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CE

DATASHEET

Ultra Capacitor Charger, UCC-4

- Easy installation
- Monitoring and surveillance of operation
- Balancing to save energy
- 90-450 V DC – 3.5A Output
- Modular Ultra Capacitor system

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Document no.: 4921260003 A

1. General information

1.1 Application and advantages

1.1.1 Application

The UCC (Ultra Capacitor Charger) is a charger for the Ultra Capacitor Modules UCM. There are several possiblities to connect the individual modules, from a single UCM-90 up to five modules. For UCM-90 the voltage will be from 90 V DC with one module to 450V DC for five modules in series.

The charger and modules are designed to the rough environment in a pitch system of a wind turbine, where it is exposed to major mechanical stress, EMC and temperature fluctuations. As it is part of the wind turbines security concept, it is equipped with additional security systems and diagnostics possibilities.

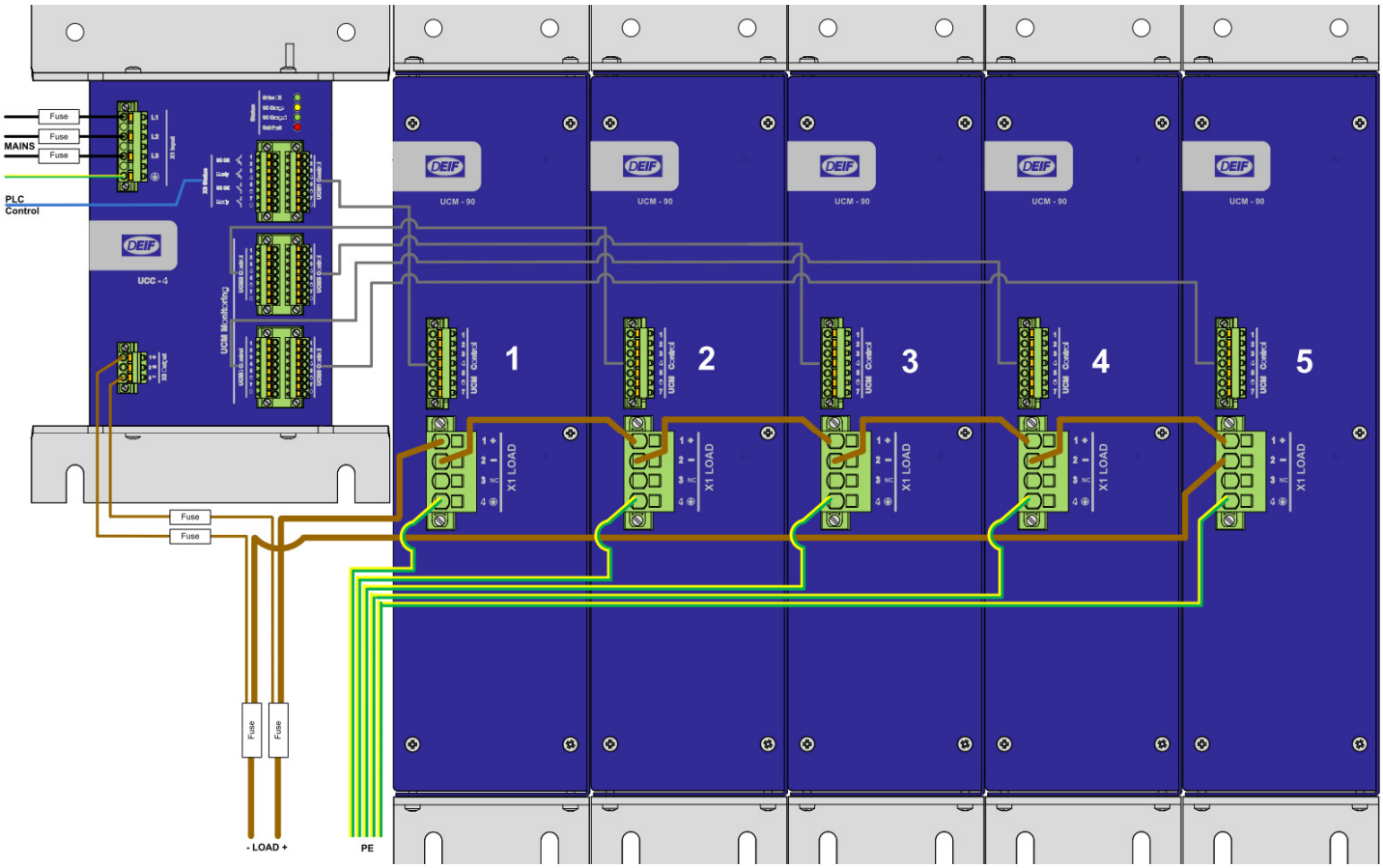
1.1.2 Advantages

- Great mechanical stability
- Convection cooling. No moving parts
- Wide working temperature range
- Particularly immune against electrical interferences
- 2 serial interface ports (EIA 485) (for data exchange, parameter assignment, service functions, remote monitoring, etc.)
- Integration in PLC possible via RS485 or signalling contacts
- Individual monitoring of the UC modules regarding temperature, polarity reversal and overvoltage
- Capacity measuring and limit monitoring
- Optimum charging of the UC modules with constant current
- System protection in case of the UC being overcharged, excess temperature and polarity reversal
- Isolated relay alarm and status signalling contacts
- Optically isolated open collector signal outputs
- High efficiency
- High reliability
- Led indicators for power OK and alarm indication

2. System information

2.1 Ultra Capacitor System

The DEIF Ultra Capacitor system consists of 2 building blocks a charger the UCC-4 and 1 to 5 energy storage modules the UCM-90. The building blocks give a very high degree of system flexibility, both for performance and physical dimensions.
Via the PC tool you can configurate the system as you like and get the running feedback from the system, capacity, voltage etc.
The UCC-4 charger get all feedback from the modules and the running feedback can be given thru the RS 485 communication or the status outputs to a controller or PLC.



3. Technical information

3.1 Led indication and status relays

Function	LED	Relay/output	Description
Mains OK	Green	-	Input OK Supply voltage X1 is within the applicable range
UC Charge	Yellow	-	Charging Rated output voltage X2 has not yet been reached 1 UCM-90 = 90 V DC……5 UCM-90 = 450 V DC
UC Charged	Green	-	Charged Rated voltage has been reached. It goes off again once the minimum output voltage (Ubmin) threshold is reached
Unit Fault	Red	-	Fault • UCM module high temperature • UCM module capacity below the limit • UCM module polarity reversal • UCM module overvoltage • Incorrect system configuration
UC OK	-	ON	System OK • UCC are not in error state • UCM modules are not in error state
Ready	-	ON	System ready UCM and/or UCC are not in error state and the UCM modules are fully charged. The UCM modules are charged if Un is reached and the voltage is then higher than Ubmin.

3.2 Data

3.2.1 General

Cooling	Cooling Convection
Maintenance	None
Mounting	4 pcs. Ø9 mm holes for screw mounting.
Distance for Convection	≥80mm. Always mount in such a way that sufficient air circulation can be ensured through the device.
Connection terminals	**Spring loaded connectors, screw secured** X1: Input terminal connections: 2.5mm² X2: Output terminal connections: 2.5mm² X3: Status output terminal connections: 1.5mm² UCMx: Control terminal connections: 1.5mm² COM1 and COM2: Serial interface: DSUB- 9 female

3.2.2 Input specifications

Input voltage	400V AC +/- 15%
Rated input current	1.7 A (Ue = 400V AC)
Max. turn-on current	15 A/0.5 msec
Max. Power consumption	185 W (X2 Output = 450 V DC)
Max. permissible stress	up to 105% Umax without destruction
Fuse protection	Max. Melting fuse 3 x 4A T or automatic type C3
Frequency range	45...65 Hz
Power factor AC-input	0,65…0,75 capacitive
Crest factor (AC)-input	2,0…2,5
Switch-on time	typ. 2s
Hold-up time	typ. 15ms

3.2.3 Output specifications

Output voltage	90… 450 V DC (1…5 UCM-90)
Output current	Nominal current: 3.5 A Maximum current (short cct.): 3.5 A
Charging characteristic	Constant current 3.5 A DC When derating 2.5 A DC
Charging time for complete charging, max.	10 F Modules: 5 min (25°C) Note! Charging time is the same for all system variations (90V,180V,270V,360V,450V)
Effeciency	Typ. 90% (X2 Output = 450 V DC, Iout = 3,5 A and X1 Input = 400 V AC)
Discharge current (without input)	<50 mA
Earth leakage current	<3.5 mA

3.2.4 UCM capacity measurement

Capacity measurement	1st measurement: When Un is reached 2nd measurement: 30 min. after 1st measurement Further measurements every 24 hours (after a power failure, repetition of this sequence)
Voltage variation during capacity measurement	Un –5.0 / +4.0 V DC

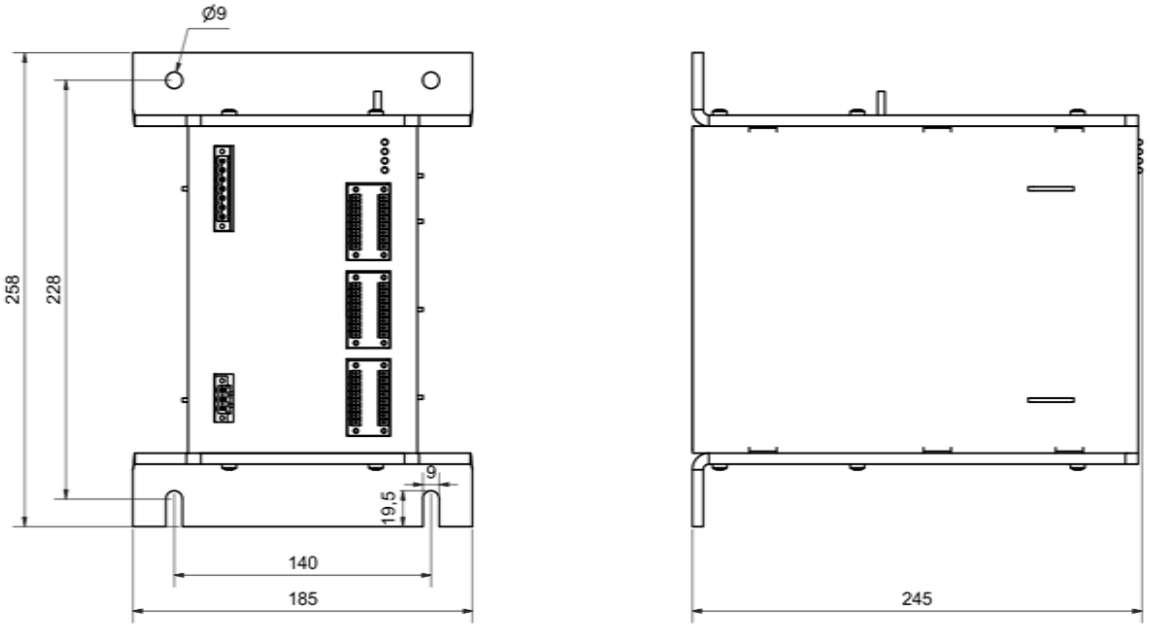
3.2.5 Other

Efficiency	0.90%	
EMC	**Electromagnetic compatibility (EMC)**	EN 61000-6-2/4
	Electrostatic discharge (ESD): Contact: 7.2 kV Air: 9.6 kV	EN 61000-4-2
	Radiated E-field emission: 30...230 MHz: 40 dB (µV/m) 230...1000 MHz: 47 dB (µV/m)	IEC 60255-25
	Conducted emission: IEC 60255-26 **Fast transients (burst):** Power: 2.4 kVp Signal: 1.2 kVp	IEC 60255-22-4, GL, LR, DNV, EN 61000-4-4
	Slow transients (surge): Power: DM 2 kVp, CM 4 kVp Signal: CM 2 kVp Frequency: CM 1,2 kVp	IACS E10, IEC60533, EN 60945, IEC 60255-26, EN 61000-4-5
	RF E-field (electric) immunity: 80...2000 MHz: 12 V/m 2...3 GHz: 10 V/m	IEC 60255-26, EN60945, GL, LR, BV, DNV, EN 61000-4-3
	RF conducted immunity 0.15...80 MHz: 12 VRMS	IEC 60255-26, EN 60945, GL, LR, BV, DNV, EN 61000-4-6
	Power frequency H-field (magnetic) immunity: Field: 400 A/m	IEC 60051, EN 61000-4-8
Safety	Safety IEC EN 60950/IEC EN 61010-1	
Temperature	-30...65°C (operating, free convection) -40...65°C (storage)	IEC 60068-2-1 IEC 60068-2-2
Humidity	-95% R.H. (non-condensing)	
Protection	Class I	
Degree of protection	IP 20	IEC/EN 60529
Altitude	< 2000 meters	
Vibration	3…13.2 Hz: 2 mm_{pp} 13.2…100 Hz: 0.7 g 3…13.2 Hz: 6 mm_{pp} 13.2…50 Hz: 2.1 g	IEC 60068-2-6 & DNV Class A IEC 60068-2-6 & DNV Class C
Bump	20 g, 16 msec, half sine 1000 bumps in each direction. 2 directions in each axis. A total of 6000 bumps.	IEC 60068-2-27 IEC 60255-21-2(class 2)
Shock (Base mount)	10 g, 11 msec, half sine 30 g, 11 msec, half sine 50 g, 11 msec, half sine Tested with 3 impacts in each direction in all 3 axes. A total of 18 impacts per test.	IEC 60255-21-2 Response (class 2) IEC 60255-21-2 Withstand (class 2) IEC 60068-2-27

4. Mechanical specifications

Case	Chassis: 1.5 mm painted steel, dark blue RAL 5002 Mounting-angels: 4.0 mm pre-zinked
Weight	7 kg (15.4 lbs)
Dimensions (WxHxD)	185 mm (7.28”) x 258 mm (10.16”) x 245 mm (9.65”)

4.1 Dimensions



All dimensions are in mm.

5. Ordering information

5.1 Order specifications

UCC-4, DEIF no. 1240040002

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