

SG203 FAULT PATH INDICATOR

Fault Path Indicators, are the latest buzzword in the industry. Considering the challenges facing the Electrical industry it could not have come sooner.



Challenges facing Electrical Utilities

Utilities have never in their history been confronted with so many diverse problems, Performance responsibilities and mandates to supply power, as we are seeing currently. The infrastructure boom, migration of workers and the need to increase GDP as driven the expectations for delivery higher than it has ever been. The utility must deliver power, at the lowest prices, in the shortest time, with the least amount of expenditure. A tall order to say the least.

Most utilities, have cut their budgets, and are now required to do the same amount of work with a much smaller budget.

So how then does the introduction of Fault Path Indicators (FPI) help?

Reduce customer dis-satisfaction – Customers are happy when the power is on. Limiting the time of outages is imperative. FPIs provide valuable information of the location of the fault. The device will pick up fault current infringement, followed by the voltage loss, caused by the upstream breaker confirming the fault, and start to emit a local flash, visible from an acceptable distance. This can be remotely monitored to reduce downtime, as the exact location of the fault is then known.

SAIDI - The FPI significantly reduces driving and fault finding time. It reduces the duration for fault clearance and reduces the number of customers affected for the duration of fault, and therefore reduces SAIDI.

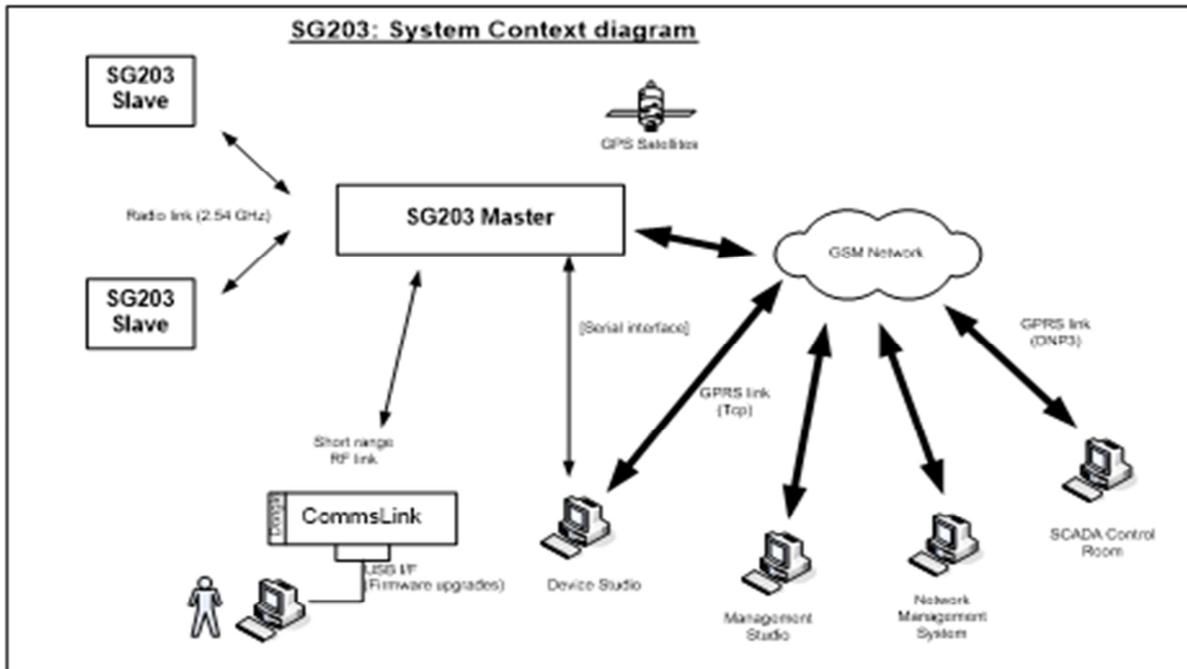
SAIFI – FPIs provide transient fault data. This information allows the utility to ascertain which parts of their networks is the worst performing, plan maintenance to reduce unplanned interruptions. The frequency of outages is reduced significantly, due to the proactive intervention by the utility.

Coupled with the above benefit, the utility also now gets valuable information e.g. Number of outages, Current demand, Voltage fluctuation, line temperature, and galloping conductor or possible downed conductor. This data is then used to maintain the network. Utilities can now spend the little money they have, to fix the most problematic parts of the network, giving them the maximum benefit, while proving increased network availability, reliability and visibility.

FAULT PATH INDICATORS

Legacy Fault Path Indicators

The purpose of this device was to indicator if a fault had passed through it. Located in the correct part of the network, it would pick up fault condition and start to flash. This significantly reduces the time for locating of faults by reducing the amount of time spent sectionalising various parts of the network.



In the next Phase manufacturers added some technology to remotely monitor these devices for fault. There is some very difficult terrain in which to find faults in the network, coupled with difficulty of access and the resources to do the work. Utilities could at this stage send linesman to the exact T-Offs where the fault occurred, reducing driving time, the amount of resources needed for fault finding and avoiding unnecessary inaccessibility problems. This technology phase showed a significant drop in the fault finding time, which is conventionally done by Trial and Error.

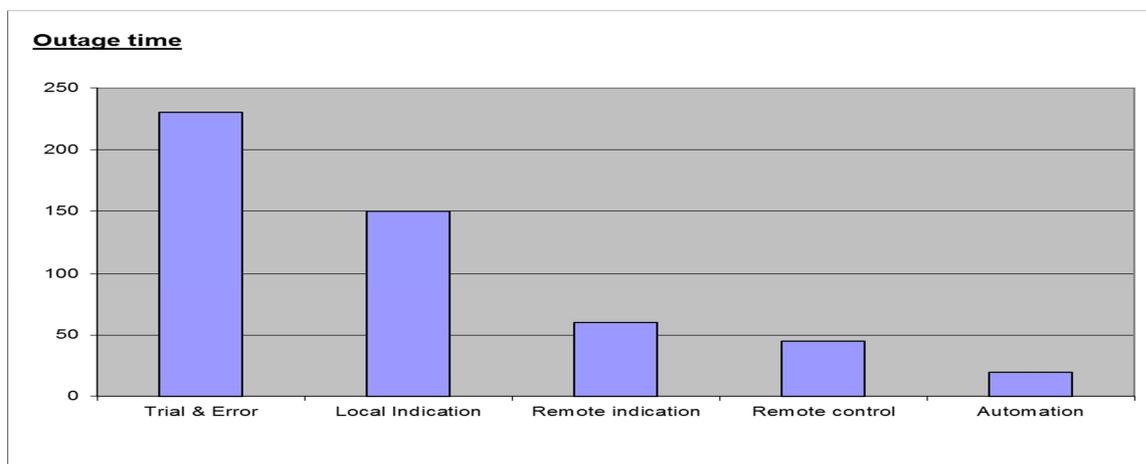


Figure 1 below show the results of a case study. Outage time indicated is in minutes.

The new generation Fault Path Indicator (FPI)

The new FPI has become a far more intelligent device, capable of much more than its predecessor. It is now capable of the old features but now includes Temperature sensing, Voltage monitoring, Current monitoring, Accelerometer function, Harmonics analysis and even waveform capture. This device now comes complete with an integrated RTU. There is now no need for external solar panel functionality.

The latest solar technology is used to power the unit and is integrated in the solution, for ease of installation and compact design. Maximum Power Point Tracking technology enables us to have the most efficient use of the Solar panels and the best care when charging the batteries.

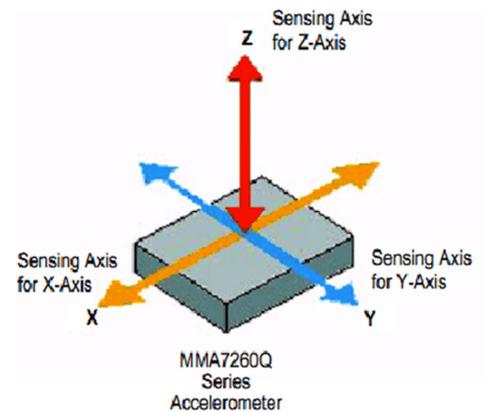
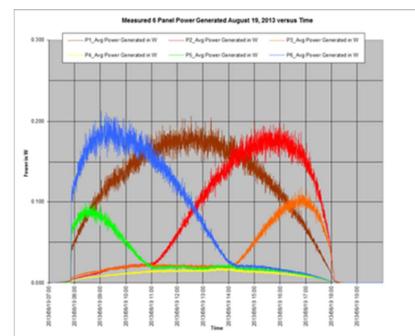


Figure 2 shows the 24 hour operation of the solar panels during sunlight



The solar panels are placed on the device, in such a way, that it harnesses the best of the sunlight, needed to charge the batteries, for the longest time.

Our device uses an incredibly low 20mA in normal mode, to function, giving the device exceptional battery usage and uptime.



ADC Energy

276 Maple Road, Pomona, Kempton Park

Tel: +27 11 396 3171/2 Mobile: +27833805008

Email Address. trevor@adcenergy.co.za