# **SmartBoard**

## System description







### Assembly

### Assembly

Only install the battery-free SmartBoard on hazardous goods vehicles (see chapter "2.8 SmartBoard for ADR (GGVS) vehicles", page 9).

#### **Preparatory measures**

- Before you begin installing, upgrading, repairing or replacing the SmartBoard, follow the instructions in chapter "2 Basic security information", page 6.
- Disconnect the power supply to the towing vehicle.
- Secure the vehicle against the risk of short-circuit. To do so, follow the instructions in chapter
   "2.7 Avoiding electrostatic charge and uncontrolled discharging (ESD)", page 8.
- Select an installation location on the vehicle frame that is easily accessible for the user and that can be reached by the planned connecting cable.
- Select an installation location that is protected from spray water.

### Alignment

The SmartBoard can be aligned at two different angles (90° and 55°):



### Assembly

#### Changing the alignment



 Push the two retaining clips on the back of the SmartBoard outwards (1) while pulling the brackets out of the guides.



- Switch the brackets from one side to the other (2).
- Push the brackets into the guides until you hear them click into place.
- ⇒ The orientation of the SmartBoard is changed.

### Assembly

#### Installation on the vehicle



- Use the dimensions in the technical drawing to drill the holes (chapter "5 Operation", page 18).
- Fasten the SmartBoard to the vehicle frame with four M8 screws and tighten the screws. Maximum tightening torque: 15 Nm.
- Install cables according to the circuit diagram in parallel with already existing wiring harnesses.
   Form large loops from ample lengths.
- Cable the SmartBoard with the Trailer EBS modulator. Press the cable plug-connector into the slot applying a little initial force. All connections must be assigned a cable or have a closing cap.
- Fasten the cable only on solid elements that are connected with the components, e.g. the vehicle frame. Fastening cables to flexible elements can cause cable breakages and the seal could break.
- Fasten the cables and connectors so that the plug connections are not subjected to any tensile stress or lateral forces. Avoid laying cables across sharp edges or near aggressive media (acids for example).
- Fasten the cable a maximum of 30 cm after the device, e.g. with a cable tie.

### Operation

### Operation

- Press any button to start the SmartBoard.
- ⇒ The main menu is displayed.

 $i \ \ \, If$  the charge level of the internal battery is too low, the battery-operated SmartBoard (product number 446 192 210 0) may not start.

#### Symbols

Active functions are displayed with the opposite colouring.



#### Using the SmartBoard main menu



The keys carry out the following functions in the main menu:

- Press one of the 1 keys to select the SmartBoard function displayed next to each key.
- Press key 2 to navigate through the different pages of the main menu.
- Press key 3 to return to the first page of the main menu.

### Operation

#### Using a SmartBoard submenu



The keys carry out the following functions in a submenu:

- Press one of the 1 keys to select the SmartBoard function displayed next to each key.
- Press key **2** to navigate through the different pages of the function.
- Press key 3 to return to the next menu level up.
- Hold down key **3** for two seconds to go back to the last page displayed in the main menu.

#### Display



The different areas of the display show the following information:

1 Functions/information.

**2** Diagnostic messages and active systems. A submenu also shows which submenu the user is in. Warnings are also shown here.

**3** Current page of the respective menu.

### **Functions**

1 The illustrations shown in this chapter may differ in places from the actual illustrations. Depending on the configuration of the vehicle (drawbar trailer, central axle trailer, semitrailer, number of axles, etc.), the illustrations on the display or individual functions may change.

In order to illustrate how the SmartBoard works, the keys in the following chapters are assigned names according to the diagram shown below:



### **ECAS** air suspension

 If ECAS is installed, it must first be brought to the normal level. Installed lifting axles must be lowered.
 For proper operation of the system, all load statuses must be calibrated. See also

chapter "6.17.3 Axle load calibration", page 39.

Select air suspension (ECAS) manual lifting / lowering or predefined levels.

Smart	Board - ECAS			
Key	Description		Description	Key
1 2 3	Without function Lifting/Lowering chassis Normal level	WABCO SmartBoard	Without function Memory level Unloading level off switch	4 5 6
Home	Back to the main menu		Without function	Next

### Functions

#### 1-point control

Smar	Board - ECAS > Lifting/lowe	ering chassis		
Key	Description		Description	Key
1	Without function	WABCO SmartBoard	Without function	4
2	Lowering chassis		Lifting chassis	5
3	Without function		ECAS Stop	6
Home	Back to ECAS menu		Without function	Next

### 2-point control Drawbar trailer

Smar	tBoard - ECAS > Lifting/low	ering chassis		
Key	Description		Description	Key
1 2 3 Home	Control front Lowering chassis Without function Back to ECAS menu	MABCO SmartBoard	Control rear Lifting chassis ECAS Stop Next page	4 5 6 Next

### 2-point control Semitrailer



#### Normal level

Smart	SmartBoard - ECAS > Normal level					
Key	Description		Description	Key		
1 2 3	Select normal level 2 Select normal level 3 Without function	WABCO SmartBoard	Select normal level 4 Without function Without function	4 5 6		
Home	Back to ECAS menu		Without function	Next		

### **Functions**

#### Memory level



### Axle load indicator

Display axle load and status (lifted/lowered).

Smart	Board - Axle load			
Key	Description		Description	Key
1	Without function	WABCO SmartBoard	Without function	4
2	Without function		Without function	5
3	Without function		Without function	6
Home	Back to the main menu		Without function	Next

### **Bounce Control**



### Brake lining wear

Display brake lining status. Brake lining wear OK

(	)	



### Functions

### **Release brakes**

Temporarily release brakes.

Smar	tBoard - Release brake			
Key	Description		Description	Key
1 2 3 Home	Without function Without function Release brake (hold down) Back to the main menu	WABCO SmartBoard	Without function Without function Without function	4 5 6 Next
Home	Back to the main menu		Without function	Next

### **Trailer length**

Show trailer length.

Smart	Board - Trailer length			
Key	Description		Description	Key
1 2 3 Home	Without function Without function Without function Back to the main menu	WABCO SmartBoard	Without function Without function Without function Without function	4 5 6 Next

### **Diagnostic memory**

Show current and saved error messages.



Figure	Description
System	System issuing the message (e.g. TEBS E) - appears at upper left in the display.
Warning lamp	Warning lamp displayed: Current message (the fault must be rectified). No warning lamp displayed: Not a current message (saved in ECU diagnostic memory).
Code	Message code.
Date	Date at the time of message output.
Time	Time of message output.
Occurrence	Odometer reading at time of message output.
Status	Current or saved message.

### **Functions**

### Electronic parking brake

1 The electronic parking brake can be configured to be disabled temporarily or permanently. If the parking brake cannot be disabled permanently, the option does not appear in the menu.

Enable and (permanently) disable the electronic parking brake.

Smar	Board - Electronic parking I	orake		
Key	Description		Description	Key
1	Without function Permanently disable	WABCO SmartBoard	Without function	4
3	Disable		Enable	6
Home	Back to the main menu		Without function	Next

### Lifting axle control

Manually lift/lower, OptiTurn<sup>™</sup>, use traction help and OptiLoad<sup>™</sup>, disable lifting axle.

Smart	Board - Lifting axle control			
Key	Description		Description	Key
1 2 3 Home	Lifting axle control OptiTurn™ Traction help Back to the main menu	WABCO SmartBoard	OptiLoad™ Without function Without function Without function	4 5 6 Next
			*	

### Lifting axle control



#### **Disable lifting axle(s)**

Smart	SmartBoard - Lifting axle control > Disable lifting axle					
Key	Description		Description	Key		
1 2 3	Without function Without function Enable/disable lifting axle 1	WABCO SmartBoard	Without function Without function Enable/disable lifting axle 2	4 5 6		
Home	Back to lifting axle control		Without function	Next		

### **Functions**

### OptiTurn™

Smart	Board - Lifting axle control	> OptiTurn™		
Key	Description		Description	Key
1 2 3	Without function Without function Enable/disable	WABCO SmartBoard	Without function Without function Options	4 5 6
Home	Back to lifting axle control		Without function	Next

#### OptiTurn<sup>™</sup> options



### **Traction help**



#### Traction help options

Smart	SmartBoard - Lifting axle control > Traction help > Options						
Key	Description		Description	Key			
	Enable/disable	WABCO SmartBoard					
1	automatically		Seasonal traction help	4			
2	Show season period		Without function	5			
3	Without function		Without function	6			
Home	Back to lifting axle control	$\textcircled{a} \bigcirc$	Without function	Next			

### Functions

### OptiLoad™

Smart	SmartBoard - Lifting axle control > OptiLoad™					
Key	Description		Description	Key		
		WABCO SmartBoard				
1	Without function		Without function	4		
2	Without function		Without function	5		
3	Enable/disable		Options	6		
Home	Back to lifting axle control		Without function	Next		

#### OptiLoad™ options

Smart	SmartBoard - Lifting axle control > OptiLoad <sup>™</sup> > Options					
Key	Description		Description	Key		
1 2 3	Enable/disable automatically Without function Without function	WABCO SmartBoard	Without function Without function Without function	4 5 6		
Home	Back to OptiLoad™		Without function	Next		

#### Odometer

 $\mathbf{i}$  If the value

If the configured values of the tyre circumference and flywheel number do not match the values of the modulator, a "!" appears before "Odometer".



### SafeStart

Limit speed when loading/unloading a tipping or tank trailer.

Smart	Board - SafeStart			
Key	Description		Description	Key
		WABCO SmartBoard	)	
1	Without function		Without function	4
2	Without function		Without function	5
3	Enable/disable		Without function	6
Home	Back to the main menu	$\textcircled{a} \bigcirc$	Without function	Next

### **Functions**

### Automatic steering axle

Enable or lock the automatic steering axle.

Sm	artBoard - Steering axle lock			
Key	Description		Description	Key
1 2 3 Hor	Without function Without function Enable automatic steering axle ne Back to the main menu	WABCO SmartBoard	Without function Without function Lock automatic steering axle Without function	4 5 6 Next

### Vehicle inclination

Show angle of inclination warning.

Vehicle inclination within tolerance range



Max. vehicle inclination exceeded



### Work light control



### **Road finisher brake**

Smart	SmartBoard - Road finisher brake						
Key	Description		Description	Key			
1 2 3	Without function Reduce braking pressure Enable/disable	WABCO SmartBoard	Without function Increase braking pressure Without function	4 5 6			
Home	Back to the main menu		Without function	Next			

### OptiTire™

Show tyre pressures, reference pressures, tyre temperature, wheel IDs, battery status and signal strength.

- To change reference pressures and wheel IDs, see chapter "6.17.8 OptiTire™ functions", page 43.
- Press the *Next* key to display the various data.
- Press the Home key to return to the main menu.

### **Functions**

### Freely configurable GIO functions (GIO FCF)

In addition to the analogue and digital functions, it is also possible to store what are known as GIO function modules via the diagnosis. These are capable of processing internal signals (CAN bus, internal pressures, speeds) as well as external input variables (such as switch, pressure sensor, SmartBoard).

Output signals as well as internal functions such as saving events to the event recorder can be controlled according GIO function module programming. The function can therefore be used to implement small customer-specific applications.

#### Freely configurable digital function

Free programming by the manufacturer of a GIO digital input or output depending on speeds and times.

#### Freely configurable analogue function

Free programming by the manufacturer of a GIO analogue input or output depending on speeds and times.

With both analogue and digital functions, an Event (for example) can be stored or a GIO output switched as a function of a switch signal and the vehicle speed.

#### Parameter setting

The function is loaded into the diagnostic software using a \*.FCF or \*.ECU file.

1 Please speak with your WABCO partner about parameters for the freely configurable functions. Only files created by WABCO can be loaded into the ECU.

#### Controlling GIO FCF with the SmartBoard

Control of the GIO functions can be configured in the diagnostic software so that they are operated either by a button or a rocker switch.





Rocker switch



### **Settings**



SmartBoard - Settings > Page 2

ney	Description		Description	ĸey
	ĺ	WABCO SmartBoard		
1	Axle overload		Sort functions	4
2	Language		Reset to factory settings	5
3	CAN termination		Odometer settings	6
Home	Back to the main menu		Next page	Next

Smart	Board - Settings > Page 3			
Key	Description		Description	Key
1	Immobilizer settings OptiTire™functions	WABCO SmartBoard	Without function Without function	4
3	Without function		Without function	6
Home	Back to the main menu		Next page	Next

### **Functions**

#### Units



#### Screen saver

When inactive, display the "Trailer Info" screen or an image you have created yourself ("Splash Screen").

 $1 \qquad \mbox{The SmartBoard diagnostic software is required to use a self-created image in the SmartBoard. You can find this at: }$ 

https://www.am.wabco-auto.com/

#### SmartBoard - Settings > Screen saver

Key	Description		Description	Key
1 2	Without function Without function	WABCO SmartBoard	Without function Without function	4
3	Enable/disable		Set inactivity time	6
Home	Back to settings		Forward to "Select screen saver"	Next

#### Set inactivity time

The screen saver is launched on expiry of a specified inactivity time. The duration of the inactivity time is set in seconds.



#### Splash screen

The SmartBoard can be configured so that a self-generated image is used as a screen saver instead of the "Trailer Info" screen.

Smart	SmartBoard - Settings > Screen saver						
Key	Description		Description	Key			
1 2 3	Without function Without function Enable/disable	WABCO SmartBoard	Without function Without function Select screen saver	4 5 6			
Home	Back to settings		Forward to "Set inactivity time"	Next			

### **Functions**

#### Select screen saver

Switch between "Trailer Info" and "Splash Screen".

#### SmartBoard - Settings > Screen saver page 2



### Axle load calibration

Smart	SmartBoard - Settings > Axle load calibration					
Key	Description		Description	Key		
		WABCO SmartBoard				
1	Without function		Without function	4		
2	Without function		Without function	5		
3	Reset calibration		Start calibration	6		
Home	Back to the main menu	$\textcircled{a} \diamond$	Without function	Next		

#### Run axle load calibration

Calibrate axle loads in empty, partially loaded and loaded state.

- 1. Select Start calibration.
- 2. Read and follow the instructions on the screen.
- 3. Press Next (key 6).
  - $\Rightarrow$  The screen for selecting the load status is displayed.



- 4. Select the load status you want to calibrate.
  - ⇒ The screen for entering the measured value is displayed.

Smart	SmartBoard - Settings > Axle load calibration					
Key	Description		Description	Key		
	Í	WABCO SmartBoard				
1	Select left		Select right	4		
2	Decrease value		Increase value	5		
3	Save and back		Without function	6		
Home	Back to axle load calibration		Without function	Next		

### **Functions**

#### Drawbar trailer

Smartl	Board - Settings > Axle load	l calibration		
Key	Description		Description	Key
		WABCO SmartBoard		
1	Select front axle(s)		Select rear axle(s)	4
2	Decrease value		Increase value	5
3	Save and back		Without function	6
Home	Back to axle load calibration	$\textcircled{a} \bigcirc$	Without function	Next

### Brightness

Smart	Board - Settings > Brightne	s		
Key	Description		Description	Key
1 2 3	Without function Decrease brightness Save and back	WABCO SmartBoard	Without function Increase brightness Without function	4 5 6
Home	Back to settings		Without function	Next

### Time / date



#### Start screen

Select the screen to be displayed when the SmartBoard is first started.

Smart	Board - Settings > Start scr	een		
Key	Description		Description	Key
		WABCO SmartBoard		
1	Without function		Without function	4
2	Down		Up	5
3	Save and back		Without function	6
Home	Back to settings	$\textcircled{a} \bigcirc$	Without function	Next

### Functions

#### Axle overload

Set warning messages for axle overload according to the number of axles.

Sma	rtBoard - Settings > Axle ove	rload		
Key	Description		Description	Key
1 2 3 Hom	Without function Without function Select number of axles le Back to settings	WABCO SmartBoard	Without function Without function Set max. mass Without function	4 5 6 Next

### OptiTire<sup>™</sup> functions

Set reference pressure by axle or by pair (with twin tyres) and change wheel ID.

#### Set reference pressure

Smartl	Board - Settings > OptiTire™	1	
Key	Description	Description	Key
1	Without function	WABCO SmartBoard Without function	4
2 3	Without function Change reference pressure	Without function Switch axles / tyre pair (twin tyre)	5
Home	Back to settings	Next page	Next

#### Change wheel ID



### **Functions**

#### Reorder functions in the main menu

1 The factory settings specify that frequently used functions are automatically arranged in the main menu. This function can be disabled in the settings.

- 1. Press the key next to the function whose position you want to change.
- 2. Press the key next to the function in the place where you want to put the selected function.
- 3. Press the *Home* key to save or cancel the allocation.
  - ⇒ The functions have been rearranged.

### SmartBoard - Settings > Arrange Functions



#### **Odometer settings**

Set wheel circumference and number of flywheel teeth.



#### Change tyre circumference

Smart	SmartBoard - Settings > Odometer > Tyre circumference					
Key	Description		Description	Key		
1	Without function	WABCO SmartBoard	Without function	4		
3	Save and back		Transfer parameter from modulator	6		
Home	Back to odometer		Switch position	Next		

### Functions

#### Change flywheel number

Smar	tBoard - Settings > Odomete	r > Flywheel number		
Key	Description		Description	Key
1 2 3 Home	Without function Reduce number Save and back Back to odometer	WABCO SmartBoard	Without function Increase number Transfer parameter from modulator Switch position	4 5 6 Next

#### **CAN** termination

Enable/disable the SmartBoard CAN resistance.

Smart	Board - Settings > CAN tern	nination		
Key	Description		Description	Key
		WABCO SmartBoard		
1	Without function		Without function	4
2	Without function		Without function	5
3	Enable/disable		Without function	6
Home	Back to settings		Without function	Next

#### Language



#### Change immobilizer PIN/PUK

Set new PIN by entering the current PIN or PUK.

Smart	SmartBoard - Settings > Change PIN/PUK					
Key	Description		Description	Key		
1	Without function	WABCO SmartBoard	Without function	4		
2	Down			4		
3	Edit		Without function	6		
Home	Back to info		Without function	Next		

### **Functions**

#### Reset to factory settings



### Info

View various sets of system information.

Key Description Description	Кеу
WABCO SmartBoard	
1 Trailer info	4
2 System info	5
3 ODR data	6
Home Back to the main menu Without function	Next

### Trailer info

Display an overview of the trailer configuration.

Smart	Board - Info > Trailer info			
Key	Description		Description	Key
1	Without function	WABCO SmartBoard	Without function	4
2	Without function		Without function	5
3	Without function		Without function	6
Home	Back to info		Without function	Next

### System info

Display information on the installed systems.

SmartBoard - Info > System info					
Key	Description		Description	Key	
4		WABCO SmartBoard		4	
2	Without function		Without function	5	
3	Without function		Without function	6	
Home	Back to info		Show next ECU	Next	

### Functions

### ODR data

Display ODR data (Operating Data Recorder).

Smart	Board - Info > ODR data			
Key	Description		Description	Key
		WABCO SmartBoard		
1	Without function		Without function	4
2	Without function		Without function	5
3	Without function		Without function	6
Home	Back to info		Next page	Next

### **Operating temperature**

Display operating temperature.

SmartBoard - Info > Temperature					
Key	Description		Description	Key	
1	Without function	WABCO SmartBoard	Without function	4	
2 3	Without function		Without function	5 6	
Home	Back to info		Without function	Next	

#### Terminal 30 (tl. 30)

Display the supply voltage for the trailer via the towing vehicle battery.



### **Emergency release (immobilizer)**

**Functions** 

The emergency release allows the brake to be released up to 3 times, even when the immobilizer is enabled. As soon as the vehicle stops the immobilizer is activated again. The remaining releases are displayed. The function is active while the immobilizer is disabled.



### Immobilizer

Enable/disable the immobilizer; manage PIN and PUK.

i If the Personal Identification Number (PIN) is entered incorrectly three times, the next entry is delayed by a waiting period. The waiting time can be interrupted by entering the Personal Unblocking Key (PUK).

#### Activate/deactivate immobilizer

SmartBoard - Info > Immobilizer					
Key	Description		Description	Key	
1 2 3	Without function Reduce number Enable/disable	WABCO SmartBoard	Without function Increase number Without function	4 5 6	
Home	Back to info		Select next number	Next	

### Maintenance and care

### Maintenance and care

#### Maintenance

The SmartBoard 446 192 211 0 is maintenance-free. The SmartBoard 446 192 210 0 battery must be replaced at an interval of approx. six years.

### **Replacement part sets**

The following replacement part sets are available for the SmartBoard:

Description	WABCO part number
Replacement battery	446 192 930 2
Brackets	446 192 931 2

### Changing the battery

The SmartBoard 446 192 210 0 contains a special battery that supplies power to the unit in the event of an interruption in the trucks/trailer power supply. Only change the battery in a dry and clean environment. The replacement battery is supplied with two replacement screws that must be used when changing the battery.

1. If necessary, remove the SmartBoard from the vehicle.



2. Unscrew the two Torx® screws on the battery cover.



3. Remove the battery cover with a pair of flat nose pliers.

4. Carefully unplug the battery (avoid sideways movements).



- 5. Push the replacement battery plug into the slot provided for it with the correct polarity and insert the replacement battery.
- 6. Insert the battery cover.
- 7. Insert the replacement screws.
- 8. Tighten the replacement screws (max. torque 0.6 Nm ± 0.1 Nm).
- ⇒ The battery change is complete.

### Cleaning

Use only a damp cloth to clean the SmartBoard. Never use cleaning agents. Detergents and other chemicals can damage the display and the keyboard and must never come into contact with the SmartBoard.

### **Storage**

Do not store the SmartBoard in a location where there is the possibility of it being exposed to water, salt or oil.

Do not store the SmartBoard in a location where the air contains dangerous gases such as hydrogen sulphide, sulphuric acid, nitrous acid, chlorine or ammonia.

Do not store the SmartBoard in a location where there is the possibility of it being exposed to direct sunlight, ultraviolet rays, ozone or radiation.

Operate the SmartBoard every two years to maintain the electrolytic capacitors on the inside. When doing so, only connect the SmartBoard to the power supply for half an hour.

Only store the SmartBoard for the duration and at the temperatures specified in the following table, to prevent damage.

#### Storage temperatures

SmartBoard	Temperature (°C)	Duration (years)
446 192 210 0	-20 – 45	1
446 102 241 0	-20 - 50	2
440 192 211 0	5 – 35	15

### Disposal

- The final and professional decommissioning and disposal of the product must be carried out in accordance with the applicable legal regulations of the user country. In particular, the regulations for the disposal of batteries, equipment and the electrical system must be observed.
- · Electrical appliances must be collected separately from household or commercial waste and recycled or disposed of in accordance with regulations.
- · If applicable, take the old device to the company's internal disposal department, which will then forward it to specialist companies (specialist disposal companies).
- In principle, it is also possible to return the old device to the manufacturer. For this purpose, contact the manufacturer's customer service. Any special agreements must be observed.
- · Electrical and electronic equipment must be collected separately from unsorted municipal waste and recycled or disposed of properly, because harmful substances can cause lasting damage to health and the environment if disposed of improperly.
- Detailed information can be obtained from specialist waste management companies or the responsible authorities.
- · The packaging must be disposed of separately. Paper, cardboard and plastics must be recycled.

### Fault codes

### Fault codes

Example: SmartBoard display

Code 001 07

Component 001 - wheel sensor a

1. Numerical block

2.	Numerical block
	Type of fault
	07 - driving route too large

Code	Message	Code	Message
Compo	nent: TEBS E		Freely configurable
001	Wheel sensor a	090	function 8
002	Wheel sensor b	091	Freely configurable
002	Wheel sensor c	001	function 7
004	Wheel sensor d	092	Freely configurable
005	Wheel sensor e		Freely configurable
006	Wheel sensor f	093	function 5
000		004	Freely configurable
007	EBS (ABS) relay valve /	094	function 4
001	solenoid valve control	095	Freely configurable
	Trailer medulater / colonaid		Tunction 3
009	Valve control	096	function 2
		007	Freely configurable
010	Trailer modulator / solenoid	097	function 1
010	control	099	IN/OUT port
058	EBS relay valve /	100	GIO - freely configurable
	redundancy	100	analogue function
059	EBS leay valve / pressure	101	GIO - freely configurable
0.0.1	Trailer modulator /	101	digital function
061	redundancy	102	Slot GIO5
062	Trailer modulator / pressure	103	Slot GIO4
002	sensors	104	Slot GIO3
069	Axle load sensor, internal	105	Slot GIO2
075	Wear sensor	106	Slot GIO1
	Error when selecting the	107	Slot GIO6
076	nominal value / redundant	108	Slot GIO7
	braking	109	ABS sensor / memory bit
	Nominal pressure sensor	110	Slot Subsystems
077	internal	111	Axle relaxation switch
	Nominal pressure sensor		Automatic lowering of lifting
078	external	112	axle switch
080	Demand pressure sensor,	113	SmartBoard
000	internal	114	Diagnosis power supply
081	Braking pressure sensor	115	Telematics unit
082	Switch 1 for trailer length	116	OptiTire™
083	Switch 2 for trailer length	117	ECAS Remote Control
084	Switch 3 for trailer length		Unit / Box
085	Switch 4 for trailer length	118	Axle load sensor, external
000	Switch for overload		(axie c-d)
086	indication	119	(axle e-f)
000	Lateral acceleration a	120	Distance sensor axle load
088	Lateral acceleration sensor		(axle c-d)
089	Proximity switch	121	Distance sensor axle load
	,	121	(axle e-f)

Code Message	
Freely programmable function 3	
Freely programmable function 2	
Freely programmable function 1	
Unloading level switch	
Output speed signal	
Distance sensor 2 (axle e-f)	
Distance sensor 1 (axle c-d)	
ECAS valve block	
Output steady positive voltage 2	
Output steady positive voltage 1	
Output RSS active signal	
Output ABS active signal	
Road finisher brake	
Not used	
LIN bus	
Speed switch 2 (ISS 2)	
Speed switch 1 (ISS 1) for manoeuvring assistance	
Residual pressure maintenance valve	
Residual pressure maintenance valve for traction help	
Lifting axle valve 2	
Lifting axle valve 1	
Pneumatic control line	
Supply pressure sensor	
External electronic air suspension module	
External ECAS	
Internal ECAS / calibration	
Not used	
Normal level 2 switch	
Up switch	
Down switch	
Brake release function	
Axle load calibration	
Not used	
Trailer length proximity switch 1	
Output steering axle lock	

### Fau

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Fault codes				
Code	Message	Code	Message	
168	Switch output steering axle	211	Door locking system	
169	Immobilizer PIN invalid	212	Lifting axle off switch	
170	Output tilt warning	213	wonitoring system rear	
178	Immobilizer valve	214	Trailer length proximity	
179	Buzzer Immobilizer	217	switch 2	
180	Demand pressure on	215	Trailer length proximity switch 3	
	CAN router/repeater CAN router/repeater power supply local system	216	Trailer length proximity switch 4	
181		217	Input switch ECAS ramp height control	
182	CAN router/repeater power supply to the next system	220	Data link towing vehicle / trailer	
183	CAN router/repeater to the	250	Not used	
	local system	251	Power supply	
184	CAN router/repeater to the	253	Parameter setting	
		254	Trailer modulator	
185	ECAS deactivation switch	OptiTi	re™ components	
186	Normal level 4 switch	630	CAN (short circuit / bus off)	

Message	Code	Message	Code	Message	
Switch output steering axle	211	Door locking system	13	Characteristic curve error	
lock	212	Lifting axle off switch	14	Special fault / see fault info	
Immobilizer PIN invalid	213	Monitoring system rear	15	See fault info	
Output tilt warning	215	switch			
Immobilizer valve	214	Trailer length proximity			
Buzzer Immobilizer		SWITCH 2			
Demand pressure on CAN router/repeater	215	switch 3			
CAN router/repeater power	216	switch 4			
supply local system	217	Input switch ECAS ramp height control			
CAN router/repeater power supply to the next system	220	Data link towing vehicle / trailer			
CAN router/repeater to the	250	Not used			
local system	251	Power supply			
CAN router/repeater to the	253	Parameter setting			
next system	254	Trailer modulator			
ECAS deactivation switch	OptiTir	e™ components			
Normal level 4 switch	639	CAN (short-circuit / bus off)			
Forklift control switch		Warning lamp 2 (optional /			
Second axle load sensor.	927	pin 4)			
external (axle c-d)	928	Warning lamp 1 (standard /			
SafeStart		Tyre data cannot be	yre data cannot be		
SafeStart pressure sensor	929	analysed			
SafeStart warning lamp	1121	Data on the CAN data bus			
Emergency brake light	3011	Pressure in tyre			
Green warning lamp	3054	-			
Brake temperature	0004				
eTASC rear axle	3111	Leakage in tyre and valve			
eTASC front axle	3154				
ECAS monoblock 2	3410	T D D			
ECAS front axle valve	3500	Tyre Pressure Deviation			
Driving level limitation	Type of	f fault			
switch	00	Value too high			
GIO service indication	01	Value too low			
Shared buzzer	02	Data is irregular or incorrect			
Shared warning lamp		Overvoltage / short-circuit			
Service mode	03	to 24 V			
GIO operating hours	0.4	Undervoltage / short-circuit			
	04	to ground			
Output overload indication	05	Break in supply cable			
3rd modulator		Current too high or circuit			
Electronic parking brake	06 grounded				
switch	07 Distance too great				
Spring brake valve	08	Slip			
2nd switch	09	Signal failure			
Electronic parking brake	10	Jump up / jump down			
vaive	11/12	See failure note			

### **Electronic Extension Module fault codes**

### **Electronic Extension Module fault codes**

Code in SmartBoard	Diagnostic Code	Description
1552-03	2483503	The component or the cable on analogue input 1 (GIO14) has a short-circuit to 24 V.
1552-04	2483604	The component or the cable on analogue input 1 (GIO14) has a short-circuit to ground.
1568-03	2509103	The component or the cable on analogue input 2 (GIO13) has a short-circuit to 24 V.
1568-04	2509204	The component or the cable on analogue input 2 (GIO13) has a short-circuit to ground.
1632-03	2611503	The component or the cable on plug-connector GIO14, pin 1, has a short-circuit to 24 V.
1632-04	2611604	The component or the cable on plug-connector GIO14, pin 1, has a short-circuit to ground.
1632-05	2611705	The component or the cable at plug-connector GIO14, pin 1, is not connected.
1632-11	2612311	A component for which there are no parameter settings was detected at slot GIO14, pin 1.
1648-03	2637103	The component or the cable on plug-connector GIO16, pin 1, has a short-circuit to 24 V. The fault can also occur in a system with battery supply (TEBS In/Out on GIO16 connected), then ignore.
1648-04	2637204	The component or the cable on plug-connector GIO16, pin 1, has a short-circuit to ground.
1648-05	2637305	The component or the cable at plug-connector GIO16, pin 1, is not connected.
1648-11	2637911	A component for which there are no parameter settings was detected at slot GIO16, pin 1.
1664-03	2662703	The component or the cable on plug-connector GIO16, pin 4, has a short-circuit to 24 V.
1664-04	2662804	The component or the cable on plug-connector GIO16, pin 4, has a short-circuit to ground.
1664-05	2662905	The component or the cable at plug-connector GIO16, pin 4, is not connected.
1664-11	2663511	A component for which there are no parameter settings was detected at slot GIO16, pin 4.
1680-03	2688303	The component or the cable on plug-connector GIO15, pin 1, has a short-circuit to 24 V.
1680-04	2688404	The component or the cable on plug-connector GIO15, pin 1, has a short-circuit to ground.
1680-05	2688505	The component or the cable on plug-connector GIO15, pin 1, has a short-circuit to ground.
1680-11	2689111	A component for which there are no parameter settings was detected at slot GIO15, pin 1.
1696-03	2713903	The component or the cable on plug-connector GIO13, pin 4, has a short-circuit to 24 V.
1696-04	2714004	The component or the cable on plug-connector GIO13, pin 4, has a short-circuit to ground.
1696-05	2714105	The component or the cable at plug-connector GIO13, pin 4, is not connected.
1696-11	2714711	A component for which there are no parameter settings was detected at slot GIO13, pin 4.

Code in SmartBoard	Diagnostic Code	Description
1712-03	2739503	The component or the cable on plug-connector GIO15, pin 3, has a short-circuit to 24 V.
1712-04	2739604	The component or the cable on plug-connector GIO15, pin 3, has a short-circuit to ground.
1712-05	2739705	The component or the cable at plug-connector GIO15, pin 3, is not connected.
1712-11	2740311	A component for which there are no parameter settings was detected at slot GIO15, pin 3.
1728-03	2765103	The component or the cable on plug-connector GIO15, pin 4, has a short-circuit to 24 V.
1728-04	2765204	The component or the cable on plug-connector GIO15, pin 4, has a short-circuit to ground.
1728-05	2765305	The component or the cable at plug-connector GIO15, pin 4, is not connected.
1728-11	2765911	A component for which there are no parameter settings was detected at slot GIO15, pin 4.
1744-03	2790703	The component or the cable on plug-connector GIO13, pin 1, has a short-circuit to 24 V.
1744-04	2790804	The component or the cable on plug-connector GIO13, pin 1, has a short-circuit to ground.
1744-05	2790905	The component or the cable at plug-connector GIO13, pin 1, is not connected.
1744-11	2791511	A component for which there are no parameter settings was detected at slot GIO13, pin 1.
1760-03	2816303	The component or the cable on plug-connector Subsystems pin 5 (tl. 15) has a short-circuit to 24 V.
1760-04	2816404	The component or the cable on plug-connector Subsystems pin 5 (tl. 15) has a short-circuit to ground.
1760-05	2816505	No components are connected on the plug-connector Subsystems pin 5 (tl. 15).
1760-11	2817111	A component for which there are no parameter settings was detected on slot Subsystems pin 5 (tl. 15).
1905-03	3048303	The supply voltage to the Electronic Extension Module is below 9 V.
1905-04	3048404	The supply voltage to the Electronic Extension Module is above 30 V.
1920-02	3072202	No echo signal received from ultrasonic sensor 1 (left). Sensor or sensor cable defective or not plugged in.
1920-03	3072303	The cable to the ultrasonic sensor 1 (left) cable has a short-circuit to 24 V.
1920-04	3072404	The cable to the ultrasonic sensor 1 (left) cable has a short-circuit to ground.
1921-03	3073903	The cable for the power supply for the ultrasonic sensor(s) on the GIO17 cable has a short-circuit to 24 V.
1921-04	3074004	The cable for the power supply for the ultrasonic sensor(s) on the GIO17 or GIO18 has a short-circuit to ground.
1936-02	3097802	No echo signal received from ultrasonic sensor 2 (right). Sensor or sensor cable defective or not plugged in.
1936-03	3097903	The cable to ultrasonic sensor 2 (right) cable has a short-circuit to 24 V.
1936-04	3098004	The cable to ultrasonic sensor 2 (right) cable has a short-circuit to ground.
1937-03	3099503	The cable for the power supply for the ultrasonic sensor(s) on the GIO18 cable has a short-circuit to 24 V.

### **Electronic Extension Module fault codes**

Code in SmartBoard	Diagnostic Code	Description
1937-04	3099604	The cable for the power supply for the ultrasonic sensor(s) on the GIO17 or GIO18 cable has a short-circuit to ground.
1952-12	3124412	TailGUARD <sup>™</sup> function cancelled because of a sensor error. This error can also occur with heavy parasitic noises.
1968-12	3150012	TailGUARD™ function cancelled because of a sensor error in the main level. This error can also occur with heavy parasitic noises.
1968-14	3150214	TailGUARD™ was deactivated while reversing.
1969-12	3151612	TailGUARD <sup>™</sup> function cancelled because of a sensor error in the expanded level. This error can also occur with heavy parasitic noises.
1984-12	3175612	TailGUARD™ function cancelled because of a fault in the Trailer EBS.
1985-12	3177212	General termination of the TailGUARD <sup>™</sup> function due to excessive reversing speed or faults in the TailGUARD <sup>™</sup> components during operation. Note the additional information ("Info" button).
2032-02	3251402	Implausible signal from distance sensor 2.
2032-03	3251503	The cable to distance sensor 2 has a short-circuit to 24 V.
2032-04	3251604	The cable to distance sensor 2 has a short-circuit to ground.
2032-05	3251705	The cable to distance sensor 2 is not connected or is defective. This fault can also occur in combination with the fault "Power supply too low", then ignore.
2032-11	3252311	A component for which there are no parameter settings was detected at slot GIO13, pin 4.
2048-02	3277002	Implausible signal from distance sensor 1.
2048-03	3277103	The cable to distance sensor 1 has a short-circuit to 24 V.
2048-04	3277204	The cable to distance sensor 1 has a short-circuit to ground.
2048-05	3277305	The cable to distance sensor 1 is not connected or is defective.
2048-11	3277911	A component for which there are no parameter settings was detected at slot GIO14, pin 4.
2080-03	3328303	The LIN bus to the ultrasonic sensors (GIO17 or GIO18) was interrupted by excessive voltage. Check the sensor cable.
2080-04	3328404	The LIN bus to the ultrasonic sensors (GIO17 or GIO18) has a short to ground. Check the sensor cable.
2080-05	3328505	No sensor is connected on the line of the LIN bus to the ultrasonic sensors (GIO17 or GIO18).
2080-09	3328909	The LIN bus to the ultrasonic sensors is having communication problems. Switch the ignition off and on again.
2081-03	3329903	The LIN bus to the ultrasonic sensors (GIO17 or GIO18) was interrupted by excessive voltage. Check the sensor cable.
2081-04	3330004	The LIN bus to the ultrasonic sensors (GIO17 or GIO18) has a short to ground. Check the sensor cable.
2081-13	3330913	The ultrasonic sensors are not configured.
2097-12	3356412	Ultrasonic sensor 1 (main level left) has an internal error. If the fault occurs frequently, replace the sensor.
2098-00	3356800	Ultrasonic sensor 1 (main level left) has an internal error. If the fault occurs frequently, replace the sensor.
2099-00	3358400	Ultrasonic sensor 1 (main level left) has an internal error. If the fault occurs frequently, replace the sensor.
2100-12	3361212	Ultrasonic sensor 1 (main level left) has an internal error. If the fault occurs frequently, replace the sensor.
2101-12	3362812	Ultrasonic sensor 1 (main level left) has an internal error. If the fault occurs frequently, replace the sensor.

Code in SmartBoard	Diagnostic Code	Description
2102-12	3364412	Ultrasonic sensor 1 (main level left) has a sensor membrane error. Make sure that the sensor membrane is clean and the sensor has a free view. If the error continues to occur, replace the sensor.
2103-05	3365305	The cable to the ultrasonic sensor 1 (main level left) was interrupted or a new ultrasonic sensor has not been learned yet. If the fault occurs during TailGUARD™ start-up, ignore the fault and repeat the start-up procedures.
2113-12	3382012	Ultrasonic sensor 2 (main level right) has an internal error. If the fault occurs frequently, replace the sensor.
2114-00	3382400	Ultrasonic sensor 2 (main level right) has an internal error. If the fault occurs frequently, replace the sensor.
2115-00	3384000	Ultrasonic sensor 2 (main level right) has an internal error. If the fault occurs frequently, replace the sensor.
2116-12	3386812	Ultrasonic sensor 2 (main level right) has an internal error. If the fault occurs frequently, replace the sensor.
2117-12	3388412	Ultrasonic sensor 2 (main level right) has an internal error. If the fault occurs frequently, replace the sensor.
2118-12	3390012	Ultrasonic sensor 2 (main level right) has a sensor membrane error. Make sure that the sensor membrane is clean and the sensor has a free view. If the error continues to occur, replace the sensor.
2119-05	3390905	The cable to ultrasonic sensor 2 (main level right) is interrupted or a new ultrasonic sensor has not been learned yet. If the fault occurs during TailGUARD <sup>™</sup> start-up, ignore the fault and repeat the start-up procedures.
2129-12	3407612	Ultrasonic sensor 3 (main level middle) has an internal error. If the fault occurs frequently, replace the sensor.
2130-00	3408000	Ultrasonic sensor 3 (main level middle) has an internal error. If the fault occurs frequently, replace the sensor.
2131-00	3409600	Ultrasonic sensor 3 (main level middle) has an internal error. If the fault occurs frequently, replace the sensor.
2132-12	3412412	Ultrasonic sensor 3 (main level middle) has an internal error. If the fault occurs frequently, replace the sensor.
2133-12	3414012	Ultrasonic sensor 3 (main level middle) has an internal error. If the fault occurs frequently, replace the sensor.
2134-12	3415612	Ultrasonic sensor 3 (main level middle) has a sensor membrane error. Make sure that the sensor membrane is clean and the sensor has a free view. If the error continues to occur, replace the sensor.
2135-05	3416505	The cable to ultrasonic sensor 3 (main level middle) is interrupted or a new ultrasonic sensor has not been learned yet. If the fault occurs during TailGUARD™ start-up, ignore the fault and repeat the start-up procedures.
2145-12	3433212	Ultrasonic sensor 4 (additional level left) has an internal error. If the fault occurs frequently, replace the sensor.
2146-00	3433600	Ultrasonic sensor 4 (additional level left) has an internal error. If the fault occurs frequently, replace the sensor.
2147-00	3435200	Ultrasonic sensor 4 (additional level left) has an internal error. If the fault occurs frequently, replace the sensor.
2148-12	3438012	Ultrasonic sensor 4 (additional level left) has an internal error. If the fault occurs frequently, replace the sensor.
2149-12	3439612	Ultrasonic sensor 4 (additional level left) has an internal error. If the fault occurs frequently, replace the sensor.

### **Electronic Extension Module fault codes**

Code in SmartBoard	Diagnostic Code	Description
2150-12	3441212	Ultrasonic sensor 4 (additional level left) has a sensor membrane error. Make sure that the sensor membrane is clean and the sensor has a free view. If the error continues to occur, replace the sensor.
2151-05	3442105	The cable to ultrasonic sensor 4 (additional level left) is interrupted or a new ultrasonic sensor has not been learned yet. If the fault occurs during TailGUARD <sup>™</sup> start-up, ignore the fault and repeat the start-up procedures.
2161-12	3458812	Ultrasonic sensor 5 (additional level right) has an internal error. If the fault occurs frequently, replace the sensor.
2162-00	3459200	Ultrasonic sensor 5 (additional level right) has an internal error. If the fault occurs frequently, replace the sensor.
2163-00	3460800	Ultrasonic sensor 5 (additional level right) has an internal error. If the fault occurs frequently, replace the sensor.
2164-12	3463612	Ultrasonic sensor 5 (additional level right) has an internal error. If the fault occurs frequently, replace the sensor.
2165-12	3465212	Ultrasonic sensor 5 (additional level right) has an internal error. If the fault occurs frequently, replace the sensor.
2166-12	3466812	Ultrasonic sensor 5 (additional level right) has a sensor membrane error. Make sure that the sensor membrane is clean and the sensor has a free view. If the error continues to occur, replace the sensor.
2167-05	3467705	The cable to ultrasonic sensor 5 (additional level right) is interrupted or a new ultrasonic sensor has not been learned yet. If the fault occurs during TailGUARD <sup>™</sup> start-up, ignore the fault and repeat the start-up procedures.
2177-12	3484412	Ultrasonic sensor 6 (additional level middle) has an internal error. If the fault occurs frequently, replace the sensor.
2178-00	3484800	Ultrasonic sensor 6 (additional level middle) has an internal error. If the fault occurs frequently, replace the sensor.
2179-00	3486400	Ultrasonic sensor 6 (additional level middle) has an internal error. If the fault occurs frequently, replace the sensor.
2180-12	3489212	Ultrasonic sensor 6 (additional level middle) has an internal error. If the fault occurs frequently, replace the sensor.
2181-12	3490812	Ultrasonic sensor 6 (additional level middle) has an internal error. If the fault occurs frequently, replace the sensor.
2182-12	3492412	Ultrasonic sensor 6 (additional level right) has a sensor membrane error. Make sure that the sensor membrane is clean and the sensor has a free view. If the error continues to occur, replace the sensor.
2183-05	3493305	The cable to ultrasonic sensor 6 (additional level middle) is interrupted or a new ultrasonic sensor has not been learned yet. If the fault occurs during TailGUARD <sup>™</sup> start-up, ignore the fault and repeat the start-up procedures.
2192-03	3507503	The cable to the trip recorder speed signal has a short-circuit to supply voltage.
2208-02	3533002	The speed signal is invalid. Move the vehicle. Should the fault persist, check the cabling of the speed signal.
2209-10	3535410	The speed signal is invalid. Switch the ignition off and on again and move the vehicle. Should the fault persist, check the cabling of the speed signal.
2224-03	3558703	Brake valve 1 has a short-circuit to supply voltage. Check the cabling.

Code in SmartBoard	Diagnostic Code	Description
2224-04	3558804	Brake valve 1 has a short-circuit to ground. Check the cabling.
2224-05	3558905	Brake valve 1 is not connected. Check the cabling.
2224-12	3559612	Brake valve 1 possibly has a leak or does not vent the brake line.
2225-03	3560303	Brake valve 2 has a short-circuit to supply voltage. Check the cabling.
2225-04	3560404	Brake valve 2 has a short-circuit to ground. Check the cabling.
2225-05	3560505	Brake valve 2 is not connected. Check the cabling.
2225-12	3561212	Brake valve 2 possibly has a leak or does not vent the brake line.
2243-11	3589911	Internal fault, the relay for the position lamps has a fault.
2257-12	3612412	Ultrasonic sensor 1 (GIO16) has an internal fault. If the fault occurs frequently, replace the sensor.
2260-12	3617212	Ultrasonic sensor 1 (GIO16) has an internal fault. If the fault occurs frequently, replace the sensor.
2261-12	3618812	Ultrasonic sensor 1 (GIO16) has an internal fault. If the fault occurs frequently, replace the sensor.
2262-12	3620412	Ultrasonic sensor 1 (GIO16) has a sensor membrane fault. Make sure that the sensor membrane is clean and the sensor has a free view. If the error continues to occur, replace the sensor.
2263-12	3622012	The cable to the ultrasonic sensor 1 (GIO16) was interrupted or a new ultrasonic sensor has not been learned yet. If the fault occurs during TailGUARD <sup>™</sup> start-up, ignore the fault and repeat the start-up procedures.
2273-12	3638012	Ultrasonic sensor 2 (GIO16) has an internal fault. If the fault occurs frequently, replace the sensor.
2276-12	3642812	Ultrasonic sensor 2 (GIO16) has an internal fault. If the fault occurs frequently, replace the sensor.
2277-12	3644412	Ultrasonic sensor 2 (GIO16) has an internal fault. If the fault occurs frequently, replace the sensor.
2278-12	3646012	Ultrasonic sensor 2 (GIO16) has a sensor membrane fault. Make sure that the sensor membrane is clean and the sensor has a free view. If the error continues to occur, replace the sensor.
2279-12	3647612	The cable to the ultrasonic sensor 2 (GIO16) was interrupted or a new ultrasonic sensor has not been learned yet. If the fault occurs during TailGUARD <sup>™</sup> start-up, ignore the fault and repeat the start-up procedures.
2289-12	3663612	Ultrasonic sensor 3 (GIO16) has an internal fault. If the fault occurs frequently, replace the sensor.
2292-12	3668412	Ultrasonic sensor 3 (GIO16) has an internal fault. If the fault occurs frequently, replace the sensor.
2293-12	3670012	Ultrasonic sensor 3 (GIO16) has an internal fault. If the fault occurs frequently, replace the sensor.
2294-12	3671612	Ultrasonic sensor 3 (GIO16) has a sensor membrane fault. Make sure that the sensor membrane is clean and the sensor has a free view. If the error continues to occur, replace the sensor.
2295-12	3673212	The cable to the ultrasonic sensor 3 (GIO16) was interrupted or a new ultrasonic sensor has not been learned yet. If the fault occurs during TailGUARD <sup>™</sup> start-up, ignore the fault and repeat the start-up procedures.

### **Electronic Extension Module fault codes**

Code in SmartBoard	Diagnostic Code	Description
2305-12	3689212	Ultrasonic sensor 4 (GIO16) has an internal fault. If the fault occurs frequently, replace the sensor.
2308-12	3694012	Ultrasonic sensor 4 (GIO16) has an internal fault. If the fault occurs frequently, replace the sensor.
2309-12	3695612	Ultrasonic sensor 4 (GIO16) has an internal fault. If the fault occurs frequently, replace the sensor.
2310-12	3697212	Ultrasonic sensor 4 (GIO16) has a sensor membrane fault. Make sure that the sensor membrane is clean and the sensor has a free view. If the error continues to occur, replace the sensor.
2311-12	3698812	The cable to the ultrasonic sensor 4 (GIO16) was interrupted or a new ultrasonic sensor has not been learned yet. If the fault occurs during TailGUARD™ start-up, ignore the fault and repeat the start-up procedures.
2321-12	3714812	Ultrasonic sensor 5 (GIO16) has an internal fault. If the fault occurs frequently, replace the sensor.
2324-12	3719612	Ultrasonic sensor 5 (GIO16) has an internal fault. If the fault occurs frequently, replace the sensor.
2325-12	3721212	Ultrasonic sensor 5 (GIO16) has an internal fault. If the fault occurs frequently, replace the sensor.
2326-12	3722812	Ultrasonic sensor 5 (GIO16) has a sensor membrane fault. Make sure that the sensor membrane is clean and the sensor has a free view. If the error continues to occur, replace the sensor.
2327-12	3724412	The cable to the ultrasonic sensor 5 (GIO16) was interrupted or a new ultrasonic sensor has not been learned yet. If the fault occurs during TailGUARD <sup>™</sup> start-up, ignore the fault and repeat the start-up procedures.
2337-12	3740412	Ultrasonic sensor 6 (GIO16) has an internal fault. If the fault occurs frequently, replace the sensor.
2340-12	3745212	Ultrasonic sensor 6 (GIO16) has an internal fault. If the fault occurs frequently, replace the sensor.
2341-12	3746812	Ultrasonic sensor 6 (GIO16) has an internal fault. If the fault occurs frequently, replace the sensor.
2342-12	3748412	Ultrasonic sensor 6 (GIO16) has a sensor membrane fault. Make sure that the sensor membrane is clean and the sensor has a free view. If the error continues to occur, replace the sensor.
2343-12	3750012	The cable to the ultrasonic sensor 6 (GIO16) was interrupted or a new ultrasonic sensor has not been learned yet. If the fault occurs during TailGUARD™ start-up, ignore the fault and repeat the start-up procedures.
2352-03	3763503	The LIN bus to the ultrasonic sensors (GIO16) was interrupted by excessive voltage. Check the sensor cable.
2352-04	3763604	The LIN bus to the ultrasonic sensors (GIO16) has a short to ground. Check the sensor cable.
2352-05	3763705	No sensor is connected on the line of the LIN bus to the ultrasonic sensors (GIO16).
2352-09	3764109	The LIN bus to the ultrasonic sensors (GIO16) is having communication problems. Switch the ignition off and on again.
2353-13	3766113	The ultrasonic sensors (GIO16) are not configured.
2368-02	3789002	The reversing signal is not available or is outside the valid range. Check the CAN connections of the 24 V CAN on port GIO12 to the vehicle.

Code in SmartBoard	Diagnostic Code	Description
2368-12	3790012	The reverse signal is implausible. Switch the ignition off and on again. Drive the vehicle and then engage the reverse gear while stationary. Check the reverse signal for a short-circuit to supply voltage.
2384-03	3814703	The pressure sensor input has a short-circuit to supply voltage. Check the cabling.
2384-04	3814804	The pressure sensor input has a short-circuit to ground. Check the cabling.
2384-14	3815814	The pressure sensor detects a braking pressure although no brake is being applied. Check the proper function of the pressure sensor and the solenoid valves if applicable and the Select-High valve for tightness.
2385-03	3816303	The supply cable for the pressure sensor has a short-circuit to supply voltage. Check the cabling.
2385-04	3816404	The supply cable for the pressure sensor has a short-circuit to ground. Check the cabling.
2400-05	3840505	The supply cable for the stop light (GIO12, pin 1) is not connected. The stop light cannot be actuated. Check the cabling.
2416-00	3865600	Supply pressure of the reverse monitoring system is too high. Check the supply pressure, the pressure limiting valve and the pressure sensor.
2416-01	3865701	Supply pressure of the reverse monitoring system is too low.
2432-12	3892412	The pressure sensor detects a braking pressure at a vehicle speed that is too high or invalid. Check the TailGUARD <sup>™</sup> valves for leaks as well as the valves and the pressure sensor and their cables for short circuits to supply.
2448-03	3917103	The status lamp or its cable has a short-circuit to supply voltage. Check the cabling.
2448-04	3917204	The status lamp or its cable has a short-circuit to ground. Check the cabling.
2448-05	3917305	The status lamp or its cable is not connected. Check the cabling; if an LED is installed, install and additional 1 kOhm resistor to ground.
2464-03	3942703	The warning lamp or its cable has a short-circuit to supply voltage. Check the cabling.
2464-04	3942804	The warning lamp or its cable has a short-circuit to ground. Check the cabling.
2464-05	3942905	The warning lamp or its cable is not connected. Check the cabling.
2480-03	3968303	The cable for the brake signal has a short-circuit to supply voltage. Check the cabling.
2480-04	3968404	The cable for the brake signal has a short-circuit to ground. Check the cabling.
2480-05	3968505	The cable for the brake signal is not connected. Check the cabling.
2496-09	3994509	Trailer Remote Control communication switched off because an existing Trailer Remote Control communication was detected via another electronic extension module. Disable all Trailer Remote Control communications in all Electronic Extension Modules except the first one (with the TailGUARD <sup>™</sup> system).
2512-12	4020412	The brake request from the TailGUARD <sup>™</sup> system was not acknowledged by the towing vehicle. Check the cabling of GIO13, pin 1 (brake signal), and GIO13, pin 3 (brake status signal). It is possible that the fault can be ignored (additional information under "Info").

### **Electronic Extension Module fault codes**

Code in SmartBoard	Diagnostic Code	Description
2513-12	4022012	The truck indicates confirmation of a TailGUARD <sup>™</sup> braking action even though the TailGUARD <sup>™</sup> system has not requested braking. Note the additional information ("Info" button), it may be possible to ignore the fault.
2514-12	4023612	The brake signal has a short-circuit to the brake confirmation signal (short-circuit GIO13, pin 1, to GIO13, pin 3). Check the cabling.
2944-09	4711309	No CAN connection to Trailer EBS.
2945-09	4712909	No CAN connection to truck. Check the cabling of the CAN lines of the Electronic Extension Module power cable (pins 2 and 3 / white-green and white-brown lines) to the vehicle (body manufacturer CAN port).
3520-09	5632909	CAN connection to towing vehicle via ISO 12098 interrupted.
4000-03	6400303	The supply voltage of the ultrasonic sensors is too high.
4000-04	6400404	The supply voltage of the ultrasonic sensors is too low. This fault can also occur in combination with the fault "Power supply too low", then ignore.
4016-03	6425903	The supply voltage to the Electronic Extension Module is above 30 V.
4016-04	6426004	The supply voltage to the Electronic Extension Module is below 9 V.
4017-03	6427503	The supply voltage to the Electronic Extension Module is too high. The reverse monitoring system was switched off.
4017-04	6427604	The supply voltage for the Electronic Extension Module is below 19 V. The reverse monitoring system was switched off.
4048-14	6478214	The TailGUARD™ system has not been learned or tested yet. Please run initial start-up routine.
4049-02	6478602	The parameter settings are incorrect. For more information: Read out parameter set and write back into the ECU.
4064-12	6503612	The port expansion was deactivated. Too many 12 V components were defined on the Electronic Extension Module in multi-voltage operation. Reduce the number to max. 3 components.
4065-12	6505212	Switch ignition off for at least 5 s. If the fault is still current after the ignition reset, contact your WABCO partner.
4066-12	6506812	Switch ignition off for at least 5 s. If the fault is still current after the ignition reset, contact your WABCO partner.
4067-12	6508412	Switch ignition off for at least 5 s. If the fault is still current after the ignition reset, contact your WABCO partner.
4068-12	6510012	Switch ignition off for at least 5 s. If the fault is still current after the ignition reset, contact your WABCO partner.
4069-12	6511612	Switch ignition off for at least 5 s. If the fault is still current after the ignition reset, contact your WABCO partner.
4088-12	6542012	Switch ignition off for at least 5 s. If the fault is still current after the ignition reset, contact your WABCO partner.



You can find information on WABCO products here: https://www.wabco-customercentre.com Please contact your WABCO partner for further information.

### ZF Friedrichshafen AG

ZF is a global technology company and supplies systems for passenger cars, commercial vehicles and industrial technology, enabling the next generation of mobility. ZF allows vehicles to see, think and act. In the four technology domains Vehicle Motion Control, Integrated Safety, Automated Driving, and Electric Mobility, ZF offers comprehensive solutions for established vehicle manufacturers and newly emerging transport and mobility service providers. ZF electrifies different kinds of vehicles. With its products, the company contributes to reducing emissions and protecting the climate.

ZF, which acquired WABCO Holdings Inc. on May 29, 2020, now has 162,000 employees worldwide with approximately 260 locations in 41 countries. In 2019, the two then-independent companies achieved sales of €36.5 billion (ZF) and \$3.4 billion (WABCO).

With the integration of WABCO, the leading global supplier of braking control systems and other advanced technologies that improve the safety, efficiency and connectivity of commercial vehicles ZF will create a new level of capability to pioneer the next generation of solutions and services for original equipment manufacturers and fleets globally. WABCO, with almost 12,000 people in 40 locations worldwide, will now operate under the ZF brand as its new Commercial Vehicle Control Systems division.

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