

15 -ാം കേരള നിയമസഭ

11 -ാം സമ്മേളനം

നക്ഷത്ര ചിഹ്നം ഇല്ലാത്ത ചോദ്യം നം. 6116

09-07-2024 - ൽ മറുപടിയ്ക്ക്

ഇടുക്കി ജില്ലയിലെ അനർട്ട് സ്ഥാപിച്ച സോളാർ പവർ പ്ലാന്റ്

ചോദ്യം		ഉത്തരം	
ശ്രീ. റോജി എം. ജോൺ		ശ്രീ. കെ. കൃഷ്ണൻകുട്ടി (വൈദ്യുതി വകുപ്പ് മന്ത്രി)	
(എ)	ഇടുക്കി ജില്ലയിലെ രാമക്കൽമേടിൽ അനർട്ട് സ്ഥാപിച്ച സോളാർ പവർ പ്ലാന്റിന് എത്ര രൂപ ആകെ ചെലവഴിച്ചുവെന്നും അതിന്റെ ശേഷി എത്ര മെഗാവാട്ട് ആണെന്നും ഇതിന്റെ നിർമ്മാണ പ്രവർത്തനം എന്നാണ് ആരംഭിച്ചതെന്നും എന്നാണ് പൂർത്തിയായതെന്നും നിലവിൽ ഈ സോളാർ പവർ പ്ലാന്റ് പൂർണ്ണതോതിൽ പ്രവർത്തിക്കുന്നുണ്ടോയെന്നും പ്രതിദിനം എത്ര യൂണിറ്റ് വൈദ്യുതി ലഭിക്കുന്നുണ്ടെന്നും അറിയിക്കാമോ;	(എ)	ഒരു മെഗാവാട്ട് ശേഷിയുള്ള സോളാർ പവർ പ്ലാന്റിനു വേണ്ടി 11.13 കോടി രൂപ (പവർ കണ്ടിഷനിംഗ് യൂണിറ്റിന്റെ തദ്ദേശീയമായ ഗവേഷണ വികസന പ്രവർത്തനം, അനുബന്ധ പഠനങ്ങൾ ഉൾപ്പെടെ) ചെലവഴിച്ചു. 2018 മെയ് മാസം നിർമ്മാണ പ്രവർത്തനം ആരംഭിച്ച് 2022 ജൂൺ മാസത്തിൽ പൂർത്തിയായി. നിലവിൽ പരീക്ഷണാടി സ്ഥാനത്തിൽ പ്രവർത്തിക്കാനുള്ള അനുമതിയാണ് കെ.എസ്.ഇ.ബി.എൽ. - ൽ നിന്ന് ലഭിച്ചിട്ടുള്ളത്. വാണിജ്യാടിസ്ഥാനത്തിൽ ഉല്പാദനം ആരംഭിച്ചിട്ടില്ല.
(ബി)	പ്രസ്തുത പ്ലാന്റിൽ നിന്ന് ഇതുവരെ എത്ര യൂണിറ്റ് വൈദ്യുതി ആകെ ഉല്പാദിപ്പിച്ചുവെന്നും വൈദ്യുതി നൽകിയ ഇനത്തിൽ കെ.എസ്.ഇ.ബി. യിൽ നിന്ന് എത്രതുക അനർട്ടിന് ഇതുവരെ ലഭിച്ചിട്ടുണ്ടെന്നും അറിയിക്കാമോ;	(ബി)	കെ.എസ്.ഇ.ബി. ലിമിറ്റഡുമായി പവർ പർച്ചേസ് കരാറായിട്ടില്ല. അതിന്റെ നടപടികൾ നടന്നുവരുന്നു. പരീക്ഷണാടിസ്ഥാനത്തിലുള്ള പ്രവർത്തനങ്ങൾക്കു ശേഷമായിരിക്കും പൂർണ്ണതോതിലുള്ള പ്രവർത്തനത്തിന് അനുമതി ലഭിക്കുക.
(സി)	അനർട്ടും കെ.എസ്.ഇ.ബി.യും തമ്മിലുള്ള പ്രസ്തുത പ്രവൃത്തിയുടെ കരാറിന്റെ പകർപ്പ് ലഭ്യമാക്കാമോ;	(സി)	കെ.എസ്.ഇ.ബി. ലിമിറ്റഡുമായി പവർ പർച്ചേസ് കരാറായിട്ടില്ല. അതിന്റെ നടപടികൾ നടന്നുവരുന്നു. പരീക്ഷണാടിസ്ഥാനത്തിലുള്ള പ്രവർത്തനങ്ങൾക്കു ശേഷമായിരിക്കും പൂർണ്ണതോതിലുള്ള പ്രവർത്തനത്തിന് അനുമതി ലഭിക്കുക.
(ഡി)	പ്രസ്തുത പ്ലാന്റിൽ സ്ഥാപിച്ചിട്ടുള്ള സോളാർ പാനലുകൾക്കും ഇൻവെർട്ടറുകൾക്കും വാറന്റിയോ ഗ്യാരണ്ടിയോ നിർമ്മാണ കമ്പനികൾ നൽകിയിട്ടുണ്ടോ; എങ്കിൽ എത്ര വർഷമാണ് നൽകിയിട്ടുള്ളത്; പ്രസ്തുത രേഖയുടെ പകർപ്പ് ലഭ്യമാക്കാമോ;	(ഡി)	ഉണ്ട്. മൊഡ്യൂളുകളുടെ 25 വർഷം പെർഫോമൻസ് വാറന്റിയുടെ രേഖകൾ അനുബന്ധമായി ചേർക്കുന്നു. ഇൻവെർട്ടർ, അനൈർട്ടിനു വേണ്ടി സിഡാക്കും കെൽടോണും ചേർന്ന് സ്വന്തമായി വികസിപ്പിച്ച സാങ്കേതിക വിദ്യ ഉപയോഗിച്ച് നിർമ്മിച്ചതായതിനാൽ സ്വന്തമായി തന്നെ പരിപാലിക്കാവുന്നതാണ്.
(ഇ)	നിലവിൽ ഈ പ്ലാന്റിന്റെ പരിപാലന ചുമതല ആരാണ് നിർവ്വഹിക്കുന്നതെന്ന് അറിയിക്കാമോ; ഇതിനായി കരാർ ഉണ്ടെങ്കിൽ അതിന്റെ പകർപ്പ് ലഭ്യമാക്കാമോ?	(ഇ)	ഈ പ്ലാന്റിന്റെ പരിപാലന ചുമതല അതിന്റെ ഗവേഷണ വികസന നിർമ്മാണ പ്രവർത്തനങ്ങളിൽ പങ്കാളികളായ സി-ഡാക്കിനേയും (പവർ കണ്ടിഷനിംഗ് യൂണിറ്റ്) കെൽടോണിനേയും

(പ്ലാന്റിന്റെ മറ്റെല്ലാ കാര്യങ്ങളും) കൂടിയാണ് ഏൽപ്പിച്ചിട്ടുള്ളത്. ഇവരുമായുള്ള കരാർ ഒപ്പു വയ്ക്കുന്നത് അന്തിമ ഘട്ടത്തിലാണ്. ഇതിന് മേൽനോട്ടം വഹിക്കാൻ ഒരു സീനിയർ ടെക്നിക്കൽ അസിസ്റ്റന്റിനെ നിയമിക്കാൻ തീരുമാനിച്ചിട്ടുണ്ട്.

സെക്ഷൻ ഓഫീസർ

**LIMITED WARRANTY CERTIFICATE FOR CRYSTALLINE SOLAR PHOTOVOLTAIC MODULE SUPPLIED BY
M/s SIRIUS SOLAR ENERGY SYSTEMS PVT.LTD.**

M/s Sirius Solar Energy Systems Pvt. Ltd. (hereafter is simplified as “SSES”) warrants to the Kerala State Electronics Development Corporation Ltd. (KELTRON) “Final Customer of Buyer” that this “SIRIUS” brand product as “Crystalline Solar PV module described below (from now called as “The Product”)

**1.Solar PV Module ,
Capacity-330Watt peak @STC
Quantity—1604nos,**

Manufactured by-SIRIUS SOLAR ENERGY SYSTEMS PVT.LTD..

Our Invoice Numbers and Module Serial Numbers attached in Appendix A.

When shipped in its original packing, will be free from defective workmanship and materials under normal application, installation, use and service conditions, and agrees that it will, at its option, either repair the defect or replace the defective Product or part thereof with a new or remanufactured equivalent at no charge to the purchaser for parts or labor for the period(s) set forth below.

This warranty does not apply to any appearance items of the Product nor to the additional excluded item(s) set forth below nor to any Product the exterior of which has been damaged or defaced, which has been subjected to misuse, abuse, abnormal service, or handling, or which has been altered or modified in design or construction. In order to enforce the rights under this limited warranty, the purchaser should follow the steps set forth below and provide proof of purchase to SSES.

The limited warranty described herein is in addition to whatever implied warranties may be granted to purchasers bylaw. All implied warranties including the warranties of merchantability and fitness for use are limited to the period(s) from the date of delivery set forth below. Neither the sales personnel of SSES nor any other person is authorized to make any warranties other than those described herein, or to extend the duration of any warranties beyond the time period described below on behalf of SSES.

The warranties described herein shall be sole and exclusive warranties granted by SSES and shall be the sole and exclusive remedy available to the purchaser. Correction of defects, in the manner and for the period of time described herein, shall constitute complete fulfillment of all liabilities and responsibilities of SSES to the purchaser with respect to the Product and shall constitute full satisfaction of all claims, whether based on contract, negligence, and strict liability otherwise.

In no event shall SSES be liable, or in any way responsible, for any damages or defects in the Product which were caused by repairs or attempted repairs performed by anyone other than SSES or authorized service providers. Nor shall SSES be liable or in any way responsible for any incidental or consequential economic or property damage. SSES’s aggregate liability, if any, in damages or otherwise, shall not exceed the invoice value as paid by the purchaser, for the single unit of SPV MODULE.

Warranty period for this product: The warranty period for material defects and workmanship is 5 years from the date of delivery. The warranty period with respect to minimum power output continues for a total of 25 years from date of delivery, the first 10 years at 90% of the minimum power output as specified in SSES's Product Specification, provided that such loss in power is determined by SSES (at its sole and absolute discretion) to be due to defects in material or workmanship at "Standard Test Conditions" (STC) and the balance of 15 years at 80% of the minimum power output as specified in SSES's Product Specification, provided that such loss in power is determined by SSES (at its sole and absolute discretion) to be due to defects in material or workmanship at STC.

Additional Item(s) Excluded from Warranty Coverage: Warranty coverage does not apply when:

- a) The Product is improperly installed or abused or misused.
- b) The Product is installed in a mobile or marine environment, subjected to improper voltage or power surges or abnormal environmental conditions (such as acid rain or other pollution).
- c) The components in the construction based on which the module is mounted are defective
- d) External corrosion, mold discoloration or the like occurs
- e) Defects caused by the Product being subjected to any of the following: extreme thermal or environmental conditions or rapid changes in such conditions, corrosion, oxidation, unauthorized modifications or connections, unauthorized opening or repair, repair by use of unauthorized spare parts, accident, force of nature (such as lightning strike), influence from chemical product or other acts beyond SSES reasonable control (including but not limited to damage by fire, flood, etc.)
- f) Death or injury to persons resulting from any cause other than negligence of SSES, its employees or representatives, and
- g) Incidental, consequential or special damages such as loss of use, loss of profits, revenues, business, goodwill, damage to reputation or expensed payable to a third party.

Authorized Signatory

B. Sravanthi

Sirius Solar Energy Systems Pvt. Ltd



Appendix A

Invoice Numbers -

Invoice No.	Date	Qty (Nos)
SI21-22/214	13.10.2021	300
SI21-22/215	13.10.2021	300
SI21-22/225	14.10.2021	300
SI21-22/230	16.10.2021	300
SI21-22/232	17.10.2021	306
SI21-22/235	18.10.2021	98
Total		1604

Module Serial Numbers –

Sl.No.	Module SI No	Sl.No.	Module SI No	Sl.No.	Module SI No
1	SS103302400001	26	SS103302400029	51	SS103302400054
2	SS103302400002	27	SS103302400030	52	SS103302400055
3	SS103302400003	28	SS103302400031	53	SS103302400056
4	SS103302400004	29	SS103302400032	54	SS103302400057
5	SS103302400006	30	SS103302400033	55	SS103302400058
6	SS103302400008	31	SS103302400034	56	SS103302400059
7	SS103302400009	32	SS103302400035	57	SS103302400060
8	SS103302400010	33	SS103302400036	58	SS103302400061
9	SS103302400011	34	SS103302400037	59	SS103302400062
10	SS103302400013	35	SS103302400038	60	SS103302400063
11	SS103302400014	36	SS103302400039	61	SS103302400064
12	SS103302400015	37	SS103302400040	62	SS103302400065
13	SS103302400016	38	SS103302400041	63	SS103302400066
14	SS103302400017	39	SS103302400042	64	SS103302400067
15	SS103302400018	40	SS103302400043	65	SS103302400068
16	SS103302400019	41	SS103302400044	66	SS103302400069
17	SS103302400020	42	SS103302400045	67	SS103302400070
18	SS103302400021	43	SS103302400046	68	SS103302400071
19	SS103302400022	44	SS103302400047	69	SS103302400072
20	SS103302400023	45	SS103302400048	70	SS103302400073
21	SS103302400024	46	SS103302400049	71	SS103302400074
22	SS103302400025	47	SS103302400050	72	SS103302400075
23	SS103302400026	48	SS103302400051	73	SS103302400076
24	SS103302400027	49	SS103302400052	74	SS103302400077
25	SS103302400028	50	SS103302400053	75	SS103302400078

Sl.No.	Module Sl No	Sl.No.	Module Sl No	Sl.No.	Module Sl No
76	SS103302400079	121	SS103302400124	166	SS103302400169
77	SS103302400080	122	SS103302400125	167	SS103302400170
78	SS103302400081	123	SS103302400126	168	SS103302400171
79	SS103302400082	124	SS103302400127	169	SS103302400172
80	SS103302400083	125	SS103302400128	170	SS103302400173
81	SS103302400084	126	SS103302400129	171	SS103302400174
82	SS103302400085	127	SS103302400130	172	SS103302400175
83	SS103302400086	128	SS103302400131	173	SS103302400176
84	SS103302400087	129	SS103302400132	174	SS103302400177
85	SS103302400088	130	SS103302400133	175	SS103302400178
86	SS103302400089	131	SS103302400134	176	SS103302400179
87	SS103302400090	132	SS103302400135	177	SS103302400180
88	SS103302400091	133	SS103302400136	178	SS103302400181
89	SS103302400092	134	SS103302400137	179	SS103302400182
90	SS103302400093	135	SS103302400138	180	SS103302400183
91	SS103302400094	136	SS103302400139	181	SS103302400184
92	SS103302400095	137	SS103302400140	182	SS103302400185
93	SS103302400096	138	SS103302400141	183	SS103302400186
94	SS103302400097	139	SS103302400142	184	SS103302400187
95	SS103302400098	140	SS103302400143	185	SS103302400188
96	SS103302400099	141	SS103302400144	186	SS103302400189
97	SS103302400100	142	SS103302400145	187	SS103302400190
98	SS103302400101	143	SS103302400146	188	SS103302400191
99	SS103302400102	144	SS103302400147	189	SS103302400192
100	SS103302400103	145	SS103302400148	190	SS103302400193
101	SS103302400104	146	SS103302400149	191	SS103302400194
102	SS103302400105	147	SS103302400150	192	SS103302400195
103	SS103302400106	148	SS103302400151	193	SS103302400196
104	SS103302400107	149	SS103302400152	194	SS103302400197
105	SS103302400108	150	SS103302400153	195	SS103302400198
106	SS103302400109	151	SS103302400154	196	SS103302400199
107	SS103302400110	152	SS103302400155	197	SS103302400200
108	SS103302400111	153	SS103302400156	198	SS103302400201
109	SS103302400112	154	SS103302400157	199	SS103302400202
110	SS103302400113	155	SS103302400158	200	SS103302400203
111	SS103302400114	156	SS103302400159	201	SS103302400204
112	SS103302400115	157	SS103302400160	202	SS103302400205
113	SS103302400116	158	SS103302400161	203	SS103302400206
114	SS103302400117	159	SS103302400162	204	SS103302400207
115	SS103302400118	160	SS103302400163	205	SS103302400208
116	SS103302400119	161	SS103302400164	206	SS103302400209
117	SS103302400120	162	SS103302400165	207	SS103302400210
118	SS103302400121	163	SS103302400166	208	SS103302400211
119	SS103302400122	164	SS103302400167	209	SS103302400212
120	SS103302400123	165	SS103302400168	210	SS103302400213

Sl.No.	Module Sl No	Sl.No.	Module Sl No	Sl.No.	Module Sl No
211	SS103302400214	256	SS103302400260	301	SS103302400305
212	SS103302400215	257	SS103302400261	302	SS103302400306
213	SS103302400216	258	SS103302400262	303	SS103302400307
214	SS103302400217	259	SS103302400263	304	SS103302400308
215	SS103302400218	260	SS103302400264	305	SS103302400309
216	SS103302400219	261	SS103302400265	306	SS103302400310
217	SS103302400220	262	SS103302400266	307	SS103302400311
218	SS103302400221	263	SS103302400267	308	SS103302400312
219	SS103302400222	264	SS103302400268	309	SS103302400313
220	SS103302400223	265	SS103302400269	310	SS103302400314
221	SS103302400224	266	SS103302400270	311	SS103302400315
222	SS103302400225	267	SS103302400271	312	SS103302400316
223	SS103302400226	268	SS103302400272	313	SS103302400317
224	SS103302400227	269	SS103302400273	314	SS103302400318
225	SS103302400228	270	SS103302400274	315	SS103302400319
226	SS103302400229	271	SS103302400275	316	SS103302400320
227	SS103302400230	272	SS103302400276	317	SS103302400321
228	SS103302400231	273	SS103302400277	318	SS103302400322
229	SS103302400232	274	SS103302400278	319	SS103302400323
230	SS103302400233	275	SS103302400279	320	SS103302400324
231	SS103302400234	276	SS103302400280	321	SS103302400325
232	SS103302400235	277	SS103302400281	322	SS103302400326
233	SS103302400236	278	SS103302400282	323	SS103302400327
234	SS103302400237	279	SS103302400283	324	SS103302400328
235	SS103302400238	280	SS103302400284	325	SS103302400329
236	SS103302400239	281	SS103302400285	326	SS103302400331
237	SS103302400240	282	SS103302400286	327	SS103302400332
238	SS103302400241	283	SS103302400287	328	SS103302400333
239	SS103302400242	284	SS103302400288	329	SS103302400334
240	SS103302400243	285	SS103302400289	330	SS103302400335
241	SS103302400244	286	SS103302400290	331	SS103302400336
242	SS103302400245	287	SS103302400291	332	SS103302400337
243	SS103302400246	288	SS103302400292	333	SS103302400338
244	SS103302400247	289	SS103302400293	334	SS103302400339
245	SS103302400248	290	SS103302400294	335	SS103302400340
246	SS103302400249	291	SS103302400295	336	SS103302400341
247	SS103302400250	292	SS103302400296	337	SS103302400342
248	SS103302400251	293	SS103302400297	338	SS103302400343
249	SS103302400252	294	SS103302400298	339	SS103302400344
250	SS103302400253	295	SS103302400299	340	SS103302400345
251	SS103302400254	296	SS103302400300	341	SS103302400346
252	SS103302400255	297	SS103302400301	342	SS103302400347
253	SS103302400256	298	SS103302400302	343	SS103302400348
254	SS103302400258	299	SS103302400303	344	SS103302400349
255	SS103302400259	300	SS103302400304	345	SS103302400350

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348	SS103302400353	393	SS103302400400	438	SS103302400445
349	SS103302400354	394	SS103302400401	439	SS103302400446
350	SS103302400355	395	SS103302400402	440	SS103302400447
351	SS103302400356	396	SS103302400403	441	SS103302400448
352	SS103302400357	397	SS103302400404	442	SS103302400449
353	SS103302400358	398	SS103302400405	443	SS103302400450
354	SS103302400359	399	SS103302400406	444	SS103302400451
355	SS103302400360	400	SS103302400407	445	SS103302400452
356	SS103302400361	401	SS103302400408	446	SS103302400453
357	SS103302400362	402	SS103302400409	447	SS103302400455
358	SS103302400363	403	SS103302400410	448	SS103302400456
359	SS103302400364	404	SS103302400411	449	SS103302400457
360	SS103302400365	405	SS103302400412	450	SS103302400459
361	SS103302400366	406	SS103302400413	451	SS103302400460
362	SS103302400367	407	SS103302400414	452	SS103302400461
363	SS103302400368	408	SS103302400415	453	SS103302400462
364	SS103302400369	409	SS103302400416	454	SS103302400463
365	SS103302400370	410	SS103302400417	455	SS103302400464
366	SS103302400371	411	SS103302400418	456	SS103302400465
367	SS103302400372	412	SS103302400419	457	SS103302400466
368	SS103302400373	413	SS103302400420	458	SS103302400467
369	SS103302400374	414	SS103302400421	459	SS103302400468
370	SS103302400375	415	SS103302400422	460	SS103302400469
371	SS103302400376	416	SS103302400423	461	SS103302400470
372	SS103302400377	417	SS103302400424	462	SS103302400471
373	SS103302400378	418	SS103302400425	463	SS103302400472
374	SS103302400379	419	SS103302400426	464	SS103302400473
375	SS103302400380	420	SS103302400427	465	SS103302400474
376	SS103302400381	421	SS103302400428	466	SS103302400475
377	SS103302400382	422	SS103302400429	467	SS103302400476
378	SS103302400383	423	SS103302400430	468	SS103302400477
379	SS103302400384	424	SS103302400431	469	SS103302400478
380	SS103302400385	425	SS103302400432	470	SS103302400479
381	SS103302400386	426	SS103302400433	471	SS103302400480
382	SS103302400387	427	SS103302400434	472	SS103302400481
383	SS103302400389	428	SS103302400435	473	SS103302400482
384	SS103302400390	429	SS103302400436	474	SS103302400483
385	SS103302400392	430	SS103302400437	475	SS103302400484
386	SS103302400393	431	SS103302400438	476	SS103302400485
387	SS103302400394	432	SS103302400439	477	SS103302400486
388	SS103302400395	433	SS103302400440	478	SS103302400487
389	SS103302400396	434	SS103302400441	479	SS103302400488
390	SS103302400397	435	SS103302400442	480	SS103302400489

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481	SS103302400490	526	SS103302400536	571	SS103302400581
482	SS103302400491	527	SS103302400537	572	SS103302400582
483	SS103302400492	528	SS103302400538	573	SS103302400583
484	SS103302400493	529	SS103302400539	574	SS103302400584
485	SS103302400494	530	SS103302400540	575	SS103302400585
486	SS103302400495	531	SS103302400541	576	SS103302400586
487	SS103302400496	532	SS103302400542	577	SS103302400587
488	SS103302400497	533	SS103302400543	578	SS103302400588
489	SS103302400498	534	SS103302400544	579	SS103302400589
490	SS103302400499	535	SS103302400545	580	SS103302400590
491	SS103302400500	536	SS103302400546	581	SS103302400591
492	SS103302400501	537	SS103302400547	582	SS103302400592
493	SS103302400502	538	SS103302400548	583	SS103302400593
494	SS103302400503	539	SS103302400549	584	SS103302400594
495	SS103302400504	540	SS103302400550	585	SS103302400595
496	SS103302400505	541	SS103302400551	586	SS103302400596
497	SS103302400507	542	SS103302400552	587	SS103302400597
498	SS103302400508	543	SS103302400553	588	SS103302400598
499	SS103302400509	544	SS103302400554	589	SS103302400600
500	SS103302400510	545	SS103302400555	590	SS103302400601
501	SS103302400511	546	SS103302400556	591	SS103302400602
502	SS103302400512	547	SS103302400557	592	SS103302400603
503	SS103302400513	548	SS103302400558	593	SS103302400604
504	SS103302400514	549	SS103302400559	594	SS103302400605
505	SS103302400515	550	SS103302400560	595	SS103302400606
506	SS103302400516	551	SS103302400561	596	SS103302400607
507	SS103302400517	552	SS103302400562	597	SS103302400608
508	SS103302400518	553	SS103302400563	598	SS103302400609
509	SS103302400519	554	SS103302400564	599	SS103302400610
510	SS103302400520	555	SS103302400565	600	SS103302400611
511	SS103302400521	556	SS103302400566	601	SS103302400612
512	SS103302400522	557	SS103302400567	602	SS103302400613
513	SS103302400523	558	SS103302400568	603	SS103302400614
514	SS103302400524	559	SS103302400569	604	SS103302400615
515	SS103302400525	560	SS103302400570	605	SS103302400616
516	SS103302400526	561	SS103302400571	606	SS103302400617
517	SS103302400527	562	SS103302400572	607	SS103302400618
518	SS103302400528	563	SS103302400573	608	SS103302400619
519	SS103302400529	564	SS103302400574	609	SS103302400620
520	SS103302400530	565	SS103302400575	610	SS103302400621
521	SS103302400531	566	SS103302400576	611	SS103302400622
522	SS103302400532	567	SS103302400577	612	SS103302400623
523	SS103302400533	568	SS103302400578	613	SS103302400624
524	SS103302400534	569	SS103302400579	614	SS103302400625
525	SS103302400535	570	SS103302400580	615	SS103302400626

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616	SS103302400627	661	SS103302400672	706	SS103302400718
617	SS103302400628	662	SS103302400673	707	SS103302400719
618	SS103302400629	663	SS103302400674	708	SS103302400720
619	SS103302400630	664	SS103302400675	709	SS103302400721
620	SS103302400631	665	SS103302400676	710	SS103302400722
621	SS103302400632	666	SS103302400677	711	SS103302400724
622	SS103302400633	667	SS103302400678	712	SS103302400725
623	SS103302400634	668	SS103302400679	713	SS103302400726
624	SS103302400635	669	SS103302400680	714	SS103302400727
625	SS103302400636	670	SS103302400681	715	SS103302400728
626	SS103302400637	671	SS103302400682	716	SS103302400729
627	SS103302400638	672	SS103302400684	717	SS103302400730
628	SS103302400639	673	SS103302400685	718	SS103302400731
629	SS103302400640	674	SS103302400686	719	SS103302400732
630	SS103302400641	675	SS103302400687	720	SS103302400733
631	SS103302400642	676	SS103302400688	721	SS103302400734
632	SS103302400643	677	SS103302400689	722	SS103302400735
633	SS103302400644	678	SS103302400690	723	SS103302400736
634	SS103302400645	679	SS103302400691	724	SS103302400737
635	SS103302400646	680	SS103302400692	725	SS103302400738
636	SS103302400647	681	SS103302400693	726	SS103302400739
637	SS103302400648	682	SS103302400694	727	SS103302400740
638	SS103302400649	683	SS103302400695	728	SS103302400741
639	SS103302400650	684	SS103302400696	729	SS103302400742
640	SS103302400651	685	SS103302400697	730	SS103302400743
641	SS103302400652	686	SS103302400698	731	SS103302400744
642	SS103302400653	687	SS103302400699	732	SS103302400745
643	SS103302400654	688	SS103302400700	733	SS103302400746
644	SS103302400655	689	SS103302400701	734	SS103302400747
645	SS103302400656	690	SS103302400702	735	SS103302400748
646	SS103302400657	691	SS103302400703	736	SS103302400749
647	SS103302400658	692	SS103302400704	737	SS103302400750
648	SS103302400659	693	SS103302400705	738	SS103302400751
649	SS103302400660	694	SS103302400706	739	SS103302400752
650	SS103302400661	695	SS103302400707	740	SS103302400753
651	SS103302400662	696	SS103302400708	741	SS103302400754
652	SS103302400663	697	SS103302400709	742	SS103302400755
653	SS103302400664	698	SS103302400710	743	SS103302400756
654	SS103302400665	699	SS103302400711	744	SS103302400757
655	SS103302400666	700	SS103302400712	745	SS103302400758
656	SS103302400667	701	SS103302400713	746	SS103302400759
657	SS103302400668	702	SS103302400714	747	SS103302400760
658	SS103302400669	703	SS103302400715	748	SS103302400761
659	SS103302400670	704	SS103302400716	749	SS103302400762
660	SS103302400671	705	SS103302400717	750	SS103302400763

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751	SS103302400764	796	SS103302400809	841	SS103302400854
752	SS103302400765	797	SS103302400810	842	SS103302400855
753	SS103302400766	798	SS103302400811	843	SS103302400856
754	SS103302400767	799	SS103302400812	844	SS103302400857
755	SS103302400768	800	SS103302400813	845	SS103302400858
756	SS103302400769	801	SS103302400814	846	SS103302400859
757	SS103302400770	802	SS103302400815	847	SS103302400860
758	SS103302400771	803	SS103302400816	848	SS103302400861
759	SS103302400772	804	SS103302400817	849	SS103302400862
760	SS103302400773	805	SS103302400818	850	SS103302400863
761	SS103302400774	806	SS103302400819	851	SS103302400864
762	SS103302400775	807	SS103302400820	852	SS103302400865
763	SS103302400776	808	SS103302400821	853	SS103302400866
764	SS103302400777	809	SS103302400822	854	SS103302400867
765	SS103302400778	810	SS103302400823	855	SS103302400868
766	SS103302400779	811	SS103302400824	856	SS103302400869
767	SS103302400780	812	SS103302400825	857	SS103302400870
768	SS103302400781	813	SS103302400826	858	SS103302400871
769	SS103302400782	814	SS103302400827	859	SS103302400872
770	SS103302400783	815	SS103302400828	860	SS103302400873
771	SS103302400784	816	SS103302400829	861	SS103302400874
772	SS103302400785	817	SS103302400830	862	SS103302400875
773	SS103302400786	818	SS103302400831	863	SS103302400876
774	SS103302400787	819	SS103302400832	864	SS103302400877
775	SS103302400788	820	SS103302400833	865	SS103302400878
776	SS103302400789	821	SS103302400834	866	SS103302400879
777	SS103302400790	822	SS103302400835	867	SS103302400880
778	SS103302400791	823	SS103302400836	868	SS103302400881
779	SS103302400792	824	SS103302400837	869	SS103302400882
780	SS103302400793	825	SS103302400838	870	SS103302400883
781	SS103302400794	826	SS103302400839	871	SS103302400884
782	SS103302400795	827	SS103302400840	872	SS103302400885
783	SS103302400796	828	SS103302400841	873	SS103302400886
784	SS103302400797	829	SS103302400842	874	SS103302400887
785	SS103302400798	830	SS103302400843	875	SS103302400888
786	SS103302400799	831	SS103302400844	876	SS103302400890
787	SS103302400800	832	SS103302400845	877	SS103302400891
788	SS103302400801	833	SS103302400846	878	SS103302400892
789	SS103302400802	834	SS103302400847	879	SS103302400893
790	SS103302400803	835	SS103302400848	880	SS103302400894
791	SS103302400804	836	SS103302400849	881	SS103302400895
792	SS103302400805	837	SS103302400850	882	SS103302400896
793	SS103302400806	838	SS103302400851	883	SS103302400898
794	SS103302400807	839	SS103302400852	884	SS103302400899
795	SS103302400808	840	SS103302400853	885	SS103302400900

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887	SS103302400902	932	SS103302400948	977	SS103302400994
888	SS103302400903	933	SS103302400949	978	SS103302400995
889	SS103302400904	934	SS103302400950	979	SS103302400996
890	SS103302400906	935	SS103302400951	980	SS103302400997
891	SS103302400907	936	SS103302400952	981	SS103302400998
892	SS103302400908	937	SS103302400953	982	SS103302400999
893	SS103302400909	938	SS103302400954	983	SS103302401000
894	SS103302400910	939	SS103302400955	984	SS103302401001
895	SS103302400911	940	SS103302400956	985	SS103302401002
896	SS103302400912	941	SS103302400957	986	SS103302401003
897	SS103302400913	942	SS103302400958	987	SS103302401004
898	SS103302400914	943	SS103302400959	988	SS103302401005
899	SS103302400915	944	SS103302400960	989	SS103302401006
900	SS103302400916	945	SS103302400961	990	SS103302401007
901	SS103302400917	946	SS103302400962	991	SS103302401008
902	SS103302400918	947	SS103302400963	992	SS103302401009
903	SS103302400919	948	SS103302400964	993	SS103302401010
904	SS103302400920	949	SS103302400965	994	SS103302401011
905	SS103302400921	950	SS103302400966	995	SS103302401012
906	SS103302400922	951	SS103302400967	996	SS103302401013
907	SS103302400923	952	SS103302400968	997	SS103302401014
908	SS103302400924	953	SS103302400969	998	SS103302401015
909	SS103302400925	954	SS103302400970	999	SS103302401016
910	SS103302400926	955	SS103302400971	1000	SS103302401017
911	SS103302400927	956	SS103302400972	1001	SS103302401018
912	SS103302400928	957	SS103302400973	1002	SS103302401019
913	SS103302400929	958	SS103302400974	1003	SS103302401020
914	SS103302400930	959	SS103302400975	1004	SS103302401021
915	SS103302400931	960	SS103302400976	1005	SS103302401022
916	SS103302400932	961	SS103302400977	1006	SS103302401023
917	SS103302400933	962	SS103302400979	1007	SS103302401024
918	SS103302400934	963	SS103302400980	1008	SS103302401025
919	SS103302400935	964	SS103302400981	1009	SS103302401026
920	SS103302400936	965	SS103302400982	1010	SS103302401027
921	SS103302400937	966	SS103302400983	1011	SS103302401028
922	SS103302400938	967	SS103302400984	1012	SS103302401029
923	SS103302400939	968	SS103302400985	1013	SS103302401030
924	SS103302400940	969	SS103302400986	1014	SS103302401031
925	SS103302400941	970	SS103302400987	1015	SS103302401032
926	SS103302400942	971	SS103302400988	1016	SS103302401033
927	SS103302400943	972	SS103302400989	1017	SS103302401034
928	SS103302400944	973	SS103302400990	1018	SS103302401035
929	SS103302400945	974	SS103302400991	1019	SS103302401036
930	SS103302400946	975	SS103302400992	1020	SS103302401037

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1022	SS103302401039	1067	SS103302401088	1112	SS103302401133
1023	SS103302401040	1068	SS103302401089	1113	SS103302401134
1024	SS103302401041	1069	SS103302401090	1114	SS103302401135
1025	SS103302401042	1070	SS103302401091	1115	SS103302401136
1026	SS103302401044	1071	SS103302401092	1116	SS103302401137
1027	SS103302401045	1072	SS103302401093	1117	SS103302401138
1028	SS103302401046	1073	SS103302401094	1118	SS103302401139
1029	SS103302401047	1074	SS103302401095	1119	SS103302401140
1030	SS103302401048	1075	SS103302401096	1120	SS103302401141
1031	SS103302401049	1076	SS103302401097	1121	SS103302401142
1032	SS103302401050	1077	SS103302401098	1122	SS103302401143
1033	SS103302401051	1078	SS103302401099	1123	SS103302401144
1034	SS103302401052	1079	SS103302401100	1124	SS103302401145
1035	SS103302401053	1080	SS103302401101	1125	SS103302401146
1036	SS103302401054	1081	SS103302401102	1126	SS103302401147
1037	SS103302401055	1082	SS103302401103	1127	SS103302401148
1038	SS103302401057	1083	SS103302401104	1128	SS103302401149
1039	SS103302401058	1084	SS103302401105	1129	SS103302401150
1040	SS103302401059	1085	SS103302401106	1130	SS103302401151
1041	SS103302401060	1086	SS103302401107	1131	SS103302401152
1042	SS103302401061	1087	SS103302401108	1132	SS103302401153
1043	SS103302401062	1088	SS103302401109	1133	SS103302401154
1044	SS103302401063	1089	SS103302401110	1134	SS103302401155
1045	SS103302401064	1090	SS103302401111	1135	SS103302401156
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1059	SS103302401078	1104	SS103302401125	1149	SS103302401170
1060	SS103302401079	1105	SS103302401126	1150	SS103302401171
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1062	SS103302401082	1107	SS103302401128	1152	SS103302401173
1063	SS103302401083	1108	SS103302401129	1153	SS103302401174
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1156	SS103302401177	1201	SS103302401223	1246	SS103302401268
1157	SS103302401178	1202	SS103302401224	1247	SS103302401269
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1159	SS103302401180	1204	SS103302401226	1249	SS103302401271
1160	SS103302401181	1205	SS103302401227	1250	SS103302401272
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1162	SS103302401183	1207	SS103302401229	1252	SS103302401274
1163	SS103302401184	1208	SS103302401230	1253	SS103302401275
1164	SS103302401185	1209	SS103302401231	1254	SS103302401276
1165	SS103302401186	1210	SS103302401232	1255	SS103302401277
1166	SS103302401187	1211	SS103302401233	1256	SS103302401278
1167	SS103302401188	1212	SS103302401234	1257	SS103302401279
1168	SS103302401189	1213	SS103302401235	1258	SS103302401280
1169	SS103302401190	1214	SS103302401236	1259	SS103302401281
1170	SS103302401191	1215	SS103302401237	1260	SS103302401282
1171	SS103302401192	1216	SS103302401238	1261	SS103302401283
1172	SS103302401193	1217	SS103302401239	1262	SS103302401284
1173	SS103302401194	1218	SS103302401240	1263	SS103302401285
1174	SS103302401195	1219	SS103302401241	1264	SS103302401286
1175	SS103302401197	1220	SS103302401242	1265	SS103302401287
1176	SS103302401198	1221	SS103302401243	1266	SS103302401288
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1179	SS103302401201	1224	SS103302401246	1269	SS103302401291
1180	SS103302401202	1225	SS103302401247	1270	SS103302401292
1181	SS103302401203	1226	SS103302401248	1271	SS103302401293
1182	SS103302401204	1227	SS103302401249	1272	SS103302401294
1183	SS103302401205	1228	SS103302401250	1273	SS103302401295
1184	SS103302401206	1229	SS103302401251	1274	SS103302401296
1185	SS103302401207	1230	SS103302401252	1275	SS103302401297
1186	SS103302401208	1231	SS103302401253	1276	SS103302401298
1187	SS103302401209	1232	SS103302401254	1277	SS103302401299
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1189	SS103302401211	1234	SS103302401256	1279	SS103302401301
1190	SS103302401212	1235	SS103302401257	1280	SS103302401302
1191	SS103302401213	1236	SS103302401258	1281	SS103302401303
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1193	SS103302401215	1238	SS103302401260	1283	SS103302401305
1194	SS103302401216	1239	SS103302401261	1284	SS103302401306
1195	SS103302401217	1240	SS103302401262	1285	SS103302401307
1196	SS103302401218	1241	SS103302401263	1286	SS103302401308
1197	SS103302401219	1242	SS103302401264	1287	SS103302401309
1198	SS103302401220	1243	SS103302401265	1288	SS103302401310
1199	SS103302401221	1244	SS103302401266	1289	SS103302401311
1200	SS103302401222	1245	SS103302401267	1290	SS103302401312

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1292	SS103302401315	1337	SS103302401361	1382	SS103302401407
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1294	SS103302401317	1339	SS103302401363	1384	SS103302401409
1295	SS103302401318	1340	SS103302401364	1385	SS103302401410
1296	SS103302401319	1341	SS103302401365	1386	SS103302401411
1297	SS103302401320	1342	SS103302401366	1387	SS103302401412
1298	SS103302401321	1343	SS103302401367	1388	SS103302401413
1299	SS103302401322	1344	SS103302401368	1389	SS103302401414
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1302	SS103302401325	1347	SS103302401371	1392	SS103302401417
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1307	SS103302401330	1352	SS103302401376	1397	SS103302401422
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1311	SS103302401334	1356	SS103302401380	1401	SS103302401426
1312	SS103302401335	1357	SS103302401381	1402	SS103302401427
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1314	SS103302401337	1359	SS103302401383	1404	SS103302401429
1315	SS103302401338	1360	SS103302401384	1405	SS103302401430
1316	SS103302401339	1361	SS103302401385	1406	SS103302401431
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1333	SS103302401357	1378	SS103302401403	1423	SS103302401449
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1428	SS103302401455	1473	SS103302401503	1518	SS103302401549
1429	SS103302401456	1474	SS103302401504	1519	SS103302401550
1430	SS103302401457	1475	SS103302401505	1520	SS103302401551
1431	SS103302401458	1476	SS103302401506	1521	SS103302401552
1432	SS103302401459	1477	SS103302401507	1522	SS103302401553
1433	SS103302401460	1478	SS103302401508	1523	SS103302401554
1434	SS103302401461	1479	SS103302401509	1524	SS103302401555
1435	SS103302401462	1480	SS103302401510	1525	SS103302401556
1436	SS103302401463	1481	SS103302401511	1526	SS103302401557
1437	SS103302401464	1482	SS103302401512	1527	SS103302401558
1438	SS103302401465	1483	SS103302401513	1528	SS103302401559
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1442	SS103302401469	1487	SS103302401517	1532	SS103302401563
1443	SS103302401470	1488	SS103302401518	1533	SS103302401564
1444	SS103302401471	1489	SS103302401519	1534	SS103302401565
1445	SS103302401472	1490	SS103302401520	1535	SS103302401566
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1447	SS103302401474	1492	SS103302401522	1537	SS103302401568
1448	SS103302401475	1493	SS103302401523	1538	SS103302401569
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1454	SS103302401481	1499	SS103302401529	1544	SS103302401575
1455	SS103302401482	1500	SS103302401530	1545	SS103302401576
1456	SS103302401483	1501	SS103302401531	1546	SS103302401577
1457	SS103302401484	1502	SS103302401532	1547	SS103302401578
1458	SS103302401485	1503	SS103302401533	1548	SS103302401579
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1461	SS103302401488	1506	SS103302401536	1551	SS103302401582
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1463	SS103302401490	1508	SS103302401538	1553	SS103302401584
1464	SS103302401491	1509	SS103302401539	1554	SS103302401585
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1469	SS103302401496	1514	SS103302401545	1559	SS103302401590
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Sl.No.	Module Sl No
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1588	SS103302401619
1589	SS103302401620
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1594	SS103302401625
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1598	SS103302401629
1599	SS103302401630
1600	SS103302401631
1601	SS103302401632
1602	SS103302401633
1603	SS103302401634
1604	SS103302401635



MS CERT

ACC.No.M4151008 IK

PUR/R-6A

CIN: U74999KL1972SGC002450

PURCHASE ORDER

	Purchase Department Keltron Equipment Complex Karakulam Thiruvananthapuram -695 564	Phone : 0472 - 2888062, 2888143, 2888820 Fax : 0472-2888736 E-mail : kec.purchase2@gmail.com kecpurchase@gmail.com
	M/s. WAAREE ENERGIES LTD. 602, Western Edge - I Off. Western Express Highway Borivali (E) Mumbai - 400066	

P.O. No. Date : Your Ref : Date :	KEC/P/FRM-IP18029/285012 18/05/2018 E Tender Id:2018_KSEDC_193478_1 09-APR-18
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Please supply the following materials in accordance with the instructions given below and as per the terms and conditions printed overleaf.

Sl. No.	Our Code	Description	Unit	Qty.	Rate Rs.	Per	Amount Rs.
SUPPLY OF ITEMS AS PER ANNEXURE ENCLOSED (1 ITEMS)							
NOTE 1 An agreement shall be executed and submit along with Security deposit as per tender clause 6.1a 2 The HSN code should be included against each items in invoice 3 Warranty : 5 Years product warranty and Normal output of PV Module at the end of 10 years should not be less than 90% and at the end of 25 years should not be less than 80% A warranty certificate to be issued along with materials. 4 LD will be applicable @ 0.5% per week of the delayed part of supply subject maximum of 5% of order value, there after PO validity will be reviewed. 5 Site Address : Ramakalmedu, Idukki 6 Transportation, loading and unloading includes in the PO amount. 7 All other terms and conditions as per e-tender documents.							

Discount	G.S.T. EXTRA	Price Basis
Payment Terms	Mode of despatch	
95% against 60 days LC. Balance 5% after warranty period or on submission of Bank Guarantee valid till the end of warranty period of 5 years for an equal amount.	FOR Destination	
Delivery Schedule	For Kerala State Electronics Development Corporation Ltd.	
By 2018 June Last Week		
P.R. No. & Date	G.S.T.No. 32AABCK1319E3Z6	

ISSUE NO	REV. NO.	DATE
2	A	01-07-17

ANNEXURE TO PO NO: KEC/P/FRM-I/P18029/285012			DTD 18-MAY-18			
1	A09048	Supply of 325 Wp Poly Crystalline Solar PV Modules as per Technical Specification in Annexure-2		NOS		
TOTAL						

ANNEXURE – 2 OF KEC/P/FRM-I/P18029/285012

TECHNICAL TERMS AND SPECIFICATIONS

1. Module Specification

The module type must be qualified as per IEC 61215, IEC 61701, IEC 61730 & IEC 62804 latest edition for Crystalline Silicon PV Module. SPV module conversion efficiency should be equal to or greater than 16 – 17 % under STC. Modules must qualify to IEC 61730 Part I and II for safety qualification testing. Certificate for module qualification from IEC or equivalent to be submitted as part of the bid offer. Undertaking from manufacturer / supplier that the modules being supplied are as per above.

The PV module shall perform satisfactorily in humidity up to 100% with temperature between -40°C to $+85^{\circ}\text{C}$. Since the modules would be used in a high voltage circuit, the high voltage insulation test shall be carried out on each module and a test certificate to that effect provided.

The predicted electrical degradation at the end of the period of 10 years shall be less than ten (10) percent and end of the next 15 years shall be less than twenty (20) percent of the full rated original output.

1.1 Other general requirement for the PV modules shall be as follows:

- a. Raw materials and technology employed in the module production processes shall have to be certified and a certificate giving details of major materials i.e. cells, glass, back sheet, their makes and data sheets to be submitted for the modules being supplied by the bidder.
- b. The rated output power of any supplied module shall have tolerance of + 3% as per MNRE standard specs (Positive tolerance only acceptable).
- c. Solar cell shall have surface anti-reflective coating to help absorb more light in all weather conditions.
- d. The module frame, if any, shall be made of a corrosion-resistant material which shall be electrolytic ally compatible with the structural material used for mounting the modules.
- e. Solar module shall be laminated using lamination technology using established polymer and Polyester laminate.
- f. The fill factor of module shall not be less than 0.70 (typical). The V-I curve of each PV module with serial nos. should be submitted along with modules meeting the required specifications.
- g. The module shall be provided with sufficient qty of junction box with either provision of external screw terminal connection or sealed type and with arrangement for provision of by-pass diode. The box made with thermo-plastic/ABS and shall have hinged, weather proof lid with



captive screws and cable gland entry points or may be of sealed type and IP65/67 rated with UV resistant.

h. Each PV module used in the project shall be provided with a RF identification tag. RFID shall be mandatorily placed inside the module laminate and it must be able to withstand harsh environmental conditions. The following information must be mentioned in the RFID used on each module.

- i. Name of the manufacturer of PV module
- ii. Name of the Manufacturer of Solar Cells
- iii. Month and year of the manufacturer (separately for solar cells and modules)
- iv. Country of origin (separately for solar cells and module)
- v. I-V Curve for the module
- vi. Wattage, I_m , V_m and FF of the module
- vii. Unique serial no. and Model no. of the module
- viii. Date and year of obtaining IEC PV module qualification certification
- ix. Name of the test lab issuing IEC certificate
- x. Other relevant information on traceability of solar cells and module as per ISO 9000.

1.2 Graph/Test results

The copy of all test results and IV graph to be supplied against each panel (in any form).

End of Document

