

554 090 0xx 0

Installation Guide

SCALAR EVO Guard





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Before the Installation

This installation guide provides you with installation directives and procedures for the correct installation of the 554 090 0xx 0 unit.

The 554 090 0xx 0 unit is a robust, rechargeable and powerful high-end trailer telematics unit that acts as a communication hub, transmitting rich and real-time trailer-related data to the back office. The device sources data from all major brands of trailer TEBS and reefer systems, from various peripherals and sensors (e.g. temperature sensors, door lock system) and available WABCO braking, stability, efficiency and safety systems.

Liability

Installation with EBS

The installation of 554 090 0xx 0 can be carried out either by a WABCO Certified TEBS Service Partner or by the customer himself (after training / demo installation). Contact your Service Partner in case the TEBS data still need to be activated.

A lot of customers prefer to do the installation themselves: the building-in of the device can then be combined with regular trailer maintenance services, which allows for a more efficient use of time. To this purpose, we provide 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 autonomously assemble the other devices in the trailers.

Installation without EBS

The installation can be carried out either by a WABCO Certified TEBS Service Partner, or by the customer himself (after training / demo installation).

We 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 only a (partial) recording of, and an addition to, the practical knowledge of the average installer.

The illustrations and specific data of non-ZF Transics products have been checked thoroughly and have been found correct at the time this manual was composed. However, we cannot accept any responsibility for possible adaptations by the manufacturer concerned. We aim 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.



Product Article Code

554 090 0xx 0

Meaning of the 'xx' in the part number:

- '11': Orange SIM card
- Other configurations will have a different article code.

ADR Approval

A test report of TÜV (Technischer Überwachungsverein Hessen GmbH) states that 554 090 0xx 0 is compliant with the following ADR trailer types:

- OX (hydrogen peroxide),
- AT (other than EXIII, FL or OX), and
- EXII (explosive).

554 090 0xx 0 is NOT compliant with FL (inflammable) or EXIII (explosive) ADR trailer types.

When the 554 090 0xx 0 unit has been installed on a trailer, the respective vehicle has to be subjected to a new inspection for ADR type approval compliancy.

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 Transics cannot be held responsible for any errors resulting from the use of other materials. ZF Transics wishes to point out that activities which require welding to the trailer, can cause damage to the electronics of the device. 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.

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.

OPERATING CONDITIONS

Input voltage range: 10,5 – 32 V 

Current: 2 A

Temperature range: -40°C ~ +75°C

IP rating: IP6K9

Maximum power consumption while battery charging:

- 12V: ±7.4 W / 620 mA
- 24V: ±8.6 W / 360 mA

Maximum power consumption in active state (battery not charging):

- 12V: ±1.8 W / 150 mA
- 24V: ±1.9 W / 80 mA



IMPROPER USE

USE THE DEVICE ONLY FOR ITS INTENDED PURPOSE!

DO NOT OPEN THE UNIT.

IT IS NOT ALLOWED TO DRILL IN THE DEVICE HOUSING!

In case of damage of any kind, which could affect the Ingress Protection / waterproofness of the device, the device must be immediately taken out of service.

The device safety may be endangered in case:

- The device is not firmly fastened to the trailer;
- The device has suffered from transportation damages;
- The temperature limits are exceeded;
- The device is visibly damaged.

IF THE DEVICE IS VISIBLY DAMAGED, IT MUST BE IMMEDIATELY REPLACED AND SENT BACK TO ZF TRANSICS.

All other instructions, notes and regulations in this operation manual must be closely followed.




Installation Flow

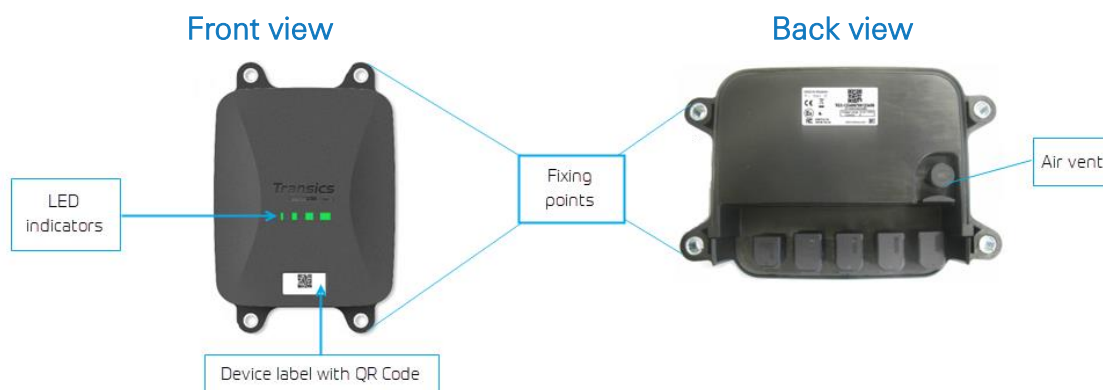
Steps of the Installation	See...
<u>Step 1 – Hardware Components</u> <ul style="list-style-type: none">• Hardware Description	Page 10
<u>Step 2 – Connecting Hardware</u> <ul style="list-style-type: none">• Hardware Activation• Hardware Connections• Connecting to the TEBS system<ul style="list-style-type: none">○ WABCO TEBS-D1 PREMIUM○ WABCO TEBS-E SUBSYSTEM○ WABCO TEBS-E SUBSYSTEM SmartBoard (Not IVTM)○ WABCO TEBS-E GIO5○ Haldex EB+○ Knorr• Connecting to the OptiTire system<ul style="list-style-type: none">○ WABCO TEBS-E SUBSYSTEM○ WABCO TEBS-E SUBSYSTEM + SmartBoard○ Non-WABCO TEBS-E• Connecting to the Temperature Recorder<ul style="list-style-type: none">○ Euroscan○ Thermo King i-Box○ REB i-Box○ Thermo King BlueBox○ Thermo King TranScan○ Thermo King TouchLog○ Apache Cold Tracer○ Carrier DataCOLD 500○ Carrier DataCOLD 600 / Euroscan X3○ Carrier Direct○ TRS• Connecting the LIN Sensors<ul style="list-style-type: none">○ Door Sensor• Connecting the OptiLock Door Lock System	Page 11
<u>Step 3 - Checking the Installation</u> <ul style="list-style-type: none">• LED Indication• Checking the Installation with TX-CONFIG	Page 113
<u>Step 4 - 554 090 0xx 0 Position</u> <ul style="list-style-type: none">• 554 090 0xx 0 Below the Trailer• 554 090 0xx 0 At the Front of the Trailer• Fastening the 554 090 0xx 0 Unit	Page 129

Step 1 – Hardware Components

554 090 0xx 0 is a trailer tracer unit with an embedded SIM card, GSM antenna and GPS antenna. It is designed for outside use and holds a rechargeable battery. It consists of a main unit which can be connected to a trailer's TEBS system (WABCO, Haldex, Knorr), to a trailer's reefer recorder unit (Euroscan, DataCOLD, TranScan, TK i-Box, ...) or to external (temperature, door, ...) sensors.

Component	Main unit
Picture	
Dimensions (L x W x H)	<p><u>Including fixing points</u>: 218 x 152 x 63 mm</p> <p><u>Excluding fixing points</u>: 175 x 152 x 63 mm</p> <p>(Cf. "Fastening the 554 090 0xx 0" p. 133)</p>

Hardware Description

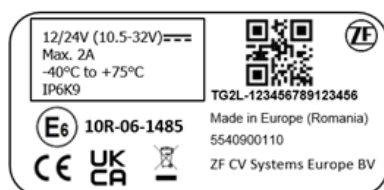


AIR VENT

Make sure that the air vent of the Unit is accessible to air at all times. Make sure that nothing can block the air access of the air vent.

Sensor	Reefer	EBS	EXT1	EXT2
Connections				

Device Serial Number: TG2L-XXXXXXXXXXXXXXXX



- For more information on LED indicators see [LED Indicators](#) on page [113](#).
- For more information on Device label with QR Code, see [Registering and Configuring 554 090 0xx 0](#) on page [118](#).

Step 2 – Connecting Hardware

Hardware Activation

Firstly, the Unit must be activated using a magnet. Upon activation, the Unit will respond using a red and green LED sequence. The start-up sequence of the device can take up to 15 minutes.

Before the Activation

IMPORTANT

When activating a Unit, make sure that it is connected to an external power source during activation, e.g. to a 24V source from the TEBS unit when a truck is connected or to a 12V source from a reefer / logger unit.



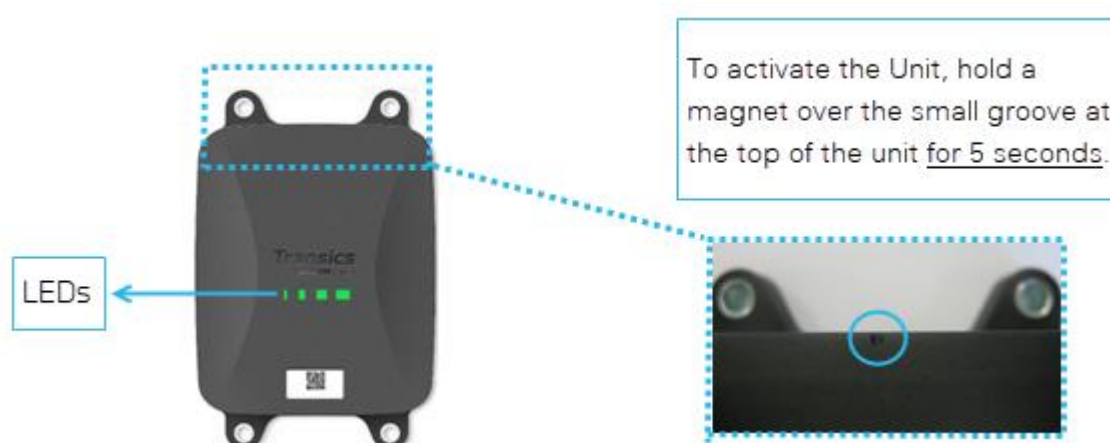
In case the Unit is **not connected to an external power source**, LEDs 2, 3 and 4 **will start blinking with an ORANGE color** (cf. "[LED indication](#)" p.113).

The Unit will not send data to the back office and it will not be shown as active, until an external power source is connected (from TEBS or reefer).

- This will only be the case as from app version 2.26 (the installed app version can be found on the product label).

Activation

- When the Unit has not yet been activated, LED 1 will be **RED**.
- After activation with the magnet, LED 1 will change to **GREEN**.





After Activation

Check the RED sequence of LED 2 for the external power connection status:

LED	Function	Color	Blinking Frequency	Description
LED 2	External power	RED	1x	Battery
			2x	External power via TEBS connector present
			3x	External power via reefer connector present
			4x	External power via TEBS and reefer connector present

Leave the Unit on an external power source for at least 15 minutes, so the unit can start up GPRS communication and obtain GPS coverage. In case the unit is unable to obtain sufficient GPRS / GPS coverage inside a closed building (for example, depot, warehouse, and so on), please try again outside the building.

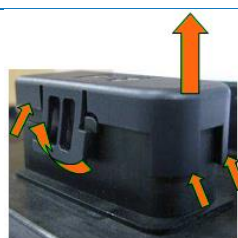
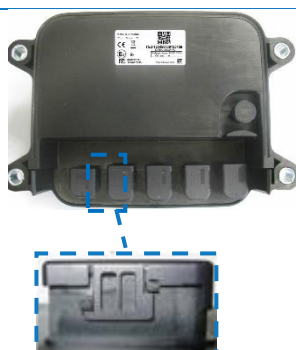
Hardware Connections

Removing the Safety Caps

Before plugging in the connectors, you will need to remove the safety caps from the connection ports. Only remove the safety caps from the ports you will be using.

DO NOT REMOVE ANY SAFETY CAPS FROM UNUSED PORTS, AS THE UNIT WILL NO LONGER BE WATERPROOF.

1. Use a flat screwdriver to lift the clips on both sides of the safety caps.
2. Remove the safety cap from the connection port.



NOTE

Do not remove the safety caps of unused ports.

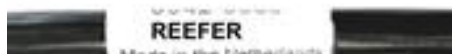
Connections to the Unit

All connectors to the Unit use the same type of connector. Always make sure that all connectors are correctly plugged in to ensure a waterproof connection.

1. Plug the connector into the correct port.



The design of the connector will prevent you from plugging a connector into a wrong port. The cable type can also be checked on the cable. For example: reefer



2. Press down the connector.

By pressing down the connector, the yellow clip will automatically move down.



3. Finally, press the yellow clip to lock the connection.



A distinct "click" should be heard.

4. The connector has been plugged in correctly.



Correctly plugged in



NOT correctly plugged in

Connecting to the TEBS System

IMPORTANT – DIAGNOSTICS SOFTWARE

Some TEBS systems require parameter adaptation of a specific port.

For the parameter adaptation, you will need:

- a PC / laptop,
- a diagnostics interface,
- a connection cable (USB / Serial)
- the WABCO diagnostics software

Software Requirements - Ordering the Diagnostics Software

Open the MYWABCO website: <https://www.am.wabco-auto.com/welcome/>

If you need help with logging in, it can be obtained by pressing the “Step-by-step instructions” button.

After you have successfully logged in, you can order the diagnostics software via MYWABCO. Please contact your WABCO Service Partner if you have any questions.

NOTE

If parameters are to be changed, however, authorization with a PIN code is required. You can obtain this PIN through the relevant training course or e-learning at the WABCO Academy. More details on the diagnostics software can be obtained from your local WABCO Service Partner or via <http://www.wabco.info/i/524>.

Hardware Requirements

Option 1

Diagnosis in accordance with ISO 11992 (CAN 24 V) via the 7-pin ISO 7638 CAN connection

<p>ISO 7638 disconnecting adapter with CAN socket (446 300 360 0)</p> 	<p>Diagnostics interface (DI-2) with USB port (for PC connection) (446 301 030 0)</p> 	<p>CAN diagnostics cable (446 300 361 0 (5m) / 446 300 362 0 (20m))</p> 
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Option 2

Diagnosis in accordance with ISO 11898 (CAN 5 V) via an external diagnosis connection

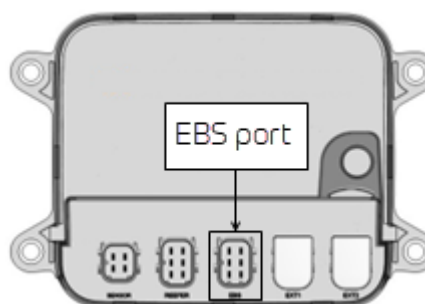
<p>External diagnostics socket with yellow cap (449 611 xxx 0): Only TEBS-E Modulators (Premium)</p> 	<p>Diagnostics interface (DI-2) with USB port (for PC connection) (446 301 030 0)</p> 	<p>CAN diagnostics cable (446 300 348 0)</p> 
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Connection to 554 090 0xx 0

The connector on the specific TEBS connection cable is connected to the EBS port of the Unit (cf. [Connections to the Unit](#) on page 14).

All TEBS connection cables use the same type of connector. Always make sure that all connectors are correctly plugged in to ensure a waterproof connection. The Unit can be powered by the TEBS system.

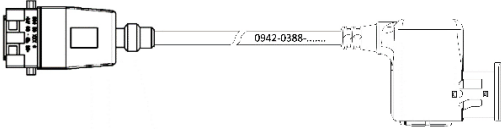
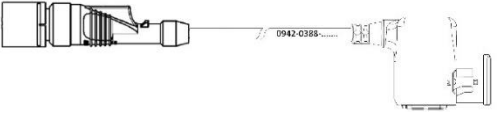
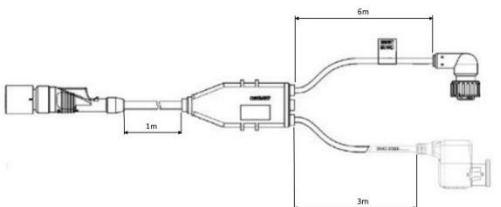
All TEBS connection cables use the same type of connector.



Connection to TEBS System

The integration with an TEBS system requires a specific cable depending on the TEBS type. The cable overview can be found on the following page.



EBS Type	PIN Assignment			Power Available	CAN Available	Article Code	Length	
	554 090 0xx 0 Side							
WABCO TEBS-D0 Standard Serial number ≤ 75000 Production date ≤ 09/2003	Not compatible with 554 090 0xx 0							
WABCO TEBS-D1 Standard 480 102 010 0	Not compatible with 554 090 0xx 0							
WABCO TEBS-D1 PREMIUM 480 102 014 0	1	Red	V IN	V in = KL15 (554 090 0xx 0 unit only powered when ignition is ON)	Yes	0942-0388-EBS-01 449 028 000 0	5 m	
	2	Black	CAN-H					
	3	-	-					
	4	Brown	GND					
	5	White	CAN-L					
	6	-	-					
WABCO TEBS-E SUBSYSTEM 480 102 03x 0 480 102 06x 0 480 102 08x 0	1	Green	V IN	Yes	Yes	0942-388-EBS-03 449 029 000 0	5 m	
	2	Black	CAN-H					
	3	Red	Input					
	4	Brown	GND					
	5	White	CAN-L					
	6	-	-					
WABCO TEBS-E SUBSYSTEM SmartBoard (Not IVTM) 480 102 03x 0 480 102 06x 0 480 102 08x 0	1	Green	V IN	Yes	Yes	0942-0388-EBS-07 449 033 000 0	1m + 6m / 3 m	
	2	Black	CAN-H					
	3	Red	Input					
	4	Brown	GND					
	5	White	CAN-L					
	6	-	-					



EBS Type	PIN Assignment 554 090 0xx 0 Side			Power Available	CAN Available	Article Code	Length	
WABCO TEBS-E GIO5 480 102 06x 0 480 102 08x 0	1	Red	V IN	Yes	Yes	0942-0388-EBS-04 449 030 000 0	5 m	
	2	Black	CAN-H					
	3	-	-					
	4	Brown	GND					
	5	White	CAN-L					
	6	-	-					
Haldex EB+ Gen. 1 "810"	1	Red	V IN	V in = KL15 (554 090 0xx 0 only powered when ignition is ON)	NO	0942-0388-EBS-10 449 034 000 0	6 m	
	2	Green	CAN-H					
	3	-	-					
Haldex EB+ Gen. 2 "820" "950 820 ..."	4	Blue	GND		As from software version C499			
	5	Yellow	CAN-L					
	6	-	-					
Haldex EB+ Gen. 3 "823" "950 823 ..."	1	Red	V IN	Yes	Yes	0942-0388-EBS-10-3 449 035 000 0	7 m	
	2	Green	CAN-H					
	3	-	-					
	4	Blue	GND					
	5	Yellow	CAN-L					
	6	-	-					

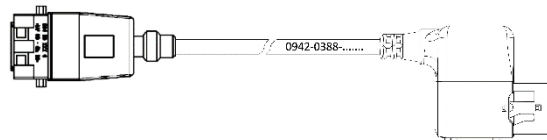
EBS Type	PIN Assignment			Power Available	CAN Available	Article Code	Length	
	554 090 0xx 0 Side							
Haldex EB+ Gen. 4 "842" "950 800 ..."	1	Red	V IN	Yes	Yes	554 091 011 0	5 m	
	2	Green	CAN-H					
	3	-	-					
	4	Blue	GND					
	5	Yellow	CAN-L					
	6	-	-					
Knorr TEBS4 (G1) ES205x	1	White	V IN	Yes	NO	0942-0388-EBS-06U 449 032 000 0	5 m	
	2	Green	CAN-H					
Knorr TEBS G2.0/G2.1 ES2060	3	-	-	Yes	Yes	ADR-certified version: 0942-0388-EBS-06U-ADR 449 032 001 0	5 m	
	4	Brown	GND					
Knorr G2.2 ES2090	5	Yellow	CAN-L	Yes	Yes	ADR-certified version: 0942-0388-EBS-06U-ADR 449 032 001 0	5 m	
	6	-	-					
Open-end cable (Diameter: 6.2 mm)	1	White	Vin			0942-0388-EBS-05 449 031 000 0	5 m	
	2	Green	CAN-H					
	3	Grey	Input					
	4	Brown	GND					
	5	Yellow	CAN-L					
	6	-	-					
						ADR-certified version: 0942-0388-EBS-05-ADR 449 031 001 0		

WABCO TEBS-D1 Premium

Required Cable

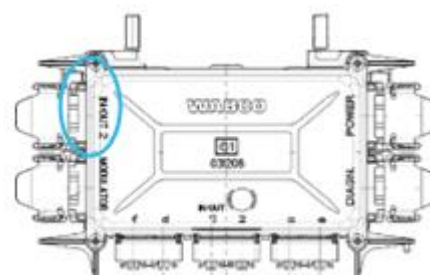
EBS D

0942-0388-EBS-01



Connect 554 090 0xx 0 to the **IN/OUT port** using the TEBS connection cable. Make sure that the contact pins remain clean and dust-free. The modulator parameters do not have to be modified. The telematics connections are automatically activated, so no parameter adaptation is required.

After connecting all hardware to the Unit, you can check the installation using TX-CONFIG (cf. [“Checking the installation with TX-CONFIG”](#) p.117).



NOTE

Modulators of the trailer TEBS type D with a production date up to 09/2003 **do not support the power supply of the Unit.**

Verify the serial number on the modulator unit:

- Supported: 480 102 014 0
- Not supported: 480 102 010 0

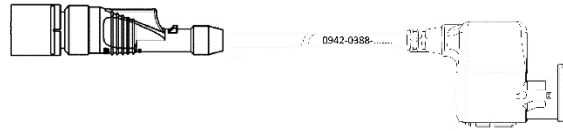


WABCO TEBS-E Subsystem

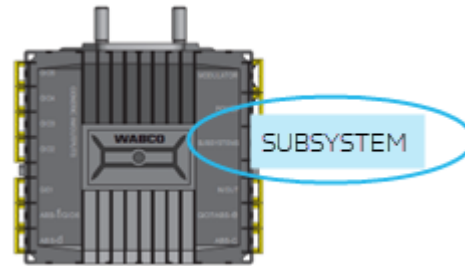
Hardware Connection

Required Cable

EBS E SUBSYSTEM	0942-0388-EBS-03
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In case of a modulator type E (Standard, Premium or Multi-voltage), connect 554 090 0xx 0 to the modulator **SUBSYSTEM** port using the TEBS connection cable.

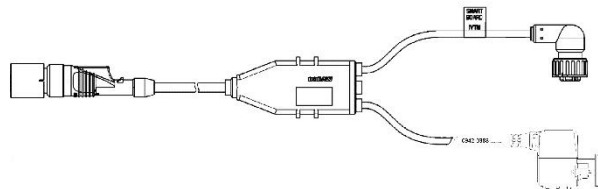


WABCO TEBS-E Subsystem SmartBoard (Not IVTM)

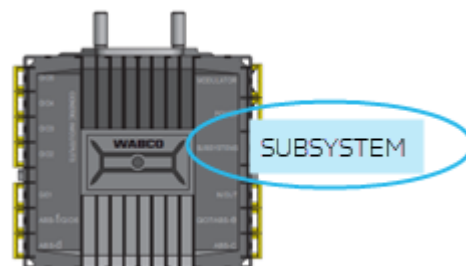
Hardware Connection

Required Cable

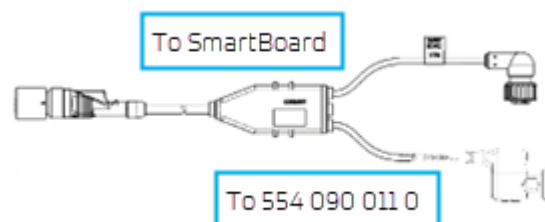
EBS E SUBSYSTEM SmartBoard	0942-0388-EBS-07
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In case a SmartBoard is occupying the SUBSYSTEM port, you will require a specific splitter cable. Connect 554 090 0xx 0 to the modulator **Subsystem** port using one end of the TEBS connection cable.



Connect the TEBS unit to the SmartBoard using the other end of the TEBS connection cable.



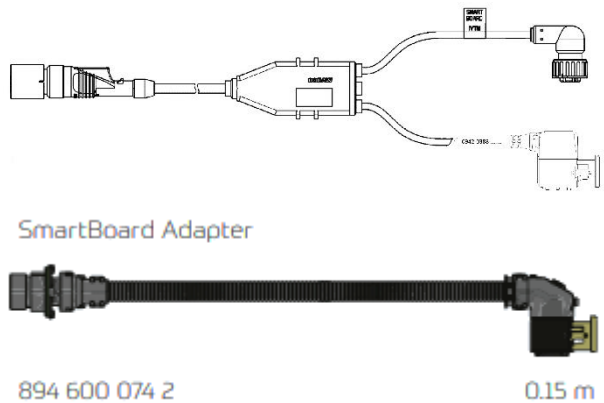
After connecting all hardware to the Unit, you can check the installation using TX-CONFIG (cf. [“Checking the installation with TX-CONFIG”](#) p.117).

WABCO TEBS-E Subsystem SmartBoard II

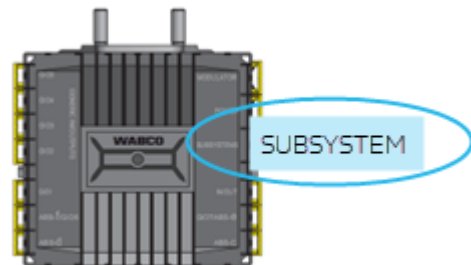
Hardware Connection

Required Cable

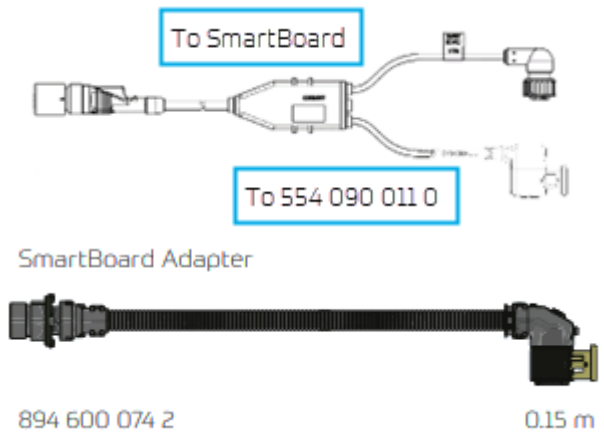
EBS E SUBSYSTEM SmartBoard II +	0942-0388-EBS-07
Adapter cable	8946000742



In case a SmartBoard is occupying the SUBSYSTEM port, you will require a specific splitter cable.
Connect 554 090 0xx 0 to the modulator **Subsystem port** using one end of the TEBS connection cable.



Connect the TEBS unit to the SmartBoard II using the other end of the TEBS connection cable and the SmartBoard adapter cable.

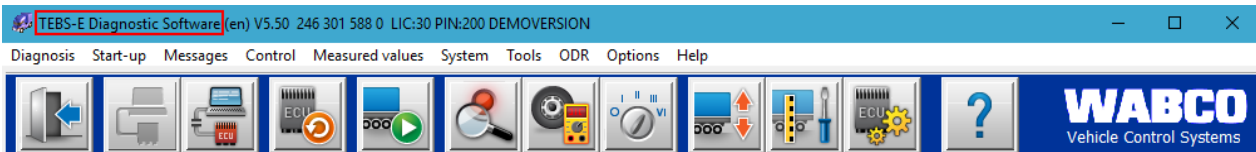


After connecting all hardware to the Unit, you can check the installation using TX-CONFIG (cf. [“Checking the installation with TX-CONFIG” p.117](#)).

Parameter Adaptation Using TEBS-E Diagnostics Software

Requirements


TEBS-E diagnostics software: Consult "[Software Requirements - Ordering the Diagnostics Software](#)" p.16.

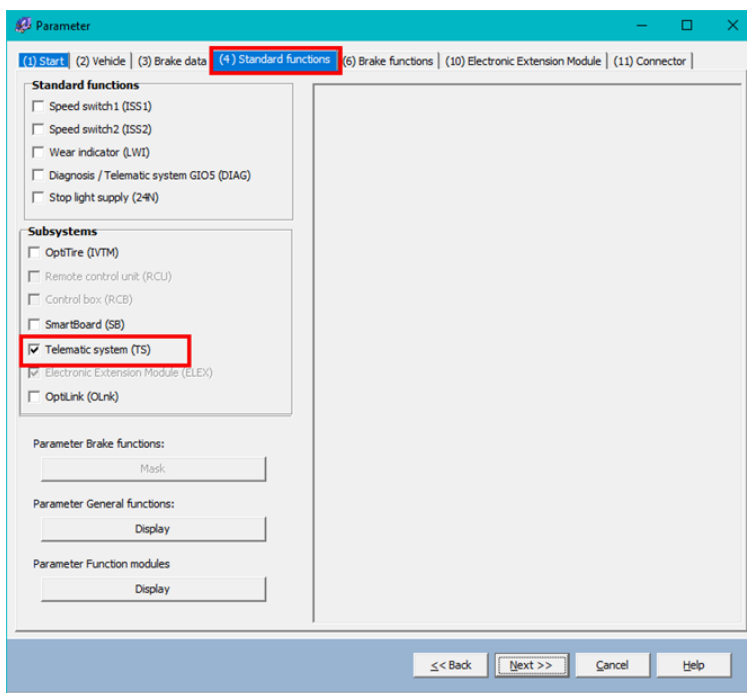


Parameter Adaptation

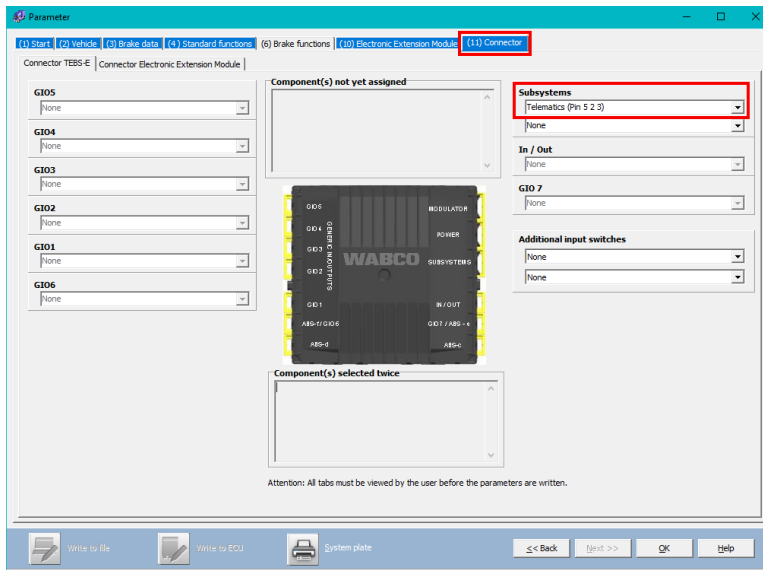
If 554 090 0xx 0 is connected to the SUBSYSTEM slot, telematics must be activated in the TEBS-E diagnostics software as the subsystem:

"TEBS window" > "Function selection" > "Subsystem" > **Telematics system (TS)**

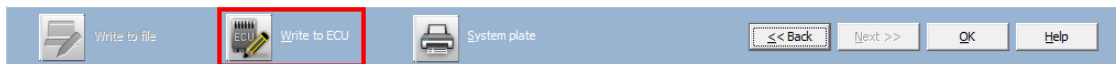
1. In the TEBS-E diagnostics software, open the "EBS system parameter settings" menu: .
2. In the "Standard functions" tab, select **Telematic system (TS)** under "Subsystems".



3. Next, select **Telematics** under “Subsystems” in the “Connector” tab.



4. Press **Write to ECU** when all modifications have been performed (PIN code needed (cf. “[Note](#)” on p. 16)).

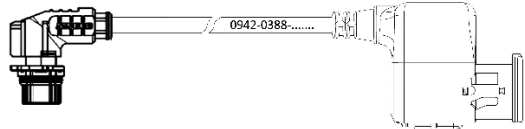



After connecting all hardware to the Unit, you can check the installation using TX-CONFIG (cf. “[Checking the installation with TX-CONFIG](#)” p.117).

WABCO TEBS-E GIO5

Hardware Connection

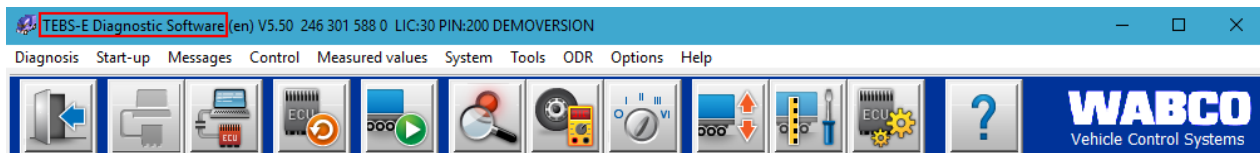
Required Cable

EBS E GIO5	0942-0388-EBS-04	
<p>In case the subsystem port cannot be used on T TEBS-E Premium, you can connect 554 090 0xx 0 to the modulator GIO5 port via the TEBS GIO5 telematics connection cable.</p>		

Parameter Adaptation Using TEBS-E Diagnostics Software

Requirements


TEBS-E diagnostics software: Consult [Software Requirements - Ordering the Diagnostics Software](#) p.16.



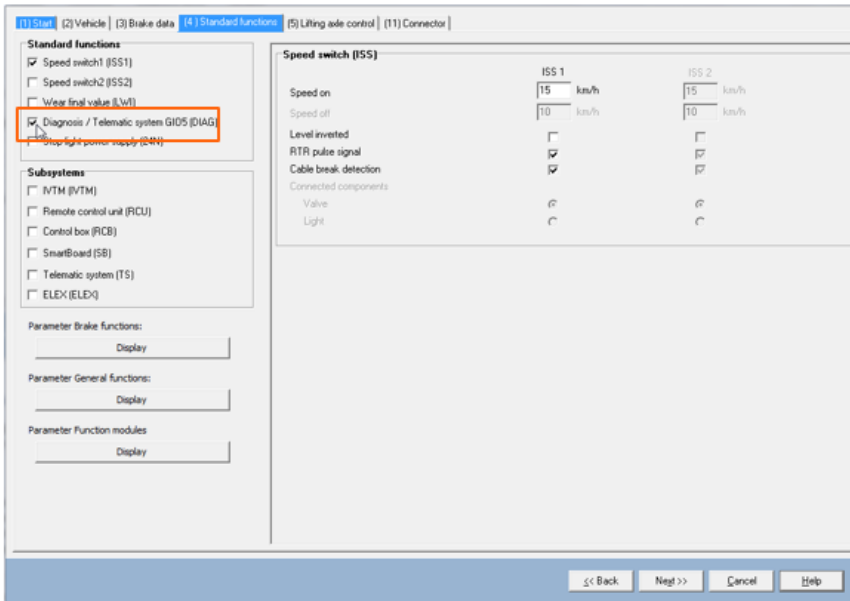
Parameter Adaptation

If 554 090 0xx 0 is connected to the SUBSYSTEM slot, telematics must be activated in the TEBS-E diagnostics software as a standard function:

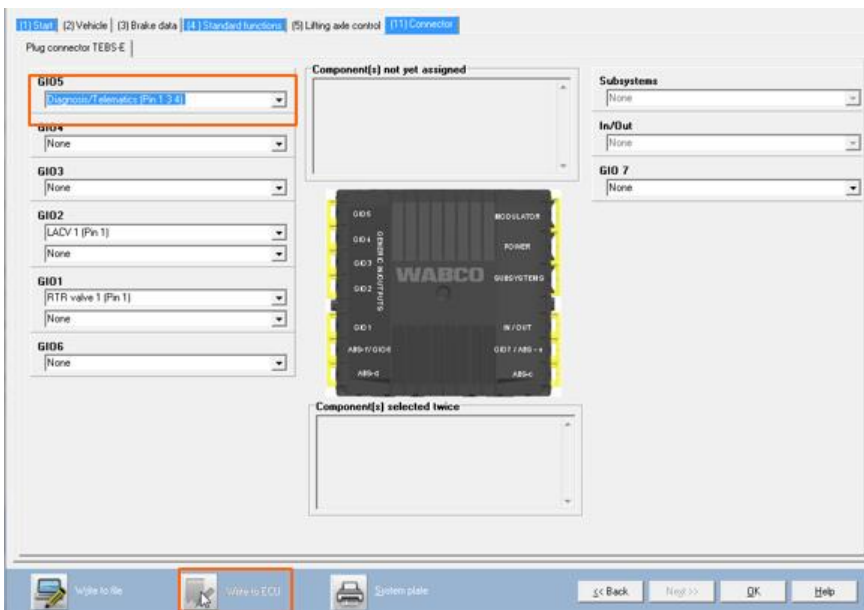
“TEBS window” > “Function selection” > “Standard functions” > **Diagnosis / Telematics system GIO5 (DIAG)**.

1. In the TEBS-E diagnostics software, open the “EBS system parameter settings” menu: .

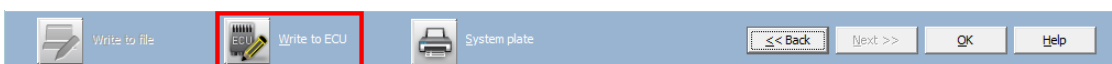
2. In the “Standard functions” tab, select **Diagnosis / Telematics system GIO5 (DIAG)**.



3. In the “Connector” tab, select **Diagnosis / Telematics** under **GIO5**.



4. Press **Write to ECU** when all modifications have been performed (PIN code needed (cf. “[Note](#)” on p. 16)).



After connecting all hardware to the Unit, you can check the installation using TX-CONFIG (cf. “[Checking the installation with TX-CONFIG](#)” p.117).

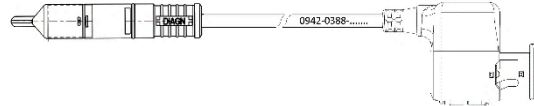
Haldex EB+

Hardware Connection

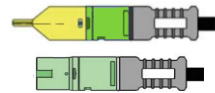
Gen. 1 / Gen. 2 - Required Cable

Haldex EB+ Gen. 1
DIAGN

0942-0388-EBS-10



1. Remove the protection cap from the connector before plugging it into the TEBS unit. Make sure that the contact pins remain clean and dust-free.



2. Connect 554 090 0xx 0 to the DIAG port using the TEBS connection cable. You will first need to remove the blanking plug covering the DIAG port.

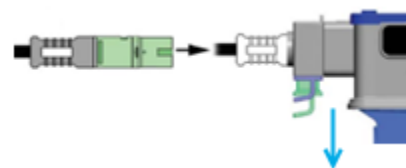
GEN. 1



GEN. 2



3. Pull down the green slide lock on the TEBS system and insert the connector.

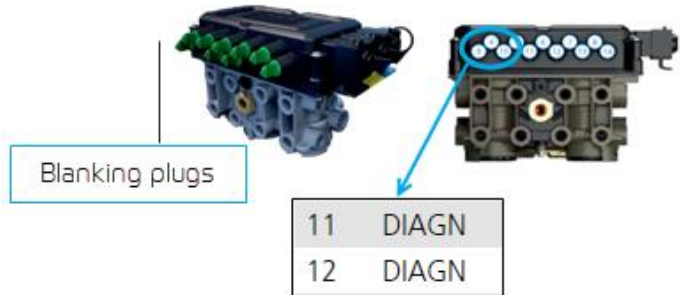


Gen. 3 – Required Cable

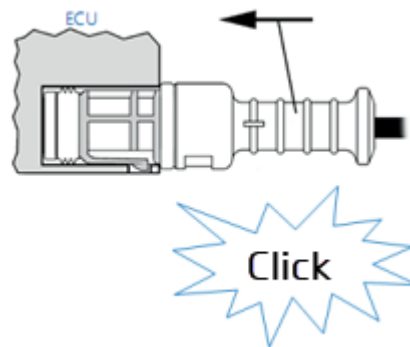
Haldex EB+ Gen. 3 | 0942-0388-EBS-10-3
DIAGN



1. Connect 554 090 0xx 0 to one of the **DIAG ports** (cf. 11 or 12 in picture) using the TEBS connection cable. You will first need to remove the blanking plug covering the DIAG port.



2. Make sure that the contact pins remain clean and dust-free. A distinct **“Click”** should be heard.



Gen. 4 – Required Cable

Haldex EB+ Gen. 4 DIAGN | 554 090 0xx 0



Please contact your local Haldex service partner to determine the correct connection.

From a hardware perspective, there is only one version: T-CAN and H-CAN are both available.




However, from a software perspective, there are 2 versions:

- T-CAN and H-CAN active
- H-CAN only active

In case T-CAN and H-CAN are active, the telematics unit **MUST** be connected to **T-CAN**.

In case only H-CAN is active, the telematics unit must be connected to **H-CAN**.

If H-CAN is already occupied, use a 'Splitter cable' 844 542 XXX (only to be purchased at Haldex).

<p>844 54x xxx</p> 	<p>Diagnostics splitter cable 4x4x4 CAN Y-Splitter (M/F/F)</p>	<p>844 542 001</p>	<p>CAN Y-Splitter (M/F/F) – 1.25m</p>
--	--	--------------------	---

We advise to check either the **Part Number** or the **Diagnostic software** to determine the correct setup

- Check Part Number

Part Number 842 00x xxx
=> connect telematics to **H-CAN**



Part Number 842 01x xxx & 842 02x xxx
=> connect telematics to **T-CAN**

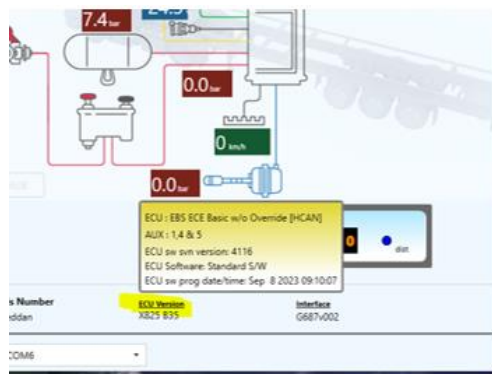


- Check DIAG++ diagnostic software

Please click on the ECU version link on the Diag++ home screen – a dialog will popup:

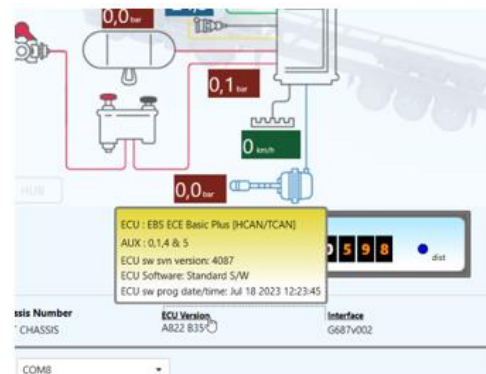
- HCAN
- HCAN/SCAN
- HCAN/HCAN
- HCAN/HCAN/SCAN

=> connect telematics to **H-CAN**



- HCAN/TCAN
- HCAN/TCAN/SCAN

=> connect telematics to **T-CAN**



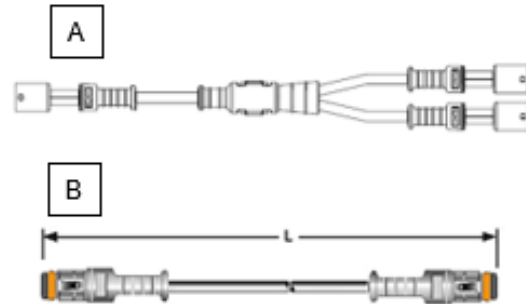
Please contact your local Haldex service partner for further support.

DIAG Ports not Available on Haldex Generation 2 Unit

In case the DIAG port on the Haldex Generation 2 unit is already occupied by, for example, an “EB+ Soft Docking” unit or an “EB+ Info Center” module, no splitter cable is available to split the existing connection. As a result, you will need to decide which hardware you want to connect.

DIAG Ports not Available on Haldex Generation 3 Unit

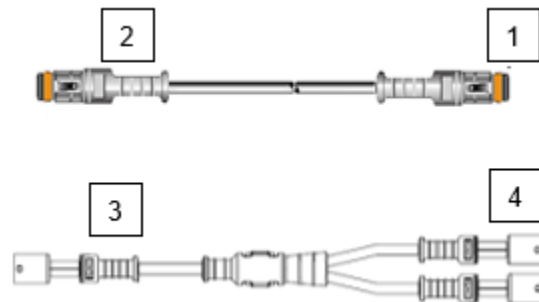
In case both DIAG ports on the Haldex Generation 3 unit are already occupied by, for example, an “EB+ Soft Docking” unit and an “EB+ Info Centre” module, an Y-splitter cable (A) and an auxiliary cable (B) are required to split the existing connection.



Disconnect the cable from one of the occupied DIAG ports on the TEBS unit and connect one end of the auxiliary cable (1) to the DIAG port.

Next, connect one end (3) of the Y-splitter cable to the other end of the auxiliary cable (2).

The two remaining connectors (4) of the Y-splitter cable can now be connected to the connector that was occupying the DIAG port and to the 554 090 0xx 0 Haldex TEBS connection cable (0942-0388-EBS-10-3).



Contact your local Haldex Service Partner to order the required cables:

A	Haldex EB+ CAN splitter cable	Part no. 814 038 001
B	Haldex auxiliary cable	Part no. 814 037 xxx

After connecting all hardware to the Unit, you can check the installation using TX-CONFIG (cf. [“Checking the installation with TX-CONFIG”](#) p.117).

Parameter Adaptation

EBS CAN data on Haldex units are only available as from software version C499. In case of older versions, please check with your local Haldex partner if a software update is available.

The version of Haldex EB+ can be verified with a PC / laptop and a specific PC interface (USB dongle) connected to the diagnostic port (cf. "[Parameter Adaptation – Hardware Requirements](#)" below).

More details on the diagnostics software can be obtained from your local Haldex Service Partner.

Parameter Adaptation – Hardware Requirements

The DIAG+ interface kit consists of a USB dongle, its connection cables and a storage case. The software must be installed on the diagnostic PC before it is connected to the USB dongle.



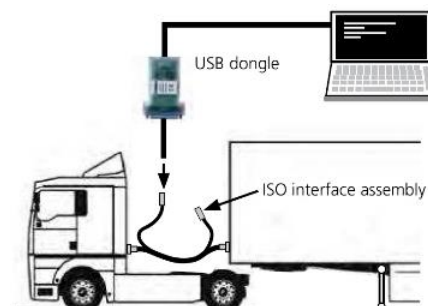
DIAG+ interface kit



USB dongle

Parameter Adaptation – Hardware Connection

Plug the USB cable into a USB port of your PC / laptop. Access the ECU by using an ISO7638 7-pin connector which uses pin 6 and 7 as a CAN data Bus using ISO interface assembly (815 018 001).

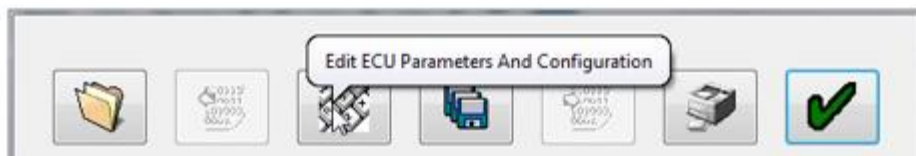


Parameter Adaptation Menu

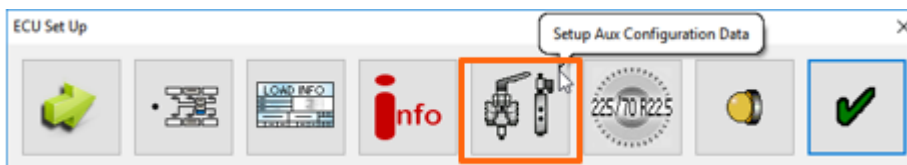
1. In the main menu, select **Configure, Read, Set up and Program The ECU**.



2. Next, click **Edit ECU parameters and configuration**.




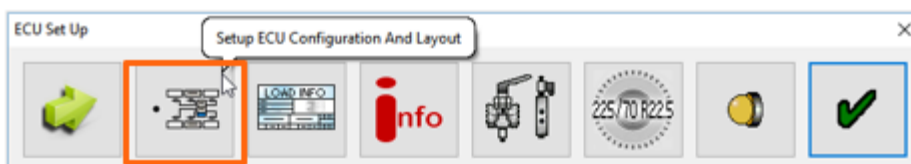
3. Next, click **Set up Aux configuration data**.



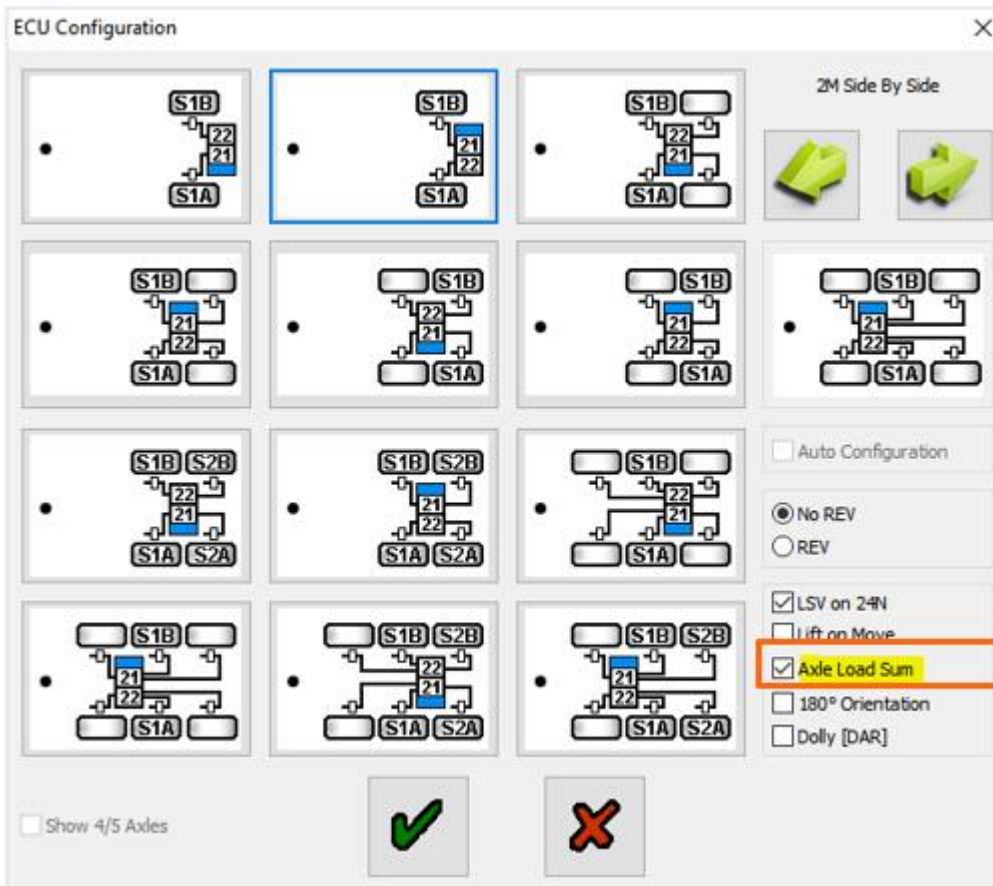
4. In the **CAN Bus** tab page, activate **TCAN (ISO on HCB)**.




5. Confirm the modification by pressing .
6. In order for the Haldex Generation 3 unit to send axle load information, a specific setting must be activated in the menu. Next, click **Set up Aux configuration and layout**.



7. Next, click the **Axle load sum** button.



8. Confirm the modification by pressing  twice.

9. Finally, press **Write configuration to the ECU**.



Knorr

Hardware Connection

Required Cable

Knorr DIAGN TIM | 0942-0388-EBS-06U



Accessories Provided

1x A-coding

1x B-coding

1x wedge lock 10x sealing plug

1 x 0942-0388-WP-Y-CONN-01
(IP68 2-bar 6-pole Y-splitter)



Knorr TEBS4 (G1) ES205x

In case of a Knorr TEBS unit G1, 554 090 0xx 0 should be connected to the **X2** connector on the TEBS unit.

Available signals:

- 5V CAN Bus **NOT available**
- Power

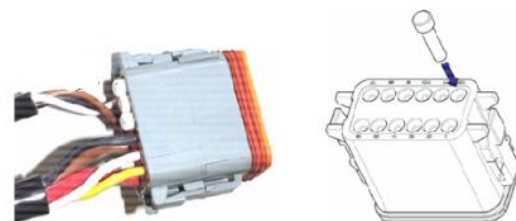


X2-connector

A-coding

PIN assignment:

No.	Color	Function	Signal
3	White	AUX IO3	V in
12	Brown	AUX GND	GND



Unused contact locations must be fitted with seal pins.

Knorr TEBS G2.0/G2.1 ES2060

In case of a Knorr TEBS unit G2.0/G2.1, 554 090 0xx 0 should be connected to the **IN/OUT connector** on the TEBS unit.

Available signals:

- 5V CAN bus **available**
- Power



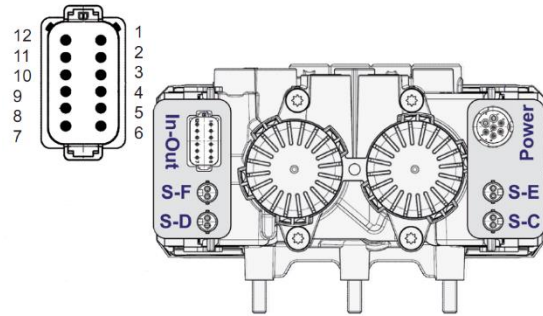
IN/OUT connector

- B-coding
- Pin assignment:

No.	Color	Function	Signal
3	White	AUX IO3	V in
9	Yellow	5V CAN-L	CAN-L
10	Green	5V CAN-H	CAN-H
12	Brown	AUX IO3 RET	GND

Via the specific Knorr TEBS connection cable, you can split the existing connection.

Unplug the existing connector from the TEBS unit and plug in the connector from the TEBS connection cable.



Knorr G2.2 ES2090

In case of a Knorr TEBS unit G2.2, 554 090 0xx 0 should be connected to the **IN/OUT connector** on the TEBS unit.

Available signals:

- 5V CAN Bus **available**
- Power



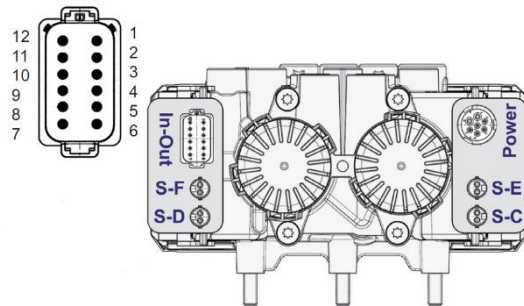
IN/OUT connector

- A-coding
- PIN assignment:

No.	Color	Function	Signal
3	White	AUX IO3	V in
9	Yellow	5V CAN-L	CAN-L
10	Green	5V CAN-H	CAN-H
11	Brown	AUX IO3 RET	GND

Via the specific Knorr TEBS connection cable, you can split the existing connection.

Unplug the existing connector from the TEBS unit and plug in the connector from the TEBS connection cable.



Parameter Adaptation (Knorr G2.1 only)

Use the Knorr "ECUtalk" diagnostics software and the Knorr "UDIF" PC interface kit to establish a diagnostic connection with the modulator.

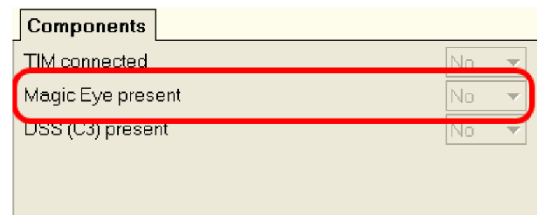
In the main menu of the diagnostics software, click the **Change configuration** or **Components** button.



In the "Components" section, activate the **Magic Eye** function by selecting **Yes** from the drop-down menu.

Click the **OK** button to confirm the parameter settings.

In the main menu, select the **Program TEBS / Write to ECU** button.



Parameter Adaptation (Knorr G2.1 and Knorr G2.2)

Auxiliary I/O - AUXIO3 must be enabled and set to **V out**. "Error detection" must be set to **Short circuit**.

The screenshot shows the 'Auxiliary I/O' configuration window. The 'AUXIO3' row is highlighted with a red box. The 'Function name' is set to 'V out' and the 'Error detection' is set to 'ECU: Short circuit'. The 'Pin' column shows AUXIO1, AUXIO2, and AUXIO3. The 'Type' column shows 'Output' for all three. The 'V avg[V]' column shows '24V'.

Pin	Type	Function name	Error detection	V avg[V]
AUXIO1	Output	SP	Solenoid/Bulb: ε	24V
AUXIO2	Output	LAC2	Solenoid/Bulb: ε	24V
AUXIO3	Output	V out	ECU: Short circuit	24V

The 'In - Out' Connector section shows a diagram of a 12-pin connector with the following mapping:

Pin Number	Function
1	AUXIO1
2	AUXIO2
3	AUXIO3

After connecting all hardware to the Unit, you can check the installation using TX-CONFIG (cf. "[Checking the installation with TX-CONFIG](#)" p.117).

X2 or IN/OUT connector not Available

In case the X2 (G1) or IN/OUT (G2.0/2.1/2.2) 12-pin connectors are already occupied, a distribution box (894 600 002 2) is required to split the existing connection cable.



NOTE

The cable glands allow for a cable diameter range of 4.5 – 10 mm.

The cable glands should be tightened with a maximum of 3 Nm.

Connecting to the OptiTire System

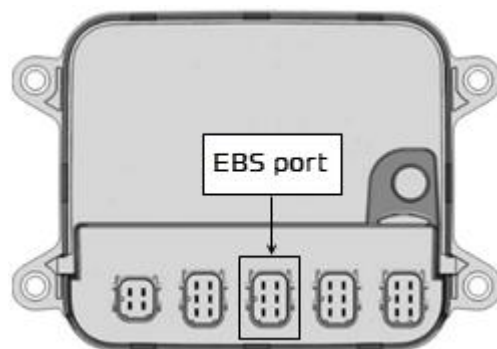
554 090 0xx 0 also integrates with the OptiTire tire pressure monitoring system. To connect it simultaneously to the TEBS system (WABCO or non-WABCO) and to the OptiTire system, additional cabling may be required, depending on your setup and the available connections (cf. [“Required Cable”](#) on page 42).

Connection to 554 090 0xx 0

Always make sure that all connectors are correctly plugged in to ensure a waterproof connection.

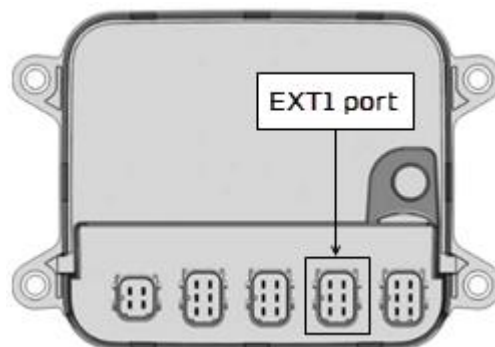
WABCO TEBS-E

The specific TEBS connection cable must be connected to the **EBS port** of the Unit. The Unit is powered by the TEBS system.



Non-WABCO TEBS-E

The specific OptiTire connection cable must be connected to the **EXT1 port** of the Unit.



Connection to TEBS System

The required cable depends on your configuration. Consult the Cable Overview section.



Cable Overview

WABCO TEBS-E

EBS Type	PIN Assignment 554 090 0xx 0 Side			Power Available	CAN Available	Article Code	
WABCO TEBS-E SUBSYSTEM E standard: 480 102 03x 0 E premium: 480 102 06x 0 480 102 08x 0 (MultiV)	1	Red	V IN	Yes	Yes	0942-0388- EBS-03-OPTI 449 041 000 0 + 894 600 001 2	
	2	Black	CAN-H				
	3	-	-				
	4	Brown	GND				
	5	White	CAN-L				
	6	-	-				
WABCO TEBS-E SUBSYSTEM + SmartBoard E standard: 480 102 03x 0 E premium: 480 102 06x 0 480 102 08x 0 (MultiV)	1	Red	V IN	Yes	Yes	0942-0388- EBS-07-OPTI 449 042 000 0	
	2	Black	CAN-H				
	3	-	-				
	4	Brown	GND				
	5	White	CAN-L				

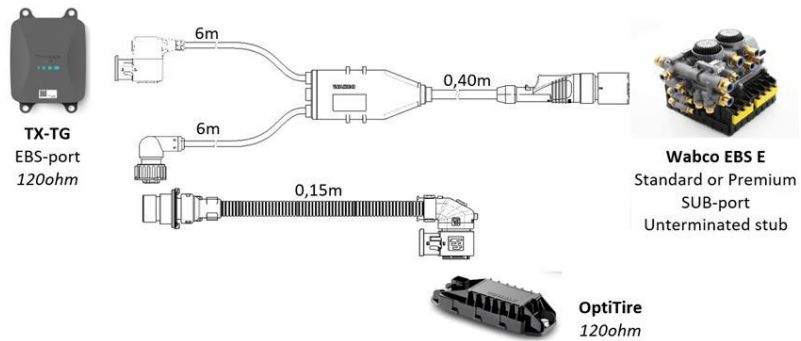
WABCO TEBS-E Subsystem

Required Cables

0942-0388-EBS-03-OPTI

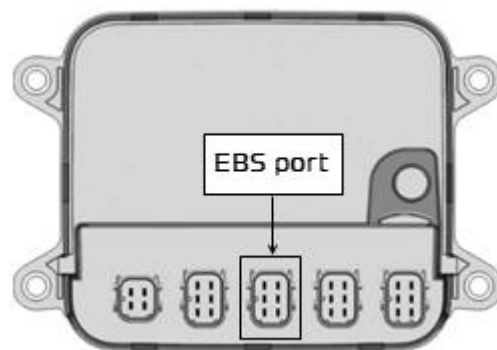
+

894 600 001 2

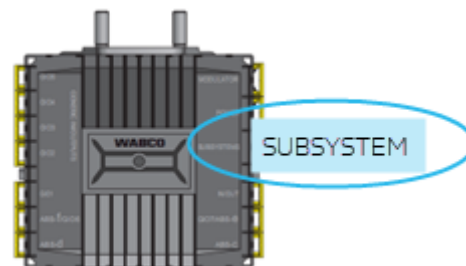


Connect the specific TEBS connection cable to the **EBS port** of the Unit (cf. "[Connections to the Unit](#)" p.14).

Always make sure that all connectors are correctly plugged in to ensure a waterproof connection. The Unit can be powered by the TEBS system.

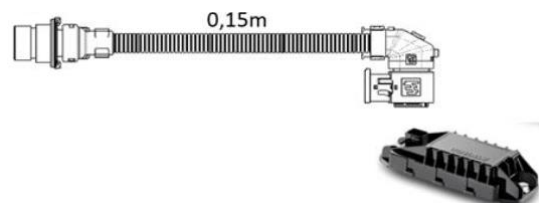


In case of a modulator type E (Standard, Premium or Multivoltage), connect the TEBS connection cable to the modulator **SUBSYSTEM** port.



Use the additional connection cable 894 600 001 2 to connect the remaining connector of the TEBS connection cable to the OptiTire system.

For more information on the OptiTire system, we refer to the OptiTire installation manual: https://www.wabco-customercentre.com/catalog/docs/815010229_3.pdf.

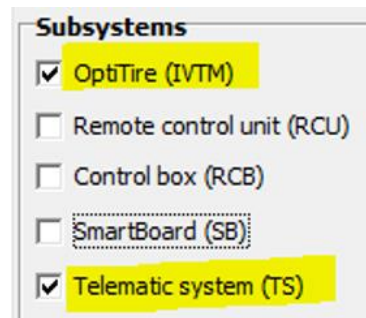


IMPORTANT

If 554 090 0xx 0 and the OptiTire system are connected to the SUBSYSTEM slot, 2 options must be activated in the **TEBS-E diagnostics software**:

“TEBS window” > “Function selection” > “Subsystem” > **Telematics system (TS)** and **OptiTire (IVTM)**.

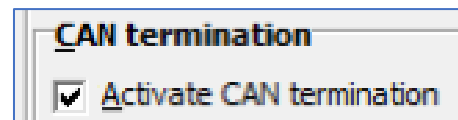
Cf. [“Parameter Adaptation Using OptiTire Diagnostics Software: WABCO TEBS-E & NON-WABCO TEBS-E”](#) on p.54.



IMPORTANT

For this configuration type, the CAN Bus termination of the OptiTire ECU must be set to **Active** (default value) in the **OptiTire diagnostics software**.

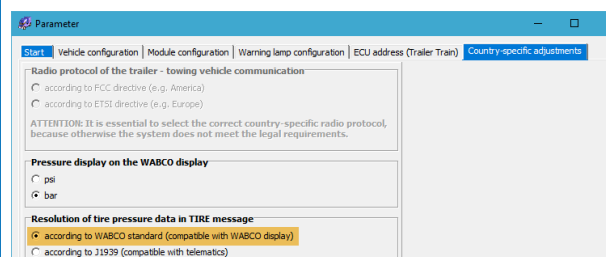
Cf. [“Parameter Adaptation Using OptiTire Diagnostics Software”](#) on p. 54.



IMPORTANT

On the “Country-specific adjustment” tab page in the **OptiTire diagnostics software**, under **Resolution of tire pressure data in TIRE message** at the bottom:

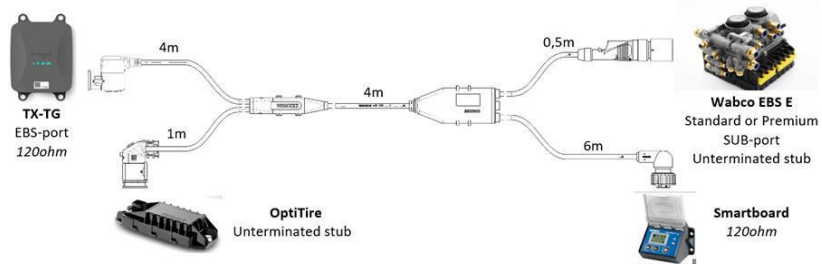
- When the OptiTire ECU is connected to the EBS port, make sure that you select “According to J1939 (compatible with telematics)”.



WABCO TEBS-E Subsystem + SmartBoard

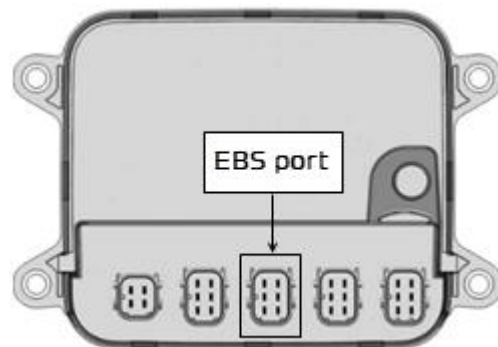
Required Cables

0942-0388-EBS-07-OPTI



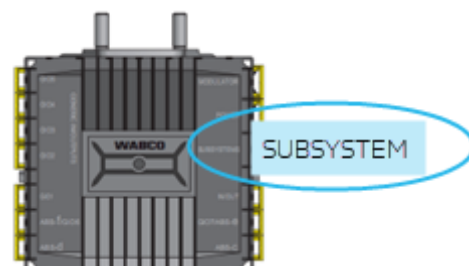
Connect the specific TEBS connection cable to the **EBS port** of the Unit (cf. "[Connections to the Unit](#)" p.14).

Always make sure that all connectors are correctly plugged in to ensure a waterproof connection. The Unit can be powered by the TEBS system.



In case a SmartBoard is occupying the SUBSYSTEM port, use the specific TEBS connection cable with 4 connectors: 0942-0388-EBS-07-OPTI.

Connect it to the modulator **SUBSYSTEM port** using the TEBS connection cable as shown in the image above.

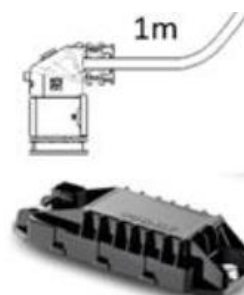


Connect the TEBS connection cable to the SmartBoard.



Connect the remaining end of the TEBS connection cable to the OptiTire system.

For more information on the OptiTire system, we refer to the OptiTire installation manual: <https://www.wabco-customercentre.com/catalog/docs/8150102293.pdf>.

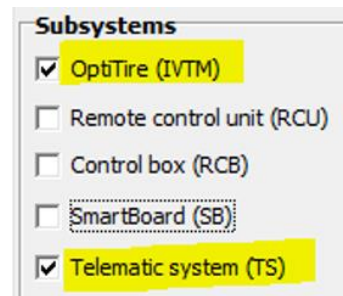


IMPORTANT

If 554 090 0xx 0 and the OptiTire system are connected to the SUBSYSTEM slot, 2 options must be activated in the **TEBS-E diagnostics software**:

“TEBS window” > “Function selection” > “Subsystem” > **Telematics system (TS)** and **OptiTire (IVTM)**.

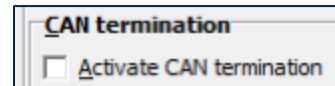
Cf. [“Parameter Adaptation Using OptiTire Diagnostics Software: WABCO TEBS-E & NON-WABCO TEBS-E”](#) on p.54.



IMPORTANT

For this configuration type, the CAN Bus termination of the OptiTire ECU must be set to **Inactive** in the **OptiTire diagnostics software**.

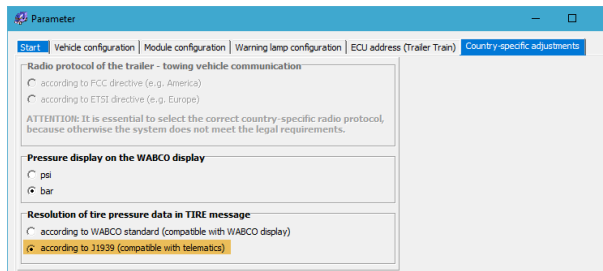
Cf. [“Parameter Adaptation Using OptiTire Diagnostics Software”](#) on p.54.



IMPORTANT

On the “Country-specific adjustment” tab page in the **OptiTire diagnostics software**, under **Resolution of tire pressure data in TIRE message** at the bottom:

- When the OptiTire ECU is connected to the EBS port, make sure that you select “According to J1939 (compatible with telematics)”.

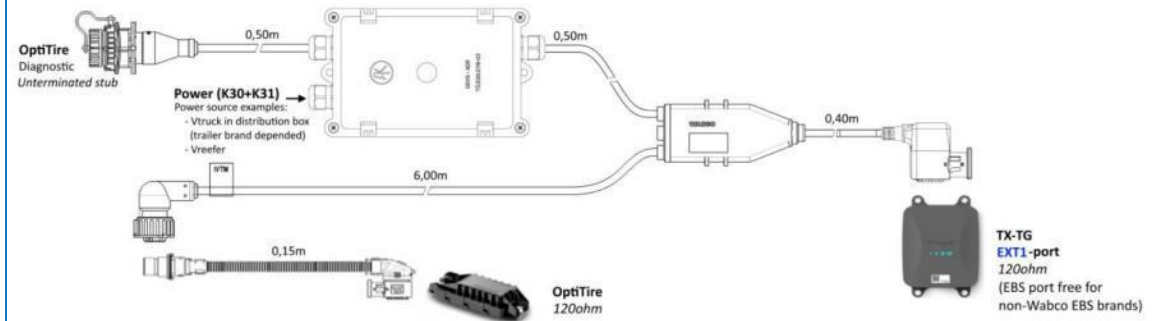


Cable Overview

Non-WABCO TEBS-E

External power source for OptiTire ECU

EBS Type	PIN Assignment Distribution Box		Article Code
	Color	Signal	
Non-WABCO TEBS-E	Brown	GND	0942-0388-EXT1-OPTI
	Red	V IN	449 039 002 0
			+ 894 600 001 2



External power source for 554 090 0xx 0

EBS	PIN Assignment 554 090 0xx 0 Side			Power Available	CAN Available	Article Code	Length	
Haldex EB+ Gen. 1 "810"	1	Red	V IN	V in = KL15 (554 090 0xx 0 only powered when ignition is ON)	No	0942-0388-EBS-10 449 034 000 0	6 m	
	2	Green	CAN-H					
	3	-	-					
Haldex EB+ Gen. 2 "820" "950 820 ..."	4	Blue	GND		As from software version C499			
	5	Yellow	CAN-L					
	6	-	-					
Haldex EB+ Gen. 3 "823" "950 823 ..."	1	Red	V IN	Yes	Yes	0942-0388-EBS-10-3 449 035 000 0	7 m	
	2	Green	CAN-H					
	3	-	-					
	4	Blue	GND					
	5	Yellow	CAN-L					
	6	-	-					

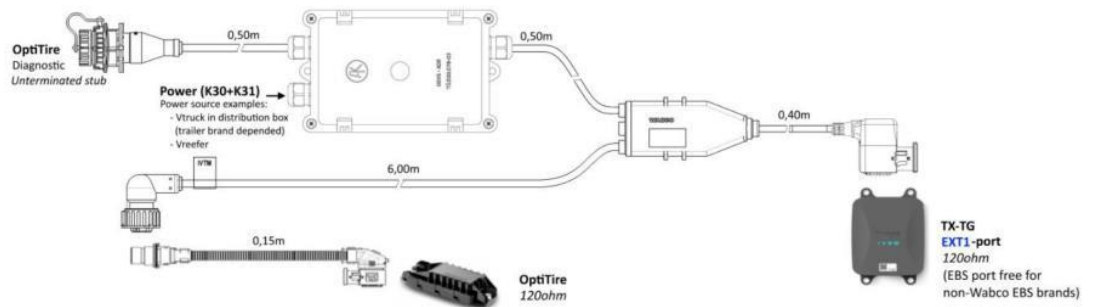
EBS	PIN Assignment 554 090 0xx 0 Side			Power Available	CAN Available	Article Code	Length	
HalDEX EB+ Gen. 4 "842" "950 800 ..."	1	Red	V IN	Yes	Yes	554 091 011 0	5 m	
	2	Green	CAN-H					
	3	-	-					
	4	Blue	GND					
	5	Yellow	CAN-L					
	6	-	-					
Knorr TEBS4 (G1) ES205x	1	White	V IN	Yes	NO	0942-0388-EBS-06U 449 032 000 0	5 m	
	2	Green	CAN-H					
Knorr TEBS G2.0/G2.1 ES2060	3	-	-	Yes	Yes	ADR-certified version: 0942-0388-EBS-06U-ADR 449 032 001 0	5 m	
	4	Brown	GND					
Knorr G2.2 ES2090	5	Yellow	CAN-L	Yes	Yes	ADR-certified version: 0942-0388-EBS-06U-ADR 449 032 001 0	5 m	
	6	-	-					

EBS	PIN Assignment 554 090 0xx 0 Side			Power Available	CAN Available	Article Code	Length	
Open-end cable (Diameter: 6.2 mm)	1	White	Vin			0942-0388-EBS-05 449 031 000 0	5 m	
	2	Green	CAN-H					
	3	Grey	Input					
	4	Brown	GND			ADR-certified version: 0942-0388-EBS-05-ADR 449 031 001 0		
	5	Yellow	CAN-L					
	6	-	-					
WABCO TEBS-D1 PREMIUM 480 102 014 0	1	Red	V IN	V in = KL15 (554 090 0xx 0 only powered when ignition is ON)	Yes	0942-0388-EBS-01 449 028 000 0	5 m	
	2	Black	CAN-H					
	3	-	-					
	4	Brown	GND					
	5	White	CAN-L					
	6	-	-					

Non-WABCO TEBS-E

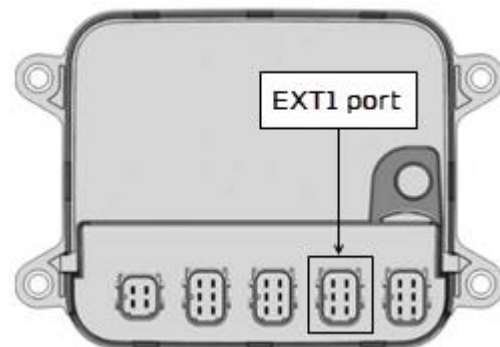
Required Cables

0942-0388-
EXT1-OPTI
449 039 002 0
+
894 600 001 2



Connect the specific EBS connection cable to the **EXT1 port** of the Unit (cf. [“Connections to the Unit” p.14](#)).

Always make sure that all connectors are correctly plugged in to ensure a waterproof connection.



Use the distribution box to connect the power source (12/24V) and ground connection. The power source must be fused (5A).

Power source examples:

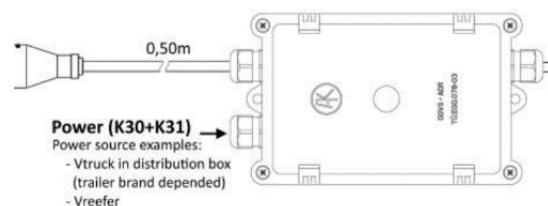
- From EBS (available on Knorr EBS, if not yet occupied)
- From truck in distribution box (depends on trailer brand)

The power source cable is not included and should be provided by the customer. Make sure that the cable is suitable for this environment and application.

Cable Requirements:

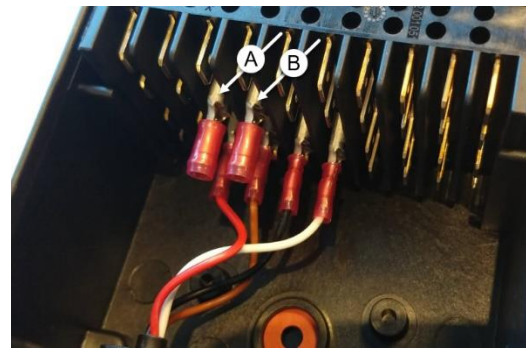
- Cable wires: min. 0.5 mm²
- Cable diameter: 4.5 – 10 mm

The cable gland must be tightened with 3 Nm.



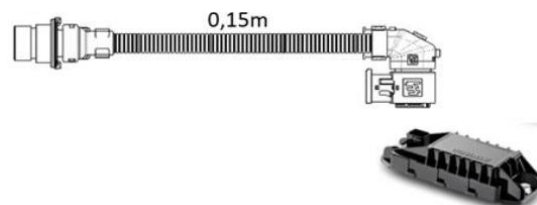
Inside the distribution box, two fast-on connectors are available to power the OptiTire system:

- Connect the power source (12/24V) to the connector above the red wire (cf. **A** in the picture).
- Connect the ground connection (GND) to the connector above the brown wire (cf. **B** in the picture).



Use the additional connection cable 894 600 001 2 to connect the remaining connector of the TEBS connection cable to the OptiTire system.

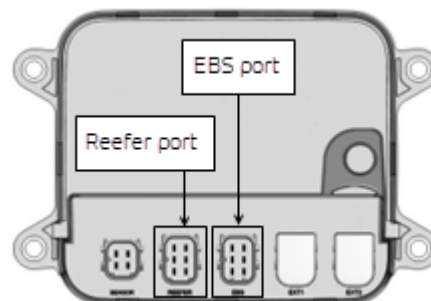
For more information on the OptiTire system, we refer to the OptiTire installation manual: <https://www.wabco-customercentre.com/catalog/docs/8150102293.pdf>



IMPORTANT

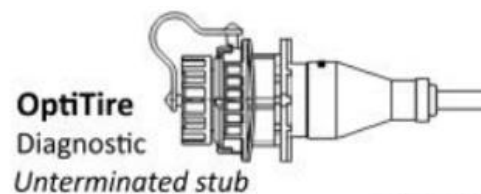
The distribution box connection will only power the OptiTire system.

The Unit must be powered separately using the EBS port or the reefer port.



NOTE

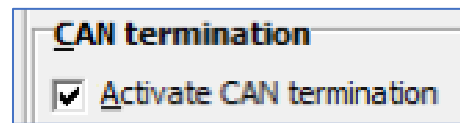
For diagnostic purposes, the WABCO diagnostics cable can be connected directly to the diagnostic connector on the distribution box.



IMPORTANT

For this configuration type, the CAN Bus termination of the OptiTire ECU must be set to **Active** (default value) in the OptiTire diagnostics software.

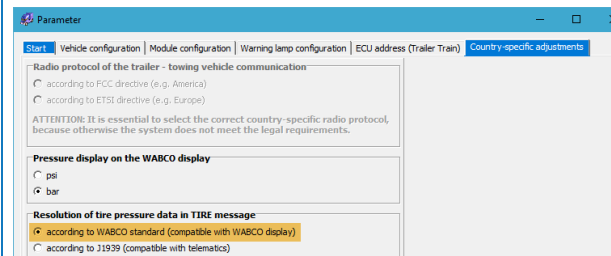
Cf. "[Parameter Adaptation Using OptiTire Diagnostics Software](#)" on p. [34](#).



IMPORTANT

On the "Country-specific adjustment" tab page in the **OptiTire diagnostics software**, under **Resolution of tire pressure data in TIRE message** at the bottom:

When the OptiTire ECU is connected to the EXT1 port, make sure that you select "According to WABCO standard (compatible with WABCO display)".



Parameter Adaptation Using OptiTire Diagnostics Software: WABCO TEBS-E & NON-WABCO TEBS-E

Hardware Requirements

Option 1

Diagnosis in accordance with ISO 11992 (CAN 24 V) via the 7-pin ISO 7638 CAN connection

<p>ISO 7638 disconnecting adapter with CAN socket (446 300 360 0)</p> 	<p>Diagnostics interface (DI-2) with USB port (for PC connection) (446 301 030 0)</p> 	<p>CAN diagnostics cable (446 300 361 0 (5m) / 446 300 362 0 (20m))</p> 
---	---	---

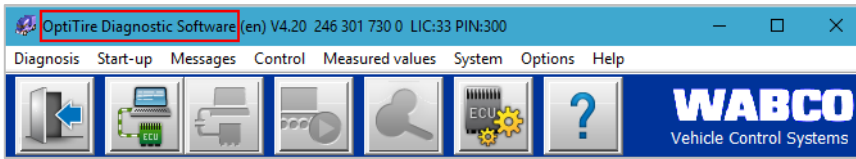
Option 2

Diagnosis in accordance with ISO 11898 (CAN 5 V) via an external diagnosis connection


<p>External diagnostics socket with yellow cap (449 611 xxx 0): Only TEBS-E Modulators (Premium)</p> 	<p>Diagnostics interface (DI-2) with USB port (for PC connection) (446 301 030 0)</p> 	<p>CAN diagnostics cable (446 300 348 0)</p> 
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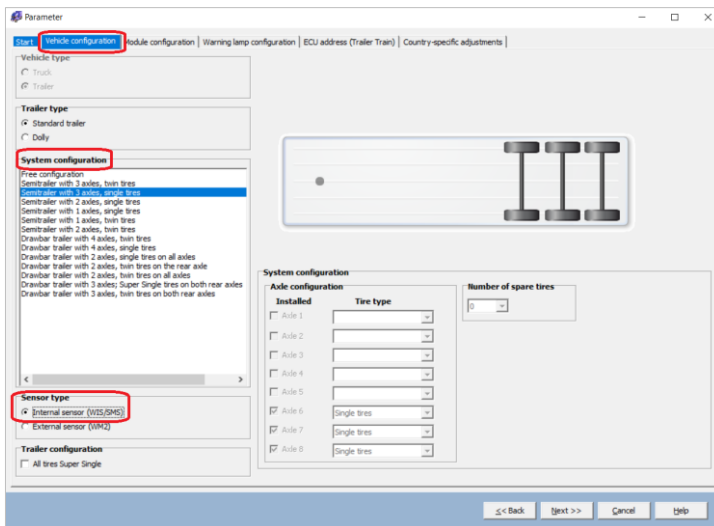
Software Requirements

OptiTire diagnostics software: Consult “[Software Requirements - Ordering the Diagnostics Software](#)” p.16.

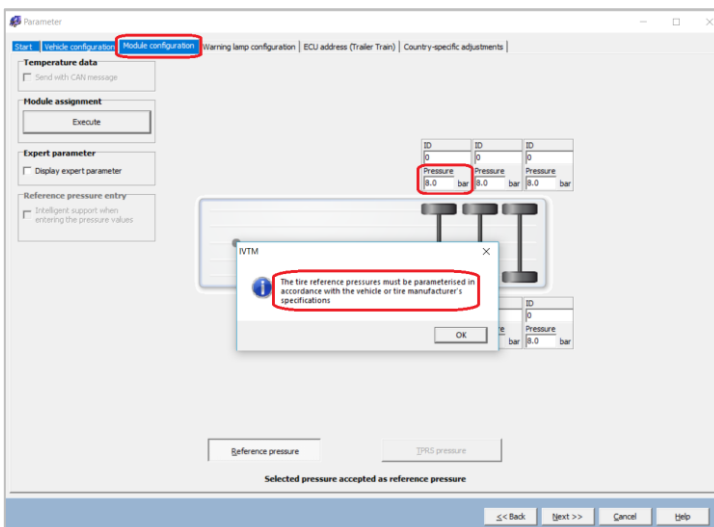


Parameter Adaptation

1. In the OptiTire diagnostics software, open the “OptiTire / IVTM system configuration” menu: .
2. In the “Vehicle configuration” tab, select the correct trailer configuration under “System configuration” and select “Internal sensor (WIS / SMS)” under “Sensor type”.



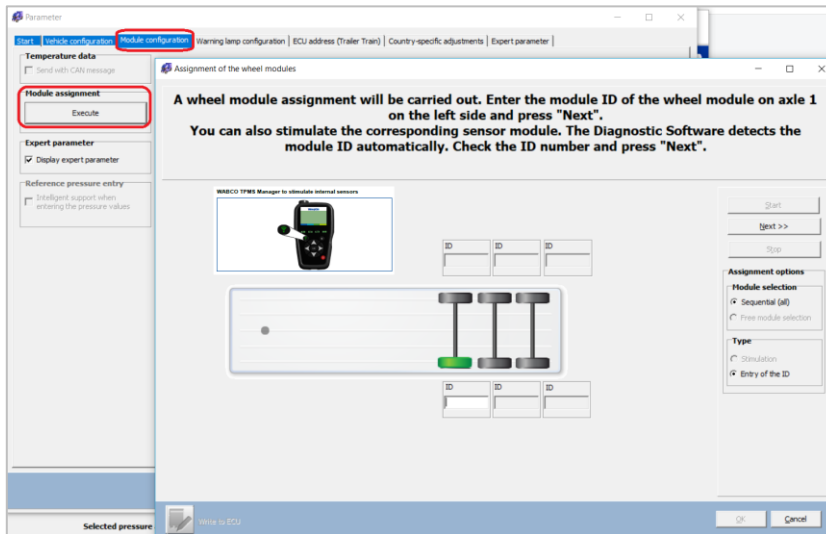
3. Next, in the “Module configuration” tab, you can set the reference tire pressure per wheel sensor. The tire reference pressure must be parameterized in accordance with the vehicle / tire manufacturer specifications.



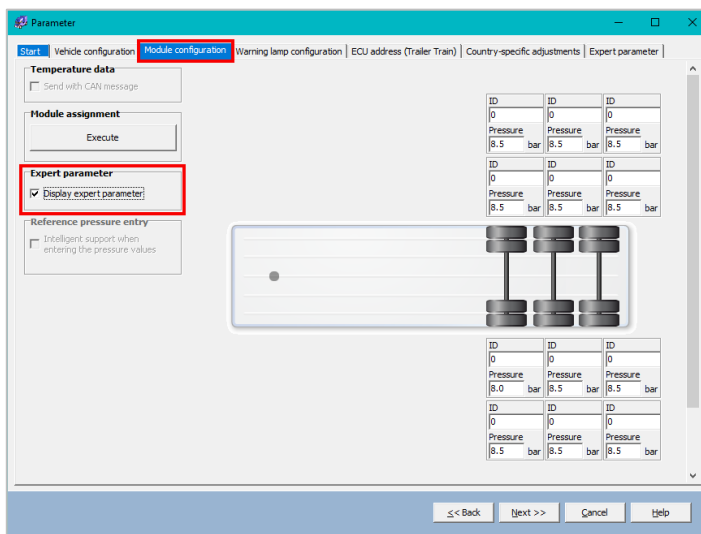
- Next, click on **Execute** on the left in the "Module configuration" tab.
You can now assign the correct sensor module ID to each wheel.

This can be done by manually entering each sensor ID in the correct input fields, or by using the **WABCO TPMS Manager** to stimulate and read out tire pressure sensors.

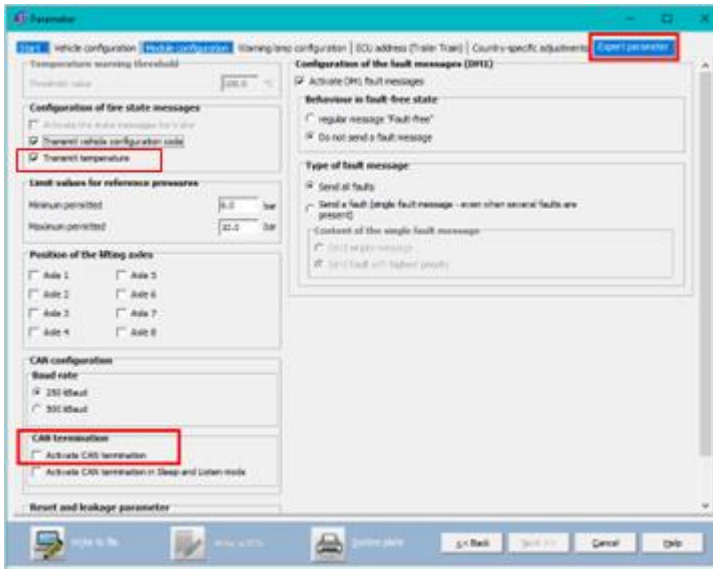
In this case, the correct sensor ID will be entered automatically in the input fields.
After entering all required IDs, click "OK" to confirm and close the window.



- Next, in the "Module configuration" tab, select "Display expert parameter" to activate the "Expert parameter" tab.

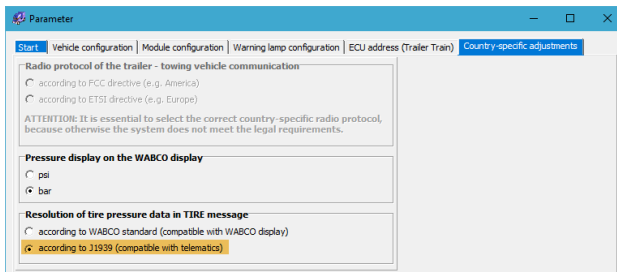


- In the “Expert parameter” tab, activate the setting “Transmit temperature” and adjust the setting “Activate CAN termination” according to your configuration type.

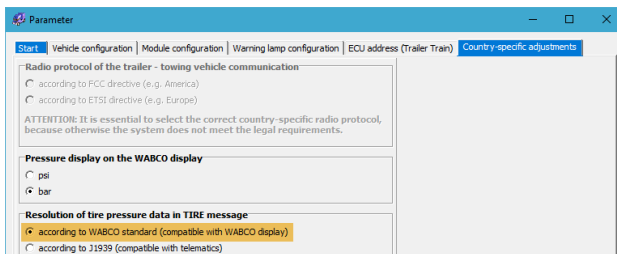


- Next, on the “Country-specific adjustment” tab page in the OptiTire diagnostics software, under Resolution of tire pressure data in TIRE message at the bottom:

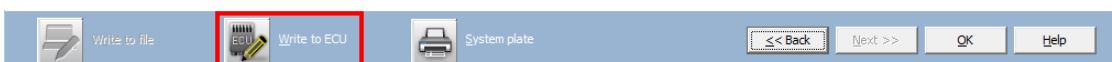
- WABCO TEBS-E:** When the OptiTire ECU is connected to the EBS port, make sure that you select “According to J1939 (compatible with telematics)”.



- NON WABCO TEBS-E:** When the OptiTire ECU is connected to the EXT1 port, make sure that you select “According to WABCO standard (compatible with WABCO display)”.



- Press **Write to ECU** to confirm any modifications (PIN code needed (cf. “[Note](#)” on p.16)).



Connecting to the Temperature Recorder

Single Connection (Reefer or Data Logger)

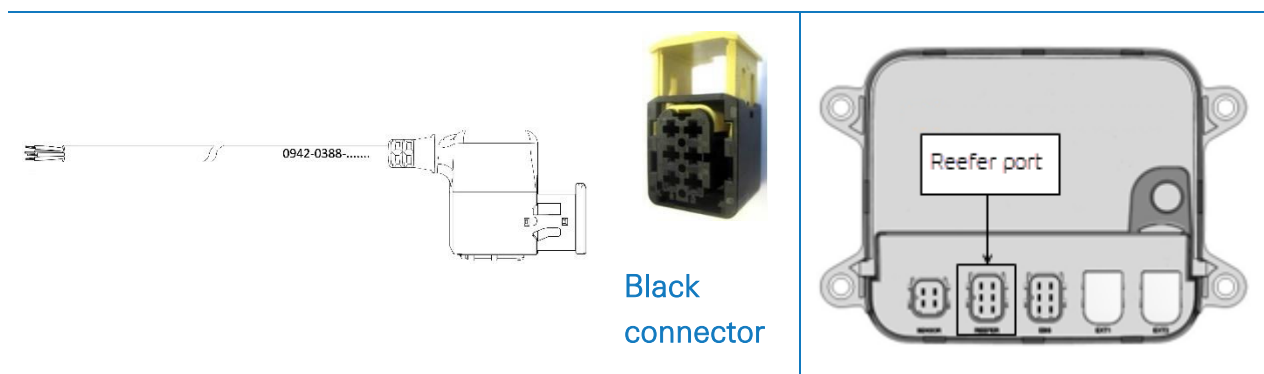
In case of a single connection to only a reefer or a data logger (temperature recorder), use the reefer cable (0942-0388-REEFER) to connect to the REEFER port of the Unit.

The reefer cable includes a power connection, so it can be connected to the reefer battery (cf. "[Recommendations for Reefer ON/OFF Connection](#)" p.61) to power the Unit.

Single Connection	Required Cable (Article Code)	Connection Port on 554 090 0xx 0
Reefer / data logger	REEFER (0942-0388-REEFER)	REEFER

Plug the black connector from the reefer cable into the REEFER port of the Unit (cf. "[Connections to the Unit](#)" p.14).

Always make sure that all connectors are correctly plugged in to ensure a waterproof connection. The Unit can also be powered by the reefer unit on the trailer.



Connect the open-end wires from the reefer cable (0942-0388-REEFER) to the reefer unit or temperature recorder.

Reefer Cable 554 090 0xx 0				Temperature Recorder / Reefer Unit	
PIN	Wire Color	Signal	>		
1	White	V in	>		TO +12V
2	Green	RX	>		TO TX
3	Grey	V out	>		
4	Brown	GND	>		TO GND
5	Yellow	TX	>		TO RX
6	Pink	Input	>		To reefer on / off (cf. p.61)

Double Connection (Reefer and Data Logger)

As from app version 2.24.17523, 554 090 0xx 0 supports two simultaneous connections to a reefer unit (Thermo King i-Box, Carrier Direct) AND to a data logger (Thermo King TouchPrint / TranScan, Carrier DataCOLD 500/600, Euroscan X1/2/3).

It is not possible to combine two loggers. In case of a double connection, the reefer connection is always the “primary” connection and the data logger connection is always the “secondary” connection. (See also “[Primary Reefer Connection](#)” p.59.)

Double Connection	Required Cable (Article Code)	554 090 0xx 0 Port
Reefer (primary)	REEFER (0942-0388-REEFER)	REEFER
Data logger (secondary)	EXT2 (0942-0388-EXT2)	EXT2

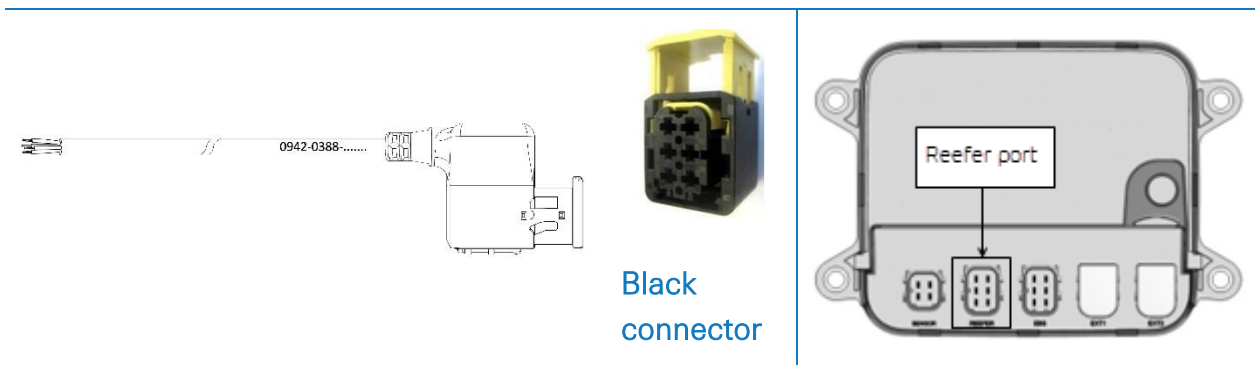
IMPORTANT

In case of a single connection, the data logger must be connected to the REEFER port.
 In case of a double connection, the data logger must be connected to the EXT2 port.
 Make sure that you connect to the correct ports in case you are switching from a single to a double connection or vice versa.

Reefer Connection (Primary)

Plug the black connector from the reefer cable into the **REEFER port** of the Unit (cf. “[Connections to the Unit](#)” p.14).

Always make sure that all connectors are correctly plugged in to ensure a waterproof connection. The Unit can also be powered by the reefer unit on the trailer.



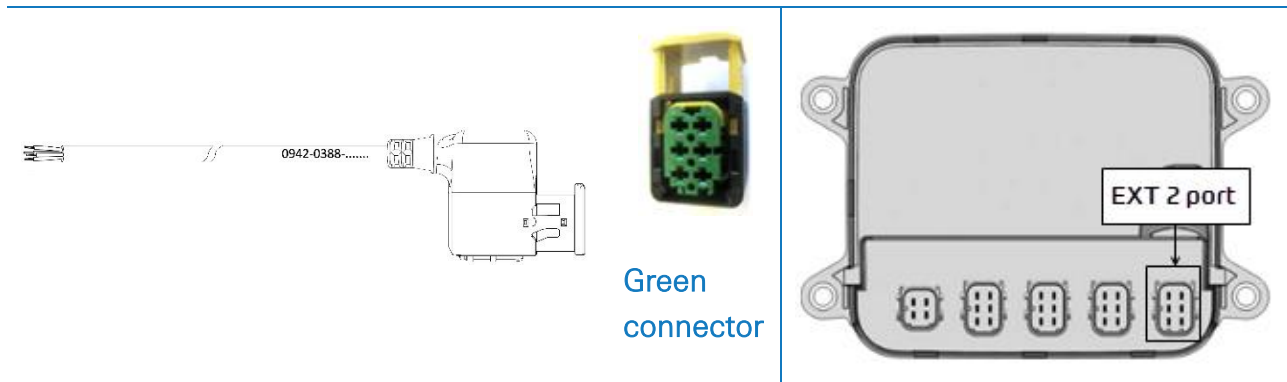
Connect the open-end wires from the reefer cable (0942-0388-REEFER) to the reefer unit or temperature recorder.

Reefer Cable 554 090 0xx 0				Reefer Unit
PIN	Wire Color	Signal		
1	White	V in	>	TO +12V
2	Green	RX	>	TO TX
3	Grey	V out		
4	Brown	GND	>	TO GND
5	Yellow	TX	>	TO RX
6	Pink	Input	>	To reefer on / off (cf. p.61)

Data Logger Connection (Secondary)

Plug the green connector from the EXT2 cable into the **EXT2 port** of the Unit (cf. "[Connections to the Unit](#)" p.14).

Always make sure that all connectors are correctly plugged in to ensure a waterproof connection. The Unit can also be powered by the reefer unit on the trailer.



Connect the open-end wires from the EXT2 cable (0942-0388-EXT2) to the data logger.

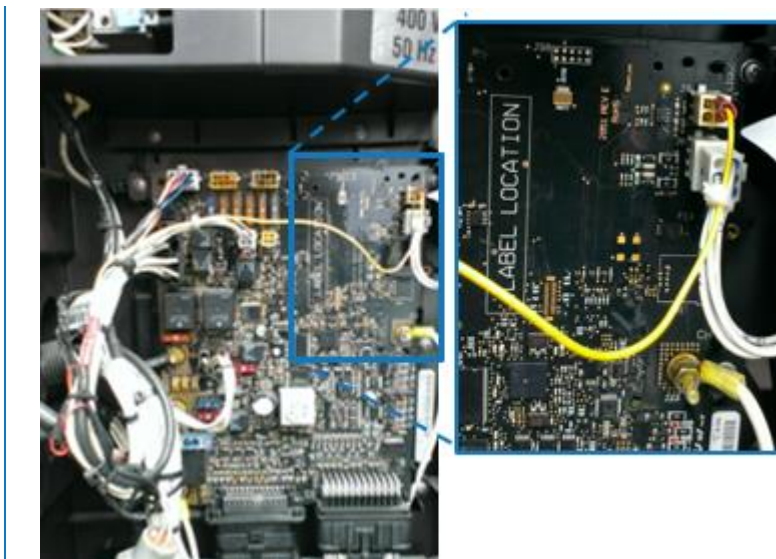
EXT2 Cable 554 090 0xx 0				Data Logger	
PIN	Wire Color	Signal			
1	Green	RX	>		TO TX
2	Brown	GND	>		TO GND
3	-	-			
4	Yellow	TX	>		TO RX
5	White	- *			
6	-	-			To reefer on / off (cf. p.61)

* Isolate unused wires

Recommendations for Reefer ON/OFF Connection

Thermo King

The reefer ON/OFF connection can be found on connector J8.



Carrier

If the yellow wire of connector 1 (CON 1) is connected to "IGN" (= ignition / voltage after contact), you can measure whether 12 V is detected when the reefer is turned ON.

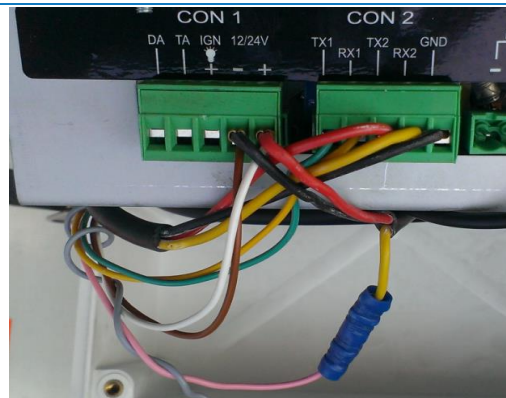


The yellow wire from IGN needs to be connected to the "GCS-1/SPK2" wire, which can be found in the reefer electricity box.



To save battery power, the yellow wire might not be connected to "IGN".

In that case, you can use the yellow wire to connect the pink "Reefer ON / OFF" wire.



Euroscan TMS / Euroscan X1/X2

Hardware Connection

1. Open the data logger to access the connector blocks.

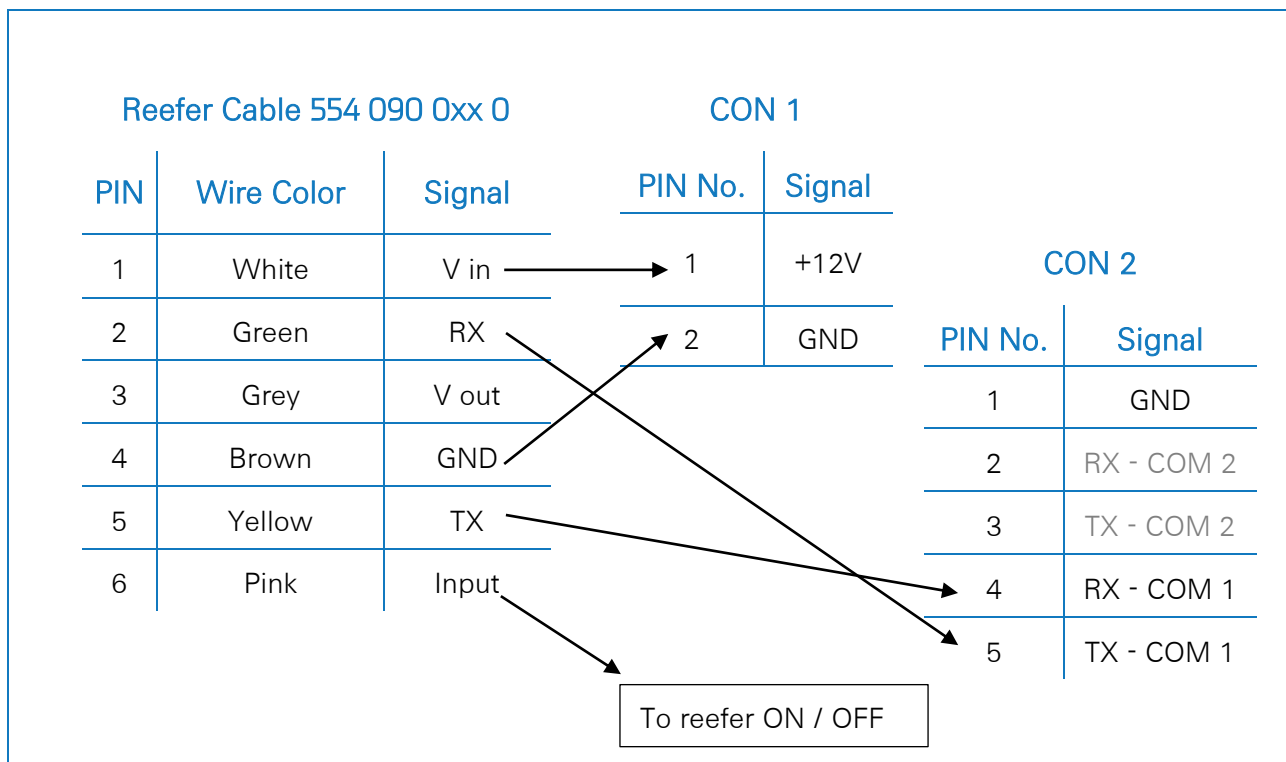


2. Connect the wires of the open-end reefer cable to the correct pins of the data logger.



Single Connection - Only Data Logger Connected to 554 090 0xx 0

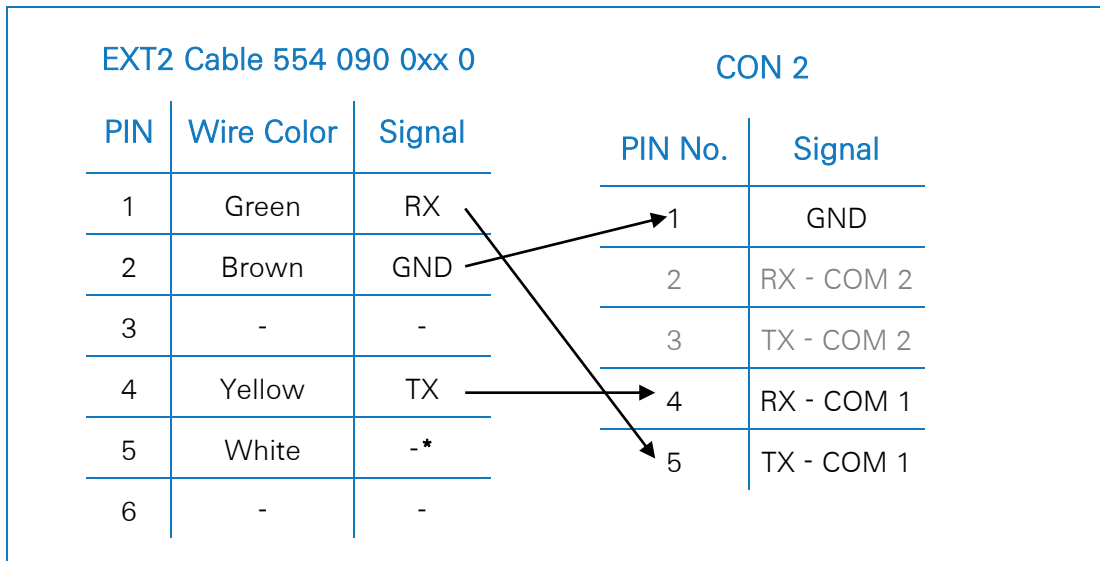
Connect the open-end wires from the REEFER cable (0942-0388-REEFER) to the data logger.



Double Connection (as Secondary) - Data Logger and Reefer Connected to 554 090 0xx 0

Connect the open-end wires from the EXT2 cable (0942-0388-EXT2) to the data logger.

EXT2 Cable 554 090 0xx 0			CON 2	
PIN	Wire Color	Signal	PIN No.	Signal
1	Green	RX	1	GND
2	Brown	GND	2	RX - COM 2
3	-	-	3	TX - COM 2
4	Yellow	TX	4	RX - COM 1
5	White	-*	5	TX - COM 1
6	-	-		



* Isolate unused wires

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:

- **TMS Protocol 9k6** or **TMS Protocol 38k4** in case of Euroscan TMS.

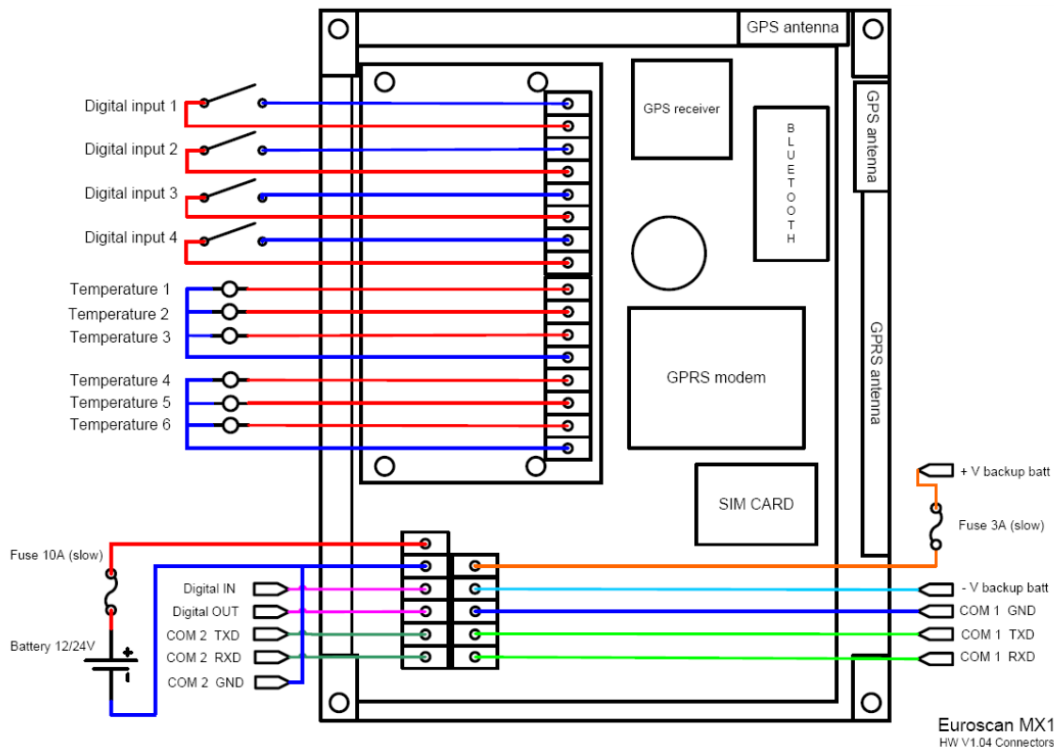
Procedure

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** or **TMS Protocol 38k4** is displayed.
7. Press the **green** button once to confirm your changes.
8. Press the **red** button twice to return to the Main Menu.

After connecting all hardware to the Unit, you can check the installation using TX-CONFIG (cf. "[Checking the installation with TX-CONFIG](#)" p. [117](#)).

Euroscan MX1

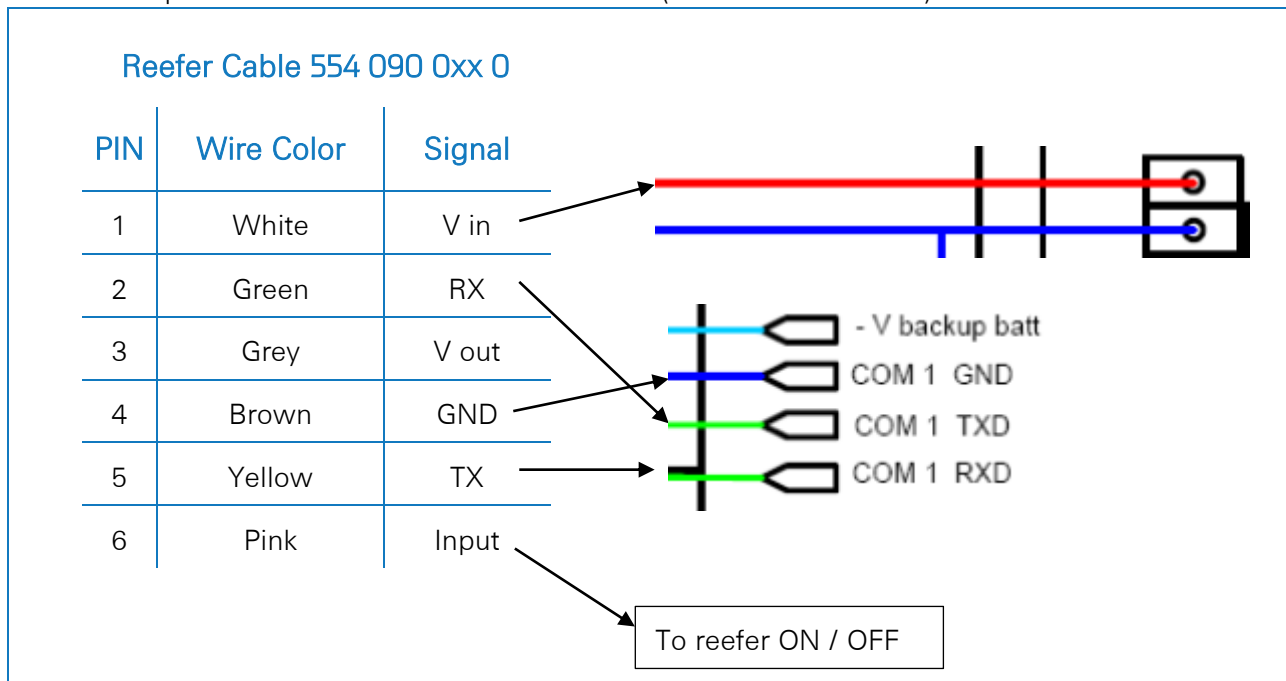
Open the MX1 unit to access the connector blocks. Connect the wires of the open-end reefer cable to the correct pins.



Hardware Connection

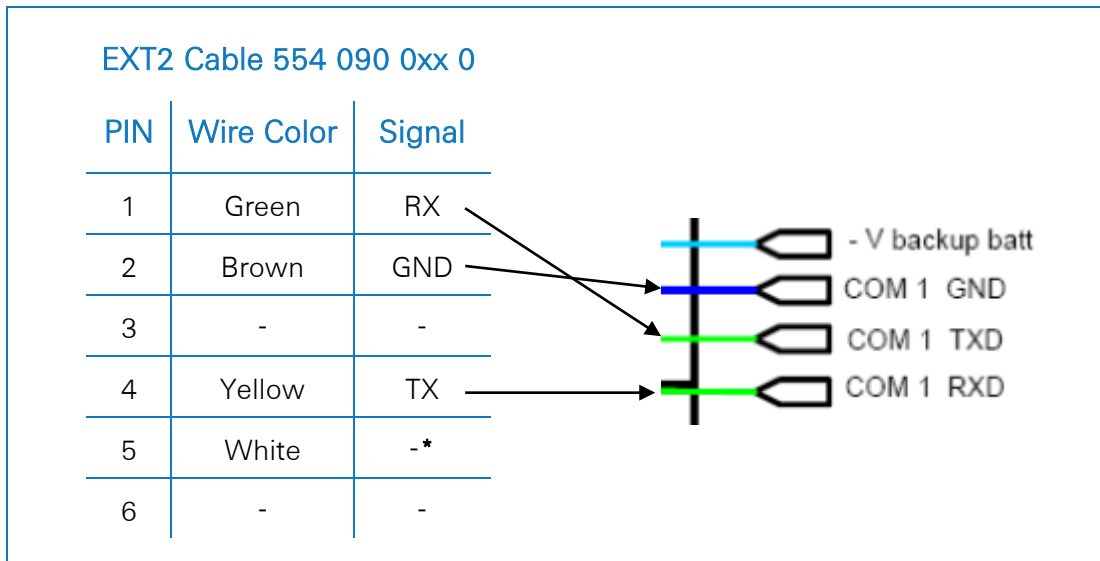
Single Connection - Only Data Logger Connected to 554 090 0xx 0

Connect the open-end wires from the REEFER cable (0942-0388-REEFER) to the reefer unit.



Double Connection (as Secondary) - Data Logger and Reefer Connected to 554 090 0xx 0

Connect the open-end wires from the EXT2 cable (0942-0388-EXT2) to the recorder.



* Isolate unused wires

NOTE

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

Setting the Reefer Protocol

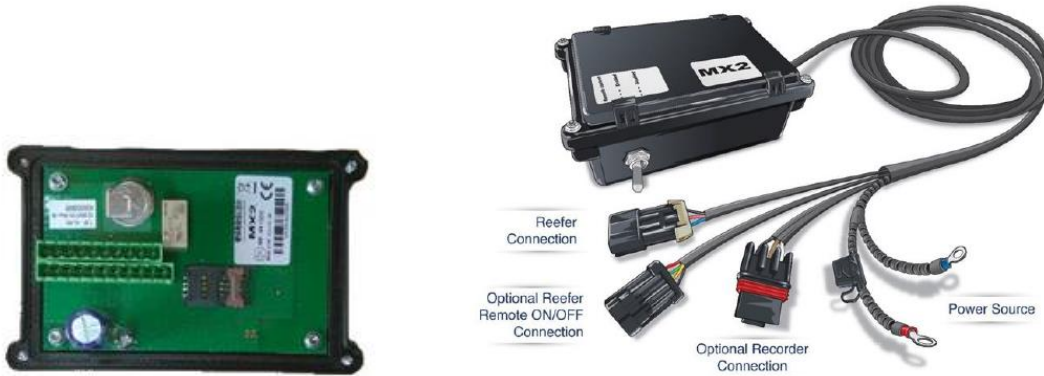
After connecting the hardware, the recorder protocol must be set to **Partner Protocol** using the EuroTOOL.

For more information, contact your local Euroscan dealer.

After connecting all hardware to the Unit, you can check the installation using TX-CONFIG (cf. ["Checking the installation with TX-CONFIG"](#) p. 117).

Euroscan MX2

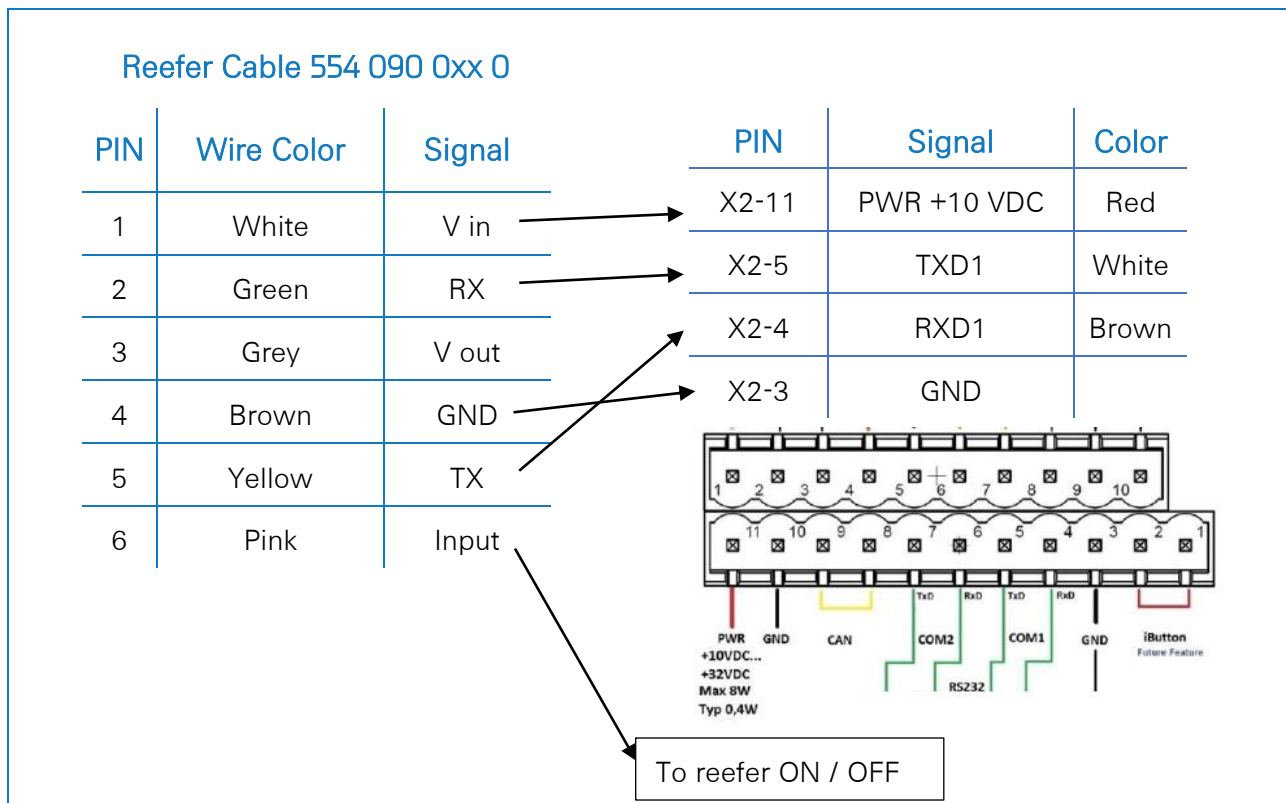
Open the MX2 unit to access the connector blocks. Connect the wires of the open-end reefer cable to the correct pins.



Hardware Connection

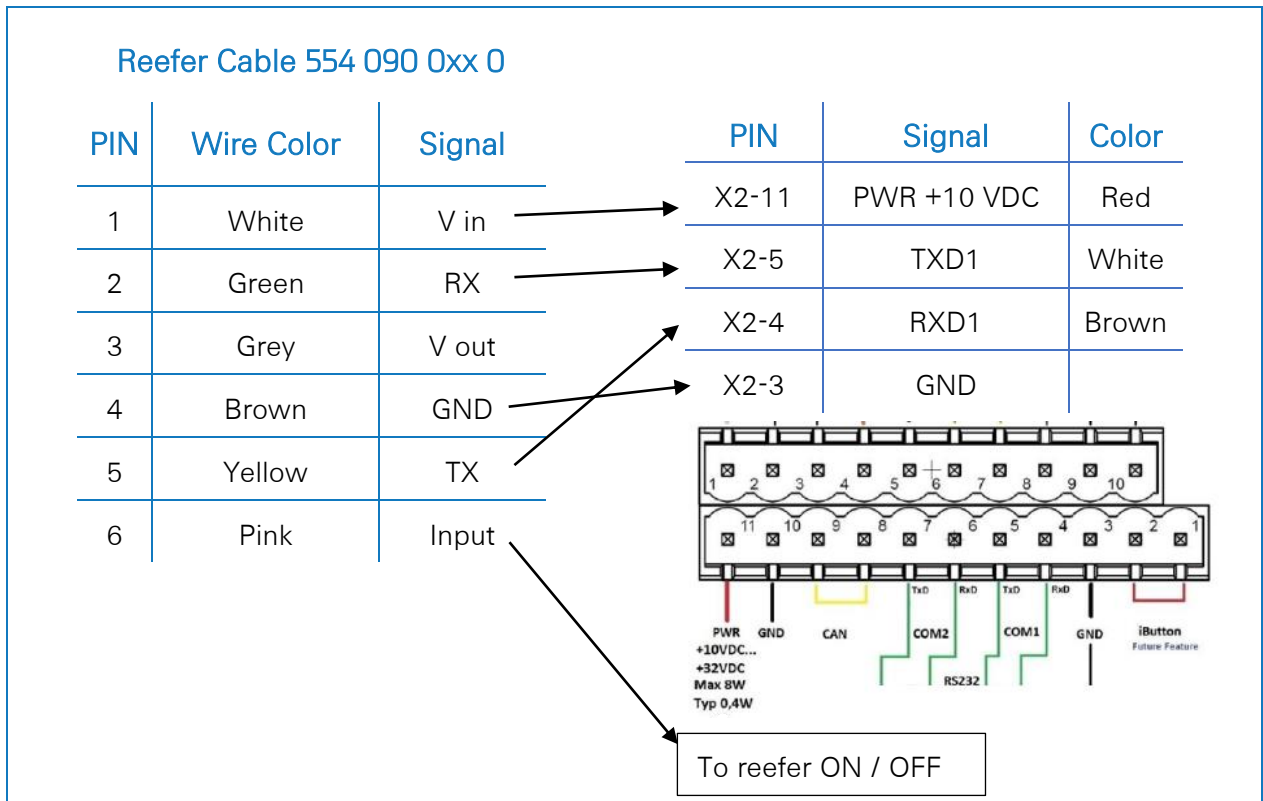
Single Connection - Only Data Logger Connected to 554 090 0xx 0

Connect the open-end wires from the REEFER cable (0942-0388-REEFER) to the reefer unit.



Double Connection (as Secondary) - Data Logger and Reefer Connected to 554 090 0xx 0

Connect the open-end wires from the EXT2 cable (0942-0388-EXT2) to the recorder.



Setting the Reefer Protocol

After connecting the hardware, the recorder protocol must be set to **Partner Protocol** using the EuroTOOL.

For more information, contact your local Euroscan dealer.

After connecting all hardware to the Unit, you can check the installation using TX-CONFIG (cf. ["Checking the installation with TX-CONFIG"](#) p. 117).

Thermo King i-Box

This installation requires the following firmware version:

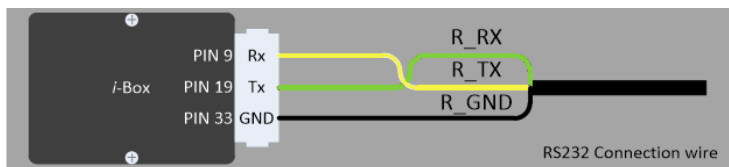
- Firmware i-Box: REV 5309 or higher.

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



Hardware Connection

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



Reefer Cable 554 090 0xx 0

PIN	Wire Color	Signal	Port 2 (3rd Party)	
			PIN No.	Signal
1	White	V in		
2	Green	RX	9	RX
3	Grey	V out	19	TX
4	Brown	GND	33	COM2
5	Yellow	TX	35	+12V
6	Pink	Input		



To reefer ON / OFF

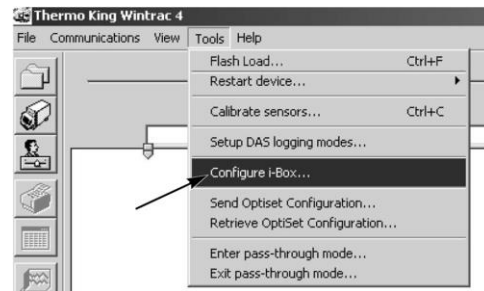
Setting the Reefer Protocol

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

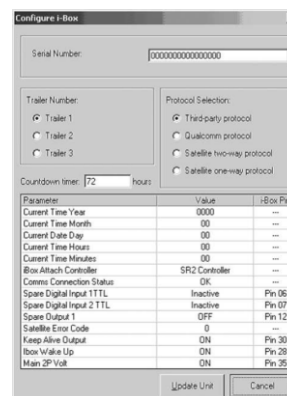
However, in case another system is connected to the i-Box, the protocol will need to be set to “Third-party protocol” using the Wintrac software on a diagnostic PC / laptop.

More details on the diagnostics 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”.



After connecting all hardware to the Unit, you can check the installation using TX-CONFIG (cf. [“Checking the installation with TX-CONFIG”](#) p. 117).

REB i-Box

This installation requires the following firmware versions:

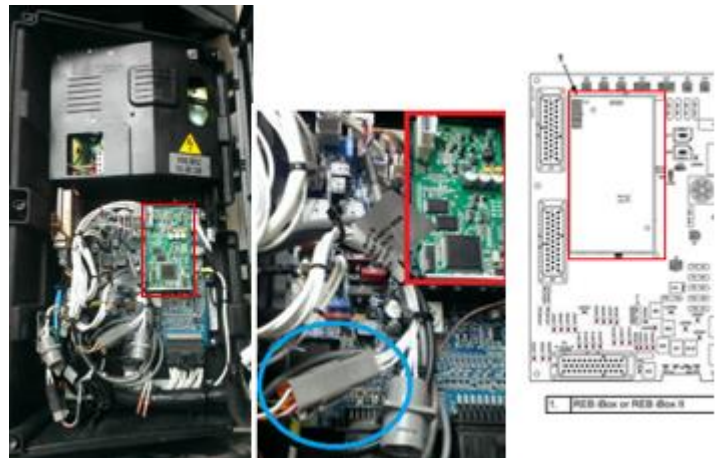
- Firmware i-Box: 5309 or higher.

Hardware Connection

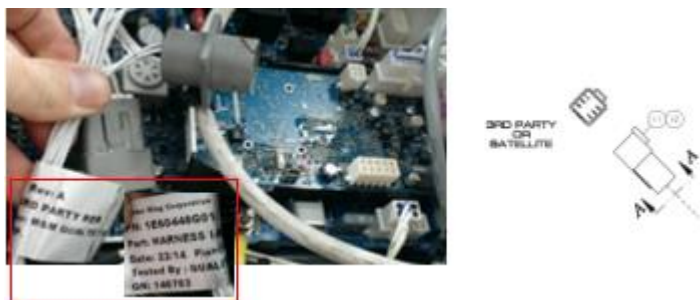
The REB i-Box is a motherboard that is mounted on an SR-3 or SR-4 base controller (the motherboard may have a different color than shown in the picture).

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 in REB I i-Box REV A031 / firmware version 5506 and for REB II i-Box firmware version 5370.

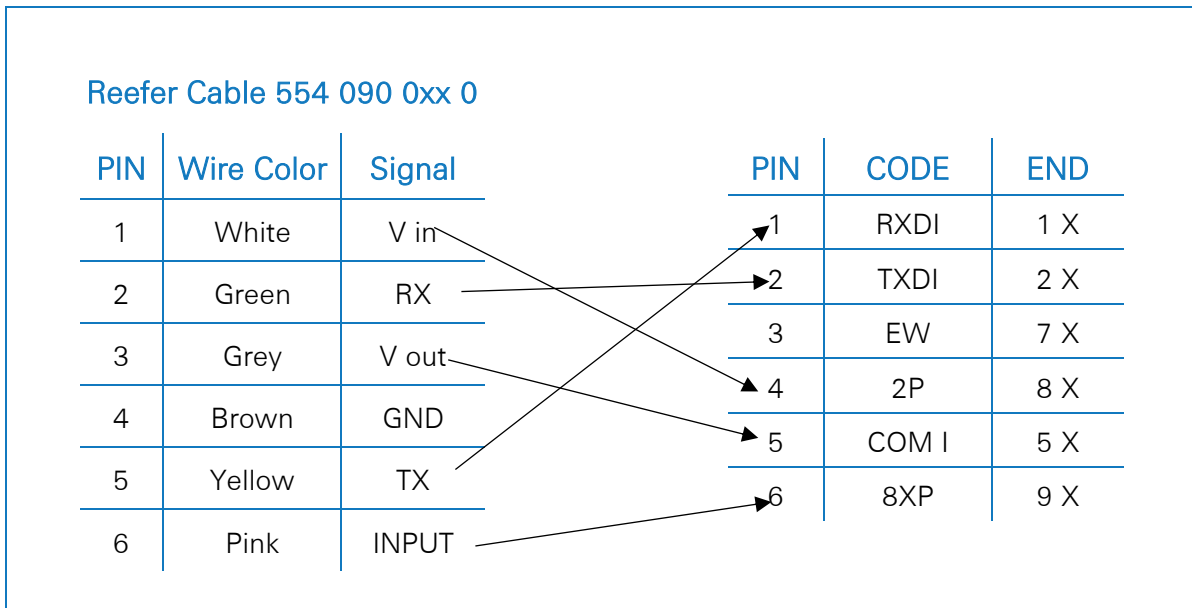


1. Find the 3rd-party REB wiring harness.



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





Setting the Reefer Protocol

Normally, the REB does not require any specific configuration.

However, in case another system is connected to the REB i-Box, the protocol will need to be reconfigured (cf. [“Setting the Reefer Protocol”](#) p.72).

After connecting all hardware to the Unit, you can check the installation using TX-CONFIG (cf. [“Checking the installation with TX-CONFIG”](#) p. 117).

Thermo King BlueBox

IMPORTANT

To allow the configuration to work correctly with the i-Box harness, the BlueBox unit must be set to “i-Box mode”. This can be done remotely by the manufacturer (Thermo King).

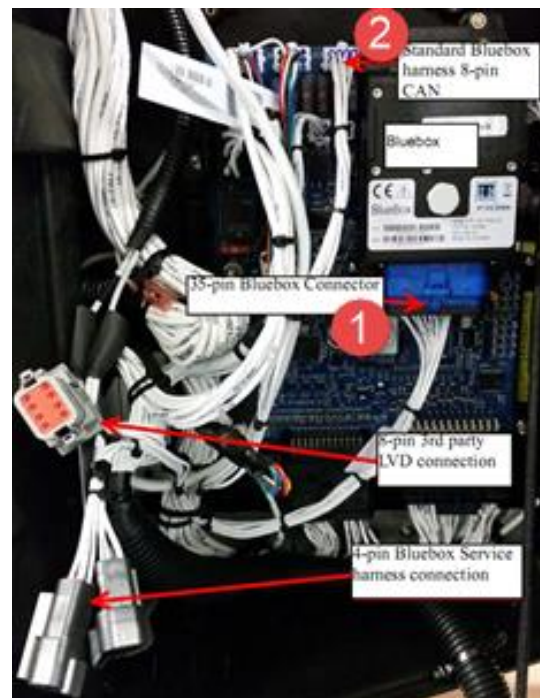
The BlueBox is an interface between telematics systems and Thermo King controllers (SLXi, SLXe and SLXi SR-3).

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



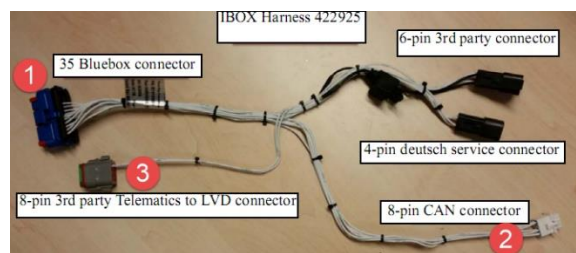
Firstly, unplug the standard BlueBox harness from the BlueBox:

1. Unplug the 35-pin BlueBox connector from the BlueBox unit (cf. no. 1 in the picture).
2. Unplug the 8-pin CAN connector from CAN1 (cf. no. 2 in the picture).
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).

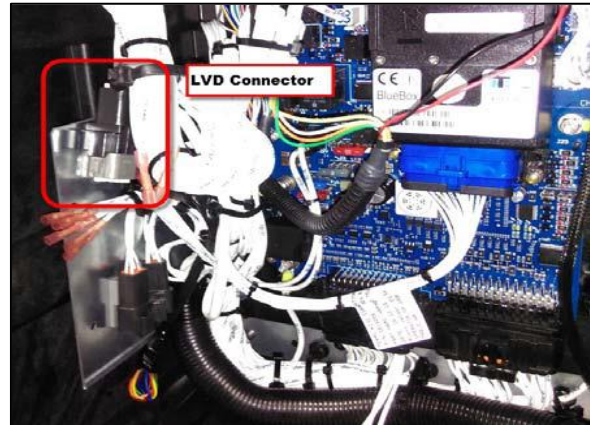
1. Plug in the i-Box harness 35 BlueBox connector (cf. no. 1 in the picture).



2. Plug in the 8-pin CAN connector (cf. no. **2** in the picture above) to the 8-pin CAN1 on the controller.
Make sure that the connector clip is secured.



3. Next, unplug the 8-pin Deutsch plug from the LVD harness of the control box.
4. Now, plug in the 8-pin Deutsch 3rd-party connector (cf. no. **3** in the picture above) into the LVD 8-pin connector.



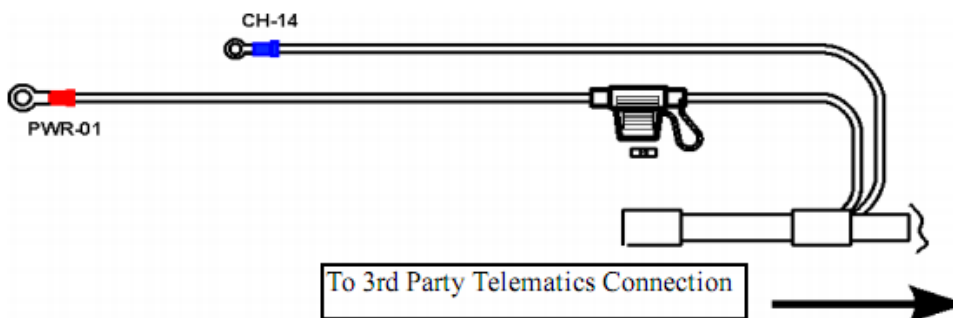
Power and GND Connections

NOTE

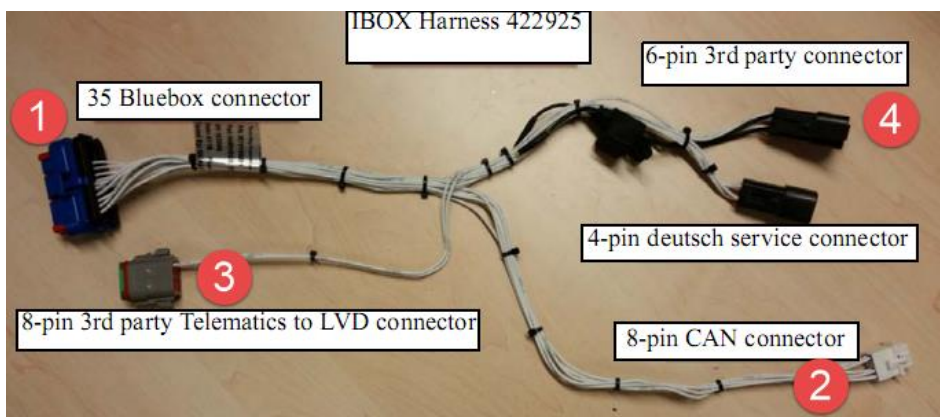
Power and GND connections are only required when no LVD is present.

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.



The connections to 554 090 0xx 0 can be found on the 6-pin 3rd-party connector (cf. no. 4 in the picture).



Reefer Cable 554 090 0xx 0

PIN	Wire Color	Signal	PIN	CODE	END
1	White	V in	1	RXDI	1 X
2	Green	RX	2	TXDI	2 X
3	Grey	V out	3	EW	7 X
4	Brown	GND	4	2P	8 X
5	Yellow	TX	5	COM I	5 X
6	Pink	INPUT	6	8XP	9 X

Checking the Installation

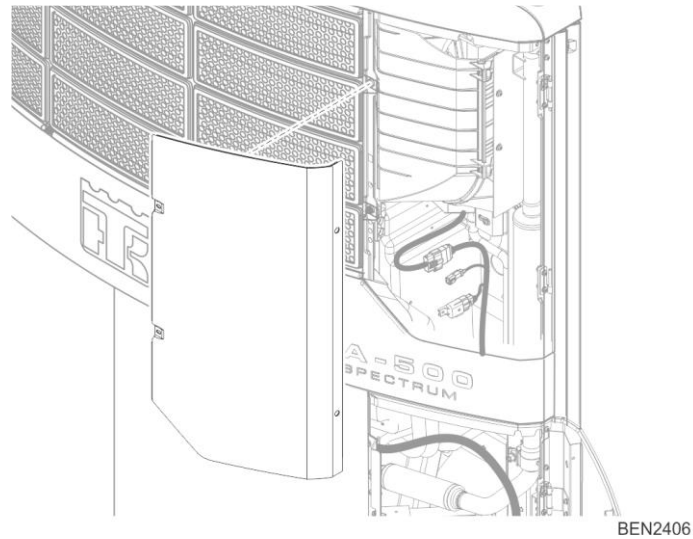
In telematics mode, the i-Box LED will blink in the following patterns, depending on whether it is operating correctly or experiencing a failure, while the BlueBox is not in power saving mode.

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

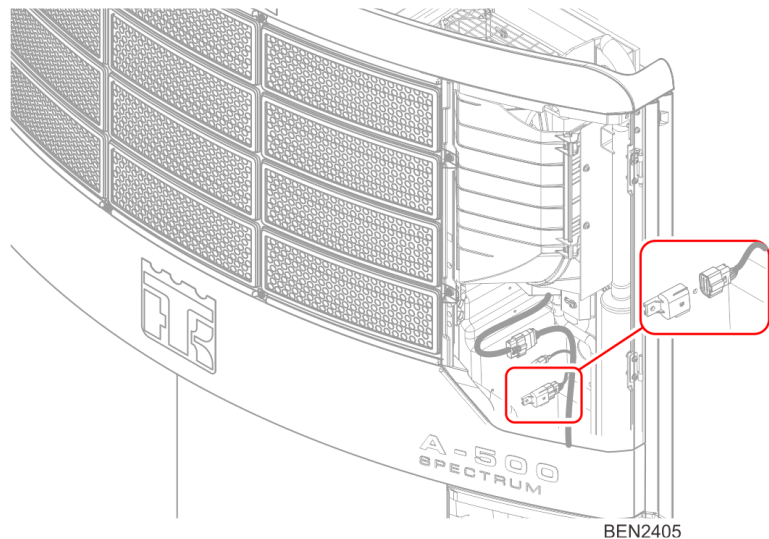
Thermo King BlueBox 2

Hardware Connection

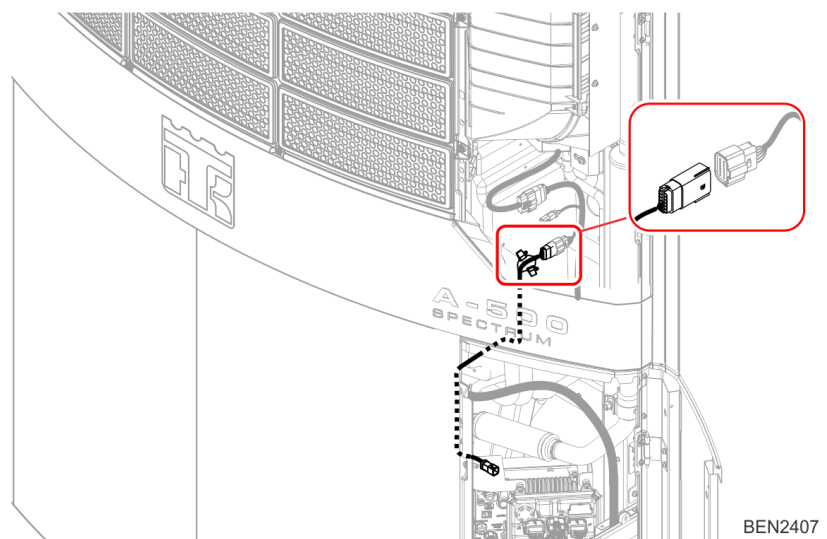
1. Open the doors.
2. Turn the service switch to the OFF position and disconnect the positive battery cable.
3. Remove the top left panel by removing the screws.



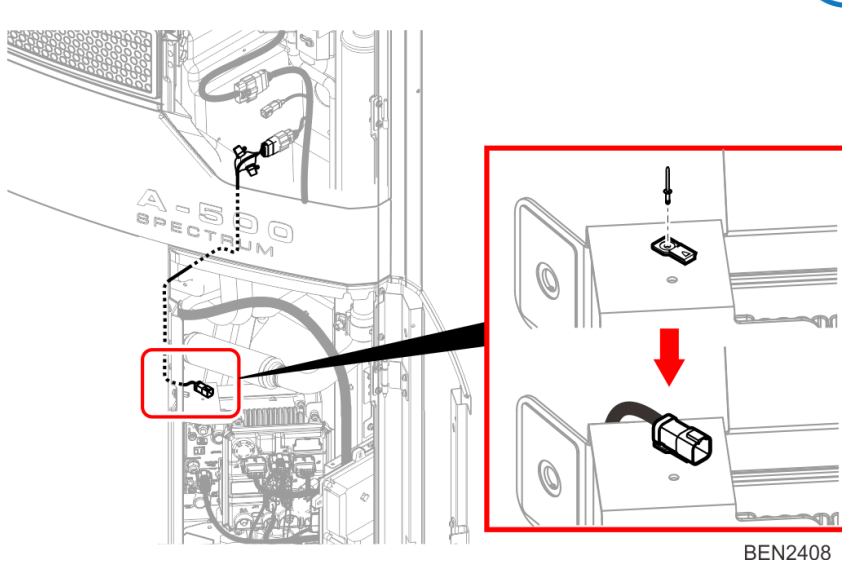
4. Locate the 12-pin connector on the bulkhead as marked below.
5. Disconnect the connector from the fixture.
6. Remove the fixture by removing the grommet using appropriate driller.



7. Connect the 12-pin connector from the i-Box harness (Part Number: 401722).
8. Insert the fir tree on the 12-pin connector to the bulkhead hole to fix the connector.
9. Do the harness routing towards the DC/DC bracket as shown in the figure.



10. Install the connector mounting tab to the DC bracket using pop rivet on to the holes available on the DC/DC bracket as shown in the below location.
11. Mount the 6-pin connector assembly to the tab.



BEN2408

Reefer Cable 554 090 0xx 0

PIN	Wire Color	Signal	PIN	CODE	END
1	White	V in	1	RXDI	1 X
2	Green	RX	2	TXDI	2 X
3	Grey	V out	3	EW	7 X
4	Brown	GND	4	2P	8 X
5	Yellow	TX	5	COM I	5 X
6	Pink	INPUT	6	8XP	9 X

HMI Configuration

1. Navigate to "PRO FEAT" in Guarded Access Menu.
2. Select the 3rd Party Power 10A and set to "Low Voltage Disconnect".



Thermo King TranScan / (TK)DL-PRO

Hardware Connection

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

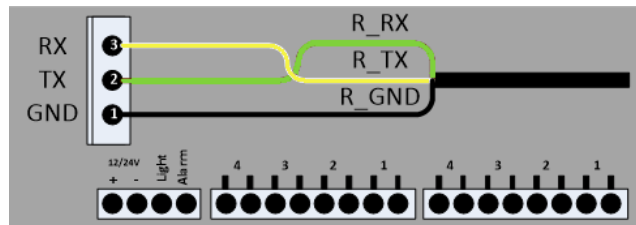


TranScan



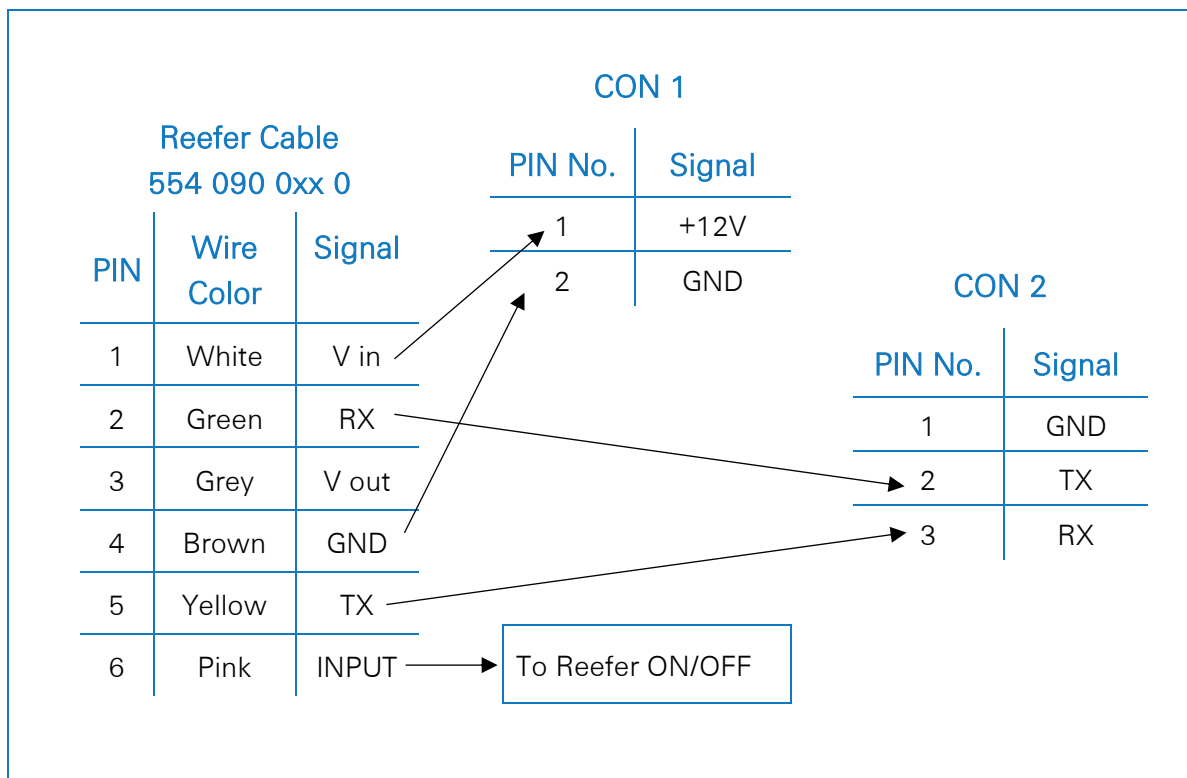
(TK)DL-PRO

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



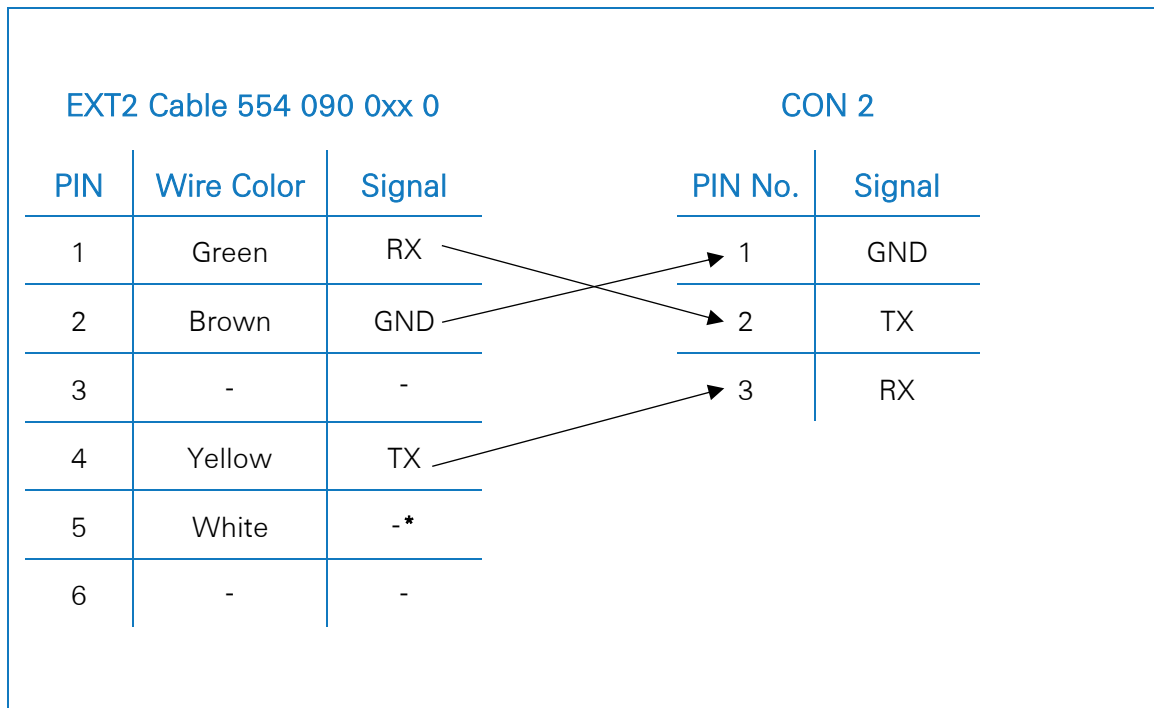
Single Connection - Only Data Logger Connected to 554 090 0xx 0

Connect the open-end wires from the REEFER cable (0942-0388-REEFER) to the data logger.



Double Connection (as Secondary) - Data Logger and Reefer Connected to 554 090 0xx 0

Connect the open-end wires from the EXT2 cable (0942-0388-EXT2) to the data logger.



* Isolate unused wires

Setting the Reefer Protocol

The TranScan temperature recorder does not require any specific configuration. After connecting all hardware to the Unit, you can check the installation using TX-CONFIG (cf. [“Checking the Installation with TX-CONFIG”](#) p. [117](#)).

Thermo King TouchLog


IMPORTANT

As of 2019-2020, TouchLog replaces TouchPrint Datalogger.



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.

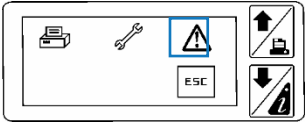
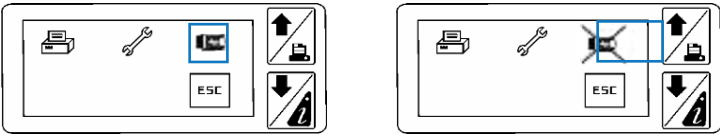
Press  next to the screen to consult the firmware version from the **Quick Info** menu.

In case, "TouchPrint printer" is displayed as printer model, your unit is not compatible with SCALAR EVO Guard.



OR

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

COMPATIBLE	NOT COMPATIBLE	
 <p data-bbox="177 1659 507 1697">Thermo King TouchLog</p>	 <p data-bbox="767 1659 1201 1697">Thermo King TouchLog printer</p>	

Required Firmware Version

For the connection with 554 090 0xx 0, the TouchPrint 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.



Hardware Connection

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

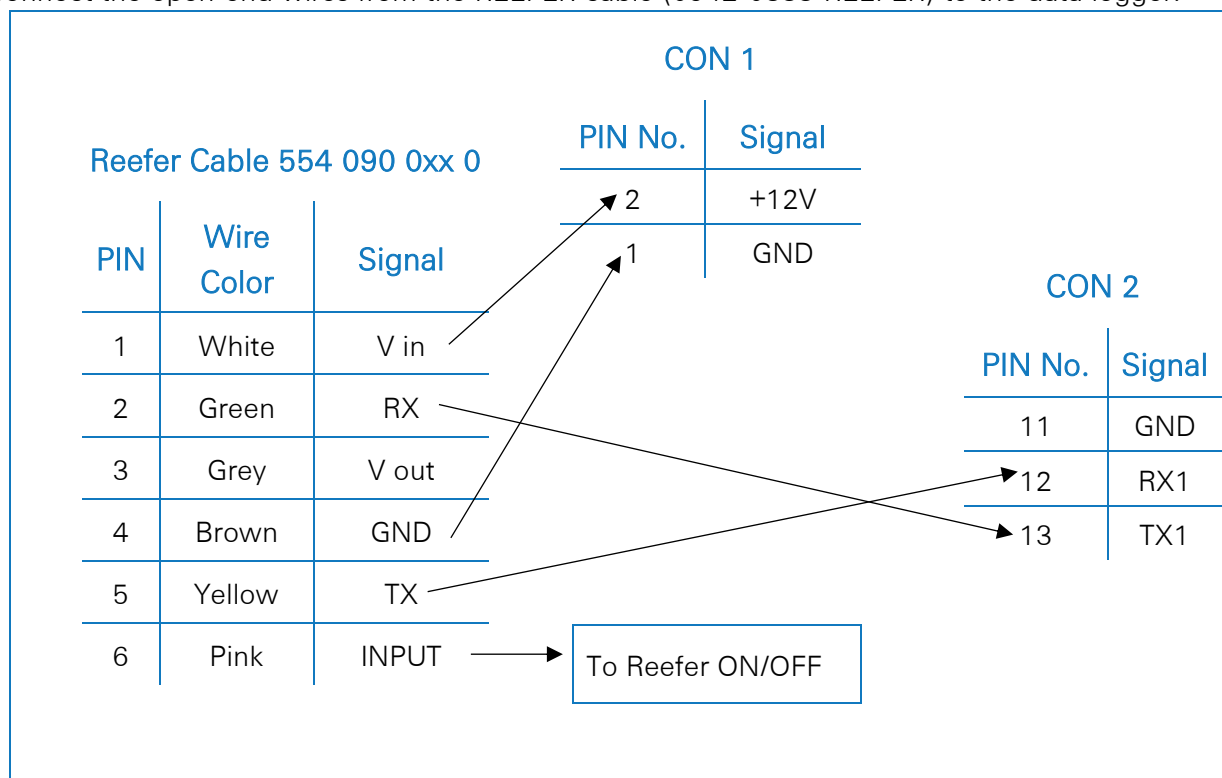


2. Connect the wires of the open-end reefer cable to the correct pins on the temperature recorder.



Single Connection - Only Data Logger Connected to 554 090 0xx 0

Connect the open-end wires from the REEFER cable (0942-0388-REEFER) to the data logger.



Double Connection (as Secondary) - Data Logger and Reefer Connected to 554 090 0xx 0

Connect the open-end wires from the EXT2 cable (0942-0388-EXT2) to the data logger.

EXT2 Cable 554 090 0xx 0			CON 2	
PIN	Wire Color	Signal	PIN No.	Signal
1	Green	RX	11	GND
2	Brown	GND	12	RX1
3	-	-	13	TX1
4	Yellow	TX		
5	White	-*		
6	-	-		

* Isolate unused wires

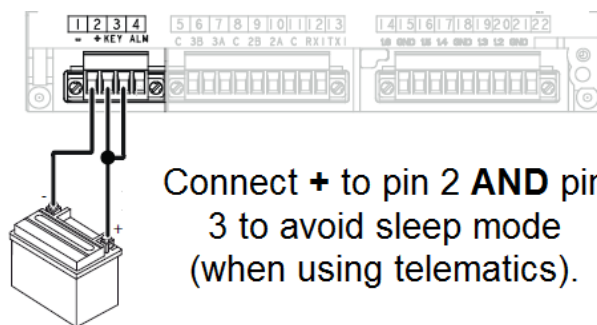
After connecting all hardware to the Unit, you can check the installation using TX-CONFIG (cf. [“Checking the Installation with TX-CONFIG”](#) p.117).

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.



Connect + to pin 2 AND pin 3 to avoid sleep mode (when using telematics).

Configuring the TouchLog Module

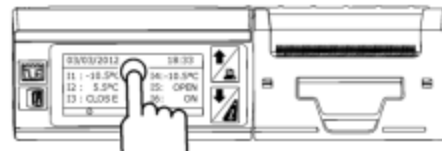
Normally, the TouchLog module should be configured by the Thermo King installer, but in case no information is received from the TouchLog module after connecting it correctly, you should check if it is configured correctly.

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.

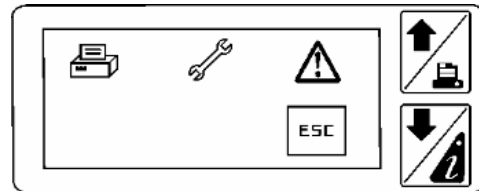


2. Next, tap the button to access the configuration menu.

Look for the button to check the input configuration.

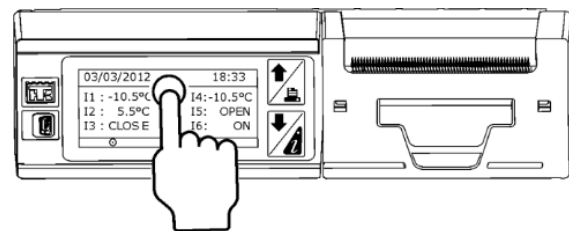
NOTE

The digital inputs are ground steered.

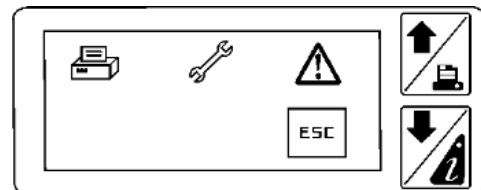


How to Check if the Serial Port on the TouchLog Module is Configured Correctly

1. Tap the screen.

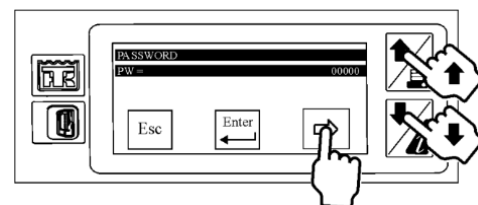


2. Next, tap and hold the button for more than 2 seconds to access the service menu.



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

Next, tap the 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

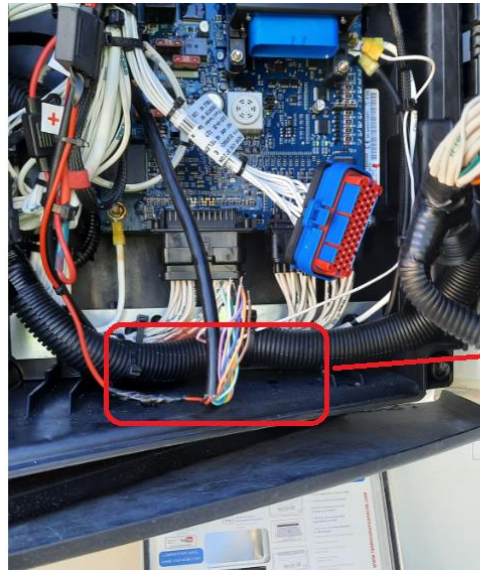
Apache Cold Tracer

Hardware Connection

Open the temperature recorder to access the connector blocks.



Connect the open-end wires from the REEFER cable (0942-0388-REEFER) to the Apache cable.



Apache Cable

Single Connection - Data Logger Connected to 554 090 0xx 0

Reefer Cable 554 090 0xx 0			Apache Cable	
PIN	Wire Color	Signal	Wire Color	Signal
1	White	V in		
2	Green	RX	LIGHT BLUE	RX1
3	Grey	V out		
4	Brown	GND	DARK BLUE	TX1
5	Yellow	TX		
6	Pink	Input	GREY	GND

Carrier DataCOLD 500

IMPORTANT

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

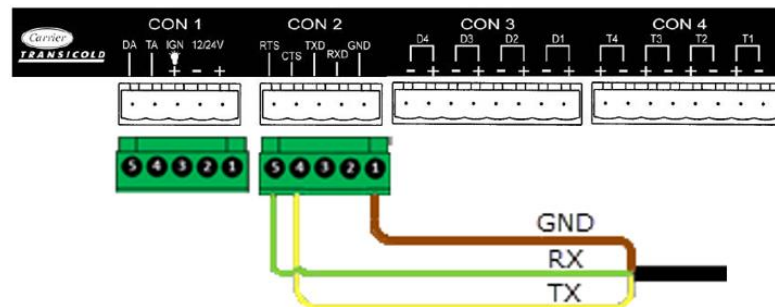
- The firmware version of the DataCOLD 500 recorder must be at least version 2.313.
- The protocol of the COM port (mostly COM2) for the communication between the reefer unit and the DataCOLD 500 recorder must be set to **Vector**.

Hardware Connection

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.



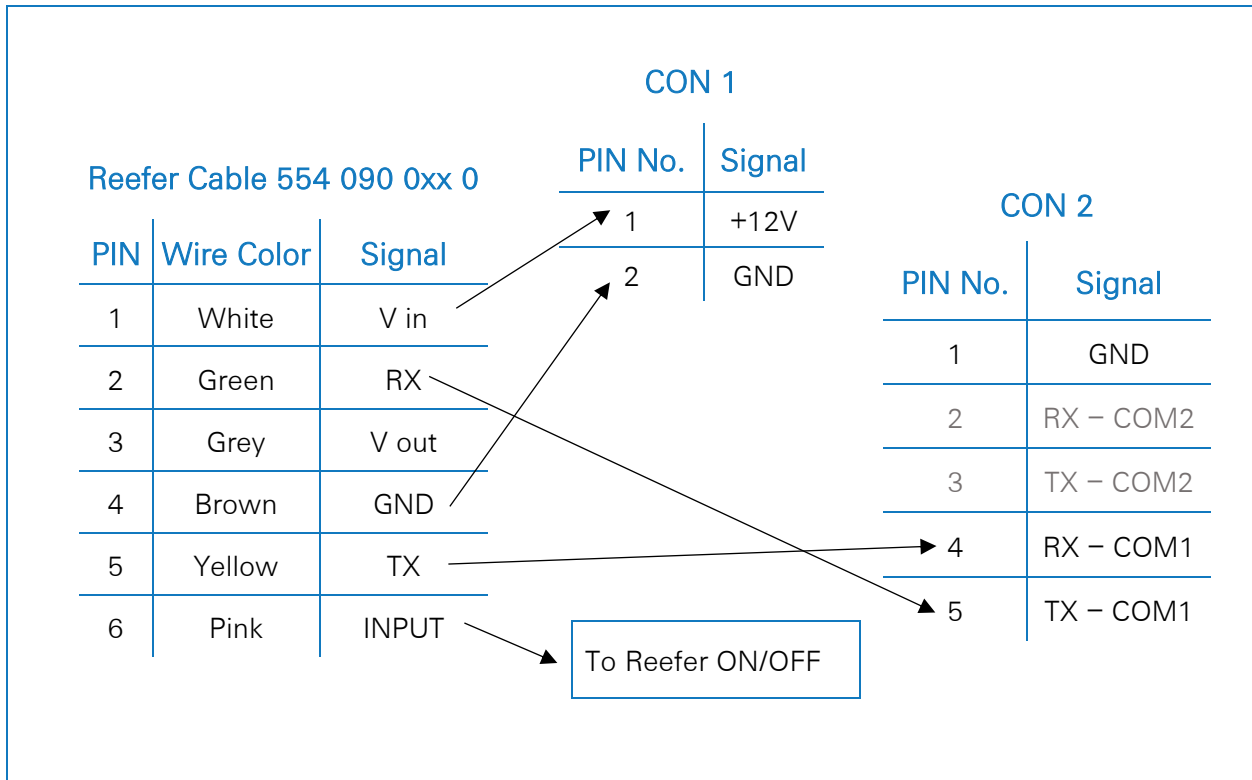
NOTE

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



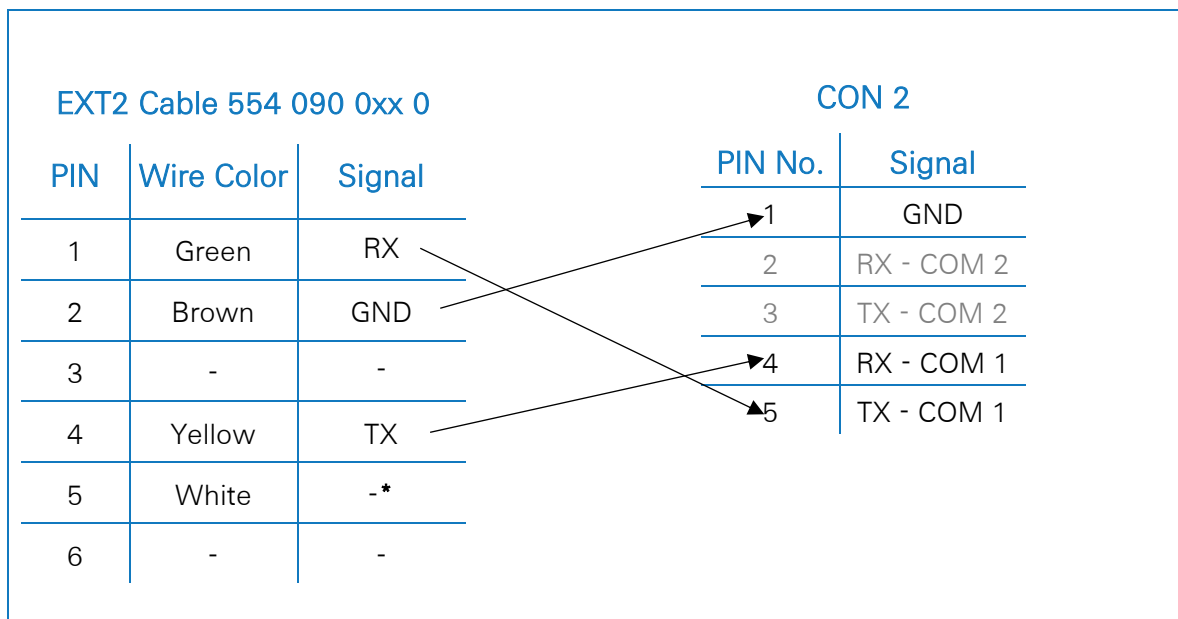
Single Connection - Only Data Logger Connected to 554 090 0xx 0

Connect the open-end wires from the REEFER cable (0942-0388-REEFER) to the data logger.



Double Connection (as Secondary) - Data Logger and Reefer Connected to 554 090 0xx 0

Connect the open-end wires from the EXT2 cable (0942-0388-EXT2) to the data logger.



* Isolate unused wires

Setting the Reefer Protocol

After connecting the hardware, the recorder protocol must be set to **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

After connecting all hardware to the Unit, you can check the installation using TX-CONFIG (cf. "[Checking the installation with TX-CONFIG](#)" p. [117](#)).

Carrier DataCOLD 600 / Euroscan X3

IMPORTANT

To have all correct data from the reefer via DataCOLD 600 / Euroscan X3, the following requirements must be met:

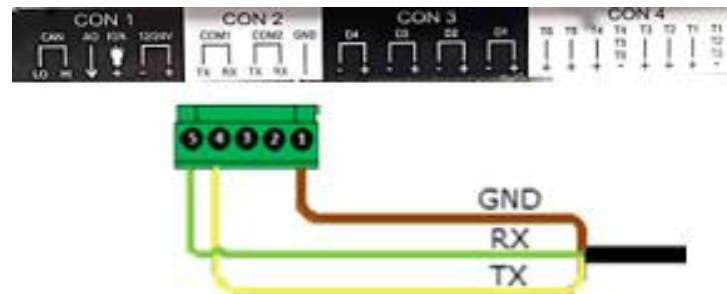
- The firmware version of the DataCOLD 600 / Euroscan X3 recorder must be at least version 3.30.5.
- The protocol of the COM port (mostly COM2) for the communication between the reefer unit and the DataCOLD 600 / Euroscan X3 recorder must be set to Carrier Advance (not "Vector").

Hardware Connection

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.



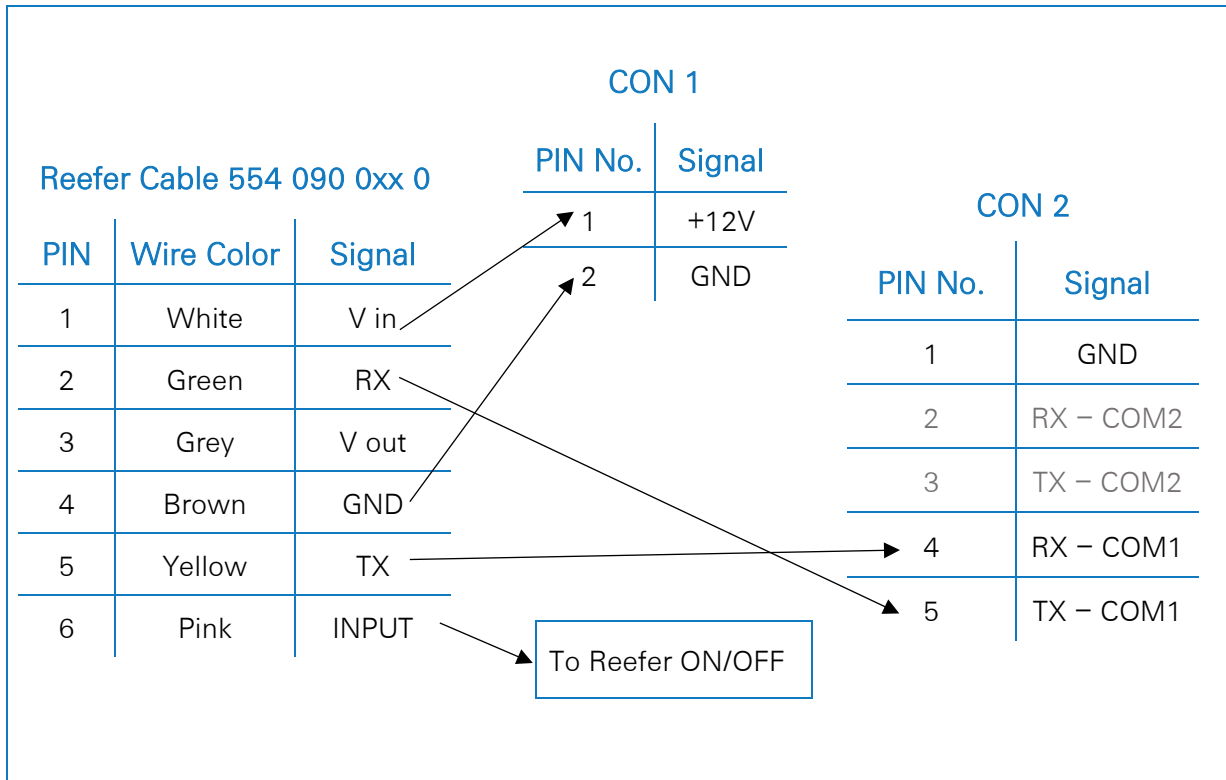
NOTE

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



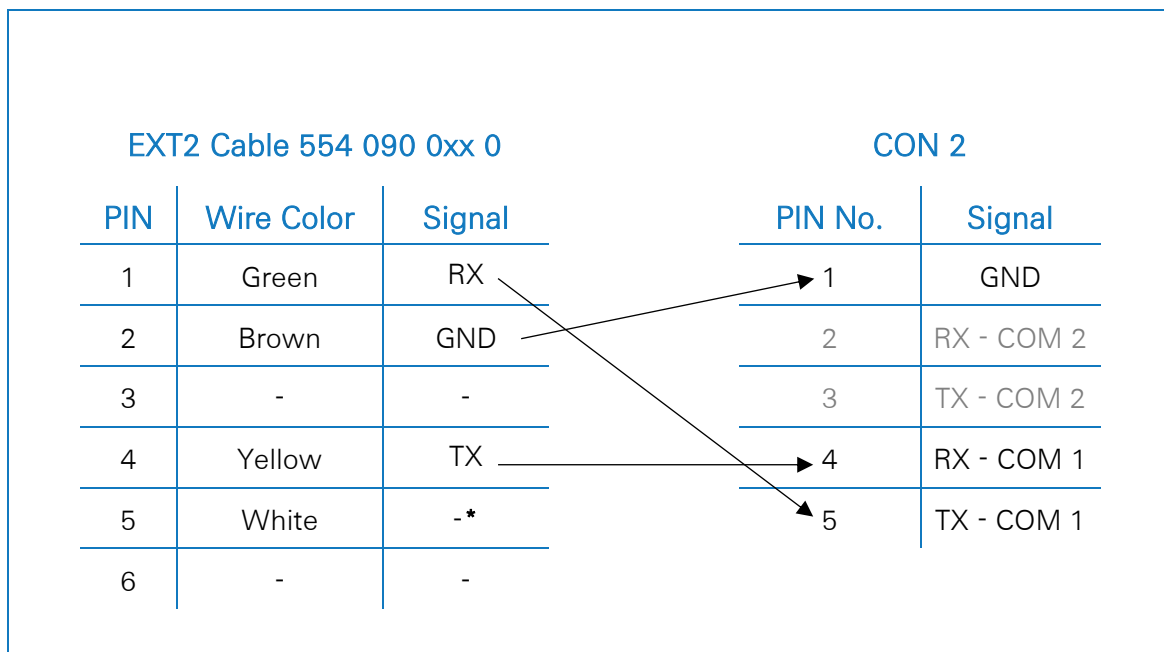
Single Connection - Only Data Logger Connected to 554 090 0xx 0

Connect the open-end wires from the REEFER cable (0942-0388-REEFER) to the data logger.



Double Connection (as Secondary) - Data Logger and Reefer Connected to 554 090 0xx 0

Connect the open-end wires from the EXT2 cable (0942-0388-EXT2) to the data logger.



* Isolate unused wires

Setting the Reefer Protocol

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

Procedure

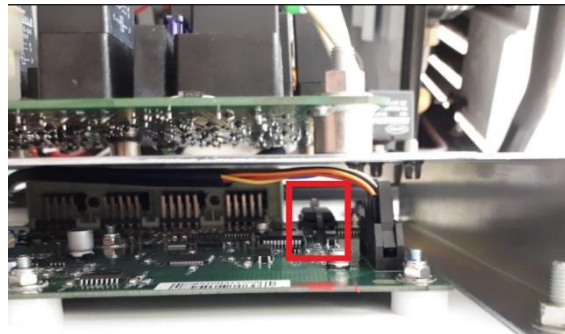
1. Hold the **green** button for 3 seconds. The recorder will ask to **Enter PIN code** (Default PIN code: 1111).
2. Next, press the **blue** button 4 times to open **Menu 5. Temperature entry settings**.
3. Press the **blue** button once to open **Menu 11. Communication settings**.
4. Press the **green** 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.

After connecting all hardware to the Unit, you can check the installation using TX-CONFIG (cf. [“Checking the Installation with TX-CONFIG”](#) p. [117](#)).

Carrier Direct

Important Requirements

- On light Carrier models for vans (Xarios, Pulsor, Neos ...), Carrier Direct 2-way communication is NOT possible.
- Carrier Direct 2-way communication requires an update of the reefer software with a DataTrak license.
- This license can only be ordered at Carrier:
- **Vector HE 19** models require "Datatrak USB" P/N 12-00814-22 (for 10 reefers)".
- **Other Vector models** require "Datatrak USB" P/N 12-00813-22 (for 10 reefers) + "PCMCIA / USB adapter P/N 76-50214-01".
- **For Supra and Maxima models**, a chip needs to be switched on the reefer controller board. This chip can only be ordered at Carrier. Once the chip or license is loaded, one- and two-way communication is enabled on the reefer unit.
- Other Carrier models must be checked / tested.
- ALWAYS contact your local Carrier dealer to activate 2-way communication.



Supra chip

Hardware Connection

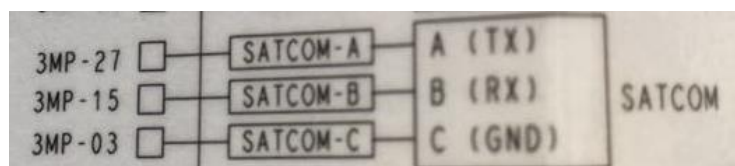
Carrier Direct MUST be connected to the SATCOM port of the reefer via the SATCOM connector (P/N 22-50078-08SK). This part can only be ordered at Carrier.



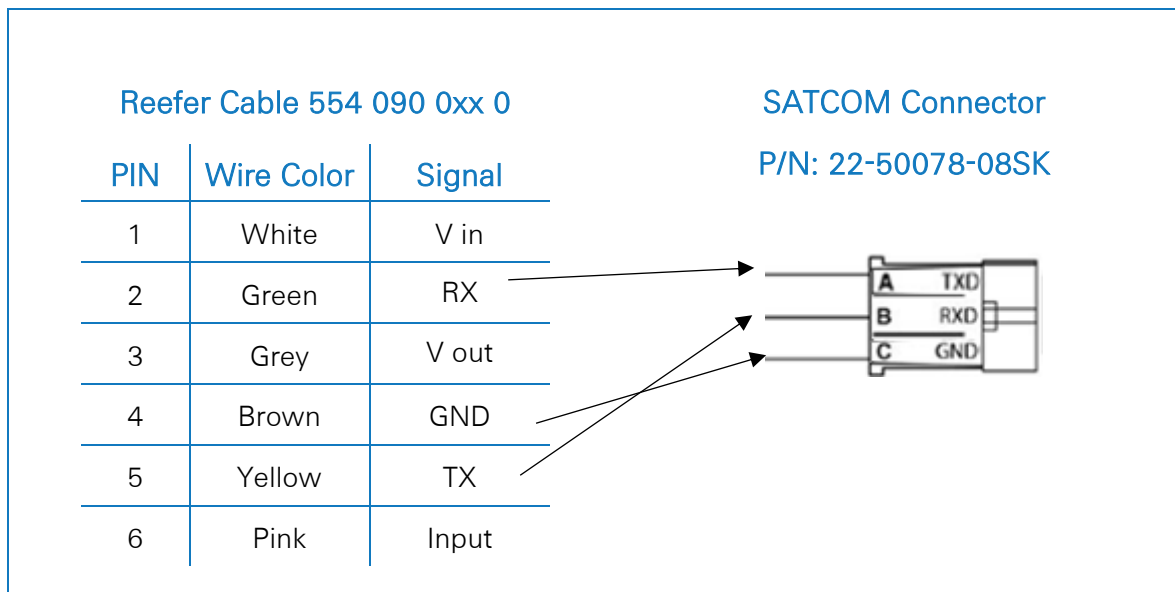
However, Carrier does not allow removing the SATCOM connector. Always order the specific connector (for serial connections) to plug in to this SATCOM connector.



SATCOM connector



Connection scheme



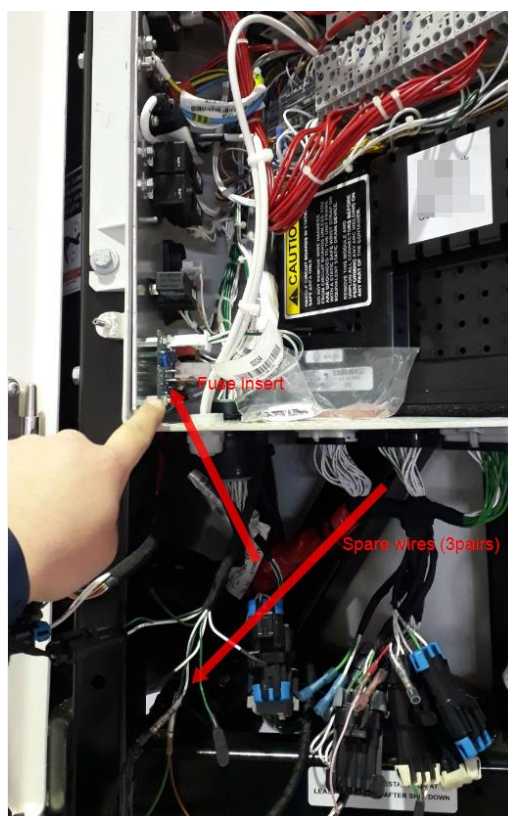
Power Connection

Power can be taken from the spare wires that come out of the main power box.

Three pairs of spare wires can be found (cf. image).

Also make sure that an adequate fuse is added to the printboard in the main power distribution box, as shown on the picture on the right.

Wire numbers: BGC1-3/OP1.



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 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.



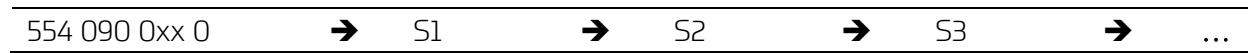
Reefer Cable 554 090 0xx 0

CON 1

PIN	Wire Color	Signal	PIN No.	Signal	RS232 Connector
1	White	V in	2	+12V	Signal
2	Green	RX			GND
3	Grey	V out			TX
4	Brown	GND			RX
5	Yellow	TX			
6	Pink	INPUT			

Connecting the LIN Sensors





The Unit can also be connected to external LIN sensors: temperature sensor and door sensor. Multiple sensors can be connected in series (max. 10 sensors).



HACCP Certification

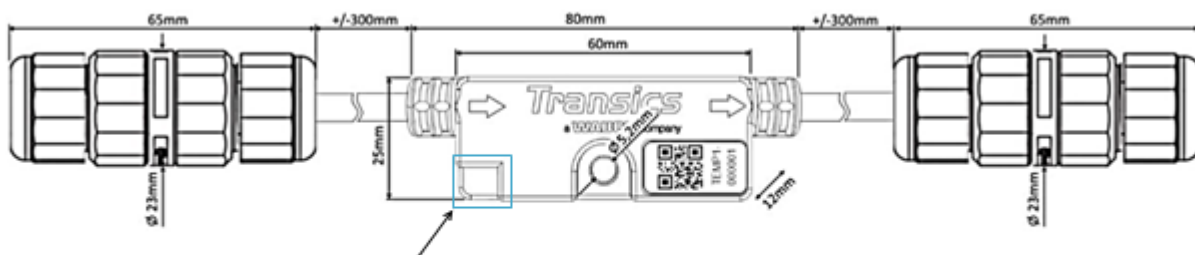
554 090 0xx 0 meets the requirements of the DIN EN12830:1999-10 standard.

Device	554 090 0xx 0
Accuracy Class 1 in °C	-30 to 85
Climatic Environment Type	B

TYPE	CABLE ARTICLE CODE
554 090 0xx 0 Connection Cable (25m) (Outside Trailer)	0942-0388-SENSOR
	Trailer wall hole seal elements 
	Closure cap to make the last sensor connector watertight 
	Cable joiner in case the sensor cable needs to be extended to reach the first sensor 
Temperature Sensor (Inside Trailer)	0942-0388-SEN-TEMP
Specifications Temperature Sensor	
Temperature measurement range	30°C - +85°C
Measurement accuracy	+/- 1°C
Operating temperature	-30°C - +85°C
IP rating	IPx6K and IPx9k

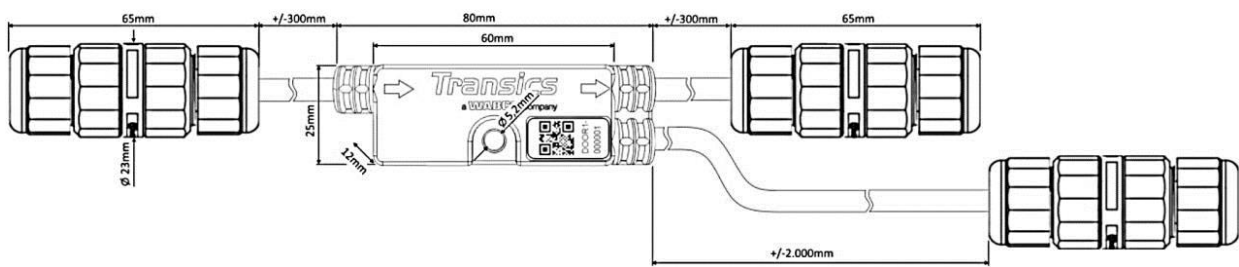
TYPE

CABLE ARTICLE CODE



The lower left corner of the LIN sensor contains the actual sensor probe. Keep this area free from obstructions for accurate temperature readings.

Door Sensor (Inside Trailer)	0942-0388-SEN-DOOR
Specifications Door Sensor	
Operating temperature	-30°C - +85°C
IP rating	IPx6K and IPx9k



Extension Cable (15m) (Inside Trailer)	0942-0388-TRAILER
--	-------------------



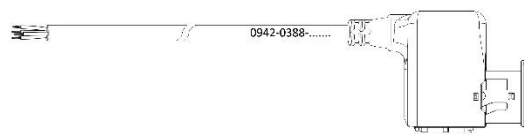
0942-0388-.....

Connecting 554 090 0xx 0 to External Sensors

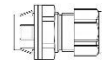
The 554 090 0xx 0 integration with an external door / temperature sensor requires a specific sensor connection cable. The sensor connection cable is connected to a temperature / door sensor. Multiple sensors can be connected in series. The wires of the open-end cable must be connected to the correct pins on the temperature / door sensors.

Required Cable – SENSOR Cable

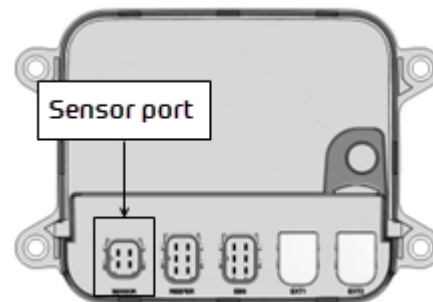
Cable Article Code	0942-0388-SENSOR
Length	25m



Seal elements for connections through trailer walls



The sensor cable is connected to the sensor port on the Unit (cf. [“Connections to the Unit”](#) p.14).



Sensor Cable through Outside Trailer Wall

1. Drill a 16mm-diameter hole in the front of the trailer through the outside wall, the insulation and the inside wall. Try not to drill through the holding frame of the refrigeration system.



2. Click the cable gland in the hole as shown in the picture.



3. Fasten the gland by rotating the pressure nut counterclockwise.

NOTE

The cable glands should be tightened with a maximum of 2.5 Nm. If no (open-end) torque wrench is available, the glands should be fastened hand tight.



4. Now, push the cables through the cable glands.

TIP

Tape the wires together to insert the cables more easily.

5. After inserting the cables, tighten the cap nut by rotating it clockwise.

NOTE

The cable glands should be tightened with a maximum of 2.5 Nm. If no (open-end) torque wrench is available, the glands should be fastened hand tight.



Inside the Trailer

1. Make a small hole in the center of the grommet (delivered with the temperature package).



2. Slide the grommet over the cable and carefully insert the grommet into the hole on the inside of the trailer wall.

PLEASE NOTE

The cable must be protected by a flexible cable sheath. Make sure that neither the elements installed, nor the cables can hamper the normal functioning of the trailer.



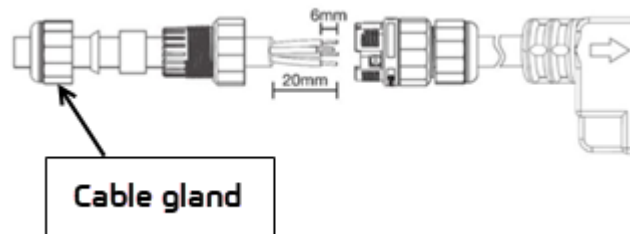
Connecting the First Lin Sensor

IMPORTANT

The sensors need to be installed in a specific direction. The direction of the sensor is indicated by the arrows on the sensor housing.



1. Cut the 0942-0388-SENSOR cable to the correct length and connect the open end to the first sensor.
2. Remove the cable gland from the LIN sensor and slide it over the 0942-0388-SENSOR cable.
3. Connect the 4 wires and screw the cable gland back on the sensor connector.



NOTE

The cable glands should be tightened with a maximum of 2.5 Nm.
If no (open-end) torque wrench is available, the glands should be fastened hand tight.

NOTE

- WHEN REPLACING SENSORS - ZF Transics recommends using the cable glands from the new sensors.
- Cable glands of old / replaced sensors are not recommended for reuse.
- It is also recommended to shorten and strip connection wires again if they have already been connected.

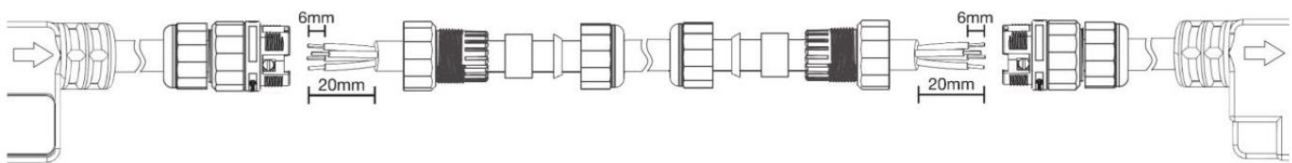
Connecting Sensor to Sensor

1. Use the 0942-0388-TRAILER extension cable to interconnect the different sensors. Cut off the necessary lengths of the cable to connect the sensors.



2. Unscrew the cable glands from both sensors and connect all wires. Always connect the wires in the same way:

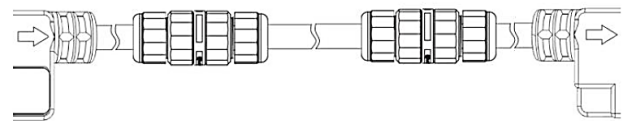
Wire color	Pin no.	Signal
White	1	LIN
Yellow	2	VILS
Green	3	VIHS
Brown	4	GND



Screw the cable glands back onto the sensor connector.

NOTE

The cable glands should be tightened with a maximum of 2.5 Nm. If no (open-end) torque wrench is available, the glands should be fastened hand tight.



Repeat the process until all sensors have been connected. Up to 10 sensors can be connected.

IMPORTANT

The sensors need to be installed in a specific direction. The direction of the sensor is indicated by the arrows on the sensor housing.

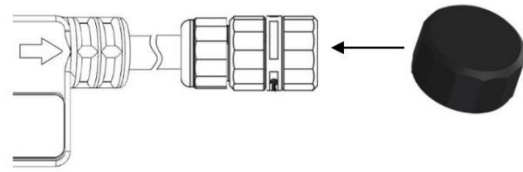


554 090 0xx 0 → S1 → S2 → S3 → ..

Use the closure cap (delivered with the 0942-0388-SENSOR cable) to make sure that the last sensor connector in row is watertight.

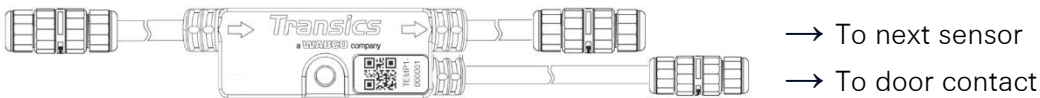
NOTE

The closer cap should be tightened with a maximum of 2.5 Nm. If no (open-end) torque wrench is available, the glands should be fastened hand tight.



Door Sensor

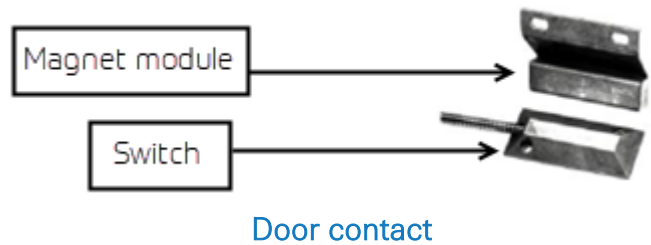
The Unit also allows the connection of a LIN door sensor (0942-0388-SEN-DOOR). The 0942-0388-SEN-DOOR sensor is connected to a magnetic door contact (0942-0385-TRDC-03) which detects the door status (open / closed):



Article code: 0942-0388-SEN-DOOR

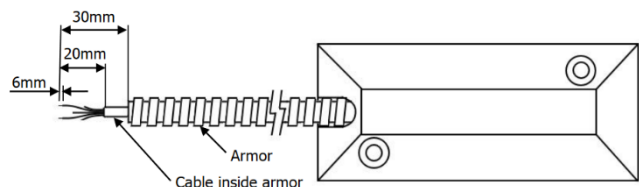
The door contact itself consists of:

- A switch with a 60 cm steel armored cable
- A magnet module mounted on the trailer door
- 4 screws and 2 plugs



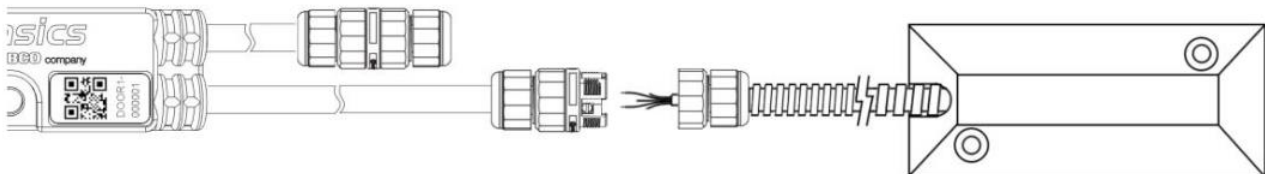
Article code: 0942-0385-TRDC-03

- Straighten and stretch the armored part of the switch cable and cut the inner cable to a length of 30 mm measured from the outer cable armor.
- Next, strip the inner cable 20 mm.
- Only the GREEN and WHITE wires need to be connected. Cut off the other wires (red, brown and black). Make sure that you cut them to different lengths and/or isolate them to avoid short-circuiting.
- Finally, strip the GREEN and WHITE wire 6 mm.



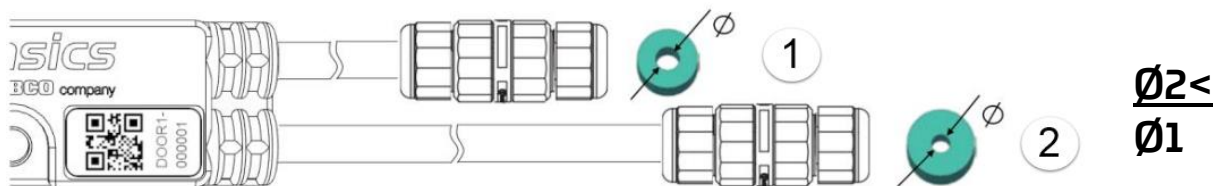
- Remove the cable gland from the LIN door sensor.
- Slide the cable gland over the INNER switch cable (NOT over the cable armor) and connect all wires of the door sensor. Always connect the wires in the same way:

Wire Color	PIN No.	Signal
Green	2	Door contact
White	3	Door contact



IMPORTANT

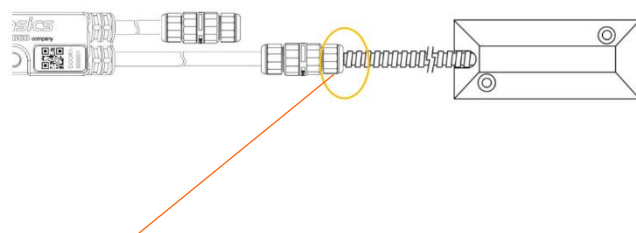
- Make sure that the cable gland is only placed over the INNER switch cable, NOT over the armor itself.
- Do NOT mix the different cable glands from the LIN door sensor. The cable gland to connect the next sensor (cf. no. 1 below) has a larger diameter than the cable gland to connect the door sensor (cf. no. 2 below).



Screw the cable gland back onto the sensor connector.

NOTE

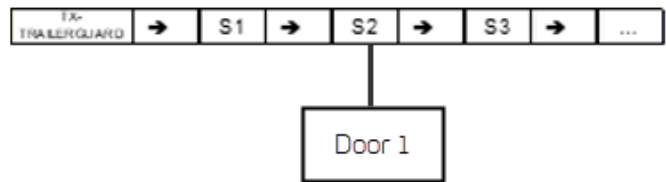
The cable glands should be tightened with a maximum of 2.5 Nm. If no (open-end) torque wrench is available, the glands should be fastened hand tight.



IMPORTANT

If all above steps have been followed correctly, the inner cable sleeve should no longer be visible after connecting the sensor. The cable armor should come against the LIN sensor connector.

Door sensors can be connected at any location within the sensor series.



Fixing the LIN Sensors

The sensors and connectors must also be connected at the points indicated below (cf. 2-7 in the picture below) within the indicated distance. The cable may not be bent within these indicated distances.

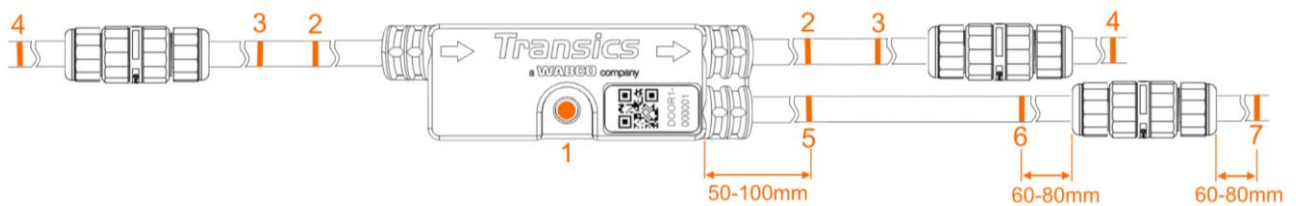
- Temperature sensor

Fix the sensors using an M5 bolt / screw in the sensor's central attachment point (cf. 1 in the picture below).



- Door sensor

Fix the sensors using an M5 bolt / screw in the sensor's central attachment point (cf. 1 in the picture below).



Mounting the Door Contact

Switch

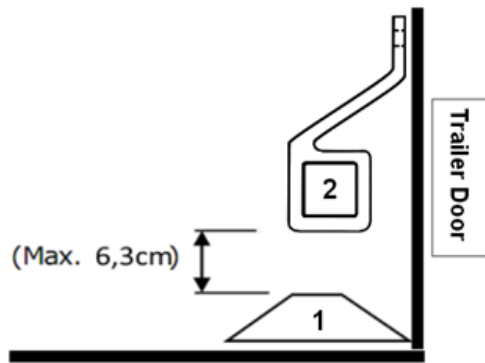
Mount the switch (cf. no. 1 in the picture) on the load bed / trailer ceiling and connect the GREEN and WHITE wires to the sensor connection cable using the armored cable.

Door Magnet

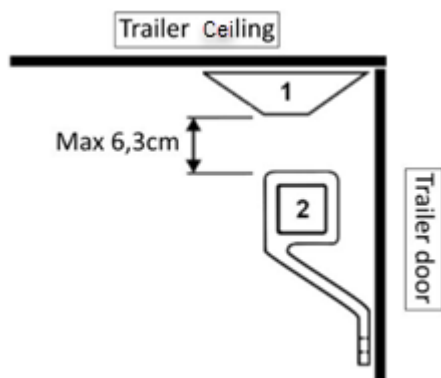
The door magnet (cf. no. 2 in the picture) is mounted on the trailer door using the supplied fastening material.

Place the door magnet as close as possible to the switch (in case of a closed door). The door contacts are able to bridge a maximum gap of 6.3 cm.

Floor Mounting



Ceiling Mounting



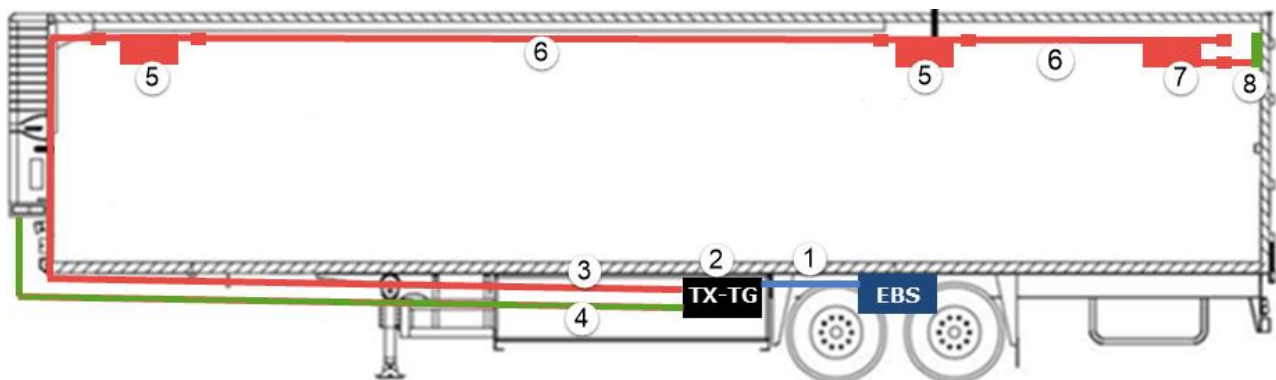
Recommended Installation Temperature Sensors

Please ensure that you only use cables supplied by ZF Transics.

The temperature sensor is usually positioned parallel to the refrigeration unit control sensor in the return air flow (cf. no. 5 below).

Sensors can be fastened using M5 bolts / screws.

Example of a Two Temperature Installation with Door Contact

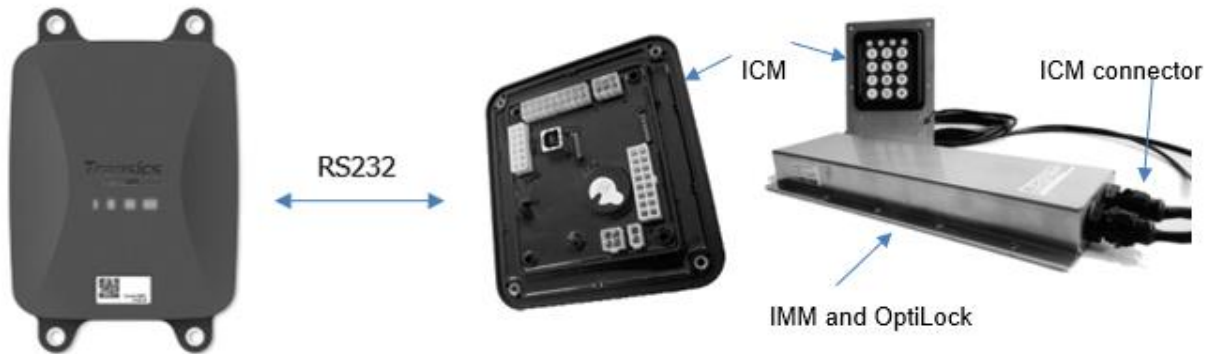


Label Number	Explanation
1	EBS cable from 554 090 0xx 0 to TEBS unit: article code: 0942-0388-EBS-... (depending on TEBS type)
2	Unit: article code: 554 090 0xx 0
3	Connection cable (25 m) from 554 090 0xx 0 to temperature sensor: article code: 0942-0388-SENSOR
4	Reefer Cable (25 m) from 554 090 0xx 0 to temperature recorder: article code: 0942-0388-REEFER
5	<p>2 x LIN temperature sensors: article code: 0942-0388-SEN-TEMP</p> <ul style="list-style-type: none"> • <u>Sensor 1</u> Parallel to the refrigeration unit control sensor in the return air flow • <u>Sensor 2</u> Approximately 10 m inside the trailer or at 2/3 of the compartment
6	Extension cable (15 m) between sensors: article code: 0942-0388-TRAILER
7	LIN door sensor: article code: 0942-0388-SEN-DOOR
8	Door contact (mounted on trailer ceiling): article code: 0942-0385-TRDC-03

Connecting the OptiLock Door Lock System

Connection via EXT2 Port (RS232) - Default

The Unit can also be connected to a door lock system.



Required Cables

Type	Cable Article Code	Length
554 090 0xx 0 open-end connection cable	0942-0388-EXT2	25m

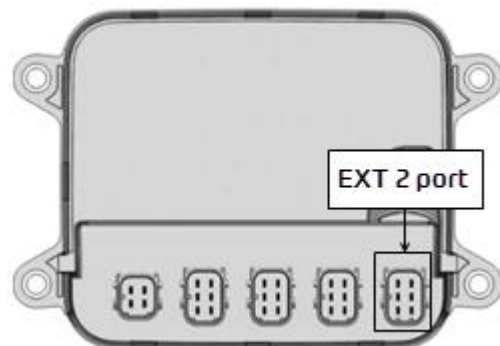
Connection to 554 090 0xx 0

The connector on the open-end connection cable is connected to the EXT2 port of the Unit (cf. [“Connections to the Unit”](#) p.14).

Always make sure that all connectors are correctly plugged in to ensure a waterproof connection.



The connection cable uses a 6-pin connector.




Connection to Door Lock System

The integration of 554 090 0xx 0 with the door lock system requires a specific open-end connection cable.



Required Cables

Type	Cable Article Code	Length	
554 090 0xx 0 open-end connection cable	0942-0388-EXT2	25m	

Hardware Connection

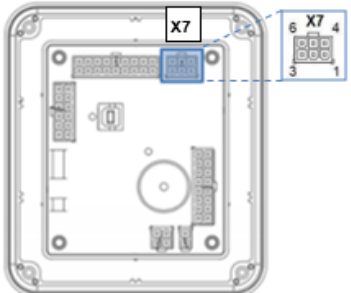
The wires of the open-end cable must be connected to the correct pins on the ICM X7 connector.

NOTE

The X7 connector is delivered with the ICM / OptiLock system. In case the connector is not available on the OptiLock ICM, contact your trailer builder as it was delivered with the ICM. The X7 connector can also be obtained via WABCO by ordering a Repair kit control unit (ICM) (order number = 183 530 000 2).

See: <https://www.wabco-customercentre.com/catalog/en/1835300002?cclcl=en>.

EXT2 Cable 554 090 0xx 0			ICM X7 Connector		
PIN	Wire Color	Signal		Signal	PIN
1	Green	RX	>	To TX	4
2	Brown	GND	>	To GND	6
3	-	-			
4	Yellow	TX	>	To RX	5
5	White	- *			
6	-	-			



* Isolate unused wires

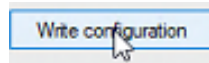
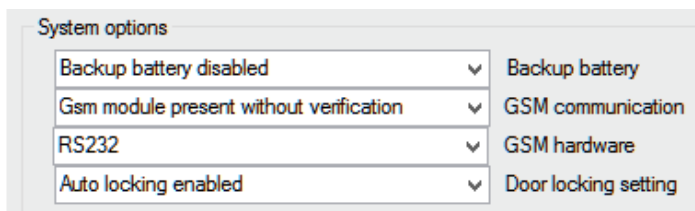
Installation of Door Lock System

For the installation and connection of the OptiLock and the ICM control unit, we refer to the “OptiLock installation instructions”.

Parameter Adaptation

After connecting the hardware, the communication to the door lock system must also be activated using the ICM control software.

In the “System options” of the ICM control software, set the **GSM communication** option to “GSM module present without verification” and the **GSM hardware** option to “RS232” (cf. the image below).



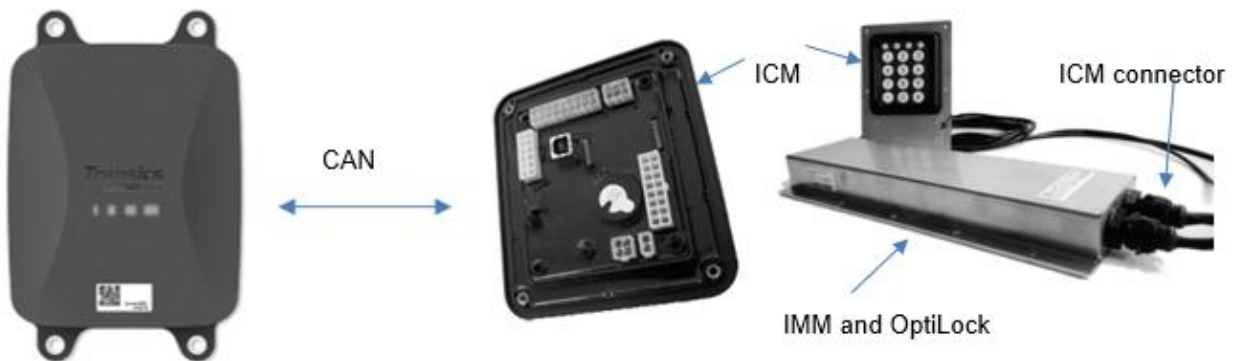
Confirm the modification by pressing **Write configuration**. Consult the “OptiLock installation instructions” for further information.

After connecting all hardware to the Unit, you can check the installation using TX-CONFIG (cf. “[Checking the installation with TX-CONFIG](#)” p. 117).

Connection via EXT1 PORT (CAN)

For the connection via CAN, the ICM firmware must be at least version 21.133.513, which can be verified in the “Product information” tab of the OptiLock software.

Programming	System	ELBs	Status	Product information	Accesscode	History
Informatie						
Software Number		21.133.513				
Hardware Number		22.271.725				
Serialnumber ICM		244610004				



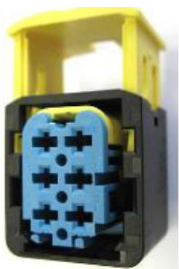
Required Cables

Type	Cable Article Code	Length
554 090 0xx 0 open-end connection cable	0942-0388-EXT1	25m

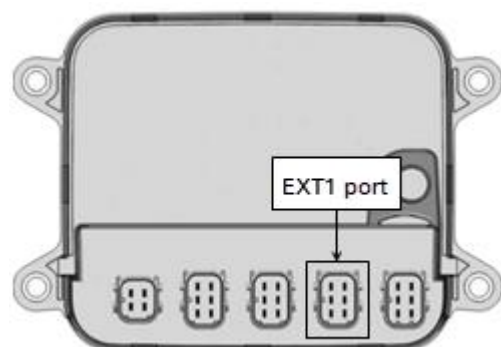
Connection to 554 090 0xx 0

The connector on the open-end connection cable is connected to the EXT1 port of the Unit (cf. [“Connections to the Unit” p.14](#)).

Always make sure that all connectors are correctly plugged in to ensure a waterproof connection.



The connection cable uses a 6-pin connector.

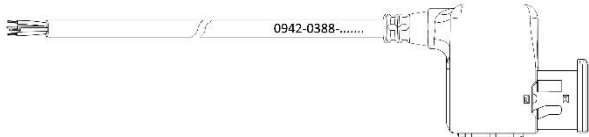


Connection to Door Lock System

The integration of 554 090 0xx 0 with the door lock system requires a specific open-end cable.



Required Cables

Type	Cable Article Code	Length	
554 090 0xx 0 open-end connection cable	0942-0388-EXT1	25m	

Hardware Connection

The wires of the open-end cable must be connected to the correct pins on the ICM X7 connector.

NOTE

The X7 connector is delivered with the ICM / OptiLock system. In case the connector is not available on the OptiLock ICM, contact your trailer builder as it was delivered with the ICM. The X7 connector can also be obtained via WABCO by ordering a Repair kit control unit (ICM) (order number = 183 530 000 2).

See: <https://www.wabco-customercentre.com/catalog/en/1835300002?cclcl=en>

EXT1 Cable 554 090 0xx 0			ICM X7 Connector	
PIN	Wire Color	Signal	Signal	PIN
1	Green	CAN-H	> To CAN-H	1
2	Brown	GND	> To GND	3
3	-	-		
4	Yellow	CAN-L	> To CAN-L	2
5	White	<i>Output*</i>		
6	-	-		

* Isolate unused wires

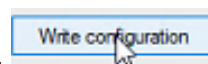
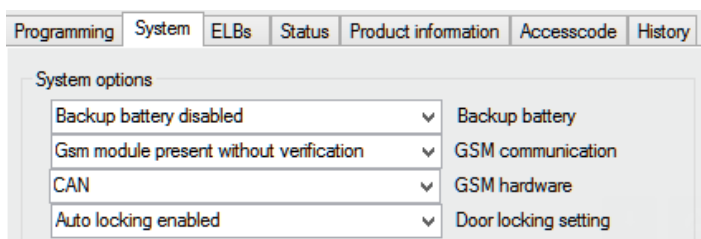
Installation of Door Lock System

For the installation and connection of the OptiLock and the ICM control unit, we refer to the “OptiLock Installation Instructions”.

Parameter Adaptation

After connecting the hardware, the communication to the door lock system must also be activated using the ICM control software.

In the “System options” of the ICM control software, set the GSM communication option to “GSM module present without verification” and the GSM hardware option to “CAN” (cf. the image below).



Confirm the modification by pressing Write configuration:

Consult the “OptiLock Installation Instructions” for further information.

After connecting all hardware to the Unit, you can check the installation using TX-CONFIG (cf. “[Checking the installation with TX-CONFIG](#)” p. 117).

Step 3 – Checking the Installation

LED Indicators

Via various blinking combinations of the LEDs at the front of the unit, 554 090 0xx 0 will indicate its current status:

- LED 1 Active / not active
- LED 2 Power: external / battery
- LED 3 Communication / GPS
- LED 4 EBS / reefer

LED	Function	Color	Blinking Frequency		Description
LED 1	Active mode	GREEN			Continuously lit until external power is removed
	Not active mode	RED			Continuously lit until device goes into low power battery mode
LED 2	External power	RED	1x	Battery	
			2x	External power via TEBS connector present	
			3x	External power via reefer connector present	
			4x	External power via TEBS and reefer connector present	
	Battery state	GREEN	1x	Battery defect	
			2x	Low battery level	
			3x	Medium battery level	
			4x	High battery level	
LED 3	Communication	RED	1x	GPRS and server connection established	
			2x	GPRS connection established, but no connection with server	
			3x	GSM network connection established	
			4x	No GSM network available (that is, SIM not activated)	



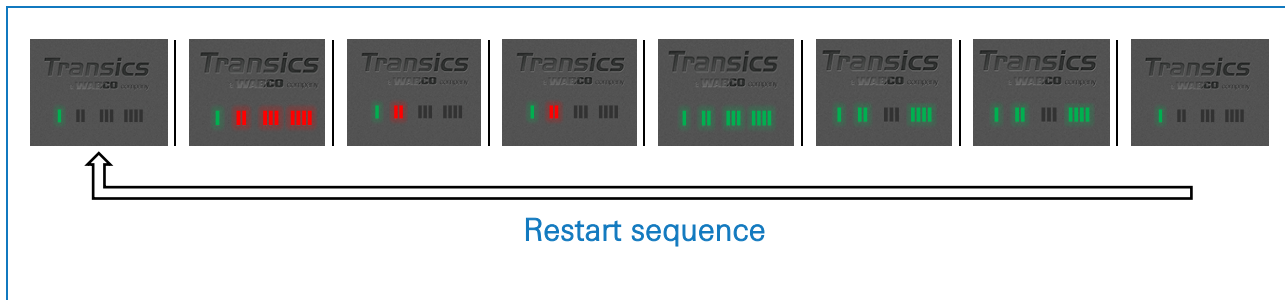
LED	Function	Color	Blinking Frequency	Description
			5x	No SIM card detected
	GPS	GREEN	1x	Valid GPS signal received
			2x	Invalid GPS signal received
			3x	No GPS signal received
LED 4	EBS connection	RED	1x	No TEBS configured
			2x	No TEBS detected
			3x	WABCO TEBS detected
			4x	Knorr or Haldex TEBS detected
	Reefer connection	GREEN	1x	No reefer configured
			2x	No reefer detected
			3x	TK iBox detected
			4x	Euroscan / Datacold TMS detected
			5x	Transcan TKDL detected
			6x	Touchprint detected
			7x	Datacold 600 detected
			8x	TRS detected
			9x	Apache detected
			10x	Hultsteins detected
LED 2, 3 and 4		ORANGE	Continuously blinking	As from app version 2.26, LEDs 2, 3 and 4 will start blinking with an ORANGE color in case the Unit is <u>not connected to an external power source</u> . To prevent draining the internal battery, the Unit will not send data to the back office, unless an external power source is connected (from TEBS or reefer).

Interpreting the LED Indications

The device will continuously repeat a specific LED sequence. The best way to interpret the LED indications is to look at each LED separately and count the series per LED.

Example Installation

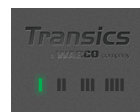
The Unit is connected to a Thermo King i-Box and powered by the reefer unit (Medium battery).
LED sequence of the example installation:



Interpreting the Example Sequence

LED 1 (Active / Not Active Mode)

LED 1: continuously **GREEN**
Active mode

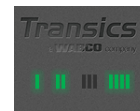


LED 2 (Power)

LED 2: blinks **RED** 3x
Externally powered via reefer connector



LED 2: blinks **GREEN** 3x
Medium battery level



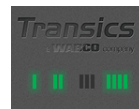
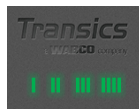
LED 3 (Communication / GPS)

Now, we look at the same sequence as above for a second time, only taking into account LED 3.

LED 3: blinks **RED** 1x
GPRS and server connection established



LED 3: blinks **GREEN** 1x
Valid GPS signal received



LED 4 (EBS / Reefer Connection)

Now, we look at the same sequence as above for a third time, only taking into account LED 4.

LED 4: blinks **RED** 1x
No TEBS configured



LED 4: blinks **GREEN** 3x
Connected to Thermo King i-Box



Checking the Installation with TX-CONFIG

Installing TX-CONFIG


The 554 090 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  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.

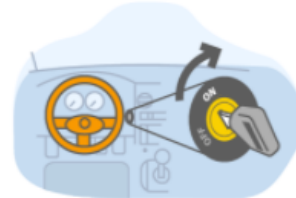
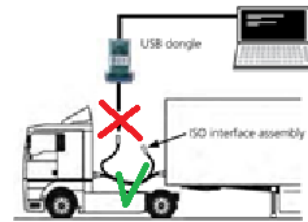
IMPORTANT

- Make sure that the device was activated correctly using the magnet activation.
- ZF Transics recommends you wait 15 minutes after the activation to allow the connection to be established before verifying the installation with TX-CONFIG.
- Also make sure that the Unit is connected to an external power source (EBS / reefer unit).

Registering and Configuring 554 090 0xx 0

Before checking the data with WABCO Fleet Installer:

- Disconnect the diagnostics software from the ECU.
- Connect the trailer to a truck with the ISO cable.
- Turn ON the vehicle contact.



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.

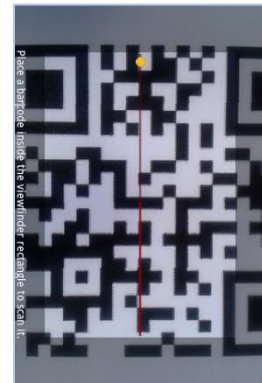
3. Press **INSTALL** to register the installed 554 090 0xx 0 device.

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 554 090 0xx 0 on-board computer device (located on the front or the backside of the unit).

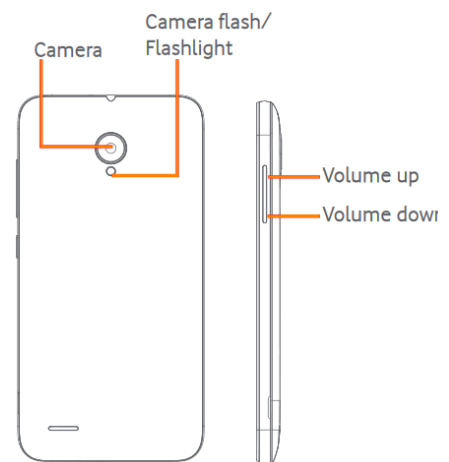


PLEASE NOTE

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.

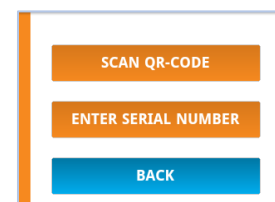
The volume button can be normally found on the side of your smartphone (depending on device type).



ALTERNATIVELY

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

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



IMPORTANT

Make sure that the device was activated correctly using the magnet activation (cf. "[Hardware Description](#)" on p.11.).

ZF Transics recommends you wait 15 minutes after the activation to allow the connection to be established before verifying the installation with TX-CONFIG.


Also make sure that the Unit is connected to an external power source (EBS / reefer unit).

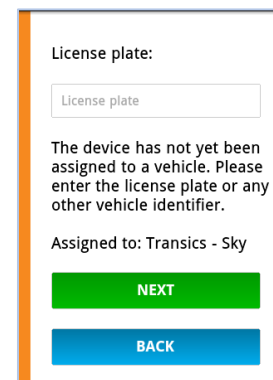
The application checks if the scanned / entered serial number is valid.

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

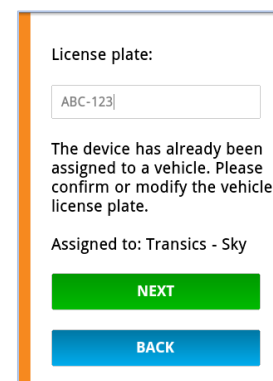
- To link the serial number to the vehicle, enter the license plate of the vehicle.
- Press  to continue.



License plate:

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.

- Press  to confirm.



License plate:

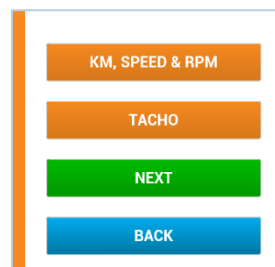
PLEASE NOTE

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 .

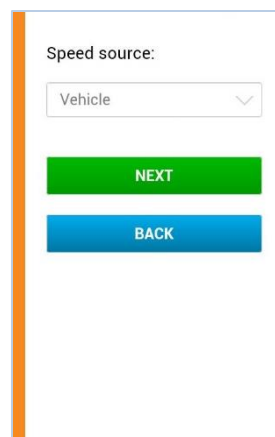


Speed Source

9. Select the correct speed source from the list.
This parameter defines the source that 554 090 0xx 0 uses for its speed (sent to the back office).

	EBS	554 090 0xx 0 uses the speed information received from the TEBS unit.
EBS GPS Autodetect	GPS	554 090 0xx 0 calculates kilometers based on the vehicle position.
	AutoDetect	554 090 0xx 0 automatically chooses its source based on the available sources.

10. Press  to continue.



Km Source

11. Select the correct mileage source from the list.

This parameter defines the source that 554 090 0xx 0 uses for its mileage (sent to the back office).

<p>EBS</p> <p>GPS</p> <p>Autodetect</p>	EBS	554 090 0xx 0 use the mileage information received from the TEBS unit.
	GPS	554 090 0xx 0 calculates kilometers based on the vehicle position.
	AutoDetect	554 090 0xx 0 automatically chooses its source based on the available sources.

12. Press **NEXT** to continue.

Km

13. The mileage of 554 090 0xx 0 must be set to the mileage of the trailer.

14. Press **NEXT** to continue.

PLEASE NOTE

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

Enter the Trailer Parameters

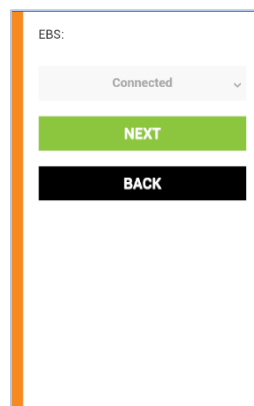
15. Press **EBS & REEFER** to continue.

EBS Connection

16. Choose whether TEBS is connected.

Connected
Not connected

Press **NEXT** to continue.

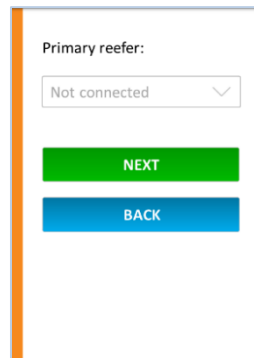


Primary Reefer Connection

17. Choose whether a primary reefer is connected.

Connected
Not connected

18. Press **NEXT** to continue.

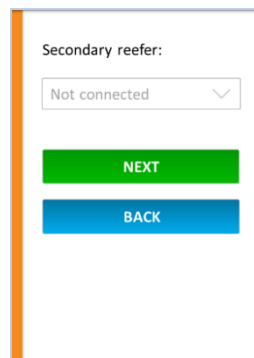


Secondary Reefer Connection

19. Choose whether a secondary reefer is connected.

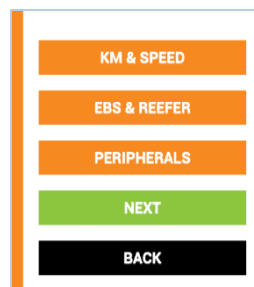
Connected
Not connected

20. Press **NEXT** to continue.



Enter the Peripheral Parameters.

21. Press **PERIPHERALS** to continue.

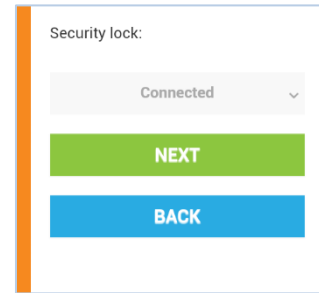


Peripheral Connection

22. Select Connected (for example, if a security lock is connected).

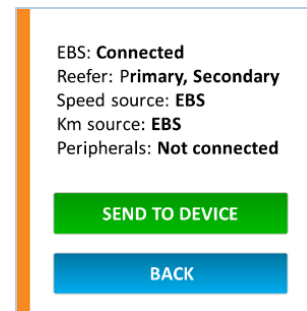
Connected
Not connected

23. Press **NEXT** to continue.



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

24. If all settings are correct, press **SEND TO DEVICE** to confirm and send the configuration to 554 090 0xx 0.

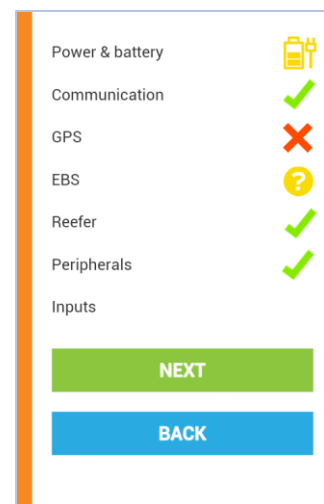


Device Health

Next, the "Device health" will indicate the status for the different sections.

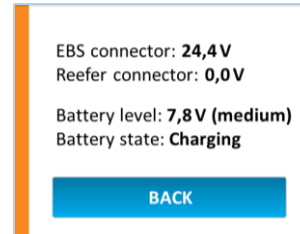
Press an item to display its details. Press Back to return to the device health overview.

- [Power & Battery](#)
- [Communication](#)
- [GPS](#)
- [EBS](#)
- [Reefer](#)
- [Peripherals](#)
- [Inputs](#)
- [LIN bus](#)



Power & Battery

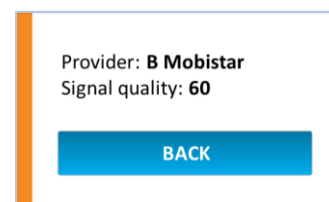
- EBS and Reefer connectors: Voltage
- Battery level: actual voltage and low / medium / high indication
- Battery state:
 - Charging
 - not charging
 - fully charged
 - error charging
 - not charging due to temperature
 - no battery



Communication

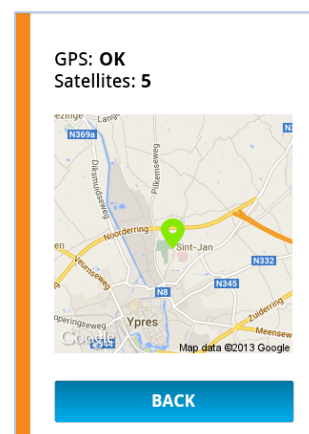
- Provider
- Signal quality percentage

The Signal Quality should be above 40% to have a stable GPRS connection.



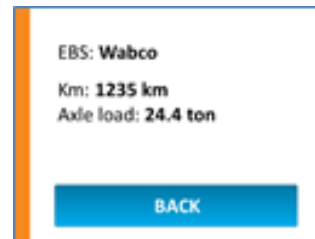
GPS

- GPS connection status: OK / Not OK
- Satellites: Number of satellites covering the trailer. A minimum of 3 and preferably 5 satellites are necessary for a good GPS position.
- Current position on map



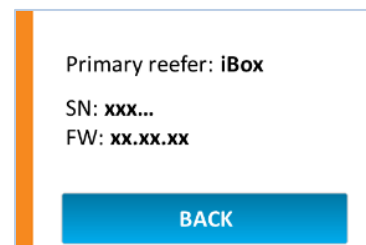
EBS

- EBS:
 - WABCO
 - Knorr
 - Haldex
- Mileage
- Axle load



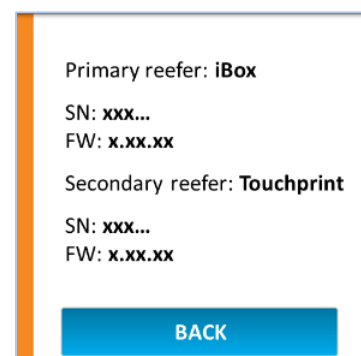
Reefer (Single Connection)

- State:
 - Not OK
 - i-Box
 - DataCOLD
 - Euroscan
- SN: serial number
- FW: firmware version



Reefer (Double Connection)

- Primary reefer: i-Box or Carrier Direct
 - State: Not OK
 - SN: serial number
 - FW: firmware version
- Secondary reefer: DataCOLD, TouchPrint, TranScan or Euroscan
 - State: Not OK
 - SN: serial number
 - FW: firmware version



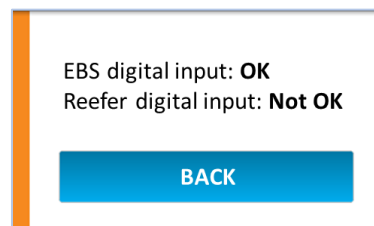
Peripheral

- Security lock:
 - Not OK
 - Open
 - Closed
 - Locked
 - Armed



Inputs

- EBS digital input:
 - OK
 - Not OK
- Reefer digital input:
 - OK
 - Not OK



LIN Bus

Status	Icon
Not connected	NA
Connected - No sensors detected	✗
Connected - Sensors detected - Error	✗
Connected - Sensors detected	✓
Connected - Sensors detected - Updating	?
Connected - Sensors detected - Initializing	?

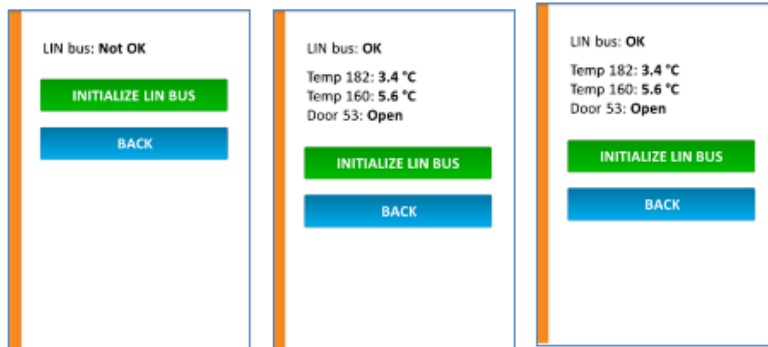
- Press **LIN bus** to display its details.



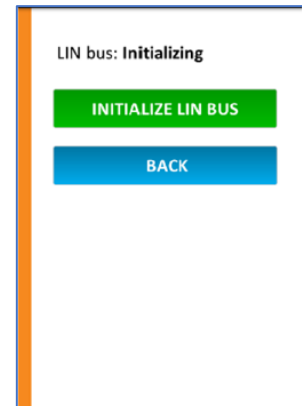
LIN Bus

In order to retrieve up-to-date information, press **INITIALIZE LIN BUS** at first. The latest LIN sensor info will now be displayed.

Temperature and door sensors are displayed in the same order as the installation order (cf. [“Connecting the first LIN sensor”](#)).

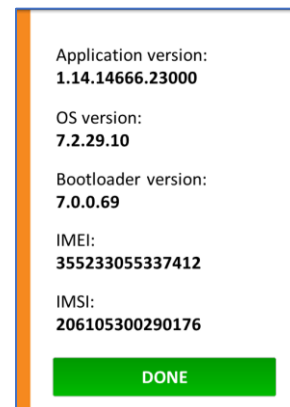


- Press **Back** to return to the “Device health” overview.



Device Health

- In the Device health screen, press Next to confirm the installation.
- All version information will be displayed in the following screen.
- Press Done to close.



Step 4 – 554 090 0xx 0 Position

IMPORTANT

When installing 554 090 0xx 0, try to keep the area around the antennas (cf. picture) away from metal or other obstructions as much as possible to avoid signal disturbance.



Make sure that sufficient GPS coverage (clear view to the sky) is guaranteed at all times. Verify whether a good GPS position has been received. Check this for every installation!

554 090 0xx 0 Below the Trailer

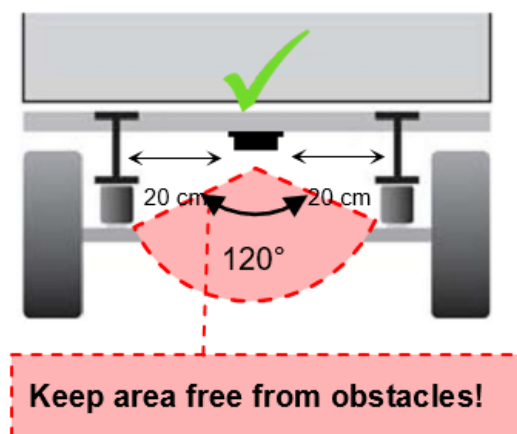
Correct Installation

After the installation was verified using TX-CONFIG or based on the LED indicators, the Unit is installed under the trailer.

The unit must always be installed with the front directed to the bottom (away from the trailer).

Make sure that the unit has a clear view to the bottom (not obstructed by other components).

Make sure that the label of the unit is visible at all times.

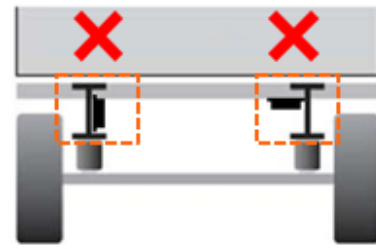


Trailer back view

Incorrect Installation

INCORRECT

Preferably, do not install the unit on or inside the trailer beams.

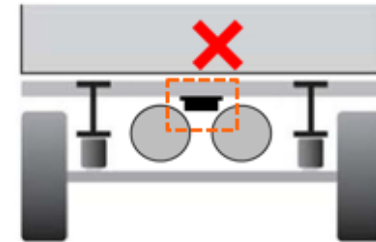


Trailer back view

INCORRECT

Do NOT install the unit above other components (for example, air tanks).

The unit requires a clear view to the bottom.



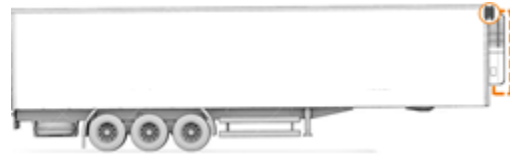
Trailer back view

554 090 0xx 0 at the Front of the Trailer

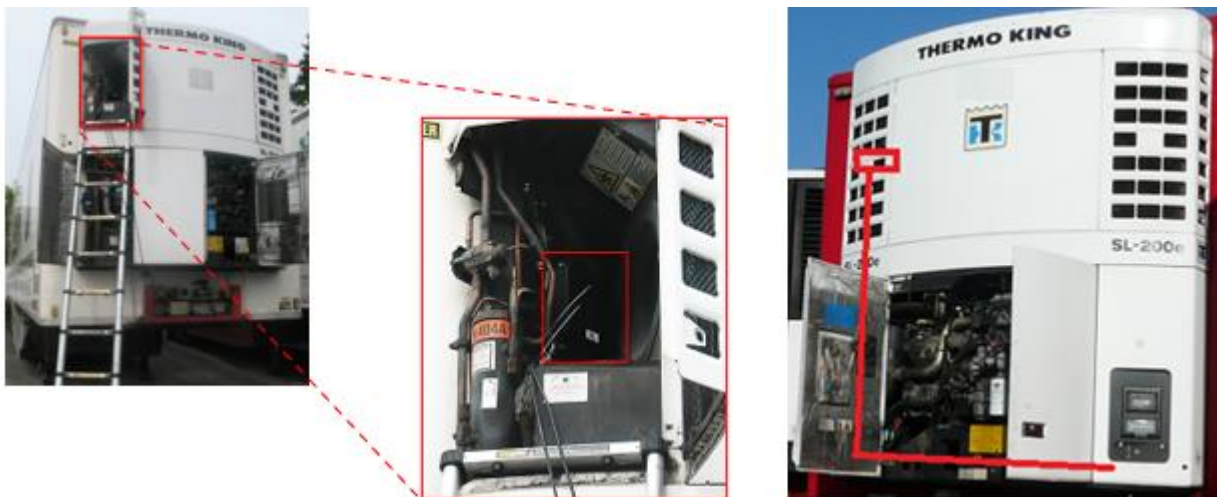
In case the Unit is only connected to the reefer unit, it can be installed at the front of the trailer.

Make sure that the unit has a clear view to the sky (not obstructed by other components).

Make sure that the label of the unit is visible at all times.



Installation Example – Thermo King



Secure all Connected Wires

After connecting all hardware to 554 090 0xx 0, we recommend using cable ties to relieve tension from the connectors.



NOTE

Make sure that 554 090 0xx 0 is mounted on a rigid, flat surface.

Use all 4 fixing points to fasten the 554 090 0xx 0 device.



Minimum Bend Radius for Interconnect Cables

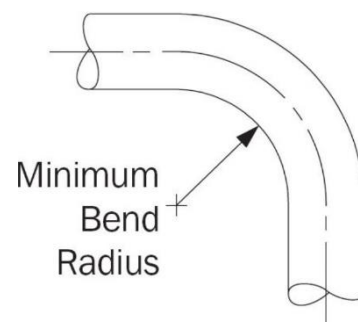
Observe the following minimum bend radius for interconnect cables.

- Minimum bend radius = **10 x cable diameter**

- 0942-0388-EBS-01
- 0942-0388-EBS-03
- 0942-0388-EBS-04
- 0942-0388-EBS-07
- 0942-0388-EBS-10
- 0942-0388-EBS-10-3

- Minimum bend radius = **15 x cable diameter**

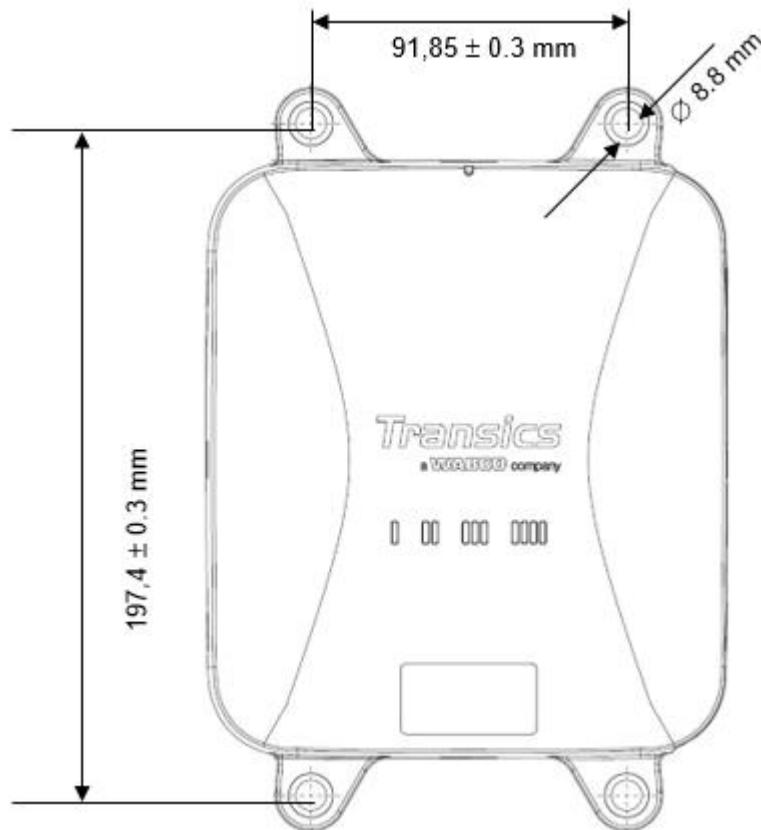
- 0942-0388-EBS-05
- 0942-0388-EBS-06U
- 0942-0388-SENSOR
- 0942-0388-TRAILER
- 0942-0388-REEFER
- 0942-0388-EXT2
- 0942-0388-SEN-TEMP
- 0942-0388-SEN-DOOR



Fastening the 554 090 0xx 0 Unit

The 4 fixing points have a diameter of 8.8 mm. We recommend using M8 bolts or screws to mount the Unit.

When fastening 554 090 0xx 0 on the vehicle frame, use 4 hexagon head bolts M8 x 1.25, class 8.8 and tighten the bolts with a maximum torque of 25.4 Nm (dry).





Contact Information

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