istaBreeze

POWERING NATURAL ENERGY

TECHNICAL DOCUMENTATION

CHARGE CONTROL SYSTEMS

PRODUCT DOCUMENTATION

i/HCC-Pro Charge Controller

User Manual

Essential information for safe installation, commissioning, operation, maintenance, and servicing of the charge controller.

DOCUMENT TYPE	PRODUCT
Installation & Operation Manual	i/HCC-Pro Charge Controller

READ BEFORE INSTALLATION

Keep this manual available throughout the complete service life of the system.

ORIGINAL INSTRUCTIONS

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CHARGE CONTROLLER

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Professional Wind Charge Controller

Safe and efficient charging for battery-based wind energy systems.

1.5 kW	2 kW
24 VDC or 48 VDC	**24 VDC or 48 VDC**
Choose the version that matches the battery bank.	Choose the version that matches the battery bank.

SYSTEM OVERVIEW

The I/HCC-Pro is a dedicated wind charge controller for 1.5 kW and 2 kW wind turbines. It converts the turbine's three-phase AC output and controls the charging of a 24 V or 48 V battery bank.

The wind controller and a separate solar charge controller may operate on the same battery bank when each device is correctly sized and installed.

HOW IT WORKS

Wind Turbine
Generates three-phase AC power.

›

I/HCC-Pro
Rectifies, regulates and monitors the system.

›

Battery Bank
Stores energy at 24 VDC or 48 VDC.

KEY FEATURES

Integrated Protection
Protection against overcharge, deep discharge, short circuit, overload and lightning-related surges.

Automatic Braking
Monitors battery voltage and activates the external dump load when the battery is full or voltage is too high.

Integrated Display
Provides clear system monitoring and supports simple day-to-day operation.

Efficient Charging
Microprocessor-controlled voltage and current limiting support stable operation and longer component life.

DUMP LOAD INSTALLATION

Install the dump load horizontally in a well-ventilated area. Keep a minimum distance of 50 cm from the battery, charge controller and combustible materials. The dump load becomes hot during operation.

Select only the controller version that matches both the rated turbine power and the battery-bank voltage. Installation and electrical connections must be carried out by qualified personnel.

TECHNICAL SPECIFICATIONS

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I/HCC-PRO SERIES

2 kW Charge Controller

Technical data for the 24 VDC and 48 VDC controller versions.

CONTROLLER SERIES	VERSION 01	VERSION 02
2 kW I/HCC-Pro	24 VDC	48 VDC

ELECTRICAL DATA

Specification	24 VDC Version	48 VDC Version
Maximum Wind Turbine Input	2.2 kW	2.2 kW
Charging Voltage	25.2 V	52.8 V
Maximum Wind Charging Current	80 A	40 A
Minimum Battery Voltage	21 V	42 V
Automatic Braking Voltage	28.8 V ±1 V	58 V ±1 V
Wind Turbine Recharge Voltage	26.9 V ±1 V	55 V ±1 V
Overtemperature Braking / Release	50 °C / 45 °C	50 °C / 45 °C
Temperature Compensation	−4 mV/°C per 2 V cell	−4 mV/°C per 2 V cell

CONSTRUCTION & ENVIRONMENT

Display	Current, power, battery voltage, brake status and temperature
Cooling	External aluminium cooling fins
Protection Class	IP20 — indoor installation
Dump Load	2 kW braking resistor
Operating Conditions	−20 °C to +45 °C / 35–85% RH
Temperature Sensor Range	−35 °C to +80 °C / accuracy ±1 °C
Cable Termination	Battery 10 mm² · Turbine 6 mm² · Dump load 6 mm² · Ground 4 mm²
Dimensions / Weight	30 × 30 × 20 cm / 7 kg

OPERATING CONTROLS

Generator ON / OFF

For normal operation, select **ON** and close the manual brake. After manually braking, select **OFF** to lock the generator safely.

Manual Brake

Select **OFF** to activate manual braking. Select **ON** to return the controller to normal operating mode.

Reset Button

Deactivates the automatic brake after the fault or braking condition has been resolved.

Important: Use the controller version that matches the nominal battery-bank voltage. Cable sizing and installation requirements must be verified for the actual system and local regulations.

TECHNICAL SPECIFICATIONS

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I/HCC-PRO SERIES

1.5 kW Charge Controller

Technical data for the 24 VDC and 48 VDC controller versions.

CONTROLLER SERIES	VERSION 01	VERSION 02
1.5 kW I/HCC-Pro	24 VDC	48 VDC

ELECTRICAL DATA

Specification	24 VDC Version	48 VDC Version
Maximum Wind Turbine Input	1.6 kW	1.6 kW
Charging Voltage	25.2 V	52.8 V
Maximum Wind Charging Current	80 A	40 A
Minimum Battery Voltage	21 V	42 V
Automatic Braking Voltage	28.8 V ±1 V	58 V ±1 V
Wind Turbine Recharge Voltage	26.9 V ±1 V	55 V ±1 V
Overtemperature Braking / Release	50 °C / 45 °C	50 °C / 45 °C
Temperature Compensation	−4 mV/°C per 2 V cell	−4 mV/°C per 2 V cell

CONSTRUCTION & ENVIRONMENT

Display	Current, power, battery voltage, brake status and temperature
Cooling	External aluminium cooling fins
Protection Class	IP20 — indoor installation
Dump Load	1.5 kW braking resistor
Operating Conditions	−20 °C to +45 °C / 35–85% RH
Temperature Sensor Range	−35 °C to +80 °C / accuracy ±1 °C
Cable Termination	Battery 10 mm² · Turbine 6 mm² · Dump load 6 mm² · Ground 4 mm²
Dimensions / Weight	30 × 30 × 20 cm / 7 kg

OPERATING CONTROLS

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Charge Controller

Controller overview · 2 kW / 24 VDC and 48 VDC versions

CONTROLLER OVERVIEW

The illustration provides an overview of the charge controller and its display functions. Before installing or operating the system, take a few moments to become familiar with the display and the information it provides. Understanding each value and indicator supports correct installation, safe operation and reliable long-term performance of the wind turbine system.

Before operation: Confirm that the controller version matches the turbine rating and the nominal battery-bank voltage.



LCD Display

Shows key system information and operating values in real time.

Current
Ampere (A)

Power
Watt (W)

Battery
Voltage (V)

Brake
Brake status

Temperature
Controller temperature

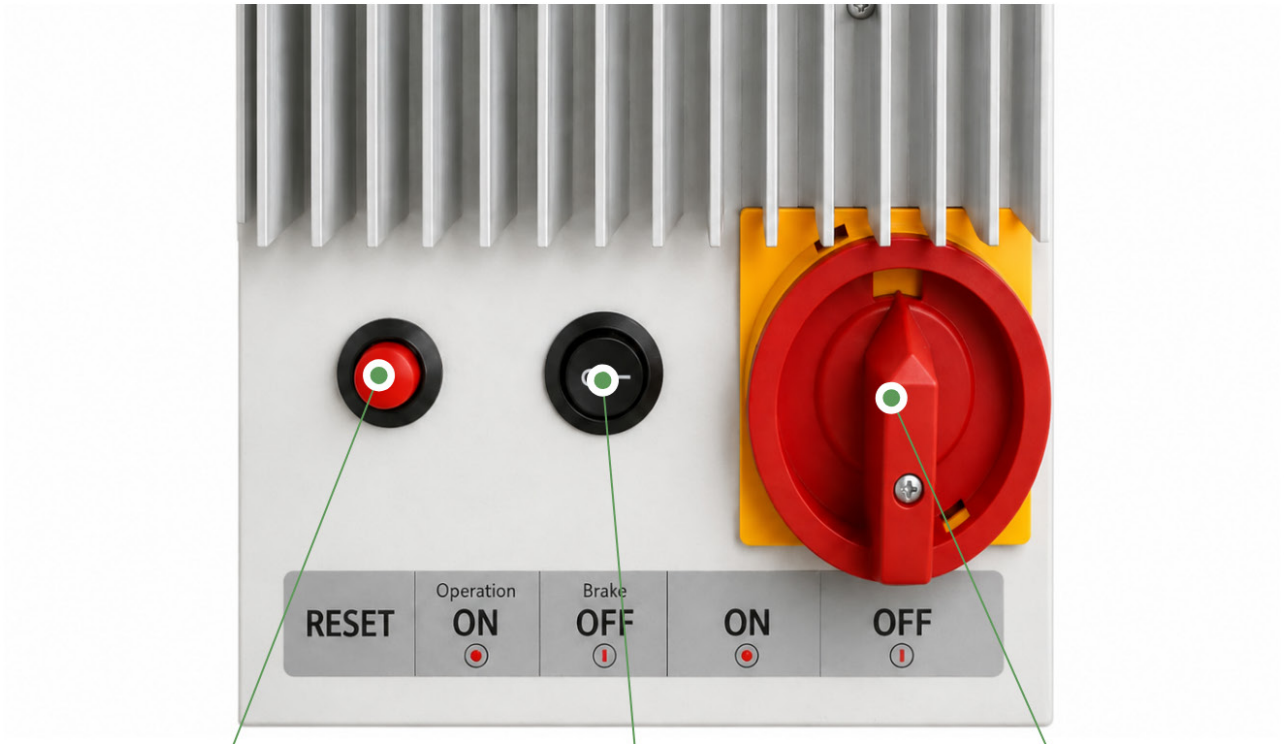
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Controller Operating Controls

Reset, manual brake and generator ON/OFF functions

Use the following controls in the correct sequence to manage braking and generator operation safely.



Reset Button

Press to identify the current brake mode. If **BRAKE** disappears for 2–3 seconds and then returns, automatic braking is active. If it remains visible, manual braking is active.

Manual Brake Button

OFF Activates manual braking.

ON Returns to normal operation.

Generator ON / OFF Switch

OFF After activating the manual brake, switch the generator OFF. The generator is locked for safe braking.

ON Switch the generator ON, then release the manual brake by selecting ON.

Stopping the System
Manual brake OFF → Generator OFF

Starting the System
Generator ON → Manual brake ON

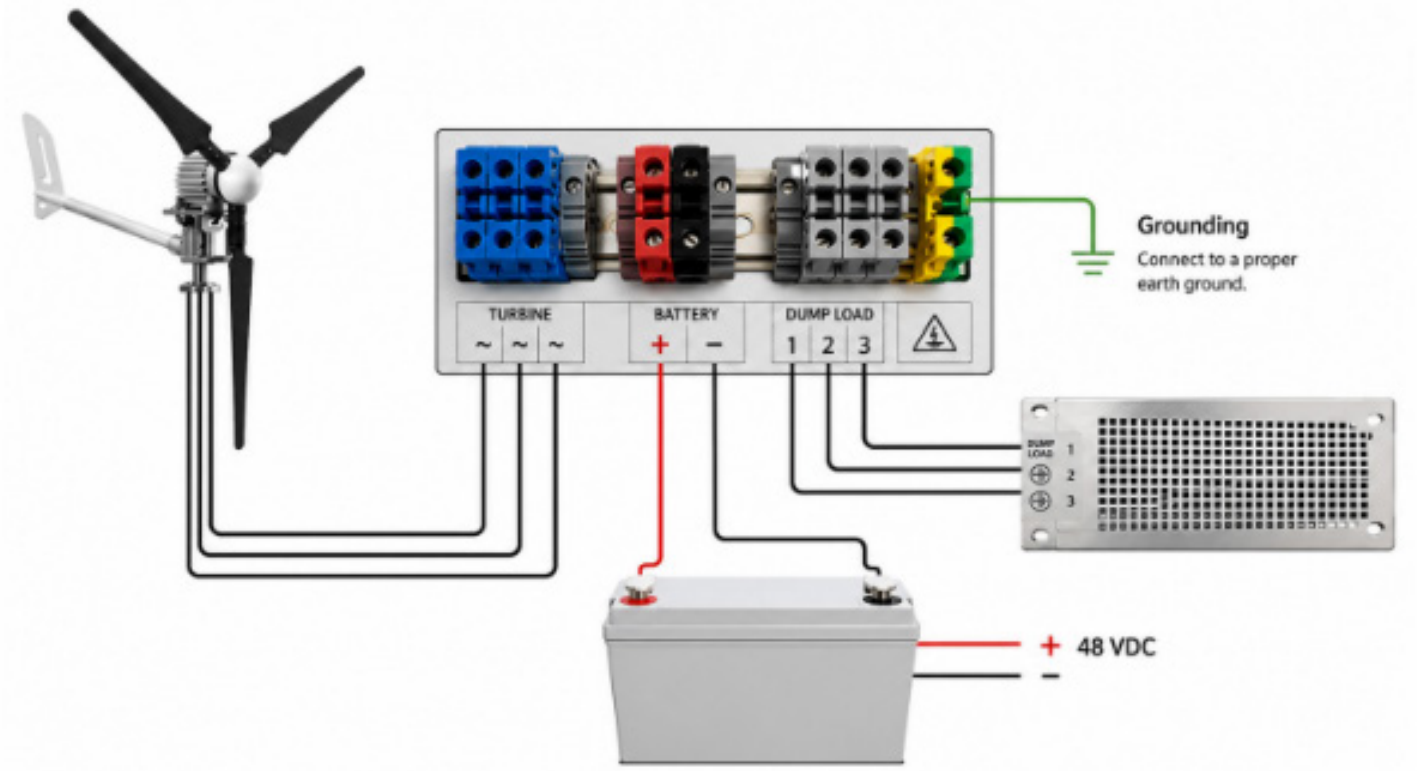
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Connection Diagram

Wind turbine, battery, dump load and grounding connections · 48 VDC version

Connect each component to the corresponding terminal block shown below. Complete all wiring while the charge controller and generator are switched off.



TERMINAL CONNECTIONS

TURBINE	BATTERY	DUMP LOAD	GROUNDING
~ ~ ~	+ −	1 2 3	⏚
AC Output (3 Phase)	**48 VDC Battery**	**Dump Load Resistor**	**Protective Earth**
Connect the three turbine phase wires.	Observe the correct battery polarity.	Connect all three resistor terminals.	Connect to a proper earth ground.

Important: Check that every terminal is securely connected before switching on the controller. Never operate the system without the dump load and protective grounding connected.

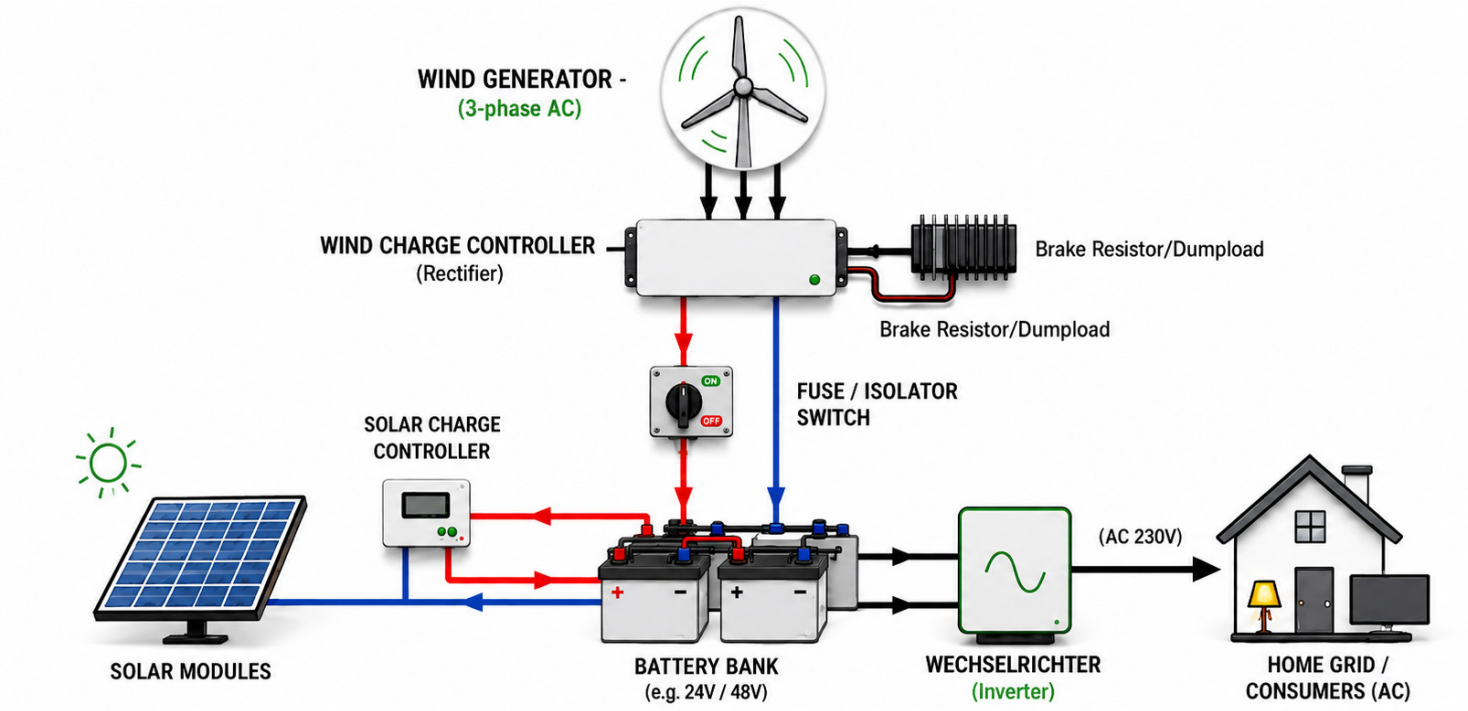
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Wind and Solar Energy System

Combined renewable-energy system for battery storage and home-grid supply

The diagram shows how a wind turbine and a separate solar charge controller can operate with the same battery bank. Stored DC energy is converted to AC power by a suitable inverter.



SYSTEM BENEFITS

01	02	03	04	05
RENEWABLE ENERGY	**BATTERY STORAGE**	**SAFE & RELIABLE**	**CLEAN POWER**	**HOME ENERGY**
Wind and solar generation	Shared 24 V or 48 V bank	Protected system operation	Low-emission electricity	Supply through an inverter

Important: The wind charge controller is not a hybrid controller. Solar modules require a separate solar charge controller connected to the same battery bank.