



CENTRALIZING SOLAR FARM CONNECTIVITY

SUMMARY

Renewable energy continues to overtake the energy market. In 2021, the global renewable generation capacity had surpassed 3 Terrawatt (TW). Nearly 850 GW of that achievement is thanks to solar energy, representing an 18.5% increase from 2020 and an 814% increase from 2012. With forecasts estimating solar energy alone will reach 1.5 TW by 2025, its future seems, appropriately enough – bright.

However, to reach key climate goals by 2050, investments in solar energy infrastructure will need to ramp up considerably. New solar farms must be installed, and existing ones must expand. Considering the sheer number of devices involved, this ramp-up is more technically complex than it may seem at first glance.

CHALLENGE

An acre (4 km²) of land can fit approximately 2000 solar panels, and about 10 acres are needed to produce 1 MW. Each solar panel needs an inverter to convert DC electricity into AC and a computer to control them, making the number of devices in a solar farm around 60,000 per 1 MW. When your grid encompasses so many devices spread over such a large area, the ability to access and manage them all remotely is not a luxury – it's a necessity. This means each of those 60,000 devices needs to be connected to the internet, and considering the numbers we're talking about, that connection better be reliable.

Let's say you went through the whole process, laid down the infrastructure just right, and all 60,000 of your devices are online. Well done! But from now on, every time you expand your grid to generate more electricity, your network will become extra complicated and at risk of encountering technical issues.

SOLUTION

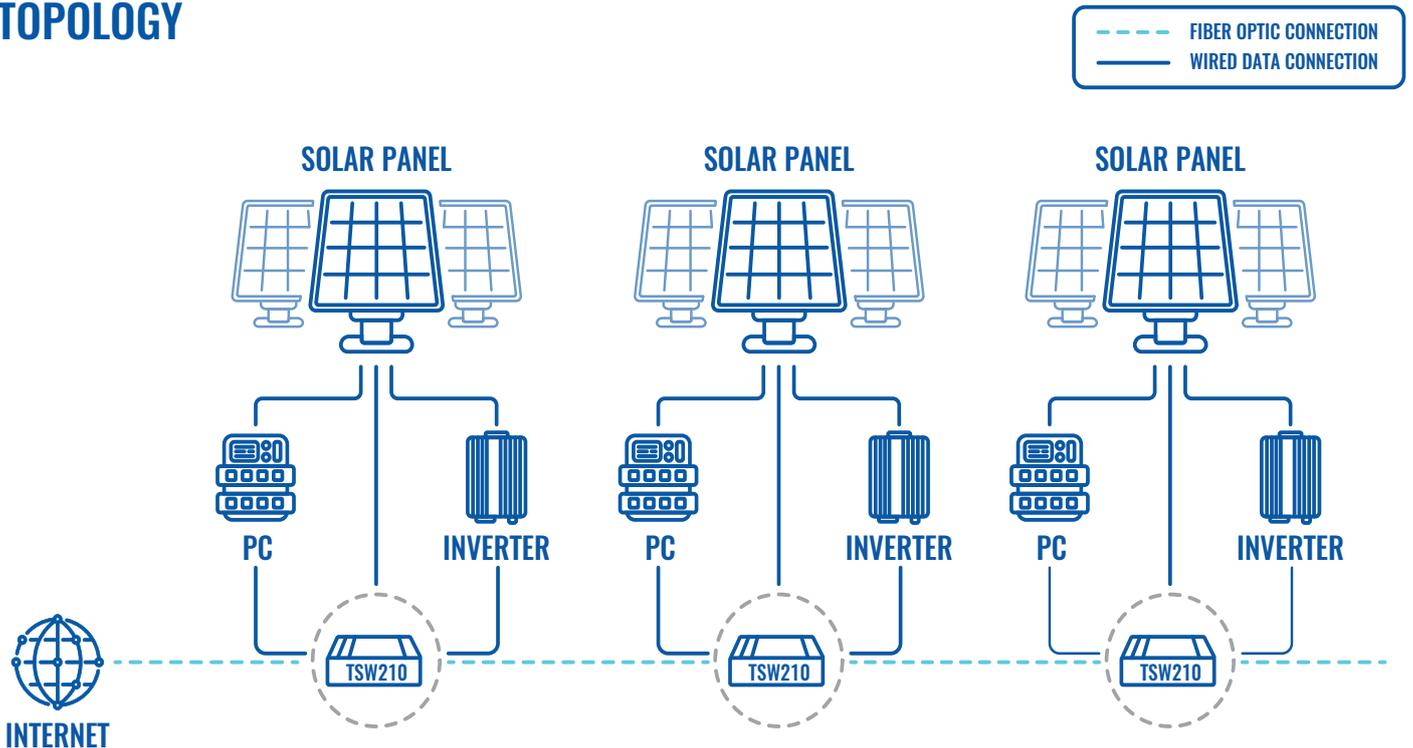
To future-proof your grid from future connectivity complications, the ideal solution is using an unmanaged industrial switch like our brand new TSW210. Equipped with 2 SFP ports for long-range fiberoptic communication and 8 Gigabit Ethernet ports, the TSW210 is perfect for centralizing your network with a reliable connection and minimal latency.

SOLUTION

With each solar panel and its corresponding converter and computer connected to a single switch via an Ethernet connection, and all switches in your solar farm connected to one another via a wireless connection, your grid can be accessed remotely and with minimum complexity. In addition, the interconnectivity of the switches means that any failure in one of them, for whatever reason, will not lead to further failures in others.

But with some of the largest solar farms in the world being in desert environments, can these switches handle the high temperatures and rugged conditions? Of course they do! Durable aluminum housing and the ability to withstand temperatures of -40°C to +75°C make the TSW210 perfect for such conditions.

TOPOLOGY



BENEFITS

- Designed to operate even in extreme temperatures and adverse environments, the TSW210 feels at home in biomes best suited for solar farms.
- 2 SFP ports for long-range fiberoptic communication and 8 Gigabit Ethernet ports make the TSW210 the ideal choice for long-distance networks without compromising reliability or latency.
- A compact size, DIN rail and other surface mounting options, and 2-pin industrial DC power socket with an input voltage range of 7-57 VDC make this unmanaged switch easy to fit in the complex mechanical setup of solar farms.

WHY TELTONIKA NETWORKS?

A secure and reliable connection is the foundation of every modern-day IoT solution, from a simple binary sensor to a vast renewable energy grid that holds our future in its metallic hands. Our devices facilitate such connections expertly because when we design them, we hold them to the highest quality standards to ensure that the hands holding the future will never falter.

