

4 Troubleshooting

4.1 What to check first in case of faults

- Check
 - Fuel in the tank?
 - Fuel lines leaking? (Visual check)
 - Summer diesel in the fuel line?
 - Combustion air system or exhaust system damaged or blocked?
 - Hot air system blocked?
- Electrical components
 - Cables, connections damaged?
 - Contacts corroded?
 - Fuses defective?
 - Incorrect wiring? (short circuits, interrupted / broken)
- Measure battery voltage
 - Battery voltage < 10.5 volt: the undervoltage protection of the 12 volt heater has triggered.
 - Battery voltage < 21.5 volt: the undervoltage protection of the 24 volt heater has triggered.
- Measure voltage supply (Terminal 30)
 - Disconnect the 10-pin connector XS10 / XB10 and measure the applied voltage in connector XB10 between chamber 2 (br) and chamber 4 (rd).
 - If it differs from the battery voltage, check the fuses, the supply cables, the negative connection and the positive support point on the battery for voltage drop (corrosion / interruption).

4.2 Control box is locked

The control box is locked if the following faults occur:

- Unsuccessful start attempts
 - After 10 consecutive failed start attempts.
- Overheating
 - After 10-times shutdown on overheating.

4.3 Unlocking the control box

In case of locking due to too many overheating events, the control box can be unlocked by removing the heater fuse:

- Switch on heater.
- Remove heater fuse within 20 seconds.
- Re-insert the heater fuse after around 5 seconds.

Note

The control box can also be unlocked using a diagnostic unit / control unit. For the procedure and description for diagnostic units and control units, see “Installation Instructions Plus – EasyStart/Altitude Kit / Special Functions and Diagnosis”.

4.4 Overview of the diagnostic units and control units suitable for diagnosis

The electronic control box can store up to 20 faults, which can be read out and displayed (10 active faults, 10 stored faults). The following diagnostic units and control units can be used to query the fault memory in the control box and if necessary, to delete the locking of the control box:

Diagnostic unit	Order No.:
▪ EasyScan	22.1550.89.0000

The following control units can also be used for the diagnosis:

Control units	Order No.:
▪ EasyStart Remote ⁺	22.1000.34.1700*
▪ Easy Start Pro	22.1000.35.2200**
▪ EasyStart Web (up to 2018)	22.1000.34.5100*
▪ EasyStart Web (from 2019)	22.1000.34.7800*
▪ EasyStart Web (from 2021)	22.1000.35.3500**

*) Not available for North America

***) For North America, refer to the Product Catalogue

Note

- If the readout is made using a LIN control unit, only 1 active and 5 stored faults are displayed.
- Control units connected to the heater via the switch input S+ cannot be used for diagnosis.

4.5 Notes on heater diagnosis with control units

4.5.1 Easy Start Pro

Note

For details of how to read out the heat faults, see Installation Instructions ES Pro

4.5.2 EasyStart Web

Note

The heater faults are read out via the workshop access of the web application, see also Installation Instructions PLUS

4.5.3 EasyStart Remote⁺ ***

- Connection via LIN interface

If faults occur while the heater is running, they are displayed with “Err” after the mobile unit is activated.

The current fault is displayed. The stored faults “F1” to “F5” can be enquired.

To read out the heater error, see Installation Instructions Remote+ or Installation Instructions Plus.

***) Not applicable for North America

4.6 Flashing code display

4.6.1 Function display and error output via flashing code

Output of the operating display (combustion mode or output control):

→ LED lights up permanently


In case of error:


→ Output of the current error as a flashing code (see table)

				2 s				4 s					6 s				8 s	No.	Error
[All 18 columns are lit]																		0	No fault / normal operation
[Columns 1, 3, 5, 7, 9, 11, 13, 15, 17 are lit]																		1	Locking due to overheating
[Columns 1, 3, 5, 7, 9, 11, 13, 15, 17 are lit]																		2	Overvoltage cut-off
[Columns 1, 3, 5, 7, 9, 11, 13, 15, 17 are lit]																		3	Undervoltage cut-off
[Columns 1, 3, 5, 7, 9, 11, 13, 15, 17 are lit]																		4	Glow plug is defective
[Columns 1, 3, 5, 7, 9, 11, 13, 15, 17 are lit]																		5	Burner motor is defective
[Columns 1, 3, 5, 7, 9, 11, 13, 15, 17 are lit]																		6	Invalid configuration
[Columns 1, 3, 5, 7, 9, 11, 13, 15, 17 are lit]																		7	Safety time exceeded
[Columns 1, 3, 5, 7, 9, 11, 13, 15, 17 are lit]																		8	Overheating
[Columns 1, 3, 5, 7, 9, 11, 13, 15, 17 are lit]																		9	Metering pump is defective
[Columns 1, 3, 5, 7, 9, 11, 13, 15, 17 are lit]																		10	Ext. Temperature sensor / setpoint transmitter is defective
[Columns 1, 3, 5, 7, 9, 11, 13, 15, 17 are lit]																		11	Combination sensor is defective
[Columns 1, 3, 5, 7, 9, 11, 13, 15, 17 are lit]																		12	Flame cutout
[Columns 1, 3, 5, 7, 9, 11, 13, 15, 17 are lit]																		13	Too many exceedances of "safety time 1" ¹⁾
[Columns 1, 3, 5, 7, 9, 11, 13, 15, 17 are lit]																		14	Control box defective
[Columns 1, 3, 5, 7, 9, 11, 13, 15, 17 are lit]																		15	Other errors: EasyScan diagnosis necessary

1) Exceeding of the allowable number of starts



4.7 Fault code table


Fault code P000... for EasyScan and TP 7.1 (if con- nected via CAN) (...) for TP 7 (LIN)	Error description	Cause <ul style="list-style-type: none"> ▪ Remedial action 	Fault class For TP7.1 control units: <ul style="list-style-type: none"> ▪ EasyStart Web ▪ EasyStart Pro
P000100 (071) P000101 (072) P000102 (073)	Overheating/air outlet sensor – Interruption – Short circuit – Short circuit to battery (+)	<ul style="list-style-type: none"> ▪ Check overheating sensor. – Check cables for continuity, short circuit and damage. – Unplug connector XB2, measure the resistance between cable BN (chamber 3) and cable WH (chamber 6). – Measured values see page 34, in case of deviating values → replace temperature sensor. 	1: Service
P000110 (087) P000111 (088) P000112 (089)	Air inlet sensor – Interruption – Short circuit – Short circuit to battery (+)	<ul style="list-style-type: none"> ▪ Check the air inlet sensor for damage – in case of visible damage → replace the temperature sensor – Unplug connector XB2, measure the resistance between cable BK (chamber 1) and BK (chamber 4) – For measured values - see page 34 ▪ Delete fault memory. – If the error continues to be displayed → replace the temperature sensor. 	1: Service
P00010A (051)	Cold blowing – Timeout	The combustion chamber has not cooled sufficiently for a restart. <ul style="list-style-type: none"> ▪ Check whether hot combustion air is drawn in. If no → check flame sensor, see Fault code P000120 (064) and Fault code P000121 (065). 	1: Service
P000114 (014)	Possible risk of overheating (implausible signal)  Note! Fault code P000114 (014) is displayed only if <ul style="list-style-type: none"> ▪ the heater is in operation ▪ Temperature reached at overheating sensor at least 80 °C. 	Temperature difference between the flame and overheating sensor is too large. <ul style="list-style-type: none"> ▪ For remedial action, see Fault code P000115 (012). ▪ Check flame sensor. – Unplug connector XB2, measure the resistance between cable BU (chamber 2) and cable BN (chamber 3). – Measured values see page 34, in case of deviating values → replace temperature sensor. 	1: Service
P000115 (012)	Overheating – Software threshold exceeded	<ul style="list-style-type: none"> ▪ Check air throughput ▪ Check overheating sensor – Check cables for continuity, short circuit and damage. – Unplug connector XB2, measure the resistance between cable BN (chamber 3) and cable WH (chamber 6). – Measured values see page 34, in case of deviating values → replace temperature sensor. 	5: Air system or air outlet

Fault code P000... for EasyScan and TP 7.1 (if connected via CAN) (...) for TP 7 (LIN)	Error description	Cause <ul style="list-style-type: none"> ▪ Remedial action 	Fault class For TP7.1 control units: <ul style="list-style-type: none"> ▪ EasyStart Web ▪ EasyStart Pro
P000116 (017)	Overheating – Hardware threshold exceeded	Temperature at overheating sensor >150 °C <ul style="list-style-type: none"> ▪ For remedial action, see Fault code P000115 (012). ▪ Check overheating sensor. – Check cables for continuity, short circuit and damage. – Unplug connector XB2, measure the resistance between cable BN (chamber 3) and cable WH (chamber 6). – Measured values see page 34, in case of deviating values -> replace temperature sensor. 	5: Air system or air outlet
P00011A (015)	Operating lock-out – too many overheating events detected	The control box is locked due to too frequent consecutive overheating (Fault code P000114 (014) , Fault code P000115 (012)). <ul style="list-style-type: none"> ▪ For remedial action, see Fault code P000114 (014), Fault code P000115 (012). ▪ Unlock control box, see Chapter 4.3, p. 18. 	6: Overheating, heater is blocked
P000120 (064) P000121 (065) P000122	Flame sensor – Interruption – Short circuit – Short circuit to battery (+)	<ul style="list-style-type: none"> ▪ Check flame sensor. – Check cable for continuity, short circuit and damage. – Unplug connector XB2, measure the resistance between cable BU (chamber 2) and cable BN (chamber 3). – Measured values see page 34, in case of deviating values -> replace the temperature sensor. ▪ Further display Fault code P000120 (064) and Fault code P000121 (065) -> replace the control box, see Chapter 5.4.2, p. 30. 	1: Service
P000125 (057) P000126 (053) P000127 (054) P000128 (055) P000129 (056)	Flame cutout from start process Flame cutout within the control range 0% – 25% Flame cutout within the control range 25% – 50% Flame cutout within the control range 50% – 75% Flame cutout within the control range 75% – 100%  Note! In case of flame cutout during the start phase or in normal operation the heater is restarted (max. 5 times). If the restart was successful, the fault code display is deleted.	<ul style="list-style-type: none"> ▪ Check exhaust and combustion air system. ▪ Check fuel quantity and fuel supply, see Chapter 5.6, p. 42. ▪ Check flame sensor, see Fault code P000120 (064) and Fault code P000121 (065). 	1: Service

Fault code P000... for EasyScan and TP 7.1 (if con- nected via CAN) (...) for TP 7 (LIN)	Error description	Cause <ul style="list-style-type: none"> ▪ Remedial action 	Fault class For TP7.1 control units: <ul style="list-style-type: none"> ▪ EasyStart Web ▪ EasyStart Pro
P00012A (052)	Unsuccessful starting process	<ul style="list-style-type: none"> ▪ Check exhaust and combustion air system. ▪ Check fuel quantity and fuel supply, see Chapter 5.6, p. 42. ▪ Check the fuel filter or fuel strainer in the metering pump, renew if necessary. 	4: Fuel supply or fuel pump
P00012B (050)	Operating lockout, too many unsuccessful starting processes	Following 10 unsuccessful start attempts the control box is locked. <ul style="list-style-type: none"> ▪ Unlock control box, see Chapter 4.3, p. 18. ▪ Check fuel quantity and fuel supply, see Chapter 5.6, p. 42. 	1: Service
P000130 (060)	External air temperature sensor (LEF2) – Interruption	<ul style="list-style-type: none"> ▪ Test external air inlet sensor ▪ Disconnect the GYRD / BNWH plug-in connection of the external temperature sensor and measure the resistance value, diagram and table of values see page 17, – if temperature sensor is ok, re-connect the GYRD / BNWH plug-in connection. ▪ Disconnect connector XS10/XB10 at the heater and measure the resistance value between PIN 5 GRRD and PIN 6 BNWH in connector housing XB10. – In the event of interruption/damage, the ohmic resistance value is outside the characteristic (for table, see on page 17). ▪ If the error continues to be displayed, test the connection to connector XS12/XB12. ▪ If resistance value is ok → replace control box. 	7: Emergency running
P000131 (061) P000132	External air temperature sensor (LEF2) – Short circuit – Short circuit to battery (+)	<ul style="list-style-type: none"> ▪ Test external air inlet sensor ▪ Disconnect the GYRD / BNWH plug-in connection of the external temperature sensor and measure the resistance value, diagram and table of values see page 17, – if ok, re-connect the GYRD / BNWH plug-in connection. ▪ Disconnect connector XS10/XB10 at the heater and measure the resistance value between PIN 5 GRRD and PIN 6 BNWH in connector housing XB10. – In the event of interruption/damage, the ohmic resistance value is outside the characteristic (for table, see on page 17). ▪ If the error continues to be displayed, test the connection to connector XS12/XB12. ▪ If the error P000131 (061) continues to be displayed → replace control box. 	7: Emergency running
P000143 (006)	Air pressure sensor – Implausible signal	<ul style="list-style-type: none"> ▪ Delete error and try again. ▪ If error occurs again, replace control box. 	7: Emergency running

Fault code P000... for EasyScan and TP 7.1 (if connected via CAN) (...) for TP 7 (LIN)	Error description	Cause <ul style="list-style-type: none"> ▪ Remedial action 	Fault class For TP7.1 control units: <ul style="list-style-type: none"> ▪ EasyStart Web ▪ EasyStart Pro
P000150 P000151 P000152	Circuit board temperature sensor in the control box <ul style="list-style-type: none"> – defective (voltage too high) – defective (voltage too low) – Overtemperature detected 	<ul style="list-style-type: none"> ▪ Delete error and try again. ▪ Replace control box, see Chapter 5.4.2, p. 30 	1: Service
P000160 P000161 P000162	Setpoint transmitter (e.g. mini controller) <ul style="list-style-type: none"> – Interruption – Short circuit – Short circuit to battery (+) 	<ul style="list-style-type: none"> ▪ Check the setpoint transmitter (e.g. mini controller) ▪ Disconnect plug-in connection GYRD / BNWH of the setpoint transmitter (e.g. mini controller). The mini controller must be supplied with voltage and the heating switched on to enable a resistance to be measured. Therefore: <ul style="list-style-type: none"> – Disconnect the plug-in connection GYRD / BNWH to the mini controller, switch on mini controller “Heat” and measure the resistance value, – 12V: 1,7 kohm (cold) up to 2.2 kohm (warm) --> equals the nominal value ▪ Disconnect plug-in connection XS10 / XB10 and measure the continuity of the GYRD / BNWH cable between connector XB10 and plug-in connection to the mini controller. <ul style="list-style-type: none"> – In the event of cable harness interruption/damage, replace or repair. ▪ If the error continues to be displayed, test the connection to connector XS10/XB10. ▪ If resistance value is ok -> replace control box. 	7: Emergency running
P000200 (048) P000201 (047)	Metering pump <ul style="list-style-type: none"> – Interruption – Short circuit 	<ul style="list-style-type: none"> ▪ Check metering pump lead harness for continuity, short circuit and damage. – Lead harness ok -> renew the metering pump. 	4: Fuel supply or fuel pump
P000202 (049)	Metering pump <ul style="list-style-type: none"> – Short circuit to battery (+) or transistor error 	<ul style="list-style-type: none"> ▪ Check cables for continuity, short circuit and damage. i Note Disconnect the connector at the metering pump for the cable test ▪ With metering pump disconnected, check whether error P00202 continues to occur. If yes -> replace the cable harness. If not -> replace the metering pump. ▪ Display Fault code P000200 (048) metering pump defective -> replace metering pump. 	4: Fuel supply or fuel pump

Fault code P000... for EasyScan and TP 7.1 (if connected via CAN) (...) for TP 7 (LIN)	Error description	Cause ▪ Remedial action	Fault class For TP7.1 control units: ▪ EasyStart Web ▪ EasyStart Pro
P000210 (020) P000211 (021) P000212 (022)	Glow plug – Interruption – Short circuit – Short circuit to battery (+) or transistor error  Caution! Damage to unit in case of overvoltage A voltage > 9.5 V (19 V for 24 V) irreparably damages the glow plug. → Test the function with max. 9.5 V (19 V for 24 V).  Note Note the short-circuit withstand capability of the power pack.	▪ Check glow plug. – Check cables for continuity, short circuit and damage. – Unplug connector -XB13, unclip cable WH (chamber 1) and cable BN (chamber 3). – For 12 V heater: Apply 9.5 V ±0.1 volt voltage to the glow plug and measure the current intensity after 25 seconds. – If measured value is 9.5 A (+1 / –1.5) the glow plug is ok. – In case of deviating values → replace the glow plug. – For 24 V heater: Apply 19 V ±0.1 volt voltage to the glow plug and measure the current intensity after 25 seconds. – If measured value is 5.1 A (+1 / –1.5) the glow plug is ok. – In case of deviating values → replace the glow plug.	1: Service
P000213 (019)	Glow plug – Ignition energy too low	Glow plug energy input is too low. ▪ Check cables for continuity, short circuit and damage. ▪ Check glow plug, see Fault code P000210 (020) to Fault code P000212 (022) .	1: Service
P000220 P000221 P000222	Burner motor – Interruption – Short circuit – Short circuit downstream of +Ub or transistor fault	▪ Visual inspection of electric motor / control box (contacting). ▪ Check the electric motor for dirt / corrosion, clean if necessary. ▪ Check the impeller for blockage, remove the blockage if necessary. ▪ Renew the burner motor if necessary.	1: Service
P000223 (033) P000224 (035)	Burner motor – Blocking – Power input too high	Impeller blocked (frozen, soiled, sluggish, ...). ▪ Remove blockage. – Check the burner motor for smooth and easy running by turning the impeller manually. Further display Fault code P000222 ▪ Renew fan, see Chapter 5.4.10, p. 35 .	1: Service
P000260 P000261 P000262	Switch output – Interruption – Short circuit – Short circuit to battery (+) or transistor error	Test the switch output. ▪ Test WHRD conductor for continuity, short circuit and damage. ▪ If cable ok → replace control box. ▪ Option: Delete errors and switch on the heater. If the error occurs again → replace the control box	1: Service

Fault code P000... for EasyScan and TP 7.1 (if connected via CAN) (...) for TP 7 (LIN)	Error description	Cause <ul style="list-style-type: none"> ▪ Remedial action 	Fault class For TP7.1 control units: <ul style="list-style-type: none"> ▪ EasyStart Web ▪ EasyStart Pro
P000280 P000281 P000282	Switch output (e.g. in configuration as fresh air damper) <ul style="list-style-type: none"> – Interruption – Short circuit to ground – Short circuit to battery (+) or transistor error 	Test the switch output. <ul style="list-style-type: none"> ▪ Test WHRD conductor for continuity, short circuit and damage. ▪ If cable ok → replace control box. ▪ Option: Delete errors and switch on the heater. If the error occurs again → replace the control box 	1: Service
P000300 (074)	Overheating detection Metering pump hardware or cutout circuit defective	<ul style="list-style-type: none"> ▪ Test air outlet sensor. <ul style="list-style-type: none"> – Check cables for continuity, short circuit and damage. – Unplug connector XB2, measure the resistance between cable WH (chamber 6) and cable BN (chamber 3). <ul style="list-style-type: none"> – Measured values see page 34, in case of deviating values → renew combination sensor. ▪ Further display Fault code P000300 (074) → replace the control box. ▪ Unlock control box, see Chapter 4.3, p. 18. 	1: Service
P000301 (090) P000302 (090)	Watchdog reset Internal error on initialising the control box Too many watchdog resets	<ul style="list-style-type: none"> ▪ Delete errors, the heater remains ready for operation. ▪ Test the power supply (voltage drops < 5 V and longer than 10 ms or < 8 V and longer than 10 ms, battery isolating switch, battery management system) ▪ Replace control box, see Chapter 5.4.2, p. 30 	1: Service
P000303 (099)	Operating lockout: Too frequent output stage errors	<ul style="list-style-type: none"> ▪ Replace control box, see Chapter 5.4.2, p. 30 	1: Service
P000304 (091)	Too many resets (loose contact)	<ul style="list-style-type: none"> ▪ Replace control box, see Chapter 5.4.2, p. 30 	1: Service
P000305 (095)	Control box not calibrated	<ul style="list-style-type: none"> ▪ Replace control box, see Chapter 5.4.2, p. 30 	1: Service
P000306 (098)	Second cutout circuit is defective	<ul style="list-style-type: none"> ▪ Replace control box, see Chapter 5.4.2, p. 30 	1: Service
P000307 (081)	CAN communication error in control unit	<ul style="list-style-type: none"> ▪ Delete errors and disconnect heater from the power supply. ▪ In the event of renewed occurrence of the error → Test the control unit, test the cables to the control unit. 	1: Service
P00030A	CAN communication error	Delete error. Heater remains ready for operation.	1: Service
P000310/1 (010)	Control box cutout due to overvoltage  Note! Heater is not functioning.	Overvoltage applied at the control box without interruption for at least 20 seconds (factory setting). <ul style="list-style-type: none"> ▪ Unplug connector -XB10 at the heater. ▪ Start the vehicle engine. ▪ Measure voltage between cable RD (chamber 4) and cable BN (chamber 2). <ul style="list-style-type: none"> – Airtronic 12 volt voltage > 16 V (factory setting) → test the generator controller – Airtronic 24 volt voltage > 32 V (factory setting) → test the generator controller – Check the battery. 	3: Overvoltage

Fault code P000... for EasyScan and TP 7.1 (if con- nected via CAN) (...) for TP 7 (LIN)	Error description	Cause <ul style="list-style-type: none"> ▪ Remedial action 	Fault class For TP7.1 control units: <ul style="list-style-type: none"> ▪ EasyStart Web ▪ EasyStart Pro
P000312/3 (011)	Control box cutout due to undervoltage i Note! Heater is not functioning.	Undervoltage applied at the control box without interruption for at least 20 seconds (factory setting). <ul style="list-style-type: none"> ▪ Unplug connector -XB10 at the heater. ▪ Measure voltage between cable RD (chamber 4) and cable BN (chamber 2). – Airtronic 12 volt voltage < 10 V (factory setting) → test the generator controller – Airtronic 24 volt voltage < 21 V (factory setting) → test the generator controller – Check the fuses, the supply cables, the ground con- nections and the positive terminal post at the battery for voltage drop (corrosion). 	2: Undervoltage
P000330 (092)	ROM error	<ul style="list-style-type: none"> ▪ Replace control box, see Chapter 5.4.2, p. 30 	1: Service
P000331 (093)	RAM error	<ul style="list-style-type: none"> ▪ Replace control box, see Chapter 5.4.2, p. 30 	1: Service
P000332 (094)	NVMEM error (EEPROM, DataFlash)	<ul style="list-style-type: none"> ▪ Replace control box, see Chapter 5.4.2, p. 30 	1: Service
P000333	AD converter error	<ul style="list-style-type: none"> ▪ Replace control box, see Chapter 5.4.2, p. 30 	1: Service
P000342	Invalid configuration	<ul style="list-style-type: none"> ▪ Impermissible combination of the Eberspächer products in the CAN system – too many CAN heaters (more than 2) – too many CAN control units (more than 2) – only 1 heater and 1 control unit allowed for ADR ▪ In the ADR case, check the ADR coding in the EasyStart Pro via EasyScan ▪ If necessary, check the connection to the control element. ▪ If the error only appears in the error memory (passive), it can be ignored and deleted as it does not restrict the function of the heater. 	1: Service
P000343	Parameter dataset is incompatible	<ul style="list-style-type: none"> ▪ Replace control box, see Chapter 5.4.2, p. 30 	1: Service
P000394	ADR button – Short circuit	<ul style="list-style-type: none"> ▪ Test ADR button. – Check the cables at GYRD / BNWH for continuity, short-circuit and damage. – Check the button for continuity, short circuit and damage. – If cables ok → replace control box. 	1: Service
P000440 (083)	Timeout, communication with control unit	<ul style="list-style-type: none"> ▪ Delete errors and disconnect heater from the power supply. ▪ In the event of renewed occurrence of the error → Test the control unit, test the cables to the control unit. ▪ If error occurs again → replace control unit. 	0: No message
P000441	Timeout during communication with LIN control unit (only CI-bus communication)	<ul style="list-style-type: none"> ▪ Delete errors and disconnect heater from the power supply. ▪ In the event of renewed occurrence of the error → Test the control unit, test the cables to the control unit. 	0: No message
P000450	LIN communication error (only CI-bus communication)	<ul style="list-style-type: none"> ▪ Delete errors and disconnect heater from the power supply. ▪ In the event of renewed occurrence of the error → Test the control unit, test the cables to the control unit. 	0: No message