

## Troubleshooting EFOY Fuel Cells EFOY Pro / EFOY COMFORT



| No. | Display text*  | Error Description  | Trouble Shooting & ToDo's  | Automatic restart? | Error list entry? | Freeze protection mode?                     | Value (in Errlog)   |
|-----|--|--|--|--------------------|-------------------|---|---|
| 1   | Service is required. Protect device against frost!   | System configuration incomplete or corrupt   | Perform 1 x System Reset<br>If permanent, please fill in RMA form on EFOY website or contact EFOY hotline for support.   | No                 | Yes               | No  | -   |
| 10  | Service is required. Protect device against frost!   | Stack temperature above 90°C (194 °F)  | No trouble shooting possible, Service is required. Please fill in RMA form on EFOY website or contact EFOY hotline for support.  | No                 | Yes               | No  | 0 = System Off<br>1 = Automatic frost protection<br>2-12 = Starting phase<br>13 -20 = Charging Phase (13-15 resting phase, 17-19 load shut off) |
| 11  | Please make sure the exhaust hose is not clogged, bent or frozen. Ensure adequate fresh air supply. To restart press OK. | Stack voltage to low during charge mode<br>Minimum cell voltage too low<br>OR<br>Oxygen supply fails<br>OR<br>Exhaust hose blocked rapidly | Please check the installation of the exhaust hose and position it so that no condensation can gather. Do not bend the exhaust hose. If necessary, clean the exhaust hose and protect the opening from becoming clogged. Shorten the exhaust hose if condensation is gathering in it. If permanent, Service is required. Please fill in RMA form on EFOY website or contact EFOY hotline for support. | after 30s          | Yes               | Yes   | -   |
| 13  | A restart is required. To restart press OK.  | Stack power too low<br>OR<br>system delivers no stack power  | Select the „System reset“ option in the main menu to restart the device (max. twice). Check exhaust hose if it not is blogged, bent or frozen. Check if air supply is sufficient. If permanent, Service is required. Please fill in RMA form on EFOY website or contact EFOY hotline for support.  | after 30s          | Yes               | Yes   | -   |
| 14  | A restart is required. To restart press OK.  | Circulation pump defect<br>OR<br>Fill level measurement incorrect<br>OR<br>Oxygen supply fails<br>OR<br>Exhaust hose blocked rapidly       | Select the „System reset“ option in the main menu to restart the device (max. twice). If permanent, Service is required. Please fill in RMA form on EFOY website or contact EFOY hotline for support.  | after 30s          | Yes               | No if circulation pump defect otherwise Yes | -   |
| 15  | Service is required. Protect device against frost!   | Is following error 10<br>Dosing problem or defect hardware.  | No trouble shooting possible, Service is required. Please fill in RMA form on EFOY website or contact EFOY hotline for support.  | No                 | No                | No  | -   |

## Troubleshooting EFOY Fuel Cells EFOY Pro / EFOY COMFORT



| No. | Display text*  | Error Description  | Trouble Shooting & ToDo's   | Automatic restart? | Error list entry? | Freeze protection mode? | Value (in Errlog)   |
|-----|--|--|---|--------------------|-------------------|-------------------------|---|
| 17  | A restart is required. To restart press OK.  | The difference between stack power and output power is too high. | Select the „System reset“ option in the main menu to restart the device (max. twice). If the error still occurs, please contact your service partner or the hotline. If permanent, Service is required. Please fill in RMA form on EFOY website or contact EFOY hotline for support.  | No                 | Yes               | Yes                     | -   |
| 18  | Please make sure the exhaust hose is not clogged, bent or frozen. Ensure adequate fresh air supply. To restart press OK. | Stack power too low  | Please check the installation of the exhaust hose and position it so that no condensation can gather. Do not bend the exhaust hose. If necessary, clean the exhaust hose and protect the opening from becoming clogged. Shorten the exhaust hose if condensation is gathering in it. If permanent, Service is required. Please fill in RMA form on EFOY website or contact EFOY hotline for support.  | after 300s         | Yes               | Yes                     | average cell voltage  |
| 20  | Fuel cartridge empty. Please replace the fuel cartridge, and press OK.   | No Methanol available, during operation                          | Exchange empty fuel cartridge. If full cartridge is not empty then check DuoCartSwitch and connection.  | No                 | No                | Yes                     | -   |
| 22  | Fuel cartridge empty. Please replace the fuel cartridge, and press OK.   | No methanol available at the beginning of operation              | Exchange empty fuel cartridge. If full cartridge is not empty then check DuoCartSwitch and connection.  | No                 | No                | Yes                     | -   |
| 30  | Please refill service fluid. To restart press ok.  | Intermediate reservoir filling level: < 30%                      | <p>Make sure that the off-heat can escape without obstruction and that the ambient temperature is below 50 °C / 122 °F. If the fuel cell is installed within a sealed container, please ensure that the opening for supply air has a diameter of at least 10 cm / 3.94 in. Then refill the fuel cell with EFOY service fluid.</p> <p>Check also the charge cycle monitor, if the EFOY shows short cycles it is an indication of a defective, too old or too small battery. The battery parameters may also need to be reviewed. Please refer to the user manual for information about the recommended battery capacities. Please check or your service partner the electrical system. Charging cycles which are too short can damage the EFOY fuel cell.</p> <p>Check also if there is a leakage of the unit.</p> | No                 | Yes               | Yes                     | 0 = System Off<br>1 = Automatic frost protection<br>2-12 = Starting phase<br>13 -20 = Charging Phase (13-15 resting phase, 17-19 load shut off) |

## Troubleshooting EFOY Fuel Cells EFOY Pro / EFOY COMFORT



| No. | Display text*   | Error Description  | Trouble Shooting & ToDo's  | Automatic restart? | Error list entry? | Freeze protection mode? | Value (in Errlog)  |
|-----|---|--|--|--------------------|-------------------|-------------------------|--|
| 31  | Please refill service fluid. To restart press ok.   | Intermediate reservoir filling level is lower 5 %  | <p>Make sure that the off-heat can escape without obstruction and that the ambient temperature is below 50 °C / 122 °F. If the fuel cell is installed within a sealed container, please ensure that the opening for supply air has a diameter of at least 10 cm / 3.94 in. Then refill the fuel cell with EFOY service fluid.</p> <p>Check also the charge cycle monitor, if the EFOY shows short cycles it is an indication of a defective, too old or too small battery. The battery parameters may also need to be reviewed. Please refer to the user manual for information about the recommended battery capacities. Please check or your service partner the electrical system. Charging cycles which are too short can damage the EFOY fuel cell.</p> <p>Check also if there is a leakage of the unit.</p> <p>If permanent, Service is required. Please fill in RMA form on EFOY website or contact EFOY hotline for support.</p> | No                 | Yes               | No                      | 0 = System Off<br>1 = Automatic frost protection<br>2-12 = Starting phase<br>13 -20 = Charging Phase (13-15 resting phase, 17-19 load shut off)  |
| 32  | Interruption:<br>Cooling insufficient. Please check installation and air supply!                            | Intermediate reservoir filling level < 55 %  | <p>The cooling air is insufficient or the ambient air is too warm. Please check whether the room in which the fuel cell is installed has sufficient ventilation, or whether the openings for the air supply in the EFOY fuel cell are blocked.</p>   | No                 | Yes               | Yes                     | 0 = System Off<br>1 = Automatic frost protection<br>2-12 = Starting phase<br>13 -20 = Charging Phase (13-15 resting phase, 17-19 load shut off)  |
| 40  | Interruption:<br>Device frozen. Please defrost device slowly for at least 24h at room temperature.          | Stack temperature below +2°C (+35 °F)  | <p>The device was exposed to temperatures below +2°C / +35°F without a connected battery and/or an EFOY fuel cartridge that was not filled sufficiently. It must be allowed to defrost for approx. 24 hours at room temperature.</p> <p>EFOY starts automatically if: The heat exchanger temperature is below +38 ° C (+100.4 °F) and the stack temperature is above +3.5 °C (+38.3 °F)</p> <p>If permanent, Service is required. Please fill in RMA form on EFOY website or contact EFOY hotline.</p>   | No                 | Yes               | No                      | 0 = System Off<br>1 = Automatic frost protection<br>2-12 = Starting phase<br>13 -20 = Charging Phase (13-15 resting phase, 17-19 load shut off)  |
| 41  | Interruption: Surroundings too warm. Please wait for the device to cool down or provide better cooling air. | <p>Temperature is too high.<br/>Ambient temperature above +53°C (+136,4 °F)<br/>OR<br/>The reservoir temperature Tres is above +61.4 °C (+142.52 °F)<br/>OR<br/>The reservoir temperature Tres is above +58°C (+136,4 °F) for more than 5 minutes.</p> | <p>Automatic:<br/>The ambient temperature is too high. The device will start automatically if the temperature drops below 50 °C / 122 °F.</p>  | No                 | Yes               | Yes                     | Internal State when Error occurred:<br>0 = System Off<br>1 = Automatic frost protection<br>2-12 = Starting phase<br>13 -20 = Charging Phase (13-15 resting phase, 17-19 load shut off) |

## Troubleshooting EFOY Fuel Cells EFOY Pro / EFOY COMFORT



| No. | Display text*  | Error Description   | Trouble Shooting & ToDo's  | Automatic restart? | Error list entry? | Freeze protection mode? | Value (in Errlog)   |
|-----|--|---|--|--------------------|-------------------|-------------------------|---|
| 50  | Battery voltage low. Please check battery and connection cable and charge battery. Please replace a defective or discharged battery. | Battery voltage is too low at sense line  | Please check the cabling and check whether a suitable battery is connected. Check the battery voltage. If it is too low, please load the battery with a battery charger. Please also check other loading devices for defects, e.g. alternator or charge controller.<br>The battery voltage has to be above 9.5 V (Lead/LiFePO4 12 V) or 19.5 V (Lead/LiFePO4 24 V). Charge battery with a battery charger. Please also check other loading devices for defects, e.g. alternator or charge controller. Check the sense line and fuses.<br><br>If battery voltage differs: Check the sense line and fuses. | No                 | No                | Yes                     | -   |
| 51  | Battery voltage too high. If applicable, please check additional charging devices and limit if necessary                             | Battery voltage is too high at sense line   | Please check the cabling and check whether a suitable battery is connected. Please also check other loading devices for defects, e.g. alternator or charge controller.<br><br>The battery voltage has to be below 15.0 V (Lead/LiFePO4 12 V) or 30.0 V (Lead/LiFePO4 24 V). Check other charging devices.<br><br>If battery voltage differs: Check the sense line and fuses.   | No                 | yes               | Yes                     | -   |
| 52  | Battery voltage low. Please check battery and connection cable and charge battery. Please replace a defective or discharged battery. | Battery voltage is too low at power line  | Please check the cabling and check whether a suitable battery is connected. Check the battery voltage. If it is too low, please load the battery with a battery charger. Please also check other loading devices for defects, e.g. alternator or charge controller.<br>The battery voltage has to be above 9.5 V (Lead / LiFePO4 12 V) or 19.5 V (Lead / LiFePO4 24 V). Charge battery with a battery charger. Please also check other loading devices for defects, e.g. alternator or charge controller. Check the sense line and fuses. If battery voltage differs: Check the sense line and fuses.    | No                 | No                | Yes                     | -   |
| 53  | Battery voltage too high. If applicable, please check additional charging devices and limit if necessary                             | Battery voltage is too high at power line   | Please check the cabling and check whether a suitable battery is connected. Please also check other loading devices for defects, e.g. alternator or charge controller. The battery voltage has to be below 15.0 V (Lead / LiFePO4 12 V) or 30.0 V (Lead / LiFePO4 24 V). Check other charging devices. If battery voltage differs: Check the sense line and fuses.   | No                 | Yes               | Yes                     | -   |
| 70  | A restart is required. To restart press OK.  | Illogical state in reservoir.<br>After occurrence of error 70 more than 3 times in 3 hours error 76 occurs. | Select the „System reset“ option in the main menu to restart the device (max. twice).  | No                 | Yes               | No                      | 0 = System Off<br>1 = Automatic frost protection<br>2-12 = Starting phase<br>13 -20 = Charging Phase (13-15 resting phase, 17-19 load shut off) |
| 71  | A restart is required. To restart press OK.  | Communication error between reservoir and main PCB.   | Select the „System reset“ option in the main menu to restart the device (max. twice).<br>If permanent --> Disconnect unit from battery for 10 seconds and re-connect.<br>If the error still occurs, please fill in RMA form on EFOY website or contact EFOY hotline for support.   | No                 | Yes               | No                      | -   |

## Troubleshooting EFOY Fuel Cells EFOY Pro / EFOY COMFORT



| No. | Display text*  | Error Description  | Trouble Shooting & ToDo's   | Automatic restart? | Error list entry? | Freeze protection mode? | Value (in Erlog)  |
|-----|--|--|---|--------------------|-------------------|-------------------------|---|
| 72  | Please disconnect fuel cartridge connection, shake cartridge firmly and reconnect. Restart device at most 2 times. Press OK for restart. | Filling the reservoir takes too long. After occurrence of error 72 more than 3 times in 3 hours error 76 occurs.   | Check the fuel cartridge connection and, if necessary, check for any contamination and remove it. Then please perform a system reset (max. twice).  | No                 | Yes               | Yes                     | -   |
| 73  | A restart is required. To restart press OK.  | Reservoir tube sensor defect   | Select the „System reset“ option in the main menu to restart the device (max. twice).<br>If the error still occurs, please fill in RMA form on EFOY website or contact EFOY hotline for support.  | No                 | Yes               | No                      | 0 = System Off<br>1 = Automatic frost protection<br>2-12 = Starting phase<br>13 -20 = Charging Phase (13-15 resting phase, 17-19 load shut off) |
| 75  | A restart is required. To restart press OK.  | Error on the dosing pump measurement. Dosing problem from Reservoir to intermediate tank.<br>OR<br>Oxygen supply fails<br>OR<br>Exhaust hose blocked rapidly | Select the „System reset“ option in the main menu to restart the device (max. twice). Check for leakage. Check exhaust hose if it is blocked, bent or frozen. Check if air supply is sufficient.<br>If the error still occurs, please fill in RMA form on EFOY website or contact EFOY hotline for support. | No                 | Yes               | Yes                     | -   |
| 76  | Service is required. Protect device against frost!   | Error occurs, after error 70 or 72 occurs more than 3 times in 3 hours   | Check firmware version for actualisation. If the error after an update still occurs, please fill in RMA form on EFOY website or contact EFOY hotline for support.   | No                 | Yes               | No                      | -   |
| 80  | A restart is required. To restart press OK.  | Internal voltage out of permitted range.   | Select the „System reset“ option in the main menu to restart the device (max. twice).<br>If the error still occurs, please fill in RMA form on EFOY website or contact EFOY hotline for support.  | No                 | Yes               | No                      | Reference voltage measured  |
| 83  | Service is required. Protect device against frost!   | The DC/DC converter on the main PCBA is defect   | Select the „System reset“ option in the main menu to restart the device (max. twice).<br>If the error still occurs, please fill in RMA form on EFOY website or contact EFOY hotline for support.  | No                 | Yes               | No                      | 0 = System Off<br>1 = Automatic frost protection<br>2-12 = Starting phase<br>13 -20 = Charging Phase (13-15 resting phase, 17-19 load shut off) |

## Troubleshooting EFOY Fuel Cells EFOY Pro / EFOY COMFORT



| No. | Display text*   | Error Description  | Trouble Shooting & ToDo's   | Automatic restart? | Error list entry? | Freeze protection mode? | Value (in Erlog)  |
|-----|---|--|---|--------------------|-------------------|-------------------------|---|
| 84  | A restart is required. To restart press OK.                     | Unit self-test failed. A component did not pass the self test. Please refer to the "value" in the error log for hints on the defective component                                   | Select the „System reset“ option in the main menu to restart the device (max. twice).<br>If the error still occurs, please fill in RMA form on EFOY website or contact EFOY hotline for support.  | after 30s          | Yes               | Depending on component  | A component did not pass the self test (PcStack 3).<br>(PcStack 3; Value "Wert" ≠ 0)<br>Periphery devices:<br>Device class + measured current draw [mA] * 100:<br>• 1: Circulation pump<br>• 2: Air pump<br>• 3: Dosing pump<br>• 5: Filling pump<br>• 7: Heat exchanger fan<br>• 8: PCB<br>• 10: Fan #2<br>• 12: Dosing pump 2 (EFOY Pro Duo)<br>E.g.: Value "Wert":<br>200001 = 2000 mA, Circulation pump |
| 99  | -   | Firmware update is ongoing   | If permanent: Customer:<br>Disconnect unit from battery and reconnect after 10 seconds.   | No                 | Yes               | -                       | Shows new Firmware version x100. Ex. 1710 for 17.10   |
| 140 | -   | Freeze protection mode is required but prohibited through a set permanent error. Please refer to the "value" in the error log to know what error prohibited the freeze protection. | Solve error immediately to prevent freezing of the stack.   | No                 | Yes               | No                      | Current Error code that prohibited freeze protection  |
| 141 | Cooling insufficient. Please check installation and air supply! | Ambient temperature too high / heat exchanger too warm<br>Reduction of power output caused by filling level below 55 %.  | The cooling air is insufficient or the ambient air is too warm. Please check whether the room in which the fuel cell is installed has sufficient ventilation, or whether the openings for the air supply in the EFOY fuel cell are blocked. Refill Service Fluid. | No                 | Yes               | Yes                     | -   |

## Troubleshooting EFOY Fuel Cells EFOY Pro / EFOY COMFORT

| No.              | Display text*  | Error Description  | Trouble Shooting & ToDo's  | Automatic restart?        | Error list entry? | Freeze protection mode? | Value (in Erlog) |
|------------------|--|--|--|---------------------------|-------------------|-------------------------|------------------|
| 150_1            | Battery defective, too small or too old. Please check the battery and the battery parameters. Replace battery if necessary or review battery parameters. | One or several battery monitors are below the minimum duration of charging cycle.                  | The EFOY has measured charging cycles which were too short. This is an indication of a defective, too old or too small battery. The battery parameters may also need to be reviewed. Please refer to the user manual for information about the recommended battery capacities. Please check the electrical system.<br>In case of short charging cycles in the manual mode, check how the user is using the Fuel Cell and inform advise the user to use more often the Automatic mode.<br>Reviewing the EFOY itself is not enough, the whole system must be analysed.<br>Charging cycles which are too short can damage the EFOY fuel cell. | No                        | Yes               | No                      | -                |
| 150_2            | EFOY GO! cannot be charged currently. Please refer to the user manual of your EFOY GO!   | EFOY GO! could not be charged.   | The EFOY GO! includes a lithium battery (LiFePO4), which cannot be charged below 0°C. If this is recognized by the EFOY fuel cell, the charging is interrupted, and the EFOY switches in the manual off mode. A warning is displayed. The frost protection mode is not affected. Please confirm the warning once the temperature has increased. The EFOY then returns to Automatic Mode.   | No                        | Yes               | No                      | -                |
| 173              | ---  | Filling the reservoir takes too long.  | System reset. Check effected fuel connector regarding connection to fuel cartridge, dirt and proper connection.  | No                        | Yes               | No                      | -                |
| 176              | Supply problem at fuel connector #1.1 #1.2 #2.1 #2.2. Please check fuel connector.   | Problem with filling of the reservoir at one fuel connector. Filling the reservoir takes too long. | Check the fuel cartridge connector for contamination and proper fuel cartridge connection. Check the fuel cartridge on functionality and exchange it if necessary. The connector can be reset in the cartridge menu in the operation panel.  | No                        | Yes               | Yes                     | -                |
| 184              | -  | Successful self-test of one or all components.   | No interaction necessary   | No                        | Yes               | No                      | -                |
| Firmware corrupt | Firmware corrupt update required   | Firmware corrupt update required. An error occurred during the firmware update                     | Try update at least 3 times. If the error is permanent, please fill in RMA form on EFOY website or contact EFOY hotline for support.   | after a successful update | No                | No                      | -                |
| Check connection | -  | Communication of unit and operating panel not working<br>OR<br>Battery voltage below 9 V           | Check the connection between the operating panel and the EFOY.<br>Check also the battery voltage. If the battery voltage is below 9 V charge it with a battery charger. Please also check other loading devices for defects, e.g. alternator or charge controller. Check the cables, connections and fuses.<br>If the error is permanent, please fill in RMA form on EFOY website or contact EFOY hotline for support.   | No                        | No                | No                      | -                |

\*Display messages may differ slightly, depending on EFOY fuel cell version