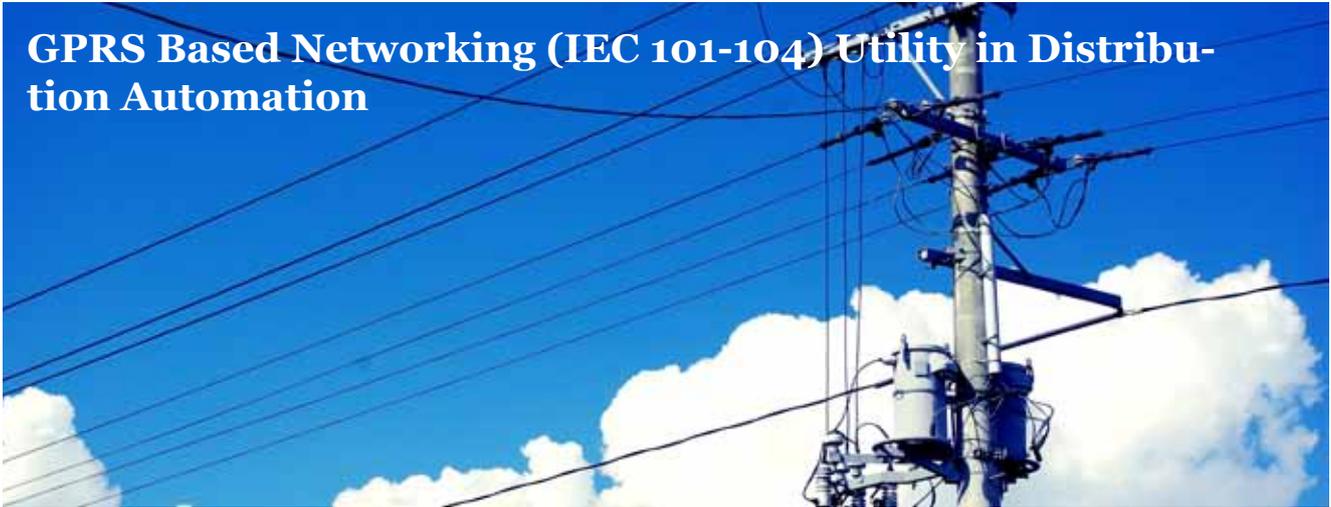


GPRS Based Networking (IEC 101-104) Utility in Distribution Automation



>>>Background

-In a Distribution Automation system, there are feeder automation options that include: demand side management (DSM), remote switch control, integrated voltage control, service restoration, feeder configuration, trouble call, fault location/isolation, load and safety checks.

-In order to meet the requirement of networking in power system, cellular devices must be:

- Industrial Grade -- Robust in harsh outdoor

environments (wide temperature/humidity range, vibration, harsh electromagnetic conditions)

- Auto-Recovery -- Reliable in unattended remote sites
- Safe -- Secured remote applications (support private APN, VPN, Firewall etc.)

-The project introduced below was about one of the biggest system integrator in China who needed a reliable and flexible networking method for power distribution system.

InHand Products and Solutions

>>> Products



InDTU332 series industrial serial to GPRS modem



Network topology

>>> Description of solution

-In this project, the big power system integrator who provided power companies with control system had got a new requirement from the power company that requested a smarter communication system for distribution lines. The power company wanted to build a control system with over 20,000 control units dispersed everywhere in the city. The whole system requested a highly reliable and flexible communication system for quick response and easy maintenance.

-However, traditional cable-network method could not meet the requirement because to install cable in thousands of field sites was a costly way. Besides, this project allowed a response time within only 3 seconds for these dispersed units which made radio system an unrealistic solution.

-With deep understanding of the project requirements, InHand Networks proposed GPRS based solution. At the remote field of on-pole switch, InHand Networks provided embedded GPRS modem InDTU332GS55 which was a customized chip and could be installed within the RTU of integrator. At the remote field of substation, we used standard model of InDTUGS55 GPRS modem which was compact designed and could be installed in the electric cabinet in the substation. All the control units were connected to InDTU332GS55 with RS232/485 serial, and then, with universal GPRS coverage, SCADA center could get access to any field without additional network construction.

>>> Features of Product and Solution

InHand products InRouter 700 and InDTU332 fully meet the requirements of power distribution automation on both networking side and working condition side:

1. Robust in harsh outdoor environments:
 - Wide operating temperature:-25-70°C, Humidity: 95% RH
 - Strict EMC features specially designed for Power System
 - Support wide power input: 5-35V DC, both with power terminal
 - Long MTBF (over 30 years!) with high reliability, significantly reducing maintenance costs for customers
2. Reliable link with link detection and auto-recovery
3. Low power consumption design specially for renewable energy system, help to cut energy costs and reduce failure rate of monitor system:
 - InDTU 332: Peak/Operating < 0.5 W; Standby < 0.8 W
4. Compact design, DIN-rail mounted, easy fit into control cabinet
5. Proven by high-end customers including ABB, Siemens, Schneider Electric, China State Grid, etc.