



# H-2000-DCDCC-48V

## User guide

## Revision history

Rev.	Date	Description	Author
1	2023-01-26	Initial release	J. Holemar

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# Glossary of terms and abbreviations

*Tab. 1: Table of Terms and abbreviations*

Term	Explanation
DC	Direct current
EMC	Electromagnetic Compatibility
H2FC	Hydrogen fuel cell
IPC	Association Connecting Electronics Industries
RoHS	Restriction of the use of certain Hazardous Substances in electrical and electronic equipment

# 1. Introduction

## 1.1 Product overview

H-2000-DCDCC-48V is a non-isolated DC/DC converter designed mainly for hydrogen fuel cell stacks.

It provides constant output voltage in the full range of input voltage.

Maximum output power is 2 kW.

## 1.2 Standards

*Tab. 2: Table of standards*

Type	Document No.	Name
EMC	EN 61326-1: 2013	Electrical equipment for measurement, control, and laboratory use – EMC requirements
RoHS	EN 62321: 2009	Electrotechnical products - Determination of level of six regulated substances (Cd, Hg, Pb, Cr+6, PBB, PBDE)
IPC	IPC-A610-D	Acceptability of Electronic Assemblies
IPC	IPC-A600-F	Acceptability of Printed Boards

## 1.3 Model variants

*Tab. 3: Table of product variants*

Model	Description
<b>H-2000-DCDCC-48V</b>	DCDC converter 48 V output 2 kW



*Fig. 1: H-2000-DCDCC-48V*

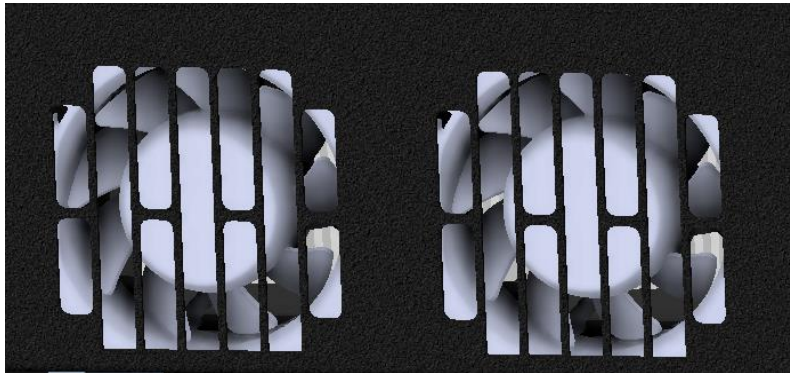
## 2. Installation and maintenance

### 2.1 Mechanical mounting

H-2000-DCDCC-48V shall be operated free standing in horizontal position.

The device must be installed in a dry environment.

There shall always be enough free space around the device to ensure free ventilation airflow.



*Fig. 2: Fan*

### 2.2 Electric connection

#### **Dangerous voltage hazard!**



Electric installation shall be always performed by a person with appropriate qualification.

H-2000-DCDCC-48V shall be always grounded during operation. Connect the ground or a PE conductor using the grounding screw.

For connecting the input and output, always use appropriate conductor dimensions according to the input and output current.



*Fig. 3: Grounding*



Warning. Always keep the correct polarity when connecting the input and output. Reverse polarity can damage the device.

## 2.3 Maintenance instructions

Before each operation check if the connection wires are not damaged and the connection screws are tightened. Avoid moisture penetration inside the device.

Remove dust from the surface of the device and from ventilation grilles regularly.

# 3. Technical description

## 3.1 Technical parameters

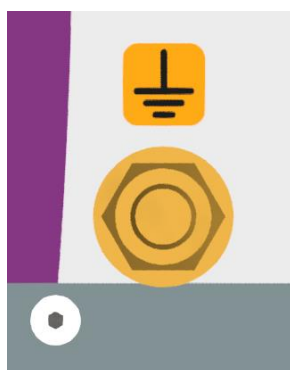
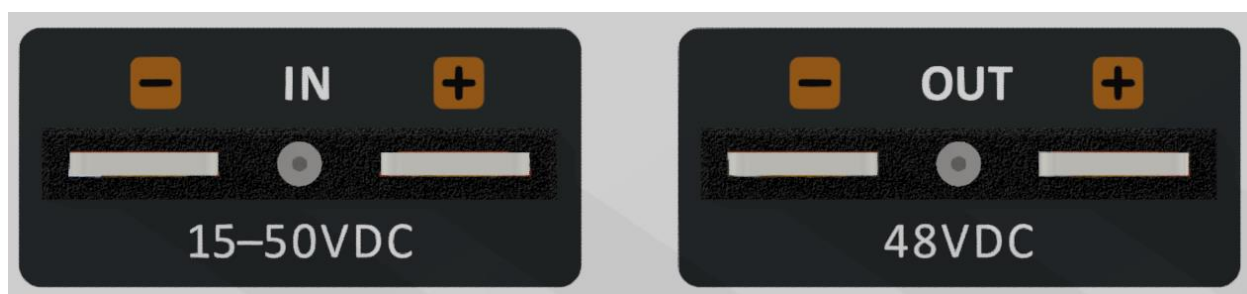
*Tab. 4: Technical parameters*

<b>INPUT</b>	<b>Voltage Range</b>	15 ~ 50 V DC
	<b>DC Current</b>	90 A maximum
<b>OUTPUT</b>	<b>DC Voltage</b>	48 V $\pm$ 5 % fixed (constant voltage)
	<b>Rated Current</b>	80 A
	<b>Current Range</b>	0 ~ 80 A
	<b>Rated Power</b>	2000 W (for $V_{in} > 25$ V)
	<b>Ripple &amp; Noise</b>	100 mV p-p
	<b>Setup; Rise Rate</b>	2 ms; 3,1 V / ms
<b>PROTECTION</b>	<b>Output Overload</b>	> 82 A
		Protection type: Constant current limiting, shut down when short circuit or overcurrent
	<b>Input fuse</b>	120 A the customer cannot replace the fuse, it must be sent to the manufacturer for replacement
	<b>Output fuse</b>	120 A the customer cannot replace the fuse, it must be sent to the manufacturer for replacement
	<b>Output Over Voltage</b>	65 V
		Protection type: Shut down output voltage, re-power input voltage to recover
	<b>Over Temperature</b>	Shut down, recovers automatically after temperature goes down



<b>Efficiency</b>	> 91 % at load current > 5 A
<b>Isolation Resistance</b>	Input – Output: non-isolated converter, common negative terminals Input/Output – Frame Ground: No isolation guaranteed
<b>IP Rating</b>	IP20
<b>Dimensions</b>	281 x 252 x 122 mm (length/width/depth)
<b>Weight</b>	4,7 kg
<b>Environmental parametres</b>	Temperature: 5÷50 °C / 41÷122 °F Humidity: 30÷70% Shocks and vibrations: none to moderate

## 3.2 Interfaces



*Fig. 4: device terminals*

*Tab. 5: DC Input terminal*




Name	Description
IN +	DC input from H2FC stack
IN -	
$\equiv$	Grounding screw

*Tab. 6: DC Output terminal*

Name	Description
OUT +	DC Output
OUT -	

### 3.3 Indicators and controls

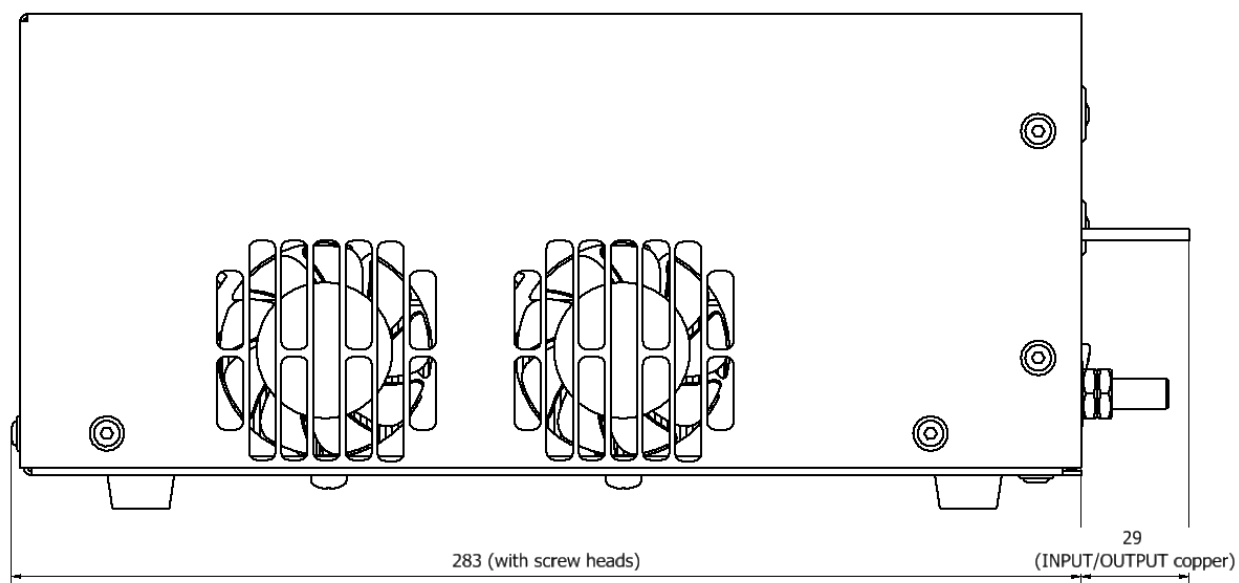
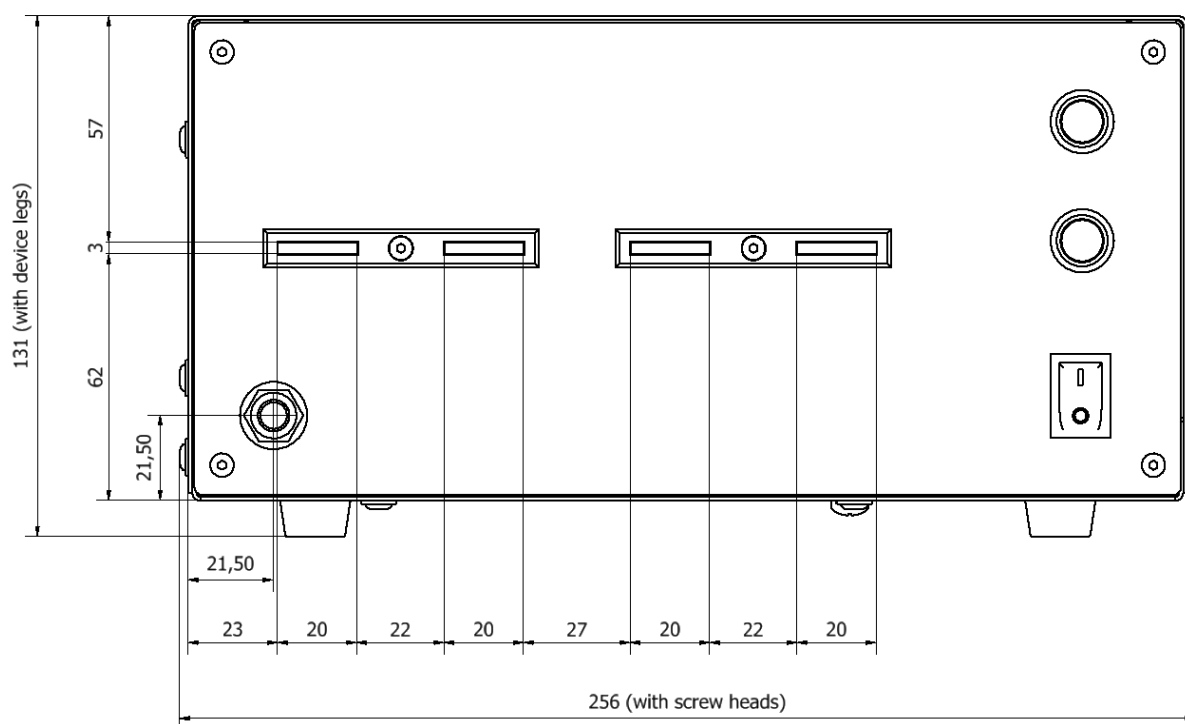
*Tab. 7: Indicators on device*

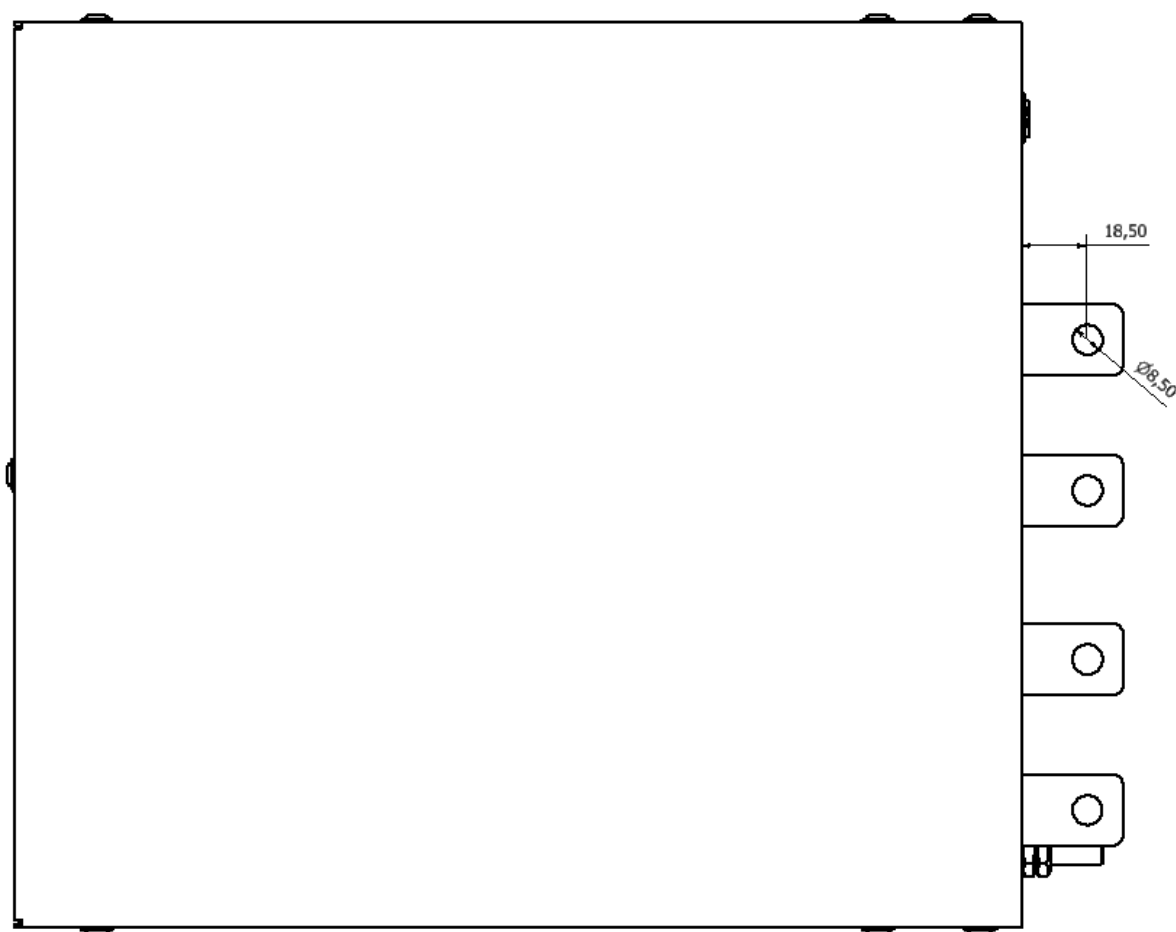
Indicator / control	Physical appearance	Meaning
IN	White LED 	Input voltage present
OUT	Green LED 	Output voltage OK
ON/OFF		Power supply

### 3.4 Mechanical dimensions



*Fig. 5: Outer dimensions*





*Fig. 6: Mechanical drawings*

## 4. Instructions for safe disposal of the Product

Packaging and waste equipment must be disposed of in accordance with Directive 2002/96/EC and relevant national laws.

*Tab. 8: Waste categories*

Waste type	Category
Packaging waste	Non-hazardous
Electrical and electronic equipment waste	Hazardous waste