ReXgen 1- Product Manual

The ReXgen1 manual provides information on the usage, safety precautions, installation procedures, and operation.

ABOUT THE MANUAL

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 ReXgen 1.

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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 label
- Do not use the logger's USB port for data logging purposes, as it may result in damaging the USB port, and this won't be covered under the warranty

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

Notes: Important usage instructions/notes/limits.

Attention: Property damage

⚠ **Warning:** Severe injury or death. Probability: Possible

Overview of the Device

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

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

- Supports 1xCAN bus.
- Functions as an interface device and supports J2534 (Pass-thru).
- It supports live CAN trace monitoring of RAW CAN signals, SAE J1939.
- Secure data storage with an 8 GB internal eMMC.
- Sleep modes with wake-up on CAN and low power consumption.

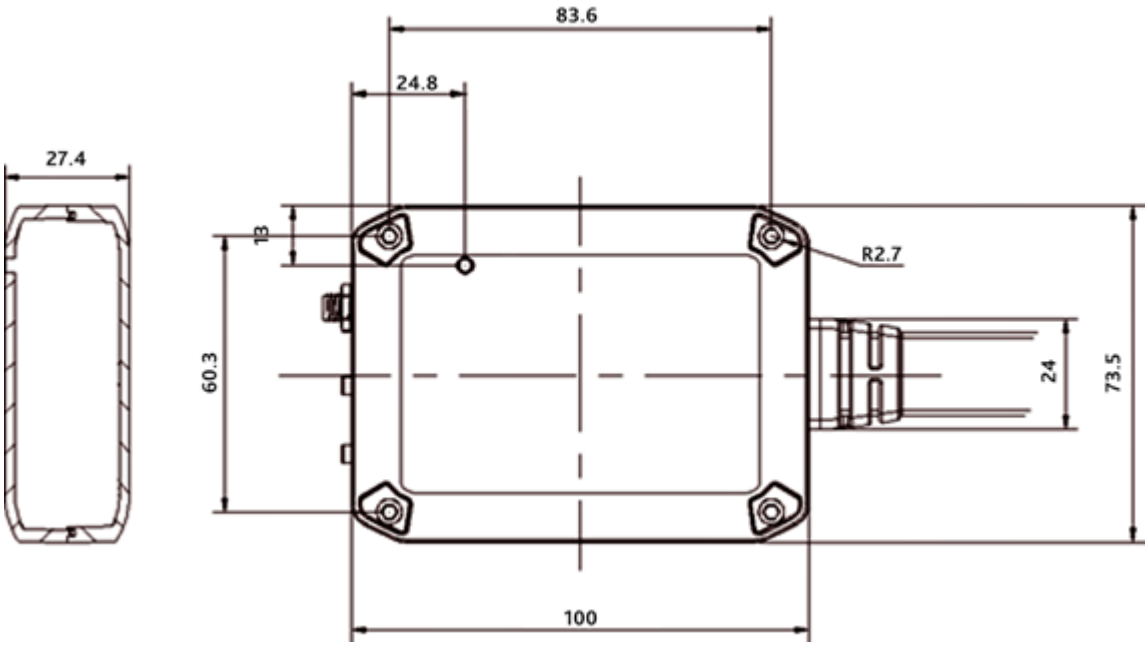
- Encrypts data logs using Advanced Encryption Standard (AES).
- Enables device lock using RSA data security.
- Open Libraries for logger management and data conversion.
- XML-based configuration, Schema provided.
- Supported data formats such as ASAM MDF4, MATLAB (.mat), CSV, ASC, BLF, and TRC*.
- Advanced trigger & filter conditions.
- Advanced CAN-Bit timing configuration.
- x1 LEDs indicate the status of logging.
- Tolerable to harsh environments with an IP65 rating.
- Easy mounting.
- A free powerful graphic interface application tool called ReXdesk is provided.
- Micro USB 2.0 PC interface.
- CAN error logging.
- An extreme level of compactness – pocket size.

Available Models

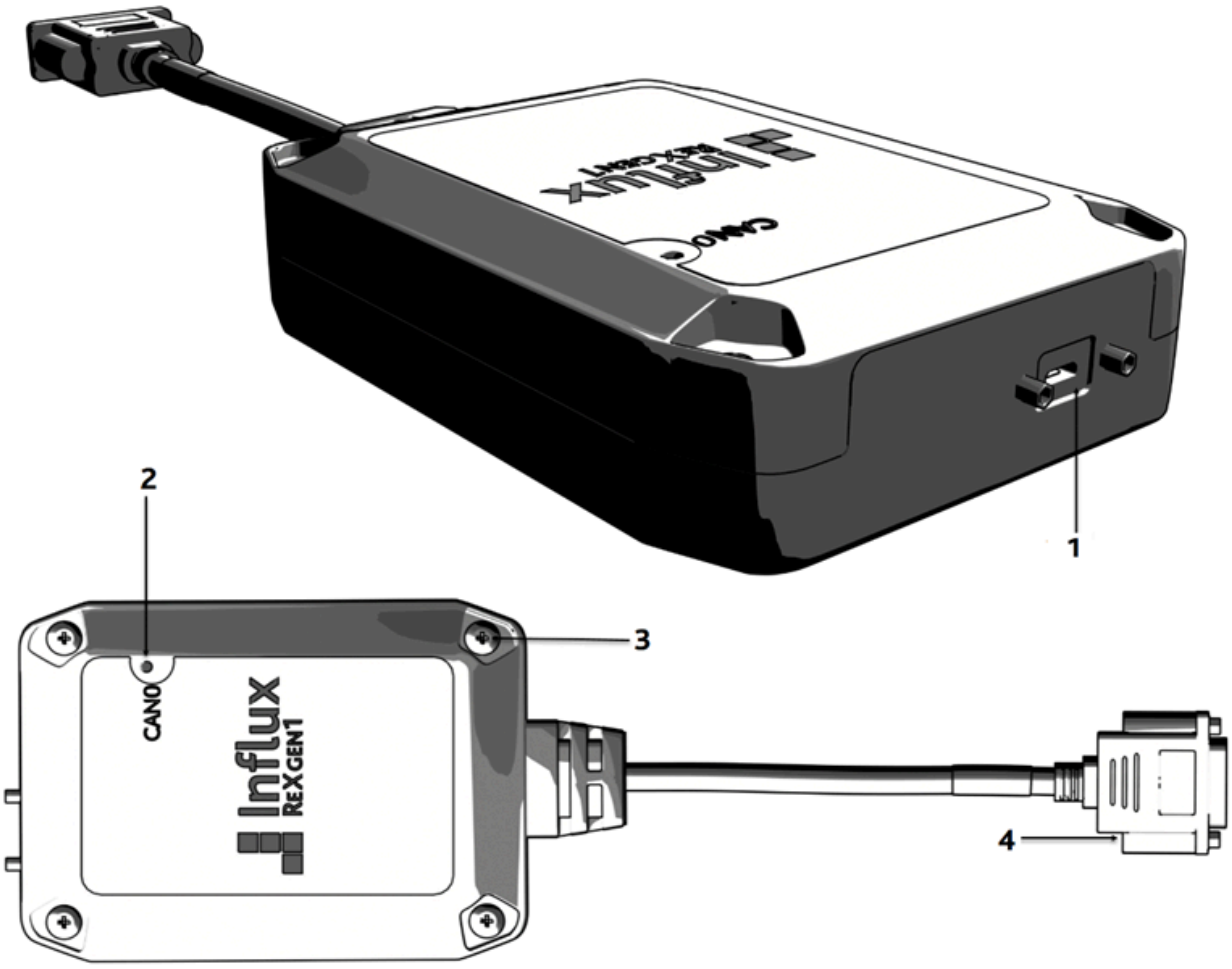
Model	eMMC Storage	CAN
INF2109.01 ↗	8 GB	1

Technical Specifications

Product Dimensions and Elements



Product Dimensions



Product Elements

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

Technical Specifications

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
Identifiers	Compliant with CAN specifications 2.0A (11-Bit ID) and 2.0B (29-Bit ID)
CAN Error Frames	Support for logging CAN error frames (bit-stuffing, form, CRC, bit, acknowledgement)
Retransmission	Configurable retransmission of frames that have lost arbitration or been disturbed by errors
Prescaling	Pre-scale CAN frames to record e.g., by time (per X ms) or by data (e.g., if byte X or Y changes)
Transmit	Transmit lists of CAN frames per channel (periodic) - e.g., for OBD2 requests- Capability to link multiple CAN messages
PC Interfaces	Rugged Micro USB 2.0 (Datalogger mode and J2534)
J2534	Yes/Pass-Thru Enabled
Data Storage Capability	8 GB Inbuilt eMMC storage (uses FIFO logic once the eMMC is full)
Supported Protocols	CAN Monitoring (RAW CAN signals, SAE J1939 support)
Identifiers	Compliant with CAN specifications 2.0A (11-Bit ID) and 2.0B (29-Bit ID)

Bit-Rate Auto-Detect	Bit rate can be auto-detected or set manually
Real-Time Clock	Sync RTC using CAN Message and ReXdesk Software
File Split	Configurable log file split size (by size: 10-512 MB and/or by time period)
Unique Device ID	Each device has a globally unique ID ensuring unique log file naming
Signed Firmware	Firmware updates are digitally signed to verify that they are from a trusted source
Cyclic Logging	Enabled by default
LEDs	1
Triggering	Trigger on a CAN ID, Trigger on Parameter Value, and Trigger on DM1 counter.
Filters	200* regular/extended ID filters per channel (range, acceptance)
Data Storage format	FAT32, Log files accessible via ReXdesk software
File Format Supported	ASAM MDF (.mf4), CSV, MATLAB, ASC, BLF, TRC
Warranty	12 months from the date of invoice.
Support	Yes, during the warranty period
Origin	UK
Data Logger Configuration	Supplied with Influx ReXdesk configuration software, XML based

Electrical Data

Electrical Data

BUS & Signals	Operating Voltage
Power supply - OBD	+5V to +27V
Power supply - USB	+4.5 to +5.5V

Function	Description
Transceiver Protection	Bus fault protection: ±58 V Thermal-shutdown protection (TSD) Common mode input voltage: ± 12V TXD dominant timeout (prevents network blocking in the event of a failure) 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	Working temperature -40degC to +85degC; Humidity max 90%
Power Saving	Wake Up On CAN, Power Down Mode, Sleep Modes,
Power Safe	100% power-safe data logging - no file corruption when disconnected or in sleep mode
Protection	Reverse voltage protection on CAN-bus supply
Power Consumption	Normal Operation: upto 50 mA at 12 V Normal Sleep <17mA Deep Sleep: <2 mA

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.

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.

Attention:

- Do not use the logger's USB port for data logging purposes, as it may damage the USB port, which won't be covered under warranty.

Device Kit

HARDWARE

Packaging will contain the following components:

INF 2109

- 1x ReXgen1
- 1x Micro USB Cable

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.↗

Service & Support

Please visit for service & support https://www.influxtechnology.com/contact ↗

The latest drivers, Software, and firmware versions are available here.

Hardware, Functions, and Accessories

Hardware

Installation

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

GROUNDING

Since providing a common ground between nodes is not required, 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 bus end 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

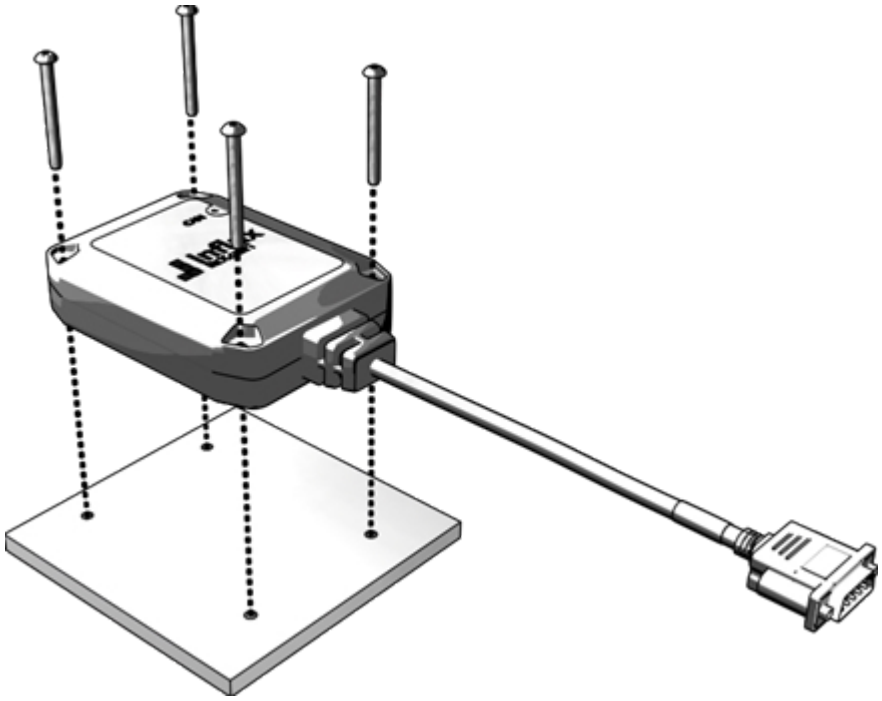
CAN Bus and USB are not isolated; care must be taken when plugging the USB into the device. Removing the power supply when the device is interfaced with a PC via a Micro USB cable is advised.

Notes:

- The CAN Bus Isolator and USB Isolators can be purchased ↗separately.
- Do not use the logger's USB port for data logging purposes, as it may result in damaging the USB port, and this won't be covered under warranty.

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.



Enclosure

> ⚠ **Warning:** The device is not intended for use without the enclosure.

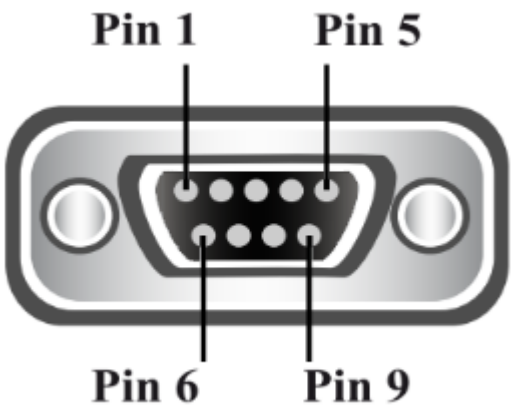
LED

	LED 1	Green	CAN0 Logging status

Pinout

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

PIN DETAILS: 9-pin Standard D-Type connector.



9-pin Standard D-Type connector

Connector

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

Notes:

- The 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 120Ω resistor across CAN H & CAN L.
- Do not short-circuit any pins.

- Do not use the logger's USB port for data logging, as it may damage the USB port, which won't be covered under warranty.

Note:

- Pins not mentioned in the description table(s) are NC.

Functions

FUNCTION	ReXgen1
CAN Logging	Yes
J2534 Pass-Thru	Yes

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 enables 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.

For a step-by-step guide, click↗ here.

How to configure reXgen data logger to record CAN data.

Functioning as a PASS-THRU device using J2534:

ReXgen1 is designed to function as a data logging device and 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. Influx Module Analyser, SavvyCAN and K-Cal Software already support the pass-thru feature.

ReXgen J2534 (pass-thru) installation step-by-step guide ↗.

Video tutorial ↗

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 ↗	120Ω 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.

Click to purchase ↗ these accessories.

Getting Started

Connecting the Device

Attention:

- A qualified technician must install, connect, and commission the device.
- Ensure the power supply is disconnected before connecting the device.
- Do not use the logger's USB port for data logging purposes, as it may damage the USB port, which won't be covered under warranty.
- Only use components from the starter kits or the accessories supplied.

POWER

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

Notes:

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

CAN

ReXgen 1 can be interfaced to the CAN bus, from which data will 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:

- The 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 120Ω resistor across CAN H & CAN L.
- Do not short-circuit any pins.
- The maximum safe applied voltage is +28V.
- CAN bus is not isolated by default; isolating devices can be purchased separately.
- Do not use the logger's USB port for data logging purposes, as it may damage the USB port, which won't be covered under warranty.

USB

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

Attention:

- Do not use the logger's USB port for data logging purposes, as it may damage the USB port, which won't be covered under warranty.

Software Installation

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

Notes:

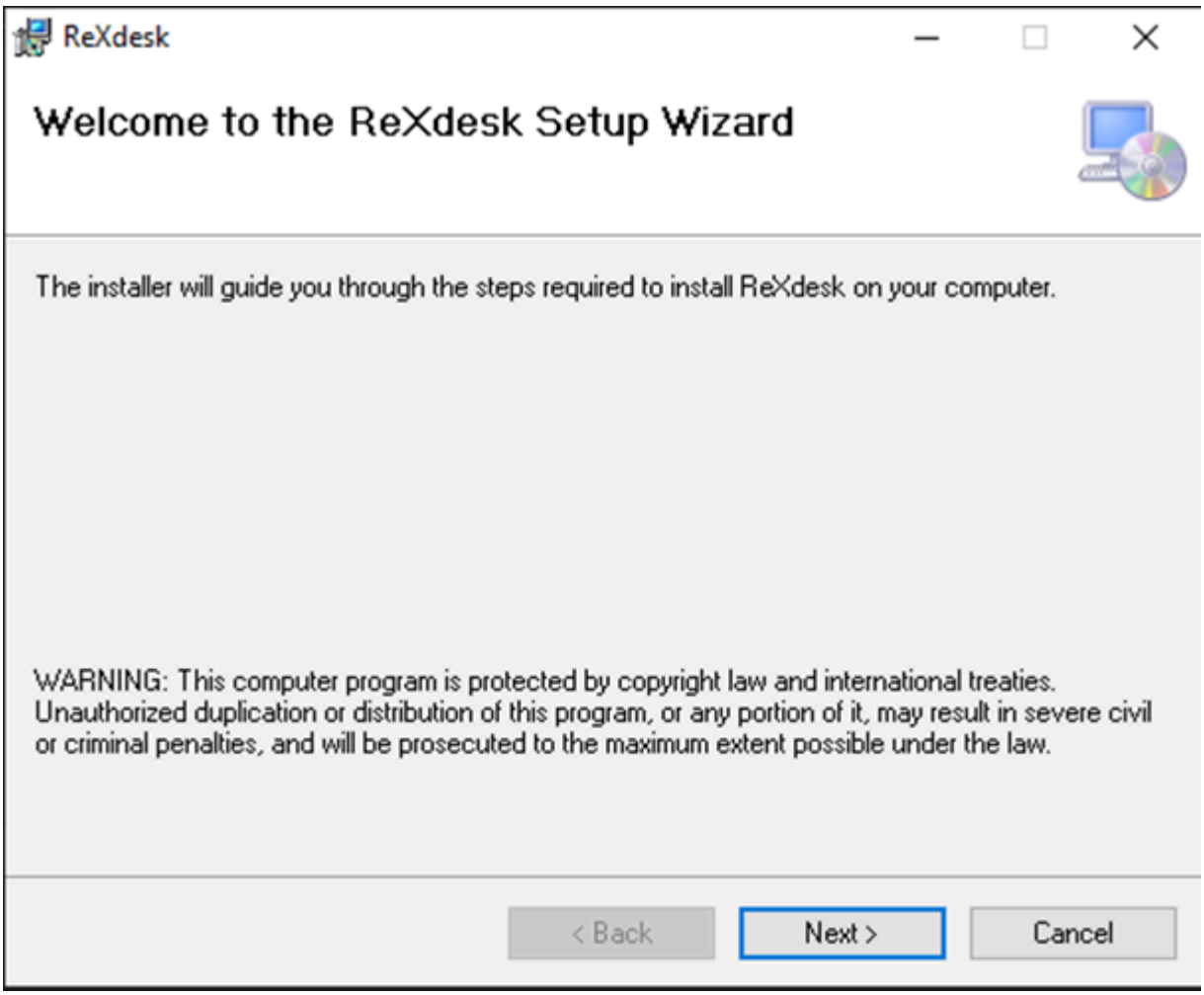
- Before proceeding with the installation, please ensure you have acquired administrative privileges.

Make sure you have installed the Microsoft Visual C++ Redistributable.

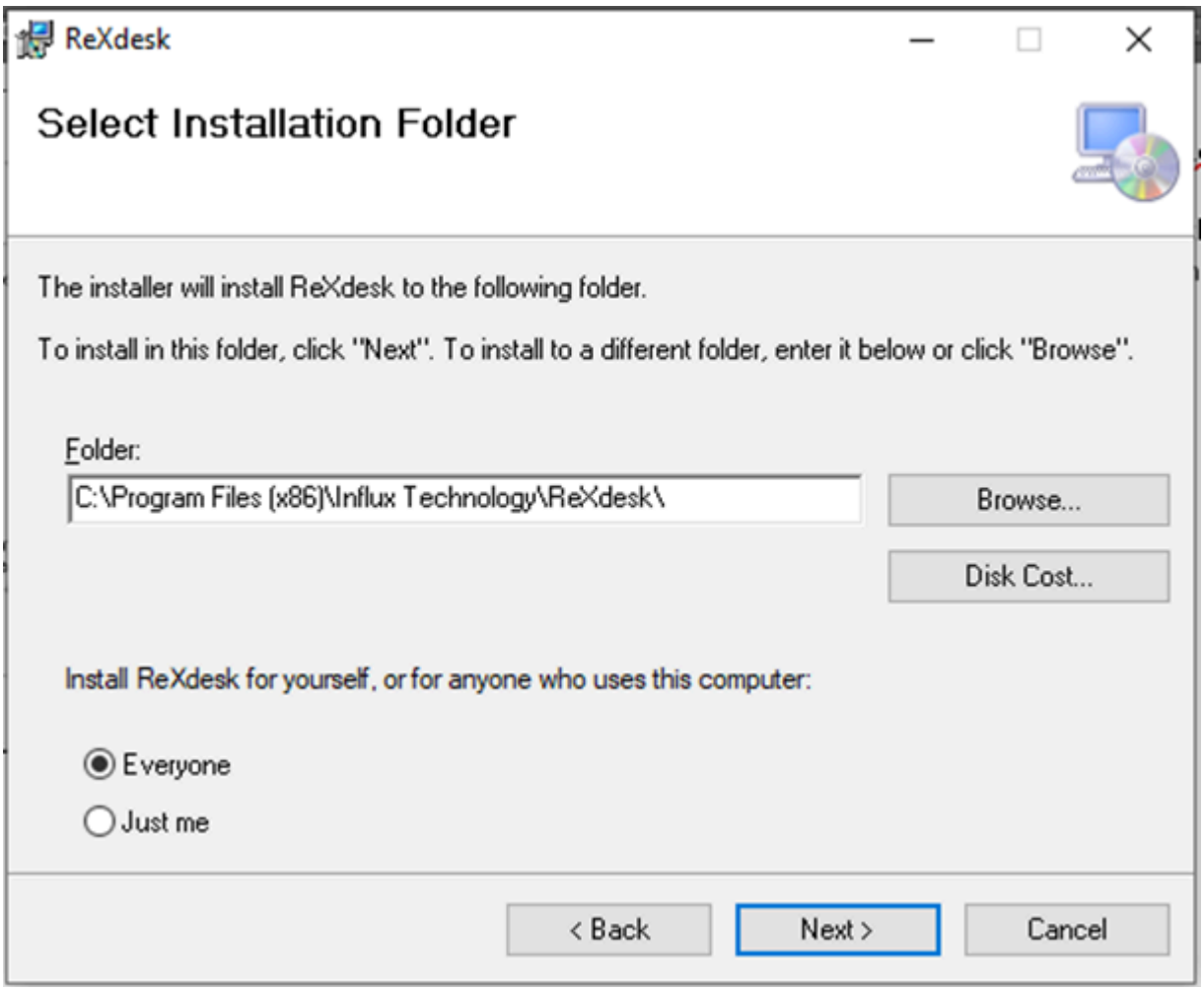
You can download it from the following link:

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

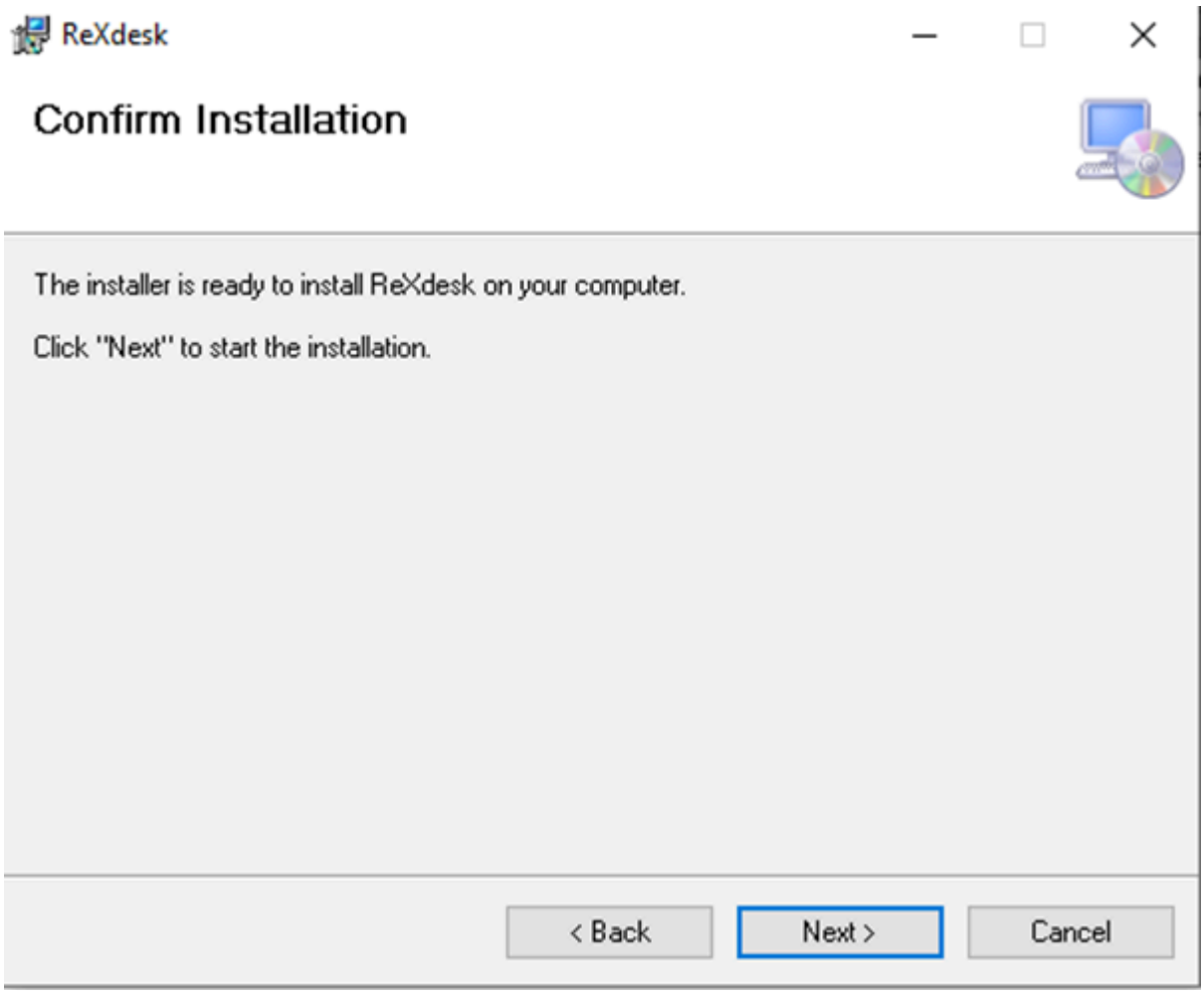
To begin the installation of the ReXdesk Software, open the installer by running the set-up file.



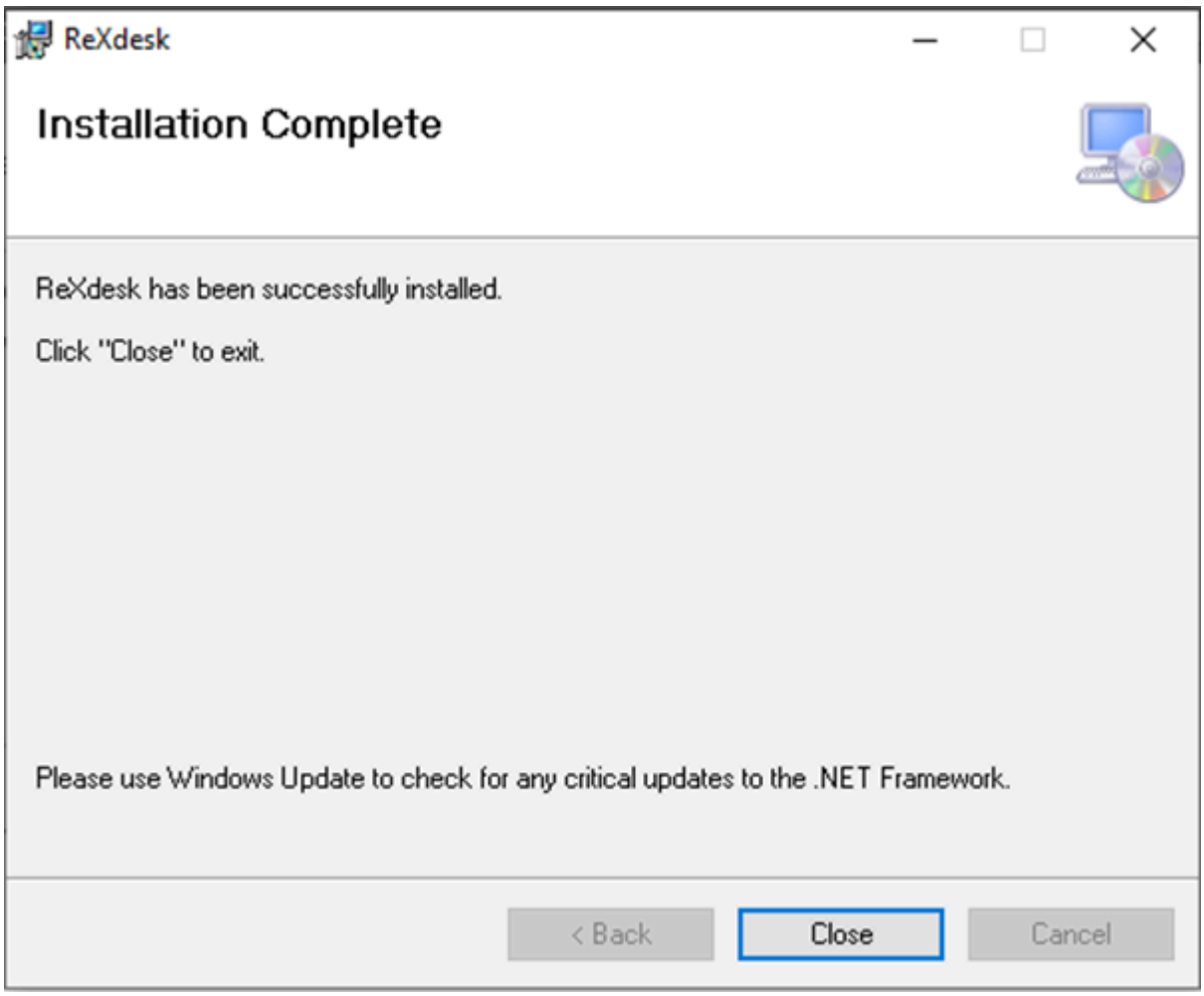
- To continue installing ReXdesk on your system, click 'Next'.
- To cancel the installation at this stage, click 'Cancel' (No software will have been installed on the system now).



- 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 can access 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.

Driver Installation

> **Notes:**
>
> - Before proceeding with the installation, please ensure you have acquired administrative privileges.

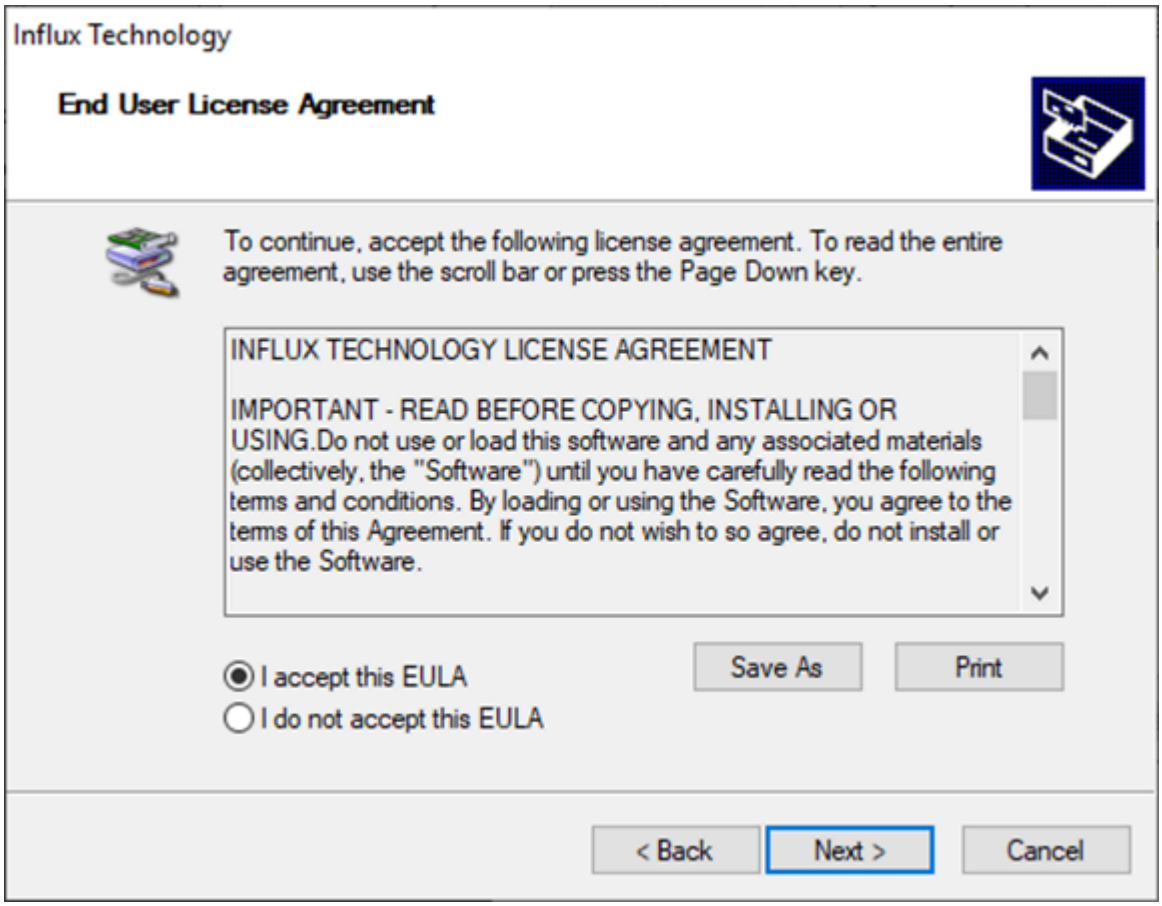
To install the ReXgen driver, run the .exe file in this location:

C:\Program Files (x86) \Influx Technology\ReXdesk\Drivers.

Or

- To install the ReXgen1 driver, locate the ReXgen1 Drivers installer from the start menu.
- Run the ReXgenInstaller.exe file.

- Click 'Next' to install 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 now).

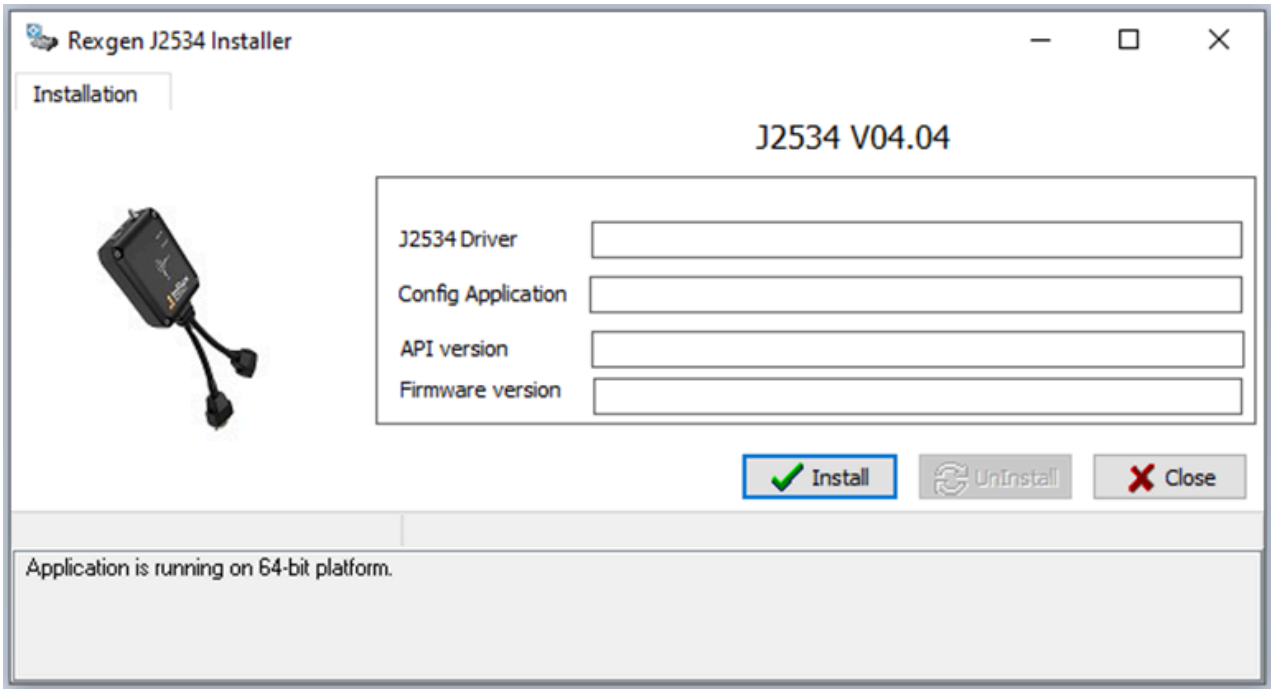


- Please read the license agreement carefully.
- Once you understand and accept the license agreement, please click 'I accept this EULA' to continue installing the driver. If you do not accept the terms, please click 'Cancel' to stop the installation at this point.
- Click 'Next' to continue with the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

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, the Windows Registry should contain J2534 ReXgen properties.

Firmware Update

Click for the firmware zip file.

Attention:

- Supports updating firmware from one ZIP package (to reflash any ReXgen).
- Ensure to format the eMMC and send the new configuration to the logger once the firmware is updated successfully.

Firmware can be updated using the Reflash option in the ReXdesk Software.

The latest firmware can also be located here:

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

Notes:

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

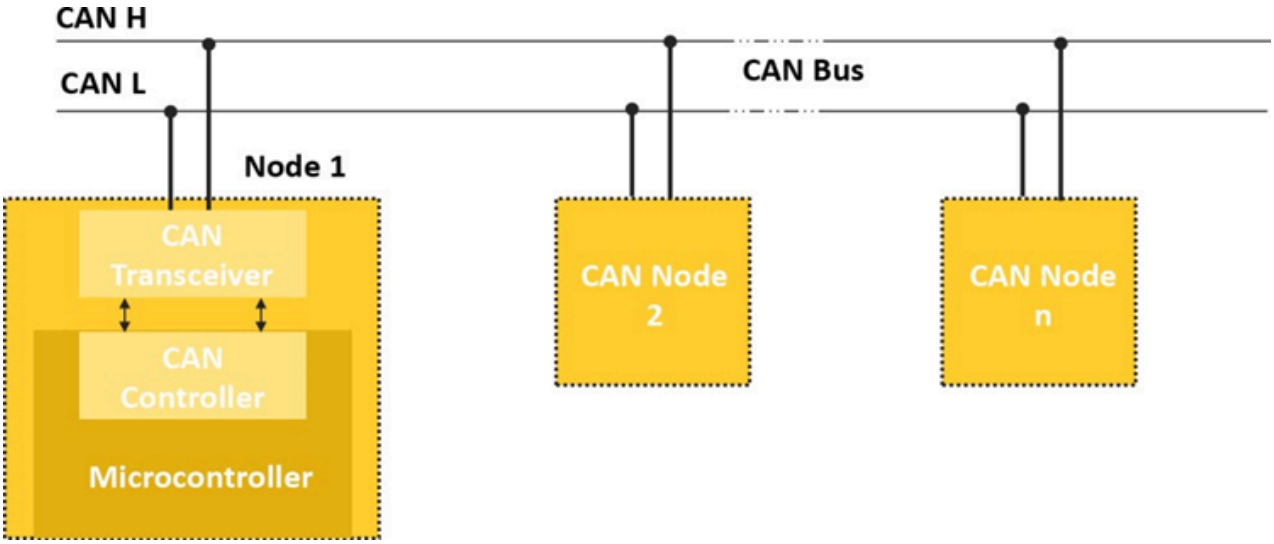
Click for a step-by-step tutorial video on updating the firmware of a ReXgen data logger.

Annexures

This chapter contains technical data and certificates.

CAN OVERVIEW

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



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 the 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 Bus Length
1 Mbits/s	25 m
500 kbit/s	100 m
250 kbit/s	250 m
125 kbit/s	500 m