

Trouble shooting for EFOY Pro fuel cells

concerning firmware 11.xx and 9.xx

Important note: Please always update the firmware if outdated

Please contact the SFC Service, if an error occurs several times and is not remediable on yourself. Phone: +49 89 673 592 - 555 or +800 732 762 78*.

* The toll-free number via landline is available in the following countries: Germany, Austria, Belgium, Denmark, France, Great Britain, Italy, the Netherlands, Norway, Spain, Sweden and Switzerland.



Text on display

Error number **at first**,

then text message

e.g. error 30: please

refill Service Fluid

types of errors

A = automatically reset (max. number of restarts and und time interval)

B = manual override needed (e.g. empty fuel cartridge)

F = frost protection mode is not possible out of this error, if the cause of error is not given any more

P = permanent error

R = Reset needed

W = warning

Update: 11th Jan. 2013

| text message | error Nr. | type of error | error description | possible cause of error | action | note |
|-------------------------|-------------|----------------------------|---------------------------------|--|---|---------------------------------|
| Please contact Service! | 1 | P | System configuration incomplete | Firmware update failed | Repair required | |
| | 10 | P | Stack defect | Defect component | Repair required | Update current firmware version |
| | 13 | A (1x30s) R/B F P | System delivers no stack power | Defect component | Press RESET If error should remain, repair required | |
| | | | | Different switching on and off thresholds in cluster operation | Adjust switching on and off threshold (via Hyperterminal) | |
| | 14 | A (1x30s) R F P | Circulation pump defect | Defect component | Repair required | |
| | 15 | P | System error | Error 10 occurred before, internal problem | Repair required | |
| 17 | R F P | Illogical state | Defect component | Repair required | | |

| text message | error Nr. | type of error | error description | possible cause of error | action | note |
|---------------------------|-----------|-------------------------------|------------------------------------|--|---|---------------------------------|
| Please check exhaust hose | 11 | A (1x30s) B R F P | Stack power to low or voltage trip | Exhaust hose blocked | Take off exhaust hose and press "reset", if the system runs without any problems, the exhaust tube is blocked. If error should remain, repair required | Update current firmware version |
| | | | | Lack of additional air | Please check installation situation, make sure that there is enough cooling air (port diameter should be 10 cm) | |
| | | | | Exhaust tube blocked | Repair required | |
| | | | | Defect component | Repair required | |
| | 18 | A (1x30s) B R F P | open circuit voltage to low | Exhaust tube or heat exchanger is blocked / frozen | Take off exhaust tube and press "reset" If error should remain, repair required | |
| | | | | Failure in open circuit voltage | Repeat start up 3 times to reheat the stack | |
| | | | | Defect component | Repair required | |

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| Please change fuel cartridge | 20 | B R F | Empty fuel cartridge | Empty or no cartridge | Connect a new fuel cartridge | In isolated cases the valve of the EFOY M5 and M10 fuel cartridges may not work. Please contact the SFC service. |
| | | | | Tank connector defect | Check if tank connection is defiled or cracked | |
| | | | | Filled or partly filled cartridge | Connect new cartridge. If fuel cartridge is not completely empty, please shake it, that the intake hose is free again | |
| | 22 | B R F P | No methanol in the system (at the beginning of operation) | Fuel cartridge sucks ambient air / fuel connector inappropriate connected | - Back off fuel connector and remove foreign material. - Connect fuel connector tightly | |
| | | | | Dosing pump blocked or defect | - Maybe you have to compress the fuel cartridge firmly while connected so a deadlock has the chance to declamp - If not --> repair required | |

| text message | error Nr. | type of error | error description | possible cause of error | action | note |
|-----------------------------|---|--|---|---|--|--|
| Please refill Service Fluid | 30 | B R F P | Intermediate reservoir filling level: < 30% | Caused by operation at too high ambient temperatures; lack of cooling air | Please refill Service Fluid and make sure that there is enough cooling air | If you have to refill service fluid to many times you should please check installation as well as the air in- and outlet |
| | | | | Subsequent damage of frozen stack | Repair required | |
| | | | | Defect components | | |
| | | | | Inner tubes are leaky | Mainly concerns systems produced before end of 2010 | |
| | 30-60 min after initial start-up --> absence of enough cooling air | - Make sure that there is enough incoming air - Press "reset", so the system has to do the start-up again | | | | |
| 31 | B P | Intermediate reservoir filling level: < 5% | Leakage or defect component | Repair required | Result of error 30 | |

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| Interruption: Surroundings to warm | 32 | A B F | Intermediate reservoir filling level < 55 % and ambient conditions cause negative water balance | System temperature is too high | - Bring down ambient temperature - possibly fan blocked - inappropriate inlet air installation - incoming air blocked by fuel cartridge or wall | Please check installation regarding off-heat |
| | 41 | A B F | Error caused by ambient temperature | Ambient temperature over 45 °C | System starts up automatically, if temperature is under 38 °C: Lower ambient temperature | |

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| Interruption: Please defrost device slowly | 40 | A B P | Error caused by ambient temperature | Stack temperature below 3 °C (possibly frozen) | Defrost system at room temperature (approximately 24 h), afterwards install the system again and start running | |
| | | | | Defect component | Repair required | |

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| Please insert filter | 38 | B | EFOY Pro 2200 XT only: Filter not detected | Filter was removed or not changed correct | Insert filter or repeat exchange | |
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| text message | error Nr. | type of error | error description | possible cause of error | action | note |
|------------------------------|-----------|---------------|---|--|--|---------------------------|
| Please check battery voltage | 50 | A B | Battery voltage is too low (sense line) | Voltage metering not in order (e.g. sense lines not or not approximately connected or cut-outs of the sense line defect) | - Take comparative measurement with circuit analyser at EFOY-power plug (two outer pins) and battery - check cut-outs of the connecting cables | |
| | | | | Battery voltage under 9V respectively 18.5 V | Recharge battery with battery charger, please change if battery is defect | |
| | 52 | A B | Output voltage too low (power line) | Voltage metering not in order (e.g. power lines not or not approximately connected or cut-outs of the power line defect) | - Take comparative measurement with circuit analyser at EFOY-power plug (two outer pins) and battery - check cut-outs of the connecting cables | |
| | | | | Battery voltage between 16 V and 18.5V --> no detection if 12 V or 24 V application is connected | Recharge battery with battery charger, please change if battery is defect | |
| | | | | Battery voltage under 9V respectively 18.5 V | Recharge battery with battery charger, please change if battery is defect | |
| | 51 | A B | Battery voltage too high (sense line) | Voltage metering of the battery is not in order (e.g. sense line not or not correctly connected or cut-out of sense line defect) | - Take comparative measurements with a multimeter at the EFOY power pins (two outer pins) and the battery - check cut-outs of the connecting cables | |
| | | | | Parallel connected charge controller hoist battery voltage too high or reacts to slowly | - Check external charge controller - Possibly caused by alternator (inside of the vehicle) | |
| | | | | Battery voltage over 16 respectively 30.5 V | Check external charge controller, if necessary disconnect to avoid damage | |
| | 53 | A B | Output voltage too high (power line) | Output voltage metering is not in order | Take comparative measurements with a multimeter at the EFOY power pins (two outer pins) and the battery | |
| | | | | Parallel connected charge controller hoist battery voltage too high or reacts to slowly | - Check external charge controller - Possibly caused by alternator (inside of the vehicle) | |
| Battery voltage over 16 V | | | | Check external charge controller, if necessary disconnect to avoid damage | | |
| Please contact service | 54 | P | Faulty measurement of battery voltage | In operation with several charging sources | Update to firmware 9.16 | Solved with firmware 9.16 |

| text message | error Nr. | type of error | error description | possible cause of error | action | note |
|------------------------|-----------|--|--|--|---|---|
| Please contact Service | 70 | R P | Reservoir sensors alert illegitimate condition -> 3 resets maximum, then error 76 permanently | Defect component | Shake system and press RESET If error should remain, repair required | Update current firmware version |
| | 73 | P | Reservoir sensor defect | Tube sensor defect | Repair required | |
| | | | | Sensor sees no methanol | | |
| | 75 | P | Illogical state | Condensate at optical sensor | Repair required | Solved with firmware 11.09 |
| | 76 | P | Cumulative occurrence of error 70 and 72 | Incorrect refilling of the reservoir | Repair required | |
| | 80 | R | Defect circuit board | Defect component | Press RESET If error should remain, repair required | |
| | | | Unit self-test failed | Defect component | | |
| | 83 | R | Defect dc/dc converter | Defect component Maybe unfounded error caused by firmware bug in firmware 11.08 and 11.09 | - Update current firmware version - Press RESET If error should remain, repair required | Maybe unfounded error caused by wrong system settings. Firmware-bug in 11.08 and 11.09, resettable with update Update current firmware version |
| | 84 | A R | Unit self-test failed | Defect component | Press RESET If error should remain, repair required | |
| 85 | A R | EFOY Pro 2200 XT only: System error | Defect component | Press RESET If error should remain, repair required | | |

| text message | error Nr. | type of error | error description | possible cause of error | action | note |
|------------------|-----------|-----------------------|--|--|--|---|
| Check connection | 72 | A B F R P | Filling of the reservoir -> timeout -> 3 restart trials at most, then error 76 permanently | Tube inside the fuel cartridge adhered to the cartridge wall | Shake cartridge firmly --> press RESET | Please also test the actions regarding error 20 / 22 Update current firmware version |
| | | | | Tank connection not fixed | Screw tank connection tightly --> press RESET | |
| | | | | Defect component | Repair required | |

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| UPDATE: DO NOT UNPLUG BATTERY | 99 | A | Firmware update is running | | | Do not disconnect system and battery, do not cut data interface connection |
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| None Only displayed in ERROR-LOG | 137 | A | EFOY Pro 2200 XT only: Filter exchange XT confirmed | | No activity necessary | |
| | 139 | A | EFOY Pro 2200 XT only: Necessary filter exchange is displayed | Note for filter exchange after 2.200 operating hours | Change filter according to user manual | |
| | 140 | A | Anti freeze protection not possible | Anti freeze mode is blocked by previous error | Fix previous error | |
| | 172 | A | Error 72 was ignored once | | No activity necessary | |
| | 184 | A | Successful self-test | | No activity necessary | |

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| Firmware corrupt update required | none | A B | An error occurred during the firmware update | | Update the firmware via EFOY update tool (EUT) or updater | |
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| "check battery" or "check connection" | none | A B | Remote control is not communicating with the fuel cell | Remote control is connected to the wrong socket (Data interface) | check connection between fuel cell and remote control, possibly charge the battery, check cable | Maybe unfounded error caused by firmware 9.23 and 11.08 Update current firmware version |
| | | | | Battery voltage lower than 8 V | | |
| | | | | Defect remote control | Connect another remote control. If error should remain, repair required | |

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|------------------------------|------|--------|--|--|--|
| Hybrid or R or RC in Display | none | B P | Hybrid or Remote mode although not activated or not controlled | Unintentional activation | Deactivate: - via hyperterminal "remote off" - key combination "auto" + ">>" deactivates remote control (a lock appears top right) |
| | | | | Humidity at cable or board --> oxidised cable or oxidised board connections | - Check if the system was or is in contact with humidity --> dry - If external cable is oxidised --> change cable - System defect --> Repair required |
| | | | | Socket "Data Interface" receives signal on Pin 7 / 8 | Check cable in socket "Data Interface", if Pin 7 / 8 receives a signal. Check cable. |