



Certificate of Compliance

Certificate: 80034168 **Master Contract:** 203213
Project: 80203034 **Date Issued:** 2024-06-17
Issued to: **Fronius International GmbH**
Gunter Fronius Strasse 1
Wels-Thalheim, Upper Austria 4600
Austria
Attention: Andreas Schauer

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.



Issued by: *Peter Lim*
 Peter Lim

PRODUCTS

Class 5311 09 POWER SUPPLIES - Distributed Generation Power Systems Equipment
 Class 5311 89 POWER SUPPLIES - Distributed Generation - Power Systems Equipment - Certified to U.S. Standards

Models	Primo GEN24 3.8 208-240	Primo GEN24 5.0 208-240	Primo GEN24 6.0 208-240	Primo GEN24 7.7 208-240	Primo GEN24 10.0 208-240
Part Numbers	4,210,140,800 4,210,140,800,95	4,210,141,800 4,210,141,800,95	4,210,142,800 4,210,142,800,95	4,210,143,800 4,210,143,800,95	4,210,144,800 4,210,144,800,95
Models	Primo GEN24 3.8 208-240 Plus	Primo GEN24 5.0 208-240 Plus	Primo GEN24 6.0 208-240 Plus	Primo GEN24 7.7 208-240 Plus	Primo GEN24 10.0 208-240 Plus
Part Numbers	4,210,140,802 4,210,140,802,95	4,210,141,802 4,210,141,802,95	4,210,142,802 4,210,142,802,95	4,210,143,802 4,210,143,802,95	4,210,144,802 4,210,144,802,95



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Input Data PV		Primo GEN24 3.8 208-240 Primo GEN24 3.8 208-240 Plus	Primo GEN24 5.0 208-240 Primo GEN24 5.0 208-240 Plus	Primo GEN24 6.0 208-240 Primo GEN24 6.0 208-240 Plus	Primo GEN24 7.7 208-240 Primo GEN24 7.7 208-240 Plus	Primo GEN24 10.0 208- 240Primo Primo GEN24 10.0 208-240 Plus
Nominal PV-Power	208 V	3940 W	5150 W	5920 W	7920	9740
	220 V	3940 W	5150 W	6190 W	7920	10310
	240 V	3940 W	5150 W	6190 W	7920	10310
Max. PV array power (Ppv_max 1 / Ppv_max 2 / Ppv_max_inverter)		4750 W / 2850 W / 5700 W	6250 W / 3750 W / 7500 W	7500 W / 4500 W / 9000 W	11520 W / 11520 W / 11520 W	13500 W / 13000 W / 15000 W
MPP-Voltage Range		200 ... 480 V	230 ... 480 V	230 ... 480 V	260 ... 480 V	260 ... 480 V
Usable MPP voltage range		65 ... 530 V			65 ... 480 V	
DC Input Voltage Range		65 ... 600 V				
Min. Input Voltage		65 V				
Max. Input Voltage (open circuit voltage)		600				
Nominal Input Voltage	208 V	360 V			365 V	
	220 V	380 V			365 V	
	240 V	400 V			385 V	
Nominal Input Current	208 V	10.9 A	14.3 A	16.4 A	21.7 A	26.7 A
	220 V	10.4 A	13.6 A	16.3 A	21.7 A	28.2 A
	240 V	9.9 A	12.9 A	15.5 A	20.6 A	26.8 A
Max. usable Input Current (MPPT1 / MPPT 2)		22.0 A / 12.0 A	22.0 A / 12.0 A	22.0 A / 12.0 A	22.0 A / 22.0 A	22.0 A / 22.0 A
Max. usable Input Current (MPPT1 + MPPT 2)		34.0 A	34.0 A	34.0 A	44.0 A	44.0 A
Max. array short circuit current (1.5 * I _{max}) (MPPT1 / MPPT 2)		36 A / 19 A	36 A / 19 A	36 A / 19 A	41.25 A / 36 A	41.25 A / 36 A
Max. array short circuit current (1.5 * I _{max}) (MPPT1 + MPPT 2)		55.0 A	55.0 A	55.0 A	77.25 A	77.25 A
DC Startup Voltage		80 V				
Max. continuous utility backfeed current **		0 A				



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Input Data PV	Primo	Primo	Primo	Primo	Primo
	GEN24 3.8 208-240	GEN24 5.0 208-240	GEN24 6.0 208-240	GEN24 7.7 208-240	GEN24 10.0 208-240
	Primo	Primo	Primo	Primo	Primo
	GEN24 3.8 208-240	GEN24 5.0 208-240	GEN24 6.0 208-240	GEN24 7.7 208-240	GEN24 10.0 208-240
	Plus	Plus	Plus	Plus	Plus
Max. continuous backfeed current from other MPPT or battery-input ***	0 A	0 A	0 A	0 A	0 A
Max. backfeed current from other strings on same MPPT ****	36 A	36 A	36 A	41.25 A	41.25 A
DC overvoltage category in accordance with UL 1741 (OVC)	2				
Admissible conductor size (DC)	AWG 14 ... AWG 8				
No. of DC Input Terminals	2x DC+1, 2x DC+2 and 4x DC- spring-type terminals for solid: copper stranded / fine stranded: copper				
No. of MPP Trackers	2				

Input Data Battery	Primo	Primo	Primo	Primo	Primo
	GEN24 3.8 208-240	GEN24 5.0 208-240	GEN24 6.0 208-240	GEN24 7.7 208-240	GEN24 10.0 208-240
	Primo	Primo	Primo	Primo	Primo
	GEN24 3.8 208-240	GEN24 5.0 208-240	GEN24 6.0 208-240	GEN24 7.7 208-240	GEN24 10.0 208-240
	Plus	Plus	Plus	Plus	Plus
Max. Input Power	3800 W	5000 W	6000 W	7680 W	10000 W
Min. Input Voltage	150 V				
Max. Input Voltage (at 1000 W/m ² / 14°F in open circuit operation)	455 V				
Max. usable Input Current	22.0 A	22.0 A	22.0 A	22.0 A	22.0 A
Max. continuous utility backfeed current **	0 A			0 A	0 A
Max. continuous backfeed current from other MPPT or battery-input ***	0 A	0 A	0 A	0 A	0 A
DC overvoltage category in accordance with UL 1741 (OVC)	2				
Admissible conductor size (DC)	AWG 12 ... AWG 8				
No. of DC Input Terminals	1x DC+ and 1x DC- spring-type terminals for solid: copper stranded / fine stranded: copper				
No. of DC Inputs	1				

* Temperature derating would start earlier in higher elevations
 ** Maximum current from inverter to solar module when inverter is experiencing an error. Assured by electrical design of the inverter.
 *** During normal operation
 **** During one fault condition (acc. IEC62109-1:2010 and CAN/CSA C22.2 No. 62109-1:16)



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Output Data		Primo GEN24 3.8 208-240 Primo GEN24 3.8 208-240 Plus	Primo GEN24 5.0 208-240 Primo GEN24 5.0 208-240 Plus	Primo GEN24 6.0 208-240 Primo GEN24 6.0 208-240 Plus	Primo GEN24 7.7 208-240 Primo GEN24 7.7 208-240 Plus	Primo GEN24 10.0 208-240 Primo GEN24 10.0 208-240 Plus
Nominal output power ($P_{AC\ nom}$)	208 V	3800 W	5000 W	5740 W	7680 W	9450 W
	220 V	3800 W	5000 W	6000 W	7680 W	10000 W
	240 V	3800 W	5000 W	6000 W	7680 W	10000 W
Max. continuous output power (40°C) V_{nom}	208 V	3800 W	5000 W	5740 W	7680 W	9450 W
	220 V	3800 W	5000 W	6000 W	7680 W	10000 W
	240 V	3800 W	5000 W	6000 W	7680 W	10000 W
Max. continuous output power (45°C) V_{min} / V_{max}	208 V	3800 W / 3800 W	5000 W / 4880 W	5660 W / 4880 W	7680 W / 7680 W	8120 W / 7900 W
	220 V	3800 W / 3800 W	5000 W / 5000 W	5940 W / 5020 W	7680 W / 7680 W	8310 W / 8500 W
	240 V	3800 W / 3800 W	5000 W / 5000 W	6000 W / 5540 W	7680 W / 7680 W	9070 W / 9120 W
Max. continuous output power (50°C) V_{min} / V_{max}	208 V	3800 W / 3800 W	4780 W / 3870 W	4780 W / 3870 W	6850 W / 6940 W	6850 W / 6940 W
	220 V	3800 W / 3800 W	5000 W / 3980 W	5070 W / 3980 W	7310 W / 7130 W	7310 W / 7130 W
	240 V	3800 W / 3800 W	5000 W / 4350 W	5340 W / 4350 W	7520 W / 7680 W	7520 W / 8020 W
Max. continuous output power (55°C) V_{min} / V_{max}	208 V	3640 W / 2760 W	3640 W / 2760 W	3640 W / 2760 W	6850 W / 6940 W	6850 W / 6940 W
	220 V	3800 W / 2820 W	3860 W / 2820 W	3860 W / 2820 W	7310 W / 7130 W	7310 W / 7130 W
	240 V	3800 W / 3070 W	4060 W / 3070 W	4060 W / 3070 W	7520 W / 7680 W	7520 W / 8020 W
Max. continuous output power (60°C) V_{min} / V_{max}	208 V	2400 W / 1500 W	2400 W / 1500 W	2400 W / 1500 W	5060 W / 5940 W	5060 W / 5940 W
	220 V	2560 W / 1490 W	2560 W / 1490 W	2560 W / 1490 W	6230 W / 5510 W	6230 W / 5510 W
	240 V	2660 W / 1580 W	2660 W / 1580 W	2660 W / 1580 W	5490 W / 6810 W	5490 W / 6810 W
Number of phases		1				
Nominal AC voltage	208 V	208 V				
	220 V	220 V				
	240 V	240 V				
Operating AC voltage range default	208 V	183 - 229 V (12/+10%)				
	220 V	194 - 242 V (-12/+10%)				
	240 V	211 - 264 V (-12/+10%)				
Adjustment range for voltage	208 V	104 - 288 V				
	220 V	104 - 288 V				
	240 V	104 - 288 V				



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Output Data		Primo GEN24 3.8 208-240 Primo GEN24 3.8 208-240 Plus	Primo GEN24 5.0 208-240 Primo GEN24 5.0 208-240 Plus	Primo GEN24 6.0 208-240 Primo GEN24 6.0 208-240 Plus	Primo GEN24 7.7 208-240 Primo GEN24 7.7 208-240 Plus	Primo GEN24 10.0 208- 240Primo Primo GEN24 10.0 208-240 Plus
Voltage trip limit accuracy		1% of nominal value				
Voltage clearing times		0.016 - 21.0 sec.				
Max. continuous output current at Vnom	208 V 220 V 240 V	18.3 A 17.3 A 15.8 A	24.0 A 22.7 A 20.8 A	27.6 A 27.3 A 25.0 A	36.9 A 34.9 A 32.0 A	45.45 A 45.45 A 41.7 A
AC output overcurrent protection	208 V 220 V 240 V	25 A 25 A 20 A	30 A 30 A 30 A	35 A 35 A 35 A	50 A 45 A 40 A	60 A 60 A 55 A
Minimum AWG	208 V 220 V 240 V	AWG 12 AWG 12 AWG 12	AWG 10 AWG 10 AWG 10	AWG 8 AWG 10 AWG 10	AWG 8 AWG 8 AWG 8	AWG 6 AWG 6 AWG 6
Admissible conductor size (AC)			AWG 14 ... AWG 8		AWG 12 ... AWG 6	
Max. output overcurrent protection	208 V 220 V 240 V		65 A 65 A 65 A		65 A 65 A 65 A	
Max. output fault current per duration (peak / rms over duration)	208 V 220 V 240 V		536 A / 15.7 A over 151 ms 528 A / 16.0 A over 144 ms 532 A / 16.7 A over 148 ms		682 A / 20,1 A over 396 ms 676 A / 35,4 A over 120 ms 698 A / 20,4 A over 339 ms	
Nominal output frequency					50 Hz / 60 Hz	
Operating frequency range default for 60Hz setups					59.3 - 60.5 Hz	
Operating frequency range default for CAL setups					58.5 - 60.5 Hz	
Adjustment range for frequency					45 - 66 Hz	
Frequency trip limit accuracy					0.05 Hz	
Frequency clearing times					0.016 - 600 sec.	
Total harmonic distortion			< 3.5%			< 3%
Power factor					0.8 - 1 ind. / cap.	
AC overvoltage category in accordance with UL 1741 (OVC)					4	



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Output Data		Primo GEN24 3.8 208-240 Primo GEN24 3.8 208-240 Plus	Primo GEN24 5.0 208-240 Primo GEN24 5.0 208-240 Plus	Primo GEN24 6.0 208-240 Primo GEN24 6.0 208-240 Plus	Primo GEN24 7.7 208-240 Primo GEN24 7.7 208-240 Plus	Primo GEN24 10.0 208- 240Primo Primo GEN24 10.0 208-240 Plus
Max. permitted mains impedance Z _{max} at PCC (mOhm)		none				

Opportunity power socket		Primo GEN24 3.8 208 – 240 Primo GEN24 3.8 208 – 240 Plus	Primo GEN24 5.0 208 – 240 Primo GEN24 5.0 208 – 240 Plus	Primo GEN24 6.0 208 – 240 Primo GEN24 6.0 208 – 240 Plus	Primo GEN24 7.7 208 – 240 Primo GEN24 7.7 208 – 240 Plus	Primo GEN24 10.0 208 – 240 Primo GEN24 10.0 208 – 240 Plus
Nominal output power (P _{AC nom})	120 V 220 V 240 V	1560 W 2860 W 3120 W	1560 W 2860 W 3120 W	1560 W 2860 W 3120 W	1560 W 2860 W 3120 W	
Number of phases		1				
Nominal AC voltage	120 V 220 V 240 V	120 V 220 V 240 V				
Max. continuous output current at V _{nom}	120 V 220 V 240 V	13.0 A 13.0 A 13.0 A	13.0 A 13.0 A 13.0 A	13.0 A 13.0 A 13.0 A	13.0 A 13.0 A 13.0 A	
Minimum AWG	120 V 220 V 240 V	AWG 16 AWG 16 AWG 16				
Admissible conductor size (AC)		AWG 16 ... AWG8				
Max. output overcurrent protection	120 V 220 V 240 V	30 A 30 A 30 A				
Nominal output frequency		63 Hz				
Total harmonic distortion		< 5%				
Power factor		0 - 1 ind. / cap.				
AC overvoltage category in accordance with UL 1741 (OVC)		4				
Max. permitted mains impedance Z _{max} at PCC (mOhm)		none				



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Emergency power switching time	40sec	35 sec.
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General Data		Primo GEN24 3.8 208-240 Primo GEN24 3.8 208-240 Plus	Primo GEN24 5.0 208-240 Primo GEN24 5.0 208-240 Plus	Primo GEN24 6.0 208-240 Primo GEN24 6.0 208-240 Plus	Primo GEN24 7.7 208-240 Primo GEN24 7.7 208-240 Plus	Primo GEN24 10.0 208-240Primo Primo GEN24 10.0 208-240 Plus
Max. Efficiency	208 V 240 V	97.4% 97.6%	97.4% 97.6%	97.4% 97.6%	97.2% 97.5%	97.2% 97.5%
CEC Efficiency	208 V 240 V	96.5% 96.5%	97.0% 97.0%	97.0% 97.0%	96.5 % 97.0 %	96.5 % 97.0 %
Tare losses (CEC Night-time consumption (without DC))	208 V 240 V	0.4 W 0.6 W	0.4 W 0.6 W	0.4 W 0.6 W	9.2 W 9.2 W	8.4 W 8.5 W
Frequency Range		2412 – 2462MHz				
Channels		1-11				
Radio-frequency power:		<100mW (<20dBm)				
Power supply via Fronius GPOI Terminal connection / interface protocol		10.5-13.6V / 6W Power supply is fixed to 6W; supply voltage depends on supplied current				
Integrated interfaces						
WLAN		Fronius Solar.web, Modbus TCP, JSON, Fronius Push Service; 802.11b/g				
2x Ethernet LAN RJ45		10/100Mbit; max. 100m Fronius Solar.web, Modbus TCP, JSON, Fronius Push Service Networking				
USB (type A socket)		1A @5V max. in case of no load on the GPIO connector				
Wired Shut down (WSD)						
2x RS485		Modbus RTU SunSpec (only without Smart Meter and Battery) or meter/battery connection				
6 digital inputs 6 digital IOs		Inputs: Voltage level low: min. 0V - max. 1.8V; high: min. 4,5V - max. 28,8V / Input resistance: 70kOhm Outputs: 5 Watt @ 12V in total for all six digital outputs when supplied internally in case of no load on the USB Port. 1A @ >12,5V to 24V per digital output when supplied externally by an external power supply but in total max. 3A				
Datalogger and Webserver		Integrated				
Enclosure Type		Type 4X				
Inverter Weight		35.56 lbs. (16.13 kg)			49.05 lbs. (22.25kg)	
Shipping Weight		41.23 lbs. (18.70 kg)			57.10 lbs. (25.90kg)	
Admissible Ambient Temperature		-40 ... 140°F (-40 ... +60°C)				
Admissible Storage Temperature		-40 ... 158°F (-40 ... +70°C)				
Rel. Humidity		0 ... 100% (non-condensing)				
Elevation *		13123 ft (4000m) with a max. Input Voltage of 600V				



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Protection Devices	Primo GEN24 3.8 208-240	Primo GEN24 5.0 208-240	Primo GEN24 6.0 208-240	Primo GEN24 7.7 208-240	Primo GEN24 10.0 208-240
	Primo GEN24 3.8 208-240	Primo GEN24 5.0 208-240	Primo GEN24 6.0 208-240	Primo GEN24 7.7 208-240	Primo GEN24 10.0 208-240
	Plus	Plus	Plus	Plus	Plus
DC Ground fault detector / interrupter	no (Transformerless inverter)				
DC isolation measurement	integrated				
Photovoltaic Arc-Fault Circuit-Protection	PV DC Arc-Fault-Circuit-Protection Type 1 according to UL1699B:2024 and F-I-AFPE-1-4-1 according to IEC63027:2023				
Photovoltaic Rapid Shutdown Equipment	internal PVRSE RS2 Equipment; in accordance with UL1741 and CSA C22.2 No.330:23				
DC reverse polarity protection	yes				
Islanding protection	internal				
Over temperature	output power derating / active cooling				

Utility interconnection voltage and frequency trip limits and trip time		
Trip limit and trip time accuracy	Voltage:	+/- 1.0% of Vnom L-L, +/- 1.5% of Vnom L-N
	Frequency:	+/- 0.05 Hz
	Trip Time	+/- 0.016 Sec
	Accuracy:	

Conditions of Acceptability:

- The products have also been verified for functional safety under Class B for CSA C22.2 No. 0.8 related to the integrated PVRSE and related Inverter Shutdown and Remote Shutdown functions and UL1998 Software Class 1 for all safety functions.
- While the Grid Support Utility interactive function evaluated according to IEEE 1547-2018, IEEE 1547a-2020 and IEEE 1547.1-2020, for Fronius Inverter, Utility Interconnection Voltage and Frequency Trip Limits and Trip Times setting as well as the enter service setting as following:

Shall trip function	Abnormal Voltage Shall trip—Category III			
	Default settings		Ranges of allowable settings	
	Voltage (p.u. of nominal voltage)	Clearing time (s)	Voltage (p.u. of nominal voltage)	Clearing time (s)
OV2	1.20	0.16	fixed at 1.20	fixed at 0.16
OV1	1.10	13	1.10 - 1.20	1.0 – 13.0
UV1	0.88	21	0.0 - 0.88	2.0 – 50.0
UV2	0.50	2	0.0 - 0.5	0.16 – 21.0

Shall trip function	Abnormal Frequency Shall trip— Category III	
	Default settings	Ranges of allowable settings



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	Frequency (Hz)	Clearing time (s)	Frequency (Hz)	Clearing time (s)
OF2	62	0.16	61.8–66.0	0.16–1 000.0
OF1	61.2	300	60.1–66.0	180.0–1 000.0
UF1	58.5	300	50.0–59.9	180.0–1 000
UF2	56.5	0.16	50.0–57.0	0.16–1 000

Enter service criteria		Default settings	Ranges of allowable settings
Permit service		Enabled	Enabled/Disabled
Applicable voltage within range	Minimum value	≥ 0.917 p.u.	0.88 p.u. to 0.95 p.u.
	Maximum value	≤ 1.05 p.u.	1.05 p.u. to 1.1 p.u.
Frequency within range	Minimum value	≥ 59.5 Hz	59.0 Hz to 59.9 Hz
	Maximum value	≤ 60.1 Hz	60.1 Hz to 61.0 Hz

3. UL1741 SA Utility Interconnection Default Voltage and Frequency Trip Limits and Trip Times:

Voltage and frequency limits for utility Interaction

Condition	Simulated utility source		Maximum time (sec) at 60 Hz before cessation of current to the simulated utility
	Voltage (V)	Frequency (Hz)	
A	$< 0.50 V_{nor}$ Adjustable (104V to $0.95\%V_{nor}$)	Rated	@ 60Hz: 0.16 (Default) @ CAL: 1.5 (Default) Adjustable (0.016s to 4.25s)
B1	@ 60HZ: $0.50 V_{nor} \leq V < 0.88 V_{nor}$ @ CAL: $0.50 V_{nor} \leq V < 0.70 V_{nor}$ Adjustable (104V to $0.95\%V_{nor}$)	Rated	@ 60Hz: 2 (Default) @ CAL: 11.0 (Default) Adjustable (0.016s to 21s)
B2	@ CAL: $0.70 V_{nor} \leq V < 0.88 V_{nor}$	Rated	@ CAL: 21.0 (Default) Adjustable (0.016s to 21s)
C	$1.10 V_{nor} < V < 1.20 V_{nor}$ Adjustable ($105\%V_{nor}$ to 288V)	Rated	@ 60Hz: 1 (Default) @ CAL: 13.0 (Default) Adjustable (0.016s to 21s)
D	$1.20 V_{nor} \leq V$ Adjustable ($105\%V_{nor}$ to 288V)	Rated	0.16 (Default) Adjustable (0.016s to 4.25s)
E	Rated	@ 60Hz: $f > 60.5$ (Default) Adjustable (50.0 to 66.0)	@ 60Hz: 0.16 (Default) @ CAL: 300 (Default) Adjustable (0.016s to 600s)
F	Rated	@ 60Hz: $f < 59.3$ (Default) @ CAL: $f < 58.5$ (Default) Adjustable (50.0 to 66.0)	@ 60Hz: 0.16 (Default) @ CAL: 300 (Default) Adjustable (0.016s to 600s)



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Condition	Simulated utility source		Maximum time (sec) at 60 Hz before cessation of current to the simulated utility
	Voltage (V)	Frequency (Hz)	
G	Rated	@ 60HZ: f < 57.0 (Default) Adjustable (50.0 to 66.0)	0.16 (Default) Adjustable (0.016s to 600s)
H	Rated	@ 60HZ: f > 62.0 (Default) Adjustable (50.0 to 66.0)	0.16 (Default) Adjustable (0.016s to 600s)
I	Reconnect Time 300s (Default) Adjustable (5s to 900s)		

SA11 Ramp Rates		
		CAL-Setup
Output current Rating [A]	Irated	According to rating plate
Minimum normal ramp up rate [%Irated/sec]	RRnorm_up_min	0.1
Maximum normal ramp up rate [%Irated/sec]	RRnorm_up_max	100
Minimum output current [A]	Ilow	10% Irated
Ramp Rate Accuracy MSARR [%Irated/sec]		≤1%
Minimum soft start ramps up rate [%Irated/sec]	RRSS_min	0.1
Maximum soft start ramps up rate [%Irated/sec]	RRSS_max	100
SA12 SPF (Specified Power Factor)		
		CAL-Setup
Apparent Power Rating [VA]	Srated	According to rating plate
Output Power Rating [W]	Prated	According to rating plate
DC input voltage range with function enabled [V]		According to rating plate
Nominal AC voltage [V]	Vnom	According to rating plate
AC voltage range with function enabled [Vmin. Vmax]		According to rating plate
AC voltage measurement accuracy [V]	MSAVac	≤1% Vn
DC voltage measurement accuracy [V]	MSAVdc	≤2% Vn
Active power range of function [W]	Plow. Prated	20% - 100%

Power Factor Accuracy	MSAPF	0.01
Power Factor settling time [sec]		1
Minimum Inductive (Under excited) Power Factor	PF min.ind	0.8



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Minimum Capacitive (Over excited) Power Factor	PF min.cap	0.8
Power factor default	PF	1
PF mid.cap		0.9
PF mid. ind		0.9

SA13 Volt-Var Mode		
		CAL-Setup
Apparent Power Rating [VA]	Srated	According to rating plate
Output Power Rating [W]	Prated	According to rating plate
EUT Input voltage range with function enabled [V]		According to rating plate
Nominal AC EPS voltage [V]	Vnom	According to rating plate
AC EPS voltage range with function enabled [V]	Vmin - Vmax	According to rating plate
Reactive Power Accuracy [% or Var]		±2.5% Sn
Maximum Ramp Rate [Var/s]		100%Qmax / 0.02Vn
Maximum Rated Reactive Power Production (Capacitive. Overexcited) [Var]	Qmax.over cap	53% of Sn
Maximum Rated Reactive Power Production (Inductive. Underexcited) [Var]	Qmax.under ind	53% of Sn
Maximum Slope [Var/V]	KVARmax	48.08%Qmax / V
Deadband Range [V]	Deadband min Deadband max	0%Vnom 20%Vnom
Settling Time [s]		10
V1=the voltage at Q1		0.88 Vn
Q1=the maximum reactive power production setting		53% or 100% of nameplate apparent power
V2=the voltage at Q2		0.99 Vn
Q2=the reactive power setting at the lower voltage deadband limit		0
V3=the voltage at Q3		1.01 Vn
Q3=the reactive power setting at the upper voltage deadband limit		0
V4=the voltage at Q4		1.1 Vn
Q4=the maximum reactive power absorption setting		53% or 100% of nameplate apparent power

SA14 Frequency Watt		
		CAL-Setup
Output Power Rating [W]	Prated	According to rating plate



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SA14 Frequency Watt		
AC frequency range with function enabled [Hz]	fmin. fmax	According to rating plate
Manufacturer's stated AC frequency measurement accuracy [Hz or %Hz]	MSAHz	0.05Hz
Manufacturer's stated P(f) accuracy [W or %W]	MSAP(f)	±2.5% Prated
Settling time [sec]	ts	1
Adjustment range of the start of frequency droop [Hz]	fstart_min. fstart_max	60.017 Hz - 66 Hz
Maximum slope of frequency droop [%Prated/Hz]	KPower-Frequ_Max	100 %/Hz
Minimum slope of frequency droop [%Prated/Hz]	KPower-Frequ_Min	10 %/Hz
Slope of active power response to changes in frequency	KPower_Frequ	50%/Hz

SA15 Volt Watt		
		CAL-Setup
Output Power Rating [W]	Prated	According to rating plate
AC voltage range with function enabled [V]	Vmin - Vmax	According to rating plate
Nominal AC voltage [V]	Vnom	According to rating plate
AC voltage accuracy [V or %V]	MSAVac	≤ 1% Vn
Output Power accuracy [W or %W]	MSAWatts	±2.5% Prated
Accuracy of time	MSAt	1cyc +1.5cyc (detection time)
Setting time [sec]	ts	10 sec
Adjustment range of the start of active power reduction [V]	Vstart_min. Vstart_max	103% Vnom - 113% Vnom
Adjustment range of the stop of the curtailment function [V]	Vstop_min. Vstop_max	no hysteresis
Maximum Slope of active power reduction @208V [%Prated/V]	Kpower-Volt_Max	48.1 %Pmom/V
Maximum Slope of active power reduction @240V [%Prated/V]	Kpower-Volt_Max	41.7%Pmom/V
Maximum Slope of active power reduction @480V [%Prated/V]	Kpower-Volt_Max	36.1%Pnom/V
Minimum Slope of active power reduction @208V [%Prated/V]	Kpower-Volt_Min	6.8 %Pmom/V
Minimum Slope of active power reduction @240V [%Prated/V]	Kpower-Volt_Min	5.9%Pmom/V
Minimum Slope of active power reduction @480V [%Prated/V]	Kpower-Volt_Min	5.16%Pnom/V



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SA15 Volt Watt		
		CAL-Setup
Range of adjustment of a delay before return to normal operation [sec]	treturn_min. treturn_max	no hysteresis
Adjustment range of the rate of return to normal operation [%Prated/sec]	KPower_Rate_Min. KPower_Rate_Max	no hysteresis
Use of hysteresis in the Volt-Watt function		no hysteresis
Slope of the active power response to changes in voltage @208V	KPower_Volt. default	12.02 %Pmom/V
Slope of the active power response to changes in voltage @240V	KPower_Volt. default	10.4 %Pmom/V
Slope of the active power response to changes in voltage @480V	KPower_Volt. default	9.03%Pnom/V
Active power rate of return to normal operation	KPower_Rate	no hysteresis

4. Utility interactive evaluations were conducted with the following firmware:

Software Version	Control Devises	Primo GEN24 3.8 208-240 Primo GEN24 3.8 208-240 Plus	Primo GEN24 5.0 208-240 Primo GEN24 5.0 208-240 Plus	Primo GEN24 6.0 208-240 Primo GEN24 6.0 208-240 Plus	Primo GEN24 7.7 208-240 Primo GEN24 7.7 208-240 Plus	Primo GEN24 10.0 208-240 Primo GEN24 10.0 208-240 Plus
ZEUS	ST Microelectronics / STM32F765NGH7 (U20)	V2.10.2 (release date 24/01/2020) V2.28.5 (release date 23/02/2024)			V2.28.5 (release date 23/02/2024)	
KRONOS	ST Microelectronics / STM32F765NGH7 (U1)	V2.16.2 (release date 24/01/2020) V2.36.6 (release date 23/02/2024)			V2.36.6 (release date 23/02/2024)	
Check-Sum ZEUS	ST Microelectronics / STM32F765NGH7 (U20)	0x57a62a64 (release date 24/01/2020) 0xe5b98a5d (release date 23/02/2024)			0xe5b98a5d (release date 23/02/2024)	
Check-Sum KRONOS	ST Microelectronics / STM32F765NGH7 (U1)	0xbab5e48f (release date 24/01/2020) 0x95013193 (release date 23/02/2024)			0x95013193 (release date 23/02/2024)	

5. Maximum output power with derating for:

Primo GEN24 3.8 208-240/Primo GEN24 3.8 208-240 Plus:

Maximum output power can be delivered with an input voltage range of 200-480 V dc

208Vac

Volts	-40C	+40C	+45C	+50C	+55C	+60
200VDC	3800W	3800W	3800W	3800W	3640W	2400W
480VDC	3800W	3800W	3800W	3800W	2760W	1500W



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220Vac

Volts	-40C	+40C	+45C	+50C	+55C	+60
200VDC	3800W	3800W	3800W	3800W	3800W	2560W
480VDC	3800W	3800W	3800W	3800W	2820W	1490W

240Vac

Volts	-40C	+40C	+45C	+50C	+55C	+60
200VDC	3800W	3800W	3800W	3800W	3800W	2660W
480VDC	3800W	3800W	3800W	3800W	3070W	1580W

Primo GEN24 5.0 208-240/Primo GEN24 5.0 208-240 Plus:

Maximum output power can be delivered with an input voltage range of 230-480 V dc

208Vac

Volts	-40C	+40C	+45C	+50C	+55C	+60
230VDC	5000W	5000W	5000W	4780W	3640W	2400W
480VDC	5000W	5000W	4880W	3870W	2760W	1500W

220Vac

Volts	-40C	+40C	+45C	+50C	+55C	+60
230VDC	5000W	5000W	5000W	5000W	3860W	2560W
480VDC	5000W	5000W	5000W	3980W	2820W	1490W

240Vac

Volts	-40C	+40C	+45C	+50C	+55C	+60
230VDC	5000W	5000W	5000W	5000W	4060W	2660W
480VDC	5000W	5000W	5000W	4350W	3070W	1580W

Primo GEN24 6.0 208-240/Primo GEN24 6.0 208-240 Plus:

Maximum output power can be delivered with an input voltage range of 230-480 V dc

208Vac

Volts	-40C	+40C	+45C	+50C	+55C	+60
230VDC	6000W	6000W	5660W	4780W	3640W	2400W
480VDC	6000W	6000W	4880W	3870W	2760W	1500W

220Vac

Volts	-40C	+40C	+45C	+50C	+55C	+60
230VDC	6000W	6000W	5940W	5070W	3860W	2560W
480VDC	6000W	6000W	5020W	3980W	2820W	1490W

240Vac

Volts	-40C	+40C	+45C	+50C	+55C	+60
230VDC	6000W	6000W	6000W	5340W	4060W	2660W



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480VDC	6000W	6000W	5540W	4350W	3070W	1580W
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Primo GEN24 7.7 208-240/Primo GEN24 7.7 208-240 Plus:

208Vac

Volts	-40C	+40C	+45C	+50C	+55C	+60
260VDC	7680W	7680W	7680W	7680W	6850W	5060W
480VDC	7680W	7680W	7680W	7680W	6940W	5940W

220Vac

Volts	-40C	+40C	+45C	+50C	+55C	+60
260VDC	7680W	7680W	7680W	7680W	7310W	6230W
480VDC	7680W	7680W	7680W	7680W	7130W	5510W

240Vac

Volts	-40C	+40C	+45C	+50C	+55C	+60
260VDC	7680W	7680W	7680W	7680W	7520W	5490W
480VDC	7680W	7680W	7680W	7680W	7680W	6810W

Primo GEN24 10.0 208-240/Primo GEN24 10.0 208-240 Plus:

208Vac

Volts	-40C	+40C	+45C	+50C	+55C	+60
260VDC	9450W	9450W	9100W	8120W	6850W	5060W
480VDC	9450W	9450W	8840W	7900W	6940W	5940W

220Vac

Volts	-40C	+40C	+45C	+50C	+55C	+60
260VDC	10000W	10000W	9280W	8310W	7310W	6230W
480VDC	10000W	10000W	9540W	8500W	7130W	5510W

240Vac

Volts	-40C	+40C	+45C	+50C	+55C	+60
260VDC	10000W	10000W	10000W	9070W	7520W	5490W
480VDC	10000W	10000W	10000W	9120W	8020W	6810W

6. All models meet the surge requirements of IEEE C62.41.2-2002, Location Category B (6kV). Tests were performed using ring wave and combination waveforms, both polarities, for common mode and differential mode coupling, 20 pulses each test. After surge testing the units were operational with control functionally verified by frequency and voltage disconnect tests.
7. The above models are permanently connected utility-interactive inverters intended for operation with Photovoltaic supplies only.
8. The above models are intended to be used in an ungrounded power system in conjunction with the requirements specified in the National Electrical Code, ANSI/NFPA 70, 2014 Ed, section 690.35.
9. The above inverter models are provided with integral PV DC ARC-Fault Circuit Protection for series arcing faults (type 1).
10. Coordination with and approval of the area EPS and DR operators is required for the field adjustable settings for response to abnormal voltage & frequency trip limits / trip times and for changes of real and reactive power.



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11. To fulfill the rapid shutdown requirements of the NEC Article 690.12 and CEC Sec 64-218 Photovoltaic system rapid shutdown with the Primo GEN24 series models, the inverter can be used together with a suitable rapid shutdown device, or the inverter must be mounted within the boundary values given in the NEC and CEC Article. The ac output of the inverter complies with the requirements of following standards to ensure the ac conductors are within the controlled limits of 30Vdc, 15Vac and 8A within the 30
12. Battery pack is not evaluated as part of the inverter system.
13. Allow the capacitors of the inverter to discharge (2 minutes)

APPLICABLE REQUIREMENTS

CSA C22.2 No. 107.1:16 (Fourth Edition)(R2021) - Power conversion equipment

UL 1741 (Third Edition; Reprint with revisions through and including May 19, 2023) - UL Standard for Safety Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources

UL 1741 CRD - UL Standard for Safety Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources

CSA C22.2 NO. 330:23 - Photovoltaic Rapid Shutdown Systems

CSA C22.3 No. 9:20 (Second edition) - Interconnection of distributed energy resources and electricity supply systems

UL 1699B (First Edition; Reprint with revisions through and including April 9, 2024) - UL Standard for safety Photovoltaic (PV) DC Arc-Fault Circuit Protection



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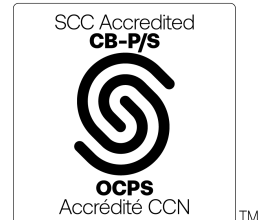
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Notes:

Products certified under Class(es) C531109 have been certified under CSA's ISO/IEC 17065 accreditation with the Standards Council of Canada (SCC). www.scc.ca





Supplement to Certificate of Compliance

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*The products listed, including the latest revision described below,
are eligible to be marked in accordance with the referenced Certificate.*

Product Certification History

Project	Date	Description
80203034	2024-06-17	Update report 80034168 (80179059) to include UL1741 SB testing and additional two new models Series for Fronius models Primo GEN24 7.7 208-240, Primo GEN24 7.7 208-240 Plus and Fronius Primo GEN24 10.0 208-240 and Primo GEN24 10.0 208-240 Plus.
80179059	2023-09-29	Update report 80034168 to revise applicable standard from UL1741 2nd edition to UL1741 3rd Edition and evaluate additional alternate components.
80034168	2020-05-21	Original model certification new model Primo GEN24 (C/US) Product CLASS 5311- 09 and CLASS 5311 89. -Include CEC efficiency attestation.