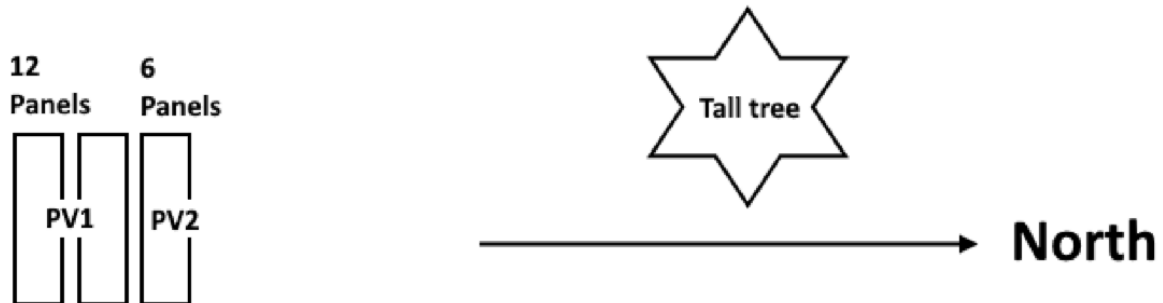


Tigo evaluation

Six Tigo TS4-A-O 1000VTUV 700W were installed on a string of six panels that create array PV2 in the current setup with all the panels mounted flat. Adjacent to PV2, is a second array of 12 panels creating array PV1.



Panel information: SRP-275-6PB-HV panels, each of 275W, Open Circuit 38.3V, Short Circuit 9.08A, Max Pwr 31.6V, Max Pwr Current 8.71. PV inverter information: Solax 5kW SKTL5000E,

PV1 open circuit voltage is 466V, PV2 open circuit voltage is 233V.

Findings: the PV1 and PV2 array currents and the power per panel production did not vary significantly when the shade of the tree covered the first 1 or 2 panels on the western side of PV2. If anything, the PV2 performance, relative to PV1, might have gone down somewhat.

Despite that the PV1 and PV2 currents and Power per Panel performance were comparable, supporting that the panels in PV2 appeared to be working OK, the individual panels were tested with an EY800 panel tester for open circuit V and MPP P,V&I. The readings confirmed proper operation of the 6 panels. The results are included.

If the panels were ok, perhaps the inverter could not handle an array of only 4 panels.

This was tested next on a sunny day through inserting a by-pass lead for the 2 western most panels.

Again, PV2 performed OK running on only 4 panels. The results are also included.

This leaves the conclusion that the Tigo units do not operate as promised.

This is in agreement with Mark Cavanagh's findings which he documents in his blog "Tigo optimiser recall?":
By Mark Cavanagh Posted December 8, 2021, <https://www.mcelectrical.com.au/tigo-optimiser-recall/>

Mark concluded that the units are sold with incorrect software installed. Connecting the units to the internet appears to cause a software update fixing the issues. It would appear that Tigo is well aware of the issues but refuses to take any responsibility. Profits appear to be put before customer interests.

Peter Strous, 9/9/2022, theidealdiet@tpg.com.au

Solar Panel Multimeter EY800W results:

1.

Voc = 34.93 V
Vmp = 29.48 V
Imp = 5.56 A
Pmax = 163.9 W

2.

Voc = 34.75 V
Vmp = 29.22 V
Imp = 5.60 A
Pmax = 163.6 W

3.

Voc = 34.82 V
Vmp = 30.06 V
Imp = 5.33 A
Pmax = 160.2 W

4.

Voc = 34.97 V
Vmp = 30.06 V
Imp = 5.36 A
Pmax = 161.1 W

5.

Voc = 34.97 V
Vmp = 30.06 V
Imp = 5.36 A
Pmax = 161.1 W

6.

Voc = 34.95 V
Vmp = 30.06 V
Imp = 5.50 A
Pmax = 165.3 W

Testing PV2 performance on 4 panels only

Before by-passing 2 panels PV2 Voltage was over 165V:

Inverter (306B9A6E)		Energy Flow		Status
PV1 Current	6.3A	PV2 Current	6.2A	
PV1 Voltage	344.4V	PV2 Voltage	168.5V	
Output Current	12.8A	Network Voltage	248.4V	
Today's Energy	9kWh	Total Energy	19,454.6kWh	
PV1 Input Power	2,169W	PV2 Input Power	1,044W	
Power Now	3132W	Exported Power	-10W	
Exported energy	0kWh	Grid Consumption	0kWh	
EPS Voltage	0V	EPS Current	0A	
EPS Power	0W	EPS Frequency	0Hz	
BMS Lost	No			
Last Updated:2022-09-06 12:42:28				

After by-passing 2 panels with PV2 running on 4 panels only the PV2 voltage dropped to just above 120V:

Inverter (306B9A6E)		Energy Flow		Status
PV1 Current	6.9A	PV2 Current	5.8A	
PV1 Voltage	348.6V	PV2 Voltage	121.6V	
Output Current	12.3A	Network Voltage	247.5V	
Today's Energy	9.6kWh	Total Energy	19,455.2kWh	
PV1 Input Power	2,405W	PV2 Input Power	705W	
Power Now	2963W	Exported Power	20W	
Exported energy	0kWh	Grid Consumption	0kWh	
EPS Voltage	0V	EPS Current	0A	
EPS Power	0W	EPS Frequency	0Hz	
BMS Lost	No			
Last Updated:2022-09-06 13:02:28				

Inverter (306B9A6E)		Energy Flow		Status
PV1 Current	6.6A	PV2 Current	4.7A	
PV1 Voltage	348.0V	PV2 Voltage	126.0V	
Output Current	11.6A	Network Voltage	243.9V	
Today's Energy	9.9kWh	Total Energy	19,455.5kWh	
PV1 Input Power	2,296W	PV2 Input Power	592W	
Power Now	2804W	Exported Power	-43W	
Exported energy	0kWh	Grid Consumption	0kWh	
EPS Voltage	0V	EPS Current	0A	
EPS Power	0W	EPS Frequency	0Hz	
BMS Lost	No			
Last Updated:2022-09-06 13:07:28				

Inverter (306B9A6E)		Energy Flow		Status
PV1 Current	6.7A	PV2 Current	5A	
PV1 Voltage	338.2V	PV2 Voltage	121.3V	
Output Current	11.4A	Network Voltage	247.6V	
Today's Energy	10.1kWh	Total Energy	19,455.7kWh	
PV1 Input Power	2,265W	PV2 Input Power	606W	
Power Now	2770W	Exported Power	8W	
Exported energy	0kWh	Grid Consumption	0kWh	
EPS Voltage	0V	EPS Current	0A	
EPS Power	0W	EPS Frequency	0Hz	
BMS Lost	No			
Last Updated:2022-09-06 13:12:28				

Inverter (306B9A6E)		Energy Flow		Status
PV1 Current	6.4A	PV2 Current	4.5A	
PV1 Voltage	338.7V	PV2 Voltage	124.2V	
Output Current	11.1A	Network Voltage	246.9V	
Today's Energy	10.3kWh	Total Energy	19,455.9kWh	
PV1 Input Power	2,167W	PV2 Input Power	558W	
Power Now	2718W	Exported Power	-32W	
Exported energy	0kWh	Grid Consumption	0kWh	
EPS Voltage	0V	EPS Current	0A	
EPS Power	0W	EPS Frequency	0Hz	
BMS Lost	No			
Last Updated:2022-09-06 13:17:28				

Another observed abnormality with PV2:

