HandyBob's Blog
Making off grid RV electrical systems work

2015 MIDNITE CLASSIC PROBLEMS

Here we are in 2015 and too much in the solar world stays the same. It is time for me to say something about my experience with the MidNite Solar Classic. Realize that I do not take this step lightly in relating this experience for the whole world to see it. Also, be assured that I have saved every single email regarding this and there are well over a hundred. This is the culmination of a **two year** period of frustration. (I added the bold high light after somebody told me I would get better results with honey. I have been given the glad handshake routine and lied to for these two years, told that nobody else is reporting problems. Therefore, I give up. I am justifiably angry.) Anybody who thinks they can sue me first needs to realize that I don't have any money and second that I am being completely factual as I see it. Very carefully so. I am also not being compensated for this by anybody. That is a ridiculous statement to be making, but it is true.

I did a lot of research and talked with the founder of MidNite for months before deciding to try their new Classic 200 charge controller. I was at first put off by the fact that the same people who developed the Classic had designed the Outback, a controller that I have never liked, mostly because it is so complicated, but also because they just simply exaggerated about the efficiency. It was many years ago when I measured one and proved this. I know there are many people who claim to love the things. Well, people who buy any expensive thing will brag about how smart they are. It is possible they have improved it since, but the Outback is still a complicated nightmare to program. MidNite claims to be more efficient than all of the competitors and have testing on their web site to "prove" this. Keep reading. I was also put off a bit by the goofy looks and marketing of the Classic, but it was attractive for

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several reasons. I could use one of these, while if I used Morningstar it would have taken two Morningstar Tristar's for a 2000 watt array on my 24V battery system. This let me use one #6 run for the whole array with four panels in series, which exceeds the 150V limit of a Tristar. The Classic has a standard built in display with custom programming capabilities right on the screen. It also has built in relays for running things like the ventilation fan for a battery box, plus ground fault and arc fault protection. Bottom line, it costs less than the alternative.

I bought it and installed it in January of 2013. At first I was very impressed with the charging and it seemed to work well…… Reality started to rear it's ugly head very quickly.

The first thing I saw as a problem was the lack of a manual. Furnished with the unit is a printed quick start guide called "Just The Facts" and a CD is included which has the same information. Programming seemed to be fairly easy, but I did need to phone them to ask a few questions that were not explained. Every time I called them with a problem I was told some new way to work around the programming to start a new day or to fool the thing into doing what was needed, but there was no documentation. The last time I looked, there was still no manual shown on the MidNite web site. Wouldn't you think that a manual should be written before introducing a new product?

The second thing that bothered me was the difficulty I had in getting #4 cable into the lugs that look like #8 to me. A little aside here…. Morningstar uses #2 lugs even in their 45 amp controller. This Classic is rated over 80 amps, yet you cannot use #2 wires. This was when I noticed that MidNIte also does not include remote voltage sensing. I had a discussion with them about this. They just don't think it is important to compensate for the voltage drop that is going to be present when the thing is loaded up and producing amps, even if the wires are short. Morningstar puts this on their little 30 amp RV controller, a $120 Prostar. Notice the trend here?

Next, the arc fault tripped and shut the charging **off**. I tried resetting the sensitivity as suggested by the factory and soon discovered that I just could not trust the thing to keep charging. With nothing but half of my panels connected on a temporary set of brand new wires and a Magnum inverter panel feeding only a temporary construction power receptacle (no AC panel), it simply would not keep charging. I let that happen just a couple of times and disabled both arc fault and ground fault. One of the factory people told me that they didn't see why anybody with off grid solar would want arc fault protection anyway, but it is now code required. Somewhere along here I also discovered a screen glitch. The display would show a vertical break in the message. I looked and looked for a pic of this, but evidently I didn't save it. I had to send that pic to them before they would believe me. The factory told me to power down & reboot, which would fix it (telling me that they knew about this problem before I reported it, but would not admit to it). I have had to do this many times. It seems that just touching a button can cause it to have some sort of fit or hick-up.

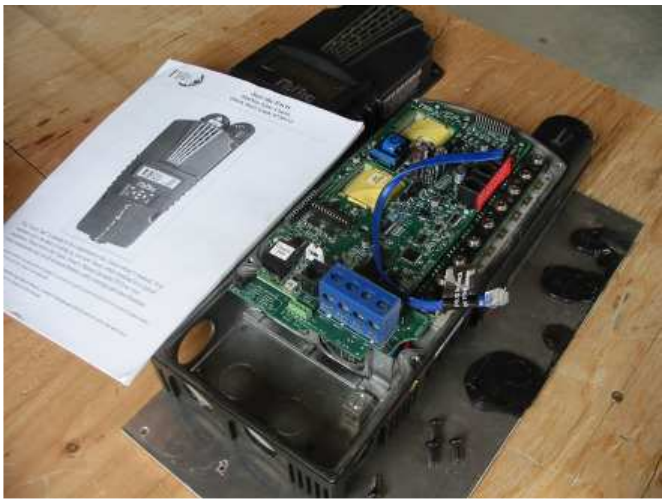
About 9 months into this I noticed that my batteries didn't seem to be holding their voltage overnight so I started looking at the history functions in my Trimetric battery monitor. I was shocked to find that the highest voltage recorded showed that automatic monthly equalization I had programmed was not happening. The factory had no idea why this would be and of course they argued. It seems that I am the only guy in the world who ever reports problems to any manufacturer today… Right. I did a couple of manual EQ cycles and got the batteries working correctly again. Then I started paying close attention to the auto EQ counter. I found that it would lock up. It took some convincing on my part but the factory did agree to send a new unit and I changed it out, sending the first unit back right away so they could put it on the test bench and see if they could figure out what was wrong. Big mistake…. The new unit died within days, leaving me with no charging. The factory agreed to overnight air a replacement on a Thursday, but of course FedEx didn't get it to me until Monday. Fun times, going five days without charging when you don't have a generator! I did manage to do some temporary wiring without a controller just so we could get by, but it was no fun in the dead of winter.

The third Classic worked exactly like the first. No auto EQ, nuisance tripping of arc fault and the screen issue all appeared very quickly. One day when I checked the screen I found that it showed equalizing, when I had auto EQ turned **off**! That was the day I started yelling. I called the factory and basically lost it. People world wide have set their Classics to do auto EQ that is not happening and they don't seem to understand how big of a problem this is. The liability involved in the cost of all of those batteries would be huge. Then, once in a while it just decides to do an equalization when you don't want it to. I was told they had not been able to get my first unit to show the auto EQ problem more than a couple of times and if they can't duplicate the issue, they cannot fix it. I don't know how many times I talked with them about the problems, even going to the extent of suggesting that they try to duplicate my system and the temperatures I see and just got more frustrated as it became apparent that they did not have the capability to do this.

All of this lead me to really start paying attention instead of trusting it and I discovered that the Classic does exactly the same period of absorption every day, while the quick start guide says this time will be varied depending on the time spent in bulk and refers the user to consult the manual for an explanation…. **What manual?** So, I have been manually changing this from an hour and a half to three hours once in a while in an attempt to keep the overcharging to a reasonable amount, while making sure I take care of my very expensive batteries. I also do a monthly manual EQ. Morningstar's Tristar has an automatic charging algorithm that works seamlessly. I know this because I have installed dozens of them in RV's, set the dip switches and sent the people down the road, hearing nothing but happy reports later.

Oh, I forgot about the noise. This thing has a "Turbo" fan that runs when it gets hot. The main cooling fans (there are two) aren't very noisy, but nearly continuous. I cannot help but think about how reliable something like this is when it rely's on what is probably a 50 cent Chinese made fan for cooling. Plus,

think about the dust. If you live off grid and depend on solar power for your life it needs to be as reliable as you can make it. That little “turbo” fan is a buzzing thing that sounds like a hair clipper. I could hear it from outside the building and across the yard. The factory first suggested a couple of drops of silicone caulk around the fan, saying they had started doing that during later production. Then one of their tech guys suggested putting my business card under the corner of the controller, saying that was what he did to his. No kidding, that is actually what he said! I tried this and it didn’t help. They sent a new fan, I took the controller off of the wall, took it apart and installed it and it was quickly just as bad as before. I tried using a bunch of caulk everywhere along the plastic fan housing joint (again taking it off of the wall to do so). Look at the picture. Those are globs of black silicone caulk, plus a piece of rubber hose. It didn’t help a bit.



One day I got so upset that I started yelling again and that same tech guy admitted that he had disconnected his fan. Problem solved… Maybe the damn thing will fry! The factory says that the controller will cut output to reduce heat. Notice that Morningstar Tristar’s are absolutely silent. No cooling fans at all. Hmmm

Notice the dust on the fans in this picture. This controller has been in operation for less than six months in a relatively clean environment. What would one located in the desert look like? The screens were covered with dust, but I blew on them before thinking. You can also see those little terminals I complained about.

After nearly a year and a half of this BS, I was told that a new unit was being designed and it would have a balanced variable speed “turbo” fan and they were removing the auto EQ function that they never could get to work correctly. They finally sent me one in February 2015. I opened the box, found there is STILL no manual, the unit looks exactly the same and I decided that I am not going to waste my time installing it. Really, I count that I have had the thing off of the wall five times already.

Now I need to tell you that I put one of these into a system last year that is a 5 hour drive away and I’ve been living in fear of having to make that drive to change that controller. It has exhibited all of the same problems as mine. I read two reports on a solar forum by people who were having similar problems and one of those guys sent me private emails where he told me that he has had three Classics, and all three acted differently. He thinks they have a “personality”. One guy on that forum said he was going to replace his Classic with a Morningstar Tristar simply to get rid of the fan noise and people went nuts on him, shouting him down. Then there was a guy who had changed back to Tristar and was convinced that he was seeing more energy produced, not less. You don’t suppose he was argued with, do you? I was able to talk the guy I did the other system for through changing his controller so I didn’t have to go. He reported that the cooling fans ran all night long! Later they went off. Then it developed the split screen glitch the factory claimed to have fixed. He rebooted it and the fans ran for two whole days and nights. It also decided to EQ on its own, when that function was supposed to have been removed. Then the charging started dropping off for no apparent reason, so he asked the factory what was wrong. Without looking back into all of the history first, some new guy at the factory suggested that the problem is the system being under built (after it had been working for nearly two years). I designed that system after taking measurements of his loads and except for controller problems it has performed flawlessly. By the way, in one of my early emails with the founder of MidNite I sent him pics of that system and his response was “it should work great”. Who knows what the future holds there, but I am worried. Again, can you understand why I am angry? Blaming me for their inability to make the thing work right does not sit well here. Look; I am not a big professional installer, but all 5 of the Classics I have had anything to do with (not including the new one I never installed) has exhibited problems. This is a pretty dismal success rate and they just keep shipping new ones out every day. A recall would probably put them out of business, but that is what should happen if they ever figure out how to fix the problems.

Now why do I put “Turbo” in quotes? Well, marketing with flappers, a box designed to look like a 1920’s radio, on & on…. You tell me…. Should I be taking a company like this seriously? They should stick to making surge protectors and distribution boxes. Those things they do well. My opinion is that they cannot make computer logic work and they certainly need to be testing their products for years before foisting them on an unsuspecting public. By the way, they are having trouble with their new controller, the Kid. Evidently, it is not very efficient. Am I surprised?

Everybody is entitled to their opinion. Mine is that Morningstar still is the world wide leader in off grid solar and I am never going to try anything else again. I remember years ago when they told me in advance that they were working on a new 600V controller that took them years to perfect and introduce. It was not yet available when I did my system and

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the price is still very high, but it is supplied with a manual. I opted for two Tristar's for redundancy & reliability. They've also been working on big inverters for years, but you cannot buy them yet. I expect when we see them for sale, we will be able to buy with confidence. I spent the money to rewire my arrays so I could have only two panels in series, within the 150V capability of two Tristar's. I spent the extra money for a second controller, relay driver and meter bus. I did not add ground fault because I think it is a stupid idea and I don't need to satisfy any electrical inspector. It is done. It works. Actually it works unbelievably well. I have spent a lot of money and time that I do not have to spare over this issue. I will never be over the anger, but at least I have a reliable and absolutely silent system now.

Does anybody want to buy a Classic 200 cheap? It comes with a ten minute guaranty. Sorry dude, no manual is included.

I can now say with absolute certainty that MidNite does not tell the truth regarding efficiency. Of course I cannot actually prove it, not having a certified test lab, but read this: The day before I took it down, with the batteries low enough to still be in bulk and near noon I recorded 1688W output from the Classic. The day after, with pretty much identical conditions, the two Tristar's were producing 1692W, so close as to be indistinguishable. (Notice the that this is about 85% of my array's 2000W rating… MPPT boost? What boost?) Wouldn't you expect two controllers to be less efficient than one? However, the Classic has this nasty little habit of dropping to zero output once in a while for a second as it does it's tracking. I heard from one owner whose Classic would occasionally lock up at zero output, so I know this is not the only one that does this. Morningstar doesn't do this, providing constant output. It would take some pretty expensive metering and a lot of work to actually prove the bottom line comparison between the two, but I am satisfied that I am much better off now. Last, I can tell you that my resting voltage in the morning has improved a bit. A tenth of a volt each day for several days in a row, that finally settled at about a half of a volt. This is not a tiny difference. Why? Obviously, Morningstar is doing a better job of charging the batteries all the way up. I have been a bit worried about the resting voltages I have been seeing and my hydrometer readings just have not seemed high enough (plus slowly diverging), even with extra time in absorption. My cells all now test exactly equal, something that I have not seen for many months. That thing was slowly ruining my expensive batteries and I didn't know it. They once said something to me about not all PWM being created equally and from what I see happening late in the absorption cycle I can tell you that Morningstar pushes more amps into the batteries than a Classic does in identical conditions. I won't say how much more because nobody would believe me, but I will say that at the end of the absorption cycle even after charging for 3 hours it has never gone below a 25% improvement over what I was seeing before (20 amps now, 16 amps before). I was using that drop to 16 amps (about 2% of C20 rating) to tell me when my batteries were full. Big mistake, now that I have been watching the Tristar's for a month. Maybe a tiny portion of this could be due to having two runs of wiring rather than one, but the difference is much bigger than could be explained by that. This little secret that nobody ever talks about is why MPPT is not really worth all of the money it costs unless you use it to cut your wiring costs. It is also the secret that explains why so many of the cheap charge controllers sold in the RV world just do not work. They are not all the same. Some of the MPPT ones are terrible.

In conclusion, all I can say is that you don't have to listen to me, but buyer beware is an even truer thing to keep in mind today than ever before. I love Morningstar products. I will never again buy anything of MidNite's except a surge protector, circuit breaker or a box to put them in.