

Workshop literature

**STILL
ELECTRONIC
DOCUMENTATION
SYSTEM**

FM-X error list

FM-X-10
FM-X-14
FM-X-17
FM-X-20
FM-X-25



Edition 11/2012

- "Electric steering (ELK2)" error messages added
- "FleetManager 4.x" error messages (error no. 2218-2229, 2234-2238) added
- Error messages supplemented and revised in all areas

Edition 12/2013

- "FZS" error messages (304-404) added
- "FPS" error message (2184) changed
- "Electric steering (ELK2)" error messages (4300) changed

Annex

02 Diagnostics

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Error list

Truck control unit (FZS)

The errors described are those that are identified by the FZS itself. The error numbers are divided into groups in the FZS.				
FE xx:		General errors		
FE 1xx:		Error in the traction		
FE 2xx:		Error in the hydraulics		
FE 3xx:		Error in the steering		
FE 5xx:		Error in the setpoint devices for hydraulics and sensors		
FE 7xx:		Internal error detection by the FZS monitoring processor		
FE 9xx:		Errors in the "truck can-bus" area		
FE 1xxx:		General internal FZS errors		

No.	Description	Cause	Reaction	Remedy
01	Emergency off switch S1 actuated; error class 1	- Emergency off switch actuated - Emergency off switch faulty - Emergency off switch wiring faulty	- All functions are locked - Main contactor K1 has failed or cannot close	- Unlock the emergency off switch and switch the truck off/on with key switch S1 - Check emergency off switch wiring - Replace emergency off switch
99	Error in the CAN monitoring	More than 30,000 faulty CAN messages received	EMERGENCY STOP	- Reset by switching truck off and on again - Note further error messages - Replace FZS
100	"FPS OK" signal (0 V) is not switched by the traction and pump controller (FPS) within 7 s after "truck ON"; error class 2	- The FPS detected an error during run-up after "truck ON" - The FPS detected an error during operation - Open circuit between X1.8 (FPS) and X1.30 (FZS) - FPS or FZS faulty 1+48 V not present at FPS (+FE300)	All functions are locked except steering	- Check wiring - Note additional FPS error numbers and apply remedy according to the error number - Check whether FPS 0 V signal switches at X1.8: - If yes, replace FZS - If no, replace FPS
101	The current-controlled output for triggering the parking brake detects an open circuit; error class 1	- Open circuit between X1.17 (FZS) and parking brake (current-controlled 0 V output) - Open circuit between X1.23 (FZS) and parking brake (3+48 V supply) - Parking brake coil faulty - FZS faulty	- Driving is locked - FZS does not send the information "brake OFF" to FPS via the truck can-bus	- Check wiring - Check parking brake - Replace FZS
102	Seat switch configuration error, shown in display as: SEAT !	Check whether seat switch is present in dual-pedal version (only for trucks where seat switch has been connected at the dead man switch input)	EMERGENCY STOP	- Check parameters - Check seat switch - Check seat switch wiring
103	Seat switch level change error every 8 hours, shown in display as: NO SEAT !	Driver's seat not vacated for 8 hours	Driving is locked	- Switch on truck and sit on and vacate driver's seat - Check wiring - Check seat switch - Replace FZS
105	UPA error; error in assembly basket connection	-	-	Note the UPA description
106	UPA error; assembly basket above height switch	-	-	Note the UPA description
107	UPA error; assembly basket below height switch	-	-	Note the UPA description

Error list

No.	Description	Cause	Reaction	Remedy
200	The 0 V output for the lifting control valve and/or the lowering proportional valve detects an open circuit/short circuit (during function selection only); error class 1	• Open circuit between X1.42 (FZS) and proportional valve 2Y2 • Open circuit between X1.43 (FZS) and control valve 2Y20 • Open circuit between X1.19 (FZS) and/or valve 2Y2/2Y20 (common 0 V supply) • Short circuit between X1.42 and X1.19 or between X1.43 and X1.19 at the FZS • Valve coil faulty • FZS faulty	Lifting/lowering is locked	• Check wiring • Check valve coils • Replace FZS
201	The 0 V output for the DS/LS shift proportional valves detects an open circuit/short circuit (during function selection only); error class 1	• Open circuit between X1.44 (FZS) and proportional valve 2Y54 • Open circuit between X1.45 (FZS) and proportional valve 2Y55 • Open circuit between X1.18 (FZS) and/or valve 2Y54/2Y55 (common 0 V supply) • Short circuit between X1.44 and X1.18 or between X1.45 and X1.18 at the FZS • Valve coil faulty • FZS faulty	Shift is locked	• Check wiring • Check valve coils • Replace FZS
202	The 0 V output for the DS/LS tilt control valve detects an open circuit/short circuit (during function selection only); error class 1	• Open circuit between X1.38 (FZS) and control valve 2Y58 • Open circuit between X1.37 (FZS) and control valve 2Y59 • Open circuit between X1.22 (FZS) and/or valve 2Y58/2Y59 (common 3+48 V supply) • Short circuit between X1.38 and X1.22 or between X1.37 and X1.22 at the FZS • Valve coil faulty • FZS faulty	Tilting is locked	• Check wiring • Check valve coils • Replace FZS
203	The 0 V output for the l/r transition shift control valve or auxiliary hydraulics 1 A/B detects an open circuit/short circuit (during function selection only); error class 1	Transition shift: • Open circuit between X1.15 (FZS) and control valve 2Y52 • Open circuit between X1.16 (FZS) and control valve 2Y53 • Open circuit between X1.22 (FZS) and/or valve 2Y52/2Y53 (common 3+48 V supply) • Short circuit between X1.15 and X1.22 or between X1.16 and X1.22 at the FZS • Valve coil faulty • FZS faulty Auxiliary: • Open circuit between X1.13 (FZS) and control valve 2Y56 • Open circuit between X1.14 (FZS) and control valve 2Y57 • Open circuit between X1.22 (FZS) and/or valve 2Y56/2Y57 (common 3+48 V supply) • Short circuit between X1.13 and X1.22 or between X1.14 and X1.22 at the FZS • Valve coil faulty • FZS faulty	Transition shift/auxiliary hydraulics 1 are locked	• Check wiring • Check valve coils • Replace FZS
204	The 0 V output for triggering auxiliary hydraulics 2 detects an open circuit/short circuit (during function selection only); error class 1	• Open circuit between X1.40 (FZS) and the components for auxiliary hydraulics 2 • Short circuit between X1.40 and X1.22 at the FZS • Valve coil/relay faulty • FZS faulty	Auxiliary hydraulics 2 are locked	• Check wiring • Check valve coils/relay • Replace FZS
300	No 0 V signal "ELK OK" (electric steering OK); error class 2	• The electric steering (ELK) detected an error during run-up after "truck ON" • The ELK detected an error during operation • Open circuit between X47.12 (ELK) and X1.6 (FZS) • ELK or FZS faulty • 1+48 V not present at FPS (+FE100)	Driving is locked; parking brake is applied	• Check wiring • Note additional ELK error numbers and apply remedy according to the error number • Check whether ELK 0 V signal switches at X47.12: - If yes, replace FZS - If no, replace ELK

No.	Description	Cause	Reaction	Remedy
301	While the truck is travelling, the electric steering (ELK) sends the information "steering torque too low" via the truck can-bus; error class 2	- Steering mechanism is stiff - The carried load exceeds the nominal load - The drive wheel is very worn or brittle - ELK faulty	Driving is locked; parking brake is applied	- Check steering mechanism - Compare carried load with truck's nominal load - Check drive wheel and change if necessary - Replace ELK
302	While the truck is travelling, the FZS sends the information "truck travelling" via the truck can-bus; the electric steering (ELK) does not respond with "steering active"; error class 2	- The ELK detected a fault - ELK faulty	Driving is locked; parking brake is applied	- Note additional ELK error numbers and apply remedy according to the error number - Replace ELK
303	"Steering OK" active when the truck is switched on	- External minus at X1:6 (FZS) - Reset at FZS without steering restart - FZS faulty - Steering controller faulty	Driving is locked	- Switch truck off/on - Check wiring - Replace FZS - Replace steering unit
304	ELK type could not be determined	Communication between ELK and FZS interrupted when switched on	Steering system error messages may be assigned to the wrong steering type - No immediate response; the system will continue to work with the last known configuration - If the steering type is unknown, "ELK2" is set by default	- Switch truck off/on - Check FZS - ELK CAN BUS
400	Corresponds to text message in display: "Card?"	-	-	-
401	Corresponds to text message in display: "Card Test OK!"	-	-	-
402	Corresponds to text message in display: "Card not OK!"	-	-	-
403	Corresponds to text message in display: "Crash!"	-	-	-
404	Corresponds to text message in display: "Remove Card! "	-	-	-
400	Shown on display as: Insert access card, enter pin	-	-	-
401	Shown on display as: Card test OK	-	-	-
402	Shown on display as: Card test not OK	-	-	-
403	Shown on display as: Crash!	-	-	-
404	Shown on display as: Remove card	-	-	-
500	Lift/lower setpoint device (joystick/lever) or hydraulic setpoint converter (HSK) faulty; error class 2	The HSK sends a percentage setpoint although the associated analogue setpoint signal is within the neutral position range (≈ 2.5 V)	Lifting/lowering is locked	- Check the setpoint signals using the "ParaDigFMx" diagnostic software (0.5 V to 4.5 V) and replace the complete joystick or lever if necessary - Check the percentage setpoint from the HSK using the "ParaDigFMx" diagnostic software (0% to 100%) and replace the HSK if necessary
501	Shift setpoint device (joystick/lever) or hydraulic setpoint converter (HSK) faulty; error class 2	The HSK sends a percentage setpoint although the associated analogue setpoint signal is within the neutral position range (≈ 2.5 V)	Shift is locked	- Check the setpoint signals using the "ParaDigFMx" diagnostic software (0.5 V to 4.5 V) and replace the complete joystick or lever if necessary - Check the percentage setpoint from the HSK using the "ParaDigFMx" diagnostic software (0% to 100%) and replace the HSK if necessary

No.	Description	Cause	Reaction	Remedy
502	Tilt setpoint device (joystick/lever) or hydraulic setpoint converter (HSK) faulty; error class 2	The HSK sends a percentage setpoint although the associated analogue setpoint signal is within the neutral position range (≈ 2.5 V)	Tilting is locked	• Check the setpoint signals using the "ParaDigFMx" diagnostic software (0.5 V to 4.5 V) and replace the complete joystick or lever if necessary • Check the percentage setpoint from the HSK using the "ParaDigFMx" diagnostic software (0% to 100%) and replace the HSK if necessary
503	Transition shift setpoint device (joystick/lever) or hydraulic setpoint converter (HSK) faulty; error class 2	The HSK sends a percentage setpoint although the associated analogue setpoint signal is within the neutral position range (≈ 2.5 V)	Transition shift is locked	• Check the setpoint signals using the "ParaDigFMx" diagnostic software (0.5 V to 4.5 V) and replace the complete joystick or lever if necessary • Check the percentage setpoint from the HSK using the "ParaDigFMx" diagnostic software (0% to 100%) and replace the HSK if necessary
504	A hydraulic function is already selected at "truck ON" via one of the hydraulic setpoint devices; error class 1; shown on display as: NO JOYSTICK!	• Joystick/lever already actuated at "truck ON"; setpoint signal is in the neutral position range (≈ 2.5 V) • Hydraulic setpoint device faulty • Hydraulic setpoint converter (HSK) faulty	The hydraulic function is locked	• Move joystick/lever to neutral position • Check the setpoint signals using the "ParaDigFMx" diagnostic software (0.5 V to 4.5 V) and replace the complete joystick or lever if necessary • Check the percentage setpoint from the HSK using the "ParaDigFMx" diagnostic software (0% to 100%) and replace the HSK if necessary
505	No 0 V signal "joystick/4-lever OK" from hydraulic setpoint converter (HSK); error class 2	• Open circuit between X1.4 (HSK) and X1.54 (FZS) • Hydraulic setpoint device faulty • Hydraulic setpoint converter (HSK) faulty	Hydraulic functions are locked	• Check wiring • Check the setpoint signals using the "ParaDigFMx" diagnostic software (0.5 V to 4.5 V) and replace the complete joystick or lever if necessary • Check the percentage setpoint from the HSK using the "ParaDigFMx" diagnostic software (0% to 100%) and replace the HSK if necessary
506	No signal from reference switch 8B20 for height measure after 500 mm vertical travel in the main lift; error class 2	• Open circuit between X1.8 (FZS) and reference switch • No 24 V supply for reference switch • Metal/reference switch sensing distance too big • Reference switch faulty • FZS faulty	Height display and height preselection not operational	• Check wiring • Check sensing distance between metal and reference switch (max. sensing distance 6 mm) • Replace reference switch • Replace FZS
507	No pulse from incremental transducer 8B21 for height measure after signal from reference switch 8B20; error class 2	• Open circuit between X1.29 and/or X1.7 (FZS) and incremental transducer • No 24 V supply for incremental transducer • Incremental transducer faulty • Incremental transducer mechanism faulty • Height measure toothed belt faulty • FZS faulty	Height display and height preselection not operational	• Check wiring • Check mechanism • Replace toothed belt • Replace incremental transducer • Replace FZS
508	"Fork in free lift" switch 8B27 for height preselection gives wrong signal; error class 2	• Reference switch 8B20 has switched and the "fork in free lift" switch has not switched off • The incremental transducer 8B21 detects vertical travel > 500 mm in the main lift and the "fork in free lift" switch has not switched off • "Fork in free lift" switch faulty • Sensing distance of metal/"fork in free lift" switch too small • FZS faulty	Height preselection not operational	• Check general switching function of the "fork in free lift" switch and replace if necessary • Check the sensing distance of the metal/"fork in free lift" switch (max. sensing distance 6 mm) • Replace FZS
509	"Foot switch actuated" signal at truck ON	• Foot switch active when truck switched on • Foot switch faulty	EMERGENCY STOP	• Release foot switch • Check wiring • Check foot switch
510	Tilt sensor 2B2 voltage is outside the permitted range; error class 2 (FZS-SR software V1.24 and above)	• The voltage at X1.34 (FZS) is not within the range 0.5 V to 10.5 V • Open circuit in the 0 V supply for the tilt sensor (X73.2) • Open circuit in the 24 V supply for the tilt sensor (X73.1) • Open circuit between X73.3 (tilt sensor) and X1.34 (FZS) • Tilt sensor faulty • FZS faulty	None	• Check wiring • Replace tilt sensor • Replace FZS

No.	Description	Cause	Reaction	Remedy
511	Pressure sensor 2B31 voltage is outside the permitted range; error class 2 (FZS-SR software V1.24 and above)	• The voltage at X1.35 (FZS) is not within the range 0.5 V to 5.5 V • Open circuit in the 0 V supply for the pressure sensor (X1.2) • Open circuit in the 24 V supply for the pressure sensor (X1.1) • Open circuit between X1.3 (pressure sensor) and X1.35 (FZS) • Pressure sensor faulty • FZS faulty	None	• Check wiring • Replace pressure sensor • Replace FZS
512	Automatic unit: FZS X1:33 and X1:57 do not match	The following requirements were not fulfilled: • X1:33 Res Analog1 0 V - 3.5 V must be X1:57 MQ_Sens1= 0(24 V) • If X1:33 Res Analog1 6.5 V - 10.0 V, X1:57 MQ_Sens1 must be 1(0 V)	STOP	• Check wiring • Replace FZS
520	Automatic unit: Switched from automatic to manual	-	STOP	• Check wiring • Replace FZS
521	Automatic unit: Switched from manual to automatic	-	STOP	• Check wiring • Replace FZS
700	The internal current-measuring circuit in the FZS detects triggering of the lifting/lowering valves without function selection; error class 2	• External voltage at X1:19 • FZS faulty	• Internal safety relays K1/K2 in the FZS are switched off • All functions are locked except steering	• Check wiring • Replace FZS
701	The internal current-measuring circuit in the FZS detects triggering of the shift valves without the corresponding function being selected; error class 2	• External voltage at X1:18 • FZS faulty	• Internal safety relays K1/K2 in the FZS are switched off • All functions are locked except steering	• Check wiring • Replace FZS
702	The internal current-measuring circuit in the FZS detects triggering of the tilt valves without the corresponding function being selected; error class 2	• FZS faulty	• Internal safety relays K1/K2 in the FZS are switched off • All functions are locked except steering	• Replace FZS
703	The internal current-measuring circuit in the FZS detects triggering of the transition shift valves without the corresponding function being selected; error class 2	• FZS faulty	• Internal safety relays K1/K2 in the FZS are switched off • All functions are locked except steering	• Replace FZS
705	The parking brake is triggered without a corresponding function being selected; error class 2	The internal current-measuring circuit in the FZS detects triggering of the parking brake; faulty FZS	• Internal safety relays K1/K2 in the FZS are switched off • All functions are locked except steering	• Replace FZS
706	No 2+24 V at FZS; error class 1	• No voltage at X1:47 (FZS) and emergency off not actuated • Open circuit between emergency off switch S2 and X1.47 (FZS) • FZS faulty	• Internal safety relays K1/K2 in the FZS are switched off • All functions are locked except steering	• Check emergency off switch "S2" 31/32 • Check wiring • Replace FZS
707	No 2+24 V at FZS; error class 1	• Open circuit between emergency off switch S2 and X1.67 (FZS) • FZS faulty	• Internal safety relays K1/K2 in the FZS are switched off • All functions are locked except steering	• Check emergency off switch "S2" 11/12 • Check wiring • Replace FZS
708	Voltage at safety relay output during switch on	• External voltage at X1: 17/X1:23 or X1:22 (FZS) • Safety relay closed at switch on • Safety relay contacts welded	All functions are locked	• Check wiring • Replace FZS
709	Internal safety relay K2 for 3+24 V in FZS faulty; error class 2	• After "truck ON", it is detected that relay contact is already closed • FZS faulty	All functions are locked	• Replace FZS
729	Internal error	-	-	• Reset the truck by switching it off and on • Replace FZS
730	Internal error	-	-	• Reset the truck by switching it off and on • Replace FZS
731	Internal error	-	-	• Reset the truck by switching it off and on • Replace FZS

No.	Description	Cause	Reaction	Remedy
900	Truck can-bus communication error between FZS and FPS; error class 1	• FZS no longer receiving data from the FPS • Truck can-bus in the FPS area faulty • FPS power supply faulty • FPS faulty	All functions are locked except steering	• Check truck can-bus • Check FPS power supply • Replace FPS
903	Truck can-bus communication error between FZS and steering (ELK); error class 1	• FZS no longer receiving data from the ELK • Truck can-bus in the ELK area faulty • ELK power supply faulty • ELK faulty	Driving is locked; parking brake is applied	• Check truck can-bus • Check ELK power supply • Replace ELK
904	• FleetManager 4.x Truck can-bus communication error between FZS and hydraulic setpoint converter (HSK); error class 1	• FZS no longer receiving data from the display • Truck can-bus in the HSK area faulty • HSK power supply faulty • HSK faulty	Hydraulic functions are locked	• Check truck can-bus • Check HSK power supply • Replace HSK
905	Truck can-bus communication error between FZS and display; error class 1	• FZS no longer receiving data from the display • Truck can-bus in the display area faulty • Display power supply faulty • Display faulty	Driving is locked	• Check truck can-bus • Check display power supply • Replace display
906	Truck can-bus communication error between FZS and access control (FleetManager); error class 1	• FZS no longer receiving data from the access control • Truck can-bus in the access control area faulty • Access control power supply faulty • Access control faulty	All functions are locked as logging into truck is not possible	• Check truck can-bus • Check access control power supply • Replace access control
907	Truck can-bus communication error between FZS and automatic controller (ELK)	• FZS not receiving any data from automatic controller • Truck can-bus in the automatic controller area faulty • Power supply to automatic controller faulty • Automatic controller faulty	All functions are locked	• Check truck can-bus • Check power supply to automatic controller
908	Truck can-bus communication error between FZS and automatic controller (ELK); error class 1	• FZS not receiving any data from automatic controller • Truck can-bus in the automatic controller area faulty • Power supply to automatic controller faulty • Automatic controller faulty	All functions are locked	• Check truck can-bus • Check power supply to automatic controller
910	Total communication failure on truck can-bus, level 1; error class 2	• The FZS is no longer able to receive and/or send any data • Truck can-bus faulty • FZS power supply faulty • FZS faulty	The FZS resets itself and tests the communication again	• Check truck can-bus • Check FZS power supply • Replace FZS
911	Total communication failure on truck can-bus, level 2; error class 2	• Even after the FZS has automatically reset (FE910), it can no longer receive and/or send any data • Truck can-bus faulty • FZS power supply faulty • FZS faulty	All functions are locked	• Check truck can-bus • Check FZS power supply • Replace FZS
1000	Internal CPU error in the FZS; error class 2	• The two processors (control and monitoring) can no longer exchange data • FZS faulty	All functions are locked except steering	Replace FZS
1001	Check sum error in the EEPROM parameter of the FZS; error class 2	• The stored parameters have changed by themselves or are partly corrupted • FZS faulty	Hydraulic functions are restricted in regard to speed	• Check the parameters; adjust and save if necessary. To do this, first delete the error memory and, without turning the truck off/on, resave the parameters or load the truck-specific parameter file (*.ptx) using the "ParaDigFMx" service software. • Replace FZS
1002	Check sum error in the EEPROM parameter of the FZS for the height preselection parameter; error class 2	• The stored parameters have changed by themselves or are partly corrupted • FZS faulty	Hydraulic functions are restricted in regard to speed	• Check the parameters; adjust and save if necessary. To do this, first delete the error memory and, without turning the truck off/on, resave the parameters or load the truck-specific parameter file (*.ptx) using the "ParaDigFMx" service software. • Replace FZS
1003	Internal CPU error in the FZS; error class 2	• The two processors (control and monitoring) can no longer exchange data • FZS faulty	All functions are locked except steering	Replace FZS

No.	Description	Cause	Reaction	Remedy
1004	Default set of parameters was loaded from ROM to EEPROM; error class 2	New parameters have been loaded into the FZS during an FZS software update. These are yet to be defined. They can be set to valid values by loading a default set of parameters.	All functions are described with basic parameters, functions are not optimal	• Load the truck-specific parameter file (*.ptx) using the "ParaDigFMx" service software • Carry out teach-in of pressure and tilt sensor, as well as of the shift measurement system (if present)
1005	Internal check sum error	Error in ASD record	-	• Reset by switching truck off and on again • Replace FZS
1006	Parameters for special functions are incorrect/invalid	• Error when saving parameters • Error in the controller	Standard parameters for special functions are loaded	• Reset parameters • Replace controller

Drive and pump controller (FPS)

This section describes the errors that are detected by the FPS or the converters themselves.				
No.	Description	Cause	Reaction	Remedy
2001	• Accelerator pedal 1B1 voltage (single pedal version) not within the permitted range; error class 2 • Accelerator pedal 1R20 voltage (dual pedal version) not within the permitted range; error class 2	• Voltage at X1.19 (FPS) is not within the range < 9.6 V • Open circuit in 0 V supply for accelerator pedal (X2.1 or X1.1 for dual pedal version) • Accelerator pedal potentiometer faulty • FPS faulty	Driving is locked	• Check wiring • Check accelerator pedal potentiometer • Replace FPS
2002	• Accelerator pedal 1B1 voltage (single pedal version) not within the permitted range; error class 2 • Accelerator pedal 1R20 voltage (dual pedal version) not within the permitted range; error class 2	• Voltage at X1.19 (FPS) is not within the range > 0.4 V • Open circuit between X1.19 (FPS) and X2.2 (accelerator pedal, setpoint value) or X1.2 for dual pedal version • Accelerator pedal potentiometer faulty • FPS faulty	Driving is locked	• Check wiring • Check accelerator pedal potentiometer • Replace FPS
2003	Accelerator pedal configuration (one or dual pedal version) unknown	• The accelerator pedal version has been incorrectly configured in the FPS • FPS faulty	Driving is locked	• Reload the basic FPS parameters using the "ParaDigFMx" service software ("Battery data/hour meter" page) - Then perform a teach-in on the double pedal (if present) and check the FPS parameters (see the chapter entitled "FPS, Repairs") • Replace FPS
2004	Brake pressure switch 1S12 reports "brake pedal actuated" and accelerator pedal actuated at the same time; error class 1 (FPS SR software V3.64 and above)	• Accelerator pedal voltage > 5.5 V and brake pressure switch is open • Accelerator pedal and brake pedal are actuated at the same time • Open circuit in 0 V supply for brake pressure switch • Open circuit between X1.16 (FPS) and brake pressure switch • Brake pressure switch faulty • FPS faulty	Driving is locked	• Ensure correct operation • Check wiring • Replace switch • Replace FPS
2005	No signal from switch on accelerator pedal 1B1 when actuated; error class 1	• Accelerator pedal voltage > 5.5 V but switch has not been actuated • Open circuit in 0 V supply for switch on accelerator pedal • Open circuit between X1.18 (FPS) and switch on accelerator pedal • Switch set incorrectly • Switch faulty • Accelerator pedal potentiometer set incorrectly • FPS faulty	Driving is locked	• Check wiring • Adjust switch • Replace switch • Adjust accelerator pedal potentiometer • Replace FPS

This section describes the errors that are detected by the FPS or the converters themselves.				
No.	Description	Cause	Reaction	Remedy
2007	Accelerator pedal voltage (dual pedal version) is not within the permitted range; error class 2 (present with FPS SR V3.72 or above)	• Voltage at X1.17 (FPS) is not within the range < 9.6 V • Open circuit in 0 V supply for accelerator pedal (X1.1) • Potentiometer 1R20 faulty • FPS faulty	Driving is locked	• Check wiring • Check accelerator pedal potentiometer • Replace FPS
2008	Accelerator pedal voltage (dual pedal version) is not within the permitted range; error class 2 (present with FPS SR V3.72 or above)	• Voltage at X1.17 (FPS) is not within the range > 0.4 V • Open circuit between X1.28 (FPS) and X1.4 (accelerator pedal, 10 V supply) • Open circuit between X1.17 (FPS) and X1.3 (accelerator pedal, setpoint value) • Potentiometer 1R20 faulty • FPS faulty	Driving is locked	• Check wiring • Check accelerator pedal potentiometer • Replace FPS
2010	Accelerator pedal already actuated at "truck ON"; error class 1; shown in display as: NO PEDAL !	• Accelerator pedal voltage > 5.5 V at "truck ON" (single pedal version) • Accelerator pedal voltage at "truck ON" is outside the "zero window" ± 0.3 V (dual pedal version) • Accelerator pedal has been actuated • Accelerator pedal sticking • Accelerator pedal potentiometer set incorrectly • Accelerator pedal potentiometer faulty • FPS faulty	Driving is locked	• Check accelerator pedal • Adjust accelerator pedal potentiometer • Replace accelerator pedal • Replace FPS
2011	Accelerator pedal 1B1 actuated without foot switch 1S25; error class 1; shown in display as: PEDAL SEQUENCE !	• Incorrect operating sequence • Open circuit in 0 V supply for foot switch • Open circuit between X1.22 (FPS) and foot switch • Foot switch faulty • FPS faulty	Driving is locked	• Execute correct operating sequence (1st foot switch, 2nd accelerator pedal) • Check wiring • Replace foot switch • Replace FPS
2013	Switch on accelerator pedal 1B1 already producing a signal at "truck ON"; error class 1	• Accelerator pedal has been actuated • Accelerator pedal sticking • Switch set incorrectly • Switch faulty • FPS faulty	Driving is locked	• Check accelerator pedal • Adjust switch • Replace switch • Replace FPS
2014	Short circuit at 10 V supply for accelerator pedal 1B1; error class 2	• Voltage at FPS output X1.28 < 8 V • Accelerator pedal faulty • Short circuit at X1.28 to 0 V • FPS faulty	Driving is locked	• Replace accelerator pedal • Rectify short circuit at X1.28 • Replace FPS
2017	Battery lock monitoring reports that it is "unlocked"; error class 1	• Battery is unlocked • Open circuit between X1.23 (FPS) and battery interlock switch 1B27 • No 24 V supply for battery interlock switch • Sensing distance between metal and battery interlock switch too great • Battery interlock switch faulty • Battery interlock mechanism faulty • FPS faulty	Truck can only travel at creep speed (drive program 0 active)	• Lock battery • Check wiring • Check sensing distance between metal and battery interlock switch (max. sensing distance 6 mm) • Replace battery interlock switch • Check battery interlock mechanism • Replace FPS
2018	Monitoring processor goes "offline" during operation; error class 2	• Program loss • FPS faulty	All functions are locked, main contactor K1 is opened	• Perform software update with "Winflash" software for control processor (SR) and monitoring processor (UE) • Replace FPS
2020	CAN communication interrupted between FPS and converter. Error for information only (collective error). This occurs after 6 failed login attempts at the converter. Actual errors FE2039, 2041, 2045 (traction converter) or FE2040, 2042, 2044 (hydraulics converter); error class 2	• Converter can-bus faulty • No 24 V supply at converter • No enable signal at converter • Converter faulty	None	• Check converter can-bus • Check 24 V supply at converter (X1.15) • Check enable signal at converter (0 V at X1.11) • Replace converter
2021	FPS internal 15 V supply faulty;	FPS faulty	None	Replace FPS
2022	error class 2			

This section describes the errors that are detected by the FPS or the converters themselves.				
No.	Description	Cause	Reaction	Remedy
2023	Internal buffer battery flat; error class 2	Buffer battery voltage < 2.1 V	After the key switch has been turned off/on, the current operating hours cannot be stored; hour meter functions inaccurately	• Replace battery • Replace FPS
2024	Battery voltage at converter capacitors < 25 V; error class 2	• Truck battery flat • Open circuit between X1.29 (FPS) and battery "+" terminal of the converters • Fuse F5 faulty • Fuse F1 faulty • Main contactor faulty (fails to close) • FPS faulty • Converter faulty	All functions are locked; main contactor K1 is opened	• Charge truck battery • Check wiring • Check fuses • Replace main contactor • Replace FPS • Replace converter
2025	Main contactor K1 already closed when truck switched on; error class 2	• Voltage at X1.29 (FPS, capacitor charging line) is immediately a constant > 24 V after "truck ON" • Main contactor incorrectly connected • Main contactor sticking	All functions are locked except steering	• Connect main contactor correctly • Replace main contactor
2026	The capacitors in the converters could not be charged; error class 2	• Voltage at X1.29 (FPS, capacitor charging cable) is ≤ 36 V within 3.5 seconds after "truck ON" • Truck battery flat • Open circuit between X1.29 (FPS) and battery "+" terminal of the converters • Fuse F5 faulty • FPS faulty • Converter faulty	All functions are locked; main contactor K1 fails to close	• Charge truck battery • Check wiring • Check fuse • Replace FPS • Replace converter
2028	Parameters for the drive programs faulty	• Invalid parameters in the FPS memory • FPS faulty	Driving with setpoint values is possible (no optimised drive behaviour)	• Using the "ParaDigFMx" service software, execute the command "Load FPS basic parameters" ("Battery data/hour meter" page) • Check accelerator in the dual pedal teach-in • Check FPS parameters (see chapter entitled "FPS, Repairs") • Replace FPS
2029	Shunt for measuring battery capacity incorrectly connected; error class 2	Measurement connections on shunt reversed	None	Change measurement connections on shunt
2035	No enable from "traction converter"; error class 2	• No 24 V supply at X1.15 ("traction converter") • No 0 V enable signal at X1.11 ("traction converter") • Traction motor rev sensor faulty • "Traction converter" faulty	All functions are locked; main contactor K1 fails to close	• Check 24 V supply • Check 0 V enable signal • Note additional FPS error numbers and apply remedy according to the error number • Replace "traction converter"
2036	No enable from "hydraulic converter"; error class 2	• No 24 V supply at X1.15 ("hydraulic converter") • No 0 V enable signal at X1.11 ("hydraulic converter") • Pump motor rev sensor faulty • "Hydraulic converter" faulty	All functions are locked; main contactor K1 fails to close	• Check 24 V supply • Check 0 V enable signal • Note additional FPS error numbers and apply remedy according to the error number • Replace "hydraulic converter"
2037	Internal fault in "traction converter"; error class 2	"Traction converter" faulty	All functions are locked; main contactor K1 fails to close	Replace "traction converter"
2038	Internal fault in "hydraulic converter"; error class 2	"Hydraulic converter" faulty	All functions are locked; main contactor K1 fails to close	Replace "hydraulic converter"
2039	Converter can-bus communication error between FPS and "traction converter"; error class 2	• "Converter can-bus" in the traction converter area faulty • No 24 V supply at X1.15 ("traction converter") • No 0 V enable signal at X1.11 ("traction converter") • "Traction converter" faulty	All functions are locked; main contactor K1 fails to close	• Check converter can-bus • Check 24 V supply • Check 0 V enable signal • Replace "traction converter"

This section describes the errors that are detected by the FPS or the converters themselves.				
No.	Description	Cause	Reaction	Remedy
2040	Converter can-bus communication error between FPS and "hydraulic converter"; error class 2	• "Converter can-bus" in the hydraulic converter area faulty • No 24 V supply at X1.15 ("hydraulic converter") • No 0 V enable signal at X1.11 ("hydraulic converter") • "Hydraulic converter" faulty	All functions are locked; main contactor K1 fails to close	• Check converter can-bus • Check 24 V supply • Check 0 V enable signal • Replace "hydraulic converter"
2041	Converter can-bus communication error between FPS and "traction converter"; error class 2	• Converter can-bus in "traction converter" area faulty • No 24 V supply at X1.15 ("traction converter") • No 0 V enable signal at X1.11 ("traction converter") • "Traction converter" faulty	All functions are locked; main contactor K1 fails to close	• Check converter can-bus • Check 24 V supply • Check 0 V enable signal • Replace "traction converter"
2042	Converter can-bus communication error between FPS and "hydraulic converter"; error class 2	• "Converter can-bus" in the hydraulic converter area faulty • No 24 V supply at X1.15 ("hydraulic converter") • No 0 V enable signal at X1.11 ("hydraulic converter") • "Hydraulic converter" faulty	All functions are locked; main contactor K1 fails to close	• Check converter can-bus • Check 24 V supply • Check 0 V enable signal • Replace "hydraulic converter"
2043	No external enable signal during operation at the "traction converter"; error class 2	• No 0 V enable signal at X1.11 ("traction converter") • Open circuit between X1.12 (FPS) and X1.11 ("traction converter") • FPS faulty • "Traction converter" faulty	Driving is locked	• Check 0 V enable signal • Check wiring • Replace FPS • Replace traction converter
2044	Converter can-bus communication error between FPS and "hydraulic converter"; error class 2	• "Converter can-bus" in the hydraulic converter area faulty • No 24 V supply at X1.15 ("hydraulic converter") • No 0 V enable signal at X1.11 ("hydraulic converter") • "Hydraulic converter" faulty	All functions are locked; main contactor K1 fails to close	• Check converter can-bus • Check 24 V supply • Check 0 V enable signal • Replace "hydraulic converter"
2045	Converter can-bus communication error between FPS and "traction converter"; error class 2	• "Converter can-bus" in the traction converter area faulty • No 24 V supply at X1.15 ("traction converter") • No 0 V enable signal at X1.11 ("traction converter") • "Traction converter" faulty	All functions are locked; main contactor K1 fails to close	• Check converter can-bus • Check 24 V supply • Check 0 V enable signal • Replace "traction converter"
2046	Monitoring processor remains "offline"; error class 2	• Program loss • FPS faulty	All functions are locked; main contactor K1 fails to close	• Perform software update with "Winflash" software for control processor (SR) and monitoring processor (UE) • Replace FPS
2047	No signals from pump motor rev sensor during lowering if "energy regeneration during lowering" option is active; error class 2 (present with FPS SR V3.68 or above)	• Rev sensor faulty • Open circuit between rev sensor and "hydraulic converter"	Lowering function is locked, proportional valve 2Y2 is no longer activated	• Replace rev sensor • Check wiring
2050	No external enable signal during operation at the "hydraulic converter"; error class 2	• No 0 V enable signal at X1.11 ("hydraulic converter") • Open circuit between X1.13 (FPS) and X1.11 ("hydraulic converter") • FPS faulty • "Hydraulic converter" faulty	Hydraulic functions are locked	• Check 0 V enable signal • Check wiring • Replace FPS • Replace "hydraulic converter"
2051	Internal temperature sensor in the "hydraulic converter" faulty;	"Hydraulic converter" faulty	Hydraulic functions are locked	Replace "hydraulic converter"
2052	error class 2			
2053	"Hydraulic converter" temperature > 89°C; error class 2; shown in display as: TEMP PUMP CONVERTER !	• Converter ventilation faulty • Truck's nominal load exceeded • Pump motor rev sensor incorrectly connected • Pump motor rev sensor faulty • Incorrect pump motor • Pump motor faulty • Switching output X1.41 (FZS) faulty • "Hydraulic converter" faulty	• Linear reduction of output power to 115°C, then main lift shut-off • Main lift shut-off when lowering, in energy recovery mode only	• Check ventilation • Check load carried • Check rev sensor • Replace pump motor • Replace FZS • Replace "hydraulic converter"

This section describes the errors that are detected by the FPS or the converters themselves.				
No.	Description	Cause	Reaction	Remedy
2054 2055	Fault in internal temperature sensor of "traction converter"; error class 2	"Traction converter" faulty	Driving is locked	Replace "traction converter"
2056	"Traction converter" temperature > 89°C; error class 2; shown in display as: TEMP PUMP CONVERTER !	• Converter ventilation faulty • Truck's nominal load exceeded • Traction motor rev sensor incorrectly connected • Traction motor rev sensor faulty • Incorrect traction motor • Traction motor faulty • Switching output X1.41 (FZS) faulty • "Traction converter" faulty	• Linear reduction of output power to 115°C, then main lift shut-off • Vmax between 89°C-115°C; restricted to 2.5 km/h within this range (shut-off at > 115°C)	• Check ventilation • Check load carried • Check rev sensor • Replace traction motor • Enable at > 80°C • Replace FZS • Replace "traction converter"
2060	Internal fault in "traction converter"; error class 2	"Traction converter" faulty	All functions are locked; main contactor K1 fails to close	Replace "traction converter"
2061	Internal fault in "hydraulic converter"; error class 2	"Hydraulic converter" faulty	All functions are locked; main contactor K1 fails to close	Replace "hydraulic converter"
2062	Internal fault in "traction converter"; error class 2 (present with FPS SR V3.72 or above)	"Traction converter" faulty	Driving is locked	Replace "traction converter"
2063	Internal fault in "hydraulic converter"; error class 2 (present with FPS SR V3.72 or above)	"Hydraulic converter" faulty	Hydraulic functions are locked	Replace "hydraulic converter"
2064	Internal fault in "traction converter"; error class 2 (present with FPS SR V3.72 or above)	"Traction converter" faulty	Driving is locked	Replace "traction converter"
2065	Internal fault in "hydraulic converter"; error class 2 (present with FPS SR V3.72 or above)	"Hydraulic converter" faulty	Hydraulic functions are locked	Replace "hydraulic converter"
2071	Internal fault in "traction converter"; error class 2 (present with FPS SR V3.72 or above)	"Traction converter" faulty	Driving is locked	Replace "traction converter"
2074	Internal fault in "hydraulic converter"; error class 2 (present with FPS SR V3.72 or above)	"Hydraulic converter" faulty	Hydraulic functions are locked	Replace "hydraulic converter"
2075	Internal fault in "traction converter"; error class 2 (present with FPS SR V3.72 or above)	"Traction converter" faulty	Driving is locked	Replace "traction converter"
2076	Internal fault in "hydraulic converter"; error class 2 (present with FPS SR V3.72 or above)	"Hydraulic converter" faulty	Hydraulic functions are locked	Replace "hydraulic converter"
2077	Internal fault in "hydraulic converter"; error class 2	"Hydraulic converter" faulty	All functions are locked; main contactor K1 fails to close	Replace "hydraulic converter"
2078	Internal fault in "traction converter"; error class 2	"Traction converter" faulty	All functions are locked; main contactor K1 fails to close	Replace "traction converter"
2087 2088	FPS detects faulty signal from traction motor rev sensor; error class 2	• Input X1.15 or X1.24 (FPS) receiving unstable signal from rev sensor • Wiring faulty • Wiring laid too close to power connections • Plug connectors loose • Rev sensor faulty	None	• Check wiring • Check plug connections • Replace rev sensor

Error list

This section describes the errors that are detected by the FPS or the converters themselves.				
No.	Description	Cause	Reaction	Remedy
2089	Internal error in FPS; error class 2	FPS faulty	All functions are locked; main contactor K1 is opened	Replace FPS
2090				
2091				
2092				
2093				
2094				
2095				
2096	Internal error	-	EMERGENCY STOP	• Reflash FPS • Replace FPS
2097	Internal error	-	EMERGENCY STOP	• Reflash FPS • Replace FPS
2106	FPS detects no communication on truck can-bus (signals from FZS to FPS); error class 1	• Truck can-bus faulty • FPS faulty	None	• Check truck can-bus • Replace FPS
2107				
2108				
2109				
2110				
2111				
2112				
2114	FPS detects no communication on truck can-bus (signals from FZS to FPS); error class 1	• Truck can-bus faulty • FZS sends no CAN signals • FPS receives no CAN signals	Traction and hydraulic functions are locked	• Check truck can-bus • Check using CAN signal diagnostics • Replace FZS • Replace FPS
2117	The two setpoint signals from the dual pedal potentiometer 1R20 are not within the permitted range; error class 2 (present with FPS SR V3.72 or above)	• The two voltage values do not add up to 10 V (tolerance from ± 0.7 V in neutral position to ± 1.1 V at full actuation) • Teach-in not conducted correctly • Potentiometer 1R20 faulty • FPS faulty	Driving is locked	• Repeat teach-in • Replace potentiometer 1R20 • Replace FPS
2118	Teach-in for dual pedal potentiometer 1R20 was executed with errors; error class 2 (present with FPS SR V3.72 or above)	• Teach-in not conducted correctly • Potentiometer 1R20 faulty • FPS faulty	Driving with FPS setpoint values is possible (no optimised handling behaviour)	• Repeat teach-in • Replace potentiometer 1R20 • Replace FPS
2119				
2136	Internal error in FPS; error class 2	FPS faulty	All functions are locked; main contactor K1 is opened	Replace FPS
2137				
2138				
2139				
2140				
2141				
2142				
2143				
2154	Internal error in FPS; error class 2	FPS faulty	None	Replace FPS
2155				
2156				
2157				
2167	Internal fault in "hydraulic converter"; error class 2	"Hydraulic converter" faulty	Hydraulic functions are locked	Replace "hydraulic converter"
2168	Internal fault in "traction converter"; error class 2	"Traction converter" faulty	Driving is locked	Replace "traction converter"

This section describes the errors that are detected by the FPS or the converters themselves.				
No.	Description	Cause	Reaction	Remedy
2170	Internal fault in "hydraulic converter"; error class 2	"Hydraulic converter" faulty	Hydraulic functions are locked	Replace "hydraulic converter"
2171	Internal fault in "traction converter"; error class 2	"Traction converter" faulty	Driving is locked	Replace "traction converter"
2172				
2173	Internal fault in "hydraulic converter"; error class 2	"Hydraulic converter" faulty	Hydraulic functions are locked	Replace "hydraulic converter"
2174	Internal fault in "traction converter"; error class 2	• "Traction converter" faulty • Traction motor rev sensor faulty (short circuit at 10 V supply)	Driving is locked	• Replace "traction converter" • Replace rev sensor
2175	Internal fault in "hydraulic converter"; error class 2	• "Hydraulic converter" faulty • Pump motor rev sensor faulty (short circuit at 10 V supply)	Hydraulic functions are locked	• Replace "hydraulic converter" • Replace rev sensor
2176	"Traction converter" detects faulty traction motor rev sensor; error class 2	• No current flowing across connections X1.7/X1.8 ("traction converter", 10 V rev sensor supply) • Open circuit between X1.7/X1.8 ("traction converter") and traction motor rev sensor • Rev sensor faulty	Driving is locked	• Check wiring • Replace rev sensor
2178	"Hydraulic converter" detects faulty pump motor rev sensor; error class 2	• No current flowing across connections X1.7/X1.8 ("hydraulic converter", 10 V rev sensor supply) • Open circuit between X1.7/X1.8 ("hydraulic converter") and pump motor rev sensor • Rev sensor faulty	Hydraulic functions are locked	• Check wiring • Replace rev sensor
2179	"Traction converter" temperature > 115°C; error class 2	• Converter ventilation faulty • Truck's nominal load exceeded • Traction motor rev sensor incorrectly connected • Traction motor rev sensor faulty • Incorrect traction motor • Traction motor faulty • Switching output X1.41 (FZS) faulty • "Traction converter" faulty	Driving is locked	• Check ventilation • Check load carried • Check rev sensor • Replace traction motor • Replace FZS • Replace "traction converter"
2181	"Hydraulic converter" temperature > 115°C; error class 2	• Converter ventilation faulty • Truck's nominal load exceeded • Pump motor rev sensor incorrectly connected • Pump motor rev sensor faulty • Incorrect pump motor • Pump motor faulty • Switching output X1.41 (FZS) faulty • "Hydraulic converter" faulty	Hydraulic functions are locked	• Check ventilation • Check load carried • Check rev sensor • Replace pump motor • Replace FZS • Replace "hydraulic converter"
2182	Internal fault in "traction converter"; error class 2	• Suppression capacitor incorrectly connected to horn or not connected at all • "Traction converter" faulty	Driving is locked	• Check suppression capacitor on horn • Replace "traction converter"
2183	Internal fault in "hydraulic converter"; error class 2	• Short circuit • Incorrect motor connected • Suppression capacitor on horn faulty or not connected • "Hydraulic converter" faulty • Hydraulic motor faulty	Driving is locked	• Check wiring • Replace capacitor • Replace "hydraulic converter" • Replace hydraulic motor
2184				
2185	"Traction converter" reports excess voltage; error class 2	• Voltage across capacitors > 82 V • Main contactor K1 opens during regenerative braking • Fuse F1 blows during regenerative braking • Incorrect truck battery • "Traction converter" faulty	None	• Check main contactor K1 • Check fuse F1 • Check truck battery (48 V) • Replace "traction converter" • See also FE 2187
2186	Internal fault in "traction converter"; error class 2	"Traction converter" faulty	Driving is locked	Replace "traction converter"

This section describes the errors that are detected by the FPS or the converters themselves.				
No.	Description	Cause	Reaction	Remedy
2187	"Hydraulic converter" reports excess voltage; error class 2	• Voltage across capacitors > 82 V • Main contactor K1 opens during regenerative energy recovery on lowering • Fuse F1 blows during regenerative energy recovery on lowering • Incorrect truck battery • "Hydraulic converter" faulty	None	• Check main contactor K1 • Check fuse F1 See also FE2185
2190	Internal fault in "hydraulic converter"; error class 2	"Hydraulic converter" faulty	None	Replace "hydraulic converter"
2191	"Traction converter" detects communication error to FPS on converter can-bus; error class 2	• Converter can-bus faulty • "Traction converter" faulty • FPS faulty	Driving is locked	• Check converter can-bus • Replace "traction converter" • Replace FPS
2192	Internal fault in "traction converter"; error class 2	"Traction converter" faulty	None	Replace "traction converter"
2193	"Hydraulic converter" detects communication error to FPS on converter can-bus; error class 2	• Converter can-bus faulty • "Hydraulic converter" faulty • FPS faulty	Hydraulic functions are locked	• Check converter can-bus • Replace "hydraulic converter" • Replace FPS
2195	Traction motor temperature > 150°C; error class 2	• Traction motor ventilation faulty • Truck's nominal load exceeded • Rev sensor incorrectly connected • Rev sensor faulty • Temperature sensor faulty • Traction motor faulty • "Traction converter" faulty	Driving is locked	• Check traction motor ventilation • Check load carried • Check rev sensor • Replace rev sensor • Check temperature sensor; if faulty, temperature sensor must be replaced • Replace traction motor • Replace "traction converter"
2196	Pump motor temperature > 150°C; error class 2	• Pump motor ventilation faulty • Truck's nominal load exceeded • Rev sensor incorrectly connected • Rev sensor faulty • Temperature sensor faulty • Pump motor faulty • "Hydraulic converter" faulty	Hydraulic functions are locked	• Check pump motor ventilation • Check load carried • Check rev sensor • Replace rev sensor • Check temperature sensor; if faulty, temperature sensor must be replaced • Replace pump motor • Replace "hydraulic converter"
2199	Traction motor temperature sensor faulty; error class 2	• Open circuit between X1.4/X1.3 ("traction converter") and temperature sensor • Temperature sensor faulty • "Traction converter" faulty	Vmax = 2.5 km/h	• Check wiring • Check temperature sensor; if faulty, temperature sensor must be replaced • Replace "traction converter"
2200	Pump motor temperature sensor faulty; error class 2	• Open circuit between X1.4/X1.3 ("hydraulic converter") and temperature sensor • Temperature sensor faulty • "Hydraulic converter" faulty	Pump motor speed is restricted to 1000 rpm	• Check wiring • Check temperature sensor; if faulty, temperature sensor must be replaced • Replace "hydraulic converter"
2201	Traction motor temperature > 145°C; error class 2; shown in display as: TEMP TRACTION MOTOR !	• Traction motor ventilation faulty • Truck's nominal load exceeded • Rev sensor incorrectly connected • Rev sensor faulty • Temperature sensor faulty • Traction motor faulty • "Traction converter" faulty	Vmax=2.5 km/h; power reduction 50%	• Check traction motor ventilation • Check load carried • Check rev sensor • Replace rev sensor • Check temperature sensor; if faulty, temperature sensor must be replaced • Replace traction motor • Replace "traction converter"
2203	Traction motor temperature sensor faulty; error class 2	• Short circuit between X1.4/X1.3 ("traction converter", temperature sensor connection) • Temperature sensor faulty • "Traction converter" faulty	Vmax = 2.5 km/h	• Check wiring • Check temperature sensor; if faulty, temperature sensor must be replaced • Replace "traction converter"

This section describes the errors that are detected by the FPS or the converters themselves.				
No.	Description	Cause	Reaction	Remedy
2204	Pump motor temperature sensor faulty; error class 2	• Short circuit between X1.4/X1.3 ("hydraulic converter", temperature sensor connection) • Temperature sensor faulty • "Hydraulic converter" faulty	Pump motor speed is restricted to 1000 rpm	• Check wiring • Check temperature sensor; if faulty, temperature sensor must be replaced • Replace "hydraulic converter"
2206	"Traction converter" detects faulty traction motor rev sensor; error class 2	• No current flowing across connections X1.7/X1.8 ("traction converter", 10 V rev sensor supply) • Open circuit between X1.7/X1.8 ("traction converter") and traction motor rev sensor • Rev sensor faulty	Driving is locked	• Check wiring • Replace rev sensor
2207	Pump motor temperature > 145°C; error class 2; shown in display as: TEMP PUMP MOTOR !	• Pump motor ventilation faulty • Truck's nominal load exceeded • Rev sensor incorrectly connected • Rev sensor faulty • Temperature sensor faulty • Pump motor faulty • "Hydraulic converter" faulty	Pump motor speed is restricted to 1000 rpm	• Check pump motor ventilation • Check load carried • Check rev sensor • Replace rev sensor • Check temperature sensor; if faulty, temperature sensor must be replaced • Replace pump motor • Replace "hydraulic converter"
2208	"Traction converter" detects faulty traction motor rev sensor; error class 2 (present with FPS SR V3.72 or above)	• No pulses from rev sensor detected via connections X1.5/X1.6 ("traction converter", incremental transducer inputs) • Open circuit between X1.5/X1.6 ("traction converter") and traction motor rev sensor • Rev sensor faulty	Driving only possible at low speed	• Check wiring • Replace rev sensor
2209	"Hydraulic converter" detects faulty pump motor rev sensor; error class 2 (present with FPS SR V3.72 or above)	• No pulses from rev sensor detected via connections X1.5/X1.6 ("hydraulic converter", incremental transducer inputs) • Open circuit between X1.5/X1.6 ("hydraulic converter") and pump motor rev sensor • Rev sensor faulty	Hydraulics only possible at low speed	• Check wiring • Replace rev sensor
2210	"Hydraulic converter" detects faulty pump motor rev sensor; error class 2	• No current flowing across connections X1.7/X1.8 ("hydraulic converter", 10 V rev sensor supply) • Open circuit between X1.7/X1.8 ("hydraulic converter") and pump motor rev sensor • Rev sensor faulty	Hydraulic functions are locked	• Check wiring • Replace rev sensor
2211	FPS detects communication error on converter can-bus; error class 2	• Converter can-bus faulty • FPS faulty	None	• Check converter can-bus • Replace FPS
2212				
2213				
2214				
2215				
2216				
2217				
2218	FleetManager 4.x: No communication to the FMID	• No FMID installed • Error in the CAN bus • Incorrect software versions	Traction and hydraulic functions are locked	• Check parameters • Check can-bus • Update vehicle software to correct versions • Replace FPS
2220	FleetManager 4.x: FleetManager server cannot be accessed	No response from FleetManager server before timeout (error generated after the third unsuccessful attempt)	No connection to FleetManager communication server	Have FleetManager communication server and FleetManager server checked to ensure they are functioning correctly
2221	FleetManager 4.x: Wrong modem type configured	The modem type parameter GPRS is set incorrectly	No connection to FleetManager communication server	• Check/set modem type parameter • Reset by switching truck off and on again

This section describes the errors that are detected by the FPS or the converters themselves.				
No.	Description	Cause	Reaction	Remedy
2222	FleetManager 4.x: The modem cannot log into the relevant network	• Incorrect network • No GPRS reception • SIM card is missing or faulty	No connection to FleetManager communication server	Automatic, if GPRS reception possible
2223	FleetManager 4.x: Modem does not confirm transmission of data before timeout	Data could not be sent to the FleetManager communication server	No connection to FleetManager communication server	Reset by switching the truck off and then on again
2224	FleetManager 4.x: FleetManager server cannot be accessed	Modem cannot connect to the FleetManager communication server	No connection to FleetManager communication server	Have FleetManager communication server checked to ensure it is functioning correctly
2225	FleetManager 4.x: Error in transmitted configuration file "Driver Table"	"Driver Table" file faulty: • Checksum (CRC sum) incorrect • Truck serial number does not match • No drivers registered	Truck enabled without means of access	Load "Driver Table" configuration file (see FleetManager documentation)
2226	FleetManager 4.x: Writing of FleetManager data to EEPROM memory failed	FPS faulty	Unspecified error in FleetManager functions	Check FleetManager parameterising • Send new "Driver Table" file • Replace FPS
2227	FleetManager 4.x: Data loss in remote data transfer memory	• FleetManager data memory full • Unable to send all data via remote data transfer • Problem in internal memory administration	The oldest data was overwritten; all data to be sent by remote data transfer is deleted	• Check communication with the FleetManager communication server • Replace FPS • Replace remote data transfer unit
2228	FleetManager 4.x: Data loss in FMID memory	• FleetManager data memory full • Unable to send all data to the FMID • Problem in internal memory administration	The oldest data was overwritten; all data to be sent to the FMID is deleted	• Check communication with the FMID • Replace FPS • Replace FMID
2229	FleetManager 4.x: Data loss in priority memory	• FleetManager data memory full • Unable to send all data via remote data transfer • Problem in internal memory administration	The oldest data was overwritten; all data to be sent by remote data transfer is deleted	• Check communication with the FleetManager communication server • Replace FPS • Replace remote data transfer unit
2231	Internal error in FPS; error class 2	FPS faulty	All functions are locked; main contactor K1 fails to close	Replace FPS
2232				
2233				
2234	FleetManager 4.x: Communication between FPS and FMID interrupted	• Can-bus faulty • FPS faulty • FMID faulty	Truck loses enable; error message appears only after renewed enable of the truck	• Check can-bus • Check software states • Replace FPS • Replace FMID
2235	FleetManager 4.x: Communication between FPS and accident recorder interrupted	• Can-bus faulty • FPS faulty • Accident recorder faulty	Only shown in display; no restriction of truck functions	• Check can-bus • Check software states • Replace FPS • Replace accident recorder
2236	FleetManager 4.x: Communication between FPS and GPRS module interrupted	• Can-bus faulty • FPS faulty • GPRS module faulty	-	• Check can-bus • Check software states • Replace FPS • Replace GPRS module
2237	FleetManager 4.x: Accident recorder is expected, but does not respond at switch on	• Can-bus faulty • Accident recorder faulty	Only shown in display; no restriction of truck functions	• Reset by switching off and on again • Check can-bus • Check software states • Replace accident recorder
2238	FleetManager 4.x: GPRS module is expected, but does not respond at switch on	• Can-bus faulty • GPRS module faulty	-	• Reset by switching off and on again • Check can-bus • Check software states • Replace GPRS module

This section describes the errors that are detected by the FPS or the converters themselves.				
No.	Description	Cause	Reaction	Remedy
2240	Accelerator pedal 1B1 voltage too low; error class 2	• Voltage at X1.19 (FPS) < 3.65 V • Open circuit between X1.28 (FPS) and accelerator pedal (10 V supply) • Open circuit between X1.19 (FPS) and accelerator pedal (setpoint value) • Accelerator pedal potentiometer faulty • FPS faulty	Driving is locked	• Check wiring • Check accelerator pedal potentiometer • Replace FPS
2241	Different number of revolutions from traction motor CAN message and FPS; error class 2	• Speed delivered by "traction converter" via truck can-bus different from speed computed by FPS • Open circuit at X1.5/X1.6 ("traction converter", rev sensor input) • Open circuit at X1.15/X1.24 (FPS, rev sensor input) • "Traction converter" faulty • FPS faulty	None	• Check wiring • Replace "traction converter" • Replace FPS
2242	Internal error in FPS; error class 2	FPS faulty	None	Replace FPS
2251	Internal error in FPS; error class 2	FPS faulty	None	Replace FPS
2252				
2253	Main contactor K1 cannot be triggered due to open circuit; error class 2	• Open circuit between X1.31 (FPS) and main contactor (48 V supply) • Open circuit between X1.9 (FPS) and main contactor (0 V supply) • No 48 V supply at X1.1 (FPS) • Main contactor coil faulty • Main contactor coil incorrectly connected • FPS faulty	All functions are locked except steering	• Check wiring • Check 48 V supply at X1.1 (FPS) • Replace main contactor • Connect main contactor coil correctly • Replace FPS
2254	Converter can-bus communication error between FPS and "hydraulic converter"; error class 2	• Converter can-bus in • "hydraulic converter" area faulty • No 24 V supply at X1.15 ("hydraulic converter") • No 0 V enable signal at X1.11 ("hydraulic converter") • FPS faulty • "Hydraulic converter" faulty	All functions are locked; main contactor K1 fails to close	• Check converter can-bus • Check 24 V supply • Check 0 V enable signal • Replace FPS • Replace "hydraulic converter"
2255	Converter can-bus communication error between FPS and "traction converter"; error class 2	• "Converter can-bus" in the traction converter area faulty • No 24 V supply at X1.15 ("traction converter") • No 0 V enable signal at X1.11 ("traction converter") • FPS faulty • "Traction converter" faulty	All functions are locked; main contactor K1 fails to close	• Check converter can-bus • Check 24 V supply • Check 0 V enable signal • Replace FPS • Replace "traction converter"

Error display

The errors described are those that are detected by the display itself.				
No.	Description	Cause	Reaction	Remedy
2401	Power supply < 18 V; error class 2	• Voltage supply from DC/DC converter too low • Error in the power supply wiring for the display • Truck battery discharged • Display faulty	Display not operational	• Check 24 V supply for DC/DC converter and replace if necessary • Check power supply wiring for display (24 V to X1.1, 0 V to X1.6) • Check truck battery • Replace display
2402	Power supply >32 V; error class 2	• Voltage supply from DC/DC converter too high • Error in the power supply wiring for the display • Display faulty	Display not operational	• Check 24 V supply for DC/DC converter and replace if necessary • Check power supply wiring for display (24 V to X1.1, 0 V to X1.6) • Replace display
2403	Internal can-bus error; error class 2	Display faulty	Only shown in display; no restriction of truck functions	Replace display
2404	Display cannot continuously send or receive data from the can-bus; error class 2	• Malfunctions on truck can-bus • Display faulty	Only shown in display; no restriction of truck functions	• Check "truck can-bus" • Replace display

Hydraulic setpoint converter (HSK)

The errors described are those that are detected by the HSK itself. Before the HSK is changed, carry out a software update. This may rectify the error.				
No.	Description	Cause	Reaction	Remedy
2510	The sum of the voltages from the lift/lower setpoint device (joystick/lever) is outside the permitted range; error class 2	• The sum of the setpoint signals (signal 1 + signal 2) is not within the range 4.7 V to 5.3 V (4.5 V to 5.5 V for HSK software version V1.32 or above) • Open circuit between joystick/lever and HSK • Joystick/lever faulty • HSK faulty	Lifting/lowering is locked	• Check the setpoint signals using the "ParaDigFMx" diagnostic software and replace the complete joystick or lever if necessary • Check the wiring between the joystick/lever and HSK • Replace HSK
2511	The sum of the voltages from the shift setpoint device (joystick/lever) is outside the permitted range; error class 2	• The sum of the setpoint signals (signal 1 + signal 2) is not within the range 4.7 V to 5.3 V (4.5 V to 5.5 V for HSK software version V1.32 or above) • Open circuit between joystick/lever and HSK • Joystick/lever faulty • HSK faulty	Shift is locked	• Check the setpoint signals using the "ParaDigFMx" diagnostic software and replace the complete joystick or lever if necessary • Check the wiring between the joystick/lever and HSK • Replace HSK
2512	The sum of the voltages from the tilt setpoint device (joystick/lever) is outside the permitted range; error class 2	• The sum of the setpoint signals (signal 1 + signal 2) is not within the range 4.7 V to 5.3 V (4.5 V to 5.5 V for HSK software version V1.32 or above) • Open circuit between joystick/lever and HSK • Joystick/lever faulty • HSK faulty	Tilting is locked	• Check the setpoint signals using the "ParaDigFMx" diagnostic software and replace the complete joystick or lever if necessary • Check the wiring between the joystick/lever and HSK • Replace HSK
2513	The sum of the voltages from the transition shift setpoint device (joystick/lever) is outside the permitted range; error class 2	• The sum of the setpoint signals (signal 1 + signal 2) is not within the range 4.7 V to 5.3 V (4.5 V to 5.5 V for HSK software version V1.32 or above) • Open circuit between joystick/lever and HSK • Joystick/lever faulty • HSK faulty	Transition shift is locked	• Check the setpoint signals using the "ParaDigFMx" diagnostic software and replace the complete joystick or lever if necessary • Check the wiring between the joystick/lever and HSK • Replace HSK
2520	Parameter data record in EEPROM is incorrect; error class 2	• The calculated checksum of the data does not correspond to the saved checksum • HSK faulty	Hydraulic functions are locked	• Use the "Winflash" software to reinstall the software for the control processor and the monitoring processor • Replace HSK

The errors described are those that are detected by the HSK itself. Before the HSK is changed, carry out a software update. This may rectify the error.				
No.	Description	Cause	Reaction	Remedy
2530	The HSK is unable to send any data via the truck can-bus; error class 2	- Truck can-bus faulty - HSK faulty	Hydraulic functions are locked	- Check truck can-bus - Replace HSK
2540	Internal error in control processor; error class 2	HSK faulty	Hydraulic functions are locked	Replace HSK
2550	Internal error; error class 2	- Communication between control processor and monitoring processor is faulty - HSK faulty	Hydraulic functions are locked	Replace HSK
2560	Internal error; error class 2	- Lift monitoring error; control processor and monitoring processor detecting different signals - HSK faulty	Hydraulic functions are locked	Replace HSK
2561	Internal error; error class 2	- Shift monitoring error; control processor and monitoring processor detecting different signals - HSK faulty	Hydraulic functions are locked	Replace HSK
2562	Internal error; error class 2	- Tilt monitoring error; control processor and monitoring processor detecting different signals - HSK faulty	Hydraulic functions are locked	Replace HSK
2563	Internal error; error class 2	- Transition shift monitoring error; control processor and monitoring processor detecting different signals - HSK faulty	Hydraulic functions are locked	Replace HSK
2570	Internal error; error class 2	The "joystick OK" output (X1.4) is checked when the truck is switched on to see if any signals are exchanged; no signal exchange (0 V-24 V-0 V) - HSK faulty - Open circuit between HSK X1:4 and X1:54	Hydraulic functions are locked	- Replace HSK - Check wiring
2580	Internal error in monitoring processor; error class 2	HSK faulty	Hydraulic functions are locked	Replace HSK

FleetManager 3. x



NOTE

The **FleetManager 4. x** error messages are located in the FPS section (error no. 2218- 2229, 2234 - 2238)

The errors described are those that are detected by FleetManager 3 x itself.				
No.	Description	Cause	Reaction	Remedy
2736	Unknown card type or read/write error; error class 2	- Card in use is not a configuration card or valid access card - Card is faulty - FleetManager read/write unit is faulty	Truck functions are locked	- Use correct card - Replace read/write unit
2737	FleetManager has not yet been configured; error class 2	- FleetManager has not yet been configured using the configuration card - The card in use is an access card, not a configuration card	Shown on display only; all truck functions are available	- Configure FleetManager - Use correct configuration card
2738	Configuration failed; error class 2	The data on the configuration card in use does not match the FleetManager	Shown on display only; all truck functions are available	Use the correct configuration card
2816	Accident recorder is expected, but does not respond at switch on	- Can-bus faulty - Accident recorder faulty	Only shown in display; no restriction of truck functions	- Reset by switching truck off and on again - Check can-bus - Replace accident recorder

Electric steering (ELK 1)

The errors described are those that are detected by ELK 1 itself. Before replacing the steering unit, a software update should usually be carried out first. This may rectify the error.				
No.	Description	Cause	Reaction	Remedy
3001	Software does not match the hardware version	- Old steering hardware - Incorrect software loaded	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Load correct software - Replace steering unit
3002	Internal error	No communication with monitoring processor after start	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Replace steering unit
3018 3019	Under/over voltage at the supply for the setpoint/actual value device	The supply for the setpoint/actual value device or the internal 2.5 V reference voltage is overloaded	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Check setpoint/actual value device - Check setpoint/actual value device wiring - Replace steering unit
3020	Battery supply excess voltage	Battery voltage > 70 V	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Check battery voltage
3021	Battery supply under voltage	- Battery discharged, U < 18 V - Interrupted power supply	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Charge battery - Check battery voltage - Check wiring
3022	Internal error	Internal parameterising error. Steering switches off, "steering OK" signal off, parking brake is applied and driving locked	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Replace steering unit
3033	Output stage excess current	- Steering is stiff - Steering steers against mechanical stop	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Check steering mechanism - Replace steering unit
3034	Output stage overtemperature (> 80°C)	- Permanent steering at a standstill with excessive wheel load - Short circuit at the supply for setpoint/actual value device - Steering unit faulty	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Observe truck's nominal load - Check performance - Check setpoint/actual value device - Replace steering unit
3035 3036	Internal error	Internal monitoring of Phase U and W detects an error	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Replace steering unit
3037	Short-circuit at "Steering OK" output	Short-circuit to "+" potential at output X47.12 (ELK)	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Check wiring between X47.12 (ELK) and X1.6 (FZS)
3041	Steering contactor fails to close	- Fuse 3F1 faulty - Wiring faulty - Steering controller faulty	EMERGENCY STOP	- Replace fuse 3F1 - Check wiring - Replace steering controller
3049	Open circuit in setpoint device power supply	- Setpoint device current < 2 mA - Open circuit between X50L (ELK) and setpoint device 3R11 - Setpoint device faulty	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Check wiring - Perform A/D converter alignment - Replace setpoint device
3050	Setpoint device excess current	- Setpoint device current > 9.4 mA - Short circuit at X50L (ELK) - Setpoint device faulty	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Check wiring - Perform A/D converter alignment - Replace setpoint device
3051	Open circuit in actual value device power supply	- Actual value device current < 2 mA - Open circuit between X49G (ELK) and actual value device 3R10 - Actual value device faulty	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Check wiring - Perform A/D converter alignment - Replace actual value device
3052	Actual value device excess current	- Actual value device current > 9.4 mA - Short circuit at X49G (ELK) - Actual value device faulty	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Check wiring - Perform A/D converter alignment - Replace actual value device

The errors described are those that are detected by ELK 1 itself. Before replacing the steering unit, a software update should usually be carried out first. This may rectify the error.				
No.	Description	Cause	Reaction	Remedy
3053	Actual value device error	- Excessive deviation in the two actual value signals - Incorrect internal evaluation of the two actual value signals	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Check wiring - Check actual value device - Perform steering teach-in - Replace steering unit
3054	Setpoint device error	- Excessive deviation in the two setpoint signals - Incorrect internal evaluation of the two setpoint signals	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Check wiring - Check setpoint device - Perform steering teach-in - Replace steering unit
3055	The position of the drive wheel, as recorded by the actual value device, does not match the position of the internal incremental transducer	- Steering motor turns but steering turntable does not - Error in transmission for actual value device - Mechanism faulty - Actual value device faulty	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Check transmission mechanism - Check steering mechanism - Perform steering teach-in - Check actual value device - Replace steering unit
3056	Internal incremental transducer faulty	Internal incremental transducer sends incorrect signals	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Replace steering unit
3057	Actual value device incorrectly aligned	Self-test at power-on detects an error	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Perform A/D converter alignment - Replace steering unit
3058	Setpoint device incorrectly aligned	Self-test at power-on detects an error	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Perform A/D converter alignment - Replace steering unit
3059	Internal error	Internal current sensor values faulty	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Replace steering unit
3060	Internal engine resistance too high	- Contact problems between engine and power module - Winding faulty	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Replace steering unit
3061	Internal engine resistance too low	Engine winding faulty	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Replace steering unit
3062	Setpoint device error	- No clear angle of rotation can be derived from the setpoint signals - Open circuit between X50L (ELK) and setpoint device 3R11 - Short circuit at X50L (ELK) - Setpoint device faulty	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Check wiring - Replace setpoint device - Replace steering unit
3063	Actual value device error	- No clear angle of rotation can be derived from the actual value signals - Open circuit between X49G (ELK) and actual value device 3R10 - Short circuit at X49G (ELK) - Actual value device faulty	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Check wiring - Replace actual value device - Replace steering unit
3065	Internal error	- Engine control error - Internal incremental transducer error	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Replace steering unit
3066				
3068				
3069				
3070				
3071	Error on engine start-up	- Engine does not move at "Truck ON" - Internal incremental transducer sending incorrect signals or none at all	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Check supply voltage at X47 (ELK) - Replace steering unit
3074				
3075	Error in monitoring number of revolutions	- Steering turntable blocked - Torque too low - Steering faulty	Switch off steering at $V > 1$ km/h; Steering OK off	- Check ground conditions - Check steering assembly for ease of movement - Replace steering unit

Error list

The errors described are those that are detected by ELK 1 itself. Before replacing the steering unit, a software update should usually be carried out first. This may rectify the error.				
No.	Description	Cause	Reaction	Remedy
3076	Difference between setpoint and actual value is too big	- Steering turntable blocked - Torque too low - Steering faulty	Steering switches off; Steering OK off	- Check ground conditions - Check steering assembly for ease of movement - Replace steering unit
3077	Internal error	Error in internal process monitoring	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Replace steering unit
3078				
3081				
3082				
3083				
3084				
3085				
3086				
3088				
3089				
3090				
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3113				
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3116				
3117				
3118				
3119				
3120				
3121	Communication on truck can-bus failed between FZS and ELK	- Truck can-bus faulty - Steering unit faulty - FZS faulty	"Steering OK" signal OK; parking brake is applied and driving locked; CAN message from FZS	- Reset by switching truck off and on again - Check truck can-bus - Replace steering unit - Replace FZS
3122				
3125	No sign of life from the automatic controller	- Automatic controller is not switched on - CAN communication interrupted	Steering switches off; Steering OK off	- Switch on automatic controller - Check can-bus
3136	Timeout during setpoint device teach-in	Teach-in took too long	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Perform teach-in faster
3137	Timeout during actual value device teach-in	Teach-in took too long	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Perform teach-in faster
3145	Internal error	EEPROM memory error	Steering switches off, "steering OK" signal off; parking brake is applied and driving locked	- Reset by switching truck off and on again - Replace steering unit
3146				
3147				
3148				
3151				
3152				

Electric steering (ELK 2)

The errors described are those that are detected by ELK 2 itself. Before replacing the steering unit, a software update should usually be carried out first. This may rectify the error.				
No.	Description	Cause	Response	Remedy
4200	Internal error	-	-	• Reset by switching truck off and on again • Note further error messages • Replace steering unit
4201	Internal error	-	-	
4202	Internal error	-	-	
4203	Internal error	-	-	
4204	Internal error	-	-	
4205	Internal error	-	EMERGENCY STOP	
4206	Internal error	-	-	
4207	Internal error	-	-	
4208	Internal error	-	EMERGENCY STOP	
4209	Internal error	-	EMERGENCY STOP	
4210	Internal error	-	-	
4211	Internal error	-	EMERGENCY STOP	
4212	Internal error	-	-	
4213	Internal error when switching on	-	EMERGENCY STOP	
4214	Setpoint device or actual value device not successfully initialised	-	EMERGENCY STOP	• Teach setpoint/actual value device • Check setpoint/actual value device • Check wiring • Replace steering unit
4215	Hardware/software do not match	Incorrect hardware/software	EMERGENCY STOP	Check hardware/software versions
4216	Motor cannot be activated	-	-	Replace steering unit
4217	Impermissible actual value deviation	• Teach-in for steering not performed/completed • Actual value device faulty • Internal error	EMERGENCY STOP	• Perform teach-in for steering • Check actual value device • Check parameters • Load basic parameters
4218	Internal error when switching on	Internal initialisation incorrect	EMERGENCY STOP	• Switch truck off/on • Check software versions • Replace steering unit • Note further error messages
4219	Internal motor error	• Incorrect engine model • Motor incorrectly installed • Internal converter faulty	EMERGENCY STOP	• Reset by switching truck off and on again • Replace steering unit
4220	Internal motor error	Current sensor defective	EMERGENCY STOP	• Check power supply • Replace steering unit • Reset by switching truck off and on again • Replace steering unit
4221	Excess current in the motor	Motor or internal converter faulty	EMERGENCY STOP	
4222	Internal error	-	EMERGENCY STOP	
4223	Internal error	-	-	
4224	Internal error	-	-	
4225	Internal error	-	-	
4226	Internal error	Internal 5 V voltage not OK	EMERGENCY STOP	
4229	Internal error	-	EMERGENCY STOP	
4230	Internal error	-	EMERGENCY STOP	
4231	Internal error	-	EMERGENCY STOP	
4232	Internal error	-	EMERGENCY STOP	
4233	Internal error	-	EMERGENCY STOP	
4234	Internal error	-	EMERGENCY STOP	

The errors described are those that are detected by ELK 2 itself. Before replacing the steering unit, a software update should usually be carried out first. This may rectify the error.				
No.	Description	Cause	Response	Remedy
4235	Internal error when switching on	- Teach-in for steering not performed/completed - Actual value device faulty	EMERGENCY STOP	- Perform teach-in - Check actual value device - Check parameters - Load basic parameters
4236	Internal error	Control processor or vector processor faulty	EMERGENCY STOP	Replace steering unit
4237	Internal error	Teach-in for steering not performed/completed	EMERGENCY STOP	- Perform teach-in for steering - Check software version
4240	Internal error when switching on	Transmission of parameters to vector processor faulty	EMERGENCY STOP	- Reset by switching truck off and on again - Load basic parameters - Perform teach-in for steering - Replace steering unit
4241				
4242				
4243				
4244				
4245				
4246				
4247				
4248	Internal error when switching on	Hardware/software versions not compatible	EMERGENCY STOP	Check hardware model and software version
4249	Internal error when switching on	- Motor type not detected - Incorrect parameters entered	EMERGENCY STOP	- Load basic parameters - Perform teach-in for steering
4250	Internal error when switching on	- Current sensor type not detected - Incorrect parameters entered	EMERGENCY STOP	
4251	Internal error	Internal data transfer failed	EMERGENCY STOP	- Reset by switching truck off and on again - Replace steering unit
4252	Difference between setpoint and actual speed is too big	- Steering torque is too low - Drivetrain stuck - Four-point bearing worn - Gearbox in the steering motor faulty	EMERGENCY STOP	- Short start-up and steering test - Check drivetrain - Check/lubricate/replace four-point bearing - Replace steering unit
4253	Internal intermediate circuit voltage too low (<24 V)	- Discharge battery - Interrupted power supply	EMERGENCY STOP	- Reset by switching truck on and off again - Charge battery, check battery voltage - Check wiring
4254	Temperature of the internal steering converter too high (> 115°C)	Load moment on steering motor constantly too high	EMERGENCY STOP	- Allow steering unit to cool down - Check temperature on steering unit - Replace steering unit
4255	Position regulator output value: control processor does not match vector processor control value	Teach-in for neutral steering wheel position not performed/completed	EMERGENCY STOP	Perform teach-in for steering
4256	Impermissible jump in position regulator difference	Jump in position regulator deviation	EMERGENCY STOP	- Check setpoint device - Check actual value device - Check wiring - Replace steering unit
4257	Internal error	Deviation in actual value device signals between control processor and vector processor too great (+/-15.0°)	EMERGENCY STOP	- Check actual value device - Check wiring - Perform teach-in for steering - Replace steering controller
4258	Actual value device error (track A)	Actual value device: short circuit between channel A and 12 V supply (voltage channel A >4.5 V)	EMERGENCY STOP	- Check actual value device - Check wiring
4259	Actual value device error (track B)	Actual value device: short circuit between channel B and 12 V supply (voltage channel B >4.5 V)	EMERGENCY STOP	- Check actual value device - Check wiring
4260	Actual value device error (track A)	Actual value device: short circuit between channel A and earth or cable break (voltage channel A <0.5 V)	EMERGENCY STOP	- Check actual value device - Check wiring
4261	Actual value device error (track B)	Actual value device: short circuit between channel B and earth or cable break (voltage channel B <0.5 V)	EMERGENCY STOP	- Check actual value device - Check wiring

The errors described are those that are detected by ELK 2 itself. Before replacing the steering unit, a software update should usually be carried out first. This may rectify the error.				
No.	Description	Cause	Response	Remedy
4262	Actual value device error	Actual value device: difference between channel A and channel B too big	EMERGENCY STOP	• Perform teach-in for steering • Check actual value device • Check wiring
4263	Internal intermediate circuit voltage too high	Battery voltage too high (>70 V)	EMERGENCY STOP	• Reset by switching truck on and off again • Check battery voltage
4264	Setpoint device error	Setpoint device speed value too high	-	• Check setpoint device • Check wiring
4265	Internal error	Deviation in setpoint device signals between control processor and vector processor too great (+/-15.0°)	EMERGENCY STOP	• Check setpoint device • Check wiring • Perform setpoint device teach-in • Replace steering controller
4266	Setpoint device error (track A)	Setpoint device: short circuit between channel A and 12 V supply (voltage channel A >4.5 V)	EMERGENCY STOP	• Check setpoint device • Check wiring
4267	Setpoint device error (track B)	Setpoint device: short circuit between channel B and 12 V supply (voltage channel B >4.5 V)	EMERGENCY STOP	• Check setpoint device • Check wiring
4268	Setpoint device error (track A)	Setpoint device: short circuit between channel A and earth or cable break (voltage channel A <0.5 V)	EMERGENCY STOP	• Check setpoint device • Check wiring
4269	Setpoint device error (track B)	Setpoint device: short circuit between channel B and earth or cable break (voltage channel B <0.5 V)	EMERGENCY STOP	• Check setpoint device • Check wiring
4270	Setpoint device error	Setpoint value difference between channel A and channel B too great	EMERGENCY STOP	• Perform setpoint device teach-in • Check setpoint device • Check wiring
4271	Steering angle configuration error	Steering angle configuration between control processor and vector computer deviates	-	• Reset by switching truck off and on again • Load basic parameters • Perform setpoint device teach-in • Replace steering unit
4272	Internal error	Position setpoint value between control processor and vector computer deviates	-	• Reset by switching truck off and on again • Perform teach-in for steering • Replace steering unit
4273	Actual value device collective fault	-	-	• Note further error messages
4274	Setpoint device collective fault	-	-	• Note other steering error messages
4276	Internal error	-	-	• Reset by switching truck off and on again • Replace steering unit
4277				
4278				
4279				
4280				
4281				
4282				
4283				
4285				
4286				
4287				
4288				
4289				
4290				
4291				
4292				

The errors described are those that are detected by ELK 2 itself. Before replacing the steering unit, a software update should usually be carried out first. This may rectify the error.				
No.	Description	Cause	Response	Remedy
4294	Internal error when switching on	-	EMERGENCY STOP	- Reset by switching truck off and on again - Replace steering unit
4295				
4296				
4298	Internal error	-	EMERGENCY STOP	- Reset by switching truck off and on again - Replace steering unit
4299	Hardware/software do not match	Incorrect software/hardware	EMERGENCY STOP	- Check hardware/software versions - Reload parameters
4300	Internal error	Internal memory test	- Only shown in the display - From software version 9.16: EMERGENCY STOP	- Replace steering unit - If software version 9.15 --> update to version 9.16
4301	Internal error	Internal memory test	-	Replace steering unit
4302	Internal error when switching on	Error in the parameter memory	EMERGENCY STOP	- Reset by switching truck off and on again - Replace steering unit
4303				
4304				
4305				
4306				
4307				
4308				
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4317	Internal error when switching on	Motor parameter invalid	EMERGENCY STOP	- Load basic parameters - Replace steering unit
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The errors described are those that are detected by ELK 2 itself. Before replacing the steering unit, a software update should usually be carried out first. This may rectify the error.

No.	Description	Cause	Response	Remedy
4329	Internal error when switching on	Teach-in parameter invalid	EMERGENCY STOP	• Perform teach-in for steering
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4341	Internal error when switching on	Truck parameter invalid	EMERGENCY STOP	• Load basic parameters • Perform teach-in for steering • Replace steering unit
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4353	Internal error when switching on	Parameter invalid	EMERGENCY STOP	• Load basic parameters • Perform teach-in for steering • Replace steering unit
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The errors described are those that are detected by ELK 2 itself. Before replacing the steering unit, a software update should usually be carried out first. This may rectify the error.

No.	Description	Cause	Response	Remedy
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4403	Internal error	-	EMERGENCY STOP	• Reset by switching truck off and on again • Replace steering unit
4404				
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4406				
4407				
4408	Internal error	Error in parameter transmission	EMERGENCY STOP	• Reset by switching truck off and on again • Replace steering unit
4409				
4410				
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4415	Battery supply excess voltage	Battery voltage $U > 70 \text{ V}$	EMERGENCY STOP	• Reset by switching truck on and off again • Check battery
4416	Battery supply under voltage	• Discharge battery ($U < 24 \text{ V}$) • Interrupted power supply	EMERGENCY STOP	• Reset by switching truck on and off again • Check battery voltage • Charge battery • Check wiring

The errors described are those that are detected by ELK 2 itself. Before replacing the steering unit, a software update should usually be carried out first. This may rectify the error.				
No.	Description	Cause	Response	Remedy
4417	Steering unit intermediate circuit could not be discharged	- Emergency off switch activated - Steering contactor sticking	EMERGENCY STOP	- Check emergency off switch - Check steering contactor - Check wiring
4419	Internal error	-	EMERGENCY STOP	- Reset by switching truck off and on again - Replace steering unit
4420				
4421				
4424				
4425				
4426	Error detected when testing steering contactor	Steering contactor fails to open	EMERGENCY STOP	- Check steering contactor - Check wiring
4427	Excess current switch-off at steering contactor output	-	EMERGENCY STOP	- Check steering contactor - Check wiring
4428	Error detected at steering contactor safety output	-	EMERGENCY STOP	- Check steering contactor - Check safety output wiring
4430	Steering configuration when switched on faulty (master-slave steering)	Parameterising and/or digital input do not match	EMERGENCY STOP	- Load basic parameters - Perform teach-in for steering - Replace steering unit
4433	Error in CAN message received (internal error)	Error in internal process monitoring	-	- Reset by switching truck off and on again - Check can-bus wiring - Check FZS - Replace steering unit
4434	Error in receiving CAN messages (internal error)	Error in internal process monitoring	EMERGENCY STOP	- Reset by switching truck off and on again - Check can-bus wiring - Check FZS - Replace steering unit
4435	Internal error	Error in internal process monitoring	EMERGENCY STOP	- Reset by switching truck off and on again - Check can-bus wiring - Check FZS - Replace steering unit
4437	Can-bus communication from the FZS to the ELK interrupted	Controller not receiving data from the FZS	EMERGENCY STOP	- Reset by switching truck off and on again - Check can-bus wiring 24 V supply not OK (e.g. voltage transformer faulty, direction indicator short circuit) - Replace FZS
4438	Can-bus communication from the FZS to the ELK interrupted	Controller not receiving data from the FZS	EMERGENCY STOP	- Reset by switching truck off and on again - Check can-bus wiring 24 V supply not OK (e.g. voltage transformer faulty, direction indicator short circuit) - Replace FZS
4441	Internal error (error in CAN message received from automatic unit; only in driverless systems)	Error in internal process monitoring	EMERGENCY STOP	- Reset by switching truck off and on again - Check can-bus wiring - Check automatic controller - Replace steering unit
4442	Internal error (error in sending CAN messages)	Error in internal process monitoring	EMERGENCY STOP	- Reset by switching truck off and on again - Check can-bus wiring - Replace steering unit
4443	Internal error	Error in internal process monitoring	EMERGENCY STOP	- Reset by switching truck off and on again - Check can-bus wiring - Replace steering unit

The errors described are those that are detected by ELK 2 itself. Before replacing the steering unit, a software update should usually be carried out first. This may rectify the error.				
No.	Description	Cause	Response	Remedy
4444	Internal error (CAN start message not received)	Error in internal process monitoring	EMERGENCY STOP	- Reset by switching truck off and on again - Check FZS power supply - Check can-bus wiring - Replace steering unit
4446	Internal error	Error in internal process monitoring	EMERGENCY STOP	- Reset by switching truck off and on again - Check can-bus wiring - Replace steering unit
4454	Setpoint/actual value device voltage monitoring supply too low	Setpoint/actual value device supply voltage <10.7 V	EMERGENCY STOP	- Reset by switching truck on and off again - Check setpoint/actual value device - Check wiring - Replace steering unit
4455	Setpoint/actual value device voltage monitoring supply too high	Setpoint/actual value device supply voltage <13.22 V	EMERGENCY STOP	- Reset by switching truck on and off again - Check setpoint/actual value device - Check wiring - Replace steering unit
4456	Internal error	Error in internal voltage monitoring	EMERGENCY STOP	- Reset by switching truck on and off again - Replace steering unit
4457				
4458	Setpoint/actual value device voltage monitoring supply too low	Setpoint/actual value device supply voltage <10.7 V	EMERGENCY STOP	- Reset by switching truck on and off again - Check setpoint/actual value device - Check wiring - Replace steering unit
4459	Setpoint/actual value device voltage monitoring supply too high	Setpoint/actual value device supply voltage <13.22 V	EMERGENCY STOP	- Reset by switching truck on and off again - Check setpoint/actual value device - Check wiring - Replace steering unit
4460	Setpoint/actual value device voltage monitoring supply too low	Setpoint/actual value device supply voltage <10.4 V	EMERGENCY STOP	- Reset by switching truck on and off again - Check setpoint/actual value device - Check wiring - Replace steering unit
4462	Supply voltage at power supply unit too high	Supply voltage at power supply unit > 65 V	EMERGENCY STOP	- Reset by switching truck on and off again - Check battery voltage - Check wiring
4463	Steering wheel initialisation fault when switching on	Teach-in for steering (setpoint device) not performed/completed	-	- Perform teach-in for steering - Note further error messages
4464	Timeout during setpoint device teach-in	Setpoint device teach-in took too long	-	- Reset by switching truck on and off again - Perform teach-in faster
4465	Setpoint device error (track A)	Setpoint device: short circuit between channel A and 12 V supply (voltage channel A >4.5 V)	EMERGENCY STOP	- Check setpoint device - Check wiring - Check voltage input without setpoint device - Replace steering unit
4466	Setpoint device error (track B)	Setpoint device: short circuit between channel B and 12 V supply (voltage channel B >4.5 V)	EMERGENCY STOP	- Check setpoint device - Check wiring - Check voltage input without setpoint device - Replace steering unit
4467	Initialisation of actual value device failed	Teach-In for steering not performed/completed or incorrect	EMERGENCY STOP	Perform/repeat teach-in for steering
4469	Track A sensor input = 0 V (track A setpoint device error)	Setpoint device: short circuit between channel A and earth or cable break	EMERGENCY STOP	- Check setpoint device - Check wiring
4470	Track B sensor input = 0 V (track B setpoint device error)	Setpoint device: Short circuit between channel B and earth or cable break	EMERGENCY STOP	- Check setpoint device - Check wiring
4471	Setpoint device error	Setpoint device speed value too high	EMERGENCY STOP	- Check setpoint device - Check wiring - Replace steering unit

The errors described are those that are detected by ELK 2 itself. Before replacing the steering unit, a software update should usually be carried out first. This may rectify the error.				
No.	Description	Cause	Response	Remedy
4473	Internal error	Deviation in setpoint device signals between control processor and vector processor too great (+/-15.0°)	EMERGENCY STOP	• Replace steering unit
4474	Setpoint device error	Setpoint value difference between channel A and channel B too great	EMERGENCY STOP	• Perform teach-in for steering • Check setpoint device • Check wiring
4477	Emergency stop was signalled (2+48 V interrupted)	Emergency stop switch was actuated	EMERGENCY STOP	• Close emergency off switch • Check wiring • Reset by switching truck on and off again
4480	Difference between setpoint and actual speed is too big	• Steering torque is too low • Drive wheel sticking • Internal impulse transmitter error	EMERGENCY STOP	• Place truck in open space and restart • Replace steering unit
4482	Impermissible deviation of actual value to internal incremental transducer	• Teach-in for steering not performed/completed • Actual value device faulty • Internal error	EMERGENCY STOP	• Perform teach-in for steering • Check actual value device • Check parameters • Load basic parameters
4483	Internal error	Deviation in actual value device signals between control processor and vector processor too great (+/-10.0°)	EMERGENCY STOP	• Check actual value device • Check wiring • Perform teach-in for steering • Replace steering
4484	Actual value device error (track A)	Actual value device: short circuit between channel A and 12 V supply (voltage channel A >4.5 V)	EMERGENCY STOP	• Check setpoint device • Check wiring • Check voltage input without actual value device • Replace steering unit
4485	Actual value device error (track B)	Actual value device: short circuit between channel B and 12 V supply (voltage channel A >4.5 V)	EMERGENCY STOP	• Check setpoint device • Check wiring • Check voltage input without actual value device • Replace steering unit
4486	Actual value device error (track A)	Actual value device: short circuit between channel A and earth or cable break (voltage channel A <0.5 V)	EMERGENCY STOP	• Check actual value device • Check wiring
4487	Actual value device error (track B)	Actual value device: short circuit between channel B and earth or cable break (voltage channel B <0.5 V)	EMERGENCY STOP	• Check actual value device • Check wiring
4488	Actual value device error	Actual value difference between channel A and channel B too great	EMERGENCY STOP	• Perform teach-in for steering • Check setpoint device • Check wiring
4490	Internal error	Deviation in actual value device signals between control processor and vector processor too great (+/-15.0°)	EMERGENCY STOP	• Check actual value device • Check wiring • Perform teach-in for steering • Replace steering unit
4491	Impermissible jump in position regulator difference	Jump in position regulator deviation	EMERGENCY STOP	• Check setpoint device • Check actual value device • Check wiring • Replace steering unit
4492	Internal error when switching on	• Teach-in for steering not performed/completed • Actual value device faulty	EMERGENCY STOP	• Perform teach-in for steering • Check actual value device • Check parameters • Load basic parameters
4493	Internal error when switching on	• Teach-in for steering not performed/completed • Actual value device faulty	EMERGENCY STOP	• Perform teach-in for steering • Check actual value device • Check parameters • Load basic parameters

Error list

The errors described are those that are detected by ELK 2 itself. Before replacing the steering unit, a software update should usually be carried out first. This may rectify the error.				
No.	Description	Cause	Response	Remedy
4497	Steering unit overtemperature (power unit)	Too much torque needed	EMERGENCY STOP	• Check steering system for ease of movement • Allow steering to cool down • Avoid overloading • Replace steering unit
4498	Parameter error	Incorrect parameter for gearbox transmission	EMERGENCY STOP	• Reset by switching truck off and on again • Check gearbox parameters • Load basic parameters • Replace steering unit

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