



America

# CERTIFICATE

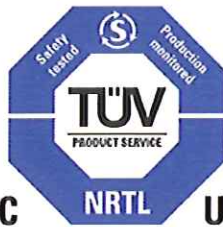
No. U8 11 02 49097 008

Holder of Certificate: **SFC Energy AG**

Eugen-Sänger-Ring 7  
85649 Brunenthal-Nord  
GERMANY

Production Facility(ies): 49097

Certification Mark:



Product: **Battery charger**  
(Direct Methanol Fuel Cell Battery Charger)

Model(s): EFOY 600, EFOY 900, EFOY 1200, EFOY 1600,  
EFOY Pro 600, EFOY Pro 1200, EFOY Pro 1600,  
EFOY Pro 1600 Longlife, MFC 75, MFC 100, MFC 130,  
EFOY 2200, EFOY Pro XT 2200, EFOY Pro 2200

Parameters:

Rated Input Voltage:	See attachment
Rated Frequency:	DC
Rated Input Current:	See attachment
Rated Output Voltage:	See attachment
Rated Output Current:	See attachment
Protection Class:	Class III

Equipment is to be installed and operated per the manufacturer's instructions.

Tested according to: CAN/CSA-C22.2 No. E60335-1/R:2007,  
CAN/CSA-C22.2 No. E60335-2-29:2006,  
UL 60335-1/R:2006-04  
(supplemented by UL 1564/R:2008-11,  
IEC 60335-2-29/A1:2004, CSA America FC-3:2004,  
NFPA 1192:2005, ANSI/RVIS 12V:2008,  
NFPA 70:2008, UL 458:2004)  
This product is intended and certified for  
Canada and the USA. Additional requirements  
may apply in other countries.

The product was voluntarily tested according to the relevant safety requirements and mentioned properties. It can be marked with the certification mark shown above. The certification mark must not be altered in any way. This product certification system operated by TÜV SÜD America Inc. most closely resembles that described by ISO/IEC Guide 67, Conformity assessment - Fundamentals of product certification, System 3. See also notes overleaf.

Test report no.: 231-809919-300

Date, 2011-03-10

Page 1 of 3





America

ATTACHMENT TO CERTIFICATE NO. U8 11 02 49097 008  
FOR SFC ENERGY AG

DIRECT METHANOL FUEL CELL BATTERY CHARGER

**ELECTRICAL RATINGS:**

Model/Type reference .....	EFOY Pro 600,	EFOY Pro 1200,	EFOY Pro 1600	EFOY Pro 1600 Longlife
Ratings:	25 W	50 W	65 W	65 W
Charging Capacity/Day:	600 Wh/day (50 Ah/day)	1200 Wh/day (100 Ah/day)	1560 Wh/day (130 Ah/day)	1560 Wh/day (1130 Ah/day)
Nominal Input / Output Voltage, DC:	12 V / 24 V	12 V / 24 V	12 V / 24 V	12 V / 24 V
Charging Current at 12 V:	2.1 A / 1.05 A	4.2 A / 2.1 A	5.4 A / 2.7 A	5.4 A / 2.7 A

Model/Type reference.....	EFOY 600	EFOY 900	EFOY 1200	EFOY 1600
Ratings :	25 W	38 W	50 W	65 W
Charging Capacity/Day:	600 Wh/day (50 Ah/day)	912 Wh/day (76 Ah/day)	1200 Wh/day (100 Ah/day)	1560 Wh/day (130 Ah/day)
Nominal Input / Output Voltage, DC:	12 V	12 V	12 V	12 V
Charging Current at 12 V:	2.1 A	3.2 A	4.2 A	5.4 A

Model/Type reference.....	MFC 75	MFC 100	MFC 130
Ratings :	38 W	50 W	65 W
Charging Capacity/Day:	912 Wh/day (76 Ah/day)	1200 Wh/day (100 Ah/day)	1560 Wh/day (130 Ah/day)
Nominal Input / Output Voltage, DC:	12 V	12 V	12 V
Charging Current at 12 V:	3.2 A	4.2 A	5.4 A

Model/Type reference.....	EFOY 2200	EFOY Pro 2200	EFOY Pro XT 2200
Ratings :	90 W	90 W	90 W
Charging Capacity/Day:	2160 Wh/day (180 Ah/day)	2160 Wh/day	2160 Wh/day
Nominal Input / Output Voltage, DC:	12 V	12 V / 24 V	12 V / 24 V
Charging Current at 12 V:	7.5 A	7.5 A / 3.75 A	7.5 A / 3.75 A



America

## ATTACHMENT TO CERTIFICATE NO. U8 11 02 49097 008 FOR SFC ENERGY AG

Turn on threshold	$U_{\text{batt}} < 12.3 \text{ V} / 24.6 \text{ V}$
Cut off threshold:	$U_{\text{batt}} > 14.2 \text{ V} / 28.4 \text{ V}$
Required starting voltage:	$> 10.8 \text{ V} / 21.0 \text{ V}$
Quiescent current requirements:	15 mA
Methanol requirements:	1.1 l/kWh
Compatible batteries:	12 V rechargeable (lead-acid or lead-gel) batteries with 40 to 200 Ah capacity

### CRITICAL CONDITIONS OF INSTALLATION AND USE:

The following are among the considerations to be made when installing and using this equipment. Consult the User's Manual for details. Items included are, but not limited to:

- All work should be carried out by qualified technicians in accordance with the technical regulations.
- Do not operate unit if there is danger of explosion.
- Do not operate at temperatures above 40°C or below -20°C. If the device has been exposed to temperatures under 0°C without being connected to a batter or with insufficiently filled fuel cartridge (Antifreeze), it must stand at room temperature for 24 hours before operating.
- For indoor use only: Unit is not watertight. Make sure that no water can enter.
- The unit may be used only to charge lead batteries that conform to the specification in chapters 3.4, S. 12) of the user manual.
- Operate only with original-equipment EFOY fuel cartridges.
- Do not smoke while changing the cartridges and avoid open flames.
- Do not expose fuel cartridges to temperatures above 45°C.
- Do not place the fuel cartridges in front of the air intake or outlet.
- At no time may siphoning occur in the hose. Make sure that the hose is neither clogged nor blocked.
- Switch off device before cleaning and unplug the battery charging cable.
- Never refill more than one bottle of Service Fluid at a time.
- The unit generates heat, thus requiring proper ventilation, see installation instructions.
- Exhaust gases contain moisture and may exceed 60°C, causing scalding.
- Exhaust by-products may contain injurious substances. Avoid inhaling exhaust directly or for long periods of time.
- Exhaust hose may not be longer than 50 cm in order to prevent freezing in winter. The hose may be up to 150 cm long for summer operation and during transitional seasons.
- The circuit connecting to the battery must contain a fuse.
- Check polarity before connecting the unit.
- Both sensor and power lines must always be connected. Always use separate lines for changing (power) and for voltage metering (sensor) to the battery.
- Do not open unit. Unauthorized tampering may jeopardize safe operation. The unit does not contain any user replaceable or serviceable components.
- Use only original equipment. Use of unauthorized parts will compromise safety. Consult user manual for authorized parts.
- Replace fused only with fused of the same type and rating. Never repair or override a fuse.
- Consult Material Safety Data Sheet (MSDS) for Methanol Fuel before use.