Certificate

No. 26-037-00

kiwa

Certificate

Applicant: **Victron Energy B.V.**
De Paal 35
1351 JG Almere
Netherlands

Product: Hybrid Inverter (Battery/PV)

Model: **Multi RS Solar 48/6000/100-450/100**

Rating: **3,68 kVA / 3,68 kW**

Intended use:

Bi-Directional battery inverter with an automatic disconnection device with single-phase mains surveillance in accordance with Technical regulation 3.3.1 for battery plants with a single-phase parallel coupling via an inverter to the public mains supply. The automatic disconnection device is an integral part of the aforementioned inverter.

Applied standards and guidelines:

SOP-9-1_15 GCC Certification Program, 09/21
Based on:
TECHNICAL REGULATION 3.3.1 - Revision 6
Requirements for energy storage facilities from 1 May 2025

The safety concept of an aforementioned representative product corresponds at the time of issue of this certificate to the valid safety specifications for the specified use in accordance with regulations.

Limitation:
Complies with the requirements of Category A. Power factor and reactive power at Pn are limited by Sn.

Report No: **22PP580-15_0**

Date of issue: 2026-02-05

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TC_ TR3.3.1_eng_B

B1.2 Documentation for category A energy storage facilities

B1.2.1. Identification

Facility Not part of this certificate	Description of the facility Not part of this certificate
Facility owner name and address	Not part of this Certificate
Facility owner telelephone no.	Not part of this Certificate
Facility owner e-mail	Not part of this Certificate
Inverter - manufacturer	Victron Energy
Inverter – rated power	Multi RS Solar 48/6000/100-450/100 3,68kVA / 3,68kW
Storage medium – manufacturer	-
Storage medium – model no.	-
Storage medium – useable energy storage capacity [kWh]	-

B1.2.2. Normal operation

Can the facility be started and operate continuously within the normal operation range, restricted only by protective settings, c.f. requirements in section 7? Where to find documentation that this requirement has been met? Test report 22PP580-15_0 from Kiwa Primara GmbH	Yes ☒ No ☐

B1.2.3. Tolerance of frequency deviations

Will the energy storage facility remain connected to the public electricity supply grid during frequency deviations as specified in section 4? Where to find documentation that this requirement has been met? Test report 22PP580-15_0 from Kiwa Primara GmbH	Yes ☒ No ☐

B1.2.4. Start-up and reconnection of a power-generating plant

Does start-up and automatic reclosing occur after three minutes following voltage and frequency coming within the areas specified in section 4.3.1? Where to find documentation that this requirement has been met? Test report 22PP580-15_0 from Kiwa Primara GmbH	Yes ☒ No ☐

B1.2.5. Power quality

For each power quality parameter, please state how the result was achieved.

B1.2.5.1. Rapid voltage changes

Does the energy storage facility comply with the rapid voltage changes threshold specified in section 5.1.1.3? Where to find documentation that this requirement has been met? Test report 22PP580-15_0 from Kiwa Primara GmbH	Yes ☒ No ☐

B1.2.5.2. DC content

Does DC content at normal operation exceed 0.5% of rated current? Where to find documentation that this requirement has been met? Test report 22PP580-15_0 from Kiwa Primara GmbH	Yes ☐ No ☒

B1.2.5.3. Current imbalance

Does the current imbalance at normal operation exceed 16 A? Where to find documentation that this requirement has been met? Test report 22PP580-15_0 from Kiwa Primara GmbH	Yes ☐ No ☒
If the facility is made up of single-phase energy storage units, have measures been taken to ensure that the above threshold is not exceeded? Where to find documentation that this requirement has been met? Test report 22PP580-15_0 from Kiwa Primara GmbH	Yes ☒ No ☐

B1.2.5.4. Flicker

Is the flicker contribution for the entire facility below the threshold specified in section 5.1.1.4? Only the information for the tested unit is available, not for the whole facility. The limits depend on the number of energy storage facilities. Where to find documentation that this requirement has been met? Test report 22PP580-15_0 from Kiwa Primara GmbH	Yes ☒ No ☐

B1.2.5.5. Harmonics

Are all harmonics for the entire facility below the thresholds specified in section 5.1.1.5? Only the information for the tested unit is available, not for the whole facility. The limits depend on the SCR. Where to find documentation that this requirement has been met? Test report 22PP580-15_0 from Kiwa Primara GmbH	Yes ☒ No ☐

B1.2.5.6. Interharmonics

This part must only be filled in for energy storage facilities larger than 50 kW.

Are all interharmonics for the entire facility below the threshold specified in section 5.1.1.6? Only the information for the tested unit is available, not for the whole facility. The limits depend on the SCR. Where to find documentation that this requirement has been met? Test report 22PP580-15_0 from Kiwa Primara GmbH	Yes ☐ No ☐

B1.2.5.7. Disturbances in the 2-9 kHz range

This part must only be filled in for energy storage facilities larger than 50 kW.

Is the emission of disturbances with frequencies in the 2-9 kHz range lower than 0.2% of the rated current I_n as required in section 5.1.1.7? Only the information for the tested unit is available, not for the whole facility. The limits depend on the SCR. Where to find documentation that this requirement has been met? Test report 22PP580-15_0 from Kiwa Primara GmbH	Yes ☐ No ☐

B1.2.6. Control functions

B1.2.6.1. Active power control

B.1.2.6.1.1. Frequency response at overfrequency

Is the energy storage facility equipped with a frequency response function in case of overfrequency? Only the information for the tested unit is available, not for the whole facility. Where to find documentation that this requirement has been met? Test report 22PP580-15_0 from Kiwa Primara GmbH	Yes ☒ No ☐

B.1.2.6.1.2. Absolute power constraint

Is the energy storage facility equipped with an absolute power constraint function? Only the information for the tested unit is available, not for the whole facility. Where to find documentation that this requirement has been met? Test report 22PP580-15_0 from Kiwa Primara GmbH	Yes ☒ No ☐

B.1.2.6.1.3. Ramp rate constraint function

Is the energy storage facility equipped with a ramp rate constraint function? Only the information for the tested unit is available, not for the whole facility. Where to find documentation that this requirement has been met? This requirement is no met.	Yes ☐ No ☒

B1.2.6.2. Reactive power control

B.1.2.6.2.1. Work area

Can the energy storage facility supply reactive power at P_n and varying operating voltages, as specified in section 6.3? Only the information for the tested unit is available, not for the whole facility. Where to find documentation that this requirement has been met? Test report 22PP580-15_0 from Kiwa Primara GmbH	Yes ☒ No ☐
Can the energy storage facility supply reactive power at varying active power as specified in section 6.3? Only the information for the tested unit is available, not for the whole facility. Where to find documentation that this requirement has been met? Test report 22PP580-15_0 from Kiwa Primara GmbH	Yes ☒ No ☐

B.1.2.6.2.2. Power factor control

Is the energy storage facility equipped with a power factor control function as specified in sections 6.3.2 and 6.3.2.1? Only the information for the tested unit is available, not for the whole facility. Where to find documentation that this requirement has been met? Test report 22PP580-15_0 from Kiwa Primara GmbH	Yes ☒ No ☐

B.1.2.6.2.3. Automatic power factor control

Is the energy storage facility equipped with an automatic power factor control as specified in section 6.3.4 and 6.3.4.1? Only the information for the tested unit is available, not for the whole facility. Where to find documentation that this requirement has been met? Test report 22PP580-15_0 from Kiwa Primara GmbH	Yes ☒ No ☐

B.1.2.6.2.4. Q control

Is the energy storage facility equipped with Q control function as specified in section 6.3.1 and 6.3.1.1? Only the information for the tested unit is available, not for the whole facility. Where to find documentation that this requirement has been met? Test report 22PP580-15_0 from Kiwa Primara GmbH	Yes ☒ No ☐

B1.2.7. Protection against electricity system faults

B1.2.7.1. Relay settings

The table below lists default values for relay settings. If default values deviate from the values specified in section 7.2.1, documentation must be provided to ensure that relay settings can be set to the correct values upon commissioning.

Protection function	**Sym-bol**	**Setting**		**Trip time**	
Overvoltage (step 2)	$U_{>>}$	264,0	V	0,23	s
Overvoltage (step 1)	$U_{>}$	253,00	V	60,0	s
Undervoltage (step 1)	$U_{<}$	194,00	V	50,04	s
Overfrequency	$f_{>}$	51,50	Hz	0,24	ms
Underfrequency	$f_{<}$	47,50	Hz	0,24	ms
Frequency change	*df/dt*	N/A	Hz/s	N/A	ms

B1.2.8. Signature

Date	Not part of this certificate
Company	Not part of this certificate
Person responsible for commis-sioning	Not part of this certificate
Signature (person responsible for commissioning)	Not part of this certificate
Facility owner	Not part of this certificate
Signature (facility owner)	Not part of this certificate