Trouble shooting for EFOY Pro fuel cells

concerning firmware 17.x

Note: Please always update the firmware if outdated

Do a RESET when an error occured, before dismounting the EFOY Pro. It might be possible, that an error occurred wrongly during external factors.

Please contact your service partner, if an error occurs several times and is not remediable on yourself.

<u>Text on display</u> <u>types of errors</u>

Error number at first, A = automatically reset (max. number of restarts and und time interval: X x Y)

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

e.g. error 30: please F = frost protection mode is not possible out of this error, if the cause of error is not given any more

refill Service Fluid **P** = **permanent** error

R = Reset needed

W = warning Update: 03.03.2014

text message	error Nr.	type of error	error description	possible cause of error	action	note
Service is required. Protect device against frost!	1		System configuration incomplete	Firmware update failed	Repair required	
Please contact EFOY hotline or hotline@sfc.com.	10	Р	Stack defect	Defect component	Repair required	Update current firmware version
	15	Р	System error	Error 10 occurred before, internal problem	Repair required	
A restart is required. If the error occurs again please	13	A 13 (1x30s) R/B	System delivers no stack power	Defect component	Repair required	
contact EFOY hotline or hotline@sfc.com. Press OK for				Different switching on and off thresholds in cluster operation	Adjust switching on and off threshold (via Hyperterminal)	
restart.	14	A (1x30s) R	Circulation pump defect	Defect component	Repair required	
	17	R	Illogical state	Defect component	Repair required	



text message	error Nr.	type of error	error description	possible cause of error	action	note
Please make sure the exhaust hose is not blogged, bent or frozen. Press OK for				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	
re-start.	11	A (1x30s) B R	Stack power to low or voltage trip	Lack of additional air	Please check installation situation, make sure that there is enough cooling air (port diameter should be 10 cm)	I
				Exhaust tube blocked	Repair required	
				Defect component	Repair required	
			open circuit voltage to low	Exhaust tube is blocked / frozen	- 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	
	18	A (1x30s) B R		Heat exchanger is blocked / frozen	- Check supply- and exhaust air conduction, if the system runs without any problems, the heat exchanger is blocked If error should remain, repair required	
				Failure in open circuit voltage	Repeat start up 3 times to reheat the stack	
				Defect component	Repair required	
Fuel cartridge empty.				Empty or no cartridge connected	Connect a new fuel cartridge and confirm it at the operation panel	
Please replace the fuel cartridge, and press OK.	20	B R	Empty fuel cartridge	Tank connector defect	Check if tank connection is defiled or cracked	In isolated cases the valve of the EFOY M5 and M10 fuel cartridges may not work. Please contact the SFC service.
,				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	22 B R	No methanol in the	Fuel cartridge sucks ambient air / fuel connector inappropriate connected	- Back off fuel connector and remove foreign material Connect fuel connector tightly	
			evetem (at the beginning	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, reparation is required	

text message	error Nr.	type of error	error description	possible cause of error	action	note
Please refill service fluid Press OK for re-start.				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	
			Intermediate reservoir	Subsequent damage of frozen stack	Repair required	If you have to refill service fluid to
	30	R	filling level: < 30%	Defect components	Repair required	many times you should please check installation as well as the air in- and outlet
				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		Intermediate reservoir filling level: < 5%	Leakage or defect component	Repair required	Result of error 30
Interruption: Cooling insufficient. Please check installation and air supply!	32	Δ	Intermediate reservoir filling level < 55 % and temperature at stack or heat exchanger to high	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 W	Error caused by ambient temperature	Ambient temperature over 45 °C	System starts up automatically, if temperature is under 38 °C: Lower ambient temperature	
Interruption						
Interruption: Device frozen. Please defrost device slowly for at	40	A Error caused by ambient	Stack temperature below 3 °C (possibly frozen)	Defrost system at room temperature (approximately 24 h), afterwards install the system again and start running		
least 24h at room temperature.		В	temperature	Defect component	Repair required	

text message	error Nr.	type of error	error description	possible cause of error	action	note
Battery voltage low. Please check battery connection and load battery.	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 - check loose connection or cable defect	
				Battery voltage under 9V respectively 18.5 V	Recharge battery with battery charger, please change if battery is defect	
		A	Output voltage too low	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 - check loose connection or cable defect	Loads with high peaks in combinatjion with small batteries can cause low voltage errors.
	52	В	(power line)	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	
Battery voltage high. If applicable, please check additional charging devices.		A		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 - check loose connection or cable defect	
	51	B F	Battery voltage too high (sense line)	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 (Freeze protection up to 17 V / 32 V)	Check external charge controller, if necessary disconnect to avoid damage	
				Output voltage metering is not in order	- Take comparative measurements with a multimeter at the EFOY power pins (two outer pins) and the battery - check loose connection or cable defect	
	53	A B F	Output voltage too high (power line)	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 respectively 30.5 V (Freeze protection up to 17 V / 32 V)	Check external charge controller, if necessary disconnect to avoid damage	

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A restart is required. If the error occurs again please contact EFOY hotline or hotline@sfc.com.	70	R	Reservoir sensors alert illegitimate condition	Defect component	IIT AFFAF SHAIIIA FAMAIN FANAIF FAAIIIFAA	Update current firmware version. If one system start is successful, the error counter is reset.
Press OK for restart.	71	A R	No internal communication with internal reservoir possible	Defect reservoir or internal cable	Repair required	
	73	R	Reservoir sensor defect	Defect component	Repair required	
	75	R	Condensate at optical sensor	Illogical state	Repair required	
	80	0 R	Defect circuit board	Defect component	Repair required	
			Unit self-test failed	Defect component	Kepali required	
	83	R	Defect dc/dc converter	Defect component	Repair required	
	84	A R	Unit self-test failed	Defect component	Press RESET If error should remain, repair required	
Service is required. Protect device against frost! Please contact	76	P	Cumulative occurrence of error 70 and 72	Incorrect refilling of the reservoir	Repair required	
EFOY hotline or hotline@sfc.com.	83	R	Defect dc/dc converter	Defect component	Repair required	

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Check connection	72	A B		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
		R		Tank connection not fixed	Screw tank connection tightly> press RESET	
				Defect component	Repair required	
UPDATE: DO NOT UNPLUG BATTERY	99	Δ	Firmware update is running			Do not disconnect system and battery, do not cut data interface connection
None Only displayed in ERROR-LOG	90	Α	Freeze cycle succesful		No activity necessary	
ERROR-LOG	140	Δ	•	Anti freeze mode is blocked by previous error	Fix previous error	
	141	A	Heat exchanger to warm	Surrounding temperature to high	No activity necessary	
	173	Δ	Reservoir error was tolerated during no risk	Illogical state	No activity necessary	
	184	Α	Successful self-test		No activity necessary	
Firmware out of date! Please update the firmware!	199		Warning of outdated firmware	The installed firmware is one year older than the system time	Update the firmware	Only FW 17.06 and 17.07
Firmware corrupt update required	none		An error occurred during the firmware update		Update the firmware via EFOY update tool (EUT) or updater	

text message	error Nr.	type of error	error description	possible cause of error	action	note
"check battery" or "check connection"			Remote control is not communicating with the fuel cell	Remote control is connected to the wrong socket (Data interface)	Connect operation panel in socket "remote control"	
	none	A B		Battery voltage lower than 8 V	Charge the battery with external charger, check cable if defect	
				Defect remote control	Connect another remote control. If error should remain, repair required	
Hybrid or RC in Display	none	Hybrid or Remote mode although not activated or not controlled		Unintentional activation	Deactivate: - via hyperterminal "remote off" - via operation panel in menu operating "mode" select "external control off" (a lock symbol occures in the display)	
			Humidity at cable or board> oxidised cable or oxidised board connections	- Check if the system was or is in contact with humidity> dry fuel cell - If external cable is oxidised> change cable - System defect> Repair required		
			1	Check cable in socket "Data Interface". Check cable.		

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