

I summarize below the most relevant differences between shunts and hall effect sensors technology.

SMUs with shunts technology

SMUs with shunts technology are used essentially for new solar plants.

This kind of SMUs can warrant good accuracy with very low drift in temperature.

With this technology we can assure 0,5% of accuracy for currents and voltage reading from -40°C to 85°C.

Note that the parallel of negatives of strings is made inside cards.

For this, when it is necessary retrofitting of existing solar plant to insert monitoring, SMUs shunts based are applied with some difficulties because the parallel of negatives is already made in existing combiner boxes. To inserts SMUs with shunts, it is necessary to destroy existing negatives parallel because before this parallel it is necessary to measure each current.

Note that now the market requires often SMUs with high input current. The limit of SMUs is that there is busbar of negative strings parallel inside cards.

It is possible to manage with 2 busbars in parallel in the upper part of cards and one in bottom part of cards maximum currents of 600 Amps (our model ST2N2425NC) with acceptable increment of temperature of busbar zone around 20/30 °C.

Note the using SMUs with shunts technology, it is necessary to interrupt string cable that must be connected to terminal block. We are using 70 Amps terminal blocks but it is necessary to close the cable inside the terminal block with an appropriate tightening torque to warrant correct thermal dissipation inside contact of terminal block.

SMUs with hall effect sensors technology

SMUs with hall effect sensors are used usually for retrofit of solar plant without monitoring.

This SMUs can be used also for new plant. Turkish and Spanish markets for example require us hall sensors also for new plants.

In Turkey this year we sold big quantity of SMUs with hall sensors also with optical fiber interface. Next week we must to delivery 186 pcs. of code ST0HS2425NC/DR 24ch, 25Amps, hall sensors, optical fiber double ring for multidrop network with redundancy to Hensel Turkey for 40 MW solar plant.

For retrofit of existing plant without monitoring is very easy to insert this kind of SMUs leaving intact the existing combiner box because this kind of SMUs not make parallels of negatives.

To insert this type of SMU, it is necessary to disconnect the negative (positive), for example from fuses. Then the negatives (positives) are passed through the sensor holes and then reconnected where they were disconnected.

The accuracy of SMUs with hall sensors is worsts than SMUs with shunts because hall sensors have drift in temperature higher shunts.

Changing hall sensors, it is possible to measure very high current per input. We can supply SMUs with hall sensors for 25 Amps, 45 Amps and 60 Amps for each input.

Note that using hall sensors the current string cable is not cut because this cable pass through hole of hall sensor.

