551 030 0xx 0

Installation Guide
SCALAR EVO Flow

Contents

Before the Installation

Dear Installer,
This installation guide provides you with installation directives and procedures for the correct installation of the ZF 551 030 0**xx** 0 on-board computer and its installation elements. The 551 030 0**xx** 0 is an on-board computer without a display, installed behind the vehicle dashboard. The 551 030 0**xx** 0 offers:

- A standard Tachograph connection for real-time Tachograph status information.
- An optional CAN Bus connection for monitoring fuel consumption and driving behavior.
- An optional RDD connection for reading out the Tachograph driver card and the mass memory.
- Wireless Bluetooth connectivity.

Liability

The installation of the on-board computers can be carried out either by technical engineers of ZF, or by a skilled person. A lot of ZF customers prefer to do the installation themselves: the building-in of the on-board computer can then be combined with regular vehicle maintenance services, which allows for a more efficient use of time. To this purpose, ZF provides trainings for the technical engineers of the (installation) company. The training consists of a theoretical part which can be illustrated with a demo installation, and further monitoring. Afterwards, the trainees will be qualified to assemble the other on-board computers in the vehicles autonomously.
Any maintenance/service on the on-board computers should also be performed by a technical engineer of ZF or by a skilled person.
ZF cannot be held responsible for any possible damage ensuing from the correct or incorrect following of the recommendations as listed in this document. Also, the technical engineer remains responsible at all times for the correct installation and connection of the hardware. This manual is but a (partial) recording of, and an addition to, the practical knowledge of the average installer.
The illustrations and specific data of non-ZF products have been checked thoroughly and have been found correct at the time this manual was composed. However, ZF cannot accept any responsibility for possible adaptations by the manufacturer concerned. ZF aims for a continuous improvement of its products; for the purpose of technical progress we reserve the right to implement changes at any time, without prior notice.

Warranty

The housing of each on-board computer is secured against unauthorized opening. Unauthorized access to the unit housing will void the warranty for that specific device.

Product Article Code

551 030 0**xx** 0

Meaning of the **xx** in the part number:

- First **x**
  - '**1**' for e-SIM activated
  - '**2**' for plastic SIM activated
- Second **x**
  - **1-9** = Functional version

Approvals

CE Approval

See 551 030 0xx 0 EU Declaration of Conformity

EEC Type Approval

E/ECE/324 Addendum 9: Regulation No. 10-06 – E6-10R06 XXXX

Disposal

Dispose of hazardous waste in an environmentally friendly manner and in compliance with relevant national regulations.

As with other old devices, all components can be returned to ZF.

Best Practices in Installation

⚠ During the entire connection procedure, the voltage must be turned off.

Assembly

The assembly of the parts must be done using the accessories provided. ZF cannot be held responsible for any errors resulting from the use of other materials.
ZF wishes to point out that activities which require welding to the vehicle can cause damage to the electronics of the on-board computer. It is imperative that the device is disconnected when carrying out such activities.
The equipment provided is only suitable for use in locations where children are not likely to be present.

Opening the Tachograph

If the seal of the Tachograph has been broken during assembly, or if signals from the Tachograph are being diverted to the on-board computer, the Tachograph must be resealed by an authorized organization. ZF and its distributors do NOT accept any responsibility for possible infringements against local legislation.

Wire Management

All the wire ways shall be smooth and free from sharp edges. Wires shall be protected so they do not come into contact with burrs, cooling fins, moving parts, etc., which could cause damage to the insulation of the conductors.

Fuses

The positive voltage 12/24 VDC and the positive voltage after contact (ignition) must be protected by a blade fuse of 3A.
Additional fuses should be foreseen by the installer, where needed.

Operating Conditions

Input voltage range: 12/24 V (9 – 32 V) ⎓
Maximum current: 3,0 A
Temperature range: -40°C ~ +70°C
Ingress Protection: IP5K0 — ISO20653 — IEC60529
Relative humidity between 10 %RH and 90 %RH (non-condensing)
Maximum power consumption:

- Power up <30s: 15 W
- Power up >30s: 2 W
- Power down: 0.15 W

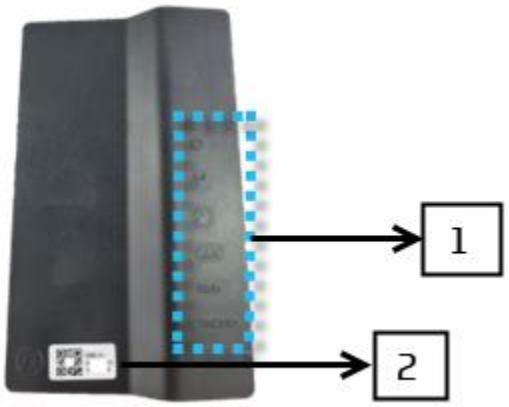
Installation Flow

Step 1 - Components

Component	Picture	Dimensions (WxHxD)
551 030 0xx 0 on-board computer (Article code: 551 030 0xx 0)		157 x 97 x 27 mm
Power I/O cable (Article code: 551 031 011 0) Cf. Complete Power Disconnection on page 10.		RDD and Tachograph wires 2,0m +/-0,05m All other wires 3,5m+/-0,05m
CAN Cable (Article code: 551 031 021 0)		2,0m +/-0,05m
FMS connector kit (Article code: 551 013 011 4)		
RDD connector kit (Article code: 551 013 021 4)		
Tachograph connector kit (Article code: 551 013 031 4)		

Description 551 030 0xx 0

Front view



Back view

Side view

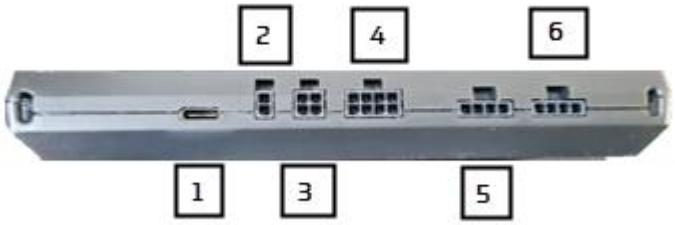
1.	LED Indicators (See page 49 for more information.)		Power Status	CAN	CAN Connection Status
			GPRS Status	RDD	RDD Connection Status
			GPS Status	TACHO	Tachograph Connection Status
2.	Label (top)	QR code + device serial number: BBE(x)1-XXXXXXXXXXXXXXX (15 digits)			
3.	Label (bottom)				
4.	Notches for Cable Ties				

Step 2 – Connecting the Hardware

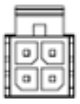
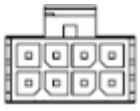
> IMPORTANT
> During the whole connection procedure, the voltage must be turned OFF.
> Only technical engineers who have received installation training by ZF are allowed to handle the on-board computer connections.

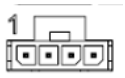
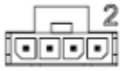
Hardware Connections

All hardware connections can be found on the side of the unit.



> COMPLETE POWER DISCONNECTION
> In case of an emergency, the entire unit can be turned off by disconnecting the power I/O connector (4 in the picture above).

Port	No.	Connector	Wire Color	Signal	
	1	USB-C			
	2	Digital Output		OUT	
	3	CAN Bus Connector	Black	CAN LOW	
			White	CAN High	
	4	Power I/O	**Black**	**K31 GND**	**MANDATORY**
			Violet	INPUT 1	
			Pink	INPUT 2	
			Grey	RDD LOW	
			Red	**K30 VBAT**	**MANDATORY**
			Blue	**K15 IGNITION**	**MANDATORY**
			Yellow	TACHO	
			White	RDD HIGH	

Port	No.	Connector	Wire Color	Signal	
	5	RS232 Cable	Yellow	TX	
			Black	GND	
			Brown	RX	
			Grey	V OUT	
	6	RS232 Cable	Yellow	TX	
			Black	GND	
			Brown	RX	
			Grey	V OUT	

Port	No.	Connector	Wire Color	Signal	
	7	USB-A			

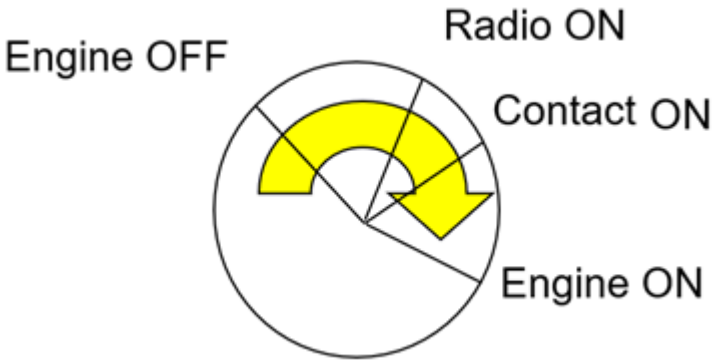
PLEASE NOTE

- Minimal voltage, GND, and ignition must be connected.
- The device is internally fused on the power connections.
- The device should be connected to a 3A fused power supply.

CAUTION

Connections must be done with the ignition turned OFF!

YOU MUST NEVER connect K15 IGNITION to the radio contact as this can cause the following problems:



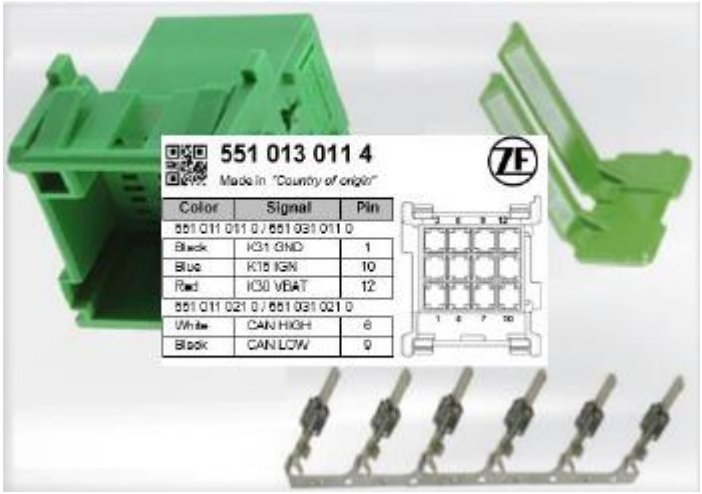
1. The Tachograph sends no data if the driver turns the ignition key to the “Radio ON” position. The on-board computer will not receive any status messages from the Tachograph.
2. When the driver stops driving and turns the ignition key to the “Radio ON” position, the question “Please choose an activity” will not be displayed on the on-board computer.

Connecting to the Standard FMS Connector

Required Hardware

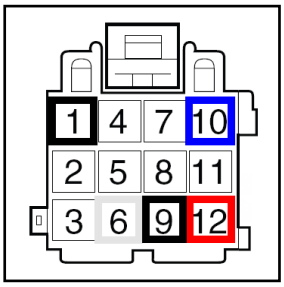
FMS connector kit: Part number: 551 013 011 4

A female standard FMS connector is provided with the on-board computer. In recent trucks, a (male) standard FMS connector is available, where the required signals can be found (K30, K31, K15, CAN- H, CAN-L).
In case no standard FMS connector is available on the truck, you will need to find the signals on another location. Consult the Truck-specific Installation Guides (TIG) for more information on truck-specific signals.



During the entire connection procedure, the voltage must be turned off!

Signal	Pin
GND (31)	1
Ignition (15)	10
Vbat (30)	12
CAN H	6
CAN L	9



Connecting the Digital Tachograph (D8)

> **OPENING THE TACHOGRAPH**
> If the seal of the Tachograph has been broken during assembly, or if signals from the Tachograph are being diverted to the on-board computer, the Tachograph must be resealed by an authorized organization. ZF and its distributors do NOT accept any responsibility for possible infringements against local legislation.

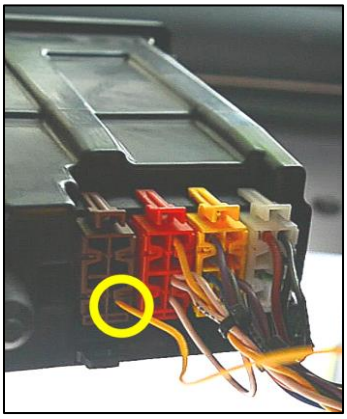
Connection to On-Board Computer

Plug the connector from the Power I/O cable (article code: 551 031 011 0) in the correct port (4) on the side of the unit.

Port	Connector	Wire Color	Signal
4	Power I/O	Yellow	K-Line
		Black	GND

Connection to Tachograph

Connect the K-Line cable (Yellow) from the Power I/O cable (article code: 551 031 011 0) directly to the Tachograph using the Brown connector (Tachograph connector kit (article code: 551 013 021 4)).

Wire Color	Signal	
Black	PIN GND (A5 or A6)	
Yellow	PIN D8 (Tachograph Data)	

Connecting the CAN Bus

Connection to On-Board Computer

Plug the connector from the CAN Bus connector (article code: 551 031 021 0) in the CAN Bus port (3) on the back of the unit.

Port	Connector	Wire Color	Signal
3	CAN Bus Connector	Black	CAN-L
		White	CAN-H

> **PLEASE NOTE**
> Regardless of what changes you are about to make to the CAN Bus connection, always switch off tension first!

Connection to CAN Bus via the FMS Interface

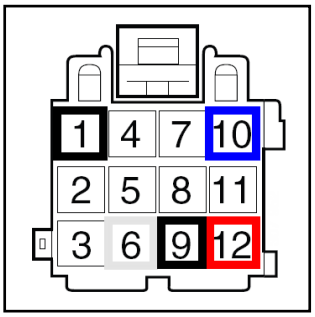
Connection to CAN Bus

Required on the Truck Side: The FMS Interface

The interface is connected to the CAN Bus through the FMS interface of the truck. Every truck manufacturer has a specific FMS Gateway. This device translates the CAN Bus messages to the FMS standard and acts as a firewall to the truck electronics (security function).

The FMS Gateway is delivered, installed, and activated by the truck manufacturer.

Signal	Pin
GND (31)	1
Ignition (15)	10
Vbat (30)	12
CAN H	6
CAN L	9



Wiring between the FMS Gateway and the Interface: The CAN BUS Connector

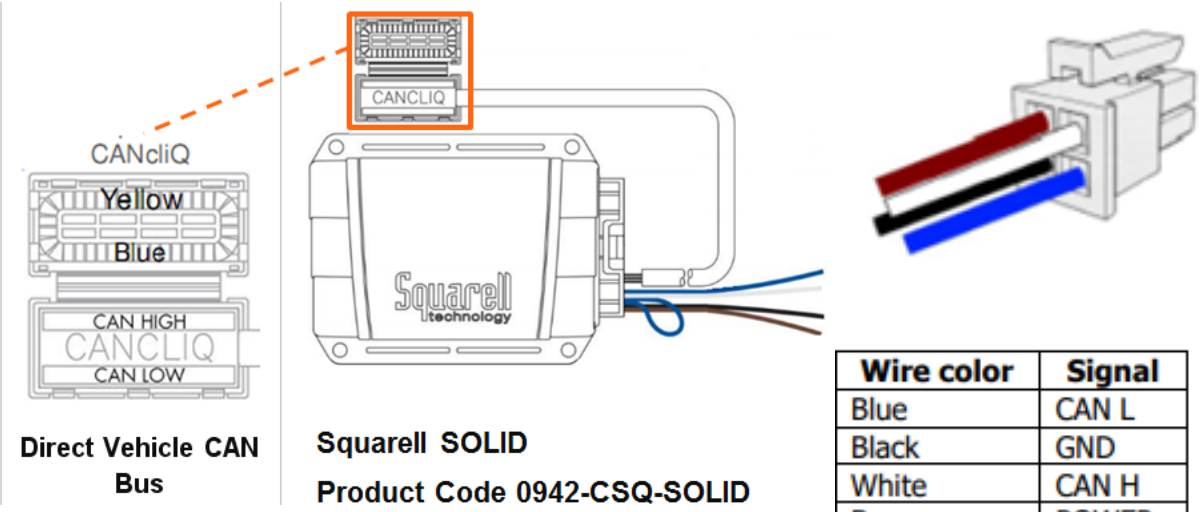
Wire Color	Signal
Black	CAN LOW
White	CAN High

Connection to CAN Bus using TX-TO-CAN

> PLEASE NOTE
> Always *first* turn off the ignition before changes are made to the CAN Bus connection.

Squarell SOLID

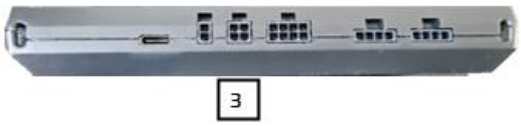
In case no FMS interface is installed on the vehicle, the TX-TO-CAN modules can be used to DIRECTLY connect to the vehicle CAN Bus.



Wire color	Signal
Blue	CAN L
Black	GND
White	CAN H
Brown	POWER

Connection to On-Board Computer

Use the Squarell Solid CANcliQ cable (551 081 011 0) to connect the Squarell unit to the CAN port (3) on the side of the main unit.



Squarell Solid CANcliQ cable (551 081 011 0)

Connection to CAN Bus

Connect the CAN wires to the correct location in the truck using the CANcliQ. The CAN Bus wire colors depend on the vehicle type. As a result, we refer to the vehicle passports (provided by your ZF Project Engineer) to find the location of the CAN Bus wires in the truck.
For more vehicle-specific information, go to https://www.mytransics.com/mydocsandtools and consult these instructions:
Squarell installation instructions - heavy commercial vehicles part 1 (a-l)
Squarell installation instructions - heavy commercial vehicles part 2 (m-z)

Connecting the Remote Data Download (RDD)

Connection to On-Board Computer

Plug the connector from the Power I/O cable (article code: 551 031 011 0) in the correct port on the side of the unit.

Port	Connector	Wire Color	Signal
4	Power I/O	Grey	RDD LOW
		White	RDD HIGH

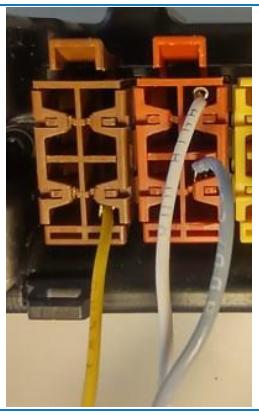
RDD via Tachograph

If the Remote Data Download (RDD) signal is NOT available on the FMS, we need to retrieve the RDD data by connecting to the Tachograph.

Connection to the Tachograph

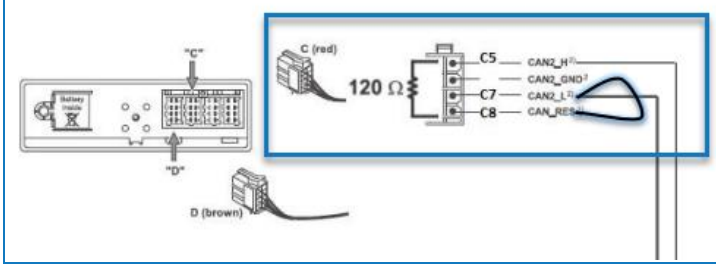
Connect the grey and white wires from the Power I/O cable (article code: 551 031 011 0) to the C-Connector (red) at the back of the digital Tachograph. A red Tachograph connector (C-Connector) will be provided by ZF (RDD connector kit (article code: 551 013 021 4)).

Wire Color	Tachograph Pin	Signal
White	5	CAN-High
Grey	7	CAN-Low



NOTE

On Scania 2023, an additional modification is required. On the red C-connector, create a loop on pin C7 and C8 to terminate the bus.



RDD via FMS

If the RDD signal is available on the FMS, we can retrieve the RDD data via the FMS interface.

Connection to the FMS

Connect the grey and white wires from the Power I/O to the FMS interface of the truck (cf. "Connection to CAN Bus via the FMS Interface" p.15).

> **NOTE**
> To receive the RDD signal, the connection to the FMS must be done through the FMS interface (TX-TO-FMS), not via TX-TO-CAN.

RDD Tachograph Compatibility

VDO

You need to verify if your Tachograph type is compatible with RDD using the version number on the digital Tachograph. The Tachograph firmware version must be at least **1.3a**. The digital Tachograph version can be found on the sticker on the Tachograph behind the paper roll of the printer.	

Stoneridge

The Tachograph firmware version must be at least **SE 5000 7.1**. The version can be found on a Tachograph printout.	

For more information, consult https://help.tx-connect.com/prodB/tx-connect/Content/UIO/English/TX-CONNECT.htm#Troubleshooting/RDD_Tacho_compatibility.htm

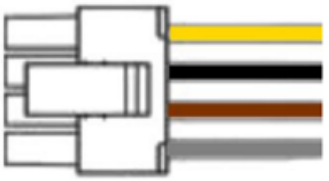
Connecting the Temperature Recorder

The temperature control system can be installed via TX-Cabled Data Link (TX-CDL). TX-CDL is a direct, wired connection to the temperature control system. The temperature control system is connected to one of the COM ports on the back of the on-board computer (cf. 5 and 6 in picture below).

Required Hardware

RS232 cable (article code: 551 011 031 0)

Supported Temperature Recorders		TX-CDL - Direct Connection
Euroscan TMS	X1	☑ TMS9600 / TMS38400
	X2	
Thermo King i-Box		☑
REB i-Box		☑
Thermo King BlueBox		☑
Thermo King TranScan		☑
Thermo King TouchLog		☑
Carrier DataCOLD 500		☑ Third party
Carrier DataCOLD 600 / Euroscan X3		☑ Partner protocol
Carrier Direct		☑
TRS		☑

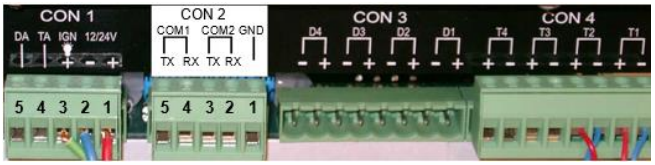


RS232 Port On-Board Computer (5/6)		Temperature Recorder
Wire Color	Signal	Signal
Yellow	TX	TX
Black	GND	GND
Brown	RX	RX
Grey*	V OUT	

IMPORTANT
Grey wire must be isolated when not connected.

Euroscan TMS / Euroscan X1/X2

Connect the pins on the ZF device to the correct pins on the connector blocks of the temperature recorder.



RS232 Port 551 030 0xx 0 (5/6)

Wire Color	Signal
Yellow	TX
Black	GND
Brown	RX

CON 2 Euroscan

PIN No.	Signal
1	GND
2	RX - COM 2
3	TX - COM 2
4	RX - COM 1
5	TX - COM 1

NOTE
In case COM1 is already occupied, you need to connect to COM2.

Setting the Reefer Protocol

After connecting the hardware, the recorder protocol must be set to the correct protocol.

- Direct (CDL) connection: **TMS Protocol 9k6** or **TMS Protocol 38k4**

Procedure

1. Hold the green button for 3 seconds. The recorder will ask to **Enter PIN code** (Default PIN code: 1111).
2. Next, press the blue button 4 times to open **Menu 5. Temperature entry settings**.
3. Press the blue button once to open **Menu 11. Communication settings**.
4. Press the green button once to select **EDIT**. The **Menu 11.1. COM1 settings** will be displayed.
5. Press the green button once to **EDIT**.
6. Set the correct protocol by pressing the yellow button:

   For Euroscan TMS: press the yellow button until **TMS PROTOCOL 9k6** is displayed.
7. Press the green button once to confirm your changes.
8. Press the red button twice to return to the main menu.

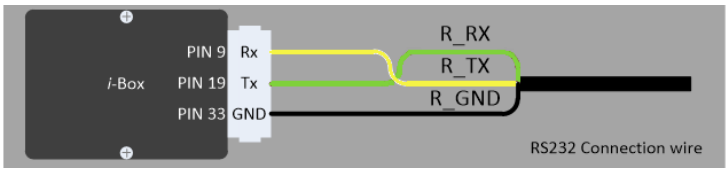
Thermo King i-Box

The i-Box is an interface between telematics systems and Thermo King controllers and data loggers.

This installation requires the following firmware version:

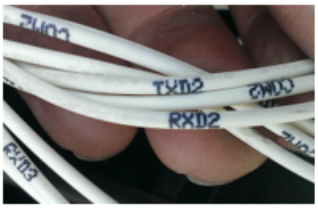
- Firmware i-Box: REV 5309 or higher

Connect the pins on the ZF device to the correct pins on the connector blocks of the temperature recorder.



RS232 Port 551 030 0xx 0 (4/6) — **Port 2 (3rd Party)**

Wire Color	Signal		PIN No.	Signal
Yellow	TX	→	9	RX
Brown	RX	→	19	TX
Black	GND	→	33	GND



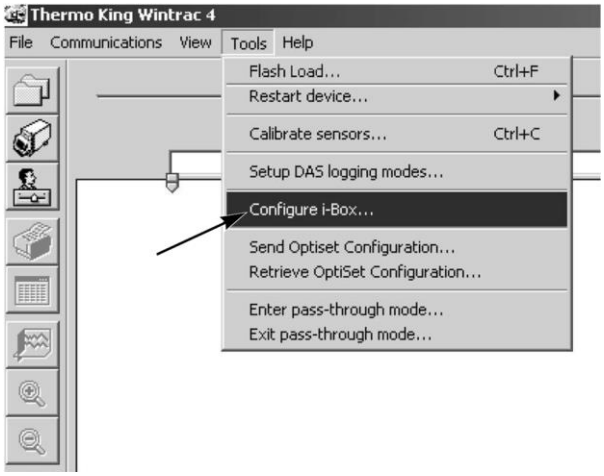
Setting the Reefer Protocol

Normally, the i-Box does not require any specific configuration.

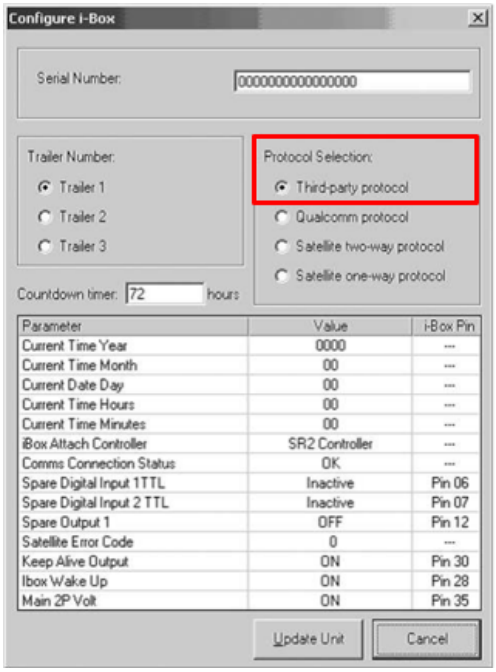
However, in case another system was connected to the i-Box before, it is possible that the protocol needs to be reconfigured to “Third-party protocol” using the Wintrac software on a diagnostic PC/laptop.

More details on the diagnostic software can be obtained from your local Thermo King service partner.

1. Connect the COM port of the diagnostic PC/laptop to the i-Box Flash Load Port connector on the i-Box unit.
2. Make sure that both the i-Box and the controller/data logger are activated.
3. Start the Wintrac software on the PC.
4. Select Configure i-Box in the Tools menu.



5. Make sure that Third-party protocol is selected under “Protocol Selection”.



REB i-Box

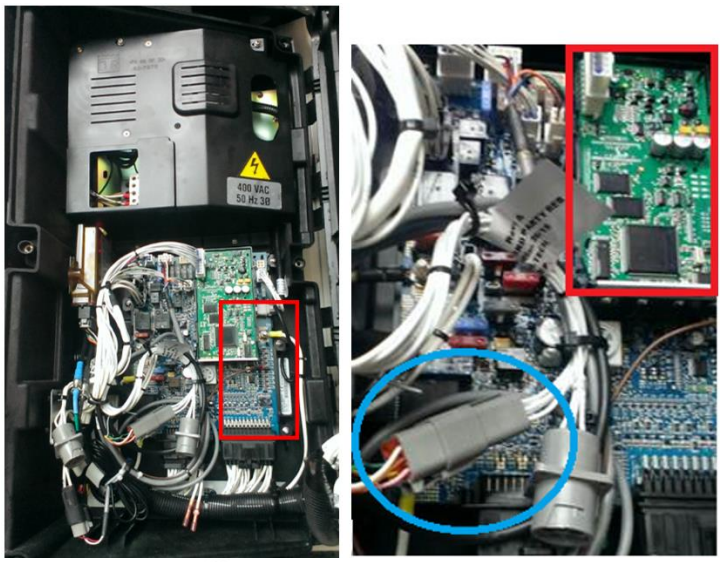
The REB i-Box is a motherboard that is mounted on an SR-3 or SR-4 base controller (the motherboard may have a different color than shown in the picture).

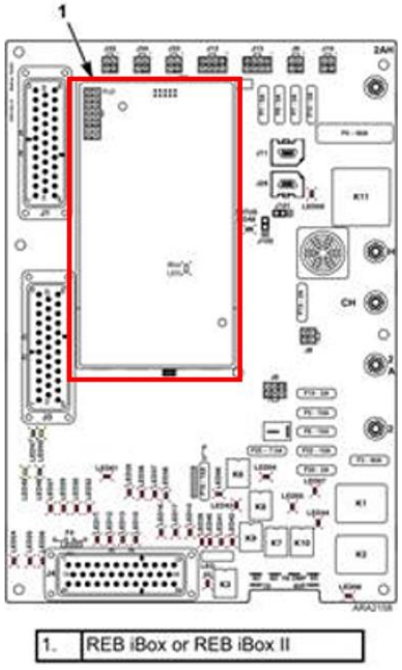
This installation requires the following firmware versions:

- Firmware i-Box: 5309 or higher

NOTE

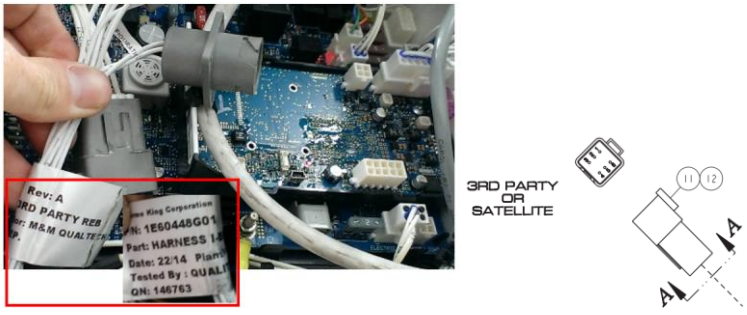
Make sure that the i-Box is compatible with the specific reefer/controller unit type and version. For example, the CryoTech reefer compatibility was only added for REB I i-Box REV A031 with firmware version 5506 and for REB II i-Box with firmware version 5370.



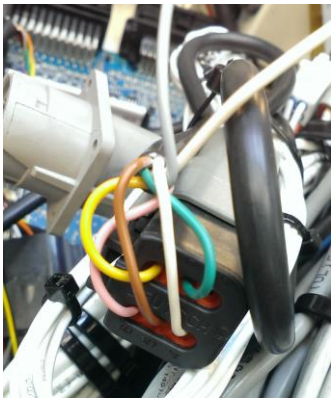


1. REB iBox or REB iBox II

1. Find the 3rd-party REB wiring harness.



2. Connect the wires of the open-end reefer cable to the correct pins on the 3rd-party REB wiring harness.



RS232 Port 551 030 0xx 0 (5/6)

Wire Color	Signal
Yellow	TX
Black	GND
Brown	RX

3rd-Party Wiring Harness

Signal	PIN No.	Code
RX	1	RXD1
TX	2	TXD1
GND	5	COM1

Setting the Reefer Protocol

Normally, the REB does not require any specific configuration.
However, in case another system was connected to the REB i-Box before, it is possible that the protocol needs to be reconfigured (cf. Setting the Reefer Protocol on page 22).

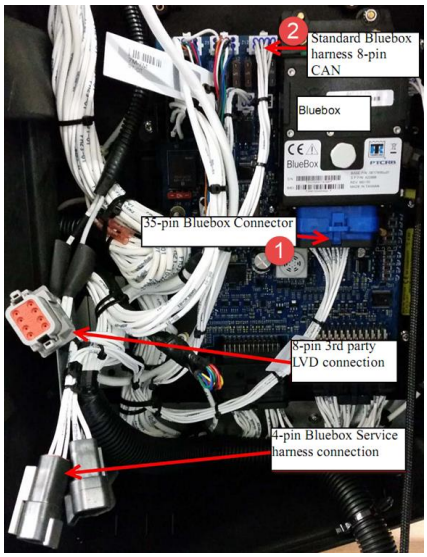
Thermo King BlueBox

The BlueBox is an interface between telematics systems and Thermo King controllers (SLXi, SLXe, and SLXi SR-3).

This unit requires some modifications to be able to communicate with a third-party telematics unit.

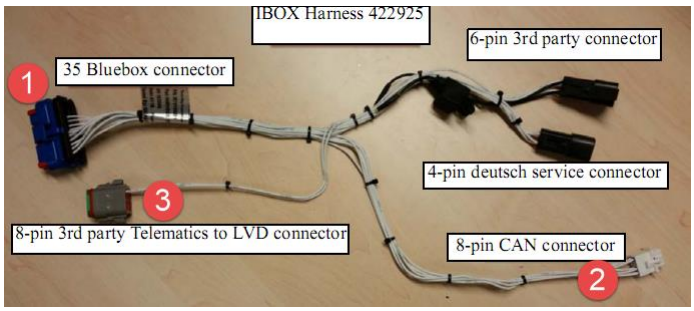
First, unplug the standard BlueBox harness from the BlueBox:

1. Unplug the 35 BlueBox connector from the BlueBox unit.
2. Unplug the 8-pin CAN connector from CAN1.
3. Remove all cable ties to remove the wire harness. Be careful not to damage any cables.



Replace the standard BlueBox harness with the **i-BOX harness** (**part number 422925**).

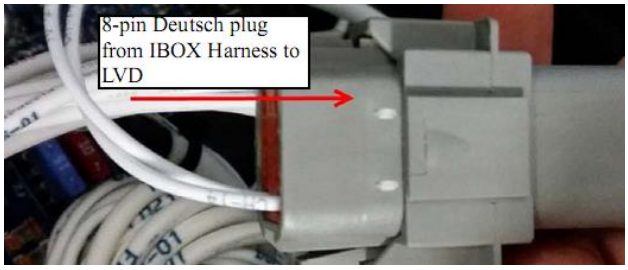
1. Plug in the i-BOX harness 35 BlueBox connector.



2. Plug in the 8-pin CAN connector to the 8-pin CAN1 on the controller. Make sure that the connector clip is secured.

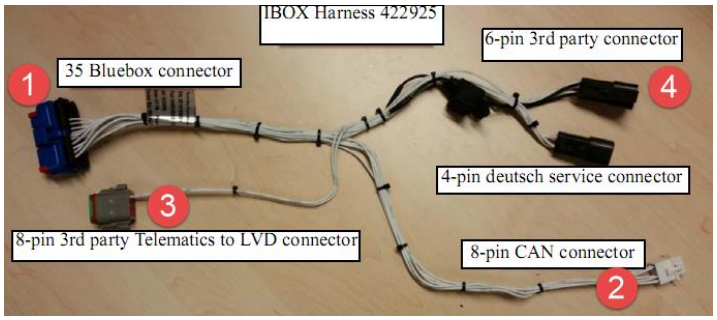
Next, unplug the 8-pin Deutsch plug from the LVD harness of the control box.

3. Now, plug in the 8-pin Deutsch 3rd-party connector into the LVD 8-pin connector.



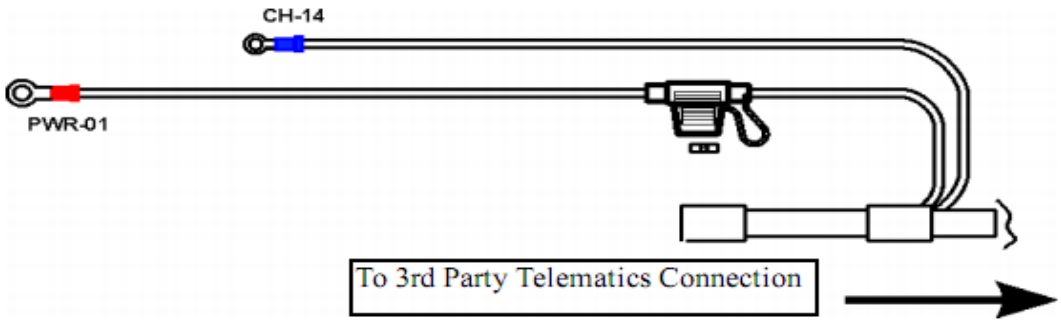
The connections to the on-board computer can be found on the 6-pin 3rd-party connector (no.**4** in the picture).

RS232 Port 551 030 0xx 0 (5/6)		3rd-Party Connector
Yellow	TX	RX (label RX-01)
Black	GND	GND (label CH-14)
Brown	RX	TX (label TX-01)



Power and GND Connections

Insert this PWR wire into TERMINAL-RING RED (crimp, solder and insulate) and connect to 2A terminal (J12) pin of SR3 and tighten the nut using a spacer.
Insert this CH wire into TERMINAL-RING BLUE (crimp, solder, and insulate) and connect to CH terminal (J23) of SR3.



Checking the Installation

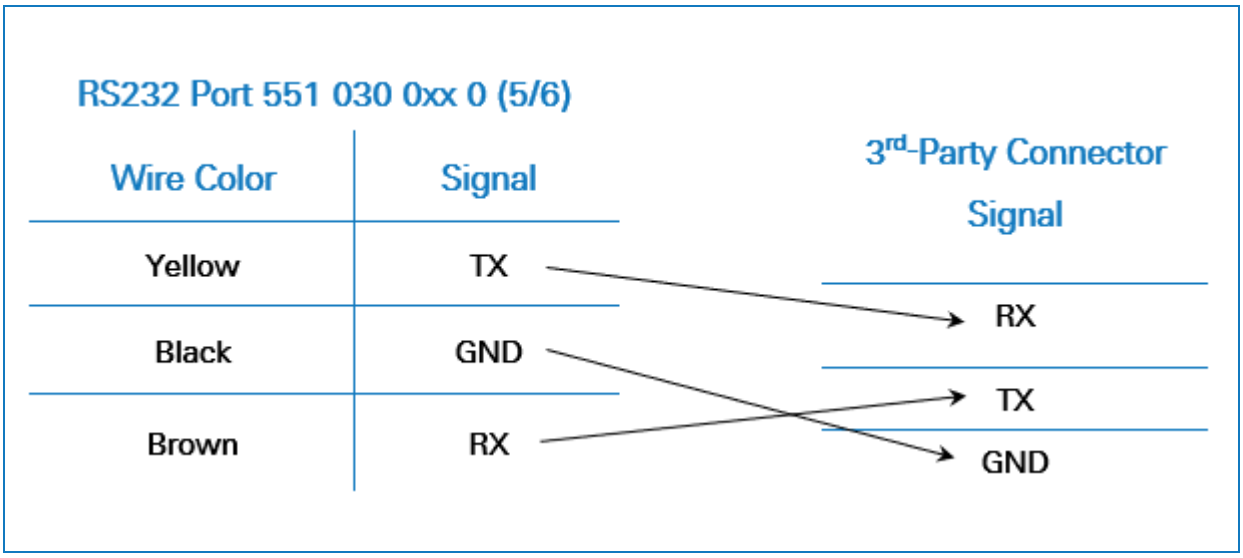
In telematics mode, the i-Box LED will blink in the following patterns, depending on whether it is operating correctly or experiencing a failure, while the BlueBox is not in power saving mode.

Operation / Pattern	Frequency
Communication failure	2 blinks per 3 seconds
OK	2 blinks per second

Direct Connection

On 551 030 0xx 0, the temperature control system is connected to COM 1 or COM 2 on the on-board computer.

Connect the pins on the ZF device to the correct pins on the temperature recorder.



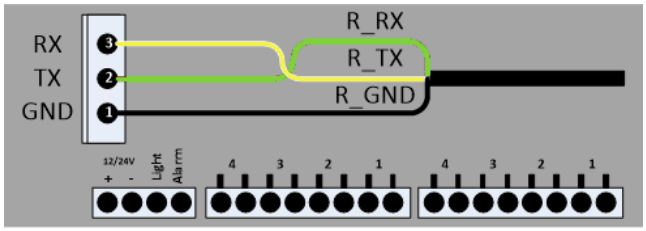
Thermo King TranScan / (TK)DL-PRO

1. Open the temperature recorder to access the connector blocks.

TranScan

(TK)DL-PRO

2. Connect the wires of the open-end reefer cable to the correct pins on the temperature recorder.



RS232 port 551 010 0xx 0 (5/6) — CON 2

Wire color	Signal	Pin No.	Signal
Yellow	TX	1	GND
Black	GND	2	TX
Brown	RX	3	RX

Setting the Reefer Protocol

The TranScan / TKDL-PRO temperature recorder does not require specific configuration.

Thermo King TouchLog

> IMPORTANT
> As of 2019-2020, TouchLog replaces TouchPrint Datalogger.

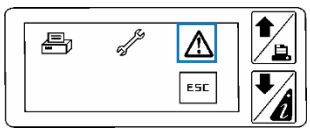
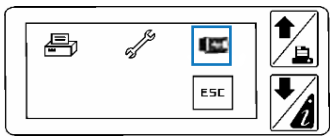
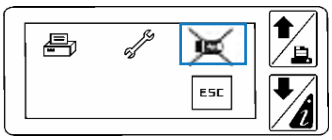
TouchLog Data Logger

> First, please make sure that you are using a Thermo King TouchLog (which supports telematics integration) and not a TouchPrint printer (which does NOT support telematics integration).

There is no visual difference between both units, so you will need to verify your hardware in the device menu via the touchscreen.
Press  next to the screen to consult the Quick Info menu.
In case "TouchPrint printer" is displayed as printer model, your unit is not compatible with 551 030 0xx 0.

OR

Also, when tapping the touchscreen, a different menu will be displayed on a TouchLog printer.

COMPATIBLE	NOT COMPATIBLE
	 
Thermo King TouchLog	Thermo King TouchPrint printer

Required Firmware Version

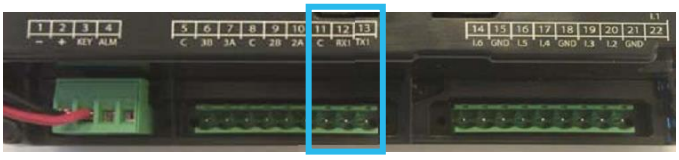
For the connection with 551 030 0xx 0, TouchLog requires minimum firmware version 515.023.

Press  to consult the current firmware version in the Quick Info menu.

Please contact your local Thermo King dealer in case the firmware needs to be updated.

1. Open the temperature recorder to access the connector blocks.

2. Connect the wires of the open-end reefer cable to the correct pins on the temperature recorder.



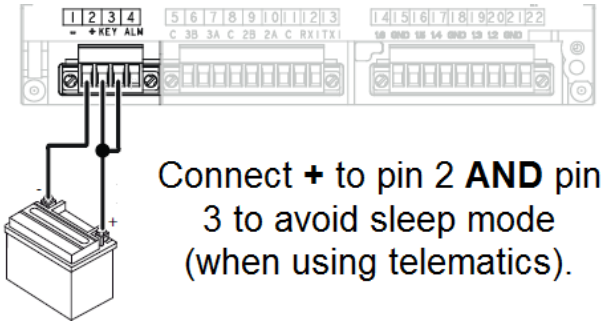
RS232 Port 551 030 0xx 0 (5/6) — **CON 2**

Wire Color	Signal	PIN No.	Signal
Yellow	TX	11	GND
Black	GND	12	RX1
Brown	RX	13	TX1

Power Connection Thermo King TouchLog

IMPORTANT

To prevent the TouchLog module from going into sleep mode, you will need to CONNECT THE + SIGNAL TO PIN 2 AND 3 as shown in the picture.
As pin 3 is the ignition, this will prevent the TouchLog module from going into sleep mode. However, the TouchLog module will consume more power, as it no longer goes into standby mode when it is not used.



Configuring the TouchLog Module

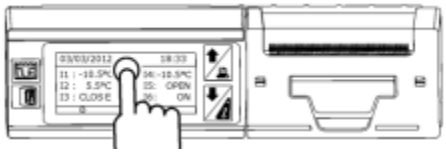
Normally, the TouchLog module should be configured by the Thermo King installer, but in case no info is received from the TouchLog module after connecting it correctly, you should check if it is configured correctly.

How to Check the Input Configuration

The main screen indirectly shows the configuration of the inputs.

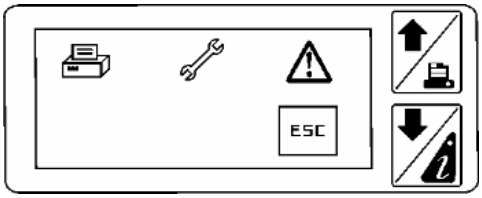
Example: If you see 6 items on the screen, then 6 inputs are enabled.

1. Tap the screen.



2. Next, tap the  button to access the configuration menu.

Look for the  button to check the input configuration.

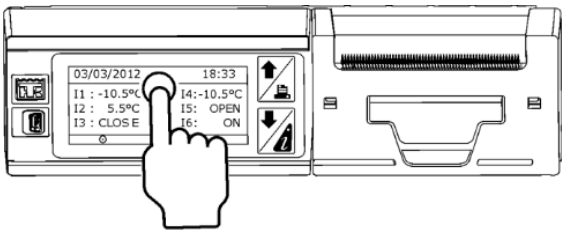


NOTE

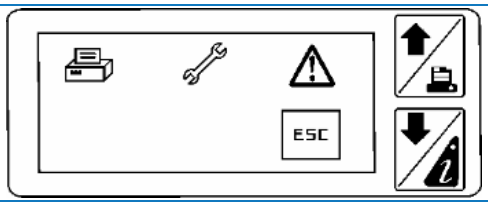
The digital inputs are ground-steered.

How to Check if the Serial Port on the TouchLog Module is Configured Correctly

1. Tap the screen.

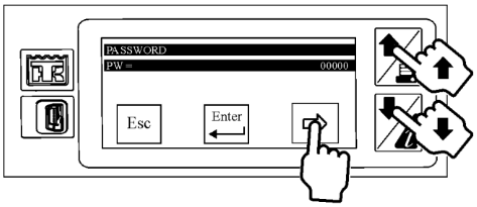


2. Next, tap and hold the  button for more than 2 seconds to access the service menu.



3. The default password is **10320** (if not correct, contact the installer of the TouchLog module).

   Next, tap the S1  button to access the settings of serial port 1.



4. The settings for serial port 1 should look like as shown in the illustration, in order to read data from the port.

	S1
Port type	RS-232
Protocol	ModBus
Address	1
Baudrate	9600
Parity	N
Stop bit	1

Carrier DataCOLD 500

NOTE

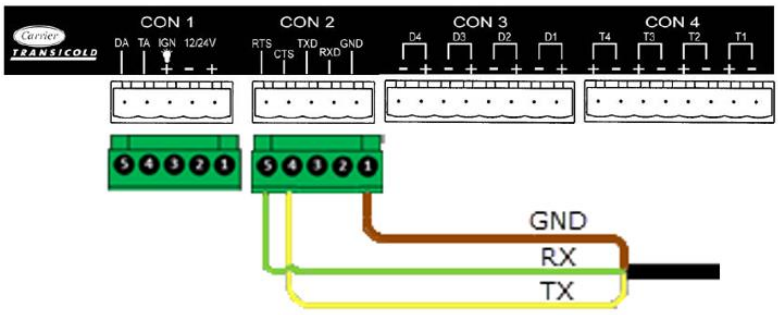
To have all correct data from the reefer via DataCOLD 500, the following requirements must be met:

- The firmware version of the DataCOLD 500 recorder must be at least version 2.313.

The protocol of the COM port (mostly COM2) for the communication between the reefer unit and the DataCOLD 500 recorder must be set to Vector.

1. Open the temperature recorder to access the connector blocks.

2. Connect the wires of the open-end reefer cable to the correct pins on the temperature recorder.



NOTE

In case COM1 is already occupied, you need to connect to COM2.

RS232 Port 551 030 0xx 0 (5/6)

Wire Color	Signal
Yellow	TX
Black	GND
Brown	RX

CON 2

PIN No.	Signal
1	GND
2	RX – COM2
3	TX – COM2
4	RX – COM1
5	TX – COM1

Setting the Reefer Protocol

After connecting the hardware, the recorder protocol must be set to third-party protocol.

- Direct (CDL) connection: **Third-party protocol**

Procedure

1. Hold the green button for 3 seconds. The recorder will ask to **Enter PIN code** (Default PIN code: 1111).

2. Next, press the blue button 4 times to open **Menu 5. Temperature entry settings**.

3. Press the blue button once to open **Menu 11. Communication settings**.

4. Press the green button once to select **EDIT**. The **Menu 11.1. COM1 port settings** will be displayed.

5. Press the green button once to **EDIT**.

6. Press the yellow button until **Third-party protocol** is displayed.

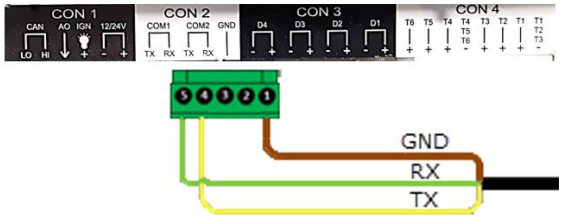
7. Press the green button once to confirm your changes.

8. Press the red button twice to return to the main menu

Carrier DataCOLD 600 / Euroscan X3

1. Open the temperature recorder to access the connector blocks.

2. Connect the wires of the open-end reefer cable to the correct pins on the temperature recorder.



NOTE

In case COM1 is already occupied, you need to connect to COM2.

CON 2

RS232 Port 551 030 0xx 0 (5/6)

Wire Color	Signal
Yellow	TX
Black	GND
Brown	RX

PIN No.	Signal
1	GND
2	RX – COM2
3	TX – COM2
4	RX – COM1
5	TX – COM1

NOTE

To have all correct data from the reefer via DataCOLD 600, the following requirements must be met:

- The firmware version of the DataCOLD 600 recorder must be at least version 3.30.5.
- The protocol of the COM port (mostly COM2) for the communication between the reefer unit and the DataCOLD 600 recorder must be set to Carrier Advance (not “Vector”).

Setting the Reefer Protocol

After connecting the hardware, the recorder protocol must be set to Partner protocol.

Procedure

1. Hold the green button for 3 seconds. The recorder will ask to **Enter PIN code** (Default PIN code: 1111).
2. Next, press the blue button 4 times to open **Menu 5. Temperature entry settings**.
3. Press the blue button once to open **Menu 11. Communication settings**.
4. Press the green button once to select **EDIT**. The **Menu 11.1. COM1 port settings** will be displayed.
5. Press the green button once to **EDIT**.
6. Press the yellow button until **Partner protocol** is displayed.
7. Press the green button once to confirm your changes.
8. Press the red button twice to return to the main menu.

Carrier Direct

IMPORTANT

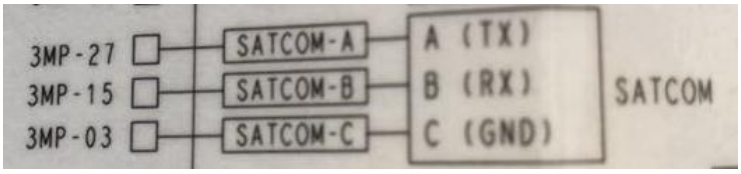
- Carrier Direct has been tested and validated with models **Vector** and **Supra**.
- DO NOT use Carrier Direct on light Carrier models for vans (Xarios, Pulsor, Neos, and so on).
- Other Carrier models must be checked / tested.

Carrier Direct must be connected to the SATCOM port of the reefer.

However, Carrier does not allow removing the SATCOM connector.

Always order the specific connector (for serial connections) to plug in on this SATCOM connector.

SATCOM connector



Connection scheme

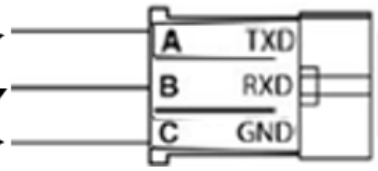
Connection Scheme

RS232 Port 551 030 0xx 0 (5/6)

Wire Color	Signal
Yellow	RX
Black	GND
Brown	TX

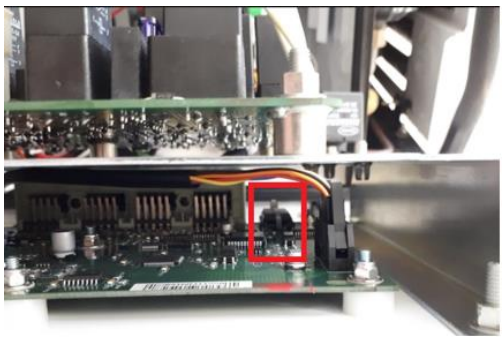
Communication Cable 3-Way

P/N: 22-60633-00



Additional Requirements

- For Vector models, a license needs to be loaded into the reefer to activate the Carrier Direct protocol. The license card to load the license can be ordered at Carrier.
- For Supra models, a chip needs to be switched on the reefer controller board. This chip can be ordered at Carrier. Once the chip or license is loaded, one- and two-way communication is enabled on the reefer unit.



Supra chip

TRS

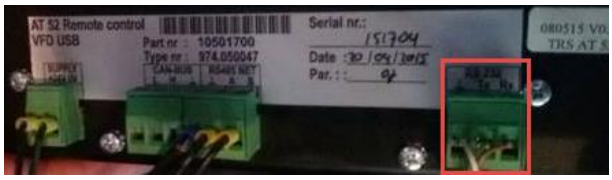
NOTE

To have all correct data from the reefer, the following requirements must be met:

- RS232 must be activated on the TRS unit by opening **Settings > USB / RS / CAN > COM USB >** set to **RS232**.
- TRS is supported as from 551 030 0xx 0 application version 2.19.

1. Open the temperature recorder to access the connector blocks.

2. Connect the wires of the open-end reefer cable to the correct pins at the back of the temperature recorder.



RS232 Port 551 030 0xx 0 (5/6)		RS232 Connector
Wire Color	Signal	Signal
Yellow	TX	GND
Black	GND	TX
Brown	RX	RX

Connecting the External Smart Card Reader

ID Card (or Smart Card) Reader for Driver Identification - Part Number: 550 005 005 2

Device Label

Connection to On-Board Computer

Use the USB-A connection on the side of the on-board computer to connect the Smart Card Reader. Always foresee strain relief for the USB cable using a cable tie.

> NOTE
> Do NOT use any type of USB hub to connect the card Reader to the interface/on-board computer.

Installing the Smart Card Reader on the Dashboard

1. First, find a suitable location to mount the Smart Card Reader.

> IMPORTANT
> 1. Carefully clean and degrease the installation surface.
> 2. The Smart Card Reader must not be exposed to direct sunlight.

2. After cleaning the surface, remove the backing paper (from the backside of the Smart Card Reader) and firmly press the Smart Card Reader onto the surface.

⚠ The device must *not* come in to contact with acetone *or* battery fluid.

Smart Card Reader (back view – adhesive side)

To achieve a good bond, use the entire adhesive surface of the Smart Card Reader.

3. Place the Smart Card Reader with the card reader slot directed toward the front of the vehicle.

4. Wait 72 hours after fixing the Smart Card Reader before use.

Using the Smart Card Reader

NOTE

The ID Card/Smart Card must first be configured in TX-CONNECT.
To configure your ID Card in TX-CONNECT see TX-CONNECT Configuration on page 42.

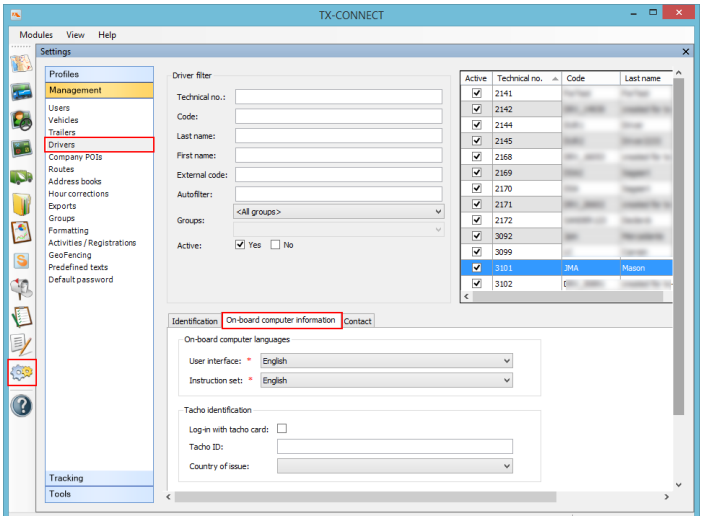
Make sure that the Smart Card is correctly inserted into the Smart Card Reader. The Smart Card must be inserted with the chip facing the same direction as the LED indicator. ONLY use ruggedized ID cards with article code 550 000 014 2. (Serial Number > TRA10010000).	 Correct way to insert Smart Card  Smart Card correctly inserted
• LED light turns GREEN indicates Smart Card detected. • LED green light *blinking* indicates Smart Card Reader is reading Smart Card. • LED turns RED indicates an error is detected.	 Location of LED on Smart Card Reader
To remove the Smart Card: Slightly lift the Smart Card and then slide out of the Smart Card Reader.	 Lift the Smart Card and then slide out of Smart Card Reader

TX-CONNECT Configuration

Before you can use your ID Card on the On-Board Computer it must be configured in TX-CONNECT (a back-office application).

TRA10012345 must be configured in TX-CONNECT

1. Log on to TX-CONNECT.
   a. Log into your TX-CONNECT account.
   b. Open **Settings** ► **Management** ► **Drivers**
   c. Select the Driver (that is, the Driver whose ID Card needs to be configured).
   d. Select the **On-board computer information** tab.



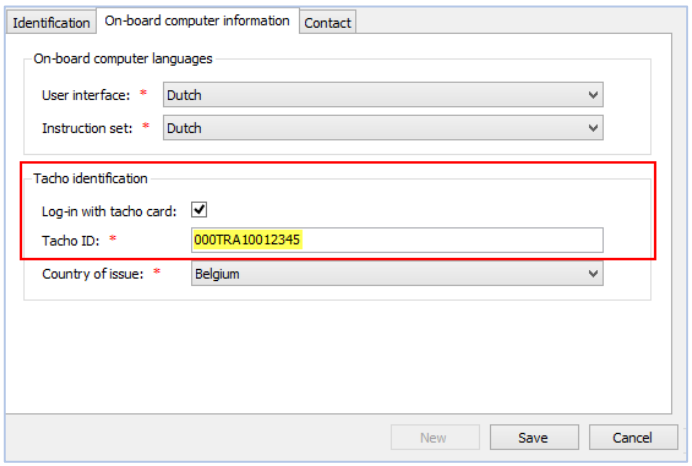
2. In the Tacho identification section select the **Login with tacho card** checkbox.

3. In the **Tach ID** field, enter 000 and then the ID Card alphanumeric number.

For Example:

- **ID Card Number**: TRA10012345
- In **Tacho ID** field: 000TRA10012345

4. Click **Save** (lower right-hand corner).



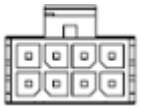
Connecting PTO

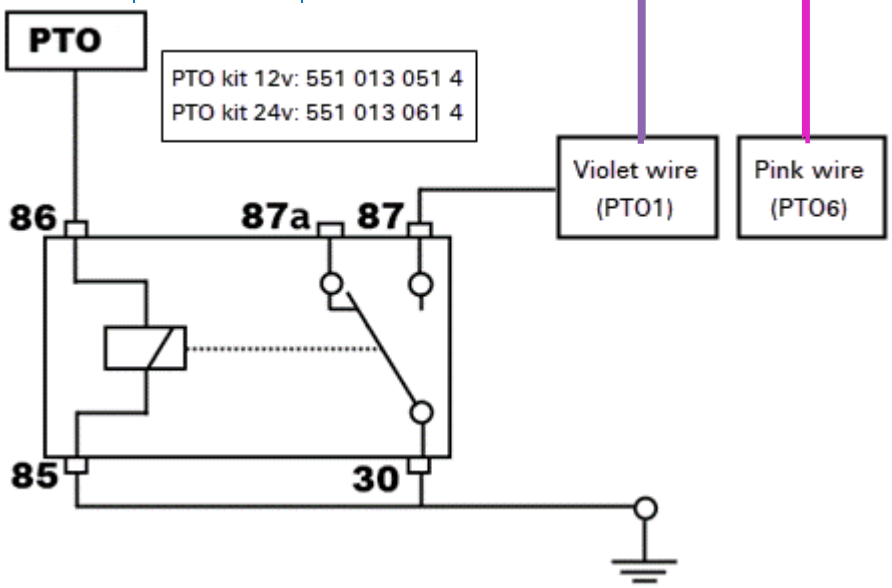
Required Hardware

	
1 x Relay	5 x Push-on connectors

Connection to On-Board Computer

If you use the PTO functionality, the connections must be made as follows:

Port		Connector	Wire Color	Signal
	4	Power I/O	Black	K31 GND
			Violet	INPUT 1
			Pink	INPUT 2
			Grey	RDD LOW
			Red	K30 VBAT
			Blue	K15 IGNITION
			Yellow	TACHO
			White	RDD HIGH



IMPORTANT	The digital input is ACTIVE LOW. ON state (> 3.4 V) and OFF state (< 3.0 V)

Connecting the PTO Extension Kit

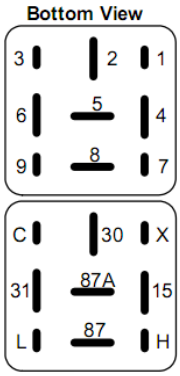
Using the PTO extension kit, three additional PTO inputs can be made available for additional applications.
For example, SOS button, pump, loading door, and so on.

NOTE
The PTO extension kit must be connected to a fused (5A) power supply with suitable 0,75 mm² wires.

Content of PTO Extension Kit

1 x PTO extension module	1 x Mounting socket	Crimp contacts (4x + 5x)
		

PTO Connection Table



Signal	PTO Kit	Vehicle	
Power	2 / 30	9 - 30V	
	6 / 31	GND	
Digital inputs	3 / C	PTO2	
	1 / X	PTO3	
	4 / 15	PTO4	
Signal	**PTO Kit**	**OBC**	**Wire Color**
CAN signal	7 / H	RDD-High	White
	9 / L	RDD-Low	Black

Remark: PTO kit contact 5/87A and 8/87 are not used.

IMPORTANT	The digital inputs PTO2, PTO3, and PTO4 are ACTIVE HIGH. ON state (> 6.4 V) and OFF state (< 5.0 V).

Connection to On-Board Computer

The PTO extension kit is connected to the RDD port (4) on the on-board computer and must be powered with 9-30 VDC.

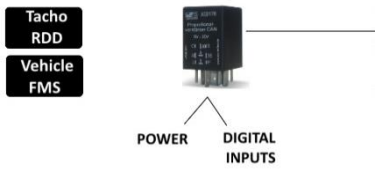
Plug the connector from the CAN cable into the correct port (4) located on the side of the unit.

IMPORTANT	The PTO extension kit CANNOT be connected to: • The CAN Bus port of 551 030 0xx 0 (port 3) • The truck CAN Bus directly

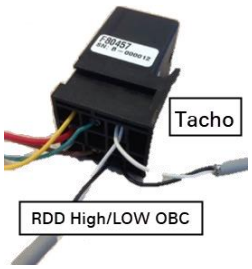
No RDD

If RDD is not used, connect the RDD cable to the Power I/O cable (article code: 551 031 011 0) on the on-board computer.

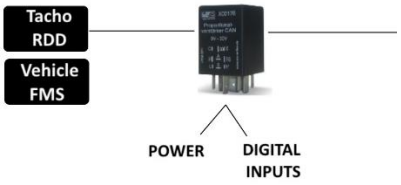
PTO Connection

PTO Kit	Wire Color Power I/O Cable	
7 / H	White wire	
9 / L	Grey wire	

RDD via Tachograph

If the RDD signal is NOT available on the FMS, then the RDD data can be retrieved by connecting to the Tachograph. In this case, connect the RDD cable to the Power I/O cable (article code: 551 031 011 0) on the on-board computer. The RDD cable is then connected in parallel with the PTO extension kit and the digital Tachograph. To make the parallel connection the RDD cable can be cut.	

PTO Connection

Tachograph	PTO Kit	Wire Color Power I/O Cable	
C5	7 / H	White wire	
C7	9 / L	Grey wire	

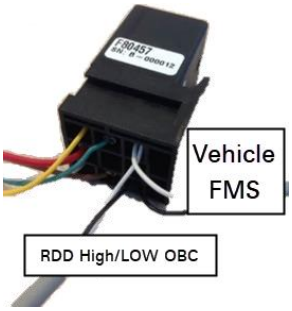
RDD via FMS

The RDD signal is retrieved from the vehicle FMS Gateway by connecting to the Tachograph.

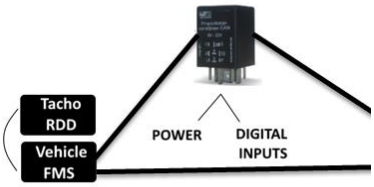
In this case, connect the RDD cable to the Power I/O cable (article code: 551 031 011 0) on the on-board computer.

The RDD cable is then connected in parallel with the PTO extension kit and the vehicle FMS Gateway.

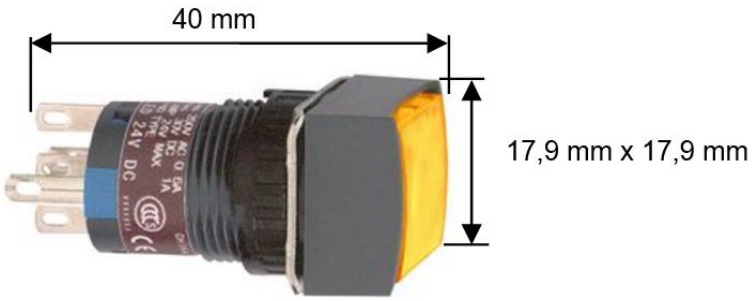
To make the parallel connection the RDD cable can be cut.



PTO Connection

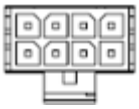
FMS Gateway	PTO Kit	Wire Color Power I/O Cable	
CAN-HIGH	7 / H	White wire	
CAN-LOW	9 / L	Grey wire	

Connecting the SOS Kit

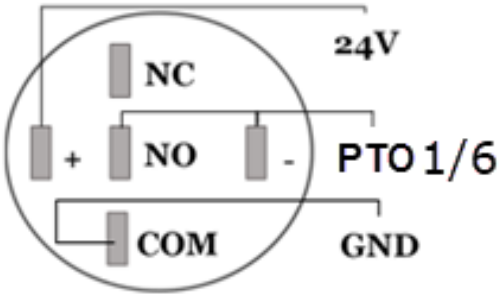


PLEASE NOTE
All connections must be done with suitable 0.75 mm² wires. Connect to a fused (3A) power supply.

Connection to Interface (No PTO Extension Kit)

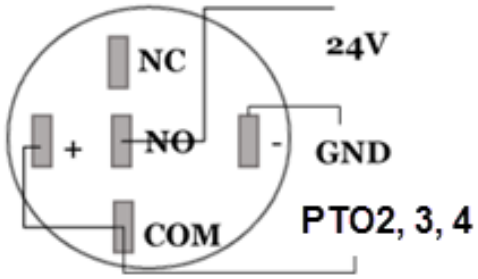
Port		Connector	Wire Color	Signal
	4	Power I/O / RDD	Black	K31 GND
			Violet	INPUT 1
			Pink	INPUT 2
			Grey	RDD LOW
			Red	K30 VBAT
			Blue	K15 IGNITION
			Yellow	TACHO
			White	RDD HIGH

Connect the SOS button to INPUT 1 = PTO1 or INPUT 2 = PTO 6 on Connector **4** (see picture above) on the on-board computer.
The SOS button must be powered with a 24V fused power supply.



Connection to PTO Extension Kit

When a PTO extension kit (cf. "Connecting the PTO Extension Kit" p. 44) is used, connect the SOS button to the PTO extension kit according to the scheme below.



Mounting the SOS Button

The SOS button can be installed on the dashboard:

- Panel cut-out diameter: ∅16 mm +-0.2 mm
- Panel thickness: 0.5 mm – 6 mm

IMPORTANT	Do not mount the SOS button on a surface that may be exposed to direct sunlight. Make sure that the pins from the SOS button do not short-circuit.

SOS Button – Behavior

Button State	Contact State	Result
Button not pressed	OPEN	Orange LED OFF - PTO state OFF
Button pressed	CLOSED	Orange LED ON - PTO state ON

Step 3 – Check the Installation

LED Indicators

LED	Function	Color	Description
	Power status	GREEN	GREEN STEADY: Power OK. Contact ON
			GREEN BLINKING: Power OK. Contact OFF
		RED	Power< 6V (truck battery low or installation incorrect.
	GPRS status	GREEN	Connected to the GPRS and to the Server.
		RED	• No GSM coverage
			• Not connected to the GPRS.
			• Not connected to the Server
	GPS status	GREEN	GPS OK (> 6 satellites detected)
		RED	GPS not OK / < 6 satellites detected
CAN	CAN connection status	GREEN	CAN connection OK
		RED	CAN connection NOK.
RDD	RDD connection status	GREEN	RDD connection OK.
		RED	RDD connection NOK.
Tacho	Tachograph connection status	GREEN	Tachograph connection OK.
		RED	Tachograph connection NOK.

Verifying the Installation with TX-CONFIG

> ⚠ TX-CONFIG is only required to verify the installation, not to follow the vehicle.

Installing TX-CONFIG

The 551 030 0xx 0 installation can be registered and verified using a smartphone with the TX-CONFIG installation app.

Download TX-CONFIG: https://www.tx-connect.com/sites/tx-config/.
OR
Scan the following QR code with your smartphone (a QR code Reader app installed on your smartphone is required)

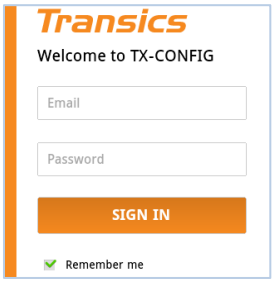
The download URL / QR code is only required once for installing the TX-CONFIG app. After the initial installation, you can simply start up TX-CONFIG from your smartphone using the TX-CONFIG icon. Press  to view all installed apps on the smartphone (icon depends on the installed O.S.).

> **PLEASE NOTE**
> TX-CONFIG requires an active Internet connection and is supported on Android 2.3 and all later versions.
> Contact the Transics Service Desk in case a problem occurs during the installation.

Registering and Configuring 551 030 0xx 0

1. Launch TX_CONFIG and log on using the supplied credentials.

2. Enter a valid email address and password and press SIGN IN.



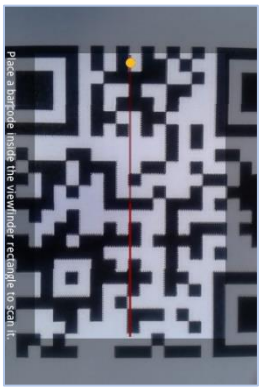
> **NOTE**
> If you do not have a valid user account, contact the Transics Service Desk.

3. Press INSTALL to register the installed 551 030 0xx 0 device.

> **PLEASE NOTE**
> The GENERATE CODE button and REPAIR button are inactive as these options are not yet available.

The smartphone's barcode scanner automatically launches.

4. Scan the QR code from the label on the 551 030 0xx 0 on-board computer device (located on the front or the backside of the unit).

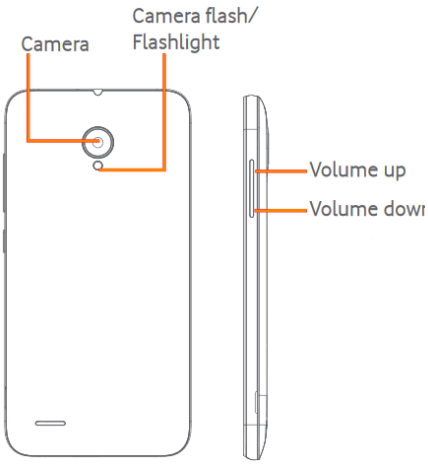


PLEASE NOTE

If supported by your smartphone, you can use the volume button on the smartphone to activate its flashlight to improve visibility while scanning.

Press “Volume up” to turn the flashlight ON and “Volume down” to turn the flashlight OFF.

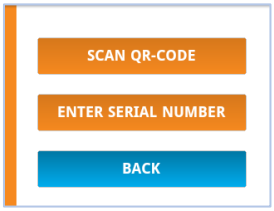
The volume button can be normally found on the side of your smartphone (depending on device type).



ALTERNATIVELY

If the QR code cannot be read by the scanner, press Back (that is, the hardware button on the smartphone).

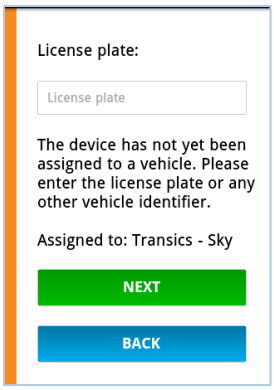
Then press **ENTER SERIAL NUMBER** and manually enter the device’s serial code.



The application checks if the scanned / entered serial number is valid.

If the serial number is valid and linked to a customer, the name of the customer appears at the bottom:

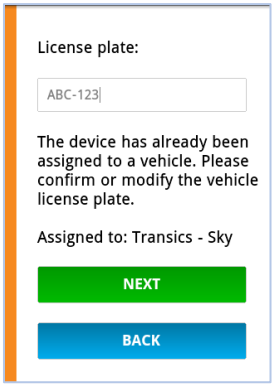
For Example:
Assigned to: Transics



5. To link the serial number to the vehicle, enter the license plate of the vehicle.

6. Press NEXT to continue.

If the serial number is already linked to a vehicle in the back office, the license plate of the vehicle will be filled in already. Modify it, if necessary.



7. Press NEXT to confirm.

PLEASE NOTE

When logging on to TX-CONNECT, the serial number will be visible in the OBC overview (Settings > Tools > OBC overview).

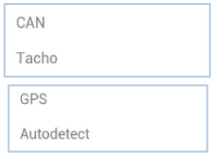
In this "OBC overview", the created vehicles can easily be assigned to the unassigned serial numbers from the list.

Enter the Vehicle Parameters

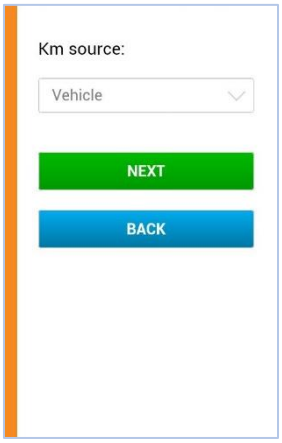
8. Press KM, SPEED & RPM.

Km Source

9. Select the correct mileage source from the list.
   This parameter defines the source that 551 030 0xx 0 uses for its mileage (sent to the back office).



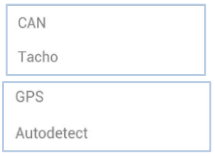
CAN	Only take into account if the CAN Bus is connected.
Tacho	Only take into account if a Tachograph is connected.
GPS	551 030 0xx 0 calculates kilometers based on the vehicle position.
AutoDetect	551 030 0xx 0 automatically chooses its source based on the available sources.



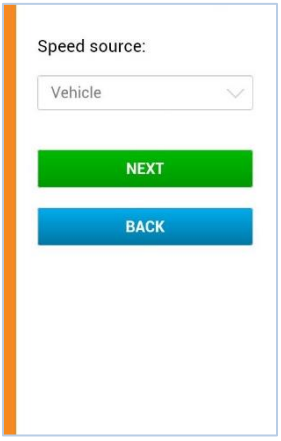
10. Press NEXT to continue.

Speed Source

11. Select the correct speed source from the list.
This parameter defines the source that 551 030 0xx 0 uses for its speed (sent to the back office).



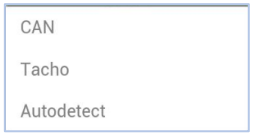
CAN	Only take into account if the CAN Bus is connected (cf. p.14).
Tacho	Only take into account if a Tachograph is connected.
GPS	551 030 0xx 0 calculates kilometers based on the vehicle position.
AutoDetect	551 030 0xx 0 automatically chooses its source based on the available sources.

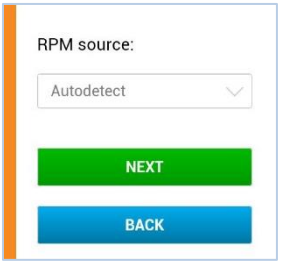


12. Press NEXT to continue.

RPM Source

13. From the list, select the correct RPM source.

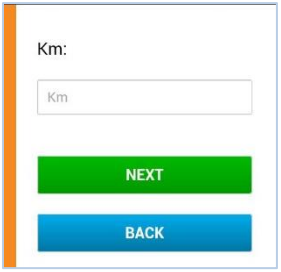




14. Press NEXT to continue.

Km

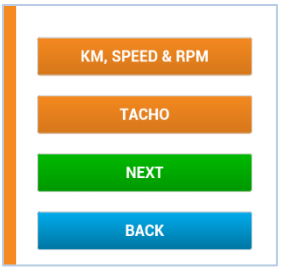
15. The mileage of 551 030 0xx 0 must be set to the value on the Tachograph.
16. Press NEXT to continue.



> **PLEASE NOTE**
>
> Km is only displayed if either "**Vehicle**", "**GPS**" or "**AutoDetect**" was selected in the Km source screen (see above).

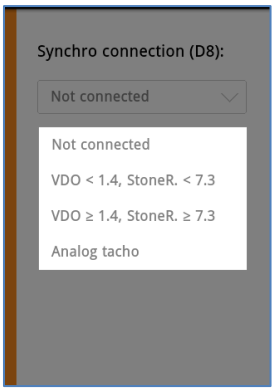
Enter the Vehicle Parameters

17. Press TACHO to continue.



Synchro Connection (D8)

18. Select the correct Tachograph Synchro Connection from the list.



> **NOTE**
> Check your Tachograph version, as different protocols are used according to the firmware version:
> - VDO < version 1.4 / Stoneridge < version 7.3
> - VDO ≥ version 1.4 / Stoneridge ≥ version 7.3

19. Press NEXT to continue.

Which Tachograph model?
You can find the Tachograph version number:

Stoneridge

- On the Tachograph printout

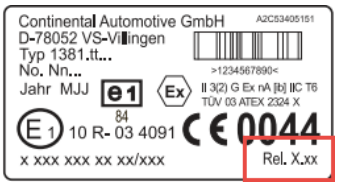
Which Tachograph model?
You can find the Tachograph version number:

VDO

- On the label behind the Tachograph paper roll

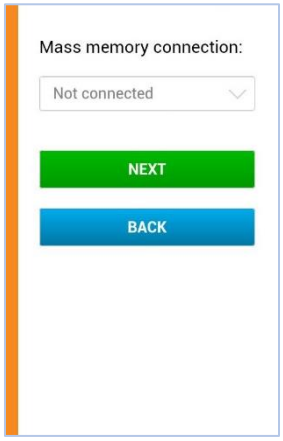
OR

- Via the Tachograph serial number (cf. RDD Tachograph Compatibility on page 18).



Mass Memory Connection

20. Select the correct option from the list.



> **NOTE**
>
> Mass Memory Connection requires the following Tachograph Firmware versions:
>
> - VDO ≥ version 1.3A
> - Stoneridge ≥ version 7.1
> - Actia: Actia AC965124 ind B, AC966060 ind A, AC965123 ind B

21. Press NEXT to continue.

After all parameters have been entered, an overview is displayed to verify the settings.

22. If all settings are correct, press SEND TO DEVICE to confirm and send the configuration to the device.

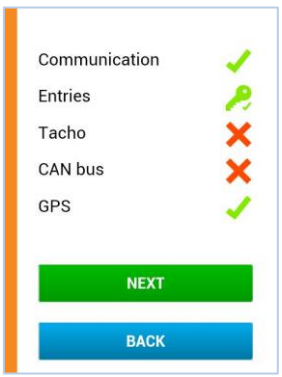
Device Health

Device Health indicates the status for the following sections:

- Communication
- Entries
- Tacho
- CAN Bus
- GPS

Press an item to display its details.

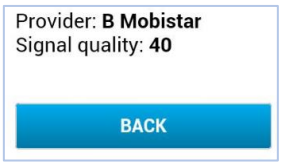
Press Back to return to the Device Health overview.



Communications

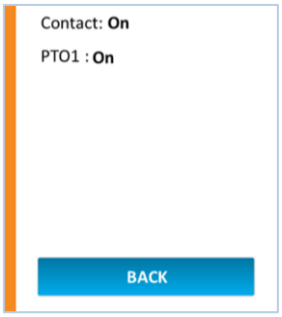
Device Health indicates the status for the following sections:

- Provider: GPRS Network Provider
- Signal Quality. To have a stable GPRS connection the Signal Quality must be above 40%.



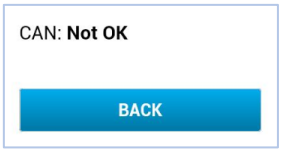
Entries

- Contact: ON / OFF
- PTO: ON / OFF



CAN Bus

- Status CAN Bus connection

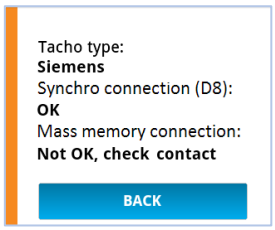


Tachograph

- Tacho type. For Example, Siemens VDO
- Synchro Connection (D8): Connection status
- Mass Memory Connection: Connection status

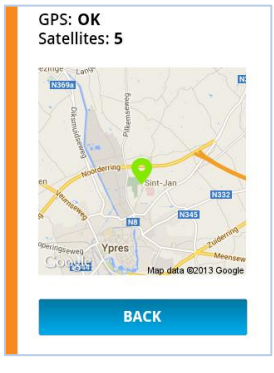
If the connection status is Not OK, then follow the instructions on the screen.

> NOTE
> For Tachograph login with a Stoneridge Tachograph, 551 030 0xx 0 requires the Stoneridge normal format.



GPS

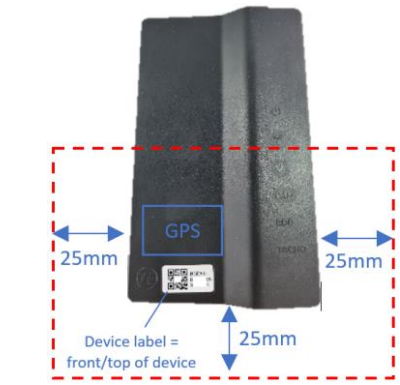
- GPS: Connection status.
- Satellites: Number of satellites covering the vehicle. For a good GPS position a minimum of 3 satellites with preferably 5 satellites are required.
- Map: Current position

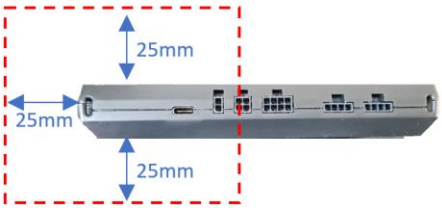


Step 4 – 551 030 0xx 0 Position

Installing the Interface Behind the Vehicle Dashboard

- Make sure that the top of the device is oriented towards the windows of the vehicle.
- When installing the unit, keep the area around the antennas away from metal or other obstructions as much as possible to avoid signal disturbance.
- As shown in the image, keep min. 25 mm of free space around the unit to ensure GPS coverage.
- Firmly mount the device in its place using cable ties.
- Use the notches on the bottom side of the unit to fix the cable ties. For Example:
  - Under the dashboard
  - In the top cabinet
  - Free space close to the Fuse Box





IMPORTANT

Always check all functionalities after each installation.

Pay specific attention to the GPS coverage.

To ensure optimal performance, it is crucial to avoid installing the unit in areas where GPS signal reception may be interfered with or shielded. Make sure that you check the GPS coverage outside (not inside a hangar, depot, workshop …), as structures may reduce GPS reception.

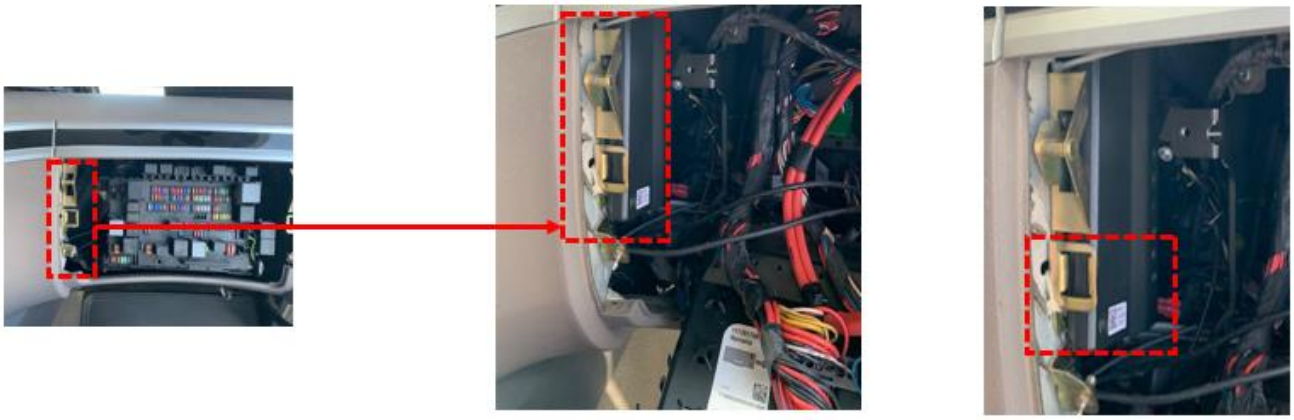
Check this for every installation!

IMPORTANT

- The on-board computer should never be mounted on or shielded by a metal surface.
- The on-board computer should never be mounted close to cable bundles/wiring harnesses (cf. Bad installation position p. 59).
- Make sure the on-board computer is mounted at sufficient distance from other electronic devices (for example, DAB radio, …) to avoid interference.
- The on-board computer may not be exposed to radiated heat (that is, heating vents, heating tubes / pipes …).
- The on-board computer may not be exposed to direct sunlight for longer periods.
- Make sure that the top of the on-board computer has a clear line of sight toward the sky (cf. picture above) in order to ensure a good GPS and GSM signal quality.
- Do not use the device at an altitude above 2000 meters.
- Avoid the presence of any material within 25 mm around the GNSS antenna, this can disturb the antenna's performance.

Installation Example

Good Installation Example



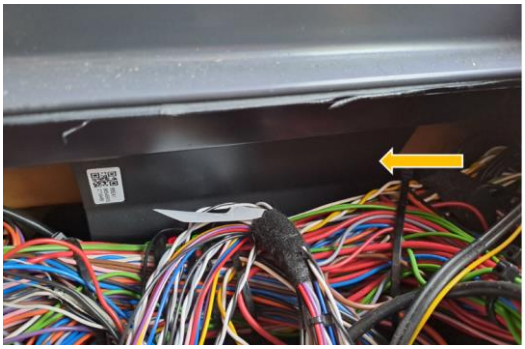
Minimum of 25 mm of free space around the unit

Good Installation Example

No cabling around the unit

Installed on a PLASTIC surface

Bad Installation Example



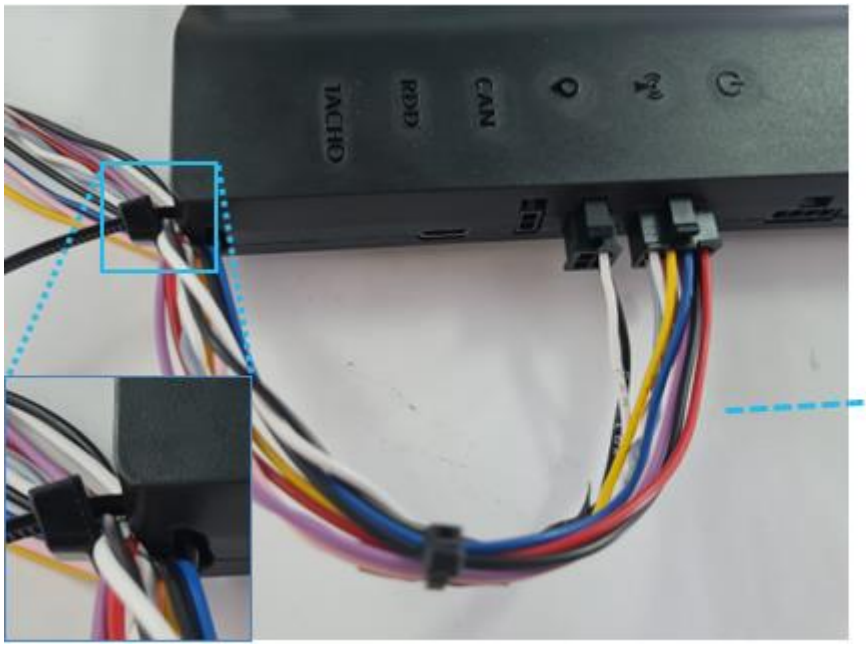
Too much cabling around the unit!

Installed on a METAL surface!

Finalizing the Hardware Installation

Secure all Connected Wires

After connecting the power cable and all other hardware (CAN Bus, digital Tachograph, and so on) to the interface, ZF recommends using cable ties to relieve tension from the connectors.



As shown in the example, make sure that tension is relieved from the connectors by making a small loop with the cable.

Secure the power cable and all other connectors (FMS, RDD, and K-Line) using a cable tie. The cable tie can be fixed to the cable tie rings on the corners of the interface.	

Contact Information

Office Hours	Monday to Friday: 08:00 – 17:30

If further information or documentation is required, please contact the support department:
https://www.zf.com/products/nl/cv/fleet/get_in_touch/support_page.html

Country	Telephone	Email
Austria	+43 (0)800 803 501	servicedesk.transics@zf.com
Belgium	+32 (0)800 54 208	
Croatia	+385 (0)800 200 616	
Czech Republic	+420 (0)800 04 04 09	
Denmark	+45 (0)80 820 110	
Estonia	+372 (06) 683 174	
Finland	+358 (0)800 145 714	
France	+33 (0)3 66 88 14 89	
Germany	+49 (0)800 723 94 73	
Greece	+30 (0)800 848 1467	
Hungary	+36 (0)800 88 147	
Ireland	+353 (0)1800 852 327	
Italy	+39 (0)800 685 166	
Latvia	+371 (0)6 33 99 824	
Lithuania	+370 (0)800 00 455	
Luxembourg	+352 (0)800 81 073	
Norway	+32 (0)2 588 26 62	
Poland	+48 (0)2 23 07 67 84	
Portugal	+351 (0)800 18 15 86	
Romania	+40 (0)3 16 30 41 22	
Russia	+7 (0)8800 222 15 59	
Slovakia	+421 (0)2 33 05 88 67	
Slovenia	+386 (0)8 06 88 887	
Spain	+34 (0)900 83 80 64	
Sweden	+46 (0)20 88 15 31	
Switzerland	+41 (0)800 600 017	
The Netherlands	+31 (0)800 39 00 000	
Turkey	+90 (0)800 62 12 405	
United Kingdom	+44 (0)808 18 90 688	
Other countries	+32 (0)2 588 26 62	

TRANSICS INTERNATIONAL BV
Ieper Business Park - Zone K - Ter Waarde 91 - 8900 Ieper - Belgium
Tel +32 (0)57 34 61 71 - Fax +32 (0)57 34 61 70
www.ZF.com - info@ZF.com
VAT BE 0881.300.923 - RPR IEPER