

I used two 10 watt solar panels to control the electrics , meters , relays etc.

This is to ensure the heaters can be turned off when 140 ° has been reached .

All the panels are in parallel. and the pair of 10W 12Vdc solar units put out 17Vdc and one amp max. So the meters and relays amp gauge all have ample power.

I used 40 Amp DC relays from Volvo 2001-2007 cars to feed the heaters , 2 heaters , 2 relays , each DHW tank has a AC thermostat and will not arc or burn the contacts on the power the relay draw 30-55 Milli amp . the relays are to close the circuit so they are normally open. Once the sun hits the small 10 W panels the system comes alive to show the voltage of the MAIN 4 panels of 350 Watt in parallel , no amps till the relays close and that's when the 10 watt units reach enough power and the 1400 Watt main panels are producing . I can see it start at 5 amps at 28-32 Vdc then ramp up to 30 Amp max at 36.9 Vdc giving me 1100 watts of heating .

MC4 feeds 4 strings #10 gauge thru 15 amp glass car fuse rail (pico 941-11 , 30 amp per fuse max ) then the output side goes to a #2 gauge cable down 2 floors 25 feet (large cable size for less voltage drop) feeds 50 amp breaker #4 gauge soft copper welders wire), then thru 2 amp meters , one analog hard wire and the other is Digital to relays Ground is the same but no fuses. The 12Vdc panels is similar but the fuse is down in the grey control box . the grounds of both panels are connect . the 12 volt side feeds the thermostats that control the relays and the meters .