Victron Energy B.V.

Almere Haven

The quality management system of **Victron Energy B.V.** and the application thereof complies with the requirements as stipulated in the standard:

NEN-EN-ISO 9001:2015

Evaluation of the quality management system took place in accordance with TÜV Nederland's certification regulations for the field of application:

Development, delivery and repair of chargers, inverters, converters, and electrical devices.

This certification is subject to annual evaluation by TÜV Nederland.

Registration number:	24574/2.2
Start date certificate:	16-07-2018
Certificate valid until:	06-07-2021
Date of first certificate:	06-07-2015
Date audit:	05-04-2018
Previous certificate valid until:	06-07-2018

Managing Director
Mr. E.W.A.C. Franken

MGMT. SYS.
RvA C 029

ISO 9001

primara Test- und Zertifizier-GmbH

Certificate

Applicant: **Victron Energy B.V.**

Product: **Inverter with integrated automatic disconnection device between a generator and the public low-voltage grid**

Model:	**Multiplus**			
	12/3000/120-16	**12/3000/120-50**	**24/3000/70-16**	**24/3000/70-50**
	48/3000/35-16		**48/3000/35-50**	
Rating:	2,4kW; 3,0kVA			
Model:	**Multiplus**		**Quattro**	
	24/5000/120-100		**24/5000/120-100/100**	
	48/5000/70-50	**48/5000/70-100**	**48/5000/70-100/100**	**48/5000/70-100/100-S**
Rating:	4,5kW; 5,0kVA			
Model:	**Quattro**			
	48/8000/110-100/100	**48/10000/140-100/100**	**48/15000/200-100/100**	
Rating:	6,4kW; 8,0kVA	8,0kW; 10,0kVA	12,0kW; 15,0kVA	

Intended use:

An automatic disconnection device with single-phase mains surveillance in accordance with Engineering Recommendation G59/3 for generators 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:

Engineering Recommendation G59/3-1
Issue 3, Amendment 1 – August 2014
Recommendations for the connection of generating plant to the distribution systems of licensed distribution network operators

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.
The above mentioned inverters are also in compliance with the standard, if installed in parallel and three-phase configurations up to 16A per phase. For configurations above 16A per phase the DNO must be consulted.

Report No: 15PP007-02

Certificate No: 15-128-04

Date of issue: 2018-02-06

DAkkS
Deutsche
Akkreditierungsstelle
D-ZE-12089-01-00

Andreas Aufmuth
Certification Department

CERTIFICATION primara Test- und Zertifizier-GmbH Grid Code Compliance G59/3

primara Test- und Zertifizier-GmbH

Power Quality. Harmonics.

Generating Unit tested to BS EN 61000-3-12

Quattro 48/15000/200-100/100

Generating Unit rating per phase (rpp)			10	kVA	Harmonics % =Measured Value (Amps) x 23/rating per phase (kVA)	
Harmonic	At 45-55% of rated output		100% of rated output		Limit in BS EN 61000-3-12	
	Measured Value (MV) in Amps	%	Measured Value (MV) in Amps	%	1 phase	3 phase
2	0,33	0,172	0,261	0,115	8%	8%
3	4,98	2,598	1,137	0,501	21,6%	Not stated
4	0,12	0,063	0,115	0,051	4%	4%
5	0,5	0,261	0,569	0,251	10,7%	10,7%
6	0,15	0,078	0,110	0,048	2,67%	2,67%
7	1	0,522	0,313	0,138	7,2%	7,2%
8	0,22	0,115	0,151	0,067	2%	2%
9	0,5	0,261	0,209	0,092	3,8%	Not stated
10	0,13	0,068	0,073	0,032	1,6%	1,6%
11	0,15	0,078	0,110	0,048	3,1%	3,1%
12	0,05	0,026	0,026	0,012	1,33%	1,33%
13	0,62	0,323	0,083	0,037	2%	2%
THD	-	5,781	-	5,270	23%	13%
PWHD	-	3,293	-	2,481	23%	22%

Quattro 48/10000/140-100/100

Generating Unit rating per phase (rpp)			10	kVA	Harmonics % =Measured Value (Amps) x 23/rating per phase (kVA)	
Harmonic	At 45-55% of rated output		100% of rated output		Limit in BS EN 61000-3-12	
	Measured Value (MV) in Amps	%	Measured Value (MV) in Amps	%	1 phase	3 phase
2	0,31	0,70	0,33	0,76	8%	8%
3	1,88	4,32	2,74	6,30	21,6%	Not stated
4	0,13	0,30	0,13	0,30	4%	4%
5	0,45	1,03	0,51	1,18	10,7%	10,7%
6	0,13	0,30	0,11	0,26	2,67%	2,67%
7	0,22	0,50	0,30	0,69	7,2%	7,2%
8	0,11	0,26	0,11	0,26	2%	2%
9	0,12	0,28	0,16	0,38	3,8%	Not stated
10	0,06	0,13	0,07	0,15	1,6%	1,6%
11	0,05	0,11	0,11	0,26	3,1%	3,1%
12	0,03	0,07	0,03	0,07	1,33%	1,33%
13	0,05	0,10	0,08	0,18	2%	2%
THD	-	11,96	-	8,68	23%	13%
PWHD	-	3,20	-	1,96	23%	22%

Multiplus 24/5000/120-100						
Generating Unit rating per phase (rpp)			5	kVA	Harmonics % =Measured Value (Amps) x 23/rating per phase (kVA)	
Harmonic	At 45-55% of rated output		100% of rated output		Limit in BS EN 61000-3-12	
	Measured Value (MV) in Amps	%	Measured Value (MV) in Amps	%	1 phase	3 phase
2	0,04	0,22	0,11	0,54	8%	8%
3	0,86	4,41	1,81	9,23	21,6%	Not stated
4	0,01	0,07	0,05	0,27	4%	4%
5	0,51	2,61	0,20	1,02	10,7%	10,7%
6	0,01	0,07	0,04	0,21	2,67%	2,67%
7	0,06	0,29	0,18	0,92	7,2%	7,2%
8	0,03	0,13	0,07	0,35	2%	2%
9	0,07	0,36	0,12	0,63	3,8%	Not stated
10	0,02	0,08	0,03	0,17	1,6%	1,6%
11	0,03	0,16	0,07	0,37	3,1%	3,1%
12	0,01	0,03	0,01	0,05	1,33%	1,33%
13	0,05	0,26	0,05	0,26	2%	2%
THD	-	10,38	-	9,58	23%	13%
PWHD	-	3,28	-	2,43	23%	22%

Generating Unit tested to BS EN 61000-3-2				
Multiplus 24/3000/70-50				
Generating Unit rating per phase (rpp)		2,4 kW		
Harmonic	At 45-55% of rated output	100% of rated output		
	Measured Value (MV) in Amps	Measured Value (MV) in Amps	Limit in BS EN 61000-3-2 in Amps	Higher limit for odd harmonics 21 and above
2	0,04	0,05	1,080	
3	0,58	0,52	2,300	
4	0,03	0,03	0,430	
5	0,17	0,16	1,140	
6	0,02	0,02	0,300	
7	0,08	0,05	0,770	
8	0,02	0,02	0,230	
9	0,05	0,05	0,400	
10	0,01	0,02	0,184	
11	0,03	0,04	0,330	
12	0,00	0,00	0,153	
13	0,02	0,03	0,210	
14	0,00	0,00	0,131	
15	0,01	0,03	0,150	
16	0,00	0,00	0,115	
17	0,00	0,02	0,132	
18	0,00	0,00	0,102	
19	0,01	0,01	0,118	
20	0,00	0,00	0,092	
21	0,01	0,01	0,107	0,160
22	0,00	0,00	0,084	
23	0,01	0,02	0,098	0,147
24	0,00	0,00	0,077	
25	0,01	0,01	0,090	0,135
26	0,00	0,00	0,071	
27	0,00	0,01	0,083	0,124
28	0,00	0,00	0,066	
29	0,00	0,01	0,078	0,117
30	0,00	0,00	0,061	
31	0,01	0,00	0,073	0,109
32	0,00	0,00	0,058	
33	0,01	0,00	0,068	0,102
34	0,00	0,00	0,054	
35	0,00	0,00	0,064	0,096
36	0,00	0,00	0,051	
37	0,00	0,00	0,061	0,091
38	0,00	0,00	0,048	
39	0,00	0,01	0,058	0,087
40	0,00	0,00	0,046	

Power Quality. Voltage fluctuations and flicker

Quattro 48/15000/200-100/100

	Starting			Stopping from full load			Running	
	d_{max}	d_c	$d_{(t)}$	d_{max}	d_c	$d_{(t)}$	P_{st}	P_{lt} 2 hours
Measured Values at test impedance	-1,87	-1,05	0	1,30	1,23	0	0,40	0,40
Normalised to standard impedance	-15,86	-8,88	0	11,07	10,41	0	3,38	3,37
Normalised to required maximum impedance	-1,34	-0,75	0	0,94	0,88	0	0,29	0,29
Limits set under BS EN 61000-3-11	4%	3,3%	3,3%	4%	3,3%	3,3%	1,0	0,65

Quattro 48/10000/140-100/100

	Starting			Stopping from full load			Running	
	d_{max}	d_c	$d_{(t)}$	d_{max}	d_c	$d_{(t)}$	P_{st}	P_{lt} 2 hours
Measured Values at test impedance	6,12	5,91	0	6,10	5,90	0	1,37	1,35
Normalised to standard impedance	6,12	5,91	0	6,10	5,90	0	1,37	1,35
Normalised to required maximum impedance	2,04	1,97	0	2,04	1,97	0	0,46	0,45
Limits set under BS EN 61000-3-11	4%	3,3%	3,3%	4%	3,3%	3,3%	1,0	0,65

Multiplus 24/5000/120-100

	Starting			Stopping from full load			Running	
	d_{max}	d_c	$d_{(t)}$	d_{max}	d_c	$d_{(t)}$	P_{st}	P_{lt} 2 hours
Measured Values at test impedance	-2,79	-2,70	0	3,98	3,83***	0	0,58	0,50
Normalised to standard impedance	-2,79	-2,70	0	3,98	3,83***	0	0,58	0,50
Normalised to required maximum impedance	-2,40	-2,33	0	3,43	3,30	0	0,50	0,43
Limits set under BS EN 61000-3-11	4%	3,3%	3,3%	4%	3,3%	3,3%	1,0	0,65

Multiplus 24/3000/70-50								
	Starting			Stopping from full load			Running	
	d_{max}	d_c	$d_{(t)}$	d_{max}	d_c	$d_{(t)}$	P_{st}	P_{lt} 2 hours
Measured Values at test impedance	0,311	0,150	0,311	1,509	0,036	1,509	0,018	0,018
Normalised to standard impedance	0,311	0,150	0,311	1,509	0,036	1,509	0,018	0,018
Normalised to required maximum impedance	N/A							
Limits set under BS EN 61000-3-11	4%	3,3%	3,3%	4%	3,3%	3,3%	1,0	0,65

Test impedance	R	0,24	Ω	XI	0,15	Ω
Standard impedance	R	0,24* 0,4**	Ω	XI	0,15* 0,25**	Ω
Maximum impedance	R	N/A	Ω	XI	N/A	Ω

*Applies to three phase and split single phase generating units
**Applies to single phase generating units and generating units using two phases on a three phase system.
***The dc is above the limit since the current goes through the normalized impedance. The required maximum supply impedance is 0,35Ω

Power Quality. Power factor.

	216,2V	230V	253V
Measured Value	0,997	0,998	0,995
Limit	>0,95	>0,95	>0,95

Measured at three voltage levels and at full output. Voltage to be maintained within + or – 1,5% of the stated level during test.

Protection. Frequency tests

Function	Setting		Trip test		"No trip tests"	
	Frequency	Time delay	Frequency	Time delay	Frequency / time	Confirm no trip
U/F stage 1	47,5Hz	20,0s	47,50Hz	20,20s	47,7Hz 25s	No trip
U/F stage 2	47,0Hz	0,5s	47,00Hz	0,610s	47,2Hz 19,98s	No trip
					46,8Hz 0,48s	No trip
O/F stage 1	51,5Hz	90,0s	51,53Hz	90,20s	51,3Hz 95s	No trip
O/F stage 2	52,0Hz	0,5s	52,03Hz	0,595s	51,8Hz 89,98s	No trip
					52,2Hz 0,48s	No trip

Protection. Voltage tests

Function	Setting		Trip test		"No trip tests"	
	Voltage	Time delay	Voltage	Time delay	Voltage / time	Confirm no trip
U/V stage 1	200,1V	2,5s	200,1V	2,555s	204,1V 3,5s	No trip
U/V stage 2	184,0V	0,5s	184,0V	0,574s	188,0V 2,48s	No trip
					180,0V 0,48s	No trip
O/V stage 1	262,2V	1,0s	262,3V	1,080s	258,2V 2,0s	No trip
O/V stage 2	273,7V	0,5s	273,8V	0,600	269,7V 0,98s	No trip
					277,7V 0,48s	No trip

a) Protection. Loss of Mains test and single phase test

Note as an alternative, inverters can be tested to BS EN 62116. The following sub set of tests should be recorded in the following table.

Test power and imbalance	33% P -5% Q	66% P -5% Q	100% P -5% Q	33% P +5% Q	66% P +5% Q	100% P +5% Q
Trip time. Limit is 0.5s	102ms	152ms	142ms	144ms	216ms	178ms

Single phase test for multi phase **Generating Units**. Confirm that when generating in parallel with a network operating at around 50Hz with no network disturbance, that the removal of a single phase connection to the **Generating Unit**, with the remaining phases connected causes a disconnection of the generating unit within a maximum of 1s.

Ph 1 removed	Confirm trip	Ph 2 removed	Confirm trip	Ph 3 removed	Confirm trip

b) Protection. Frequency change, Stability test.

	Start frequnecy	Change	End frequency	Confirm no trip
Positive vector shift	49,5Hz	+9 dregrees		No trip
Negative vector shift	50,5Hz	-9 dregrees		No trip
Positive frequency drift	49,5Hz	+0,19Hz/sec	51,5Hz	No trip
Negative frequency drift	50,5Hz	-0,19Hz/sec	47,5Hz	No trip

c) Protection. Re-connection timer.

Time delay settings (s)	Measured delay (s)	Checks on no reconnection when voltage or frequency is brought to just outside stage 1 limits of table 10.5.7.1			
20s	22,7s	At 266,2V	At 196,1V	At 47,4Hz	At 51,6Hz
Confirmation that the **Generating Unit** does not re-connect		No re-connection	No re-connection	No re-connection	No re-connection

d) Faul Level contribution.

For machines with electro-magnetic output			For inverter output		
Parameter	Symbol	Value	Time after fault	Volts	Amps
Peak Short Circuit current	i_p	-	20ms	46,07 V	8,69 A
Initial Value of aperiodic current	A	-	100ms	27,48 V	0,02 A
Initial symmetrical short-circuit current	I_K	-	250ms	27,43 V	0,02 A
Decaying (aperiodic) component of short-circuit current	i_{DC}	-	500ms	27,41 V	0,02 A
Reactance/Resistance Ratio of source	X/R	-	Time to trip	31,27 ms	In seconds

primara Test- und Zertifizier-GmbH

Certificate

Applicant: **Victron Energy B.V.**

Product: **Photovoltaic Inverter with integrated automatic disconnection device between a generator and the public low-voltage grid**

Model:	**Multiplus Compact**			
	12/800/35-16	**12/1600/70-16**	**24/800/16-16**	**24/1600/40-16**
	12/1200/50-16	**12/2000/80-30**	**24/1200/25-16**	**24/2000/50-30**
Rating:	**700W**	**1000W**	**1300W**	**1600W**

Intended use:

An automatic disconnection device with single-phase mains surveillance in accordance with Engineering Recommendation G59/3 for photovoltaic systems 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:

Engineering Recommendation G59/3-2
Issue 3 Amendment 2 September 2015
Recommendations for the connection of generating plant to the distribution systems of licensed distribution network operators

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.

Report No: 15PP103-03

Certificate No: 17-220-00

Date of issue: 2017-06-20

DAkkS
Deutsche
Akkreditierungsstelle
D-ZE-12089-01-00

Andreas Aufmuth
Certification Department

CERTIFICATION primara Test- und Zertifizier-GmbH Grid Code Compliance G59/3

primara Test- und Zertifizier-GmbH

Power Quality. Harmonics.

Generating Unit tested to BS EN 61000-3-2

Multiplus Compact 12/2000/80-30

Generating Unit rating per phase (rpp)			1,6	kW		
Harmonic	At 45-55% of rated output		100% of rated output			
	Measured Value (MV) in Amps	Normalised Value (NV) in Amps	Measured Value (MV) in Amps	Normalised Value (NV) in Amps	Limit in BS EN 61000-3-2 in Amps	Higher limit for odd harmonics 21 and above
2	0,16	0,16	0,06	0,06	1,080	
3	0,24	0,24	0,94	0,94	2,300	
4	0,13	0,13	0,05	0,05	0,430	
5	0,08	0,08	0,13	0,13	1,140	
6	0,09	0,09	0,03	0,03	0,300	
7	0,07	0,07	0,04	0,04	0,770	
8	0,06	0,06	0,02	0,02	0,230	
9	0,03	0,03	0,03	0,03	0,400	
10	0,03	0,03	0,01	0,01	0,184	
11	0,01	0,01	0,02	0,02	0,330	
12	0,01	0,01	0,00	0,00	0,153	
13	0,01	0,01	0,02	0,02	0,210	
14	0,01	0,01	0,00	0,00	0,131	
15	0,01	0,01	0,02	0,02	0,150	
16	0,01	0,01	0,00	0,00	0,115	
17	0,00	0,00	0,02	0,02	0,132	
18	0,01	0,01	0,00	0,00	0,102	
19	0,00	0,00	0,01	0,01	0,118	
20	0,00	0,00	0,00	0,00	0,092	
21	0,00	0,00	0,01	0,01	0,107	0,160
22	0,00	0,00	0,00	0,00	0,084	
23	0,01	0,01	0,01	0,01	0,098	0,147
24	0,00	0,00	0,00	0,00	0,077	
25	0,00	0,00	0,01	0,01	0,090	0,135
26	0,00	0,00	0,00	0,00	0,071	
27	0,00	0,00	0,01	0,01	0,083	0,124
28	0,00	0,00	0,00	0,00	0,066	
29	0,00	0,00	0,01	0,01	0,078	0,117
30	0,00	0,00	0,00	0,00	0,061	
31	0,00	0,00	0,01	0,01	0,073	0,109
32	0,00	0,00	0,00	0,00	0,058	
33	0,00	0,00	0,00	0,00	0,068	0,102
34	0,00	0,00	0,00	0,00	0,054	
35	0,00	0,00	0,00	0,00	0,064	0,096
36	0,00	0,00	0,00	0,00	0,051	
37	0,00	0,00	0,01	0,01	0,061	0,091
38	0,00	0,00	0,00	0,00	0,048	
39	0,00	0,00	0,01	0,01	0,058	0,087
40	0,00	0,00	0,00	0,00	0,046	

Multiplus Compact 12/800/35-16

Generating Unit rating per phase (rpp)			1,6	kW		
Harmonic	At 45-55% of rated output		100% of rated output			
	Measured Value (MV) in Amps	Normalised Value (NV) in Amps	Measured Value (MV) in Amps	Normalised Value (NV) in Amps	Limit in BS EN 61000-3-2 in Amps	Higher limit for odd harmonics 21 and above
2	0,02	0,02	0,02	0,02	1,080	
3	0,49	0,49	0,67	0,67	2,300	
4	0,02	0,02	0,02	0,02	0,430	
5	0,11	0,11	0,14	0,14	1,140	
6	0,01	0,01	0,02	0,02	0,300	
7	0,03	0,03	0,04	0,04	0,770	
8	0,01	0,01	0,02	0,02	0,230	
9	0,01	0,01	0,03	0,03	0,400	
10	0,01	0,01	0,01	0,01	0,184	
11	0,01	0,01	0,02	0,02	0,330	
12	0,00	0,00	0,00	0,00	0,153	
13	0,01	0,01	0,01	0,01	0,210	
14	0,00	0,00	0,00	0,00	0,131	
15	0,01	0,01	0,01	0,01	0,150	
16	0,00	0,00	0,00	0,00	0,115	
17	0,01	0,01	0,02	0,02	0,132	
18	0,00	0,00	0,00	0,00	0,102	
19	0,01	0,01	0,01	0,01	0,118	
20	0,00	0,00	0,00	0,00	0,092	
21	0,01	0,01	0,01	0,01	0,107	0,160
22	0,00	0,00	0,00	0,00	0,084	
23	0,00	0,00	0,01	0,01	0,098	0,147
24	0,00	0,00	0,00	0,00	0,077	
25	0,00	0,00	0,01	0,01	0,090	0,135
26	0,00	0,00	0,00	0,00	0,071	
27	0,00	0,00	0,01	0,01	0,083	0,124
28	0,00	0,00	0,00	0,00	0,066	
29	0,00	0,00	0,01	0,01	0,078	0,117
30	0,00	0,00	0,00	0,00	0,061	
31	0,00	0,00	0,00	0,00	0,073	0,109
32	0,00	0,00	0,00	0,00	0,058	
33	0,01	0,01	0,01	0,01	0,068	0,102
34	0,00	0,00	0,00	0,00	0,054	
35	0,00	0,00	0,01	0,01	0,064	0,096
36	0,00	0,00	0,00	0,00	0,051	
37	0,00	0,00	0,01	0,01	0,061	0,091
38	0,00	0,00	0,00	0,00	0,048	
39	0,00	0,00	0,01	0,01	0,058	0,087
40	0,00	0,00	0,00	0,00	0,046	

Power Quality. Voltage fluctuations and flicker

Multiplus Compact 12/2000/80-30

	Starting			Stopping from full load			Running	
	d_{max}	d_c	$d_{(t)}$	d_{max}	d_c	$d_{(t)}$	P_{st}	P_{lt} 2 hours
Measured Values at test impedance	-1,20	-1,17	0,00	1,17	1,12	0,00	0,185	0,185
Normalised to standard impedance	-1,20	-1,17	0,00	1,17	1,12	0,00	0,185	0,185
Normalised to required maximum impedance	N/A							
Limits set under BS EN 61000-3-11	4%	3,3%	3,3%	4%	3,3%	3,3%	1,0	0,65

Multiplus Compact 12/800/35-16

	Starting			Stopping from full load			Running	
	d_{max}	d_c	$d_{(t)}$	d_{max}	d_c	$d_{(t)}$	P_{st}	P_{lt} 2 hours
Measured Values at test impedance	0,53	0,50	0,00	-0,53	-0,37	0,00	0,187	0,187
Normalised to standard impedance	0,53	0,50	0,00	-0,53	-0,37	0,00	0,187	0,187
Normalised to required maximum impedance	N/A							
Limits set under BS EN 61000-3-11	4%	3,3%	3,3%	4%	3,3%	3,3%	1,0	0,65

Test impedance	R	0,24	Ω	XI	0,15	Ω
Standard impedance	R	0,24* 0,4^	Ω	XI	0,15* 0,25^	Ω
Maximum impedance	R	N/A	Ω	XI	N/A	Ω

Power Quality. Power factor.

	216,2V	230V	253V
Measured Value	0,990	0,984	0,980
Limit	>0,95	>0,95	>0,95

Measured at three voltage levels and at full output. Voltage to be maintained within + or – 1,5% of the stated level during test.

Protection. Frequency tests

Function	Setting		Trip test		"No trip tests"	
	Frequency	Time delay	Frequency	Time delay	Frequency / time	Confirm no trip
U/F stage 1	47,5Hz	20,0s	47,47Hz	20,1s	47,7Hz 25s	No trip
U/F stage 2	47,0Hz	0,5s	46,99Hz	0,57s	47,2Hz 19,98s	No trip
					46,8Hz 0,48s	No trip
O/F stage 1	51,5Hz	90,0s	51,53Hz	90,1s	51,3Hz 95s	No trip
O/F stage 2	52,0Hz	0,5s	52,01Hz	0,61s	51,8Hz 89,98s	No trip
					52,2Hz 0,48s	No trip

Protection. Voltage tests

Function	Setting		Trip test		"No trip tests"	
	Voltage	Time delay	Voltage	Time delay	Voltage / time	Confirm no trip
U/V stage 1	200,1V	2,5s	199,9V	2,58s	204,1V 3,5s	No trip
U/V stage 2	184,0V	0,5s	183,8V	0,58s	188,0V 2,48s	No trip
					180,0V 0,48s	No trip
O/V stage 1	262,2V	1,0s	264,1V	1,09s	258,2V 2,0s	No trip
O/V stage 2	273,7V	0,5s	275,6V	0,61s	269,7V 0,98s	No trip
					277,7V 0,48s	No trip

a) Protection. Loss of Mains test and single phase test

Note as an alternative, inverters can be tested to BS EN 62116. The following sub set of tests should be recorded in the following table.

Test power and imbalance	33% -5% Q Tests 22	66% -5% Q Test 12	100% -5% P Test 5	33% +5% Q Test 31	66% +5% Q Test 21	100% +5% P Test 10
Trip time. Limit is 0.5s	0,12s	0,11s	0,17s	0,15s	0,10s	0,17s

Single phase test for multi phase **Generating Units**. Confirm that when generating in parallel with a network operating at around 50Hz with no network disturbance, that the removal of a single phase connection to the **Generating Unit**, with the remaining phases connected causes a disconnection of the generating unit within a maximum of 1s.

Ph 1 removed	Confirm trip	Ph 2 removed	Confirm trip	Ph 3 removed	Confirm trip

b) Protection. Frequency change, Stability test.

	Start frequnecy	Change	End frequency	Confirm no trip
Positive vector shift	49,5Hz	+9 dregrees		No trip
Negative vector shift	50,5Hz	-9 dregrees		No trip
Positive frequency drift	49,5Hz	+0,19Hz/sec	51,5Hz	No trip
Negative frequency drift	50,5Hz	-0,19Hz/sec	47,5Hz	No trip

c) Protection. Re-connection timer.

Time delay settings (s)	Measured delay (s)	Checks on no reconnection when voltage or frequency is brought to just outside stage 1 limits of table 10.5.7.1			
		At 266,2V	At 196,1V	At 47,4Hz	At 51,6Hz
Confirmation that the **Generating Unit** does not re-connect		No Re-connection	No Re-connection	No Re-connection	No Re-connection

d) Faul Level contribution.

For machines with electro-magnetic output			For inverter output		
Parameter	Symbol	Value	Time after fault	Volts	Amps
Peak Short Circuit current	i_p	-	20ms	105,57	8,02
Initial Value of aperiodic current	A	-	100ms	74,06	0,06
Initial symmetrical short-circuit current	I_K	-	250ms	74,08	0,04
Decaying (aperiodic) component of short-circuit current	i_{DC}	-	500ms	74,15	0,06
Reactance/Resistance Ratio of source	X/R	-	Time to trip	0,032	In seconds

e) Self Monitoring solid state switching.

It has been verified that in the event of the solid state switching device failing to disconnect the Generating Plant, the voltage on the output side of the switching device is reduced to a value below 50 volt within 0,5s.

primara Test- und Zertifizier-GmbH

Certificate

Applicant: **Victron Energy B.V.**

Product: **Photovoltaic Inverter with integrated automatic disconnection device between a generator and the public low-voltage grid**

Model:	**Multiplus**			
	12/3000/120-16	**12/3000/120-50**	**24/3000/70-16**	**24/3000/70-50**
	48/3000/35-16		**48/3000/35-50**	
Rating:	**2,4kW; 3,0kVA**			

Intended use:

An automatic disconnection device with single-phase mains surveillance in accordance with Engineering Recommendation G83/2 for photovoltaic systems 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:

Engineering Recommendation G83/2
Issue 2 – August 2012
Recommendations for the connection of small-scale embedded generators in parallel with public low-voltage distribution networks.

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.
The above mentioned inverters are also in compliance with the standard, if installed in parallel and three-phase configurations up to 16A per phase. For configurations above 16A per phase the DNO must be consulted.

Report No: 15PP007-01

Certificate No: 15-110-02

Date of issue: 2015-12-01

DAkkS Deutsche Akkreditierungsstelle D-ZE-12089-01-00

Andreas Aufmuth
Certification Department

CERTIFICATION primara Test- und Zertifizier-GmbH Grid Code Compliance G83/2

Power Quality. Harmonics.

Equipment Phases: Single Phase

Harmonic:	At 45-55% of rated output	At 100% of rated output	Harmonic Limit (A)
	Normalised Value (A)		
2nd	0,06	0,08	1,080
3rd	0,89	0,80	2,300
4th	0,05	0,05	0,430
5th	0,26	0,25	1,140
6th	0,03	0,03	0,300
7th	0,12	0,08	0,770
8th	0,03	0,03	0,230
9th	0,08	0,08	0,400
10th	0,02	0,03	0,184
11th	0,05	0,06	0,330
12th	0,00	0,00	0,153
13th	0,03	0,05	0,210
14th	0,00	0,00	0,131
15th	0,02	0,05	0,150
16th	0,00	0,00	0,115
17th	0,00	0,03	0,132
18th	0,00	0,00	0,102
19th	0,02	0,02	0,118
20th	0,00	0,00	0,092
21st	0,02	0,02	0,107
22nd	0,00	0,00	0,084
23rd	0,02	0,03	0,098
24th	0,00	0,00	0,077
25th	0,02	0,02	0,090
26th	0,00	0,00	0,071
27th	0,00	0,02	0,083
28th	0,00	0,00	0,066
29th	0,00	0,02	0,078
30th	0,00	0,00	0,061
31st	0,02	0,00	0,073
32nd	0,00	0,00	0,058
33rd	0,02	0,00	0,068
34th	0,00	0,00	0,054
35th	0,00	0,00	0,064
36th	0,00	0,00	0,051
37th	0,00	0,00	0,061
38th	0,00	0,00	0,048
39th	0,00	0,02	0,058
40th	0,00	0,00	0,046

Annex to certificate 15-110-02

Power Quality. Voltage Fluctuations and Flicker.

	Starting			Stopping			Running	
	dmax	dc	d(t)	Dmax	dc	d(t)	Pst	Plt 2 hours
Measured Values	0,311	0,150	0,311	1,509	0,036	1,509	0,018	0,018
Normalised to standard impedance	0,311	0,150	0,311	1,509	0,036	1,509	0,018	0,018
Limits	4%	3,3%	3,3% 500ms	4%	3,3%	3,3% 500ms	1,0	0,65

Power Quality. Power Factor.

Output Voltage	216,2V	230V	253V
Measured Value	0,997	0,998	0,995
Limit	>0,95		

Protection. Frquency Tests.

Function	Setting		Trip test		No trip test	
	Frequency	Time delay	Frequency	Time delay	Frequency time	Confirm no trip
U/F stage 1	47,5Hz	20s	47,50Hz	20,15s	47,7Hz 25s	No trip
U/F stage 2	47,0Hz	0,5s	47,00Hz	0,59s	47,2Hz 19,98s	No trip
					46,8Hz 0,48s	No trip
O/F stage 1	51,5Hz	90s	51,53Hz	90,20s	51,3Hz 95s	No trip
O/F stage 2	52,0Hz	0,5s	52,03Hz	0,59s	51,8Hz 89,98s	No trip
					52,2Hz 0,48s	No trip

Protection. Voltage Tests.

Function	Setting		Trip test		No trip test	
	Voltage	Time delay	Voltage	Time delay	Voltage time	Confirm no trip
U/V stage 1	200,1V	2,5s	200,1V	2,55s	204,1V 3,5s	No trip
U/V stage 2	184,0V	0,5s	184,0V	0,55s	188V 2,48s	No trip
					180V 0,48s	No trip
O/V stage 1	262,2V	1,0s	262,3V	1,05s	258,2V 2,0s	No trip
O/V stage 2	273,7V	0,5s	273,8V	0,59s	269,7V 0,98s	No trip
					277,7V 0,48s	No trip

Protection. Loss of Mains Test according BS EN 62116 for Inverters.

Test Poewr and imbalance	33% -5% Q	66% -5% Q	100% -5% Q	33% +5% Q	66% +5% Q	100% +5% Q
Trip time (s)	0,1	0,2	0,1	0,1	0,2	0,2

Protection. Reconnection Timer.

Reconnestion Time	**Under/Over voltage**	**Under/over frequency**	**Loss of mains**
Minimum value	20 seconds		
Actual settings (sec)	20s	20s	20s
Recorded value (sec)	22,2s	22,7s	22,5s

	At 266,2V	At 196,1V	At 47,4Hz	At 51,6Hz
Confirmation that the unit does not re-connect.	No connection to grid	No connection to grid	No connection to grid	No connection to grid

Faul Level Contribution.

Parameter	Symbol	Value	Time after fault	Volts	Amps
Peak Short Circuit current	ip	N/A	20ms	46,07 V	8,69 A
Initial Value of aperiodic current	A	N/A	100ms	27,48 V	0,02 A
Initial symmetrical short-circuit current	IK	N/A	250ms	27,43 V	0,02 A
Decaying (aperiodic) component of short-circuit current	iDC	N/A	500ms	27,41 V	0,02 A
Reactance/Resistance Ratio of source	X/R	N/A	Time to trip	31,27 ms	-

As SSEGs (small-scale embedded generators) for PV are inverter-connected the max. short circuit current is the max. AC current.

primara Test- und Zertifizier-GmbH

Certificate

Applicant: **Victron Energy B.V.**

Product: **Inverter with integrated automatic disconnection device between a generator and the public low-voltage grid**

Model:	**Multiplus Compact**			
	12/800/35-16	**12/1200/50-16**	**12/1600/70-16**	**12/2000/80-30**
	24/800/16-16	**24/1200/28-16**	**24/1600/40-16**	**24/2000/50-30**
Rating:	**700W**	**1000W**	**1300W**	**1600W**

Intended use:

An automatic disconnection device with single-phase mains surveillance in accordance with Engineering Recommendation G83/2 for photovoltaic systems 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:

Engineering Recommendation G83/2
Issue 2 – August 2012
Recommendations for the connection of small-scale embedded generators in parallel with public low-voltage distribution networks.

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.
The above mentioned inverters are also in compliance with the standard, if installed in parallel and three-phase configurations up to 16A per phase. For configurations above 16A per phase the DNO must be consulted.

Report No: 15PP103-01

Certificate No: 15-208-03

Date of issue: 2017-05-02

DAkkS
Deutsche
Akkreditierungsstelle
D-ZE-12089-01-00

Andreas Aufmuth
Certification Department

CERTIFICATION primara Test- und Zertifizier-GmbH Grid Code Compliance G83/2

Power Quality. Harmonics.

Multiplus Compact 12/2000/80-30

Equipment Phases: Single Phase

Harmonic:	At 45-55% of rated output	At 100% of rated output	Harmonic Limit (A)
	Measured Value (A)		
2nd	0,16	0,06	1,080
3rd	0,24	0,94	2,300
4th	0,13	0,05	0,430
5th	0,08	0,13	1,140
6th	0,09	0,03	0,300
7th	0,07	0,04	0,770
8th	0,06	0,02	0,230
9th	0,03	0,03	0,400
10th	0,03	0,01	0,184
11th	0,01	0,02	0,330
12th	0,01	0,00	0,153
13th	0,01	0,02	0,210
14th	0,01	0,00	0,131
15th	0,01	0,02	0,150
16th	0,01	0,00	0,115
17th	0,00	0,02	0,132
18th	0,01	0,00	0,102
19th	0,00	0,01	0,118
20th	0,00	0,00	0,092
21st	0,00	0,01	0,107
22nd	0,00	0,00	0,084
23rd	0,01	0,01	0,098
24th	0,00	0,00	0,077
25th	0,00	0,01	0,090
26th	0,00	0,00	0,071
27th	0,00	0,01	0,083
28th	0,00	0,00	0,066
29th	0,00	0,01	0,078
30th	0,00	0,00	0,061
31st	0,00	0,01	0,073
32nd	0,00	0,00	0,058
33rd	0,00	0,00	0,068
34th	0,00	0,00	0,054
35th	0,00	0,00	0,064
36th	0,00	0,00	0,051
37th	0,00	0,01	0,061
38th	0,00	0,00	0,048
39th	0,00	0,01	0,058
40th	0,00	0,00	0,046

Multiplus Compact 12/800/35-16

Equipment Phases: Single Phase

Harmonic:	At 45-55% of rated output	At 100% of rated output	Harmonic Limit (A)
	Measured Value (A)		
2nd	0,02	0,02	1,080
3rd	0,49	0,67	2,300
4th	0,02	0,02	0,430
5th	0,11	0,14	1,140
6th	0,01	0,02	0,300
7th	0,03	0,04	0,770
8th	0,01	0,02	0,230
9th	0,01	0,03	0,400
10th	0,01	0,01	0,184
11th	0,01	0,02	0,330
12th	0,00	0,00	0,153
13th	0,01	0,01	0,210
14th	0,00	0,00	0,131
15th	0,01	0,01	0,150
16th	0,00	0,00	0,115
17th	0,01	0,02	0,132
18th	0,00	0,00	0,102
19th	0,01	0,01	0,118
20th	0,00	0,00	0,092
21st	0,01	0,01	0,107
22nd	0,00	0,00	0,084
23rd	0,00	0,01	0,098
24th	0,00	0,00	0,077
25th	0,00	0,01	0,090
26th	0,00	0,00	0,071
27th	0,00	0,01	0,083
28th	0,00	0,00	0,066
29th	0,00	0,01	0,078
30th	0,00	0,00	0,061
31st	0,00	0,00	0,073
32nd	0,00	0,00	0,058
33rd	0,01	0,01	0,068
34th	0,00	0,00	0,054
35th	0,00	0,01	0,064
36th	0,00	0,00	0,051
37th	0,00	0,01	0,061
38th	0,00	0,00	0,048
39th	0,00	0,01	0,058
40th	0,00	0,00	0,046

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Power Quality. Voltage Fluctuations and Flicker.

Multiplus Compact 12/2000/80-30

	Starting			Stopping			Running	
	dmax	dc	d(t)	Dmax	dc	d(t)	Pst	Plt 2 hours
Measured Values	-1,20	-1,17	0,00	1,17	1,12	0,00	0,185	0,185
Normalised to standard impedance	-1,20	-1,17	0,00	1,17	1,12	0,00	0,185	0,185
Limits	4%	3,3%	3,3% 500ms	4%	3,3%	3,3% 500ms	1,0	0,65

Multiplus Compact 12/800/35-16

	Starting			Stopping			Running	
	dmax	dc	d(t)	Dmax	dc	d(t)	Pst	Plt 2 hours
Measured Values	0,53	0,50	0,00	-0,53	-0,37	0,00	0,187	0,187
Normalised to standard impedance	0,53	0,50	0,00	-0,53	-0,37	0,00	0,187	0,187
Limits	4%	3,3%	3,3% 500ms	4%	3,3%	3,3% 500ms	1,0	0,65

Power Quality. Power Factor.

Output Voltage	216,2V	230V	253V
Measured Value	0,990	0,984	0,980
Limit	>0,95		

Protection. Frquency Tests.

Function	Setting		Trip test		No trip test	
	Frequency	Time delay	Frequency	Time delay	Frequency time	Confirm no trip
U/F stage 1	47,5Hz	20s	47,48Hz	20,05s	47,7Hz 25s	No trip
U/F stage 2	47,0Hz	0,5s	46,99Hz	0,539s	47,2Hz 19,98s	No trip
					46,8Hz 0,48s	No trip
O/F stage 1	51,5Hz	90s	51,52Hz	90,10s	51,3Hz 95s	No trip
O/F stage 2	52,0Hz	0,5s	52,00Hz	0,589s	51,8Hz 89,98s	No trip
					52,2Hz 0,48s	No trip

Protection. Voltage Tests.

Function	Setting		Trip test		No trip test	
	Voltage	Time delay	Voltage	Time delay	Voltage time	Confirm no trip
U/V stage 1	200,1V	2,5s	199,9V	2,56s	204,1V 3,5s	No trip
U/V stage 2	184,0V	0,5s	183,8V	0,57s	188V 2,48s	No trip
					180V 0,48s	No trip
O/V stage 1	262,2V	1,0s	264,0V	1,06s	258,2V 2,0s	No trip
O/V stage 2	273,7V	0,5s	275,5V	0,57s	269,7V 0,98s	No trip
					277,7V 0,48s	No trip

Protection. Loss of Mains Test according BS EN 62116 for Inverters.

Test Poewr and imbalance	33% -5% Q	66% -5% Q	100% -5% Q	33% +5% Q	66% +5% Q	100% +5% Q
Trip time	0,12s	0,11s	0,17s	0,17s	0,10s	0,15s

Protection. Reconnection Timer.

Reconnestion Time	**Under/Over voltage**	**Under/over frequency**	**Loss of mains**
Minimum value	20 seconds		
Actual settings	20s	20s	20s
Recorded value	22,7s	22,9s	22,7s

	At 266,2V	At 196,1V	At 47,4Hz	At 51,6Hz
Confirmation that the unit does not re-connect.	No connection to grid	No connection to grid	No connection to grid	No connection to grid

Faul Level Contribution.

For an inverter SEEG

Parameter	Symbol	Time after fault	Volts	Amps
Peak short circuit current	i_p	20ms	105,57	8,02
Initial Value of aperiodic current	A	100ms	74,06	0,06
Initial symmetrical short-circuit current	I_K	250ms	74,08	0,04
Decaying (aperiodic) component of short-circuit current	i_{DC}	500ms	74,15	0,06

As SSEGs (small-scale embedded generators) for PV are inverter-connected the max. short circuit current is the max. AC current.

primara Test- und Zertifizier-GmbH

Declaration of Conformity

Applicant: **Victron Energy B.V.**

Product type: **Inverter with integrated automatic disconnection device**

Model:	**Multiplus**			
	12/3000/120-16	**12/3000/120-50**	**24/3000/70-16**	**24/3000/70-50**
	48/3000/35-16		**48/3000/35-50**	
Rating:	2,4kW; 3,0kVA			
Model:	**Multiplus**		**Quattro**	
	24/5000/120-100		**24/5000/120-100/100**	
	48/5000/70-50	**48/5000/70-100**	**48/5000/70-100/100**	**48/5000/70-100/100-S**
Rating:	4,5kW; 5,0kVA			
Model:	**Quattro**			
	48/8000/110-100/100	**48/10000/140-100/100**	**48/15000/200-100/100**	
Rating:	6,4kW; 8,0kVA	8,0kW; 10,0kVA	12,0kW; 15kVA	

A representative test sample of above stated model passed the tests according to:

Standard: IEC 62116:2014

Report no: 15PP007-05

Certificate no: 17-218-00

Date of issue: 2017-06-16

SAFETY TESTED primara Test- und Zertifizier-GmbH NORM

NAME

primara
Test- und Zertifizier-GmbH

Declaration of Conformity

Applicant: Victron Energy B.V.

Product type: Bidirectional Battery Inverter

Models *(Technical Data on page 2)*

Multiplus 12/3000/120-16
Multiplus 12/3000/120-50
Multiplus 24/3000/70-16
Multiplus 24/3000/70-50
Multiplus 24/5000/120-50
Multiplus 24/5000/120-100
Quattro 12/3000/120-50/30
Quattro 12/3000/120-50/50
Quattro 12/5000/220-100/100
Quattro 24/3000/70-50/30
Quattro 24/5000/120-100/100
Quattro 24/8000/200-100/100
Multiplus 48/3000/35-16
Multiplus 48/3000/35-50
Multiplus 48/5000/70-50
Multiplus 48/5000/70-100
Ouattro 48/5000/70-100/100
Ouattro 48/5000/70-100/100-S
Quattro 48/8000/110-100/100
Quattro 48/10000/140-100/100
Quattro 48/15000/200-100/100

representatives test samples of above stated models passed the tests according to:

Standard: IEC 62109-1:2010
EN 62109-1:2010
IEC 60335-2-29 (fourth Edition) +A1:2004 +A2:2009 for use in conjunction with IEC 60335-1:2010 (fifth Edition) +A1:2013
EN 60335-2-29:2004 + A2:2009 with EN 60335 1:2012 + A11:2014~

Report no: 15PP007-03, 15PP007-05

Certificate no: 16-012-03

Date of issue: 2017-10-13

SAFETY TESTED primara Test- und Zertifizier-GmbH IEC 62109-1

SAFETY TESTED primara Test- und Zertifizier-GmbH EN 60335-2-29

Raphael Rader

primara
Test- und Zertifizier-GmbH

Technical Data

Model name	DC IN	AC OUT	AC IN	DC OUT	Apparent nominal output power (**Sn**)	Active nominal output power (**Pn**)
Multiplus 12/3000/120-16	9,5-17V; 250A	225-235V; 11A; 50Hz	187-250V; 16A; 45-55Hz	13,2-14,1V; 120A	3KVA	2,4kW
Multiplus 12/3000/120-50	9,5-17V; 250A	225-235V; 11A; 50Hz	187-250V; 50A; 45-55Hz	13,2-14,1V; 120A		
Multiplus 24/3000/70-16	19-33V; 125A	225-235V; 11A; 50Hz	187-250V; 16A; 45-55Hz	26,4-28,8V; 70A		
Multiplus 24/3000/70-50	19-33V; 125A	225-235V; 11A; 50Hz	187-250V; 50A; 45-55Hz	26,4-28,8V; 70A		
Multiplus 24/5000/120-50	9,5-17V; 250A	225-235V; 11A; 50Hz	187-250V; 50/30A; 45-55Hz	13,2-14,1V; 120A	5kVA	4,5kW
Multiplus 24/5000/120-100	9,5-17V; 250A	225-235V; 11A; 50Hz	187-250V; 50/50A; 45-55Hz	13,2-14,1V; 120A	5kVA	4,5kW
Quattro 12/3000/120-50/30	9,5-17V; 458A	225-235V; 11A; 50Hz	187-250V; 50/30A; 45-55Hz	13,2-14,1V; 120A	3kVA	2,4kW
Quattro 12/3000/120-50/50	9,5-17V; 250A	225-235V; 11A; 50Hz	187-250V; 50/50A; 45-55Hz	13,2-14,1V; 120A	3kVA	2,4kW
Quattro 12/5000/220-100/100	9,5-17V; 458A	225-235V; 11A; 50Hz	187-250V; 100/100A; 45-55Hz	13,2-14,1V; 220A	5kVA	4,5kW
Quattro 24/3000/70-50/30	19-33V; 125A	225-235V; 11A; 50Hz	187-250V; 50/30A; 45-55Hz	26,4-28,8V; 70A	3kVA	2,4kW
Quattro 24/5000/120-100/100	19-33V; 239A	225-235V; 18,5A; 50Hz	187-250V; 100/100A; 45-55Hz	26,4-28,8V; 120A	5kVA	4,5kW
Quattro 24/8000/200-100/100	19-33V; 381A	225-235V; 29,5A; 50Hz	187-250V; 100/100A; 45-55Hz	26,4-28,8V; 200A	8kVA	6,4kW
Multiplus 48/3000/35-16	38-66V; 65A	225-235V; 11A; 50Hz	187-250V; 16A; 45-55Hz	52,8-57,6V; 35A	3kVA	2,4kW
Multiplus 48/3000/35-50	38-66V; 65A	225-235V; 11A; 50Hz	187-250V; 50A; 45-55Hz	52,8-57,6V; 35A	3kVA	2,4kW
Multiplus 48/5000/70-50	38-66V; 118A	225-235V; 18,5A; 50Hz	187-250V; 50A; 45-55Hz	52,8-57,6V; 70A	5kVA	4,5kW
Multiplus 48/5000/70-100	38-66V; 118A	225-235V; 18,5A; 50Hz	187-250V; 100A; 45-55Hz	52,8-57,6V; 70A	5kVA	4,5kW
Ouattro 48/5000/70-100/100	38-66V; 118A	225-235V; 18,5A; 50Hz	187-250V; 100/100A; 45-55Hz	52,8-57,6V; 70A	5kVA	4,5kW
Ouattro 48/5000/70-100/100-S	38-66V; 118A	225-235V; 18,5A; 50Hz	187-250V; 100/100A; 45-55Hz	52,8-57,6V; 70A	5kVA	4,5kW
Quattro 48/8000/110-100/100	38-66V; 188A	225-235V; 28,5A; 50Hz	187-250V; 100/100A; 45-55Hz	52,8-57,6V; 110A	8KVA	6,4kW
Quattro 48/10000/140-100/100	38-66V; 235A	225-235V; 37,0A; 50Hz	187-250V; 100/100A; 45-55Hz	52,8-57,6V; 140A	10kVA	8kW
Quattro 48/15000/200-100/100	38-66V, 350A	225-235V; 53.0A; 50Hz	187-250V; 100/100A, 45-55Hz	52,8-57,6V,200A	15kVA	12kW

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Test- und Zertifizier-GmbH

Declaration of Conformity

Applicant: Victron Energy B.V.

Product type: Bidirectional Battery Inverter

Models *(Technical Data on page 2)*

Multiplus 12/3000/120-16
Multiplus 12/3000/120-50
Multiplus 24/3000/70-16
Multiplus 24/3000/70-50
Multiplus 24/5000/120-50
Multiplus 24/5000/120-100
Quattro 12/3000/120-50/30
Quattro 12/3000/120-50/50
Quattro 12/5000/220-100/100
Quattro 24/3000/70-50/30
Quattro 24/5000/120-100/100
Quattro 24/8000/200-100/100
Multiplus 48/3000/35-16
Multiplus 48/3000/35-50
Multiplus 48/5000/70-50
Multiplus 48/5000/70-100
Ouattro 48/5000/70-100/100
Ouattro 48/5000/70-100/100-S
Quattro 48/8000/110-100/100
Quattro 48/10000/140-100/100
Quattro 48/15000/200-100/100

representatives test samples of above stated models passed the tests according to:

Standard: IEC 62109-1:2010
EN 62109-1:2010
IEC 60335-2-29 (fourth Edition) +A1:2004 +A2:2009 for use in conjunction with IEC 60335-1:2010 (fifth Edition) +A1:2013
EN 60335-2-29:2004 + A2:2009 with EN 60335 1:2012 + A11:2014~

Report no: 15PP007-03, 15PP007-05

Certificate no: 16-012-03

Date of issue: 2017-10-13

SAFETY TESTED primara Test- und Zertifizier-GmbH IEC 62109-1

SAFETY TESTED primara Test- und Zertifizier-GmbH EN 60335-2-29

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Test- und Zertifizier-GmbH

Technical Data

Model name	DC IN	AC OUT	AC IN	DC OUT	Apparent nominal output power (**Sn**)	Active nominal output power (**Pn**)
Multiplus 12/3000/120-16	9,5-17V; 250A	225-235V; 11A; 50Hz	187-250V; 16A; 45-55Hz	13,2-14,1V; 120A	3KVA	2,4kW
Multiplus 12/3000/120-50	9,5-17V; 250A	225-235V; 11A; 50Hz	187-250V; 50A; 45-55Hz	13,2-14,1V; 120A		
Multiplus 24/3000/70-16	19-33V; 125A	225-235V; 11A; 50Hz	187-250V; 16A; 45-55Hz	26,4-28,8V; 70A		
Multiplus 24/3000/70-50	19-33V; 125A	225-235V; 11A; 50Hz	187-250V; 50A; 45-55Hz	26,4-28,8V; 70A		
Multiplus 24/5000/120-50	9,5-17V; 250A	225-235V; 11A; 50Hz	187-250V; 50/30A; 45-55Hz	13,2-14,1V; 120A	5kVA	4,5kW
Multiplus 24/5000/120-100	9,5-17V; 250A	225-235V; 11A; 50Hz	187-250V; 50/50A; 45-55Hz	13,2-14,1V; 120A	5kVA	4,5kW
Quattro 12/3000/120-50/30	9,5-17V; 458A	225-235V; 11A; 50Hz	187-250V; 50/30A; 45-55Hz	13,2-14,1V; 120A	3kVA	2,4kW
Quattro 12/3000/120-50/50	9,5-17V; 250A	225-235V; 11A; 50Hz	187-250V; 50/50A; 45-55Hz	13,2-14,1V; 120A	3kVA	2,4kW
Quattro 12/5000/220-100/100	9,5-17V; 458A	225-235V; 11A; 50Hz	187-250V; 100/100A; 45-55Hz	13,2-14,1V; 220A	5kVA	4,5kW
Quattro 24/3000/70-50/30	19-33V; 125A	225-235V; 11A; 50Hz	187-250V; 50/30A; 45-55Hz	26,4-28,8V; 70A	3kVA	2,4kW
Quattro 24/5000/120-100/100	19-33V; 239A	225-235V; 18,5A; 50Hz	187-250V; 100/100A; 45-55Hz	26,4-28,8V; 120A	5kVA	4,5kW
Quattro 24/8000/200-100/100	19-33V; 381A	225-235V; 29,5A; 50Hz	187-250V; 100/100A; 45-55Hz	26,4-28,8V; 200A	8kVA	6,4kW
Multiplus 48/3000/35-16	38-66V; 65A	225-235V; 11A; 50Hz	187-250V; 16A; 45-55Hz	52,8-57,6V; 35A	3kVA	2,4kW
Multiplus 48/3000/35-50	38-66V; 65A	225-235V; 11A; 50Hz	187-250V; 50A; 45-55Hz	52,8-57,6V; 35A	3kVA	2,4kW
Multiplus 48/5000/70-50	38-66V; 118A	225-235V; 18,5A; 50Hz	187-250V; 50A; 45-55Hz	52,8-57,6V; 70A	5kVA	4,5kW
Multiplus 48/5000/70-100	38-66V; 118A	225-235V; 18,5A; 50Hz	187-250V; 100A; 45-55Hz	52,8-57,6V; 70A	5kVA	4,5kW
Ouattro 48/5000/70-100/100	38-66V; 118A	225-235V; 18,5A; 50Hz	187-250V; 100/100A; 45-55Hz	52,8-57,6V; 70A	5kVA	4,5kW
Ouattro 48/5000/70-100/100-S	38-66V; 118A	225-235V; 18,5A; 50Hz	187-250V; 100/100A; 45-55Hz	52,8-57,6V; 70A	5kVA	4,5kW
Quattro 48/8000/110-100/100	38-66V; 188A	225-235V; 28,5A; 50Hz	187-250V; 100/100A; 45-55Hz	52,8-57,6V; 110A	8KVA	6,4kW
Quattro 48/10000/140-100/100	38-66V; 235A	225-235V; 37,0A; 50Hz	187-250V; 100/100A; 45-55Hz	52,8-57,6V; 140A	10kVA	8kW
Quattro 48/15000/200-100/100	38-66V, 350A	225-235V; 53.0A; 50Hz	187-250V; 100/100A, 45-55Hz	52,8-57,6V,200A	15kVA	12kW

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Test- und Zertifizier-GmbH

Declaration of Conformity

Applicant: Victron Energy B.V.

Product type: Bidirectional Battery Inverter

		DC IN	AC OUT	AC IN	DC OUT
		Input Voltage; Input current nominal	Grid output Voltage; Output current		
Model and electrical rating:	**Multiplus 12/3000/120-16**	9,5-17V; 250A	225-235V; 11A; 50Hz	187-250V; 16A; 45-55Hz	13,2-14,1V; 120A
	Multiplus 12/3000/120-50	9,5-17V; 250A	225-235V; 11A; 50Hz	187-250V; 50A; 45-55Hz	13,2-14,1V; 120A
	Multiplus 24/3000/70-16	19-33V; 125A	225-235V; 11A; 50Hz	187-250V; 16A; 45-55Hz	26,4-28,8V; 70A
	Multiplus 24/3000/70-50	19-33V; 125A	225-235V; 11A; 50Hz	187-250V; 50A; 45-55Hz	26,4-28,8V; 70A
	Multiplus 48/3000/35-16	38-66V; 65A	225-235V; 11A; 50Hz	187-250V; 16A; 45-55Hz	52,8-57,6V; 35A
	Multiplus 48/3000/35-50	38-66V; 65A	225-235V; 11A; 50Hz	187-250V; 50A; 45-55Hz	52,8-57,6V; 35A

representatives test samples of above stated models passed the tests according to:

Standard: IEC 62109-1:2010
EN 62109-1:2010

Report no: 15PP007-03

Certificate no: 16-012-00

Date of issue: 2016-02-01

Raphael Rader

APPROVALS®

Certificate of Suitability

Addendum

Certificate No.: **SAA160334**

Date of Issue: **24 May 2016**

Class Description: Non-Declared
Product Description: Bi-directional AC/DC Converter for use in a battery storage system

Additional Models	Description
Multiplus 12/3000/120-50	Similar to Multiplus 12/3000/120-16 except for multi-board design in lieu of one-board design and rated AC input 50A.
Multiplus 24/3000/70-16	Similar to Multiplus 12/3000/120-16 except for different transformer and rated DC input 19-33V 125A, DC output 26-4-28.8V 70A.
Multiplus 24/3000/70-50	Similar to Multiplus Multiplus 24/3000/70-16 except for multi-board design in lieu of one-board design and rated AC input 50A.
Multiplus 48/3000/35-16	Similar to Multiplus 12/3000/120-16 except for different transformer and rated DC input 38-66V 65A, DC output 52.8-57.6V 35A.
Multiplus 48/3000/35-50	Similar to Multiplus Multiplus 48/3000/35-16 except for multi-board design in lieu of one-board design and rated AC input 50A.

For and on Behalf of
SAA Approvals Pty Ltd

SAA Approvals Pty Ltd as accredited by JAS-ANZ under ISO/IEC 17065 certifies in accordance with the SAA Approvals Electrical Product Safety Certification Scheme that the product nominated in this certificate complies with standard/s listed.

When using the RCM the requirements of all relevant parts of AS/NZS 4417 applicable to the article must be fulfilled.

JAS-ANZ

SAA Approvals CERTIFIED

APPROVALS®

Certificate of Suitability

Addendum

Certificate No.: **SAA160334**

Date of Issue: **4 July 2016**

Class Description: Non-Declared
Product Description: Bi-directional AC/DC Converter for use in a battery storage system

Additional Models	Description
Multiplus 24/5000/120-100	Similar to Multiplus 12/3000/120-16 except multiboard design and rated: Input:- AC: 187-250V~ 45-55Hz 50/50A DC: 9.5-17Vdc 250A Output:- AC: 225-235V~ 50Hz 11A DC: 13.2-14.1Vdc 120A
Quattro 12/3000/120-50/30	Similar to Multiplus 12/3000/120-16 except multiboard design and rated: Input:- AC: 187-250V~ 45-55Hz 50/30A DC: 9.5-17Vdc 458A Output:- AC: 225-235V~ 50Hz 11A DC: 13.2-14.1Vdc 120A
Quattro 12/3000/120-50/50	Similar to Multiplus 12/3000/120-16 except multiboard design and rated: Input:- AC: 187-250V~ 45-55Hz 50/50A DC: 9.5-17Vdc 250A Output:- AC: 225-235V~ 50Hz 11A DC: 13.2-14.1Vdc 120A

For and on Behalf of
SAA Approvals Pty Ltd

SAA Approvals Pty Ltd as accredited by JAS-ANZ under ISO/IEC 17065 certifies in accordance with the SAA Approvals Electrical Product Safety Certification Scheme that the product nominated in this certificate complies with standard/s listed.

When using the RCM the requirements of all relevant parts of AS/NZS 4417 applicable to the article must be fulfilled.

JAS-ANZ

SAA Approvals CERTIFIED

Issued: 04-07-16 160334/3

APPROVALS®

Certificate of Suitability

Addendum

Certificate No.: **SAA160334**

Date of Issue: **4 July 2016**

Class Description: Non-Declared
Product Description: Bi-directional AC/DC Converter for use in a battery storage system

Additional Models	Description
Quattro 24/8000/200-100/100	Similar to Multiplus 12/3000/120-16 except multiboard design and rated: Input:- AC: 187-250V~ 45-55Hz 100/100A DC: 19-33Vdc 381A Output:- AC: 225-235V~ 50Hz 29.5A DC: 26.4-28.8Vdc 200A
Multiplus 48/5000/70-50	Similar to Multiplus 12/3000/120-16 except multiboard design and rated: Input:- AC: 187-250V~ 45-55Hz 50A DC: 38-66Vdc 118A Output:- AC: 225-235V~ 50Hz 18.5A DC: 52.8-57.6Vdc 70A
Multiplus 48/5000/70-100	Similar to Multiplus 12/3000/120-16 except multiboard design and rated: Input:- AC: 187-250V~ 45-55Hz 100A DC: 38-66Vdc 118A Output:- AC: 225-235V~ 50Hz 18.5A DC: 52.8-57.6Vdc 70A

For and on Behalf of
SAA Approvals Pty Ltd

SAA Approvals Pty Ltd as accredited by JAS-ANZ under ISO/IEC 17065 certifies in accordance with the SAA Approvals Electrical Product Safety Certification Scheme that the product nominated in this certificate complies with standard/s listed.

When using the RCM the requirements of all relevant parts of AS/NZS 4417 applicable to the article must be fulfilled.

JAS-ANZ

SAA Approvals CERTIFIED

Issued: 04-07-16 160334/5

APPROVALS®

Certificate of Suitability

Certificate No.:	**SAA160334**
Certificate Holder:	Victron Energy B.V.
Class Description:	Non-Declared
Product Description:	Bi-directional AC/DC Converter for use in a battery storage system
Brand Name:	Victron
Model No.:	Multiplus 12/3000/120-16
Markings:	Input:- AC: 187-250V~ 45-55Hz 16A DC: 9.5-17Vdc 250A Output:- AC: 225-235V~ 50Hz 11A DC: 13.2-14.1Vdc 120A Ta=50°C, Class I
Standard:	IEC 62109-1 Ed. 1.0
Conditions:	Nil
Certification Mark:	SAA160334 or RCM
Date First Registered:	24 May 2016
Date of Expiry:	24 May 2021

For and on Behalf of
SAA Approvals Pty Ltd

SAA Approvals Pty Ltd as accredited by JAS-ANZ under ISO/IEC 17065 certifies in accordance with the SAA Approvals Electrical Product Safety Certification Scheme that the product nominated in this certificate complies with standard/s listed.

When using the RCM the requirements of all relevant parts of AS/NZS 4417 applicable to the article must be fulfilled.

JAS-ANZ

SAA Approvals CERTIFIED

Issued: 24-05-16 160334/1

Certificate of Conformity

Certificate: 17041-1S

Master Contract: LC 1231751

Project: 17041

Date Issued: April 24, 2019

Issued to: Victron Energy B.V.

Certification System Type 3
(ISO / IEC Guide 67)

The products listed below are eligible to bear the LabTest Certification Mark with adjacent indicator 'US', and the subject area as shown below.

Issued by:

Certification Manager

PRODUCTS

- Inverter
- Models: MultiPlus 12/3000/120-50 120V
  MultiPlus 24/3000/70-50 120V
- Ratings:

Model number	DC IN Input Voltage range; Input current max	AC OUT	AC IN (range)	DC OUT	Apparent nominal output power (Sn)	Active nominal output power (Pn)
MultiPlus 12/3000/120-50 120V	9,5-17Vdc 250A	120Vac, 60Hz, 21A	95-140Vac, 55-65Hz, 50A	13,2-14,4Vdc 120A	3kVA	2,4kW
MultiPlus 24/3000/70-50 120V	19-33Vdc 125A	120Vac, 60Hz, 21A	95-140Vac, 55-65Hz, 50A	26,4 – 28,8Vdc, 70A	3kVA	2,4kW

APPLICABLE REQUIREMENTS & SUBJECT AREA

- UL 458: 2015 (Ed.6)

CONDITIONS OF ACCEPTABILITY

- None

The 'US' indicator adjacent to the LabTest Certification Mark shall signify that the product has been evaluated by an accredited laboratory to the applicable UL Standards. The subject area shall be displayed with the LabTest Certification Mark to identify the Standard Number, and Revision Level.

Certificate of Conformity

Certificate: 17030-1S

Master Contract: LC 1231751

Project: 17030

Date Issued: August 30, 2018

Issued to: Victron Energy B.V.

Certification System Type 3
(ISO / IEC Guide 67)

The products listed below are eligible to bear the LabTest Certification Mark with adjacent indicators 'C' and 'US', and the subject area as shown below.

c LC US

Issued by:

Certification Manager

PRODUCTS

- Inverter
- Models: MultiPlus 12/3000/120-50 120V
  MultiPlus 24/3000/70-50 120V
- Ratings:

Model number	DC IN Input Voltage range; Input current max	AC OUT Grid output Voltage; Output current	AC IN (range)	DC OUT	Apparent nominal output power (Sn)	Active nominal output power (Pn)
MultiPlus 12/3000/120-50 120V	9.5-17Vdc 250A	120Vac, 60Hz, 21A	95-140Vac, 55-65Hz, 50A	13.2-14.4Vdc 120A	3kVA	2.4kW
MultiPlus 24/3000/70-50 120V	19-33Vdc 125A	120Vac, 60Hz, 21A	95-140Vac, 55-65Hz, 50A	26.4 – 28.8Vdc, 70A	3kVA	2.4kW

APPLICABLE REQUIREMENTS & SUBJECT AREA

- UL 1741: 2016 (Ed.2)
- CAN/CSA C22.2 No. 107.1-16 (Ed.4)

CONDITIONS OF ACCEPTABILITY

- None

The 'C' and 'US' indicators adjacent to the LabTest Certification Mark shall signify that the product has been evaluated by an accredited laboratory to the applicable CSA and UL Standards respectively. The subject area shall be displayed with the LabTest Certification Mark to identify the Standard Number, and Revision Level.

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Test- und Zertifizier-GmbH

Declaration of Conformity

Applicant: **Victron Energy B.V.**

Product type: Inverter charger

Model Overview				
	DC IN	**AC OUT**	**AC IN**	**DC OUT**
Multiplus Compact 12/800/35-16	12V; 80A	230V; 3A; 50/60Hz	187-250V; 16A; 50/60Hz	12V; 35A
Multiplus Compact 12/1200/50-16	12V; 120A	230V; 4A; 50/60Hz		12V; 50A
Multiplus Compact 12/1600/70-16	12V; 150A	230V; 4A; 50/60Hz		12V; 70A
Multiplus Compact 24/800/16-16	24V; 40A	230V; 3A; 50/60Hz		24V; 16A
Multiplus Compact 24/1200/25-16	24V; 60A	230V; 4A; 50/60Hz		24V; 26A
Multiplus Compact 24/1600/40-16	24V; 80A	230V; 6A; 50/60Hz		24V; 40A
Multiplus Compact 12/2000/80/30	12V; 80A	230V; 8A; 50/60Hz		12V; 80A
Multiplus Compact 24/2000/50-30	24V; 80A	230V; 8A; 50/60Hz		24V; 50A
Easyplus Compact 12/1600/70-16	12V; 150A	230V; 4A; 50/60Hz		12V; 70A

A representative test sample of above stated models passed the tests according to:

Standard: IEC 60335-2-29:2002 (Fourth Edition) + A1:2004 + A2:2009 in conjunction with IEC 60335-1:2010 (Fifth Edition)) and EN60335-2-29:2004 + A2:2010

Report no: 15PP103-01_0

Certificate no: 15-229-00

Date of issue: 2015-12-10

Valentin Haug

Declaration of Conformity

Applicant: **Victron Energy B.V.**

Product type: Connection cables

Model/Type reference ..... : VE.Direct to USB interface
ASS030530000
Interface MK2-USB (VE.Bus to USB) ASS030130000
CANUSB interface ASS030532000
VE.Bus to NMEA2000 interface ASS030520100
VE.Direct to NMEA2000 interface ASS030520300
VE.Can to NMEA2000 Micro-C male ASS030520200
BMV-60xS to NMEA2000 interface ASS030520000
BMV-60xS to VE.Can interface ASS030520020
Interface MK2.2b (VE.Bus to RS232) ASS030120200
RS232 to USB converter ASS030200000
VE.Direct to RS232 interface ASS030520500
VE.Direct to VE.Can interface ASS030520400
VE.Direct to Global Remote interface ASS030534000
VE.Bus to VE.Can interface ASS030520105
Inverting remote on-off cable ASS030550100
Non inverting remote on-off cable ASS030550200
VE.Direct non inverting remote on-off cable ASS030550300
Skylla-i remote on-off cable ASS030550400

Ratings ..... : ---

A representative test sample of above stated models passed the tests according to:

Standard: According manufacturer specification based on IEC 60335-1 2010 (Fifth Edition) incl. Corr. 1:2010 and Corr. 2:2011 + A1:2013
Testing according to the Standard without cable performance tests. Cable performance suitable for connecting Green-Energy Equipment.

Report no: 15PP112-01_0

Certificate no: 15-239-00

Date of issue: 2015-12-21

Raphael Rader

RUSSIAN RIVER REGISTER

Form RR—11.1.2

TYPE APPROVAL CERTIFICATE
for product

Name: Inverters, converters, transformers

Manufacturer: Victron Energy B.V.

Technical documentation is approved by Ref. No. МФ-22-1130 of 26.06.2013

Victron Energy
Specifications ТУ ЮВ-001-13 Victron Energy electrical equipment

Techniques of tests ПМИ ТУ ЮВ-001-13

The prototype model is tested and surveyed according to the program approved by Russian River Register.

On the basis of checks and test results this is to certify that the structure, properties, parameters and characteristics of type product meet the requirements of Russian River Register Rules.

Application and limitations:

As electrical equipment intended for installation on vessels with a class of the Russian River Register

This Certificate is valid since 08.07.2013 г. till 08.07.2018

No 09-11.1-4.3-0179

М.П. / L.S.

Director of Moscow Branch Office of Russian River Register (/ position) (/ signature) S. Presnov (/ name)

09 0089941

Technical data:

Type	/Power W	A/Current A	B./Voltage V	Frequency Hz	Protection
Isolation transformer / Isolation transformer	2000 - 3600Вт		115/230	50	IP21
Isolation transformer / Isolation transformer	7000Вт		230/230	50	IP21
Phoenix inverter / Phoenix inverter	180-5000BA		12;24;48;96/230	50	IP20
Orion DC/DC convertor / Orion DC/DC convertor		5 - 70	18-35; 9-18/12; 24	-	IP20

This Type Approval Certificate does not substitute a Certificate or similar document of Russian River Register issued for a specific product.

This Type Approval Certificate becomes invalid in cases stipulated by Russian River Register Rules.

RUSSIAN RIVER REGISTER

Form RR—11.1.2

TYPE APPROVAL CERTIFICATE
for product

Name: Battery charges

Manufacturer: Victron Energy B.V.

Technical documentation is approved by Ref. No. МФ-22-1130 of 26.06.2013

Victron Energy
Specifications ТУ ЮВ-001-13 Victron Energy electrical equipment

Techniques of tests ПМИ ТУ ЮВ-001-13

The prototype model is tested and surveyed according to the program approved by Russian River Register.

On the basis of checks and test results this is to certify that the structure, properties, parameters and characteristics of type product meet the requirements of Russian River Register Rules.

Application and limitations:

As electrical equipment intended for installation on vessels with a class of the Russian River Register

This Certificate is valid since 08.07.2013 г. till 08.07.2018

No 09-11.1-4.3-0180

М.П. / L.S.

Director of Moscow Branch Office of Russian River Register — S. Presnov

(position) (signature) (name)

09 0089942

Technical data:

Тип, марка/Type	B./Power V	A/Current A	Fre-quency Hz	Protec-tion
Blue Power battery charger / Blue Power battery charger	180-265/12-24	7-25	50	IP20
Blue Power battery charger / Blue Power battery charger	230/12-24	7-25	50	IP65
Centaur charger / Centaur charger	90-265/12-24	20-200	50	IP20
Phoenix battery charger / Phoenix battery charger	90-265/12-24	16-50	50	IP20
Skylla-i battery charger / Skylla-i battery charger	230/12-24	80-100	50	IP21
Skylla-TG battery charger / Skylla-TG battery charger	90-265/12-24	30-100	50	IP21
Skylla-TG battery charger / Skylla-TG battery charger	400/24	50-100	50	IP21

This Type Approval Certificate does not substitute a Certificate or similar document of Russian River Register issued for a specific product.

This Type Approval Certificate becomes invalid in cases stipulated by Russian River Register Rules.

Form RR—11.1.2

RUSSIAN RIVER REGISTER

TYPE APPROVAL CERTIFICATE
for product

Name: Inverter/ chargers

Manufacturer: Victron Energy

Technical documentation is approved by Ref. No. МФ-22-1130 of 26.06.2013

Victron Energy
Specifications ТУ ЮВ-001-13 Victron Energy electrical equipment

Techniques of tests ПМИ ТУ ЮВ-001-13

The prototype model is tested and surveyed according to the program approved by Russian River Register.

On the basis of checks and test results this is to certify that the structure, properties, parameters and characteristics of type product meet the requirements of Russian River Register Rules.

Application and limitations:

As electrical equipment intended for installation on vessels with a class of the Russian River Register

This Certificate is valid since 08.07.2013 г. till 08.07.2018

No 09-11.1-4.3-0181

M.P. / L.S.

Director of Moscow Branch Office of Russian River Register — position

signature

S. Presnov — name

09 0089943

Technical data:

Type	B./Voltage V	/Power VA	Fre-quency Hz	Protec-tion
MultiPlus inverter/charger / MultiPlus inverter/charger	12;24;48/187-265	800/5000	50	IP21
Quattro inverter/charger /Quattro inverter/charger	12;24;48/187-265	3000-10000	50	IP21

This Type Approval Certificate does not substitute a Certificate or similar document of Russian River Register issued for a specific product.

This Type Approval Certificate becomes invalid in cases stipulated by Russian River Register Rules.

Form RR—11.4.2

RUSSIAN RIVER REGISTER

CERTIFICATE OF TYPE APPROVAL

Name: Inverters, converters, transformers

Manufacturer: B.V. De Paal

Technical documentation is approved by Ref. No. МФ-22-1130 of 26.06.2013

Victron Energy
Specifications ТУ ЮВ-001-13 Victron Energy electrical equipment

Techniques of tests ПМИ ТУ ЮВ-001-13

The model is tested and surveyed according to the program approved by Russian River Register.

On the basis of checks and test results this is to certify that the structure, properties, parameters and characteristics of the type product meet the requirements of the Technical regulations on the safety of inland water transport objects.

Application and limitations:

As electrical equipment intended for installation on vessels with a class of the Russian River Register

This Certificate is valid since 08.07.2013

M.L. / L.S.

No. 09-11.4-4.3-0179

Director of Moscow Branch Office of Russian River Register — S. Presnov

position — signature) — name, surname

09 0089944

Technical data:

Type	Power W	A/Current A	B./Voltage V	Fre-quency Hz
Isolation trans-former / Isolation transformer	2000 - 3600Вт		115/230	50
Isolation trans-former / Isolation transforme	7000Вт		230/230	50
Phoenix inverter / Phoenix inverter	180-5000BA		12;24;48;96/230	50
Orion DC/DC convertor / Orion DC/DC convertor		5 - 70	18-35; 9-18/12; 24	-

This Certificate of Type Approval does not substitute a Certificate or similar document of Russian River Register issued for a specific product.

This Certificate of Type Approval becomes invalid in cases stipulated by the Technical regulations on the safety of inland water transport objects.

RUSSIAN RIVER REGISTER

Form RR—11.4.2

CERTIFICATE OF TYPE APPROVAL

Name: Battery chargers

Manufacturer: Victron Energy

Technical documentation is approved by Ref. No. МФ-22-1130 of 26.06.2013

Victron Energy
Specifications ТУ ЮВ-001-13 Victron Energy electrical equipment

Techniques of tests ПМИ ТУ ЮВ-001-13

The model is tested and surveyed according to the program approved by Russian River Register.

On the basis of checks and test results this is to certify that the structure, properties, parameters and characteristics of the type product meet the requirements of the Technical regulations on the safety of inland water transport objects.

Application and limitations:

As electrical equipment intended for installation on vessels with a class of the Russian River Register

This Certificate is valid since 08.07.2013

No. 09-11.4-4.3-0180

М.П. / L.S.

Director of Moscow Branch Office of Russian River Register (position) — signature — S. Presnov (name, surname)

09 0089945

Technical data:

Type	B./Voltage V	A/Current A	Гц./Frequency Hz	Protection
Blue Power battery charger / Blue Power battery charger	180-265/12-24	7-25	50	IP20
Blue Power battery charger / Blue Power battery charger	230/12-24	7-25	50	IP65
Centaur charger / Centaur charger	90-265/12-24	20-200	50	IP20
Phoenix battery charger / Phoenix battery charger	90-265/12-24	16-50	50	IP20
Skylla-i battery charger / Skylla-i battery charger	230/12-24	80-100	50	IP21
Skylla-TG battery charger / Skylla-TG battery charger	90-265/12-24	30-100	50	IP21
Skylla-TG battery charger / Skylla-TG battery charger	400/24	50-100	50	IP21

This Certificate of Type Approval does not substitute a Certificate or similar document of Russian River Register issued for a specific product.

This Certificate of Type Approval becomes invalid in cases stipulated by the Technical regulations on the safety of inland water transport objects.

RUSSIAN RIVER REGISTER

Form RR—11.4.2

CERTIFICATE OF TYPE APPROVAL

Name: Inverter/ chargers

Manufacturer: Victron Energy B.V. .

Technical documentation is approved by Ref. No. МФ-22-1130 of 26.06.2013

Victron Energy
Specifications ТУ ЮВ-001-13 Victron Energy electrical equipment

Techniques of tests ПМИ ТУ ЮВ-001-13

The model is tested and surveyed according to the program approved by Russian River Register.

On the basis of checks and test results this is to certify that the structure, properties, parameters and characteristics of the type product meet the requirements of the Technical regulations on the safety of inland water transport objects.

Application and limitations:

As electrical equipment intended for installation on vessels with a class of the Russian River Register

This Certificate is valid since 08.07.2013

№
No. 09-11.4-4.3-0181

M.П. L.S.

Director of Moscow Branch Office of Russian River Register — position

signature

S. Presnov — name, surname

09 0089946

Technical data:

Тип, марка/Type	B./Voltage V	Power VA	Frequency Hz	Protection
MultiPlus inverter/charger / MultiPlus inverter/charger	12;24;48/187-265	800/5000	50	IP21
Quattro inverter/charger /Quattro inverter/charger	12;24;48/187-265	3000-10000	50	IP21

This Certificate of Type Approval does not substitute a Certificate or similar document of Russian River Register issued for a specific product.

This Certificate of Type Approval becomes invalid in cases stipulated by the Technical regulations on the safety of inland water transport objects.

RUSSIAN
RIVER REGISTER

Form RR – 12.1a

RECOGNITION CERTIFICATE

№ 09572

This is to certify that Russian River Register recognizes **Victron Energy B.V., The Netherlands** being capable of performing in accordance with the Russian River Register Rules:

-designing, manufacturing, installation, service and repair of inverters, converters, transformers, battery charges and inverters / chargers in accordance with documentation approved by Russian River Register.

Form of technical supervision — technical supervision by technical staff of organization on the basis of agreement or contract between organization and Russian River Register

Commencement date 26 August 2013 .

Expiry date 25 August 2015 .

Director of Moscow Branch Office of Russian River Register

(position)

(signature)

S. Presnov

(name, surname)

М.П.
L.S.

09 0089909

RDW

Vehicle Technology Division

THE NETHERLANDS
(N E D E R L A N D)

E4

COMMUNICATION

Concerning [1]:

- approval granted
- ~~approval extended~~
- ~~approval refused~~
- ~~approval withdrawn~~
- ~~production definitely discontinued~~

of a type of ~~electrical~~/electronic sub-assembly [1] with regard to Regulation number 10.

Approval number: E4-10R-053546 **Extension number: 00**

1.	Make (trade name of manufacturer)	: Victron Energy B.V.
2.	Type and general commercial description(s)	: Inverter/Charger MultiPlus Compact 24/1600/40-16 Identical/Similar Products: MultiPlus Compact 24/1200/50-16 Multiplus Compact 24/800/16-16 Phoenix 24/1600 Phoenix 24/1200
3.	Means of identification of type, if marked on the ~~vehicle~~/~~component~~/ separate technical unit [1]	: Typeplate on enclosure
3.1.	Location of that marking	: Front Side Product
4.	Category of vehicle	: All
5.	Name and address of manufacturer	: Victron Energy B.V. De Paal 35 1351 JG Almere Haven The Netherlands
6.	In the case of components and separate technical units, location and method of affixing of the approval mark	: Front Side Product

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Vehicle Admission & Surveillance

7.	Address(es) of assembly plant(s)	:
8.	Additional information (where applicable)	: see Appendix below
9.	Technical service responsible for carrying out the tests	: TÜV Rheinland Nederland B.V.
10.	Date of test report	: January 15, 2016 / August 6, 2016
11.	Number of test report	: 15080307.a01 / 13091801.a09
12.	Remarks (if any)	: see Appendix
13.	Place	: Zoetermeer
14.	Date	:23-JUN-2016
15.	Signature	:

L. Vellekoop

RDW

16. The index to the information package lodged with the approval authority, which may be obtained on request, is attached.

17. Reasons for extension : Not applicable

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(1) Strike out what does not apply.

RDW

Vehicle Technology Division

THE NETHERLANDS
(NEDERLAND)

E4

JE MAINTIENDRAI

COMMUNICATION

Concerning [1]:

- approval granted
- ~~approval extended~~
- ~~approval refused~~
- ~~approval withdrawn~~
- ~~production definitely discontinued~~

of a type of ~~electrical~~/electronic sub-assembly [1] with regard to Regulation number 10.

Approval number: E4-10R-053543 **Extension number: 00**

1.	Make (trade name of manufacturer)	: Victron Energy B.V.
2.	Type and general commercial description(s)	: Inverter/Charger Quattro 24/5000/120-100/100 230V Identical products are: Multiplus 24/5000/120-100 230V Phoenix Inverter 24/5000 230V
3.	Means of identification of type, if marked on the ~~vehicle~~/~~component~~/ separate technical unit [1]	: Typeplate on enclosure
3.1.	Location of that marking	: Front Side Product
4.	Category of vehicle	: All
5.	Name and address of manufacturer	: Victron Energy B.V.
6.	In the case of components and separate technical units, location and method of affixing of the approval mark	: Front Side Product

JE MAINTIENDRAI
RDW

Vehicle Admission & Surveillance

7.	Address(es) of assembly plant(s)	:
8.	Additional information (where applicable)	: see Appendix below
9.	Technical service responsible for carrying out the tests	: TÜV Rheinland Nederland B.V.
10.	Date of test reports	: November 30, 2015 / April 30, 2014
11.	Number of test report	: 15080404.a01 / 13091801.a06
12.	Remarks (if any)	: see Appendix
13.	Place	: Zoetermeer
14.	Date	: 04-AUG-2016
15.	Signature	:

16. The index to the information package lodged with the approval authority, which may be obtained on request, is attached.

17. Reasons for extension : Not applicable

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(1) Strike out what does not apply.

APPENDIX

to type-approval communication form number: E4-10R-053543, Extension number: 00

concerning the type-approval of an ~~electrical~~/electronic sub-assembly [1] under Regulation number 10.

1.	Additional information	: See annex
1.1.	Electrical system rated voltage	: 24 V DC ~~pos./~~neg. ground [1]
1.2.	This ESA can be used on any vehicle type with the following restrictions	: None
1.2.1.	Installation conditions, if any	: n.a.
1.3.	This ESA can be used only on the following vehicle types	: All
1.3.1.	Installation conditions, if any	: See Installation manual, attached
1.4.	The specific test method(s) used and the frequency ranges covered to determine immunity were	: ESA Not Safety related. Tests not applicable
1.5.	Laboratory accredited to ISO 17025 and recognized by the Approval Authority responsible for carrying out the tests	: TÜV Rheinland Nederland B.V.
2.	Remarks	: Attached to this Type Approval: 1 Application form 1 Annex 2B form 1 Similarity Declaration (In EMC Report) 2 EMC Testreports 1 Manual 1 Installation Manual Photos BOM Schematic Diagram PCB Layout

[1] Strike out what does not apply.

JE MAINTIENDRAI
RDW

RDW

Vehicle Technology Division

THE NETHERLANDS
(NEDERLAND)

E4

COMMUNICATION

Concerning [1]:

- approval granted
- ~~approval extended~~
- ~~approval refused~~
- ~~approval withdrawn~~
- ~~production definitely discontinued~~

of a type of ~~electrical~~/electronic sub-assembly [1] with regard to Regulation number 10.

Approval number: E4-10R-043381 **Extension number: 00**

1.	Make (trade name of manufacturer)	: Victron Energy B.V.
2.	Type and general commercial description(s)	: Inverter/Charger MultiPlus C 12/2000/80-30-230V Similar to: - Phoenix Inverter C 12/2000 – 230V
3.	Means of identification of type, if marked on the ~~vehicle~~/~~component~~/ separate technical unit [1]	: Typeplate on enclosure
3.1.	Location of that marking	: Front Side Product
4.	Category of vehicle	: All
5.	Name and address of manufacturer	: Victron Energy B.V.
6.	In the case of components and separate technical units, location and method of affixing of the approval mark	: Front Side Product

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Vehicle Admission & Surveillance

7.	Address(es) of assembly plant(s)	:
8.	Additional information (where applicable)	: see Appendix below
9.	Technical service responsible for carrying out the tests	: TÜV Rheinland Nederland B.V.
10.	Date of test report	: April 29, 2014 and December 11, 2015
11.	Number of test report	: 13091801.a08 and 15080302.a01
12.	Remarks (if any)	: see Appendix
13.	Place	: Zoetermeer
14.	Date	: 10-OCT-2016
15.	Signature	:

L. Vellekoop

RDW

16. The index to the information package lodged with the approval authority, which may be obtained on request, is attached.

17. Reasons for extension : Not applicable

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(1) Strike out what does not apply.

APPENDIX

to type-approval communication form number: E4-10R-043381, Extension number: 00

concerning the type-approval of an ~~electrical~~/electronic sub-assembly [1] under Regulation number 10.

1.	Additional information	: See annex
1.1.	Electrical system rated voltage	: 12 V DC ~~pos./~~neg. ground [1]
1.2.	This ESA can be used on any vehicle type with the following restrictions	: None
1.2.1.	Installation conditions, if any	: n.a.
1.3.	This ESA can be used only on the following vehicle types	: All
1.3.1.	Installation conditions, if any	: See Installation manual, attached
1.4.	The specific test method(s) used and the frequency ranges covered to determine immunity were	: ESA Not Safety related. Tests not applicable
1.5.	Laboratory accredited to ISO 17025 and recognized by the Approval Authority responsible for carrying out the tests	: TÜV Rheinland Nederland B.V.

2.	Remarks	: Attached to this Type Approval: 1 Application form 1 Annex 2B form 2 EMC Testreports 1 Manual Installation Manual Photos BOM Schematic Diagrams PCB Layouts

[1] Strike out what does not apply.

JE MAINTIENDRAI
RDW

RDW

Vehicle Technology Division

THE NETHERLANDS
(NEDERLAND)

E4

COMMUNICATION

Concerning [1]:

- approval granted
- ~~approval extended~~
- ~~approval refused~~
- ~~approval withdrawn~~
- ~~production definitely discontinued~~

of a type of ~~electrical~~/electronic sub-assembly [1] with regard to Regulation number 10.

Approval number: E4-10R-043380 **Extension number: 00**

1.	Make (trade name of manufacturer)	: Victron Energy B.V.
2.	Type and general commercial description(s)	: Inverter/Charger MultiPlus C 12/1600/70-16-230V Similar to: - Multiplus C 12/1200/50-16 – 230V - Multiplus C 12/800/35-16 – 230V - Phoenix Inverter C 12/1600 - Phoenix Inverter C 12/1200
3.	Means of identification of type, if marked on the ~~vehicle~~/~~component~~/ separate technical unit [1]	: Typeplate on enclosure
3.1.	Location of that marking	: Front Side Product
4.	Category of vehicle	: All
5.	Name and address of manufacturer	: Victron Energy B.V.
6.	In the case of components and separate technical units, location and method of affixing of the approval mark	: Front Side Product

Vehicle Admission & Surveillance

RDW

7.	Address(es) of assembly plant(s)	:
8.	Additional information (where applicable)	: see Appendix below
9.	Technical service responsible for carrying out the tests	: TÜV Rheinland Nederland B.V.
10.	Date of test report	: August 6, 2013, December 11, 2015
11.	Number of test report	: 10102602.a02 and 15080301.a01
12.	Remarks (if any)	: see Appendix
13.	Place	: Zoetermeer
14.	Date	: 10-OCT-2016
15.	Signature	:

L. Vellekoop

RDW

16. The index to the information package lodged with the approval authority, which may be obtained on request, is attached.

17. Reasons for extension : Not applicable

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(1) Strike out what does not apply.

APPENDIX

to type-approval communication form number: E4-10R-043380, Extension number: 00

concerning the type-approval of an ~~electrical~~/electronic sub-assembly [1] under Regulation number 10.

1.	Additional information	: See annex
1.1.	Electrical system rated voltage	: 12 - 24 V DC ~~pos./~~neg. ground [1]
1.2.	This ESA can be used on any vehicle type with the following restrictions	: None
1.2.1.	Installation conditions, if any	: n.a.
1.3.	This ESA can be used only on the following vehicle types	: All
1.3.1.	Installation conditions, if any	: See Installation manual, attached
1.4.	The specific test method(s) used and the frequency ranges covered to determine immunity were	: ESA Not Safety related. Tests not applicable
1.5.	Laboratory accredited to ISO 17025 and recognized by the Approval Authority responsible for carrying out the tests	: TÜV Rheinland Nederland B.V.

2.	Remarks	: Attached to this Type Approval: 1 Application form 1 Annex 2B form 2 EMC Testreports 1 Manual Installation Manual Photos BOM Schematic Diagrams PCB Layouts

[1] Strike out what does not apply.

JE MAINTIENDRAI
RDW

RDW

Vehicle Technology Division

THE NETHERLANDS
(NEDERLAND)

E4

COMMUNICATION

Concerning [1]:

- approval granted
- ~~approval extended~~
- ~~approval refused~~
- ~~approval withdrawn~~
- ~~production definitely discontinued~~

of a type of ~~electrical~~/electronic sub-assembly [1] with regard to Regulation number 10.

Approval number: E4-10R-053545 **Extension number: 00**

1.	Make (trade name of manufacturer)	: Victron Energy B.V.
2.	Type and general commercial description(s)	: Inverter/Charger MultiPlus Compact 24/2000/50-30-230V Identical/Similar Products: Phoenix Inverter Compact 24/2000 230V
3.	Means of identification of type, if marked on the ~~vehicle~~/~~component~~/ separate technical unit [1]	: Typeplate on enclosure
3.1.	Location of that marking	: Front Side Product
4.	Category of vehicle	: All
5.	Name and address of manufacturer	: Victron Energy B.V.
6.	In the case of components and separate technical units, location and method of affixing of the approval mark	: Front Side Product

RDW

Vehicle Admission & Surveillance

7. Address(es) of assembly plant(s)

8. Additional information (where applicable) : see Appendix below

9. Technical service responsible for carrying out the tests : TÜV Rheinland Nederland B.V.

10. Date of test report : November 30, 2015
April 4, 2014

11. Number of test report : 15080402.a01
13091801.a11_ver01

12. Remarks (if any) : see Appendix

13. Place : Zoetermeer

14. Date : 18-JUL-2016

15. Signature :

L. Vellekoop

RDW

16. The index to the information package lodged with the approval authority, which may be obtained on request, is attached.

17. Reasons for extension : Not applicable

(1) Strike out what does not apply.

RDW

Vehicle Technology Division

THE NETHERLANDS
(NEDERLAND)

E4

COMMUNICATION

Concerning [1]:

- approval granted
- ~~approval extended~~
- ~~approval refused~~
- ~~approval withdrawn~~
- ~~production definitely discontinued~~

of a type of ~~electrical~~/electronic sub-assembly [1] with regard to Regulation number 10.

Approval number: E4-10R-053539 **Extension number: 00**

1.	Make (trade name of manufacturer)	: Victron Energy B.V.
2.	Type and general commercial description(s)	: Digital Multi Control 200/200A Similar products: - Digital Multi Control 200/200GX
3.	Means of identification of type, if marked on the ~~vehicle~~/~~component~~/ separate technical unit [1]	: Typeplate on rear side (bottom of enclosure or PCB)
3.1.	Location of that marking	: Rear (bottom) side Product/PCB
4.	Category of vehicle	: All
5.	Name and address of manufacturer	: Victron Energy B.V.
6.	In the case of components and separate technical units, location and method of affixing of the approval mark	: Side Product
7.	Address(es) of assembly plant(s)	:

Vehicle Admission & Surveillance

RDW

8.	Additional information (where applicable)	: see Appendix below
9.	Technical service responsible for carrying out the tests	: TÜV Rheinland Nederland B.V.
10.	Date of test reports	: December 16, 2016
11.	Number of test report	: 15090702.a01
12.	Remarks (if any)	: see Appendix
13.	Place	: Zoetermeer
14.	Date	: 25-OCT-2016
15.	Signature	:

16. The index to the information package lodged with the approval authority, which may be obtained on request, is attached.

17. Reasons for extension : Not applicable

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(1) Strike out what does not apply.

APPENDIX

to type-approval communication form number: E4-10R-053539, Extension number: 00

concerning the type-approval of an ~~electrical~~/electronic sub-assembly [1] under Regulation number 10.

1.	Additional information	: See annex
1.1.	Electrical system rated voltage	: Powered via Host (Victron Multi Plus Compact Inverter/Charger or similar ~~pos./~~neg. ground [1]
1.2.	This ESA can be used on any vehicle type with the following restrictions	: None
1.2.1.	Installation conditions, if any	: n.a.
1.3.	This ESA can be used only on the following vehicle types	: All
1.3.1.	Installation conditions, if any	: See Installation manual, attached
1.4.	The specific test method(s) used and the frequency ranges covered to determine immunity were	: ESA Not Safety related. Tests not applicable
1.5.	Laboratory accredited to ISO 17025 and recognized by the Approval Authority responsible for carrying out the tests	: TÜV Rheinland Nederland B.V.
2.	Remarks	: Attached to this Type Approval: 1 Application form 1 Annex 2B form 1 EMC Testreport 1Manual/datasheet Photos (testreport and manual) BOM's Schematic Diagrams PCB Layouts

[1] Strike out what does not apply.

JE MAINTIENDRAI
RDW

RDW

Vehicle Technology Division

THE NETHERLANDS
(NEDERLAND)

E4

COMMUNICATION

Concerning [1]:

- approval granted
- ~~approval extended~~
- ~~approval refused~~
- ~~approval withdrawn~~
- ~~production definitely discontinued~~

of a type of ~~electrical~~/electronic sub-assembly [1] with regard to Regulation number 10.

Approval number: E4-10R-043382 **Extension number: 00**

1.	Make (trade name of manufacturer)	: Victron Energy B.V.
2.	Type and general commercial description(s)	: Inverter/Charger Quattro 12/3000/120-50/50 230V Similar to: - Multiplus 12/3000-120-16 230V - Multiplus 12/3000-120-50 230V - Phoenix Inverter 12/3000 230Vac
3.	Means of identification of type, if marked on the ~~vehicle~~/~~component~~/ separate technical unit [1]	: Typeplate on enclosure
3.1.	Location of that marking	: Front Side Product
4.	Category of vehicle	: All
5.	Name and address of manufacturer	: Victron Energy B.V.
6.	In the case of components and separate technical units, location and method of affixing of the approval mark	: Front Side Product

Vehicle Admission & Surveillance

RDW

7.	Address(es) of assembly plant(s)	:
8.	Additional information (where applicable)	: see Appendix below
9.	Technical service responsible for carrying out the tests	: TÜV Rheinland Nederland B.V.
10.	Date of test report	: April 29, 2014 and February 24, 2016
11.	Number of test report	: 13091801.a04 and 15080303.a01
12.	Remarks (if any)	: see Appendix
13.	Place	: Zoetermeer
14.	Date	: 10-OCT-2016
15.	Signature	:

16. The index to the information package lodged with the approval authority, which may be obtained on request, is attached.

17. Reasons for extension : Not applicable

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(1) Strike out what does not apply.

APPENDIX

to type-approval communication form number: E4-10R-043382, Extension number: 00

concerning the type-approval of an ~~electrical~~/electronic sub-assembly [1] under Regulation number 10.

1.	Additional information	: See annex
1.1.	Electrical system rated voltage	: 12 V DC ~~pos./~~neg. ground [1]
1.2.	This ESA can be used on any vehicle type with the following restrictions	: None
1.2.1.	Installation conditions, if any	: n.a.
1.3.	This ESA can be used only on the following vehicle types	: All
1.3.1.	Installation conditions, if any	: See Installation manual, attached
1.4.	The specific test method(s) used and the frequency ranges covered to determine immunity were	: ESA Not Safety related. Tests not applicable
1.5.	Laboratory accredited to ISO 17025 and recognized by the Approval Authority responsible for carrying out the tests	: TÜV Rheinland Nederland B.V.

2.	Remarks	: Attached to this Type Approval: 1 Application form 1 Annex 2B form 2 EMC Testreports 1 Manual Installation Manual Photos BOM Schematic Diagrams PCB Layouts

[1] Strike out what does not apply.

JE MAINTIENDRAI
RDW

RDW

Vehicle Technology Division

THE NETHERLANDS
(NEDERLAND)

E4

COMMUNICATION

Concerning [1]:

- approval granted
- ~~approval extended~~
- ~~approval refused~~
- ~~approval withdrawn~~
- ~~production definitely discontinued~~

of a type of ~~electrical~~/electronic sub-assembly [1] with regard to Regulation number 10.

Approval number: E4-10R-053544 **Extension number: 00: Correction 01**

1.	Make (trade name of manufacturer)	: Victron Energy B.V.
2.	Type and general commercial description(s)	: Inverter/Charger Quattro 24/3000/70-50/50 230V Identical/Similar Products: MultiPlus 24/3000/70-16 230V Multiplus 24/3000/70-50 230V Phoenix Inverter 24/3000 230Vac
3.	Means of identification of type, if marked on the ~~vehicle~~/~~component~~/ separate technical unit [1]	: Typeplate on enclosure
3.1.	Location of that marking	: Front Side Product
4.	Category of vehicle	: All
5.	Name and address of manufacturer	: Victron Energy B.V.
6.	In the case of components and separate technical units, location and method of affixing of the approval mark	: Front Side Product

Vehicle Admission & Surveillance

RDW

7.	Address(es) of assembly plant(s)	:
8.	Additional information (where applicable)	: see Appendix below
9.	Technical service responsible for carrying out the tests	: TÜV Rheinland Nederland B.V.
10.	Date of test reports	: November 30, 2015 / April 29, 2014
11.	Number of test report	: 15080403.a01 / 13091801.a05
12.	Remarks (if any)	: see Appendix
13.	Place	: Zoetermeer
14.	Date	: 27-JUL-2016
15.	Signature	:

L. Vellekoop

RDW

16. The index to the information package lodged with the approval authority, which may be obtained on request, is attached.

17. Reasons for extension : Not applicable

---

(1) Strike out what does not apply.

APPENDIX

to type-approval communication form number: E4-10R-053544, Extension number: 00: Correction 01

concerning the type-approval of an ~~electrical~~/electronic sub-assembly [1] under Regulation number 10.

1.	Additional information	: See annex
1.1.	Electrical system rated voltage	: 24 V DC ~~pos./~~neg. ground [1]
1.2.	This ESA can be used on any vehicle type with the following restrictions	: None
1.2.1.	Installation conditions, if any	: n.a.
1.3.	This ESA can be used only on the following vehicle types	: All
1.3.1.	Installation conditions, if any	: See Installation manual, attached
1.4.	The specific test method(s) used and the frequency ranges covered to determine immunity were	: ESA Not Safety related. Tests not applicable
1.5.	Laboratory accredited to ISO 17025 and recognized by the Approval Authority responsible for carrying out the tests	: TÜV Rheinland Nederland B.V.
2.	Remarks	: Attached to this Type Approval: 1 Application form 1 Annex 2B form 1 Similarity Declaration 1 ISO 900X 2 EMC Testreports 1 Manual 1 Installation Manual Photos BOM Schematic Diagram PCB Layout

[1] Strike out what does not apply.

JE MAINTIENDRAI
RDW

DECLARATION OF CONFORMITY

CE

COMPANY : Victron Energy B.V.

Declares that the following product:

PRODUCT TYPE	:	SINEWAVE INVERTER / BATTERY CHARGER
BRAND	:	Victron Energy
MODEL	:	MultiPlus 24/3000/70-16

Is in conformity with the requirements of the following Directives of the European Union:

EMC Directive 2014/30/EU with the following harmonized standards:

EN 55014-1:2006/A2:2011
EN 55014-2:1997/A2:2008
EN 61000-3-2:2006/A2:2009
EN 61000-3-3:2013

Low Voltage Directive 2014/35/EU with the following harmonized standards:

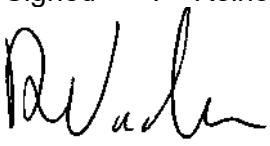
EN 60335-2-29:2004/A2:2010

Restriction of the use of certain hazardous substances RoHS (2011/65/EU and 2015/863/EU) with the following harmonized standards:

EN-IEC 63000:2018

CE MARK DATE: March, 2011

Signed : Reinout Vader



Authority : Managing Director
Date : 6 June 2019

DECLARATION OF CONFORMITY

CE

COMPANY : Victron Energy B.V.

Declares that the following products:

PRODUCT TYPE : Interfaces

BRAND : Victron Energy

ASS030530000 VE.Direct to USB	ASS030520400 VE.Direct to VE.Can
ASS030130000 MK2-USB	ASS030534000 VE.Direct to Global Remote
ASS030140000 MK3-USB	ASS030700000 VE.Can RJ45 terminator
ASS030532000 CANUSB	ASS030520105 VE.Bus to VE.Can
ASS030520100 VE.Bus to NMEA2000	ASS030550100 Inverting remote on-off cable
ASS030520300 VE.Direct to NMEA2000	ASS030550200 Non inverting remote on-off cable
ASS030520200 VE.Can to NMEA2000 Micro-C	ASS030550300 VE.Direct non inverting remote on-off cable
ASS030120200 MK2.2b (VE.Bus to RS232)	ASS030550400 Skylla-i remote on-off cable
ASS030200000 RS232 to USB converter	CSE000100000 AC Current sensor
ASS030520500 VE.Direct to RS232	

Are in conformity with the requirements of the following Directives of the European Union:

EMC Directive 2014/30/EU with the following harmonized standards:

EN 55014-1:2006/A2:2011
EN 55014-2:1997/A2:2008
ISO 7637-2:2011-03

Low Voltage Directive 2014/35/EU with the following harmonized standards:

EN 60335-1:2012/AC:2014
EN 62109-1:2010

Restriction of the use of certain hazardous substances RoHS (2011/65/EU and 2015/863/EU) with the following harmonized standards:

EN-IEC 63000:2018

CE MARK DATE: July 3rd, 2014

Signed : Reinout Vader

Authority : Managing Director
Date : 6 June 2019

MATERIAL DECLARATION

Type 1: SELF DECLARATION

<Date of declaration>

Date:	15-4-2016

<MD ID Number>

MD-ID-No.	

<Other information (e.g. shipbuilder, hull NO if appliccable.>

Remark 1	
Remark 2	
Remark 3	

	Yes	No
Is product already Type approved by DNV?		x

<Supplier (Respondent) Information>

Company name	Victron Energy B.V.
Division name	n.a.
Contact person	Reinout Vader
SDoC ID no	

<Product Information>

Product Name	Product Number	Product Total Mass		Product Information
		Mass	Unit	
DC-AC Inverter	CMP241620000	10	kg	MultiPlus C 24/1600/40-16 - 230V VE.Bus Inverter/Charger

This material information shows the amount of hazardous materials contained in

Unit:	
10,0	kg

<Material Information>

Table	Material Name		Threshold level	Present above threshold level Yes or No	IF YES Material Mass		IF YES Information on where it is used
					Mass	Unit	
Table A Materials listed in appendix 1 of the Convention	Asbestos	Asbestos	No threshold level	No			
	PCB's	Polychlorinated Biphenyls (PCBs)	No threshold level	No			
	Ozone depleting substances	Chlorofluorcarbons (CFC's)	No threshold level	No			
		Halons		No			
		Other fully Halogenated CFC's		No			
		Carbon Tetrachloride		No			
		1,1,1-Trichloroethane		No			
		Hydrochlorofluorcarbons		No			
		Hydrobromofluorcarbons		No			
		Methyl Bromide		No			
		Bromochloromethane		No			
	Anti-fouling systems containing organotin compounds as a biocid		2,500 mg total tin/kg				

Table	Material Name	Threshold level	Present above threshold level Yes or No	IF YES Material Mass		IF YES Information on where it is used
				Mass	Unit	
Table B Materials listed in appendix 2 of the Convention	Cadmium & Cadmium Compounds	100 mg/kg	No			
	Hexavalent Chromium and Hexavalent Chromium Compound	1,000 mg/kg	No			
	Lead and Lead Compounds	1,000 mg/kg	No			
	Mercury and Mercury Compounds	1,000 mg/kg	No			
	Polybromated Biphenyl (PBB's)	1,000 mg/kg	No			
	Polybrominated Dephenyl Ethers (PBDE's)	1,000 mg/kg	No			
	Polychloronaphtalenes (Cl>=3)	No thr.level	No			
	Radioactive substances	No thr.level	No			
	Certain Shortchain Chlorinated Paraffins	1%	No			

The object of declaration described above is in conformity with the Guidelines for the development of Inventory of Hazardous Materials Resolution MEPC.197(62) Adopted on 15 July 2011

Signed for on behalf of: Victron Energy B.V.

Date of issue: 15-4-2016

Place of issue: Almere-Haven

Full name Reinout Vader

Position VP

Signature and Company Stamp

DECLARATION OF CONFORMITY

CE

COMPANY : Victron Energy B.V.

Declares that the following products:
PRODUCT TYPE : SINEWAVE INVERTER / BATTERY CHARGER
BRAND : Victron Energy
MODELS :

MultiPlus C 12/2000/80-30	MultiPlus C 24/2000/50-30	MultiPlus 48/3000/35-16
MultiPlus 12/3000/120-16	MultiPlus 24/3000/70-16	MultiPlus 48/3000/35-50
MultiPlus 12/3000/120-50	MultiPlus 24/3000/70-50	MultiPlus 48/5000/70-100
	MultiPlus 24/5000/120-100	

Are in conformity with the requirements of the following Directives of the European Union:

EMC Directive 2014/30/EU with the following harmonized standards:
EN-IEC 61000-3-11: 2017
EN-IEC 61000-3-12: 2011
EN-IEC 61000-6-1:2007
EN-IEC 61000-6-2:2005
EN-IEC 61000-6-3:2007/A1:2011/C11:2012
EN 55014-1:2017
EN 55014-2:2015
EN-IEC 62040-2:2018
ISO 7637-2:2016

Low Voltage Directive 2014/35/EU with the following harmonized standards:
EN-IEC 60335-1:2012/A13:2017
EN-IEC 62109-1:2010
EN-IEC 62109-2:2011
EN-IEC 62040-1:2009/C1:2009/A1:2013

Restriction of the use of certain hazardous substances RoHS (2011/65/EU and 2015/863/EU) with the following harmonized standards:
EN-IEC 63000:2018

CE MARK DATE: April 13th, 2015

Signed : Reinout Vader

Authority : Managing Director
Date: : 18 July 2019

DECLARATION OF CONFORMITY

CE

COMPANY : Victron Energy B.V.

Declares that the following products:

PRODUCT TYPE : SINEWAVE INVERTER / BATTERY CHARGER
BRAND : Victron Energy
MODELS :

MultiPlus C 12/800/35-16	MultiPlus C 24/800/16-16	MultiPlus C 48/800/8-16
MultiPlus C 12/1200/50-16	MultiPlus C 24/1200/25-16	MultiPlus C 48/1200/13-16
MultiPlus C 12/1600/70-16	MultiPlus C 24/1600/40-16	MultiPlus C 48/1600/20-16
MultiPlus C 12/2000/80-30	MultiPlus C 24/2000/50-30	MultiPlus 48/3000/35-16
MultiPlus 12/3000/120-16	MultiPlus 24/3000/70-16	MultiPlus 48/3000/35-50
MultiPlus 12/3000/120-50	MultiPlus 24/3000/70-50	MultiPlus 48/5000/70-100
	MultiPlus 24/5000/120-100	

Are in conformity with the requirements of the following Directives of the European Union:

EMC Directive 2014/30/EU with the following harmonized standards:
EN 61000-6-3:2007/A1:2011/AC:2012
EN 61000-6-2:2019
EN 61000-6-1:2019
EN 55014-1:2017
EN 55014-2:2015
EN-IEC 61000-3-2:2019
EN 61000-3-3:2013
EN 61000-4-11:2005-02
EN-IEC 62040-2:2018
ISO 7637-2:2016
EN-IEC 62040-3 :2011

Low Voltage Directive 2014/35/EU with the following harmonized standards:
EN-IEC 60335-1:2012/C11:2014/A11:2014/A12:2017
EN-IEC 60335-2-29:2004/A2:2010/A11:2018
EN-IEC 62109-1:2010
EN-IEC 62109-2:2011
EN-IEC 62040-1:2009/C1:2009/A1:2013

Restriction of the use of certain hazardous substances RoHS (2011/65/EU and 2015/863/EU) with the following harmonized standards:
EN-IEC 63000:2018

CE MARK DATE: March, 2011

Signed : Reinout Vader

Authority : Managing Director
Date : June 6, 2019

DECLARATION OF CONFORMITY

CE

COMPANY : Victron Energy B.V.

Declares that the following products:

PRODUCT TYPE : SINEWAVE INVERTER / BATTERY CHARGER
BRAND : Victron Energy
MODELS :

MultiPlus C 12/800/35-16	MultiPlus C 24/800/16-16	MultiPlus C 48/800/8-16
MultiPlus C 12/1200/50-16	MultiPlus C 24/1200/25-16	MultiPlus C 48/1200/13-16
MultiPlus C 12/1600/70-16	MultiPlus C 24/1600/40-16	MultiPlus C 48/1600/20-16
MultiPlus C 12/2000/80-30	MultiPlus C 24/2000/50-30	MultiPlus 48/3000/35-16
MultiPlus 12/3000/120-16	MultiPlus 24/3000/70-16	MultiPlus 48/3000/35-50
MultiPlus 12/3000/120-50	MultiPlus 24/3000/70-50	

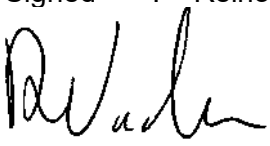
Do comply with the requirements of VDE-AR-N 4105:2011-08 for power ratings up to 3,68 kVA in combination with an external network and system protection device (ge: NA-Schutz) and an external power management system.

Restriction of the use of certain hazardous substances RoHS (2011/65/EU and 2015/863/EU) with the following harmonized standards:

EN-IEC 63000:2018

CE MARK DATE: March 5th, 2016

Signed : Reinout Vader



Authority : Managing Director
Date : 6 June 2019