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 <u>docs.influxtechnology.com</u>

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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 2.0CAN 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)
	Dimension (LxHxW): 115×56(K-TC8) / 79(K-TC16) / 149(K-TC32) x 105mm
Fnclosure	Weight 450g(K-TC8), 570g(K-TC16), 900g(K-TC32)
Linciosare	IP 40
	ABS/Aluminium Allow* (depending
	upon the stock availability)
	-40°C to +85°C
Environmental	Humidity max 90%
	K, J, T-type
Thermocouple Inputs	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	К, Ј, Т
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 newer module	ECOVI

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 Ground. 	-3 for Signal Ground and Pin-5 for Power

Thermocouple Connectors

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



IEC Connector	Pin Function
Тор	+
Bottom	К

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.

計 InfluxKC	al - InstallShield Wizard			-		×
Installing	InfluxKCal			1		y.C.
The prog	ram features you selected ar	e being installed.				
1 1	Please wait while the Install several minutes.	Shield Wizard installs	InfluxKCal. T	his may	take	
	Status:					
	Copying new files					
3						
InstallShield -						
		< Back	Next >		Cano	el

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

After the K-TCxxCal software is installed, click finish

🕼 InfluxKCal - InstallShield Wiz	zard	Х
	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	Туре	Size
amd64	17-05-2021 08:53 AM	File folder	
	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
winusbinflux_tcxx.cat	18-04-2018 05:08 PM	Security Catalog	12 KB
inusbinflux_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.

cense Agreement		ENT.	
To continue, accept the following lice agreement, use the scroll bar or pres	ense agreement. To read t s the Page Down key.	he entire	
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use the Software.	2162	~	
I accept this EULA	Save As	Print	
	To continue, accept the following lice agreement, use the scroll bar or press INFLUX TECHNOLOGY LICENSE / IMPORTANT - READ BEFORE CON USING.Do not use or load this softw (collectively, the "Software") until yo terms and conditions. By loading or u terms of this Agreement. If you do no use the Software.	To continue, accept the following license agreement. To read t agreement, use the scroll bar or press the Page Down key. INFLUX TECHNOLOGY LICENSE AGREEMENT IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.Do not use or load this software and any associated ma (collectively, the "Software") until you have carefully read the f terms and conditions. By loading or using the Software, you ag terms of this Agreement. If you do not wish to so agree, do not use the Software. Save As	

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.



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.



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

Influx Technolo End User L	gy icense Agreement	Ð				
Ŵ	To continue, accept the following license agreement. To read the entire agreement, use the scroll bar or press the Page Down key.					
	INFLUX TECHNOLOGY LICENSE AGREEMENT	^				
	IMPORTANT - READ BEFORE COPYING, INSTALLING OR					
	(collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.					
		~				
	<u>accept this EULA</u> <u>Save As</u> <u>Print</u>					
	○ I do <u>n</u> ot accept this EULA					
	< <u>B</u> ack <u>N</u> ext > C	Cancel				

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

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



Plugin 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."

÷.							
Projects	Log	ger	Analysis	Stream	Log	Impor	t
🦨 Wiz	ard	E- I	New Proje	ct 11	New Con	figuration	<u>Ш</u>
Local Pro	jects	C6	wation		Vehicle		
		ił;	New Co	nfiguratio	on		
emo a		Щ	N <u>e</u> w Bu	S			
Dash D			<u>T</u> riggers				
ebel		民	Ne <u>w</u> /Ed	it Conve	rsion Tab	le	
~			New/E <u>d</u>	it Outpu	t Signal		
		9	<u>M</u> essage	Constru	ictor		
		*	<u>P</u> roperti	es			
		Ē	<u>C</u> opy				
		ľ	P <u>a</u> ste				
		×	De <u>l</u> ete				Del
		î،	<u>S</u> end Co	onfigurati	on to th	e Logger	
			Send Co	nfigurati	on to SD	Card	-
		୍	Server				•
		IIÌ,	Import (Configura	tion		
			Export				- -
		_			Propertie	s Stream	Channels

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 Measurement Thermo Couples Calibration Reprogramming Manufacturer

- **<u>General</u>** This allows the user to configure the interface and sleep settings.
- Measurement This allows the user to visualise the thermocouple data on the oscilloscope.
- <u>Thermo Couples</u> This allows users to configure the thermocouple sampling rates and CAN IDs.
- <u>Calibration</u> This allows the user to calibrate the thermocouple inputs.
- **<u>Reprogramming</u>** 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.

TC-32 Cal v.3.21			- (- X
Load Commit Node	e Default Export Import Sci	ope Add		:
General Measurement	Thermo Couples Calibration Reprogra	mming Manufacturer		
TC32 device		Tool options		
Baud Rate 500 kbit/s	Syte Order Intel	Load at startup 🗌 Load at expo	rt 🔲 Auto assig	in ID
Sleep Modes			TC Units deg C	~
Deep Sleep	No CAN Activity 🗹			
CAN ID 0x7E2	After Time 2, min			
Interface				
Evaser Lear Light HS Channel 0 E- Kvaser Memorator HS/ F- J2534 F- Influx Rebel CT/LT Channel HS Channel MS E- Kvaser USBcan Light 4	/HS 4xHS			
TC32 Bus 1 % S	.N. 0x00008094 Fw.V. 8.23	Kvaser Leaf Light HS	500 kbit/	5 Channel 0
Load	Pressing the Load Butto the K-TCxx and displays	n Loads the settings in them on the screen.		
CAN Settings	Baud rate: Allows the us Byte order: Allows the u	ser to choose CAN Baud Rat ser to Change Byte order (Ii	e for the unit ntel/Motorola	: 1)

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

TC-32 Cal v.3.21	– 🗆 X
Load Commit Node Default Export Import Scop	e Add
General Measurement Thermo Couples Calibration Reprogram	ning Manufacturer
TC32 device Baud Rate 500 kbit/s > Byte Order Intel >	Tool options Load at startup Load at export Auto assign ID
Sleep Modes	TC Units deg C 🔍
Deep Sleep 🔽 No CAN Activity 🔽	
CAN ID 0x7E2 After Time 2, min	
TC32 ON Line S.N. 0x00008094 Fw.V. 8.23	USB Driver

Measurement Tab

This Tab allows the user to visualise the live measurements.

TC-16 Cal v.3.22.6	- □ >
Load Commit Node Default Export Import Scope Del	
General Measurement Thermo Couples Calibration Reprogramming Manufact	turer
Measured Conversion 0 0	
Thermo Couples 0-7	
● TC 0 O TC 1 O TC 2 O TC 3 O TC 8 O TC 9 O	C TC 10 C TC 11
O TC 4 O TC 5 O TC 6 O TC 7 O TC 12 O TC 13 O	C TC 14 O TC 15
Color Channel Units Value Name Oscilloscope V TC0 d Start New Log 815 Image: Start New Log V TC2 d Select All 805 815 V TC3 d Deselgt All 805 888 V TC5 d Invert Selection 795 V TC6 d Active 79 Del Del Del 775 Add Group 775 765 765 Del Group Add all 755 755 Not Use Not Use 0 0.5 1 1.5 2 2.5 3	3.5 4 4.5 5 5 6 6 7 7.5 8 8.5 9 9.5 10
< >>	Time [seconds]
29/05/21 13:02:35 +	





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.

TC(0-3) CAN ID	0x101	~	Rate	100 ms	~	CAN ID	0x102	~	Rate	100 ms	~
TC(8-11) CAN ID	0×103	~	Rate	100 ms	~	CAN ID	0x104	~	Rate	100 ms	~
TC(16-19) CAN ID [0x285		Rate	100 ms		- TC (20-23) Can ID	0x286	~	Rate	100 ms	
TC(24-27) Can Id [0x287	~	Rate	100 ms	×	CAN ID	0x288	~	Rate	100 ms	~
Type (-200 - T-type (-200 - T-type (-200 - J-type (-200 -	K-type (-20 +1250 deg +400 degC +1200 deg							(Rate list c	onfig	

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.
Туре	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.

					Settir	as		Noise Level
Nominal Value Raw Temperature				Noise	🔽 G	o to next chan	inel	0.1 C
-30 L		20				Settings		0.1 C Defa
Thermo Co	ouples 0-7 —			- Thermo Cou	ples 8-15			
	O TC1	O TC 2	O TC 3	C TC 8	C TC 9	C TC 10	O TC 11	
C TC 4	C TC 5	C TC 6	C TC 7	O TC 12	O TC 13	C TC 14	C TC 15	
Channel	Nominal 1	1 Nominal	2 Nominal 3	Nominal	4			
TC 0	-50 C	-25 C	0 C	+50 C				Clear calibr
TC 1	-50 C	-25 C	0 C	+50 C				× cical callor
TC 2	-50 C	-25 C	0 C	+50 C				(I chan the
TC 3	-50 C	-25 C	0 C	+50 C				Clear char
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			C	A.
TC 13	-50 C	-25 C	0 C	+50 C				Č.
TC 14	-50 C	-25 C	0 C	+50 C				
	50.0	25.0	0.0	IEO C				



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



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

Manufacturer

TC-16 Cal v.3.2	22.6 [TC_XX_B08_F029.1	nex] 14-05-2021 16:50:32		H-1	×
📘 📄	👤 . 🔳	🌇 🖳 🖂	-		
: Load Commi	t Node Default	Export Import Scope Del			
General Measure	ement Thermo Couples	Calibration Reprogramming	Manufacturer		
Vendor Code	0x0				
Product Code	0x54433136				
Revision number	0x01000000				
Serial number	0x00008060				
Firmware Version	8.29				
	-			V	
TC16 ON Lin	e S.N. 0x00008060	Fw.V. 8.29 USE	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.

TC-32 Cal v.3.21		- 🗆 ×
Load Commit Node Default Exp	ort Import Scope Add	
General Measurement Thermo Couples Ca	libration Reprogramming Manufacturer	
TC32 device	Tool options	
Baud Rate 500 kbit/s 🗸 Byte Order	Intel V Load at startup	Load at export 🔲 Auto assign ID 🗌
Sleep Modes		TC Units deg C 🗸
Deep Sleep 🖌 No	CAN Activity 🔽	
CAN ID 0x7E2 SAfter Time	2 , min	
Interface		
 E- Kvaser Leaf Light HS Channel 0 E- Kvaser Memorator HS/HS B- J2534 E- Influx Rebel CT/LT Channel HS Channel MS E- Kvaser USBcan Light 4xHS 		
Ÿ		¥
TC32 Bus 1 % S.N. 0x00008094 Fv	v.V. 8.23 Kvaser Leaf Light HS	500 kbit/s Channel 0

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

FTC-32 Cal v.3.21	×
ELOAD Commit Node Default Export Import Scope General Measurement Thermo Couples Calibration Reprogramm	Add ing Manufacturer
TC32 device Baud Rate 500 kbit/s V Byte Order Intel V	Tool options Load at startup Load at export Auto assign ID TO Units dea C
CAN ID 0x7E2 After Time 2, 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.

TC-16 Cal v.3.22.6 [TC_XX_B08_F029.hex] 14-05-2021 16:50:32	-	×
📕 🗜 . 📄 🐚 🖳 🖂 .		
: Open Commit Node Default Export Import Scope Del		
General Measurement Thermo Couples Calibration Reprogramming Manufacturer		
Full name : C:\Program Files (x86)\Influx Technology\Influx K-Cal\firmware\TC XX B08 I Created : 14-05-2021 16:50:32 Modified : 14-05-2021 16:50:32 Acceseed : 28-05-2021 08:49:44 Size ,bytes : 337032	F029.hex	
Last Address : 0x54A1F		
Boot SW ver. : B08 Flash SW ver.: F029		
N		
12		
TC16 ON Line S.N. 0x00008060 Ew. V. 8.29 USB Driver		



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.

Look in				
LOOK IN	:] imware		_r	
2	Name	Date mo	dified	Туре
	AT_48_B07_F004.hex	15-01-20	18 02:01 PM	HEX
uick access	KBox_B05_F032.hex	25-09-20	20 03:38 PM	HEX
	KVolt_B09_F002.hex	30-01-20	19 06:25 PM	HEX
Desktop	TC_XX_B08_F025.hex	31-03-20	21 12:23 PM	HEX
-	TC_XX_B08_F026.hex	31-03-20	21 03:28 PM	HEX
	TC_XX_B08_F029.hex	14-05-20	21 04:50 PM	HEX
Libraries				
This PC				
Network				
	<			>
	-			
	File name:		- C)pen

Then select the 'Open' option.

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

TC32	ON Line	S.N. 0x0	00008094	Fw.V. 8.23	USB Driver		Ŧ
OR							
TC32	Bus 1 % S.N	. 0x00008094	Fw.V. 8.23	Kvaser L	∞] eaf Light HS	500 kbit/s	Channel 0

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.

					- Settin	00		Noise Level	
minal Value	e	Ra	w Temperature	Noise	Setting	ys a to nevt char	nel		
-50 C		art 30	.40 C		l€ ut	o to next chan		0.10	Tolerance Default
-50 C -25 C						Settings		0.1 C	Y Delault
0 C +50 C	es 0-7			Thermo Co	uples 8-15				
+100 C +200 C	TC1	O TC 2	O TC 3	O TC 8	C TC 9	C TC 10	O TC 11		
+400 C +800 C	TC 5	O TC 6	O TC7	O TC 12	O TC 13	C TC14	O TC 15	8	
Channel	Nominal 1	1 Nominal	2 Nominal 3	Nominal	4				
CO	-50 C	-25 C	0 C	+50 C					Clearcalibrativ
C1	-50 C	-25 0	0 C	+50 C				×	Clear calibratio
C 2	-50 C	-25 C	0 C	+50 C					1
С З	-50 C	-25 C	0 C	+50 C				-	Clear channe
C 4	-50 C	-25 C	0 C	+50 C					
C 5	-50 C	-25 C	0 C	+50 C					
C 6	-50 C	-25 C	0 C	+50 C					
C 7	-50 C	-25 C	0 C	+50 C					
C 8	-50 C	-25 C	0 C	+50 C					
C 9	-50 C	-25 0	0 C	+50 C					
C 10	-50 C	-25 0	0 C	+50 C					
C 11	-50 C	-25 0	0 C	+50 C					
C 12	-50 C	-25 0	0 C	+50 C					
C 13	-50 C	-25 C	0 C	+50 C					
C 14	-50 C	-25 C	0 C	+50 C					
C 15	-50 C	-25 C	0 C	+50 C					



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 Co	uples 0-7 —			ï
• TC 0	O TC 1	O TC 2	O TC 3	
O TC 4	O TC 5	O TC 6	O TC7	

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



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]
TCO
                -50 -49.625
                                 0.03125
                                                                  -25 -24.5
                                                                                     0.09375 Low
                                                 Low
           -50 -49.5625 0.078125 Low -25 -24.828125 0.0625 Low
-50 -50.171875 0.078125 Low -25 -24.84375 0.078125 Low
TC1
TC2
                                  0.046875 Low
                                                                                   0.03125
                                                                                                    Low
TC3
                -50 -50.140625
                                                                  -25 -25.0625
                -50 -50.046875 0.09375 Low
-50 -50.28125 0.03125 Low
-50 -50.421875 0.0625 Low
                                                                  -25 -25.0625
-25 -25.25
                                                                                                    Low
Low
TC4
                                                                                        0.046875
                                                                                        0.0625
```

TC5 TC6 -25 -25.25 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.

Warning	X
<u>^</u>	Do you want to clear all calibration points from TC16 device?
	<u>Y</u> es <u>N</u> o

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:

	V	▼	
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
0		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 0		Conversion 0					
Thermo Co	uples 0-7			Thermo Co	uples 8-15	_		
• TC 0	O TC1	O TC 2	C TC 3	C TC 8	O TC 9	C TC 10	C TC 11	N
O TO A	O TC 5	C TC 6	O TC 7	O TC 12	O TC 13	O TC 14	O TC 15	63

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:





—+ ne ∆dd

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	 Saves the data Logged in the Oscilloscope, it can be saved in: 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	
⊕ TC_0_3			✓	
TC_4_7			v	
⊕ TC_8_11			~	
⊕ TC_12_15			~	
Include serial number				
			Expo	ort

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.

5		
Projects	Logger	Analysis StreamLog Import
Viza Wiza	ard 📭	New Project 🙀 New Configuration 🎹 N
Local Proj	ects Demo Confia	Vehide
		New Configuration
e		N <u>e</u> w Bus
ash De		Triggers +
ebel D	E	New/Edit Conversion Table
~		New/E <u>d</u> it Output Signal
		Message Constructor
	***	Properties
		<u>С</u> ору
	ľ,	Paste

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.

Diskog 5.3.6.0 [mlnu_Verkde_jnda_Ve5] = 6													
Projects Logger Analysis Stream	mLog Import Export Pro	ject Configuration Advanced Config Presets Logger Analysis StreamLog Settings Help											
🕼 Wizard 🖳 New Project 👯	New Configuration III New Bus	w Module • 🔏 New Protocol 🌉 New Data List 👰 New PID • 🍫 Properties 🖺 Copy 🛍 Paste 🗙 Delete 🦙 Send to StreamLog 💮 Commit to StreamLog											
Local Projects	Vehide	Influx_Vehicle_Inda_MS	ð.										
DRD CAN Example	VIN	****											
10 > 11 OBD_CAN_Example_Ext	Calibration ID	****											
d ▷ 11 OBDIL_Example	Software ID												
6 D J1939_Example	User												
e b ti Configuration1	Date	Date 23/11/38 22 Logger Type Standard - Fast Samping Rates Only 28											
a la congrada	Logger Type												
	Logger Mode	Standard - All CAN Messages Choose B # X	×										
	Number of PIDs	19 Hardware Types	2										
8	Number of Diagnostic Addresses	0 (# CAN 1 (MS)											
	Number of CCP Addresses	CAN 2 (INST)											
	Number of CAN Signals		9										
	Number of Instrumentation Channels	0 🛱 CAN 5											
	Number of Digital Channels	o 🛱 CAN 6											
		Sill Lin O											
	Trigger Settings	UN 1											
	Number of Trigger Items	1 HE UN 2											
	Number of Trigger Groups	1 The H-Box Port											
	Conversion Tables	The Flore and th											
	Number of Conversion Tables	•											
	Items With Conversion Tables	•											
	Output Signals	QK Ganoel											
	Number of Output Signals												
	Items With Output Signal	0											
	Alarm Settings												
	Alarm 1	Inactive											
	Alarm 2	Inactive											
	Properties Stream Channels PC Explorer												

Enter the BUS properties.

ts Logger Analysis	StreamLog Import Export Pr	oject Configuration Advanced Config Presets Logger Analysis StreamLog Settings Help	
Wizard 🖳 New Proje	ect 👯 New Configuration IIII New Bus 📲 🕅	ew Module - 🔏 New Protocol 🖳 New Data List 🚏 New PID - 🍓 Properties 🖺 Copy 👘 Paste 🗙 Delete	
Projects	Vehicle	A2.	
- Hal	VIN	****	
	Calibration ID		
	Software ID		
	User		
	Date	06/06/17	
	Logger Type	Standard - Fast Sampling Rates Only	
	Logger Mode	Standard - Al CAN Bus X	
	Number of PIDs	0 CANBus Settings	
	Number of Diagnostic Addresses	0	
	Number of CCP Addresses	0 Bus Speed Bus Mode	
	Number of CAN Signals	0 500 kbs V Standard V	
	Number of Instrumentation Channels		
	Number of Digital Channels		
		UN:	
	Trigger Settings	Enacie Semings	
	Number of Trigger Items	0 Listen Mode	
	Number of Trigger Groups	0	
	Conversion Tables	24 Serve	
	Number of Conversion Tables	0	
	Items With Conversion Tables	0	
	Output Signals		
	Number of Output Signals	0	
	Items With Output Signal	0	
	Properties Stream Channels PC Explorer		

Create New Protocol.

Select the CAN Monitor protocol.

Dialog 5.1.7.0 [Seimens_module]													- 8 ×		
Projects Logger Analysis Stream	nLog	Import	Export	Project Co	onfiguration	Advanced	Config	Presets	Logger	Analysis	StreamLog	Settings	Help		
🕼 Wizard 🕞 New Project	New Con	figuration]	III New Bus	New Module 👩	New Protoco	ol 📃 🔒 Ne	w Data List	₩ PID •	. 🍫 Pro	operties 🖺 Cop	y 🛅 Paste 🎽	Delete			
Local Projects		ate x 🕀	Stream Rate +												Š.
			Charac	Label		11-2-	DID		C	Deteters	Data Order	Ma Maker	Manifelia	Course to	here T a
DBD_CAN_Example_Ext	23 NO.	Hate	Stream	Label 02511		Units	PIU	Address	5128	Datatype	Byte Ulder	MiniValue	Max value 1.27400007010	Formula	
A 11 OBDII_Example	₩ 60°2	1 Sec	No	02512		V	0,15	0.00	2	Unsigned Byte	MSB First	0	1.27499997616	0.00499990	KD add
A CAN U (HS)		1 Sec	No	02512		v	0v16	0.00	2	Unsigned Byte	MSB First	0	0	0.00433333	
Keyword2000	0 ⁰ 4	1 Sec	No	02570		v	0v19	0,00	2	Unsigned Byte	MSB First	0	0	0.00499999	EDatali
B GPS and Accelerometer Bus	0°5	1 Sec	No	SHRTFT1		*	0×06	0×00	1	Unsigned Byte	MSB First	0	99.2200012207	0.78130000	EDatali 2
Tal J1939_Example	0°6	1 Sec	No	SHRTFT11		*	0x14	0x00	2	Unsigned Byte	MSB First	0	99.2200012207	0.78130000	EDatal
§ ⊳ tlt Configuration2	₩°7	1 Sec	No	SHRTFT12	_	~	0.45	0.00	2	Unsigned Byte	MSB First	0	99.2200012207	0.78130000	EDatali 🚆
the second s	Ģ ⁰ 8	1 Sec	No	SHRTFT13		Choose F	Protocol Type	×	2	Unsigned Byte	MSB First	0	0	0.78130000	EDatali 😤
8	Ģ ⁰ 9	1 Sec	No	SHRTFT22	CCP CCP F	le Protocols Protocol			2	Unsigned Byte	MSB First	0	0	0.78130000	EDatal
Que	[©] 10	1 Sec	No	PT0_STAT	CAN CAN I	fonitor			1	Unsigned Byte	MSB First	0	0	×	Datal
α.	Ģ ⁰ 11	2 Sec	No CATEMP12						2	Unsigned Word	d MSB First	-40	6513.5	0.10000000	1 D at all
	🐺 ⁰ 12	2 Sec	No	IAT		_		Court	1	Unsigned Byte	MSB First	0	215	x-40	Datal
	🖗 ⁰ 13	2 Sec	No	ECT						Unsigned Byte	MSB First	0	215	x-40	Datal
	Ψ ⁰ 14	2 Sec	No	AAT			QK	Gancel	1	Unsigned Byte	MSB First	-40	215	x-40	Datal
	Ģ ⁰ 15	2 Sec	No	CATEMP11		degC	0x3C	0x00	2	Unsigned Word	d MSB First	-40	6513.5	0.10000000	1 Datali
	φ ⁰ 16	5 Sec	No	EGR_ERR		*	0x2D	0x00	1	Unsigned Byte	MSB First	-100	100	0.78125*x-1	(Datal)
	🐺 ⁰ 17	5 Sec	No	CATEMP21		°C	0x3D	0x00	2	Unsigned Word	d MSB First	-40	6514	0.10000000	11 Datali
	Ϋ ⁰ 18	5 Sec	No	EVAP_VP		Pa	0x32	0x00	2	Signed Word	MSB First	-8192	8192	0.25*x-8192	2 Datal
	Ç ⁰ 19	5 Sec	No	CATEMP22		°C	0x3F	0x00	2	Unsigned Word	d MSB First	-40	6514	0.10000000	11 D atali
	₽ ° 20	10 Sec	No	AIR_STAT: OFF	F		0x12	0x00	1	Bitfield	MSB First	0	1	ж	Datall
	< 10 11	100	N1-	IOUCTA		*/	0.07	0.00	1	Decision d D.A.	HOD FLA	0	00.2200012207	0 701 20000	>
	Propertie	s Items P	C Explorer												
Fast DAQ															
Status messages															_
Logger Offline Moduler	2/5 Datal	tems: 60/540					Analysis Eile	r: C:\\Beta 45_B	BLC870 201	150914 162254 MD					
Logger ortinite Produce.									200						

Assign the settings and protocol name.

Dialog 5.1.7.0 [Semens_module]														- 8	×		
Projects Logge	r Analysis Stream	Log	Impor	t Export	Project	Configuration	Advanced C	onfig	Presets	Logger	Analysis	StreamLog	Settings	Help			
A Ward II	New Desires #11	NewCon	Enution	IIII Mary Burg	New Madel	2 No. 1	I 🔲 Marri	Data Lint			antin 📭 can	iii an N	Dalata				
Wizard III	+ ivew Project 11+	New Con	inguration	THE NEW BUS	+ New Module	0+ New Protoco	+ New	Data List	T+ New Pib	•	percies E Cop	y 🔲 Paste 🖍	Delete	-			
Local Projects	and to		late - 🔅	Stream Rate +													Š.
	_module N Example																11
× > 1 OBD_CA	N_Example_Ext	a No.	Rate	Stream	Label		Units	PID	Address	Size	Datatype	Byte Order	Min Value	MaxValue	Formula	Item 1 A	8
👔 🖉 👬 OBDII_E	xample	₩ ² 1	1 Sec	No	02511		V	0.15	0.00	2	Unsigned Byte	MSB First	0	1.27499997616	0.00499999	Datal	× .
	0 (HS) octube1	Q [∞] 2	1 Sec	No	02512		V	0.10	0.00	2	Unsigned Byte	MSB First	0	1.2/49999/616	0.00499999	Datal	8
×	Keyword2000	₽ °3	1 Sec	No	02513		V	Ux16	UMUU	2	Unsigned Byte	MSB First	0	0	0.00499999	Datal	×
	and Accelerometer Bus	Q [∞] 4	1 Sec	No	02522		v	0x19	0.00	2	Unsigned Byte	MSB First	0	0	0.00499999	Datal	8
▷ 11939_E	xample	₽ ° 5	1 Sec	No	SHRIFTI		74	0005	UXUU	1	Unsigned Byte	MSB First	0	39.2200012207	0.78130000	Datan	ö
n D TIT CAN_Tra	ice	Q~ 6	1 Sec	No	SHRIFT		New CAN Mor	itor Proto	col	×	Unsigned Byte	MSB First	0	99.2200012207	0.78130000	Datan	21
E F To Configura	500n2	Q. 7	1 Sec	No	SHRTFT	CAN Protocol Settin	gs				Unsigned Byte	MSB First	0	99.2200012207	0.78130000	Datal	8
28		Ψ°8	1 Sec	No	SHRTFT	Protocol Name				Rate	Unsigned Byte	MSB First	0	0	0.78130000	EDatal	111
ote		Q ¹⁰ 9	1 Sec	No	SHRTFT	CANMonitor1			10	0	Unsigned Byte	MSB First	0	0	0.78130000	EDatal	
Rem		φ ⁰ 10	1 Sec	No	PT0_ST						Unsigned Byte	MSB First	0	0	×	Datal	
		Q ⁰ 11	2 Sec	No	CATEMP	Log All Channels					Unsigned Word	d MSB First	-40	6513.5	0.1000000	1Datali	
		φ ⁰ 12	2 Sec	No	IAT	Log CAN signals	at Slow Rate				Unsigned Byte	MSB First	0	215	x-40	Datal	
		Ģ ⁰ 13	2 Sec	No	ECT						Unsigned Byte	MSB First	0	215	x-40	Datall	
		φ ⁰ 14	2 Sec	No	AAT						Unsigned Byte	MSB First	-40	215	x-40	Datal	
		Ģ ⁰ 15	2 Sec	No	CATEMP			2	¥ ⊆	ancel	Unsigned Word	d MSB First	-40	6513.5	0.1000000	1Datali	
		φ ⁰ 16	5 Sec	No	EGR_ERR		x	0x2D	0x00	1	Unsigned Byte	MSB First	-100	100	0.78125*x-1	Datal	
		Ģ ⁰ 17	5 Sec	No	CATEMP21		°C	0x3D	0x00	2	Unsigned Word	d MSB First	-40	6514	0.10000000	1 Datali	
		🛱 ⁰ 18	5 Sec	No	EVAP_VP		Pa	0x32	0x00	2	Signed Word	MSB First	-8192	8192	0.25*x-8192	Datal	
		🖗 0 19	5 Sec	No	CATEMP22	2	°C	0x3F	0x00	2	Unsigned Word	d MSB First	-40	6514	0.10000000	1 Datali	
		ç ⁰ 20	10 Sec	No	AIR_STAT:	OFF		0x12	0x00	1	Bitfield	MSB First	0	1	ж	Datal	
		#10 m	10.0	k1	LONGETO		49	0.07	0.00	2	Hariana d Doar	HOD FLA	0	00.000010007	0 701 20000	·	
		Propertie	s Items	PC Explorer													<u> </u>
Fast DAQ																	
Status messad	ies.																
																	_
Logo	er Offline - Moduler 3	2/5 Data	ltem:: 60/54	n			۵	nalutit File	C\\Beta 45	BBI C870, 201	50914 162254 IVD						
2099	in the products.						P P	analysis i so			TOLLOW IVD						111

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.

Dialog S. 1.7.0 (OBDII_Example)														- 6	×
Projects Logger Analysis Stream	nLog Im	port Export	Project	Configuration	Advanced	Config	Presets	Logger	Analysis	StreamLog	Settings	Help			
📆 Import Configuration 🕵 Recorded Data 🕞 Import Project 🛛 🔤 Load A2L 📓 Load DBC 🥁 Load ODX 📑 Load ROB 🚺 Load Fibex															
Local Projects	🕑 Rate 🗸	Stream Rate	-												₿.
DBD_CAN_Example I OBD_CAN_Example_Ext	III No. Stree	am Label		Units	Rx Ident	Message N	lame		Start Bit	Bit Count	Byte Order	Min Value	Max Value	Formula	8
A CRN CAN DIST															0
Module1															20 ×
Keyword2000 CANMonitor1 See GPS and Accelerometer Bus															ROB
▷ \$\$\$ J1939_Example > \$\$ 0 \$\$\$ CAN_Trace															FIBE
S ▷ til Configuration2															×
emote															
œ															
	Properties Iten	PC Explorer													·

Or
Click the DBC tab on the right side.

			DiaLog	5.1.7.0 [OBDII_Exampl	e]					- 8	×
Projects Logger Analysis Stream	mLog Import	Export Project	Configuration	Advanced Config	Presets	Logger Analysis	StreamLog	Settings Help			
🐼 Wizard 🖳 New Project 👯	New Configuration	📮 New Bus 📲 New Mo	odule 🔏 New Proto	col 📑 New Data Lis	New Signal	l 🗸 🍖 Properties	Copy 🛅 Pa	ste 🗙 Delete			
Local Projects Image: block blo	🙆 Rate 🗕 🛐 S	tream Rate 📼									À
DBD_CAN_Example b \$\$\$\$ OBD_CAN_Example_Ext	III No. Stream	Label	Units	Rx Ident Messag	e Name	Start Bit	Bit Count	Byte Order Min Value	Max Value	Formula	8
GBDII_Example										_	0
× Module1										7	×.
CANMonitor1 Stand Accelerometer Bus											ROB
▷ \$1\$ J1939_Example ▷ \$1\$ CAN_Trace								/			FIB
B P Configuration2											×
emote											
α <u>ε</u>											
	<										>
	Properties Items PC	Explorer									
Bus CAN Identifiers 0%											
Status messages											
Operation New Diagnostic protocol : CAN	Monitor1 created										
Logger Offline Modules:	2/5 Dataltems: 60/540			Analysis F	ile: C:\\Beta 45_Ri	BLC870_20150914_162	254.IVD				

Select the required signal from the DBC window.

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

			DiaLog	5.1.7.0 [OBDII_Examp	e]				- 8 ×
Projects Logger Analysis Stream	nLog Import	Export Proje	ct Configuration	Advanced Config	Presets Lo	igger Analysis Strea	amLog Settings Help		
📆 Import Configuration 📝 Record	rded Data 🖳 Import i	Project 🔤 Load A2	L 📴 Load DBC 🚾 I	.oad ODX 🔤 Load R	OB 🔁 Load Fibex				
Local Projects	A Rate - Co S	tream Rate				DBC			- 4 × §
	a No. Stream	Label	Units	Rx Ident Messag	e Name	🏹 🖙 🍢 🎼	📄 📑 📑		9
						Filters (use " as i Signal Label	Transmitting Node	Ident (Hex)	× Inite:
A Module1							· ·	•	
× Keyword2000						Displaying 28 / 28 items	File: K-Box_Cal_18-04-17	_SN_00000107.db	
G CANMonitor1						Signal Name	Message Name	Ident	Units ^ 🗍
Big GPS and Accelerometer bus b til J1939 Example						✓ ADC_0	ADC_0_3	0x181	× Vm
E D TI CAN_Trace						ADC_1	ADC_0_3	0x181	mV
S ▷ 11 Configuration2						ADC_2	ADC_0_3	0x181	- vm
yes Second							ADC_0_3	0x101	mv
2emo							ADC_4_7	0x102	miv
-							ADC 4 7	0x182	miv
						ADC 7	ADC 4 7	0x182	Vm
						TC 0	TC 0 3	0x281	deg (
						TC_1	TC_0_3	0x281	deg (
						TC_2	TC_0_3	0x281	deg (
						TC_3	TC_0_3	0x281	deg (
						TC_4	TC_4_7	0x282	deg (
						TC_5	TC_4_7	0x282	deg (
						√ TC_6	TC_4_7	0x282	deg C 🧹
	<					>		-	>
	Properties Items PC	Explorer				Copy Items		Apply J1939	Filters
Bus CAN Identifiers Total CAN Identifiers									
Status messages									
Operation New Diagnostic protocol : CAN	Monitor1 created								
Operation Import from DBC file : successful	4								
Logger Offline Modules:	2/5 Dataltems: 60/540			Analysis F	le: C:\\Beta 45 BBL0	C870 20150914 162254.IVD			

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

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 O
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.

CANO/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)

Pin 9

The CANO/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.