.5V

Function	Description
Transceiver Protection	Bus fault protection: $\pm 58$ V Thermal-shutdown protection (TSD) Under-voltage protection
Enclosure	PC+ ABS
IP Rating	IP65
Dimension	L - 100 mm, W - 73.5 mm, H - 27.4 mm
Weight	164 Grams
Mounting Holes	Four mounting holes and screws
Environmental Tolerance	<b>Working temperature</b> -40degC to +85degC; <b>Humidity</b> max 90%
Power Saving	Wake Up On CAN, Power Down Mode, Sleep Modes
Power Consumption	Normal Operation: 87 mA at 12 V Power Down Mode: <2 mA





## 1.1.5 INTENDED USE

The ReXgen1 is one of the most compact, pocket-sized pass-thru devices, which is also a data logger suitable for automotive and various industrial applications.

The device is designed to:

- Support J2534 (Pass-thru).
- Logs data continuously for hours from a CAN bus.
- Saves your data to the embedded SD memory card.

ReXgen1 device tolerates all harsh environments that require IP65 class protection. It can be easily mounted and integrated with your vehicle /machine.

## 1.1.6 LIABILITY & WARRANTY

Influx Technology assumes no liability for damages caused by normal wear, installation errors, or operating or maintenance faults. This is also applicable when the user modifies the devices, any accessories, or the Software without the prior approval of Influx Technology.

## 1.1.7 CONFORMITY

For detailed information on the respective tests, see Chapter Certifications.

The device meets the following standards and legal requirements:

## 1.2 DEVICE KIT

### 1.2.1 HARDWARE

Packaging will contain the following components:

#### INF 2109

- 1x ReXgen1
- 1x Micro USB Cable

### 1.2.2 SOFTWARE

ReXgen1 device will be supplied with a freely distributed configuration and data retrieval software, ReXdesk. The Software can be downloaded from our website, [www.influxtechnology.com](http://www.influxtechnology.com).

## 1.3 SERVICE & SUPPORT

Please visit the support section on our website <https://www.influxtechnology.com/support>

The latest versions of the drivers, Software, firmware, and documentation are available.



## 2. HARDWARE & FUNCTIONALITY

This chapter will provide information on the device's functionality and hardware.

### 2.1 FUNCTIONS

FUNCTION	ReXgen1
CAN Logging	Yes
J2534 Pass-Thru	Yes

Table 1: Device Functions

#### 2.1.1 RECORDING CAN DATA

The device can effectively field log data on tests and a bench via the 1xCAN interface. The device supports all standard CAN baud rates. ReXdesk software allows users to configure ReXgen1 with custom baud rates and modify advanced bit timings. ReXdesk also allows the user to configure ReXgen1 with CAN & J1939 filters. All logged data is saved to the secure embedded memory. The user can configure triggers based on CAN IDs, parameter values & J1939 DM1 messages to start or stop logging.

#### 2.1.2 Functioning as a PASS-THRU device using J2534:

ReXgen1 is designed to function not just as a data logging device but also as a capable pass-thru device. The communication protocols supported by ReXgen1 as a J2534 tool are; ISO14229, ISO14230, CAN (ISO11898), ISO15765, and J1939.

It allows the users to connect to the vehicle CAN Bus using the Pass-Thru API (Application Program Interface), enabling you to create programs that accomplish your vehicle communication needs. The pass-thru feature is already supported by Influx Module Analyser, SavvyCAN and K-Cal Software.

## 2.2 HARDWARE

### 2.2.1 INSTALLATION

The contents below specify the conditions to be ensured for the operation of ReXgen1.

#### GROUNDING

Since it is not required to provide a common ground between nodes, it is possible to have ground offsets between nodes. Each node may observe different single-ended bus voltages (common mode bus voltages) while maintaining the same differential voltage. Operating a CAN system with large ground offsets can increase electromagnetic emissions. If the system is sensitive to emissions, steps must be taken to eliminate ground offsets.



**TERMINATION**

ISO-11898 requires that the CAN bus have a nominal characteristic line impedance of 120Ω. Therefore, the typical terminating resistor value for each end of the bus is 120Ω. Bus termination is used to minimize signal reflection on the bus.

**SUPPLY VOLTAGE**

It is always recommended to keep the nominal voltage within the specified rate. The device also has internal protection against low energy voltage events due to supply wire noise.

**ISOLATION**

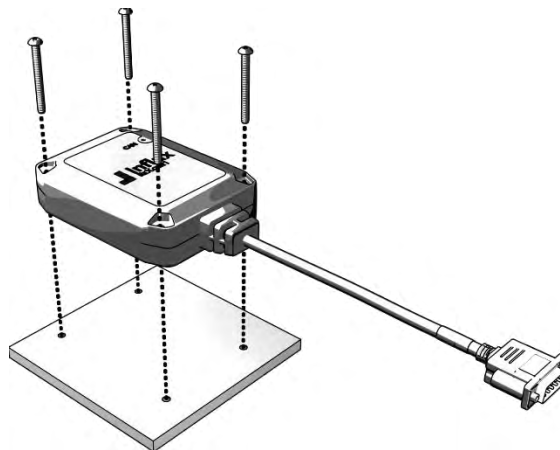
CAN Bus and USB are not isolated; care must be taken when plugging the USB into the device. Removing the power supply when the device is interfaced to a PC via a Micro USB cable is advised.

**Notes**

- The CAN Bus and USB Isolators can be purchased separately.

**MOUNTING**

Always mount the device in a way that minimises vibration exposure and accounts for the IP rating of the device. ReXgen1 is supplied with four screws to assist you with the mounting process.




**2.2.2 ENCLOSURE**

**WARNING** ⚠

The device is not intended for use without the enclosure.

**2.2.3 LED**

	LED 1	Amber	CAN Logging status
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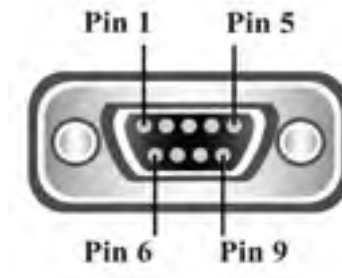


## 2.2.4 CABLES

ReXgen1 comes with an integrated cable with a 9-pin D-Type connector.

### 2.2.4.1 CONNECTOR PIN DETAILS

There is one 9-pin Standard D-Type connector.



#### Connector

PIN No DB9 (Male with Nuts)	PIN Function PWR/CAN0/Digital/LIN
Pin 1	NC
Pin 2	CAN - Low
Pin 3	GND
Pin 4	NC
Pin 5	Power GND
Pin 6	NC
Pin 7	CAN - High
Pin 9	Power Supply 5-31V

#### Notes

- Connector needs to be tightened properly to make a proper connection, ensuring reliable operation.
- Each end of the CAN bus must be terminated with a 120 Ohm resistor across CAN H & CAN L.
- Do not short circuit any pins.

## 2.2.5 ACCESSORIES

Accessory	Part Number	Description
CAN Isolator	INF4313	External isolator for the CAN Bus.
USB Isolator	INF4311	External isolator for the USB.
CAN Terminator	INF4310	120 Ohms D Sub 9 CAN Terminator.
OBD II TYPE-B Cable to 9-way D-Sub	INF4103	Cable for connecting to vehicle OBD port.
Multipower supply & CAN cable	INF4206	This cable uses the vehicle's auxiliary power outlet or banana plugs (battery) for the power supply.



## 3. GETTING STARTED

### 3.1 CONNECTING THE DEVICE

#### ATTENTION!

- A qualified technician must install, connect, and commission the device.
- Ensure the power supply is disconnected before connecting the device.
- Only use components from the starter kits, or the accessories supplied.

#### 3.1.1 POWER

Power supply to the product is given using the male, 9-pin standard D-type connector.

##### Notes

- Connector needs to be tightened properly to make a proper connection, ensuring reliable operation.
- Do not short circuit any pins.
- Maximum safe applied voltage is +34V

#### 3.1.2 CAN

ReXgen1 can be interfaced to the CAN bus from which data is to be logged using D-Sub 9. The CAN-high and CAN-low from the vehicle or machine terminals must match the CAN-high and CAN-low terminal of the ReXgen1. ReXgen1 should be configured with the same baud rate as the device to which it is interfaced.

##### Notes

- Connector needs to be tightened properly to make a proper connection, ensuring reliable operation.
- Each end of the CAN bus must be terminated with a 120 Ohm resistor across CAN H & CAN L.
- Do not short circuit any pins.
- Maximum safe applied voltage is +28V.
- CAN bus is not isolated by default; isolating device can be purchased separately.

#### 3.1.3 USB

USB can be used to interface and power the device as a PASS-THRU device. It will configure the device for data retrieval when used as a data logger.



## 3.2 SOFTWARE INSTALLATION

Download the latest version of our ReXdesk Software from the Influx Technology website.

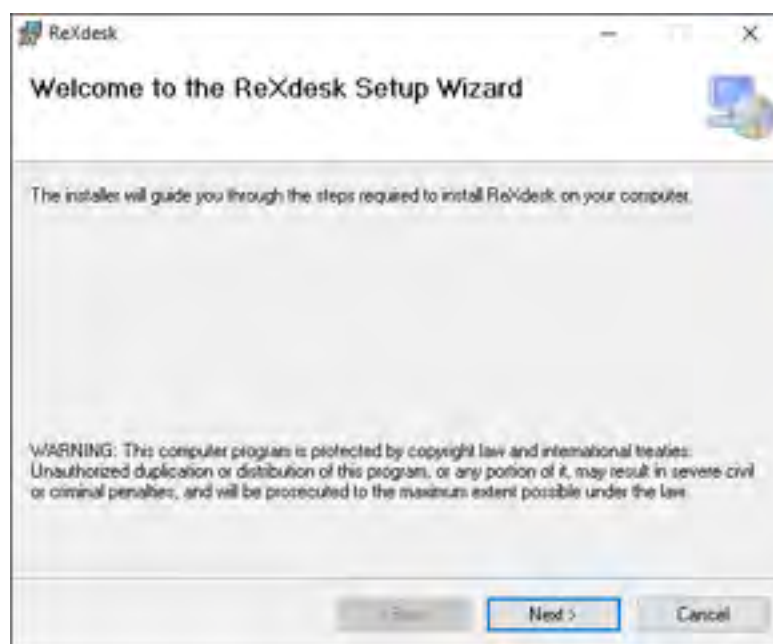
### Notes

- Before proceeding with the installation, please ensure that you have acquired administrative privileges.

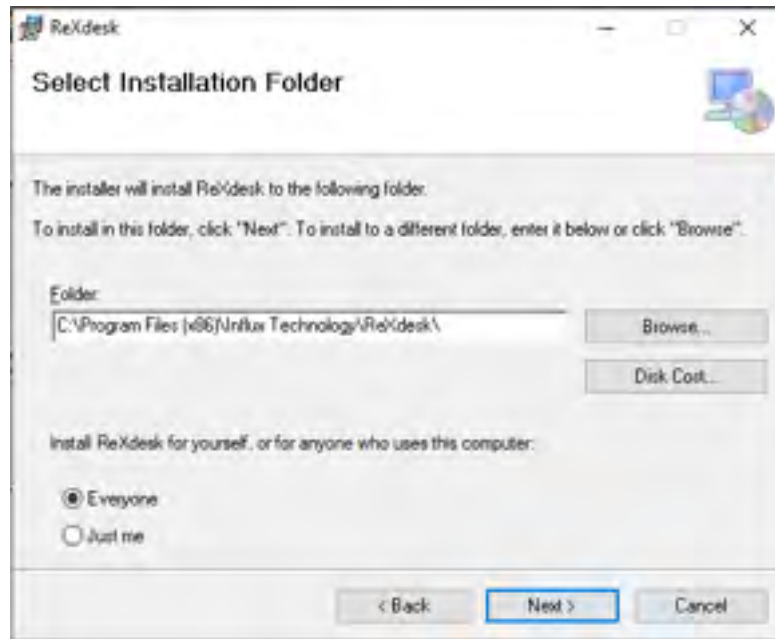
Make sure you have installed the Microsoft Visual C++ Redistributable. You can download it from the following link:

<https://www.microsoft.com/en-us/download/details.aspx?id=48145>

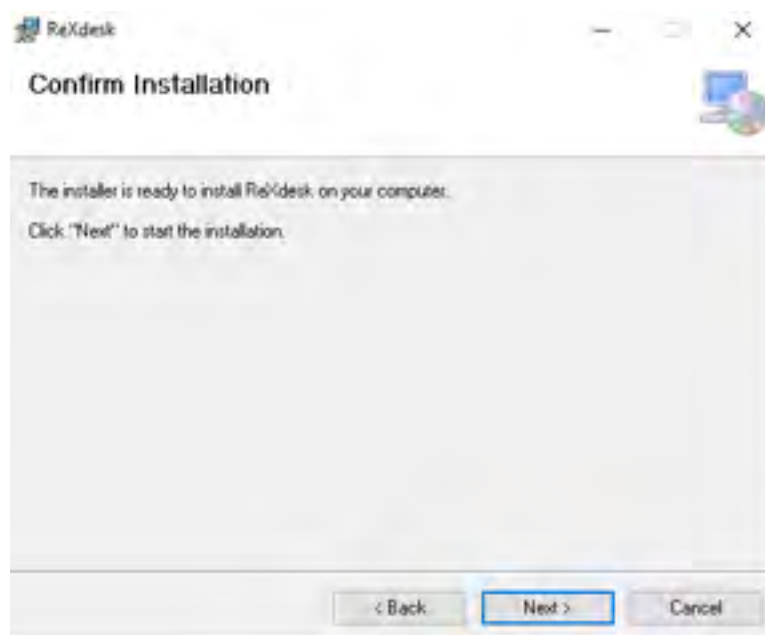
To begin the installation of the ReXdesk Software, open the installer by running the set-up file.



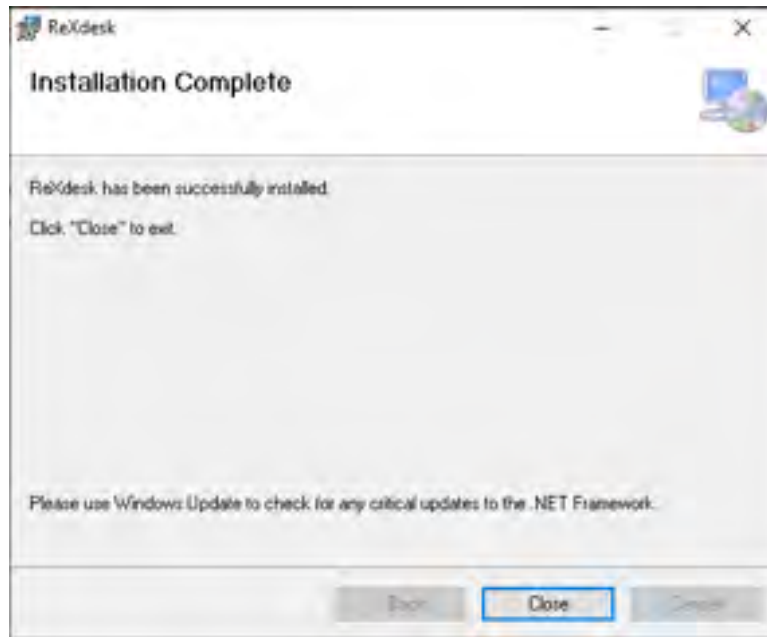
- To continue with the installation of ReXdesk on your system, click 'Next'.
- To cancel the installation at this stage, click 'Cancel' (No software will have been installed on the system at this point).



- Select the folder where you wish to install the Software; it is preferred to use the default location.
- Select the preference for computer user installation to determine which computer users will have access to the ReXdesk Software.
- Click 'Next' to continue with the installation



- To continue with the installation of ReXdesk on your system, click 'Next'.



- Once the installation is complete, this window will appear.
- Click 'Close' to close the window. ReXdesk is now successfully installed on your system.

### 3.3 DRIVER INSTALLATION

#### Notes

- Before proceeding with the installation, please ensure that you have acquired administrative privileges.

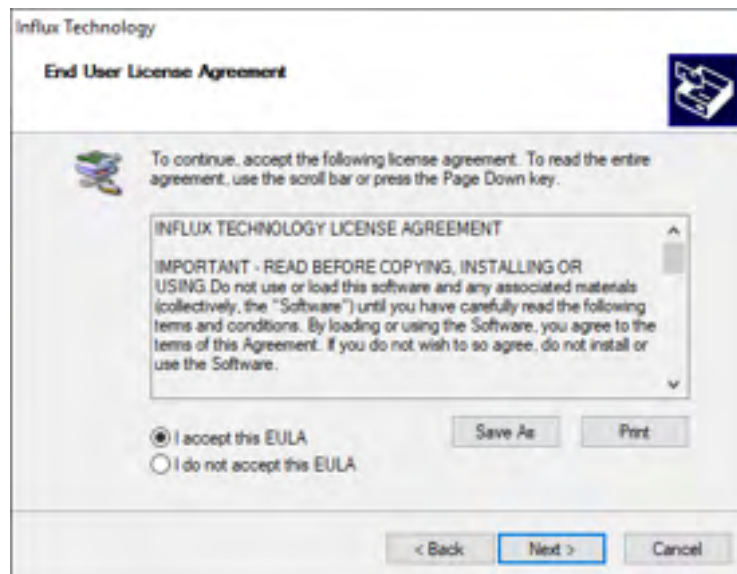
To install the ReXgen1 driver, locate the ReXgen1 Driversinstaller from the start menu. Run the ReXgenInstaller.exe file.







- Click 'Next' to continue installing the ReXgen1 device driver on your system.
- To cancel the installation at this stage, click 'Cancel' (No software will have been installed on the system at this point).



- Please read the license agreement carefully.
- Once you understand and accept the license agreement, please click 'I accept this EULA' to continue installing the driver. If you do not accept the terms, please click 'Cancel' to stop the installation at this point.
- Click 'Next' to continue with the installation process.

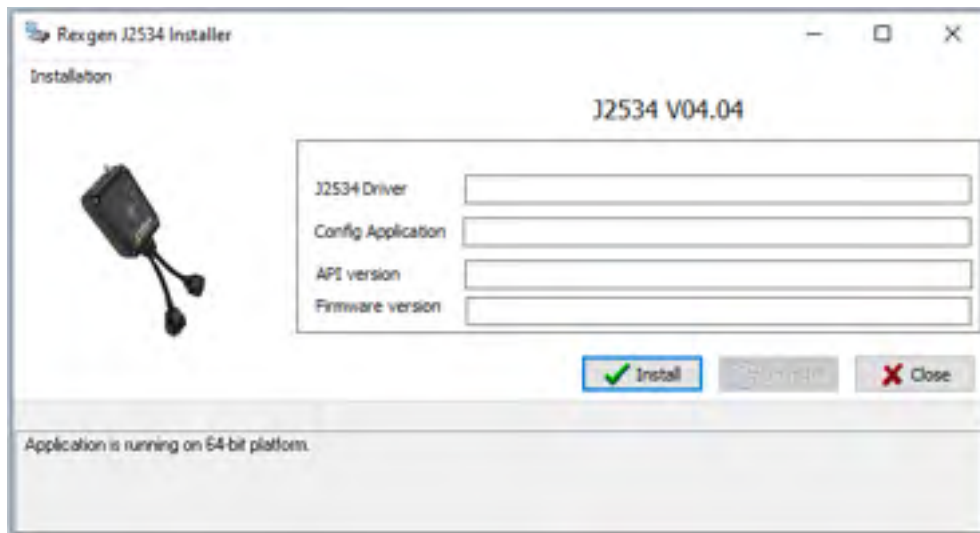


- Once the installation is complete, this window will appear.
- Click 'Finish' to close the window. The ReXgen1 driver is now successfully installed on your system.



## 3.4 ReXgen1 as a J2534 tool

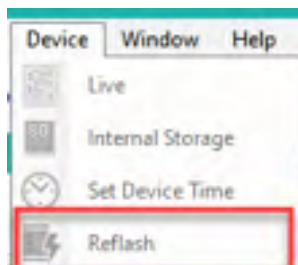
- [Download the J2534 driver](#) and execute the file.
- Download the [ReXgen J2534 driver installation guide](#)
- Click 'Install.'



After successful installation, Windows Registry should contain J2534 ReXgen properties.

## 3.5 FIRMWARE UPDATE

All newly released firmware updates will be available on [www.influxtechnology.com](http://www.influxtechnology.com)



Firmware can be updated using the Reflash option in the ReXdesk Software.  
Latest firmware for ReXgen 1 can be located here:

C:\Program Files (x86)\Influx Technology\ReXdesk\Firmware

Choose the file with prefix firmware606\_xx\_xx.bin

### Notes

- While re-flashing, the LEDs on the device will flash alternatively, do not disconnect or change the power source of the device during this process.
- The device will disconnect from the PC while it is re-flashing. It will automatically reconnect once re-flashing is completed.

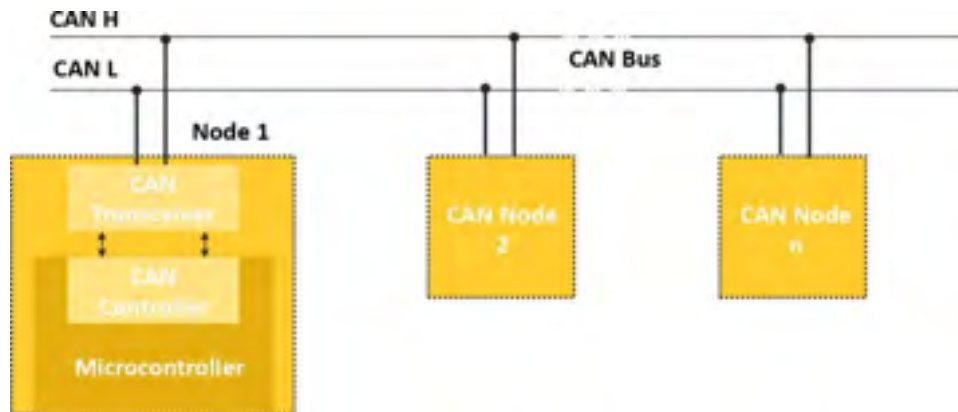


## 4 ANNEXURES

This chapter contains technical data and certificates.

### 4.1 CAN OVERVIEW

CAN stands for "Controller Area Network" and is defined in the ISO 11898 specification.



The Controller Area Network (CAN, also known as CAN Bus) is a vehicle bus standard designed to allow electronic control units and devices to communicate in applications without a host computer. As an alternative to conventional multi-wire looms, the CAN Bus allows various electronic components (such as electronic control units, micro-controllers, devices, sensors, actuators and other electronic components throughout the vehicle) to communicate on a single or dual-wire network data bus up to 1 Mbit/s.

#### CAN BUS COMPONENTS

**CAN Controller** receives the transfer data from the microcomputer integrated into the control unit/device (also known as CAN Node). The CAN controller processes this data and relays it to the CAN transceiver. Also, the CAN controller receives data from the CAN transceiver, processes it and relays it to the microcomputer integrated into the control unit/device (CAN Node).

**CAN Transceiver** is a transmitter and receiver in one. It converts the CAN controller's data into electrical signals and sends this data over the data bus lines. Also, it receives data and converts this data for the CAN controller.

**CAN Data Bus Termination** is a resistor (R) typically 120 ohms. It prevents data sent from being reflected at the ends and returning as an echo and ensures that the bus gets correct DC levels.

#### MAXIMUM BUS SPEED & CABLE LENGTH

The CAN bus uses inexpensive twisted-pair wires to send data. All the nodes are connected to the same line (bus) with small branch lines. The signals on the two CAN lines have the same data sequence, but their amplitudes are opposite. So, if a pulse on the CAN-H line goes from 2.5V to 3.75V, then the corresponding pulse on the CAN-L line goes from 2.5V to 1.25V (opposite to CAN-H).

According to the standard, the maximum speed of a CAN bus is 1 Mbit/second. At a speed of 1



Mbit/s, a maximum cable length of about 40 meters (130 ft.) can be used. This is because the arbitration scheme requires that the wavefront of the signal can propagate to the most remote node and back again before the bit is sampled.

- The maximum speed achievable is 1Mbps.
- The maximum length achievable is 500 meters at a lower speed of 125 Kbps.
- The bus should be terminated at both ends with 120-ohm resistance.
- Removal of one node will not affect the communication in the bus.

CAN Baudrate	Maximum Length	Bus
1 Mbits/s	25 m	
500 kbit/s	100 m	
250 kbit/s	250 m	
125 kbit/s	500 m	

## **Influx Technology Headquarters**

Office Suite 22,  
Building 03 Millbrook Proving Ground,  
Station Lane Millbrook  
Bedford  
MK45 2JQ

Telephone: +44 (0) 1525 842504  
Sales: sales@influxtechnology.com

## **Influx Big Data Solutions Pvt Ltd**

3358E,  
13th Main Rd,  
HAL 2nd Stage,  
Doopanahalli,  
Indiranagar,  
Bengaluru, 560008  
India

Phone: +91 8043781599  
Sales: sales\_india@influxtechnology.com

## **Influx Technology Asia**

Rm.722,  
Flr.7,  
Lisheng Tower,  
Wangfujing Street 201,  
Dongcheng District,  
Beijing,  
100005,  
China

Telephone: 86-10-5718-1640  
Email: info@influxasia.com