

K-TC 2.0 : Logger Manual

INF 2204.02/05.02/06.02

ABOUT THIS MANUAL

This document provides a brief idea of the usage, safety precautions, installation procedures and operation of the Influx K-TC 2.0. 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 K-TC 2.0: User Manual & Quick Start Guide.

Table 1: Version Details

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SUPPORT

If you have a problem that you cannot resolve on your own, feel free to contact us for assistance at docs.influxtechnology.com

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Introduction

The K-TC 2.0 is Influx's upgraded version of the older K-TC modules. Like the previous modules, these are stackable instrumentation devices compatible with Influx's entire range of data loggers. These can also be integrated with any device configured via DBC files, other logger systems or output signals on CAN to the Rebel Dash display.

The K-TC 2.0 is an ideal solution for applications that require a large number of thermocouple inputs. The K-TC 2.0's accurate sensor data is transmitted periodically on the CAN bus, enabling multiple devices to be connected. In addition, The temperature data is simultaneously logged in the inbuilt micro SD card (8GB), the K-TC 2.0 CAN bus settings, calibration, and sampling rates are all easily configurable, and these settings are stored within the K-TC 2.0 even when the device is not powered.



K-TC8



KTC16



K-TC32

Technical Specifications

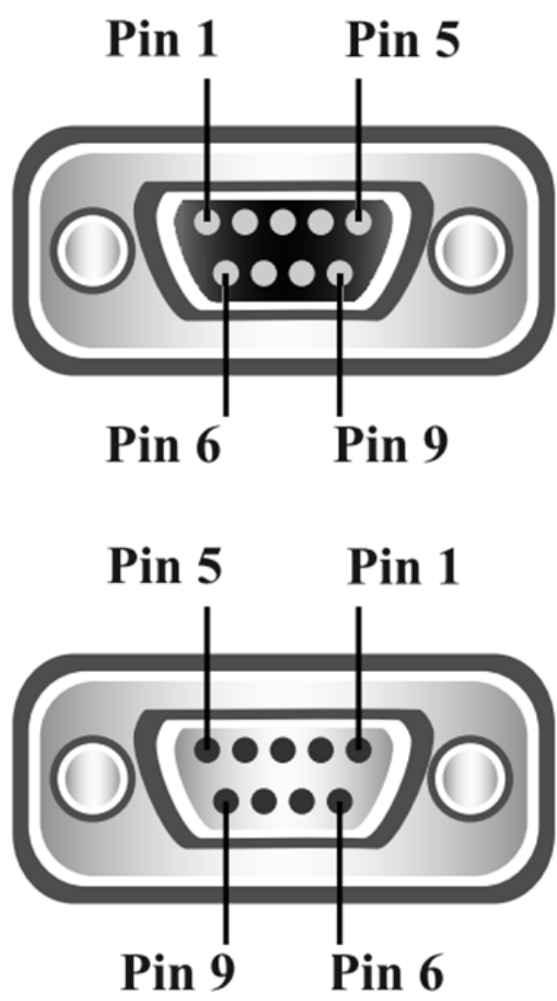
Technical Data	Description
Power supply	4.5 to 31V DC (isolated)
Power consumption	K-TC8 / K-TC16 / K-TC32
Normal operation	120mA at 12V / 140mA at 12V / 200mA at 12V
Power down standby mode	24mA at 12V / 25mA at 12V / 30mA at 12V
Configuration	Via CAN bus with K-Cal for calibration. Via USB with TC Logger SW for logging configurations stored in the device
Interfaces (Isolated)	CAN bus (max 1000 kbps) and USB 2.0
Storage	8 GB eMMc
PC Interfaces	USB2.0 Type B (isolated)
Enclosure	Dimension (LxHxW): 115×56(K-TC8) / 79(K-TC16) / 149(K-TC32) x 105mm Weight 450g(K-TC8), 570g(K-TC16), 900g(K-TC32) IP 40 ABS/Aluminium Allow* (depending upon the stock availability)
Environmental	-40°C to +85°C Humidity max 90%
Thermocouple Inputs	K, J, T-type Accuracy ± 1°C Measurement: -200 °C to 1250 °C
Connection type	Thermocouples: mini K, J ,T-Type (galvanically isolated)
Thermocouple Inputs	

Technical Data	Description
Number of channels	K-TC8: 8 channels, K-TC16: 16 channels, K-TC32: 32 channels (group of 8 thermocouples - each galvanically isolated)
Channel Input Types	K, J, T
Measurement Range	(-)200°C to (+)1200°C
Max Sampling Rate	20 Hz per channel
Max applied voltage	± 3.3 V
Peak Galvanic Isolation Voltage (from all other modules and power supplies)	
Three-wire CAN Bus	780 V
Four-wire USB Bus	840 V
Two-wire power module	560 V

Pinout of the K-TCxx

2x DB9 CAN Connectors

The CAN connectors are 1x Male and 1x Female 9-pin Subminiature D Type connectors.



DB9	Pin Function
Pin 2	CAN L
Pin 3	CAN Ground
Pin 5	Power Ground

Pin 7	CAN H
Pin 9	Power Supply 4.5-31V

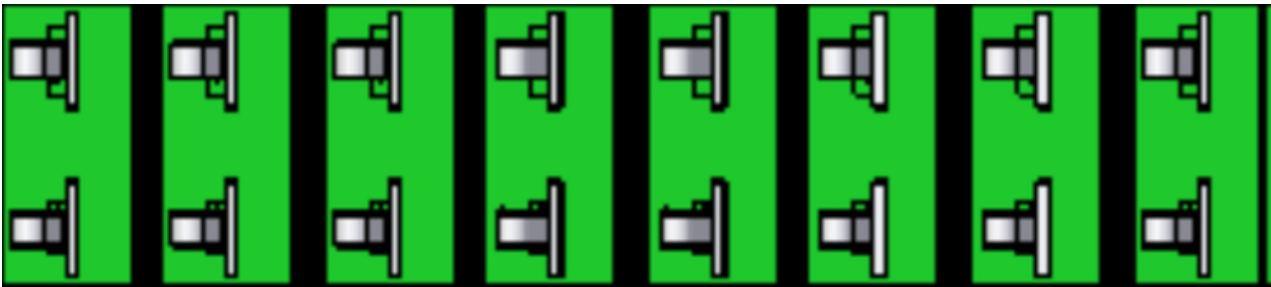


Note:

- Please ensure you use Pin-3 for Signal Ground and Pin-5 for Power Ground.

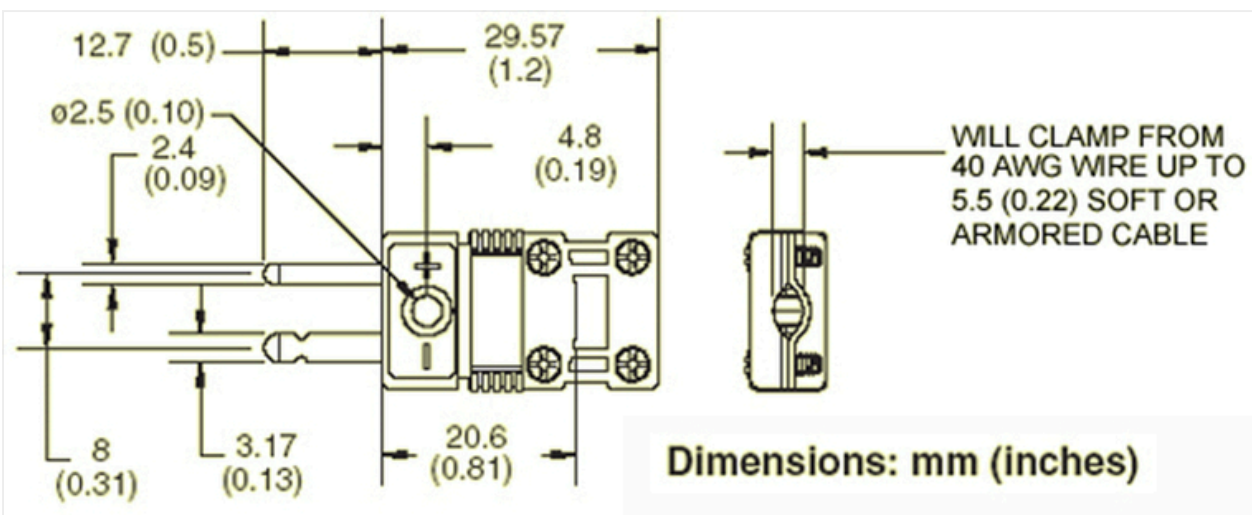
Thermocouple Connectors

The Thermocouple connectors on the K-TC are miniature-size flat-type sockets.



IEC Connector	Pin Function
Top	+
Bottom	K

The dimensions of the Male Flat Type Miniature Size Thermocouple Plug that you would plug into it are as follows:



Software Installation

[Installing the K-TCxx Cal Software](#)

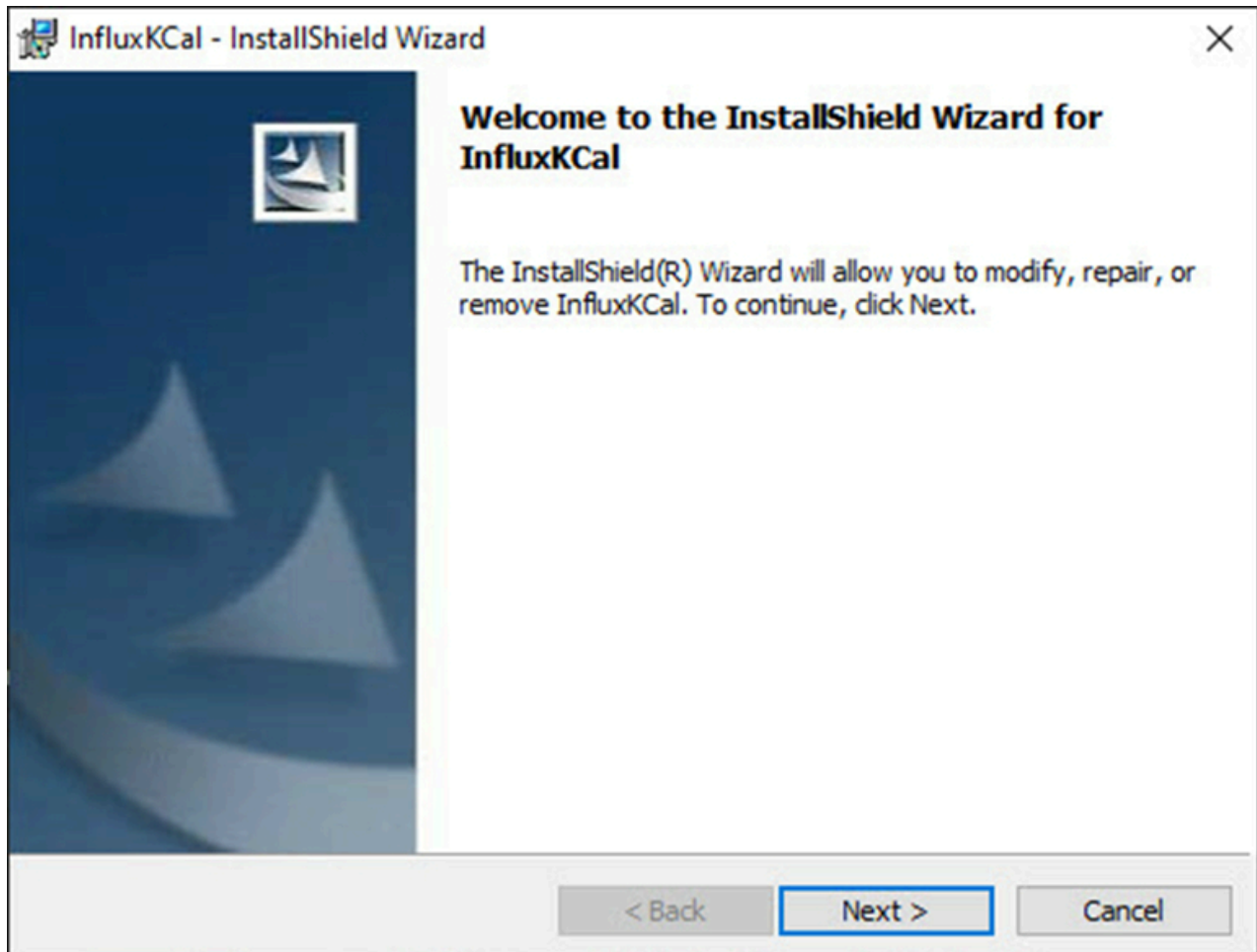
[K-TCxx Driver Installation](#)

[Installing the Rebel Drivers](#)

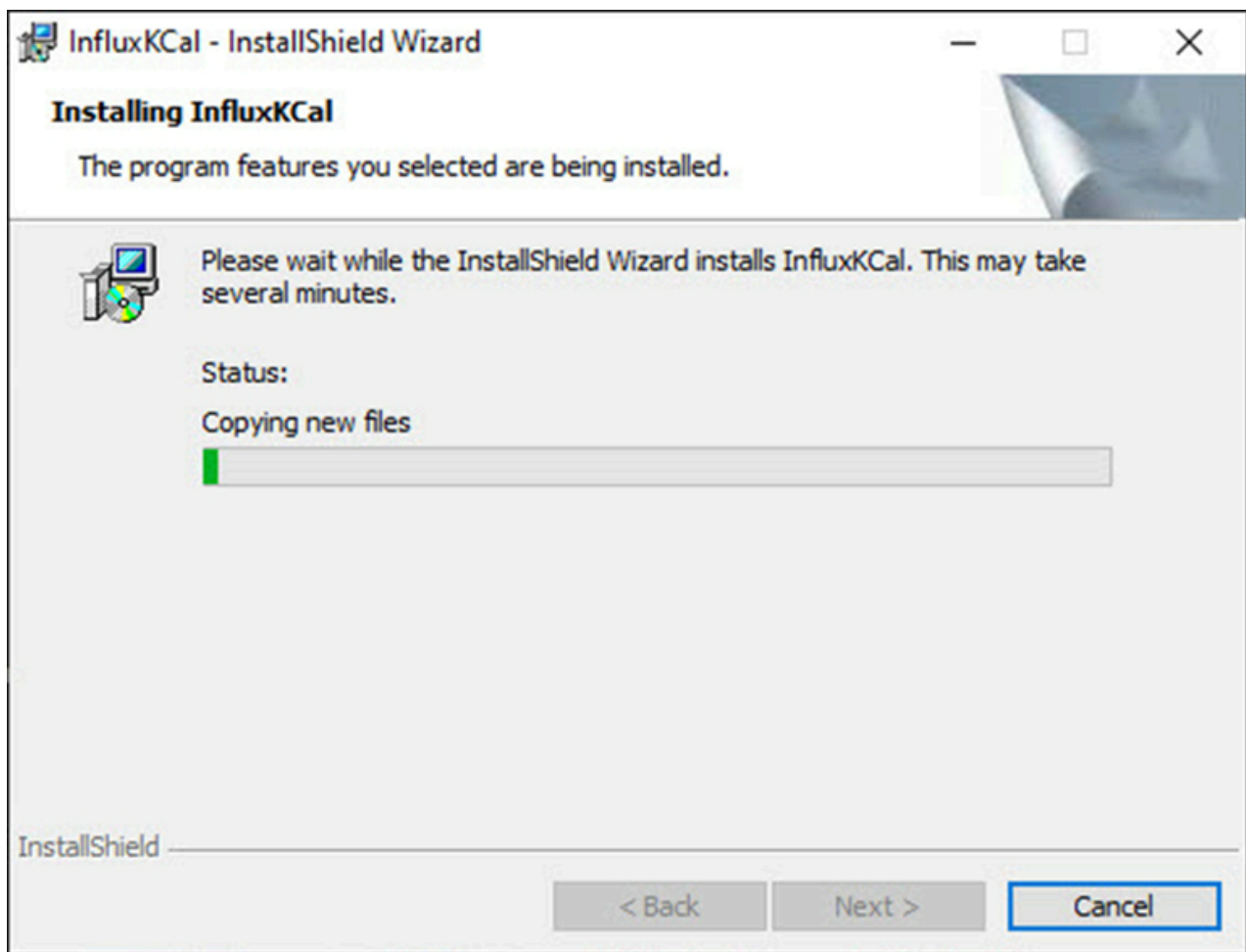
Installing the K-TCxx Cal Software

Run the K-TCxxCal.msi

Click Next to start the installation



The program installation window appears.



Click "Cancel" if you do not wish to install it.

After the K-TCxxCal software is installed, click finish



InstallShield Wizard Completed

The InstallShield Wizard has successfully installed InfluxKCal.
Click Finish to exit the wizard.

☒ Launch the program

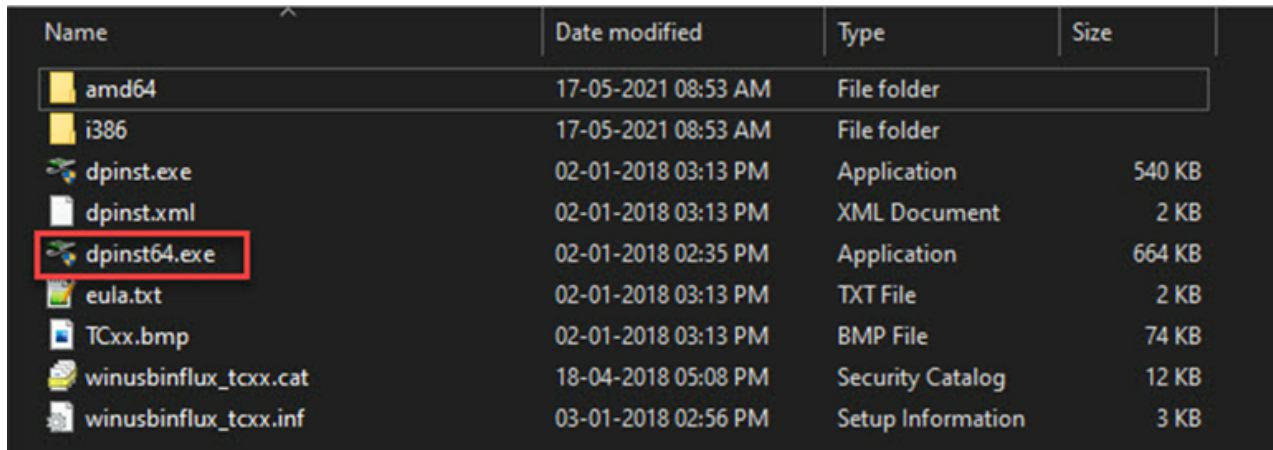
< Back

Finish

Cancel

K-TCxx Driver installation

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



Name	Date modified	Type	Size
amd64	17-05-2021 08:53 AM	File folder	
i386	17-05-2021 08:53 AM	File folder	
dpinst.exe	02-01-2018 03:13 PM	Application	540 KB
dpinst.xml	02-01-2018 03:13 PM	XML Document	2 KB
dpinst64.exe	02-01-2018 02:35 PM	Application	664 KB
eula.txt	02-01-2018 03:13 PM	TXT File	2 KB
TCxx.bmp	02-01-2018 03:13 PM	BMP File	74 KB
winusbflux_tcxx.cat	18-04-2018 05:08 PM	Security Catalog	12 KB
winusbflux_tcxx.inf	03-01-2018 02:56 PM	Setup Information	3 KB

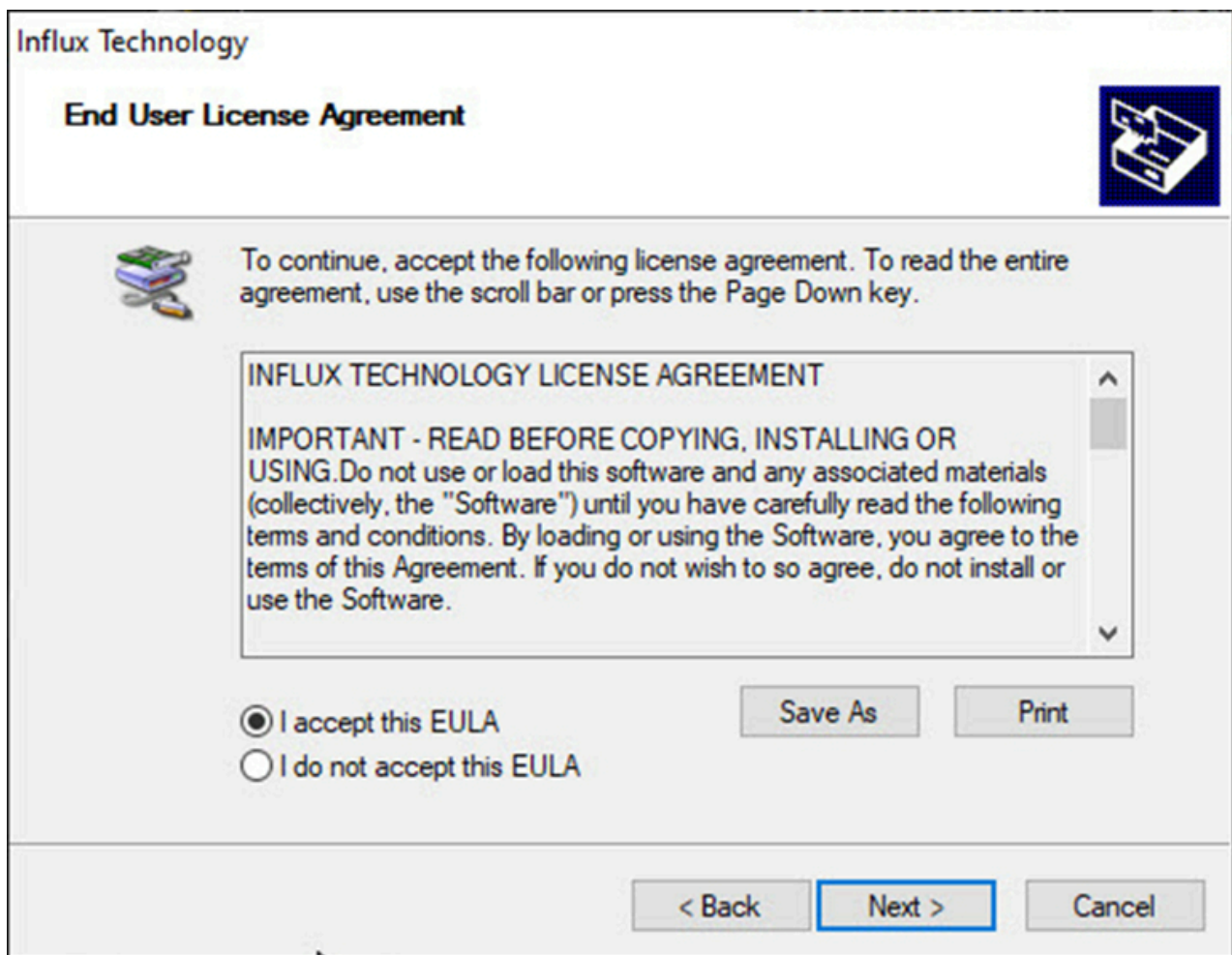
To install the K-TCxx driver, run the .exe file in this location:

C:\Program Files (x86)\Influx Technology\Influx K-Cal\TCxxDriver

The .exe file can also be found in the start menu under 'influx technology.

Run the K-TCxx Installer.exe file.

Click 'Next' to continue installing the K-TCxx device driver on your system.



To cancel the installation at this stage, click 'Cancel'. (No software has 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 with the driver's installation. If you do not accept the terms, please click 'Cancel' to stop the installation at this point.

Click 'Next' to continue the installation process.

Once the installation is complete, this window will appear.

Influx Technology



Congratulations! You are finished installing your Influx Technology TCxx device.

The drivers were successfully installed on this computer.

You can now connect your device to this computer. If your device came with instructions, please read them first.

Driver Name	Status
✓ Influx Technology Ltd (...)	Ready to use

< Back

Finish

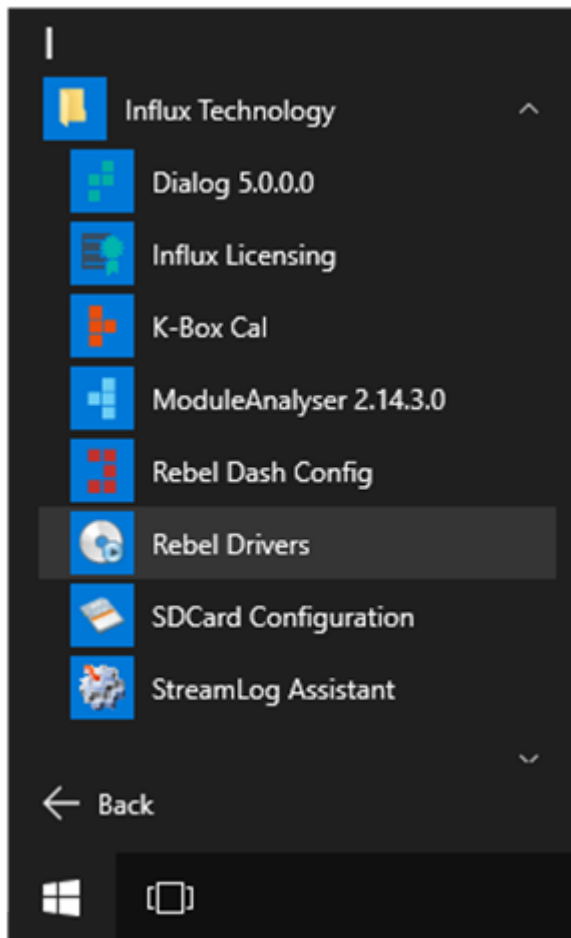
Cancel

Click 'Finish' to close the window. The K-TCxx driver is now successfully installed on your system.

Installing the Rebel Drivers

The Rebel drivers must be correctly installed to ensure the Rebel functions correctly.

If DiaLog is installed, a driver installation application will be available, which can be found in the Influx Technology folder of the Start Menu, as shown below.



Ensure the Rebel is not plugged in and click 'Next' to continue.

Influx Technology



Welcome to the Influx Technology Rebel Installer!

This wizard will walk you through updating the drivers for your Rebel device.



To continue, click Next.

< Back

Next >

Cancel

Please read and accept the EULA, then click next to continue.

Influx Technology

End User License Agreement



To continue, accept the following license agreement. To read the entire agreement, use the scroll bar or press the Page Down key.

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- ☒ I accept this EULA
☐ I do not accept this EULA

Save As

Print

< Back

Next >

Cancel

The driver installation will begin and may take a few moments.

Once the installation is complete, click 'Finish' to close the application.

Influx Technology



Congratulations! You are finished installing your Rebel device.

The drivers were successfully installed on this computer.

You can now connect your device to this computer. If your device came with instructions, please read them first.



Driver Name	Status
✓ Cypress (CYUSB) USB (...)	Ready to use
✓ Influx Technology Ltd (...)	Ready to use

< Back

Finish

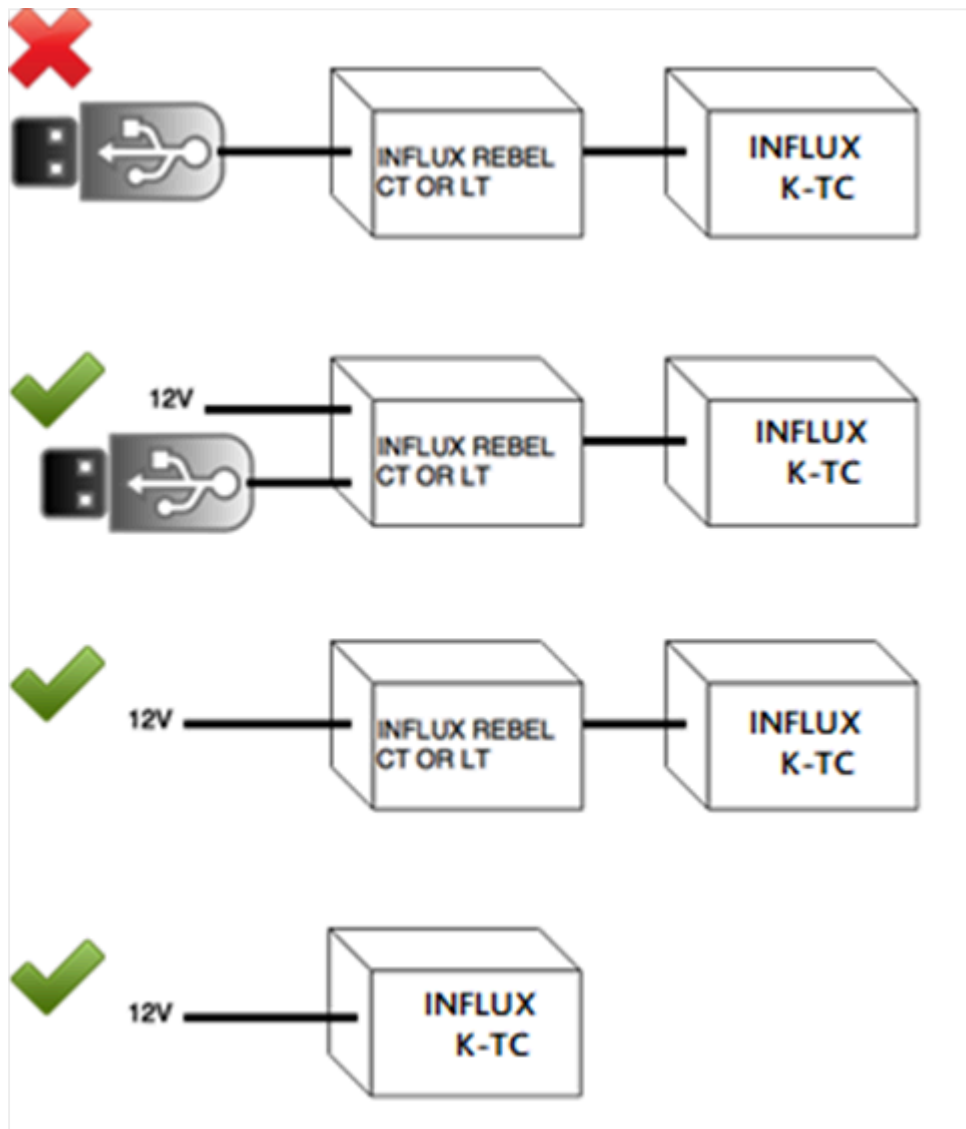
Cancel

Plug in the Rebel to allow the drivers to be recognised.

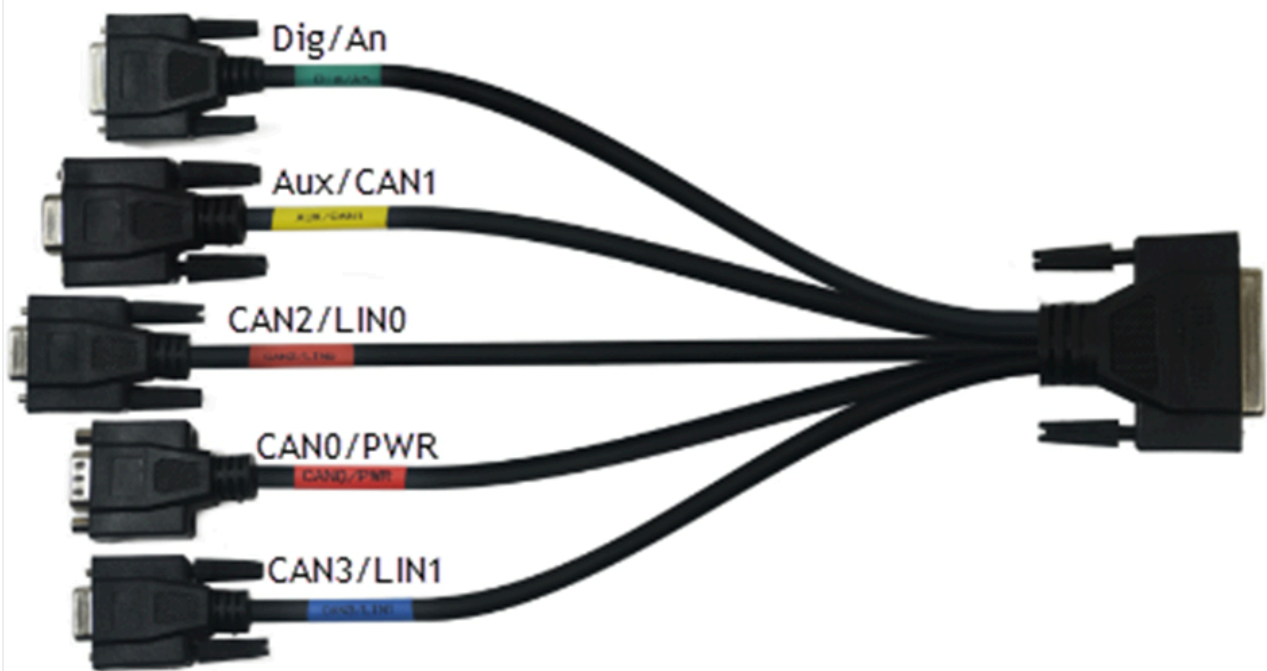
Connecting and powering the K-TCxx

However, K-TCxx is powered via the CAN and power connectors and designed with CiA® 102 pinout for the CAN bus and power to connect the device as simple as possible.

Most commonly, it will be powered from a Rebel Logger using the Multi Connect Cable, but you can also power it via pin 9 (4.5 to 36V) and pin 5 PowerGND of the 9-pin Sub D connectors. If connected via the Multi connect cable, the CAN 1 (MS) bus is also connected to allow the Logger to record the data transmitted from the K-TCxx.

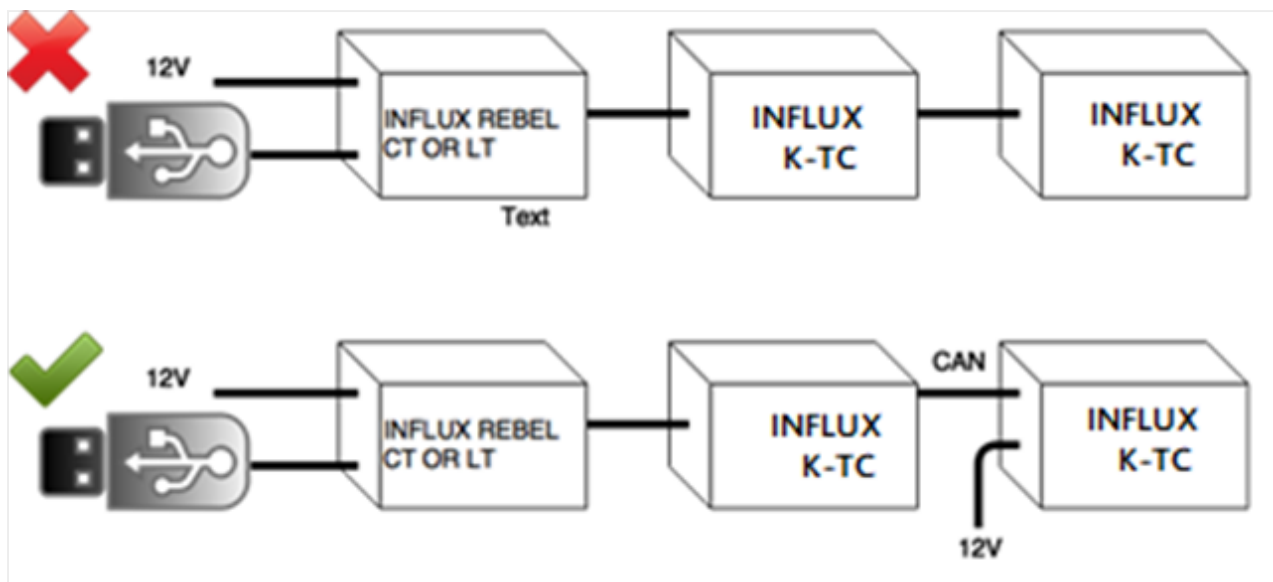




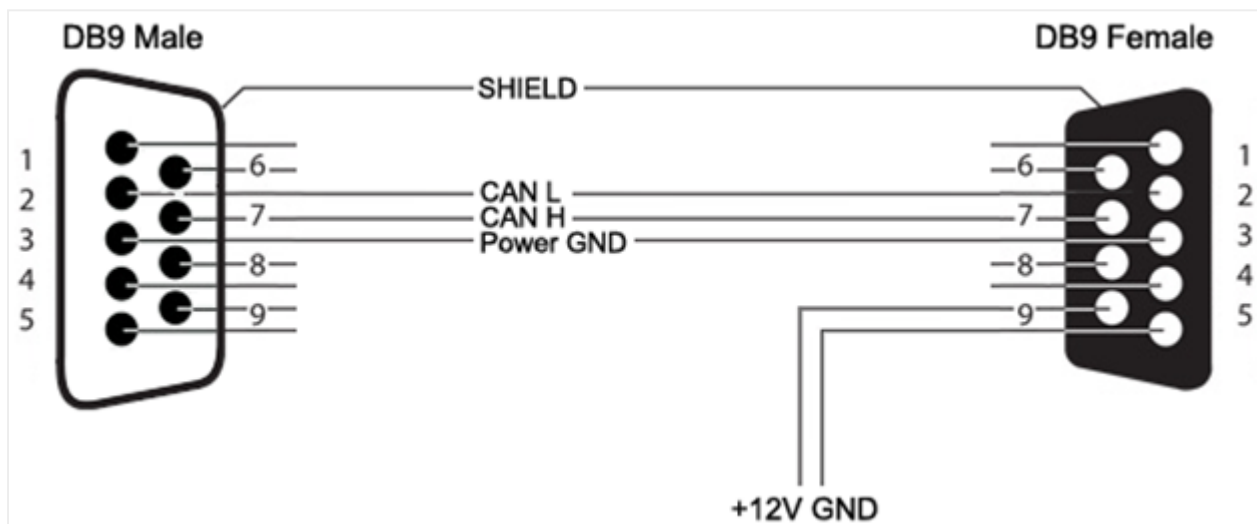


Warning:

- Several K-TCxx can be daisy chained via the additional DB9 Connector. However, they must have power supplied separately via power breakout in the cable, not via the Logger. It can also be used to connect other devices, such as the Rebel Dash.



The pinout of the required Cable between the two K-TCxx is as follows:

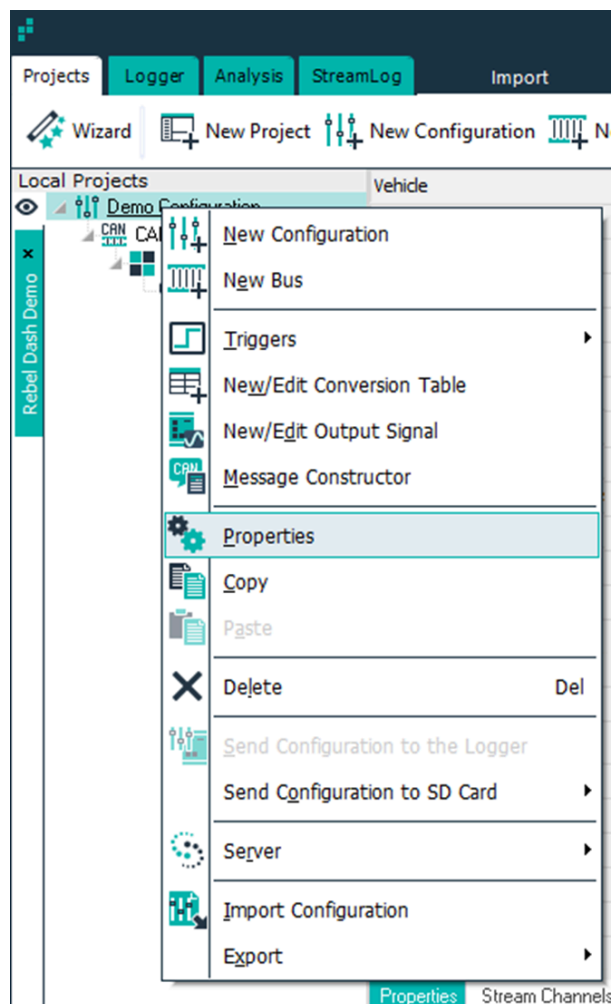


Enable the AUX Power setting within the Logger Configuration

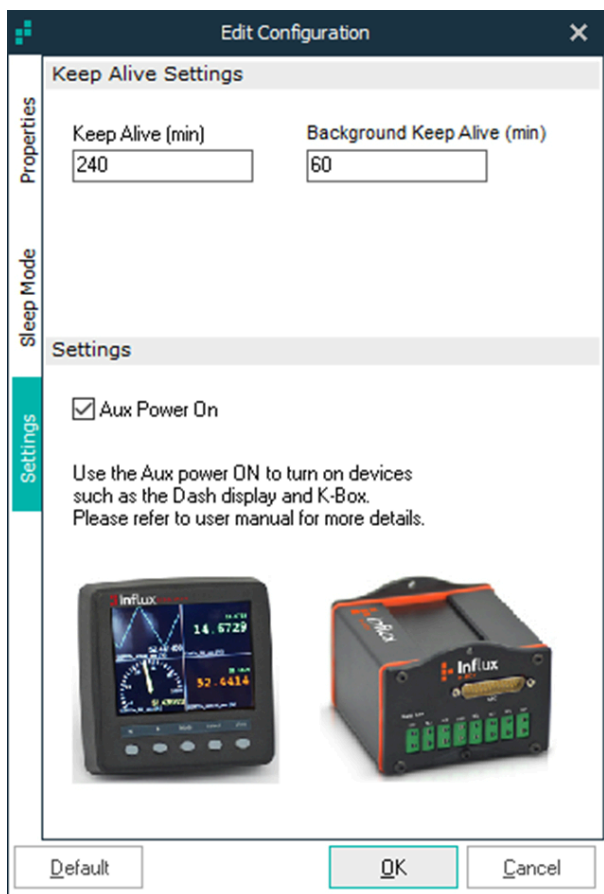
If you power it from the Logger, the Logger will need to be powered from the vehicle or an external power source

(NOT just via USB) and you will need to make sure the AUX power feature in the configuration is set to on. To do this, follow the Steps Below:

Right-click on the Project that you want to configure and select 'Properties'; if you need to create a configuration, this is detailed in the 'Loading the K-TCxx configuration into DiaLog' section document.

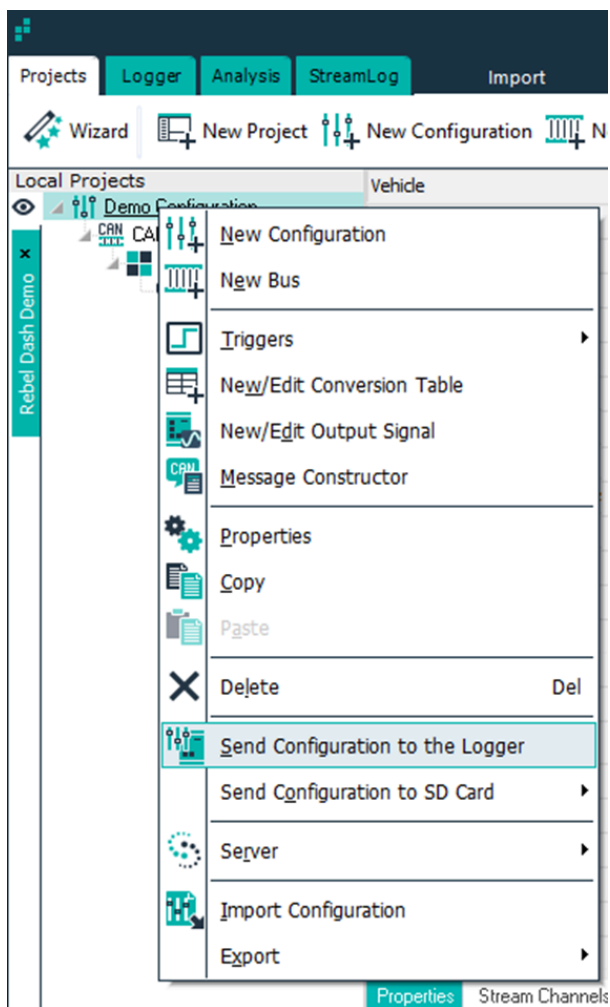


Once the Edit Configuration window is displayed, click on the 'Settings' Tab and put a Checkmark in Aux Power On.



Click OK to set the Aux Power on Setting in the Configuration...

Send the configuration to the Logger by right-clicking on the project and choosing "Send Configuration to the Logger."



If you have the CAN bus that the K-TCxx is connected to set to the right speed within your Project, you will see the Status Light on Solid Orange, and the CAN Light on Solid Green; if it is flashing green, the CAN bus is misconfigured, check the speed and termination.

Software Introduction

Graphical Overview



K-TCxx is accessed using either the desktop icon: or the 'Start Menu' directory—Influx Technology'.

Interface Tab

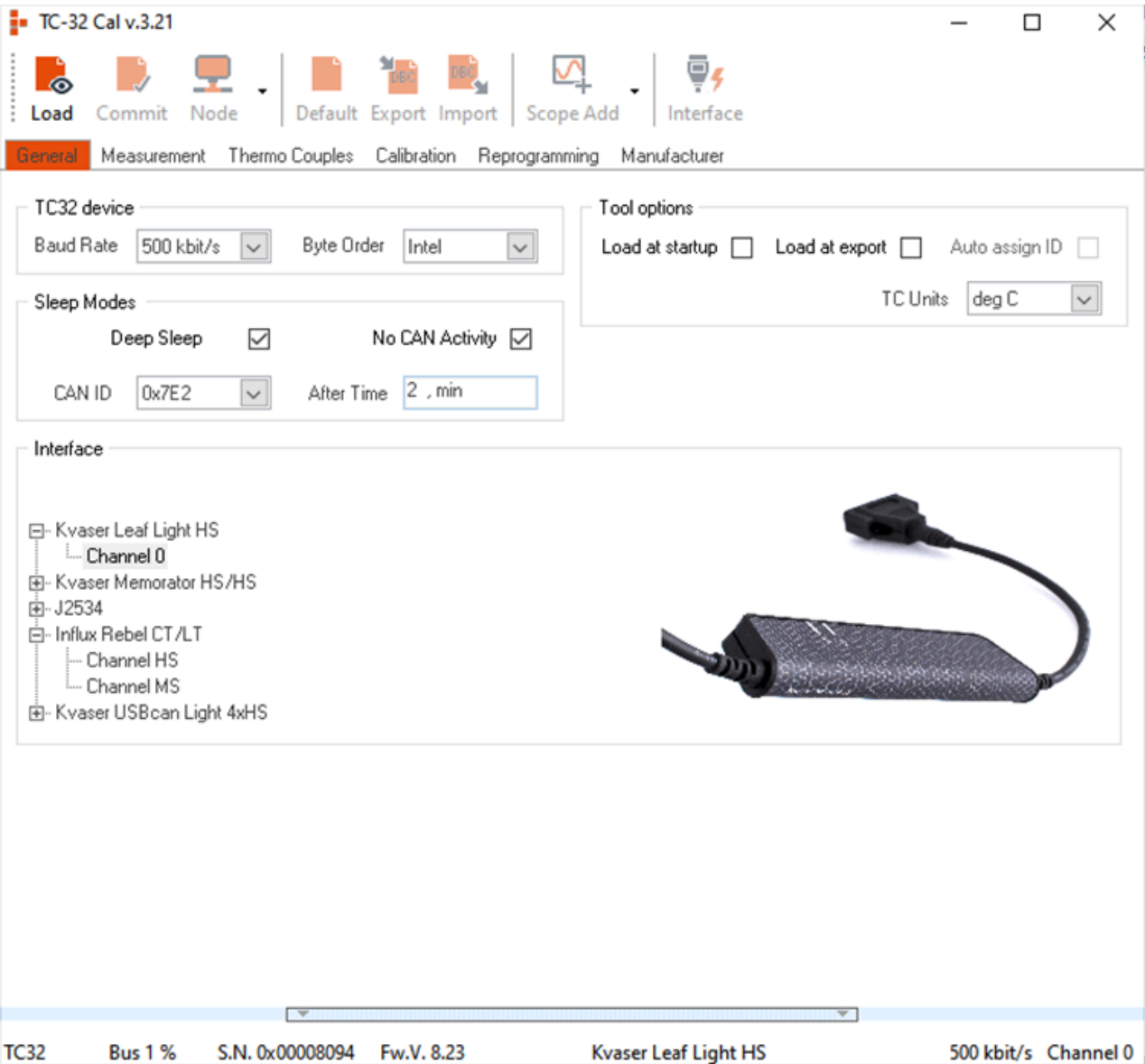
The 'Interface Tab' is situated at the top of the software screen and can navigate most program features. Some of the menus will be active only when a logger is interfaced.




- [General](#) – This allows the user to configure the interface and sleep settings.
- [Measurement](#) – This allows the user to visualise the thermocouple data on the oscilloscope.
- [Thermo Couples](#) – This allows users to configure the thermocouple sampling rates and CAN IDs.
- [Calibration](#) – This allows the user to calibrate the thermocouple inputs.
- [Reprogramming](#) – This allows the user to re-programme the TC module.
- [Manufacturer](#) - This allows the user to review the manufacturer's information

General Tab

Users can find all the settings related to the CAN Bus interface, Sleep and Software option in this Tab.



 Load	Pressing the Load Button Loads the settings in the K-TCxx and displays them on the screen.
CAN Settings	Baud rate: Allows the user to choose CAN Baud Rate for the unit Byte order: Allows the user to Change Byte order (Intel/Motorola)

Sleep Mode	<p>Deep Sleep: Enables the low power consuming Deep Sleep</p> <p>No CAN Activity: Enables sleep function if there is no CAN activity</p> <p>CAN ID: CAN ID used for Sleep Command</p> <p>After Time: Sleep delay time</p>
Tool Options	<p>Load at Startup: Enabling this automatically loads the previous settings</p> <p>Load at Export: Enabling this automatically loads the previous settings</p> <p>Auto assign ID: Enables Automatic assigning of CAN ID to signals to avoid duplicates, used when multiple devices are configured simultaneously.</p> <p>TC unit: Allows the user to specify the unit to be used, deg C or deg F</p>

TC-32 Cal v.3.21

Load

Commit

Node

Default

Export

Import

Scope Add

General

Measurement

Thermo Couples

Calibration

Reprogramming

Manufacturer

TC32 device

Baud Rate

500 kbit/s

Byte Order

Intel

Sleep Modes

Deep Sleep

☒

No CAN Activity

☒

CAN ID

0x7E2

After Time

2 , min

Tool options

Load at startup

☐

Load at export

☐


Auto assign ID

☐

TC Units

deg C

Interface



TC32

ON Line

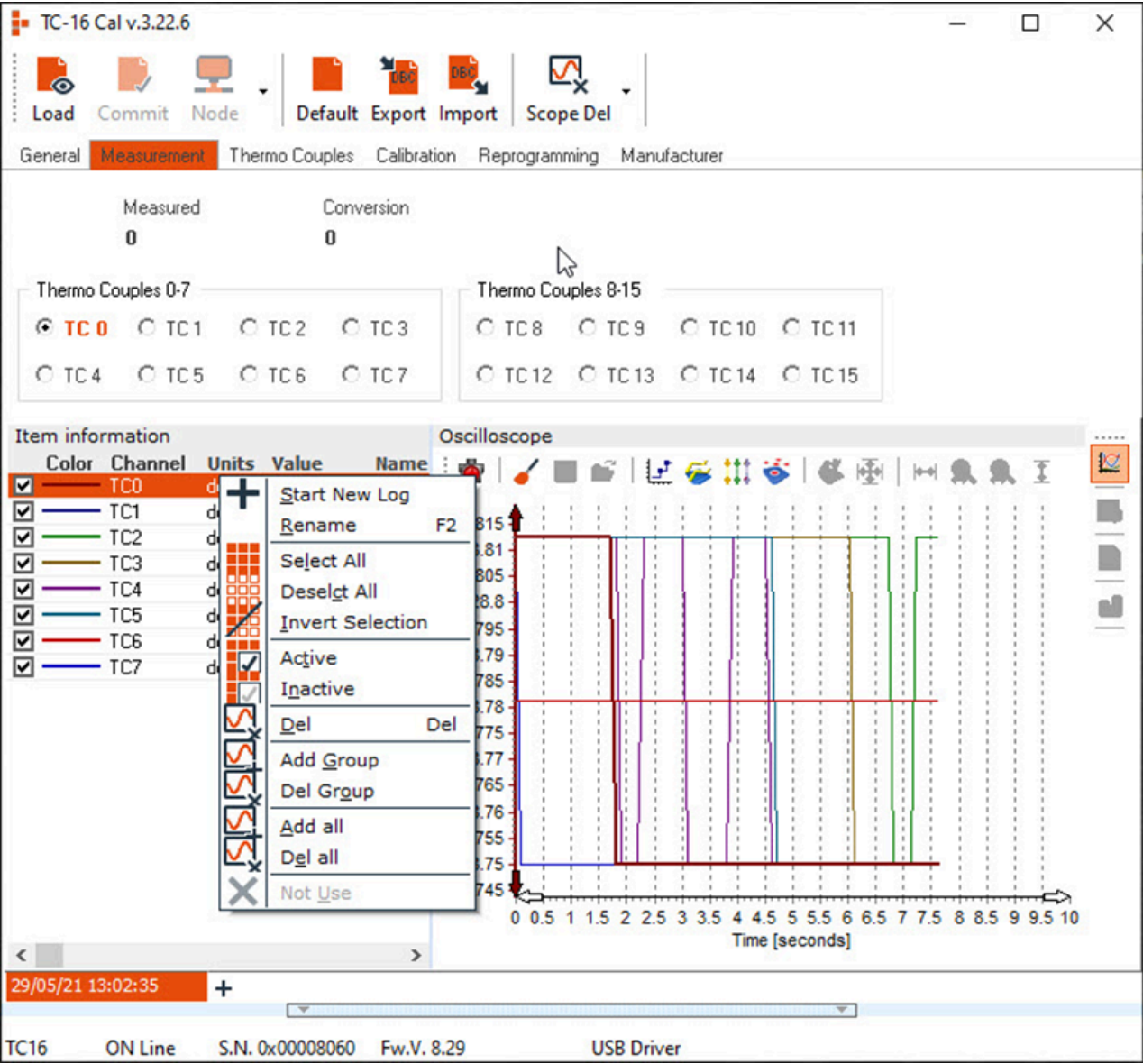
S.N. 0x00008094



Fw.V. 8.23

USB Driver

Measurement Tab

This Tab allows the user to visualise the live measurements.



 Load	Pressing the Load Button Loads the settings in the K-TCxx and displays them on the screen.
 Default	Pressing the Default Button will reset all the settings.



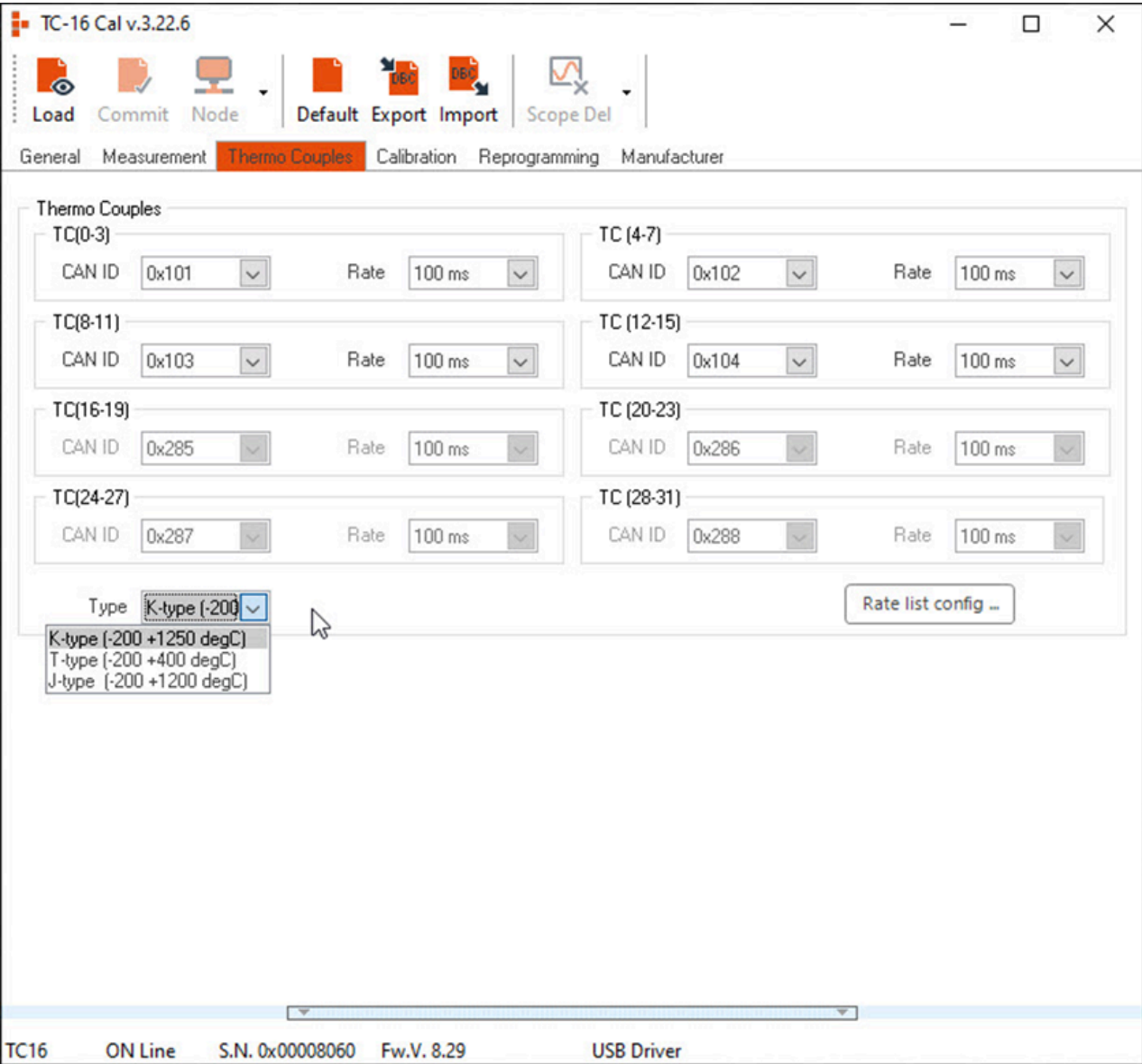
Pressing the Export button will open the DBC export window.







Pressing the Import button will load the settings from the DBC file.

Thermo Couples Tab

Users can configure the CAN ID, Transmission rate and thermocouple type in this window.



 Load	Pressing the Load Button Loads the settings in the K-TCxx and displays them on the screen.
CAN ID	Users can use this option to set the CAN ID of the messages containing thermocouple data

Rate	Allows the user to set the CAN message transmission rate.
Type	Allows the user to select the thermocouple type.
Rate List Config	Allows the user to add additional transmission rates.
 Default	Pressing the Default Button will reset all the settings.
 Export	Pressing DBC Export will open the DBC export window.
 Import	Pressing the Import button will load the settings from the DBC file.

Calibration

You can calibrate the K-TCxx to Improve the Accuracy of the measurements. The software allows you to cycle through a number of measurement points; once done, the calibration will apply the calibration to the K-TCxx, and measurement accuracy will be improved.

TC-16 Cal v.3.22.6

Load

Commit

Node

Default

Export

Import

Scope Del

General

Measurement

Thermo Couples

Calibration

Reprogramming

Manufacturer

Nominal Value

-50 C

Start

Raw Temperature

26.30

C

Noise

Settings

Go to next channel

Settings

Noise Level

0.1 C

0.1 C

Tolerance

Default

Thermo Couples 0-7

TC 0

TC 1

TC 2

TC 3

TC 4

TC 5

TC 6

TC 7

Thermo Couples 8-15

TC 8

TC 9

TC 10

TC 11

TC 12

TC 13

TC 14

TC 15

Channel	Nominal 1	Nominal 2	Nominal 3	Nominal 4
TC 0	-50 C	-25 C	0 C	+50 C
TC 1	-50 C	-25 C	0 C	+50 C
TC 2	-50 C	-25 C	0 C	+50 C
TC 3	-50 C	-25 C	0 C	+50 C
TC 4	-50 C	-25 C	0 C	+50 C
TC 5	-50 C	-25 C	0 C	+50 C
TC 6	-50 C	-25 C	0 C	+50 C
TC 7	-50 C	-25 C	0 C	+50 C
TC 8	-50 C	-25 C	0 C	+50 C
TC 9	-50 C	-25 C	0 C	+50 C
TC 10	-50 C	-25 C	0 C	+50 C
TC 11	-50 C	-25 C	0 C	+50 C
TC 12	-50 C	-25 C	0 C	+50 C
TC 13	-50 C	-25 C	0 C	+50 C
TC 14	-50 C	-25 C	0 C	+50 C
TC 15	-50 C	-25 C	0 C	+50 C

Clear calibration

Clear channel

TC16

ON Line

S.N. 0x00008060

Fw.V. 8.29

USB Driver

Load

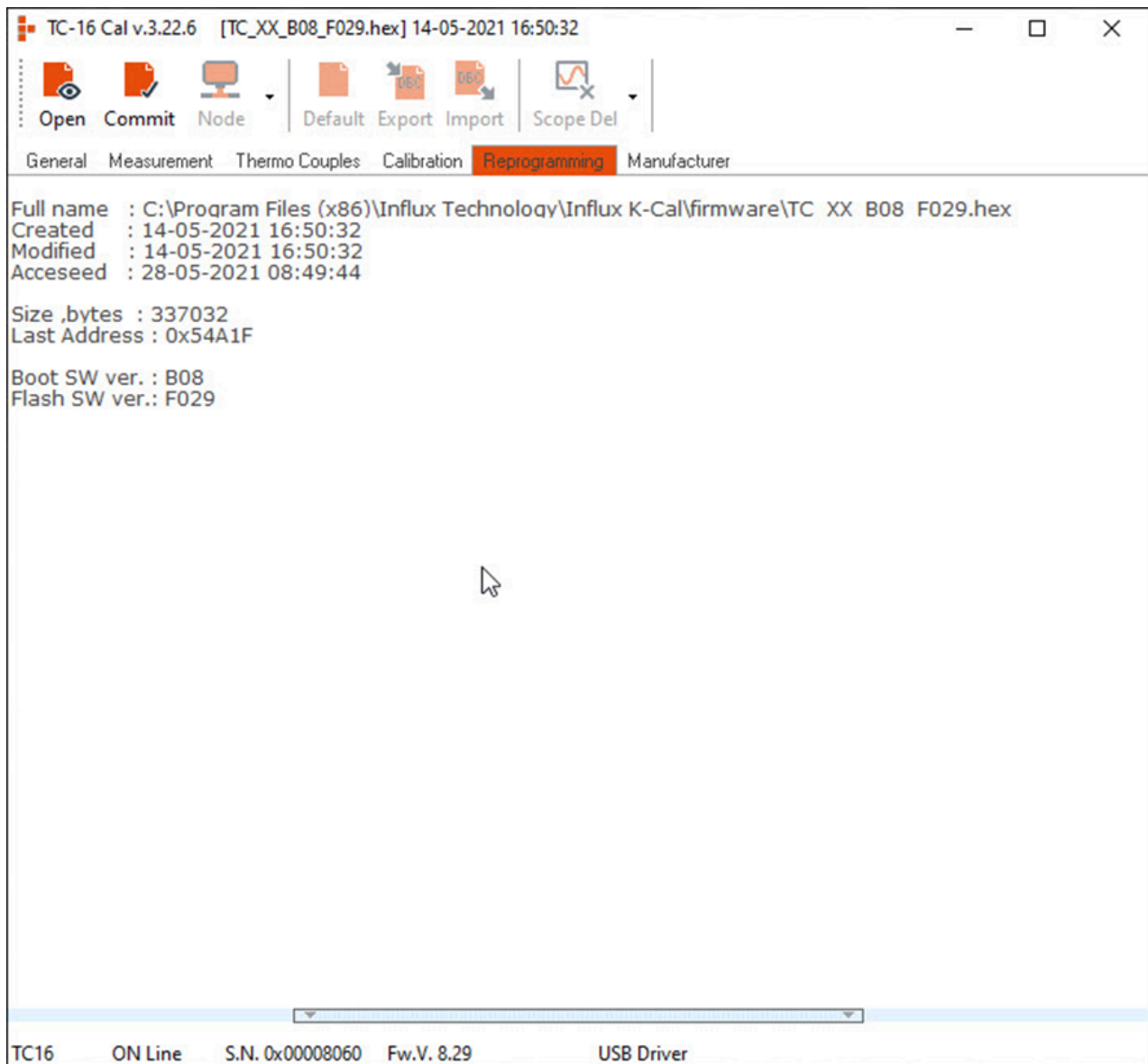
Pressing the Load Button Loads the calibration in the K-TCxx and displays them on the screen.

You may use this function if you wish to check that the K-TCxx is calibrated

Nominal Value	Allows the user to select the value being fed to the thermocouple channel.
Raw Temperature	Displays the RAW temperature data.
Noise	Displays the noise level in the signal.
Settings	Allows the user to set the Nominal temperature values.
Noise Level	Allows the user to set the tolerance level.
Clear Calibration	Clears the existing calibration in the device.

Alternatively, press the start button and attach the appropriate thermocouple test signals to the inputs of the K-TCxx to cycle through the test points to calibrate the K-TCxx for maximum accuracy.

Reprogramming



Allows the user to browse and select the firmware file.



Pressing Commit will start the Reprogramming process.



Notes:

-

- Do not disconnect or power cycle the device during the process.

Manufacturer

TC-16 Cal v.3.22.6 [TC_XX_B08_F029.hex] 14-05-2021 16:50:32

Load Commit Node Default Export Import Scope Del

General Measurement Thermo Couples Calibration Reprogramming **Manufacturer**

Vendor Code

Product Code

Revision number

Serial number

Firmware Version

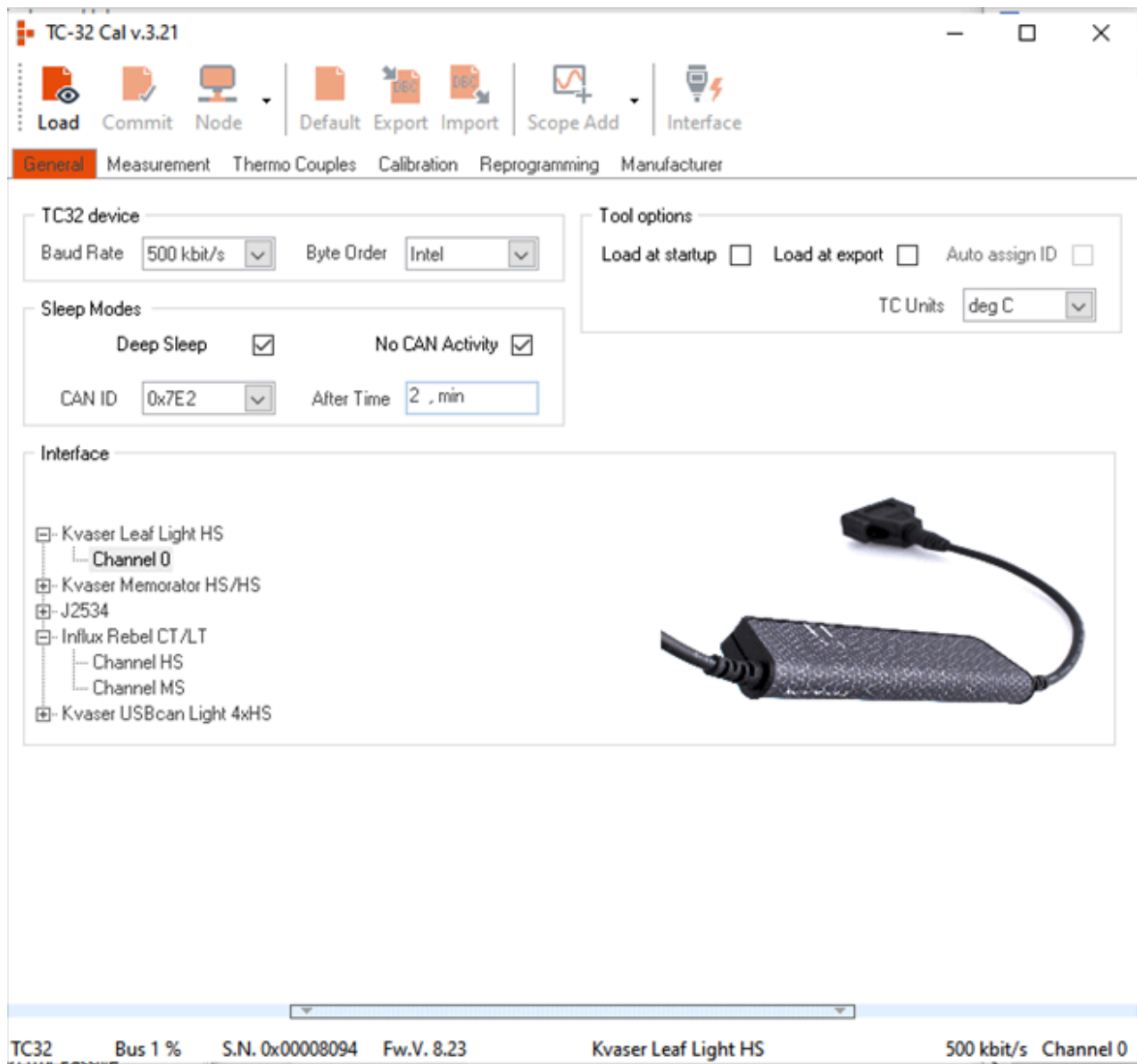
TC16 ON Line S.N. 0x00008060 Fw.V. 8.29 USB Driver



Pressing the Load Button Loads the settings in the K-TCxx and displays them on the screen.

Using the K-TCxx Cal Software

Once you launch the K-TCxx Configuration utility, you will see the settings for the Interface you are using. If the K-TCxx is on and connected, its serial no and firmware version will be displayed at the bottom of the screen.



If the device is not interfaced, choose the interface device and click Baud Rate Scan.

TC-32 Cal v.3.21

Load

Commit

Node

Default

Export

Import

Scope Add

General

Measurement

Thermo Couples

Calibration

Reprogramming

Manufacturer

TC32 device

Baud Rate500 kbit/s

Byte OrderIntel

Tool options

Load at startup

Load at export

Auto assign ID

TC Unitsdeg C

Sleep Modes


Deep Sleep

No CAN Activity

CAN ID0x7E2

After Time2 , min

Interface



TC32

ON Line

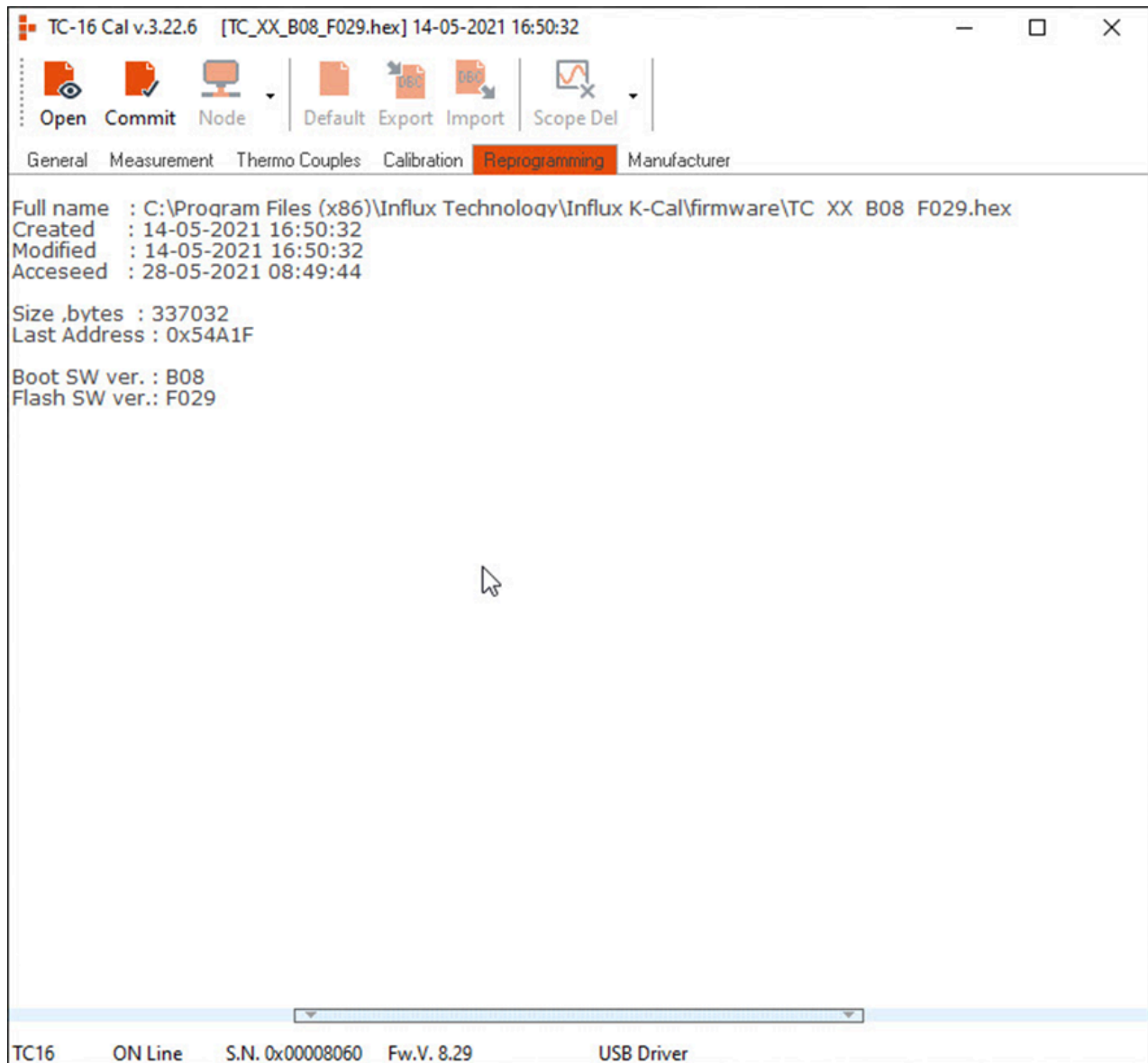
S.N. 0x00008094

Fw.V. 8.23

USB Driver

Reprogramming the K-TCxx

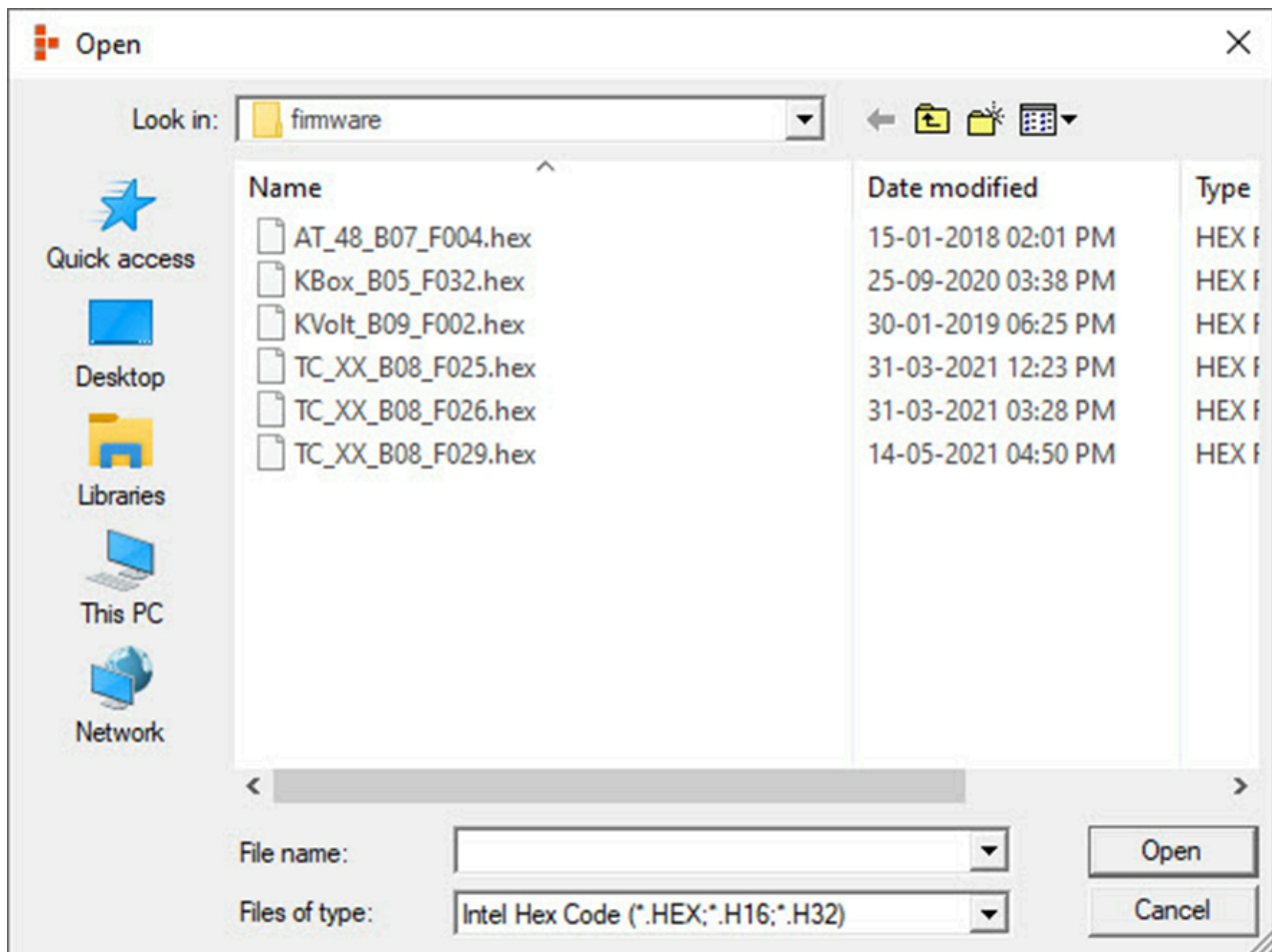
You can change to the Reprogramming Function by clicking the Tab; you will see the following Window.



Open

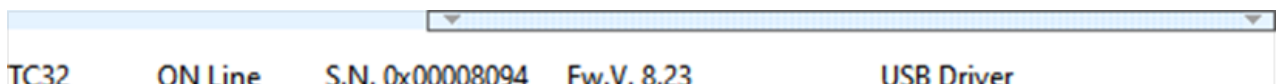
Click the Open Button

Locate the hex file that you wish to program into the K-TCxx. Usually, this will be located in C:\Program Files (x86)\Influx Technology\K-TCxx Config\firmware.

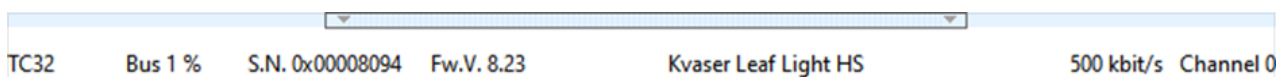


Then select the 'Open' option.

Click the Commit button; you will see the following progress indicator at the bottom of the screen:



OR



When the progress indicator reaches the right-hand side, reprogramming is complete.

Calibrating the K-TCxx

You can calibrate the K-TCxx to Improve the Accuracy of the measurements. The software allows you to cycle through a number of measurement points. Once done, committing the calibration will apply the calibration to the K-TCxx, and measurement accuracy will be improved.

The screenshot shows the 'TC-16 Cal v.3.23' software window. The 'Calibration' tab is selected. The interface includes a toolbar with buttons for Load, Commit, Node, Default, Export, Import, and Scope Del. Below the toolbar are tabs for General, Measurement, Thermo Couples, Calibration, Reprogramming, and Manufacturer. The Calibration tab displays a 'Nominal Value' dropdown menu with a list of temperatures from -50 C to +1200 C. A 'Start' button is next to it. The 'Raw Temperature' is shown as 30.40 C. There are 'Settings' and 'Noise Level' sections. The 'Noise Level' is set to 0.1 C. A table lists 16 channels (TC 0 to TC 15) with their nominal values. The 'Clear calibration' and 'Clear channel' buttons are also visible.

Channel	Nominal 1	Nominal 2	Nominal 3	Nominal 4
TC 0	-50 C	-25 C	0 C	+50 C
TC 1	-50 C	-25 C	0 C	+50 C
TC 2	-50 C	-25 C	0 C	+50 C
TC 3	-50 C	-25 C	0 C	+50 C
TC 4	-50 C	-25 C	0 C	+50 C
TC 5	-50 C	-25 C	0 C	+50 C
TC 6	-50 C	-25 C	0 C	+50 C
TC 7	-50 C	-25 C	0 C	+50 C
TC 8	-50 C	-25 C	0 C	+50 C
TC 9	-50 C	-25 C	0 C	+50 C
TC 10	-50 C	-25 C	0 C	+50 C
TC 11	-50 C	-25 C	0 C	+50 C
TC 12	-50 C	-25 C	0 C	+50 C
TC 13	-50 C	-25 C	0 C	+50 C
TC 14	-50 C	-25 C	0 C	+50 C
TC 15	-50 C	-25 C	0 C	+50 C



Load

Pressing the Load Button Loads the calibration contained in the K-TCxx and displays them on the screen.

You may use this function if you wish to check that the K-TCxx is calibrated.

Alternatively, press the start button and attach the appropriate thermocouple test signals to the inputs of the K-TCxx in order to cycle through the test points in order to calibrate the K-TCxx for maximum accuracy:

Select the Channel of the Calibration Point you wish to calibrate by either clicking the Radio Button on the channel.

Thermo Couples 0-7

☒ TC 0

☐ TC 1

☐ TC 2

☐ TC 3

☐ TC 4

☐ TC 5

☐ TC 6

☐ TC 7

Channel	Nominal 1	Nominal 2	Nominal 3	Nominal 4
TC 0	-50 C	-25 C	0 C	+50 C
TC 1	-50 C	-25 C	0 C	+50 C
TC 2	-50 C	-25 C	0 C	+50 C
TC 3	-50 C	-25 C	0 C	+50 C
TC 4	-50 C	-25 C	0 C	+50 C
TC 5	-50 C	-25 C	0 C	+50 C
TC 6	-50 C	-25 C	0 C	+50 C

Or by clicking on the point you wish to calibrate in the field to the right

Nominal Value

-50 C

▼

Start

Raw Temperature

26.30

C

Noise

Adjust the input temperature from the calibrated test equipment that you are using to match the voltage for the test point:

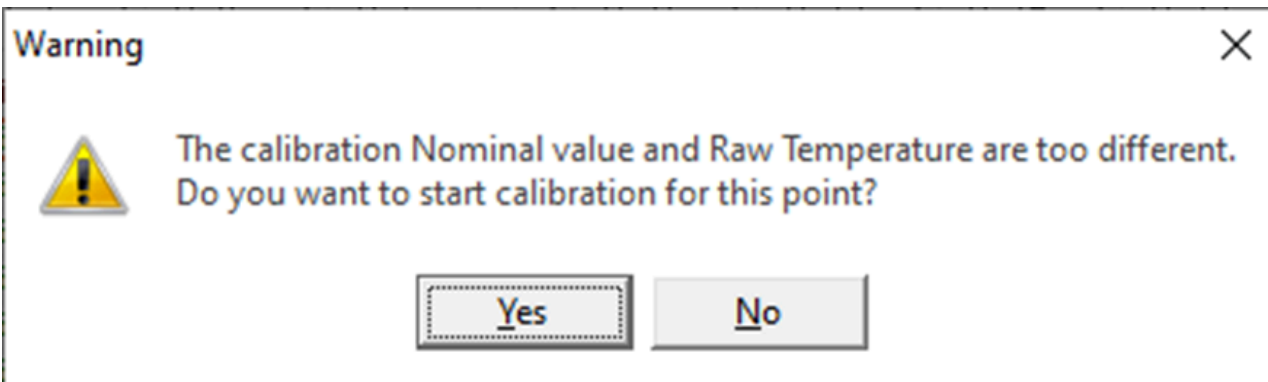


Press the Start button:

If the input temperature is stable and correct, the calibration of the channel will be updated as follows:

Channel Nominal 1	
TC 0	-50 C
TC 1	-50 C
TC 2	-50 C
TC 3	-50 C
TC 4	-50 C
TC 5	-50 C

If it is not, you will receive a warning:



Repeat the steps above until you have calibrated all the calibration points.



Once you have configured the K-TCxx as desired, click Commit to send the configuration to the K-TCxx. If you make a mistake and wish to clear the calibration, you can also use the Clear button.

This will save the calibration to the K-TCxx and create a report detailing the calibration:

K-Box Calibration report

Report number: 7

Serial Number : 0x00008094

Revision Number :

Firmware Version : 8.23

Date / Time : 18-04-2021 / 00:37:23

Calibration data

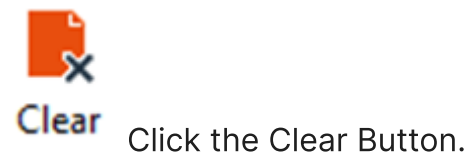
Thermo Couples

Tolerance [deg C] : Med < 0.1 Low < 0.1

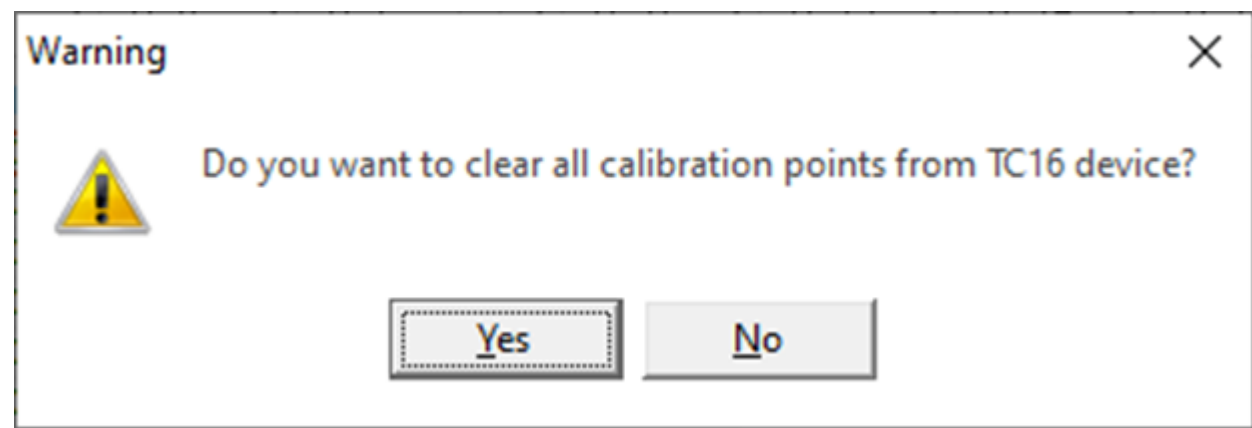
Ch	Nominal [deg C]	Measured [deg C]	Noise [deg C]		Nominal [deg C]	Measured [deg C]	Noise [deg C]	
TC0	-50	-49.625	0.03125	Low	-25	-24.5	0.09375	Low
TC1	-50	-49.5625	0.078125	Low	-25	-24.828125	0.0625	Low
TC2	-50	-50.171875	0.078125	Low	-25	-24.84375	0.078125	Low
TC3	-50	-50.140625	0.046875	Low	-25	-25.0625	0.03125	Low
TC4	-50	-50.046875	0.09375	Low	-25	-25.0625	0.046875	Low
TC5	-50	-50.28125	0.03125	Low	-25	-25.25	0.0625	Low
TC6	-50	-50.421875	0.0625	Low	-25	-25.3125	0.078125	Low

Erasing the Calibration

To erase the calibration, follow the following steps:



Click 'Yes' to confirm that you want to clear the calibration.



Check that you can see the status messages at the bottom of the K-TCxx Cal Application; if you can't, click on the light blue line and drag it upwards.

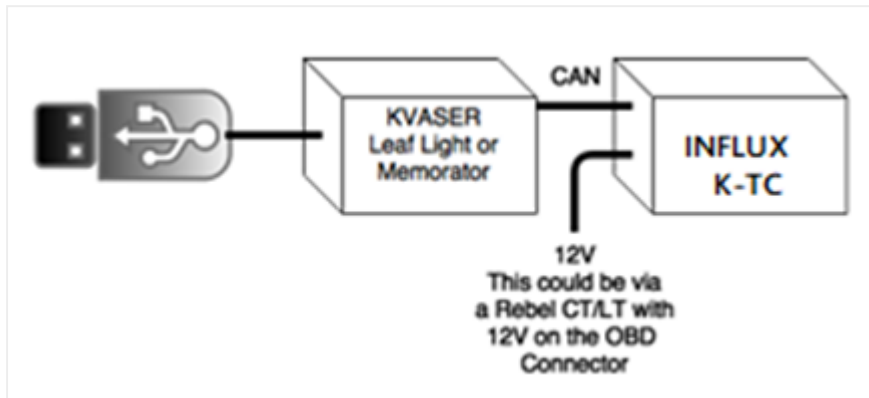


Wait until the status messages at the bottom of the window show that the Calibration table has been cleared:

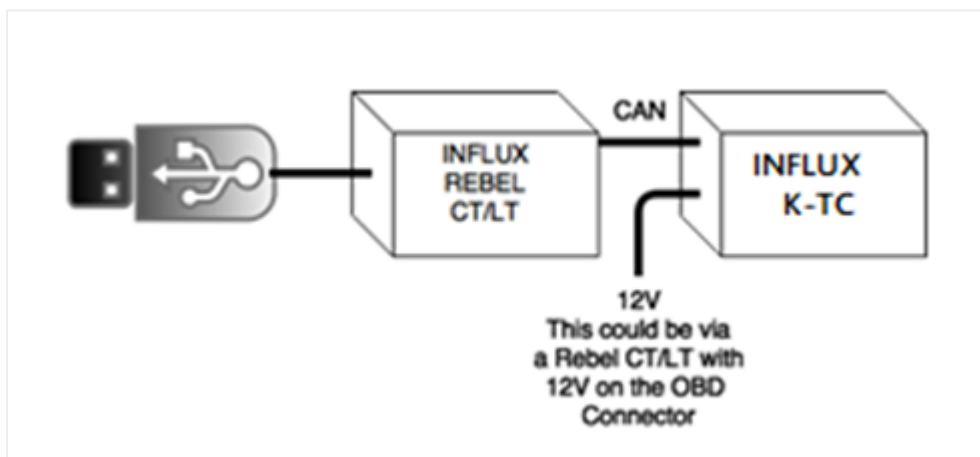
Ident	Data	Comment	Time	
0x07E4	F0 00 01 02 00 00 00 00		14:38:19	
0x07E5	F0 02 01 00 00 00 00 00	Write to Flash	14:38:19	
0x07E4	F0 00 01 02 00 00 00 00		14:38:19	
i		Calibration table was cleared.	14:38:19	

Configuring the K-TCxx

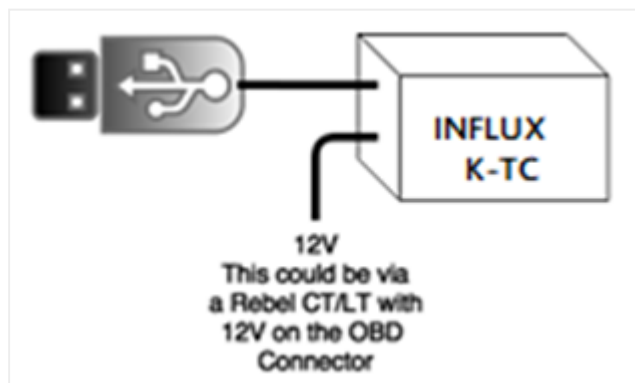
The K-TCxx comes pre-configured, but the configuration is programmable using the K-TCxx Calibration utility. It requires installing a Kvaser Leaf Light, Memorator or an Influx Rebel CT or LT and installing the K-TCxx Calibration utility.



For the above example, please install the Kvaser Drivers.



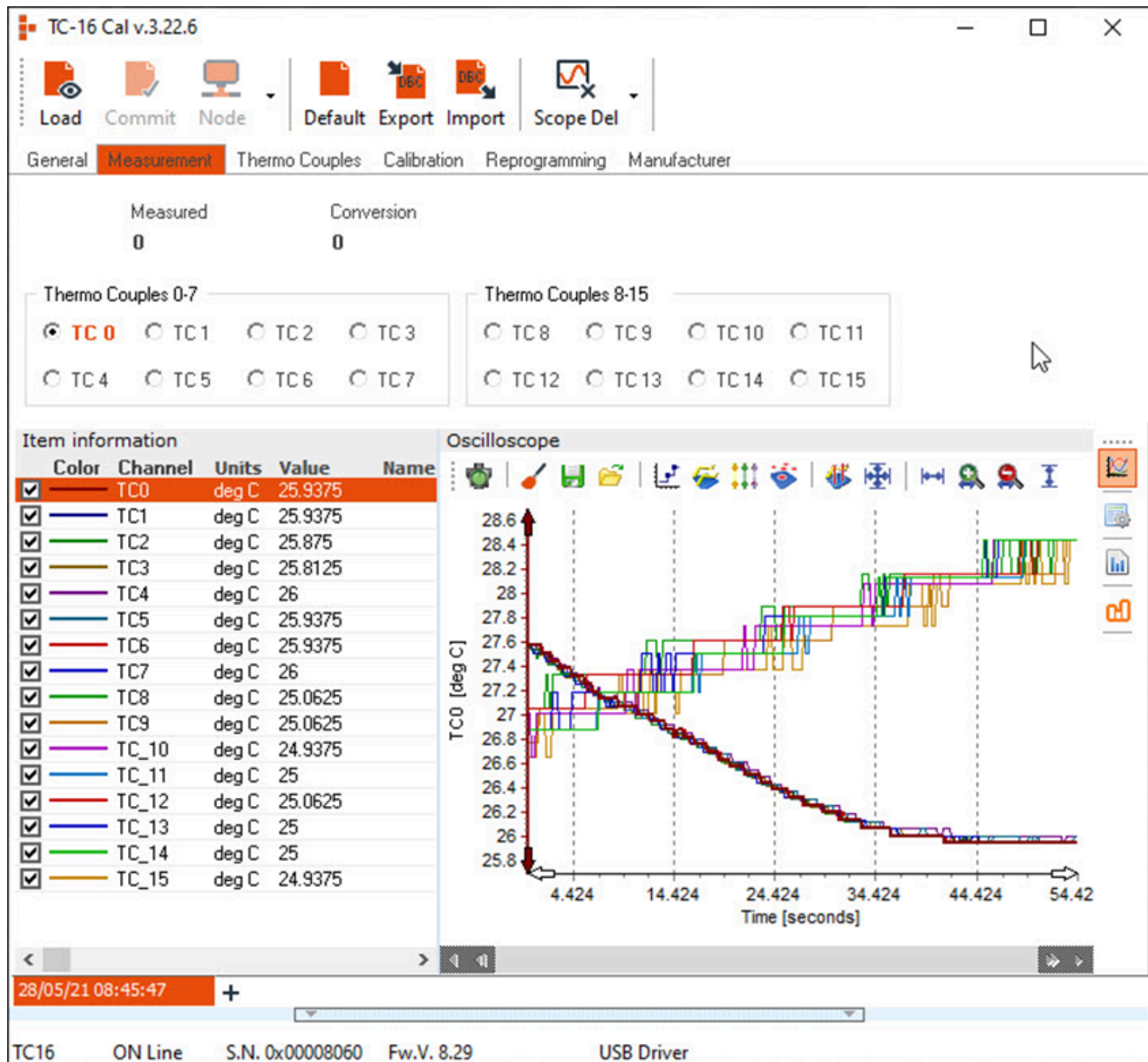
For the above example, please install the Rebel Drivers.



For the above example, please install the KTC Drivers.

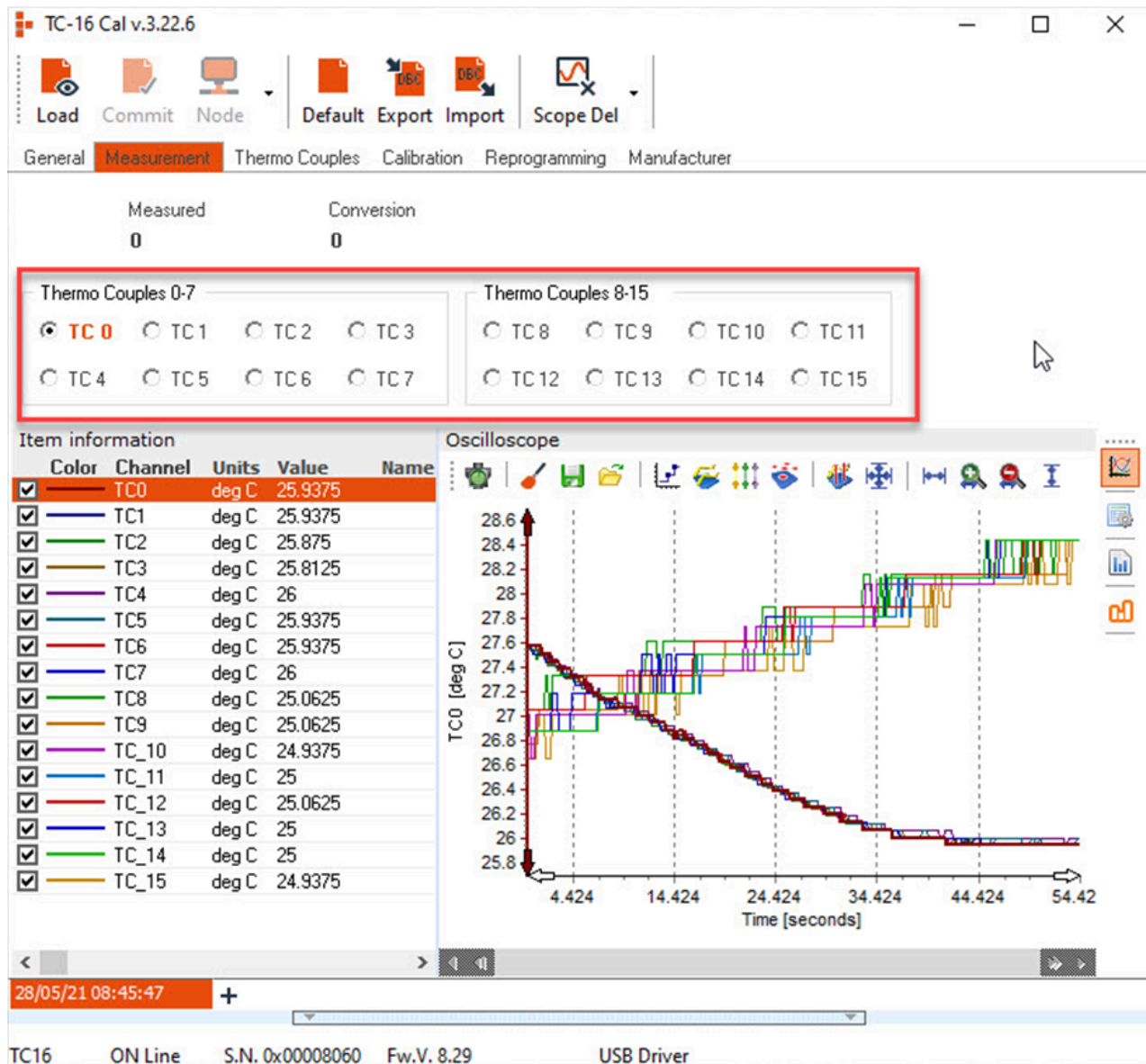
Using K-TCxx Cal to display data

You can use the K-TCxx Cal application to display the Thermocouple being measured by the K-TCxx visually.



Channel Display

The top area of the Measurement Tab displays the Measured Values for each K-TCxx channel.



Selecting the Channel to display

Click on the radio button of the channel you wish to display, and the Actual Measured Value will be displayed.

Measured	Conversion
0	0

Thermo Couples 0-7

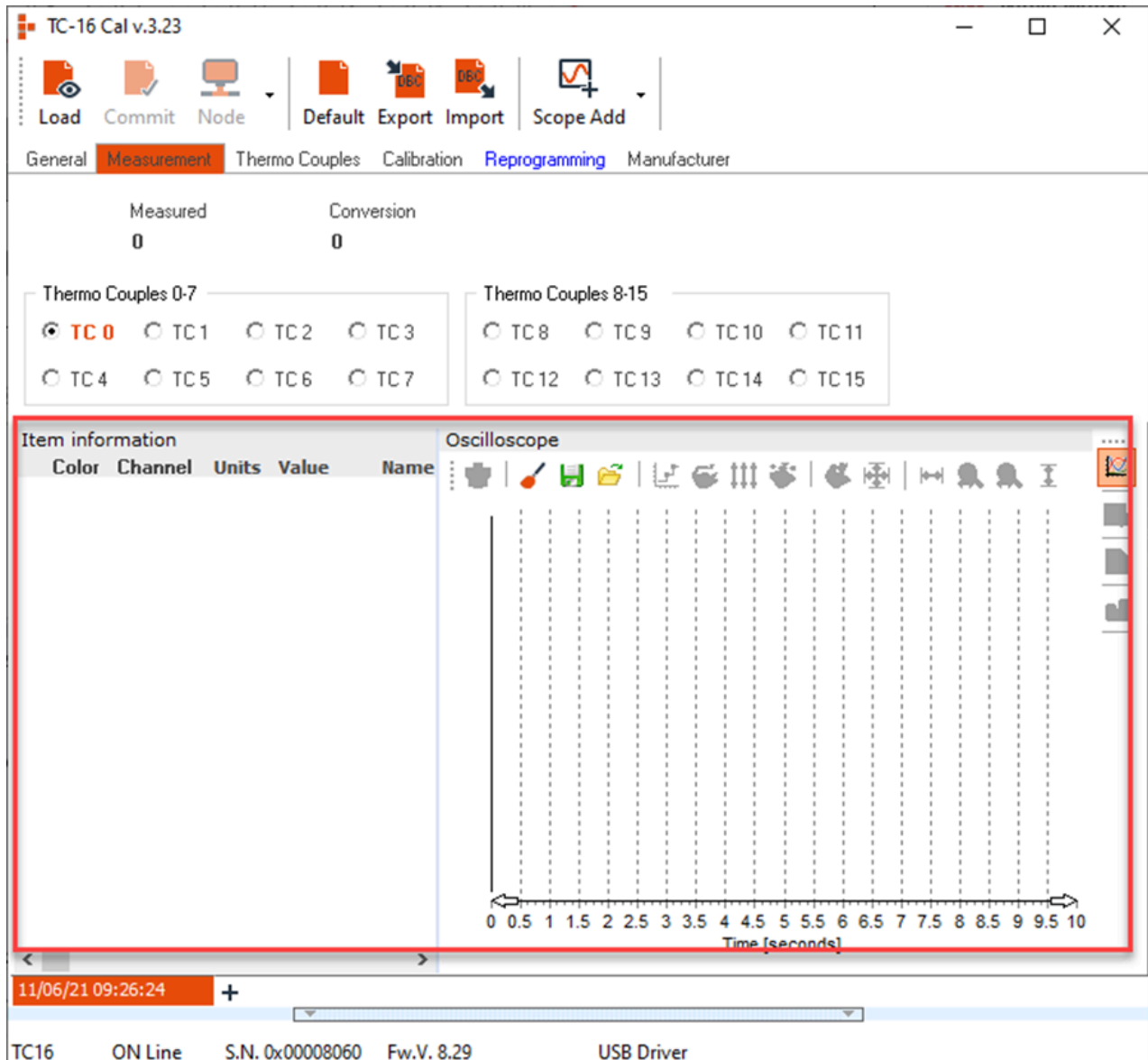
☒ TC 0 ☐ TC 1 ☐ TC 2 ☐ TC 3
☐ TC 4 ☐ TC 5 ☐ TC 6 ☐ TC 7

Thermo Couples 8-15

☐ TC 8 ☐ TC 9 ☐ TC 10 ☐ TC 11
☐ TC 12 ☐ TC 13 ☐ TC 14 ☐ TC 15

Using the Oscilloscope to display data

The lower area of the Measurement Tab is used to display the Oscilloscope:

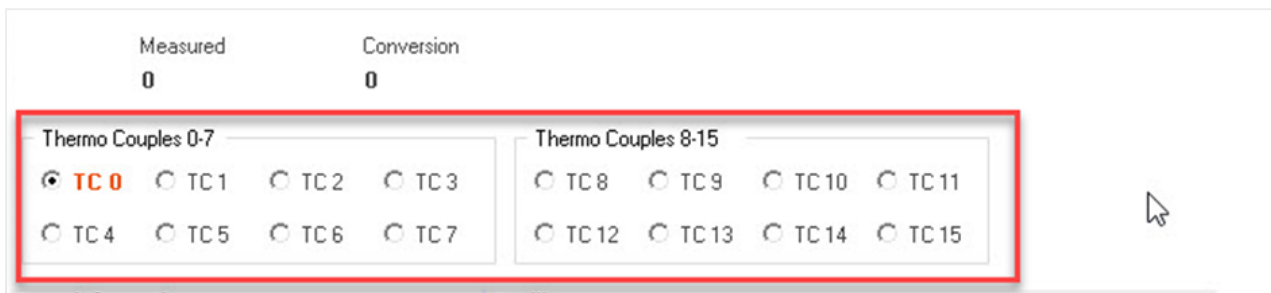


There are several ways to add items to the Oscilloscope.

Individually Adding items to the Oscilloscope.

Items can be added to the Oscilloscope individually by following the following steps:

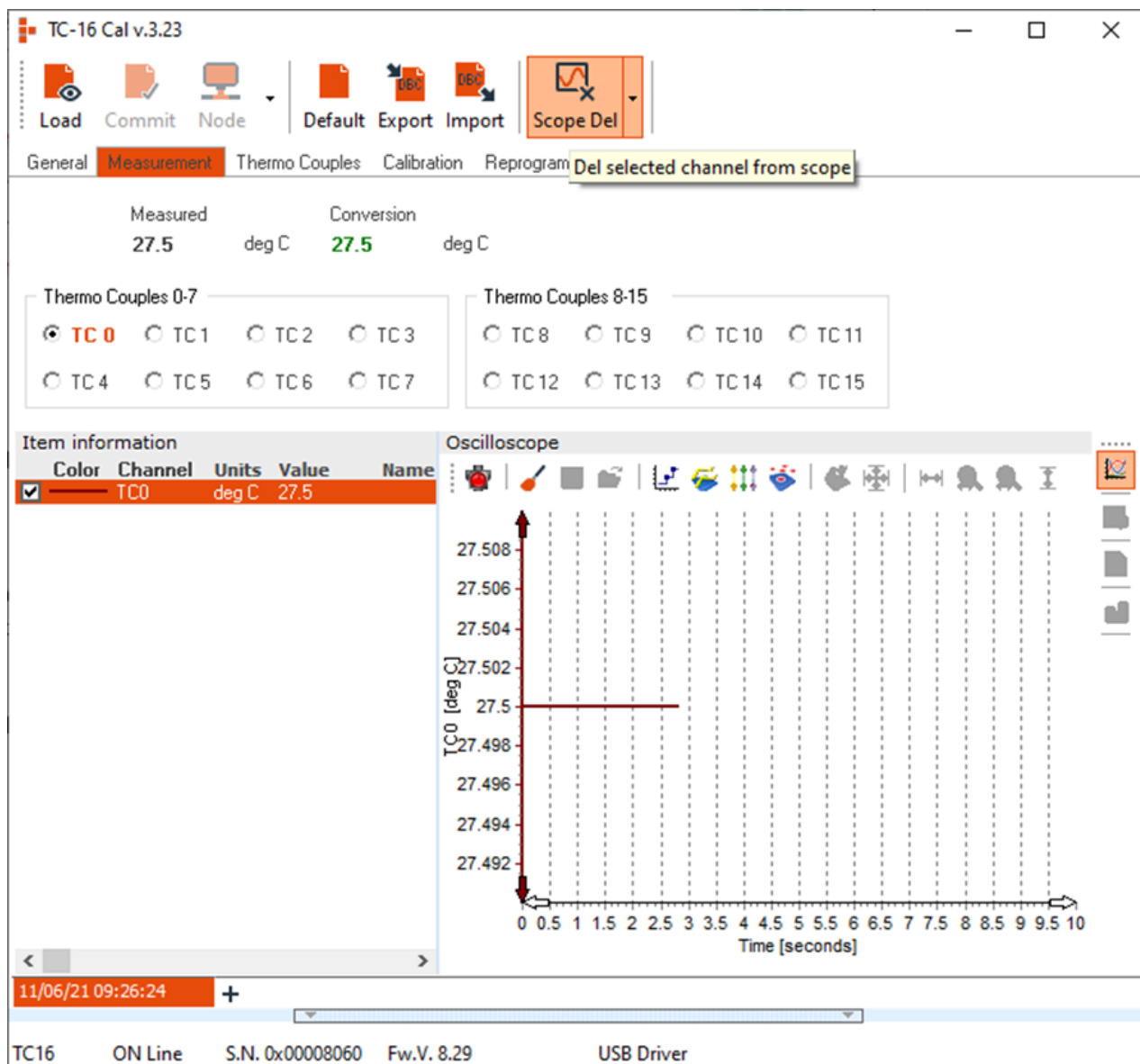
Click the Channel you want to add to the Oscilloscope:



Scope Add

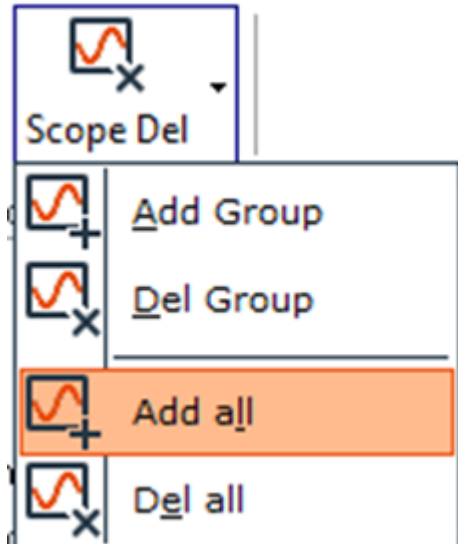
Click the Scope add button.

The channel will be added to the Oscilloscope.



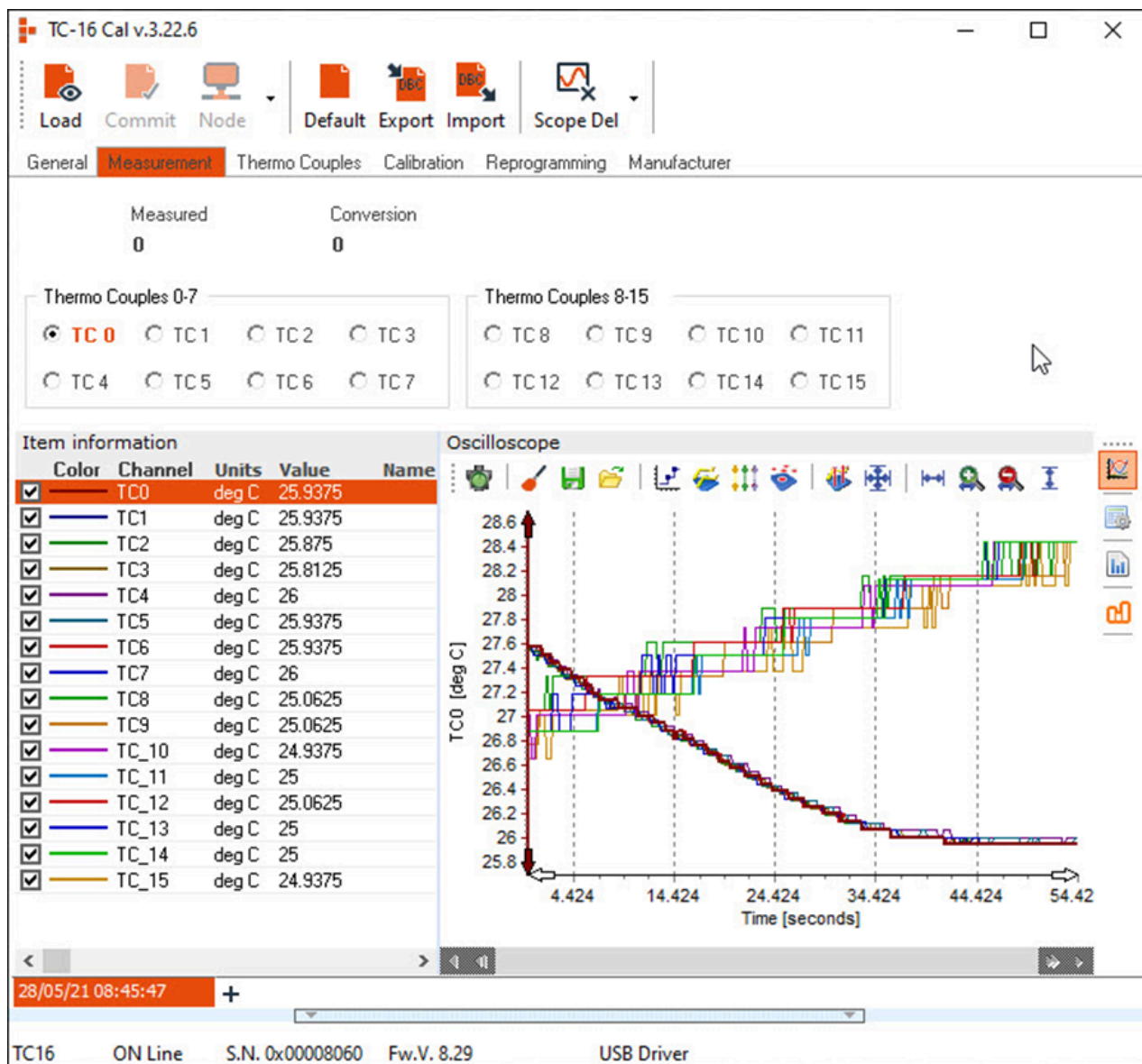
Adding All Channels to the Oscilloscope (Method 1)

All Channels can be added to the Oscilloscope by following the following steps:



Click the Scope add/Add all button.

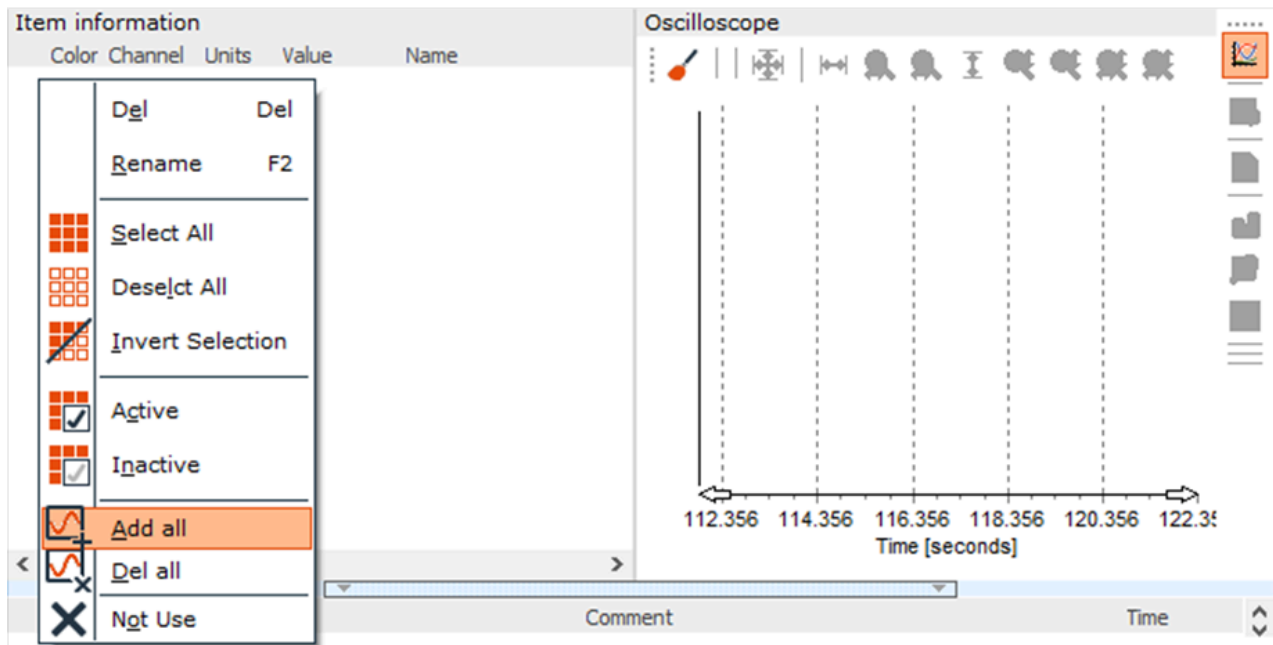
All channels will be added to the Oscilloscope.



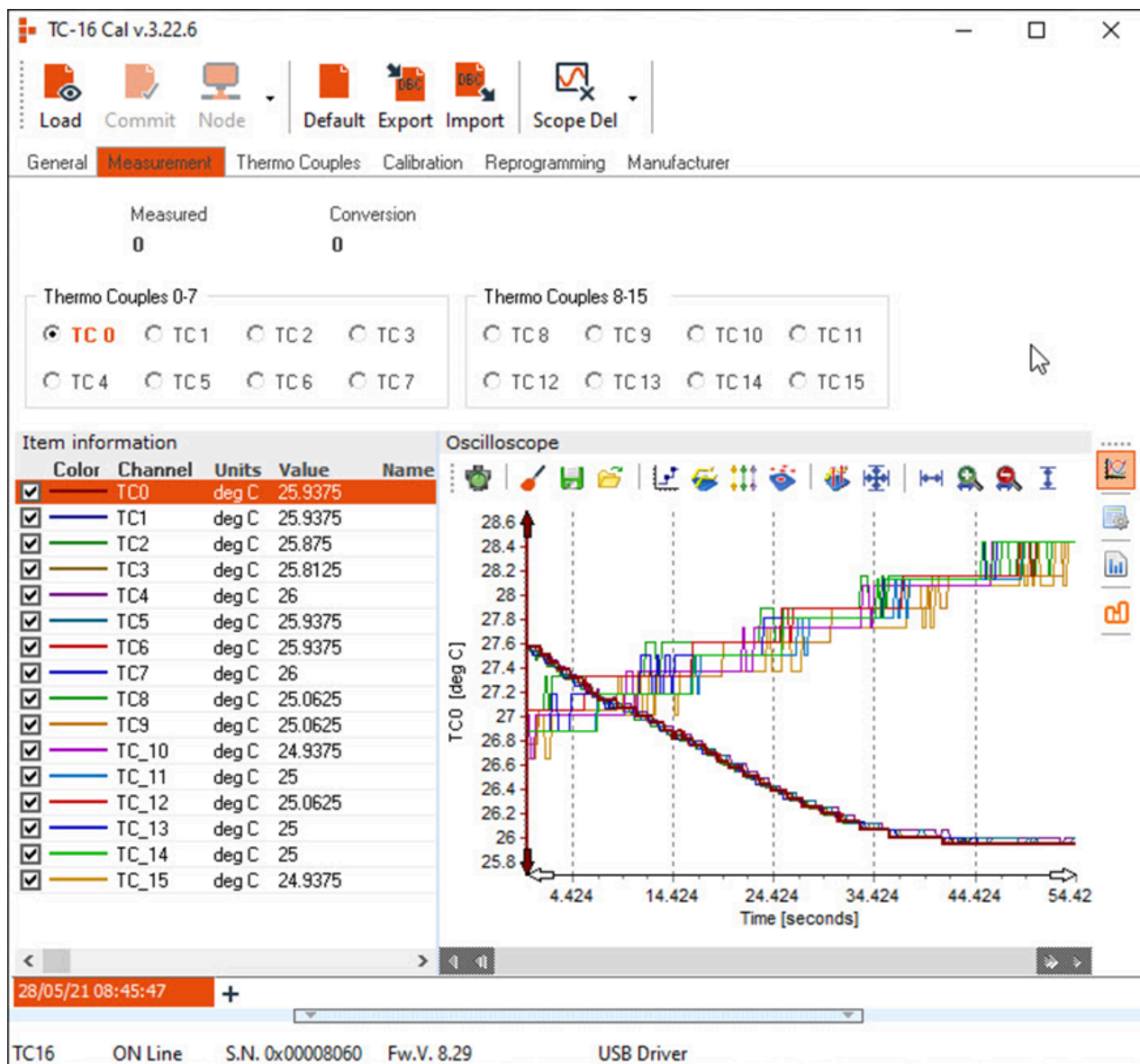
Adding All Channels to the Oscilloscope (Method 2)

All Channels can be added to the Oscilloscope by following the following steps:

Right-click in the Item Information Area and Select Add all:

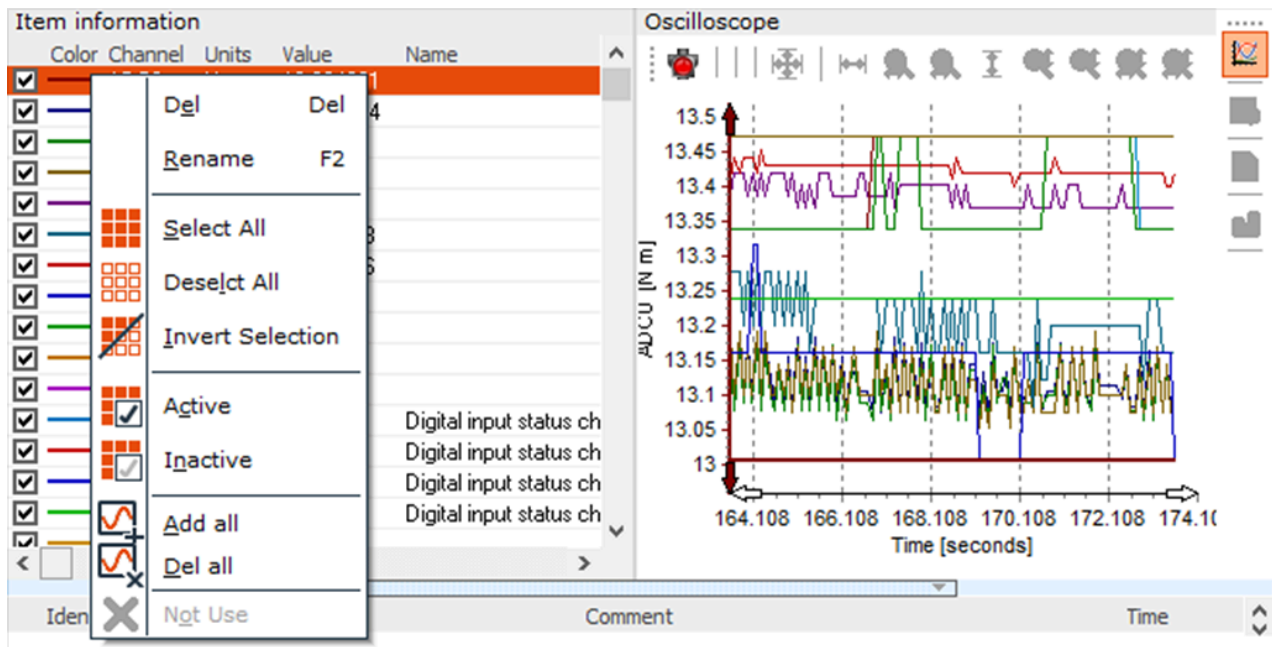


All channels will be added to the Oscilloscope.



Working with items added to the Oscilloscope

Right-click in the Item Information Area; this will bring up the following menu.



The Menu Items allow the following functionality:

Del	Deletes the item or item selected in Orange
Rename	Assigns a Name to the Channel; this will appear in the Name column
Select All	Selects all items
Deselect All	Deselects all items
Invert Selection	Selects all items not currently selected and deselects the items currently selected
Activate	Makes the selected items 'Active'; they will be shown on the Oscilloscope
Inactive	Makes the selected items 'Inactive'; they will NOT be shown on the Oscilloscope

Add all	Adds all items to the Oscilloscope
Del all	Deletes all items from the Oscilloscope
Not Use	Removes conversion tables or formulas from the selected item(s)

Using the Oscilloscope

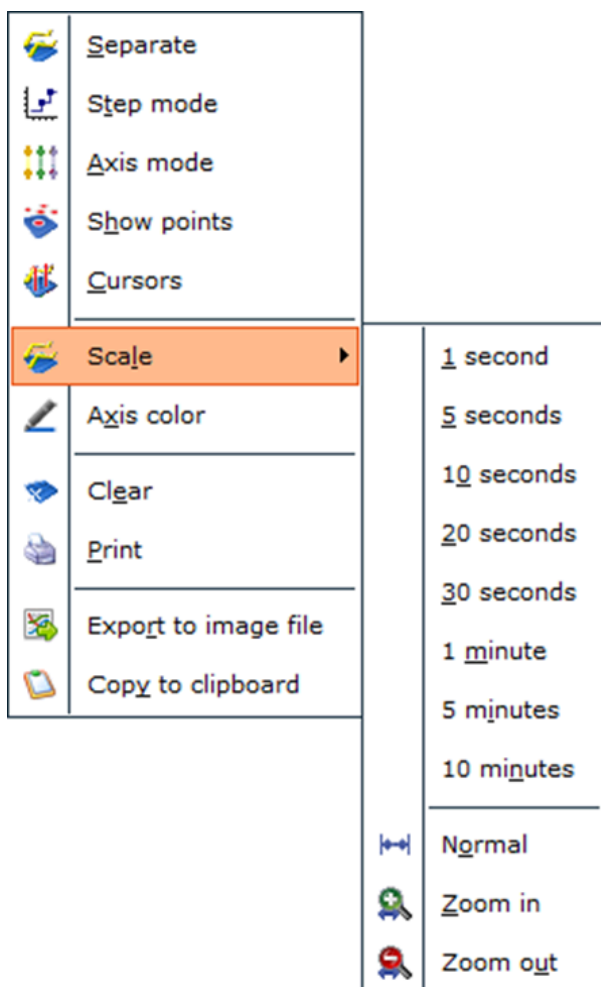
The 'Oscilloscope' functionality is controlled by a dedicated toolbar which is considered below. Each feature is then considered individually.



1	Allows the Oscilloscope to go online
2	Clear the Logged Data in the Oscilloscope
3	<p>Saves the data Logged in the Oscilloscope, it can be saved in:</p> <ul style="list-style-type: none">· Vector MDF (.DAT)· MATLAB 5.0 (.MAT)· MATLAB 5.0 Structured single or double precision (.MAT)· MATLAB 5.0 Structure Extended (.MAT)· Comma Separated Variables (.CSV)
4	Opens Logged data files previously.
5	Show steps between data points
6	Separate Items on Oscilloscope
7	Axis display modes
8	Show item points
9	Show cursors
10	Reset Zoom Factor
11	Reset X-axis Zoom Factor
12	Zoom X-axis in

13	Zoom X-axis Out
14	Fit Items to visible zoom area
15	Zoom Y-axis in
16	Zoom Y-axis Out
17	Zoom all axis in
18	Zoom all axis Out

Right-Clicking on the oscilloscope also brings up a menu with several options; these include changing the scale of the time axis to several different resolutions and changing the axis colour, clearing the data, printing, and exporting the image displayed on the scope.



Exporting a DBC file

Using the DBC Export Feature allows you to export the Conversion tables and Formulas Applied to the various Analog channels for use in other tools such as DiaLog.



Export

Clicking DBC Export will open the DBC export window.

Select Channels To Export

Channels

TC16

	Message	Signal	Export
<input checked="" type="checkbox"/>	TC_0_3		<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	TC_4_7		<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	TC_8_11		<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	TC_12_15		<input checked="" type="checkbox"/>

☒ Include serial number

Export

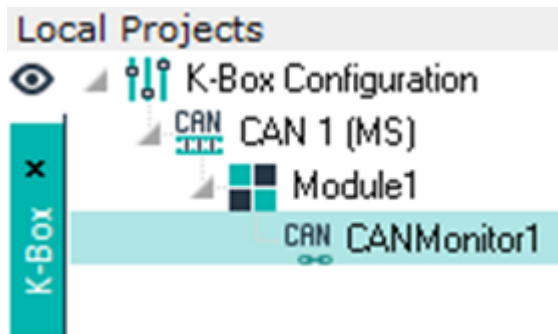
Select the channels you wish to include in the DBC and click Export.

Choose the location where you wish to save the DBC file.

How to [export data](#) using K-TC (tutorial video).

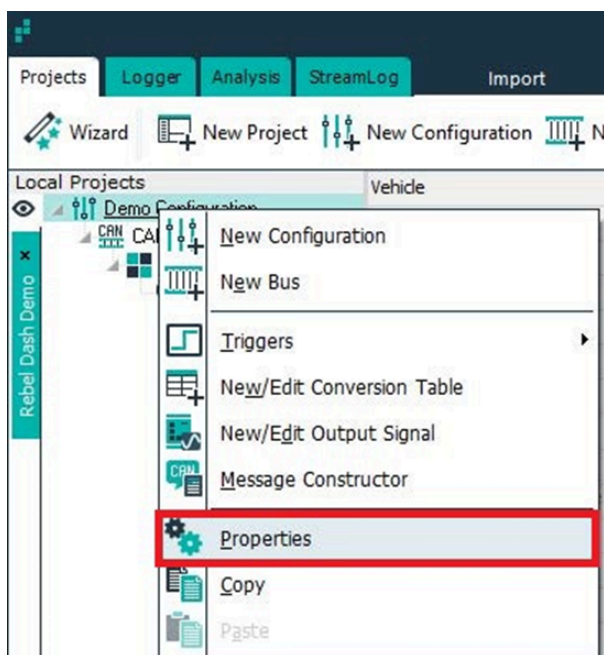
Loading the K-TCxx configuration into DiaLog

Once the K-TCxx is configured as you wish to use it and have generated a DBC file that describes its configuration, you may load that description file into DiaLog and use it to configure the Logger to record the data output by the K-TCxx.

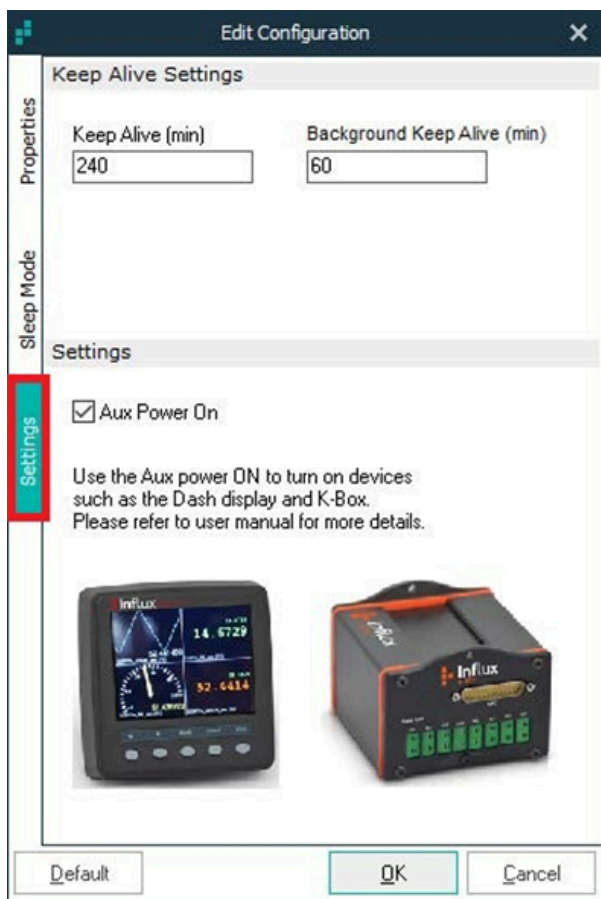


If you power it from the Logger, it will need to be powered from the vehicle or an external power source (NOT just via USB), and you will need to make sure the AUX power feature in the configuration is set to on. To do this, follow the Steps Below:

Open DiaLOG, Right-click on a project with CAN 0 HS bus, and select 'Properties.'

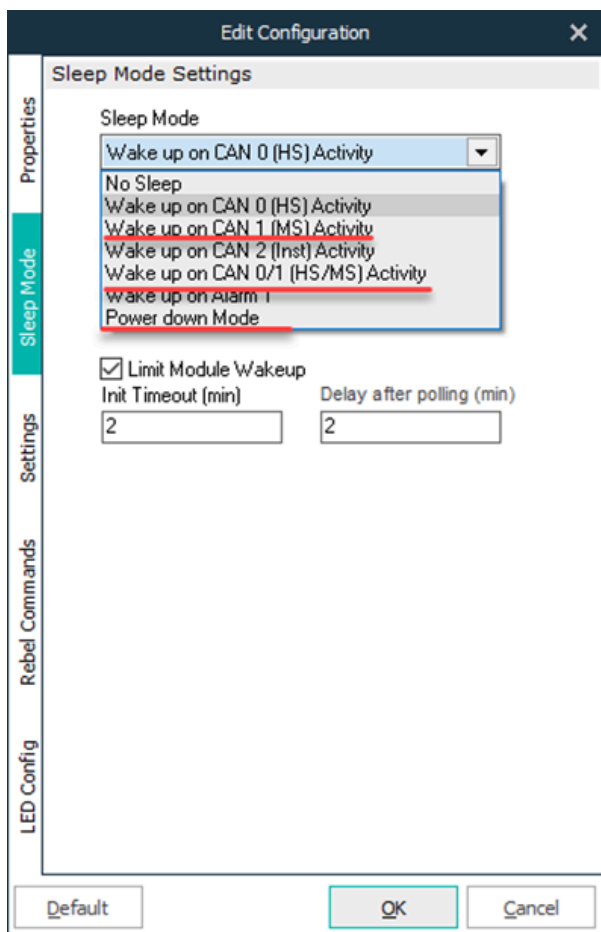


Once the Edit Configuration window is displayed, click on the 'Settings' Tab and put a Checkmark in Aux Power On; Click OK.



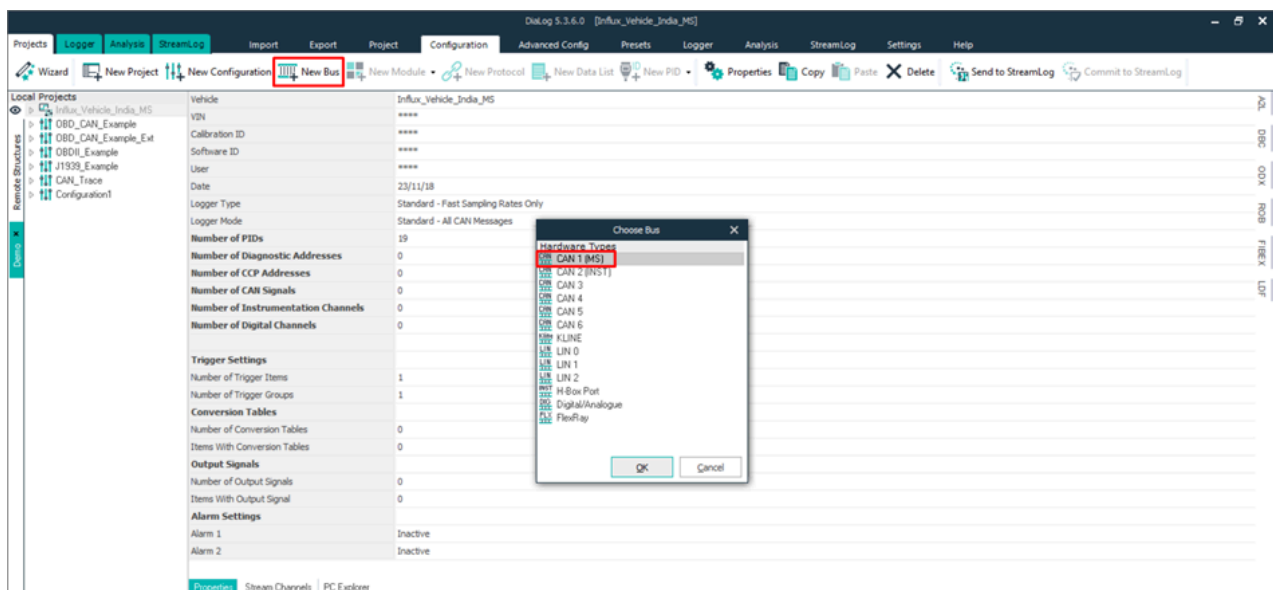
Select the sleep mode suitable for you; it is recommended to use the following:

Wake On CAN 1 or Wake On CAN 0/CAN 1 or Power Down mode.

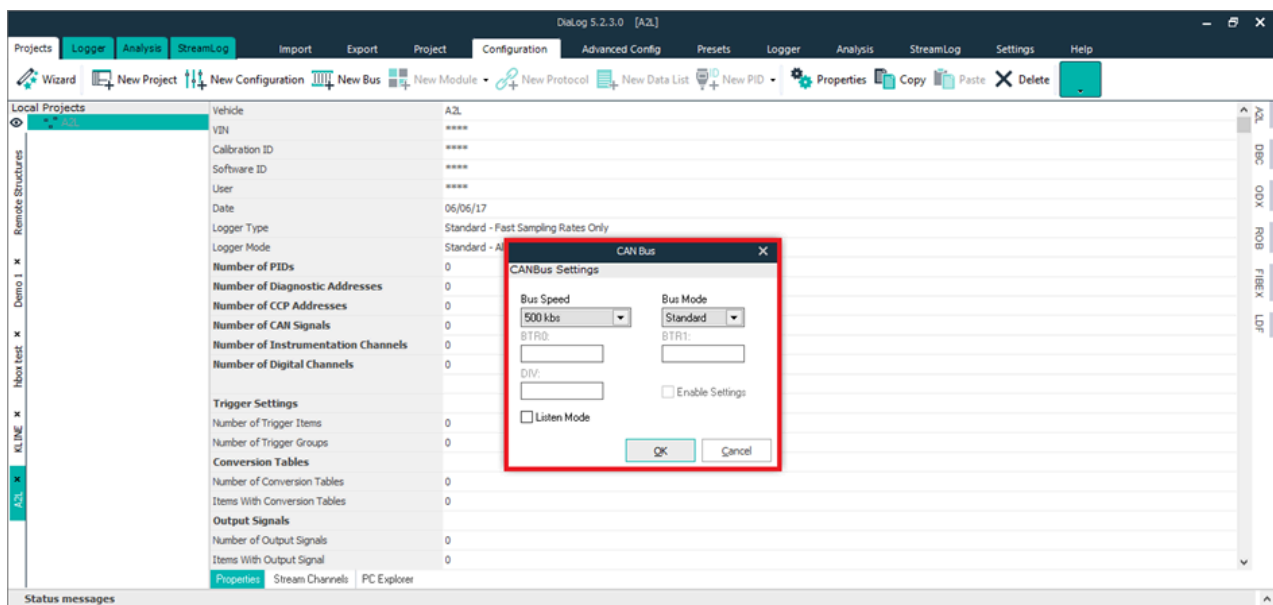


Create new BUS

Select the hardware type (CAN 1 MS) from the popup menu.

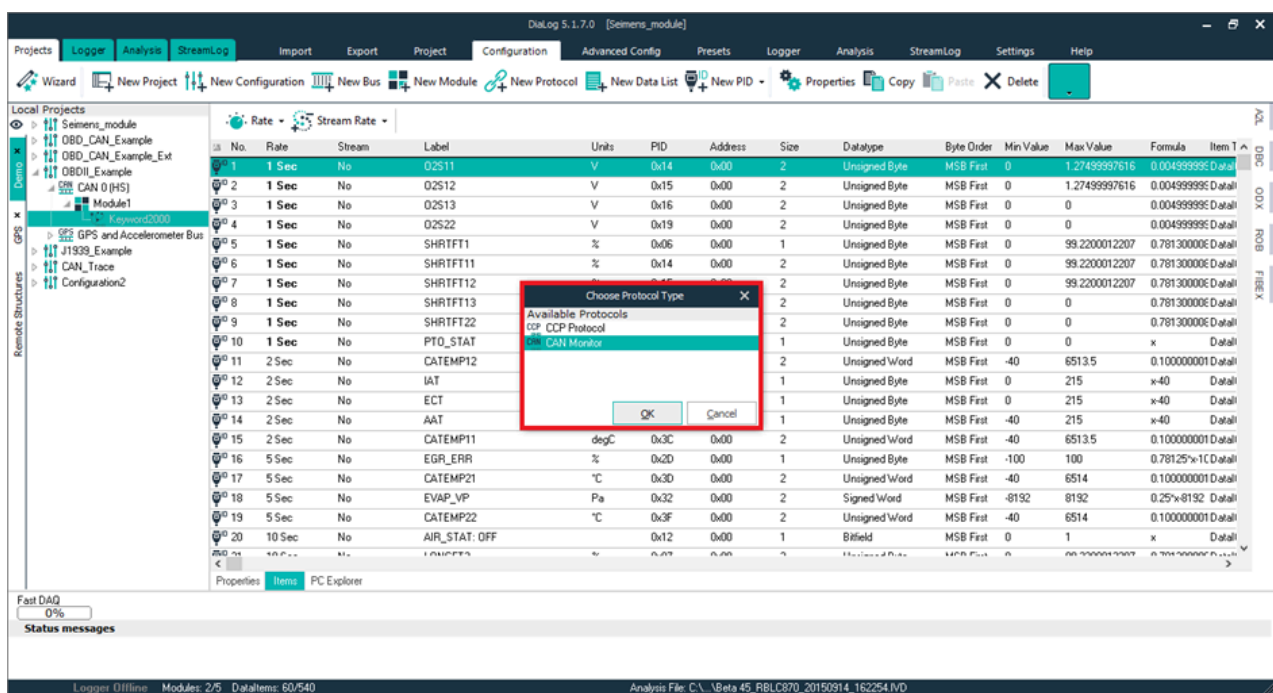


Enter the BUS properties.

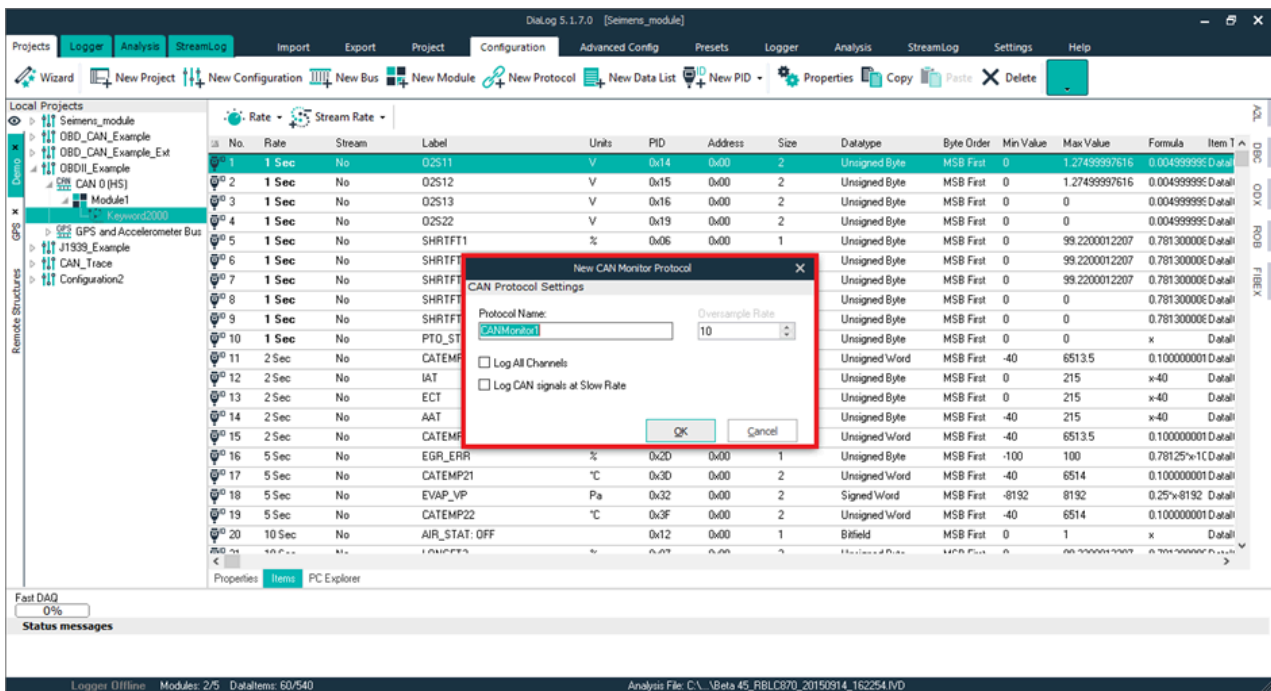


Create New Protocol.

Select the CAN Monitor protocol.



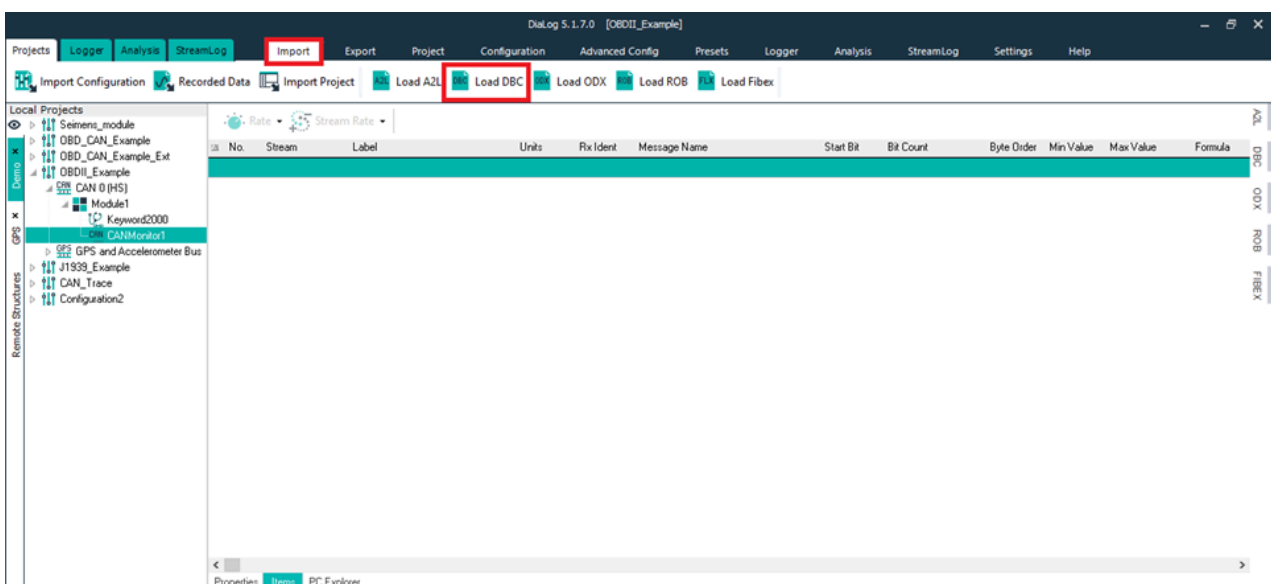
Assign the settings and protocol name.



Notes:

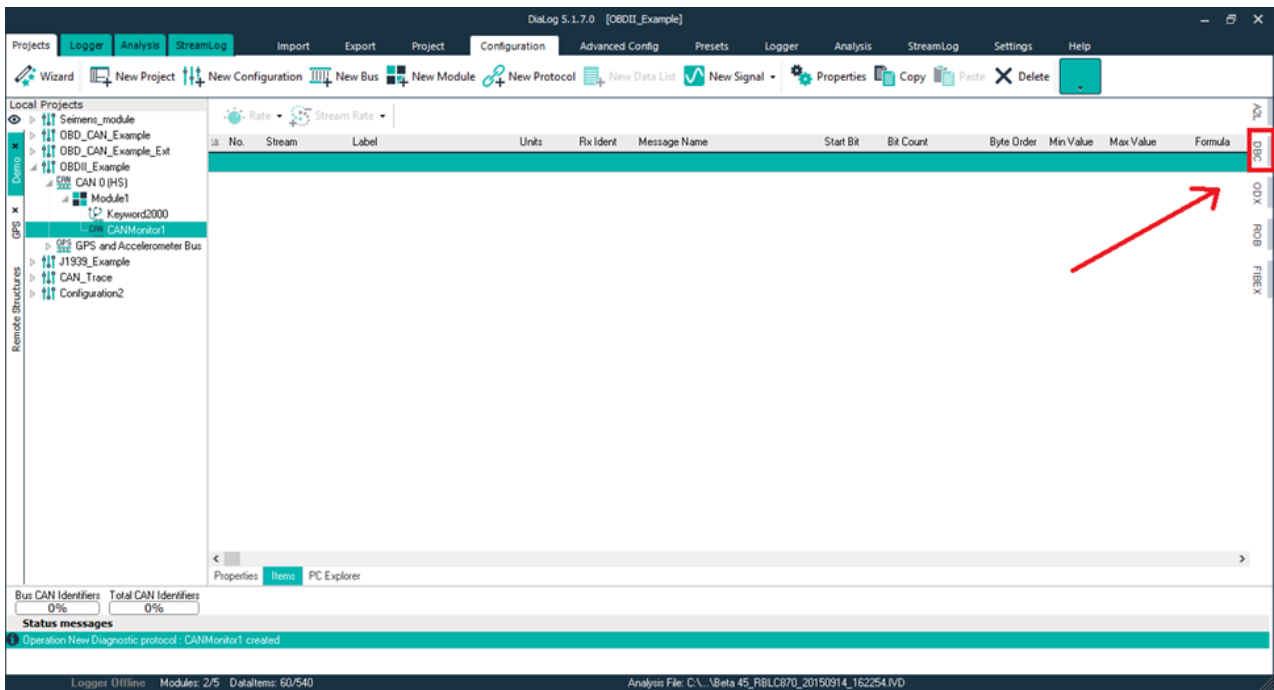
- Enable 'Log all channels' only if you wish to log all CAN messages appearing on the bus.

Select the import tab and click load DBC.



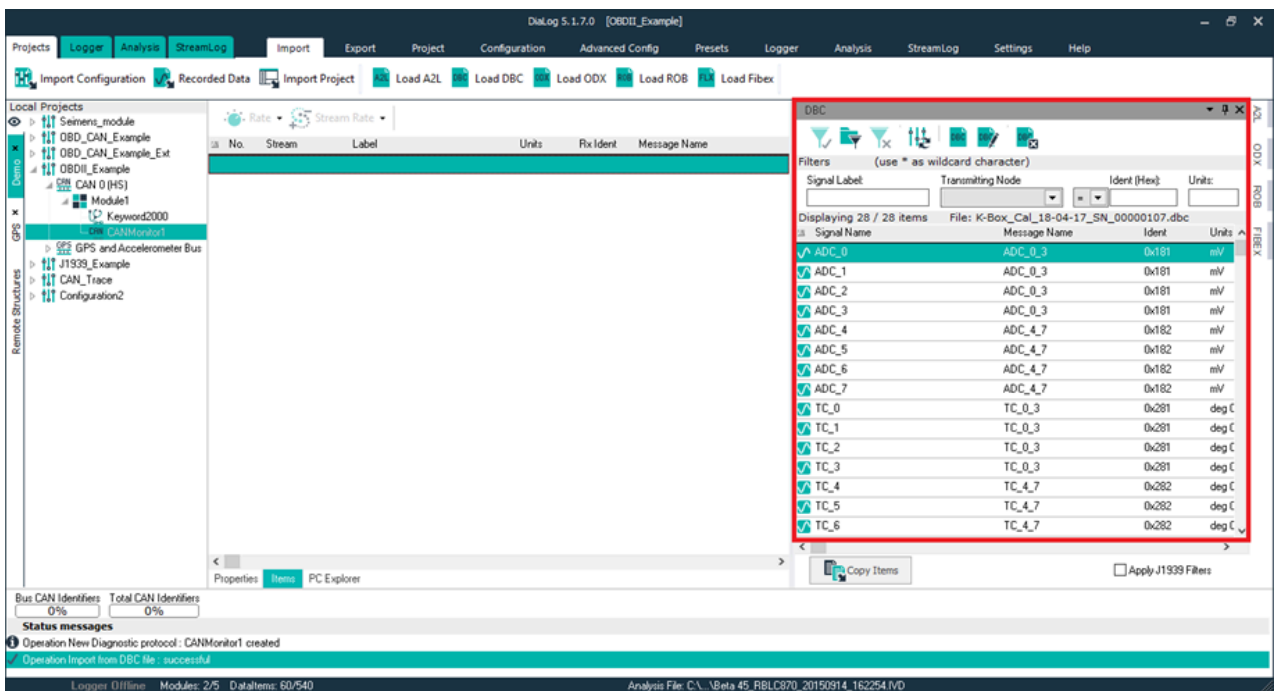
Or

Click the DBC tab on the right side.



Select the required signal from the DBC window.

Copy the selected signals and paste them into the DAQ list.



Send the configuration to the Logger.

Appendix

Pinout of the Multi-Connect Cable

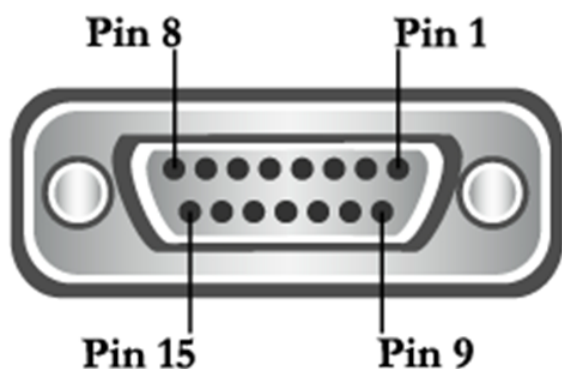
The K-Box may be connected to the multi-connect cable's AUX cable to the Rebel CT or LT Loggers. The pinout is as follows:

Dig/An (This Connector is used to connect Digital and Analogue signals to the Logger)





The Dig & An connector is a Female 15-pin Subminiature D Type connector.

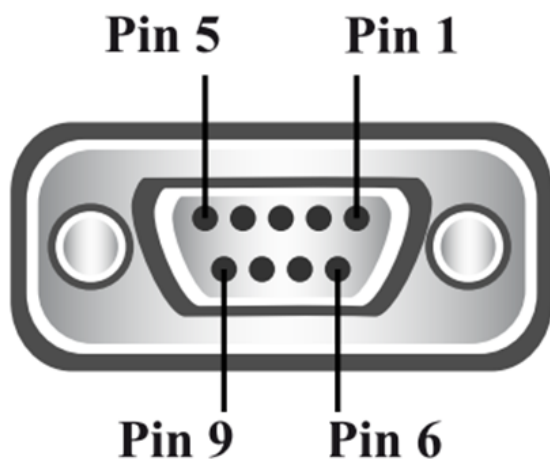


Pin No	Pin Function
Pin 2	Digital Input or Output 1 - Do not apply voltages outside the 0 to +12V range when used as an input. When used as an Output, ensure that the current drawn is not more than 100mA.
Pin 3	+4.5V Instrumentation Supply Voltage, ensure that the current drawn is not more than 100mA
Pin 4	Ground
Pin 6	Analog Ground
Pin 7	Analog Input 1 - do not apply voltages outside of the -10 to +10V range
Pin 8	Analog Input 3 - do not apply voltages outside of the -10 to +10V range
Pin 9	Digital Input or Output 0 - When used as Input, do not apply voltages outside the 0 to +12V range. When used as an Output, ensure that the current drawn is not more than 100mA.

Pin 10	Digital Input or Output 2 - When used as Input, do not apply voltages outside the 0 to +12V range. When used as an Output, ensure that the current drawn is not more than 100mA.
Pin 11	Ground
Pin 13	Wake-Up pin to wake Logger from sleep mode
Pin 14	Analog Input 0 - do not apply voltages outside of the -10 to +10V range
Pin 15	Analog Input 2 - do not apply voltages outside of the -10 to +10V range.

AUX/CAN1 (The port of the Multi Connect Cable generally used with the K-Box)

The AUX/CAN1 connector is a Female 9-pin Subminiature D Type connector.



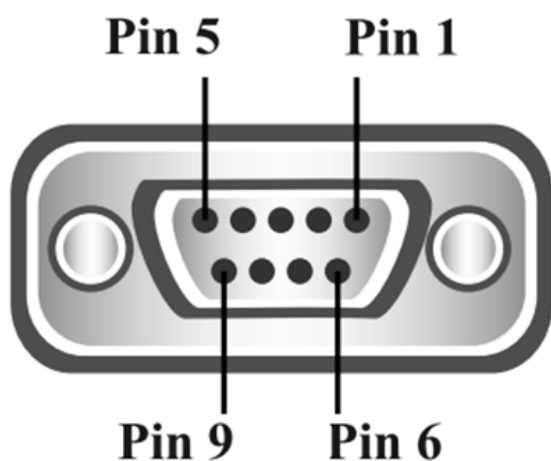
Pin No	Pin Function
Pin 2	CAN Bus 1 (Medium Speed Bus) Low Signal
Pin 3	Ground
Pin 5	Power Ground
Pin 7	CAN Bus 1 (Medium Speed Bus) High Signal

Pin 9

Power Supply Switched

CAN2/LIN0 (Used for connecting CAN2 and Ethernet to the Logger)

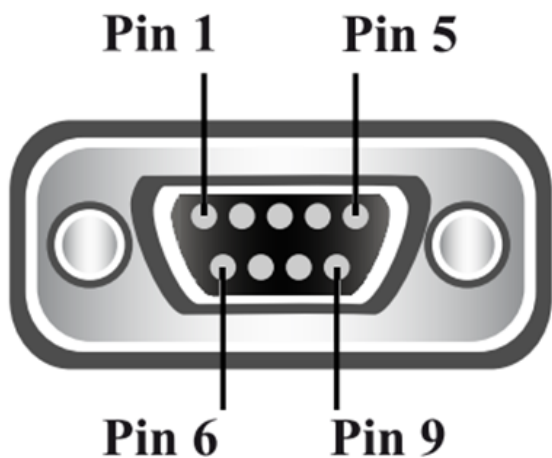
The LAN connector is a Female 9-pin Subminiature D Type connector.



Pin No	Pin Function
Pin 1	LIN 0
Pin 2	CAN / CAN FD Bus 2 (Instrumentation Bus) Low Signal
Pin 3	Ground
Pin 5	Power Ground
Pin 7	CAN / CAN FD Bus 2 (Instrumentation Bus) High Signal
Pin 9	Digital Input or Output 3 (can also be used as a switched power supply +Vd). When used as Input, do not apply voltages outside of the 0 to +12V range.

CAN0/PWR (This Connector is used to power the Logger, e.g. it could be powered via the diagnostics connector of a vehicle connected to the OBD2 to DB9 Cable)

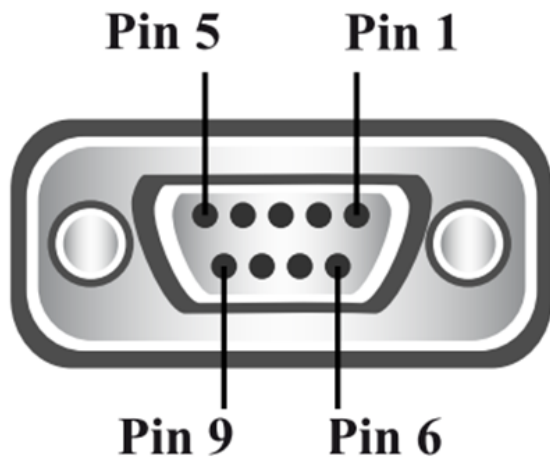
The CAN0/PWR connector is a Male 9-pin Subminiature D Type connector.



Pin No	Pin Function
Pin 1	CAN Bus 1 (Medium Speed Bus) Low Signal
Pin 2	CAN Bus 0 (High-Speed Bus) Low Signal
Pin 3	Ground
Pin 4	K-Line (1 wire bus) of ISO 9141
Pin 5	Power Ground
Pin 7	CAN Bus 0 (High-Speed Bus) High Signal
Pin 8	CAN Bus 1 (Medium Speed Bus) High Signal
Pin 9	4.5-36V Supply Voltage

CAN3/LIN1

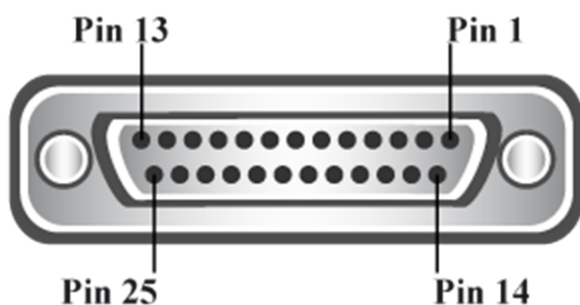
The CAN3/LIN1 is a Female 9-pin standard D-type connector with screws.



Pin No	Pin Function
Pin 1	LIN 1
Pin 2	CAN / CAN FD Bus 3 (Instrumentation Bus) Low Signal
Pin 3	Ground
Pin 5	Power Ground
Pin 7	CAN / CAN FD Bus 3 (Instrumentation Bus) High Signal
Pin 9	Digital Input or Output 3 (can also be used as a switched power supply +Vd). When used as Input, do not apply voltages outside of the 0 to +12V range.

OBD&INST (The multi-connect cable attaches to the Logger via this connector)

The OBD&INST connector is a Female 25-pin Subminiature D Type connector.



Pin No	Pin Function
Pin 1	Analog Input 3 - do not apply voltages outside of the -10 to +10V range
Pin 2	LIN 1
Pin 3	CAN / CAN FD 3 L
Pin 4	Analog Input 1 - do not apply voltages outside of the -10 to +10V range
Pin 5	Wake-Up pin to wake Logger from sleep mode
Pin 6	CAN Bus 1 (Medium Speed Bus) Low Signal
Pin 7	CAN Bus 0 (High-Speed Bus) Low Signal
Pin 8	K-Line (1 wire bus) of ISO 9141
Pin 9	4.5-36V Supply Voltage
Pin 10	+4.5V Instrumentation Supply Voltage, ensure that the current draw is not more than 100mA
Pin 11	Digital Input or Output 2 - When used as Input, do not apply voltages outside the 0 to +12V range. When used as an Output, ensure that the current drawn is not more than 100mA.
Pin 12	Digital Input or Output 0 - When used as Input, do not apply voltages outside the 0 to +12V range. When used as an Output, ensure that the current drawn is not more than 100mA.
Pin 13	CAN / CAN FD Bus 2 (Instrumentation Bus) Low Signal
Pin 14	Analog Input 2 - do not apply voltages outside of the -10 to +10V range
Pin 15	LIN 0
Pin 16	CAN / CAN FD 3 H
Pin 17	Analog Input 0 - do not apply voltages outside of the -10 to +10V range

Pin 18	Analog Ground
Pin 19	CAN Bus 1 (Medium Speed Bus) High Signal
Pin 20	CAN Bus 0 (High-Speed Bus) High Signal
Pin 21	Ground
Pin 22	Power Ground
Pin 23	Digital Input or Output 3 (can also be used as a switched power supply +Vd)
Pin 24	Digital Input or Output 1 - When used as Input, do not apply voltages outside the 0 to +12V range. When used as an Output, ensure that the current drawn is not more than 100mA.
Pin 25	CAN /CAN FD Bus 2 (Instrumentation Bus) High Signal.