

PV Module String Sizing for Solectria Renewables PVI 13KW & PVI 15KW grid tied inverters.

[See bottom for step-by-step instructions](#)

Note that these are suggested configurations only. Verify all the actual site temperature extremes and conditions will yield voltages and power levels within the specifications of the inverter and other components used in the system.

See bottom of chart for weblink to temperature data in your area. The Vmp and Vmpc values given in the tables use module manufacturers' ratings. Cell temp rise above ambient do not include effects of roofs or voltage drop through your wiring. Note that the inverter's maximum continuous AC power is limited to its 13.2 kW AC or 15.0 kW AC output rating. Also, refer to the inverter AC output power versus input voltage and current in the Technical Data section of the Installation and Operation Manual located <http://www.solren.com/customer-service/manuals.html>

CEC, PTC AC system power ratings are based on PV module PTC power rating and PTC efficiencies of the PVI 13KW and PVI 15KW inverters. PTC ratings are based on the 480VAC versions (208VAC versions are 0.5% lower).
 Datasheets: <http://www.solren.com/products/pwreleccomp.html>

Last updated: 9/14/2009

Module Manufacturer	Aleo Solar							
Module Model	aleo S_18 230							
Voltage @ MPT (STC)	29.1 VDC							
Current @ MPT (STC)	7.9 ADC							
Current, short circuit	8.44 ADC							
OCV @ 25 deg C cells	36.6 VDC							

For Vmpc @ max amb temp and OCV @ coldest temperature: green is OK, red is not OK
 orange is acceptable but should be avoided where possible (inverter will hold at 225VDC),
 purple is OK but indicates inverter will limit to 15 kW AC continuous output
 pink is acceptable but should be avoided where possible (inverter will not run above 450VDC)

Power @ MPT	230.0 W							
PTC Power Rating	204.6 W							
Temp Coeff of Vmpc	0.124 V/degC	(Vmpc)						
Temp Coeff of Vocv	0.124 V/degC	(Vocv)						
NOCT (nom. cell temp)	48 deg C							118.4 deg F

Modules total in array	50	60	70	80	55	66	77	88
Modules per string	10	10	10	10	11	11	11	11
Strings in Parallel	5	6	7	8	5	6	7	8
Voltage @ MPT (STC)	291.0	291.0	291.0	291.0	320.1	320.1	320.1	320.1

Vmpc @ max amb temp (30C, 86F amb)	250.1	250.1	250.1	250.1	275.1	275.1	275.1	275.1
Vmpc @ max amb temp (35C, 95F amb)	243.9	243.9	243.9	243.9	268.3	268.3	268.3	268.3
Vmpc @ max amb temp (40C, 104F amb)	237.7	237.7	237.7	237.7	261.4	261.4	261.4	261.4
Vmpc @ max amb temp (45C, 113F amb)	231.5	231.5	231.5	231.5	254.6	254.6	254.6	254.6
Vmpc @ max amb temp (50C, 122F amb)	225.3	225.3	225.3	225.3	247.8	247.8	247.8	247.8

OCV @ 25 deg C cells	366.0	366.0	366.0	366.0	402.6	402.6	402.6	402.6
OCV @ coldest temp (-40C, -40F amb)	446.6	446.6	446.6	446.6	491.3	491.3	491.3	491.3
OCV @ coldest temp (-30C, -22F amb)	434.2	434.2	434.2	434.2	477.6	477.6	477.6	477.6
OCV @ coldest temp (-20C, -4F amb)	421.8	421.8	421.8	421.8	464.0	464.0	464.0	464.0
OCV @ coldest temp (-10C, 14F amb)	409.4	409.4	409.4	409.4	450.3	450.3	450.3	450.3
OCV @ coldest temp (0C, 32F amb)	397.0	397.0	397.0	397.0	436.7	436.7	436.7	436.7

Power @ MPT (STC)	11500	13800	16100	18400	12650	15180	17710	20240
PTC AC system power rating	9667	11601	13534	15468	10634	12761	14888	17015
Suggested Inverter	PVI 13KW	PVI 13KW	PVI 15KW	PVI 15KW	PVI 13KW	PVI 15KW	PVI 15KW	PVI 15KW

Module Manufacturer	Aleo Solar							
Module Model	aleo S_18 225							
Voltage @ MPT (STC)	28.9 VDC							
Current @ MPT (STC)	7.78 ADC							
Current, short circuit	8.34 ADC							
OCV @ 25 deg C cells	36.4 VDC							

For Vmpc @ max amb temp and OCV @ coldest temperature: green is OK, red is not OK
 orange is acceptable but should be avoided where possible (inverter will hold at 225VDC),
 purple is OK but indicates inverter will limit to 15 kW AC continuous output
 pink is acceptable but should be avoided where possible (inverter will not run above 450VDC)

Power @ MPT	225.0 W							
PTC Power Rating	200.0 W							
Temp Coeff of Vmpc	0.124 V/degC	(Vmpc)						
Temp Coeff of Vocv	0.124 V/degC	(Vocv)						
NOCT (nom. cell temp)	48 deg C							118.4 deg F

Modules total in array	50	60	70	80	55	66	77	88
Modules per string	10	10	10	10	11	11	11	11
Strings in Parallel	5	6	7	8	5	6	7	8
Voltage @ MPT (STC)	289.0	289.0	289.0	289.0	317.9	317.9	317.9	317.9

Vmpc @ max amb temp (30C, 86F amb)	248.1	248.1	248.1	248.1	272.9	272.9	272.9	272.9
Vmpc @ max amb temp (35C, 95F amb)	241.9	241.9	241.9	241.9	266.1	266.1	266.1	266.1
Vmpc @ max amb temp (40C, 104F amb)	235.7	235.7	235.7	235.7	259.2	259.2	259.2	259.2
Vmpc @ max amb temp (45C, 113F amb)	229.5	229.5	229.5	229.5	252.4	252.4	252.4	252.4
Vmpc @ max amb temp (50C, 122F amb)	223.3	223.3	223.3	223.3	245.6	245.6	245.6	245.6

OCV @ 25 deg C cells	364.0	364.0	364.0	364.0	400.4	400.4	400.4	400.4
OCV @ coldest temp (-40C, -40F amb)	444.6	444.6	444.6	444.6	489.1	489.1	489.1	489.1
OCV @ coldest temp (-30C, -22F amb)	432.2	432.2	432.2	432.2	475.4	475.4	475.4	475.4
OCV @ coldest temp (-20C, -4F amb)	419.8	419.8	419.8	419.8	461.8	461.8	461.8	461.8
OCV @ coldest temp (-10C, 14F amb)	407.4	407.4	407.4	407.4	448.1	448.1	448.1	448.1
OCV @ coldest temp (0C, 32F amb)	395.0	395.0	395.0	395.0	434.5	434.5	434.5	434.5

Power @ MPT (STC)	11250	13500	15750	18000	12375	14850	17325	19800
PTC AC system power rating	9450	11340	13230	15120	10395	12474	14553	16632
Suggested Inverter	PVI 13KW	PVI 13KW	PVI 15KW	PVI 15KW	PVI 13KW	PVI 15KW	PVI 15KW	PVI 15KW

Module Manufacturer	Aleo Solar							
Module Model	aleo S_18 220							
Voltage @ MPT (STC)	28.7 VDC							
Current @ MPT (STC)	7.65 ADC							
Current, short circuit	8.24 ADC							
OCV @ 25 deg C cells	36.3 VDC							

For Vmpc @ max amb temp and OCV @ coldest temperature: green is OK, red is not OK
 orange is acceptable but should be avoided where possible (inverter will hold at 225VDC),
 purple is OK but indicates inverter will limit to 15 kW AC continuous output
 pink is acceptable but should be avoided where possible (inverter will not run above 450VDC)

Power @ MPT	220.0 W							
PTC Power Rating	195.5 W							
Temp Coeff of Vmpc	0.123 V/degC	(Vmpc)						
Temp Coeff of Vocv	0.123 V/degC	(Vocv)						
NOCT (nom. cell temp)	48 deg C							118.4 deg F

Modules total in array	60	70	80	90	55	66	77	88
Modules per string	10	10	10	10	11	11	11	11
Strings in Parallel	6	7	8	9	5	6	7	8
Voltage @ MPT (STC)	287.0	287.0	287.0	287.0	315.7	315.7	315.7	315.7

Vmpc @ max amb temp (30C, 86F amb)	246.4	246.4	246.4	246.4	271.1	271.1	271.1	271.1
Vmpc @ max amb temp (35C, 95F amb)	240.3	240.3	240.3	240.3	264.3	264.3	264.3	264.3
Vmpc @ max amb temp (40C, 104F amb)	234.1	234.1	234.1	234.1	257.5	257.5	257.5	257.5
Vmpc @ max amb temp (45C, 113F amb)	228.0	228.0	228.0	228.0	250.8	250.8	250.8	250.8
Vmpc @ max amb temp (50C, 122F amb)	221.8	221.8	221.8	221.8	244.0	244.0	244.0	244.0

OCV @ 25 deg C cells	363.0	363.0	363.0	363.0	399.3	399.3	399.3	399.3
OCV @ coldest temp (-40C, -40F amb)	443.0	443.0	443.0	443.0	487.2	487.2	487.2	487.2
OCV @ coldest temp (-30C, -22F amb)	430.7	430.7	430.7	430.7	473.7	473.7	473.7	473.7
OCV @ coldest temp (-20C, -4F amb)	418.4	418.4	418.4	418.4	460.2	460.2	460.2	460.2
OCV @ coldest temp (-10C, 14F amb)	406.1	406.1	406.1	406.1	446.7	446.7	446.7	446.7
OCV @ coldest temp (0C, 32F amb)	393.8	393.8	393.8	393.8	433.1	433.1	433.1	433.1

Power @ MPT (STC)	13200	15400	17600	19800	12100	14520	16940	19360
PTC AC system power rating	11085	12932	14780	16627	10161	12193	14226	16258
Suggested Inverter	PVI 13KW	PVI 13KW	PVI 15KW	PVI 15KW	PVI 13KW	PVI 15KW	PVI 15KW	PVI 15KW

Module Manufacturer	Aleo Solar							
Module Model	aleo S_18 215							
Voltage @ MPT (STC)	28.6 VDC							
Current @ MPT (STC)	7.53 ADC							
Current, short circuit	8.13 ADC							
OCV @ 25 deg C cells	36.1 VDC							

For Vmpc @ max amb temp and OCV @ coldest temperature: green is OK, red is not OK
 orange is acceptable but should be avoided where possible (inverter will hold at 225VDC),
 purple is OK but indicates inverter will limit to 15 kW AC continuous output
 pink is acceptable but should be avoided where possible (inverter will not run above 450VDC)

Power @ MPT	215.0 W							
PTC Power Rating	190.9 W							
Temp Coeff of Vmpc	0.123 V/degC	(Vmpc)						
Temp Coeff of Vocv	0.123 V/degC	(Vocv)						
NOCT (nom. cell temp)	48 deg C							118.4 deg F

Modules total in array	60	70	80	90	55	66	77	88
Modules per string	10	10	10	10	11	11	11	11
Strings in Parallel	6	7	8	9	5	6	7	8
Voltage @ MPT (STC)	286.0	286.0	286.0	286.0	314.6	314.6	314.6	314.6

Vmpc @ max amb temp (30C, 86F amb)	245.4	245.4	245.4	245.4	270.0	270.0	270.0	270.0
Vmpc @ max amb temp (35C, 95F amb)	239.3	239.3	239.3	239.3	263.2	263.2	263.2	263.2
Vmpc @ max amb temp (40C, 104F amb)	233.1	233.1	233.1	233.1	256.4	256.4	256.4	256.4
Vmpc @ max amb temp (45C, 113F amb)	227.0	227.0	227.0	227.0	249.7	249.7	249.7	249.7
Vmpc @ max amb temp (50C, 122F amb)	220.8	220.8	220.8	220.8	242.9	242.9	242.9	242.9

OCV @ 25 deg C cells	361.0	361.0	361.0	361.0	397.1	397.1	397.1	397.1
OCV @ coldest temp (-40C, -40F amb)	441.0	441.0	441.0	441.0	485.0	485.0	485.0	485.0
OCV @ coldest temp (-30C, -22F amb)	428.7	428.7	428.7	428.7	471.5	471.5	471.5	471.5
OCV @ coldest temp (-20C, -4F amb)	416.4	416.4	416.4	416.4	458.0	458.0	458.0	458.0
OCV @ coldest temp (-10C, 14F amb)	404.1	404.1	404.1	404.1	444.5	444.5	444.5	444.5
OCV @ coldest temp (0C, 32F amb)	391.8	391.8	391.8	391.8	430.9	430.9	430.9	430.9

Power @ MPT (STC)	12900	15050
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