

Rachel J - Battery Charging

1. Victron Blue Solar - 100/50 Solar Charger
Ends absorption charging stage when charger output is $<2A$.
 $2A/400AH \times 100 = 0.5\%$ or 99.5% on 400 AH house battery.
2. Balmar MC-614 Alternator Regulator
Needs to meet voltage, time, and % field before switching to next charging phase (bulk to absorption)
3. Xantrex Battery Charger (Type 3 AGM setting)
Absorption to Float @ 15A for Freedom 30
Max absorption time = 1 hour for AGM
 $15A/400AH \times 100 = 3.75\%$ or 96.25% on 400 AH battery.
4. Philippi Battery Monitor
Conditions to reset to Fully Charged:
 - a. $V > 13.5V$
 - b. $I < 2\%$ battery capacity ($0.02 \times 400 AH = 8A$)
 - c. Both a. and b. achieved for 4 minutes, ie. resets @98% charge

Ellis 36 - Rachel J - Battery Charging Devices - HOUSE BATTERY				
HOUSE BATTERY	BULK	ABSORPTION (ACCEPTANCE)	FLOAT	COMMENTS
Firefly Oasis AGM Batteries G31 12V 4 x 110AH	14.4V@25C/77F w/Temp Comp. 15.48V at -20C/-4F 13.68V at 55C/131F -24 mV/°C or -13.3 mV/°F w/Batty Temp	14.4V w/Temp Comp. Charge until current drops to 1.5A/Battery 4x1.5A/Batt=6A for bank	≤13.4 V (per B.Schwab 2017)	Reset to Bulk Phase if 12.0V for 1 Min. <u>Restoration Charge</u> Charge 14.4V to 0.6A Discharge to 10.5V Charge 14.4V to 0.6A
Alternator Charging Balmar MC-614 Voltage Regulator	14.4V	14.3V	13.4V	Use Custom Program Under Advanced Programming Mode
See attached settings page for Balmar MC-614				
Shore Power Charging Xantrex Freedom 30 Modified Sine Wave 120VAC,3000W, 12VDC Inverter/3 Stage Charger	Full rated charger current until bulk charge voltage limit is reached -20 mV/°C w/BattyTemp	Type 3 - AGM Default@70°F 14.3V Acceptance to Float Transition @ 15ADC or Max Time @ 1 Hour	Type 3 - AGM Default@70°F 13.3V	
Victron Blue Solar MPPT 100/50	---	14.4V until <2A	13.4V	Use Custom Program
See attached settings page for Blue Solar MPPT 100/50				
Ellis 36 - Rachel J - Battery Charging Devices - STARTING BATTERY				
STARTING BATTERY	BULK	ABSORPTION	FLOAT	COMMENTS
Lifeline AGM Battery 4DL 12V 1 x 210AH	14.2-14.6V Range	14.2-14.6V Range	13.1-13.4V Range	Equalize Charge 15.5V@8 Hrs 3 Stage Charger
	14.2-14.4V Max Life	14.2-14.4V Max Life	13.2-13.3V Max Life	
Sterling Power Products BBW1260 DC-DC 12V Battery Charger 60A	14.8V	14.0V	13.3V	Select Battery Type #6 - Flood/open per Lifeline recommendation

Balmar MC-614 Settings for Alternator Charging of Firefly Oasis 4x110Ahr House Battery Bank

Setting	Name	Range	Factory	Revised Set October 2016	Revised Set June 2018
bEL	Belt Load Manager (Field Reduction @ Max Load to Reduce Heating)	b-0, b-1 to b-9 (Off, 5% - 45%)	b-0 (Off)	b-0 (Off)	b-1 (5%Red/95% Max Output)
dSP	Short/Long Display	Short/Long	Sd (Short)	Sd (Short)	Ld (Long)
PrA	Advanced Program Mode	Entry -Adv Program Mode	---	---	---
dLc	Start Delay	0-999 sec	1 sec	1 sec	60 sec
AHL	High Voltage Limit (Max Bulk Chrg Voltage)	15.6 V Max		14.9 V	14.9 V
CL	Compensation Limit (Max Allow Temp Compensated Voltage)	14.1 - 15.9 Volts		14.9 V	14.9 V
bv	Bulk Voltage	14.1 - 14.8 Volts		14.4 V	14.4 V
b1c	Bulk Time (setting 001=6 min 002=12 min, etc)	6 Min - 6 Hrs in 6 Min Increments	18 Min	18 Min (003)	18 Min (003)
Av	Absorption Voltage	13.9 - 14.7 Volts (Must set@Least 0.1V Below bv)	Recommend -0.2V Below Bulk Voltage	14.3 V (-0.1V Below Bulk Voltage)	14.3 V
A1c	Absorption Time (setting 001=6 min 002=12 min, etc)	6 Min - 6 Hrs in 6 Min Increments	18 Min	18 Min (003)	60 Min (010)
Fv	Float Voltage	13.0 - 13.8 Volts		13.2 V	13.4 V
F1c	Float Time (setting 001=6 min 002=12 min, etc)	6 Min - 12 Hrs	18 Min	18 Min (003)	18 Min (003)
ALL	Low Voltage Limit			12.2 V	12.2 V
FbA	Field Threshold Bulk to Absorption	16 - 96% (Rasing FbA Shortens Bulk Charge Time)	65%	45%	45%
FFL	Field Threshold Float to Absorption	16 - 96% (Raising FFL Increased Float Charge Time)	65%	45%	45%
AL1	Alternator Temp Threshold		108°C	96°C	96°C
B11	Battery Temp Threshold		52°C	52°C	52°C
SLP	Slope Voltage Correction	0-36 mV/°C (setting 0-6.0)	mV/°C 1.0=6 mV/°C	24 mV/°C 4.0 setting	24 mV/°C 4.0 setting

Victron Blue Solar MPPT 100/50 Settings for Solar Charging of Firefly Oasis 4x110Ahr House Battery Bank					
Setting (MPPT Control /Laptop)	Name	Range	Factory	Revised Set June 2017	Revised Set July 2018
02 (v)	Battery Voltage	12, 24 V	---	12 V	12 V
03	Battery Type	8 Fixed, USER1/2	---	USER	USER
04	Max Current Out	50 A	---	50 A	50 A
05	Bulk Time Limit		---	0	0
06	Absorption Time Limit		6 Hrs or < 2.0 Amp	12 Hrs or < 2.0 Amp	16 Hrs or < 2.0 Amp
07 (a)	Absorption Voltage		14.4 V	14.4 V	14.4 V
08 (f)	Float Voltage		13.8 V	13.4 V	13.4 V
09 (k)	Temperature Compensation		16 to -32 mV/°C	-24 mV/°C	-24 mV/°C
10	Load Output				

Note: Latest firmware version V_____

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