PV Grid Connected System DESIGN

with MPPT regulation

Version 1.2

based on the BCSE GC DESIGN GUIDELINES and the Australian Solar Radiation Data Handbook

Site Location … 3028, VIC

Measurement location … MELBOURNE Latitude … 37.8 ° South *NOTE :* True NORTH is … 11 ° WEST of Magnetic

PV MODULE … 180 Wp …… Number of modules per String … 11 No. of Strings … 1

Array Tilt 20 ° above horizontal *SELECT PV module construction* ⇨ MonoCrystalline

Array orientation 20 ° Azimuth : 0° = true North, 90° = East, 180° = South, 270° = West PV Man. Tolerance 0.97

PV Array … 1.86 kW de-rated for man tol. and soiling Soiling - Dirt factor 0.97

	Jan	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Annual*	
Solar Radiation …	6.66	6.27	5.04	3.80	2.72	2.23	2.48	3.13	4.07	5.20	5.97	6.44	4.5	kWh/day
Temperature	21.5	22.2	20.1	16.9	13.8	11.2	10.7	11.6	13.5	16.0	17.7	20.0	°C	
PV PERFORMANCE …	**11.20**	**10.51**	**8.54**	**6.54**	**4.76**	**3.95**	**4.40**	**5.52**	**7.12**	**8.99**	**10.23**	**10.91**	**7.77**	kWh/day

Adjustment for LOCAL Climate … — include shading of the array and local microclimate factors such as increased cloud cover (eg. seasonal fogs) at the site, etc.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
0.99	0.99	0.97	0.97	0.98	0.98	0.97	0.97	0.97	0.99	0.99	0.99	0.98

NOTE : Any adjustment must be based on verifiable data and/or reasonable assumptions.

SYSTEM EFFICIENCY ...

Cable loss - d.c.	2	%
Inverter efficiency	92	%
Cable loss - a.c.	0.1	%

MATCH ARRAY TO VOLTAGE WINDOW OF INVERTER …

Inverter voltage window	150	V min.	500	V max.	**MODULES per String …**
PV effective cell temp	0	°C min.	75	°C max.	11 MIN.
PV module V @ STC	23.7	V_{MPP}	30	V_{OC}	14 MAX.
PV voltage temp co-eff.	0.14	V / °C			

Estimated	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Annual*	
System output …	**10.1**	**9.5**	**7.7**	**5.9**	**4.3**	**3.6**	**4.0**	**5.0**	**6.4**	**8.1**	**9.2**	**9.8**	**7.0**	**kWh/day**