

Attachment 1 Data Sheet of the Battery Charging Station

Operator Logbook Battery Charging Station Lorolwana FEBRUARY/APRIL 2002

= no entry

Date	Morning					Noon					Afternoon									
	Time	No of Batteries on Charge	Left Voltage V1	Left Current A1	Right Voltage V2	Right Current A2	Time	No of Batteries on Charge	Left Voltage V1	Left Current A1	Right Voltage V2	Right Current A2	Time	No of Batteries on Charge	Left Voltage V1	Left Current A1	Right Voltage V2	Right Current A2		
1	15/Feb/02	08:00					11:55	26	18	8	20	14	05:00							
2	16/Feb/02	08:00					13:00	5	19	4	21	8	05:00	17	18	19	22	2		
3	17/Feb/02	08:00	3	19	8	21	12	13:00					05:00							
4	18/Feb/02	08:00						13:00	18	18	10	19	10	05:00	17	18	18	4	4	
5	19/Feb/02	08:00	15	17	8	18	6	13:00	3	20	0	23	0	05:00	6	19	0	2	0	
6	20/Feb/02	08:00	3	19	0	22	0	13:00	2	18	0	21	0	05:00	3	18	0	21	0	
7	21/Feb/02	08:00	2	19	0	22	0	13:00	2	18	0	21	0	05:00	2	19	0	22	0	
8	22/Feb/02	08:00	3	19	0	22	0	13:00	3	19	0	21	0	05:00	3	19	0	22	0	
9	23/Feb/02	08:00	3	19	0	22	0	13:00	3	17	0	20	0	05:00	1	18	0	21	0	
10	24/Feb/02	08:00	2	17	0	21	0	13:00	1	19	0	21	0	05:00	1	19	0	21	0	
11	25/Feb/02	08:00	4	19	0	22	0	13:00	2	19	0	22	0	05:00	2	17	0	20	0	
12	26/Feb/02	08:00	5	18	4	19	8	13:00	2	19	0	21	4	05:00	1	18	2	21	0	
13	27/Feb/02	08:00	0	16	0	18	0	13:00	0	20	0	23	0	05:00	0	19	0	22	0	
14	28/Feb/02	08:00	0	19	0	22	0	13:00	0	19	0	22	0	05:00	0	19	0	22	0	
15	01/Mar/02	08:00	0	19	0	23	0	13:00	0	18	0	21	0	05:00	1	18	0	21	0	
16	02/Mar/02	08:00	1	18	2	22	0	13:00	1	18	0	20	4	05:00	1	17	2	21	0	
17	03/Mar/02	08:00	1	17	2	21	0	13:00	1	18	0	20	4	05:00	1	18	0	20	2	
18	04/Mar/02	08:00	2	18	8	23	0	13:00	2	18	6	22	0	05:00	33	17	14	17	14	
1	19	05/Mar/02	08:00	35	16	8	17	6	13:00	40	17	20	19	22	05:00	40	16	4	17	4
2	20	06/Mar/02	08:00	39	16	4	17	4	13:00	41	17	20	19	22	05:00	42	16	2	16	2
3	21	07/Mar/02	08:00	42	16	8	17	6	13:00	42	16	6	17	8	05:00	42	16	6	16	4
4	22	08/Mar/02	08:00	42	17	12	17	9	13:00					05:00						
5	23	09/Mar/02	08:00	37	18	16	18	10	13:00	37	17	10	18	12	05:00	28	16	2	17	2
6	24	10/Mar/02	08:00	29	17	8	18	6	13:00	23	18	8	20	8	05:00	21	17	4	20	4
7	25	11/Mar/02	08:00	20	16	0	17	0	13:00	18	18	6	21	4	05:00	20	5	0	5	0
8	26	12/Mar/02	08:00	21	17	8	18	8	13:00	18	18	4	20	6	05:00	15	20	0	21	0
9	27	13/Mar/02	08:00	17	19	0	19	2	13:00	19	19	4	20	4	05:00	15	16	0	20	0
10	28	14/Mar/02	08:00	16	20	0	22	4	13:00					05:00	18	19	8	20	8	
11	29	15/Mar/02	08:00	20	17	12	18	10	13:00	18	17	8	22	0	05:00	20	18	8	2	8
12	30	16/Mar/02	08:00	22	17	10	19	8	13:00	26	17	16	21	8	05:00	27	17	10	20	8
13	31	17/Mar/02	08:00	26	18	10	20	8	13:00	31	18	12	21	14	05:00	24	18	4	21	4
14	32	18/Mar/02	08:00	20	19	8	22	4	13:00	22	19	4	21	4	05:00	25	18	6	19	8
15	33	19/Mar/02	08:00	28	18	10	18	10	13:00	29	18	6	20	10	05:00	27	18	8	21	6
16	34	20/Mar/02	08:00	22	19	6	19	10	13:00	24	20	10	22	14	05:00	20	16	0	16	2
17	35	21/Mar/02	08:00	21	17	4	17	4	13:00	21	19	8	22	10	05:00	21	18	6	18	8
18	36	22/Mar/02	08:00						13:00					05:00						
19	37	23/Mar/02	08:00	26	18	10	21	4	13:00	26	16	4	19	4	05:00	26	16	2	18	2
20	38	24/Mar/02	08:00	25	18	8	20	4	13:00	20	19	2	21	10	05:00	18	19	2	21	4
21	39	25/Mar/02	08:00	18	20	2	22	0	13:00	21	18	10	22	6	05:00	20	18	8	22	4
22	40	26/Mar/02	08:00	21	19	8	22	6	13:00	21	18	10	21	12	05:00	20	18	8	20	6
23	41	27/Mar/02	08:00	27	17	10	17	10	13:00	26	18	10	20	16	05:00	21	17	2	17	2
24	42	28/Mar/02	08:00	17	19	10	20	10	13:00	18	18	12	20	14	05:00	16	17	2	17	2
25	43	29/Mar/02	08:00	12	19	12	21	8	13:00	12	19	0	21	4	05:00	11	19	0	21	4
26	44	30/Mar/02	08:00	12	20	4	21	10	13:00	14	18	8	20	8	05:00	14	17	0	17	2
27	45	31/Mar/02	08:00	15	18	8	18	8	13:00	17	18	16	20	16	05:00	16	17	8	18	8
28	46	01/Apr/02	08:00	14	18	10	20	10	13:00	9	18	12	21	8	05:00	10	17	2	18	2
29	47	02/Apr/02	08:00	12	18	12	18	10	13:00	10	18	8	20	10	05:00	12	18	10	19	10
30	48	03/Apr/02	08:00	16	18	12	8	12	13:00	18	19	6	20	20	05:00	15	19	2	19	8
31	49	04/Apr/02	08:00	17	20	4	19	10	13:00	18	19	2	21	18	05:00	20	18	8	20	4
32	50	05/Apr/02	08:00	18	18	10	21	4	13:00	14	18	12	21	12	05:00	14	17	8	19	8
33	51	06/Apr/02	08:00	18	18	12	20	10	13:00	13	18	10	21	4	05:00	15	18	10	19	10
34	52	07/Apr/02	08:00	17	18	16	18	12	13:00	14	17	2	19	6	05:00	11	18	4	20	6
35	53	08/Apr/02	08:00	16	17	12	19	8	13:00	15	18	8	22	4	05:00	11	17	4	18	4
36	54	09/Apr/02	08:00	16	18	12	19	10	13:00	15	18	8	18	8	05:00	22	18	6	18	4
37	55	10/Apr/02	08:00	27	18	12	19	10	13:00	27	18	18	21	21	05:00	20	18	8	19	6
38	56	11/Apr/02	08:00	22	18	10	20	8	13:00	20	18	8	20	16	05:00	17	18	4	18	6
39	57	12/Apr/02	08:00	16	17	4	17	2	13:00	22	17	6	18	8	05:00	24	16	0	18	2
40	58	13/Apr/02	08:00	29	17	8	18	6	13:00	33	16	6	18	6	05:00	32	16	0	17	2
41	59	14/Apr/02	08:00	42	17	14	19	10	13:00	32	19	16	21	18	05:00	26	16	0	17	2
42	60	15/Apr/02	08:00	39	17	8	17	6	13:00	24	19	6	20	20	05:00	19	17	6	18	4
43	61	16/Apr/02	08:00	24	18	12	18	8	13:00	22	18	18	20	18	05:00	26	17	10	18	8
44	62	17/Apr/02	08:00	26	17	12	18	10	13:00	29	18	10	19	21	05:00	23	17	4	18	4

Attachment 2 Data Analysis

Analysis period	# entries	No of Batteries on Charge	Left Voltage V1	Left Current A1	Right Voltage V2	Right Current A2	# entries	No of Batteries on Charge	Left Voltage V1	Left Current A1	Right Voltage V2	Right Current A2	# entries	No of Batteries on Charge	Left Voltage V1	Left Current A1	Right Voltage V2	Right Current A2
15 Feb-17 Apr	59	17.7	17.9	6.9	19.3	5.8	58	17.1	18.1	6.9	20.4	8.6	58	16.8	17.4	4.2	18.1	3.7
	Average >					Average >	Average >						Average >					
5 Mar-17 Apr	43	23.2	17.8	8.7	18.7	7.3	41	22.5	18.0	9.0	20.2	11.1	42	21.0	17.1	4.4	17.9	4.6
	Average >					Average >	Average >						Average >					

# of batteries	Bin	Frequency
0	0	0
0-5	5	0
6-10	10	0
11-15	15	5
16-20	20	15
21-25	25	8
26-30	30	8
31-35	35	1
36-40	40	3
41-45	45	3
More		0

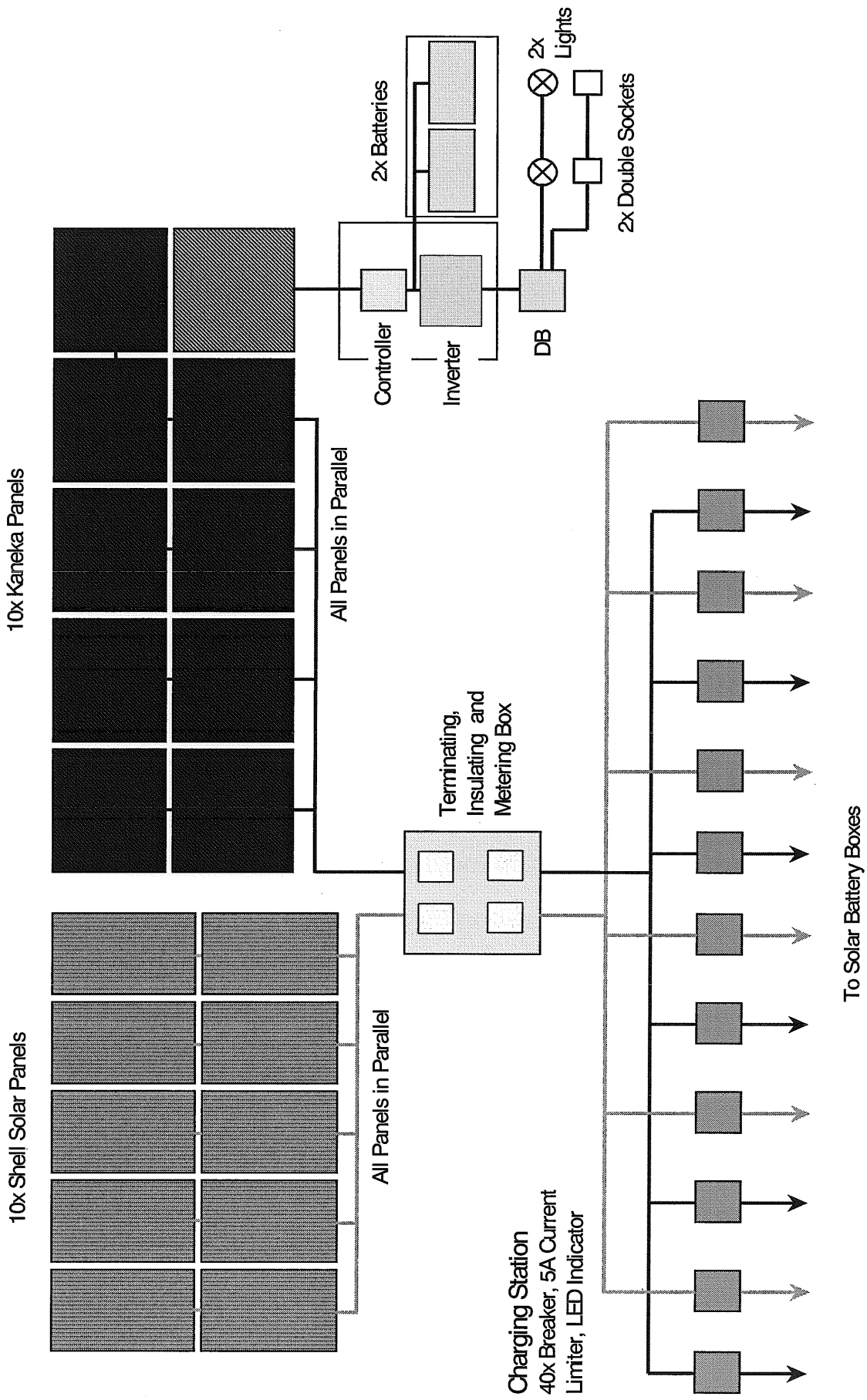
Left Voltage	Bin	Frequency
15 V	15	0
16 V	16	3
17 V	17	7
18 V	18	21
19 V	19	9
20 V	20	1
21 V	21	0
22 V	22	0
23 V	23	0
More		0

Right Voltage	Bin	Frequency
15	15	0
16	16	0
17	17	1
18	18	4
19	19	5
20	20	13
21	21	13
22	22	5
23	23	0
More		0

Left current	Bin	Frequency
0 A	0	1
0.1-2.5 A	2.5	3
2.6-5.0 A	5	4
5.1-7.5 A	7.5	7
7.6-10.0 A	10	15
10.1-12.5 A	12.5	4
12.6-15.0 A	15	0
15.1-17.5 A	17.5	3
17.6-20.0 A	20	4
20.1-22.5 A	22.5	0
More		0

Right current	Bin	Frequency
0	0	1
2.5	2.5	0
5	5	7
7.5	7.5	4
10	10	11
12.5	12.5	3
15	15	3
17.5	17.5	3
20	20	5
22.5	22.5	4
More		0

Attachment 4 Schematic Electric Diagram of the Solar Battery Charging Station



Attachment 5 Charging modes of the Power House Charge Regulator

