

# Application Story

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## Smart Metering Communication

### Solution

#### Overview:



Utilities around the world are exploring new ways to acquire and communicate consumption data for electricity, gas and water, reliably accurately and in real time. It can saves utilities the expense of periodic trips to each physical location to read a meter and another advantage is that these data coupled with analysis can help both utilities and consumers better control the production and use of electric power, gas or water to protect limited energy resource and facilitate to resolve global warming threaten.

#### Objective:

Based on GPRS technology, usually there are three ways to connect meters with the Metering Data Management system of utilities.

1. CSD.
2. Each meter is connected with meter concentrator, and concentrator is connect with GPRS modem via RS485 interface.
3. A meter is connect with a GPRS modem via RS232 interface, and some of meter have already embedded with AT command to establish PPP connection to transmit data to the MDM; And in Advanced Metering Infrastructure, bi-direction communication require GPRS modem to establish TCP connection with MDM by itself.

#### Requirement Analysis:

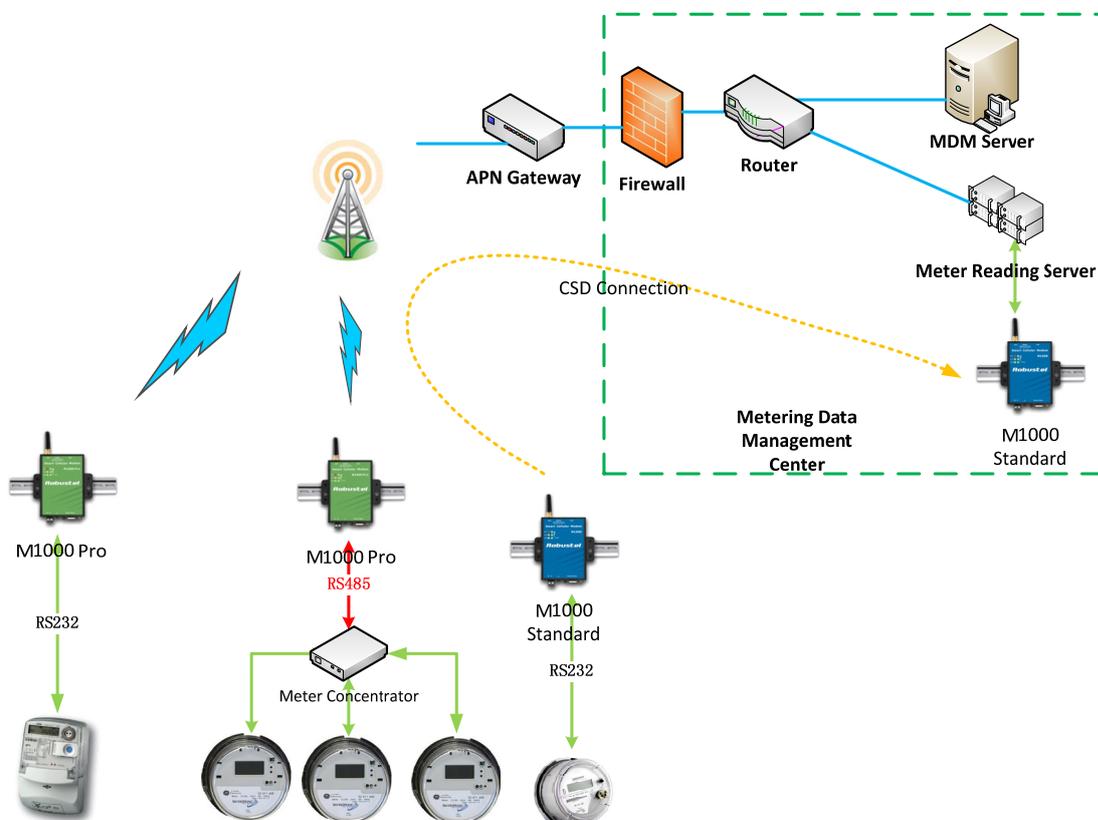
According to the utilities industrial characteristic, the Smart Metering Communication infrastructure must meet several core requirements includes:

- **High Reliability and long lifespan:** The communication device are always installed in outdoor and in some harsh environment, such as shock, corrosion, extreme weather, vibration and humidity. And it should be able to stay online for 10, 15 or even 20 years with low maintenance.
- **Low Cost:** Smart Metering communications technologies that will be deployed on a massive scale must be designed to minimize those costs and provide excellent value.

- **Low power consumption:** Even when smart meters and their communication systems are consuming a relatively small amount of power, that consumption adds up when millions of meters are connected.
- **Easy to install:** The communication device must be designed to be very easy to install and maintain to help utilities to control the operation cost when it on a massive scale.

## Solution:

1. M1000 Pro works as TCP client to update metering data to the MDM server.
2. With Meter Concentrator, M1000 Pro could collect metering data from different meters, and send to MDM server.
3. The Smart Meter to send AT Command to M1000 Standard to establish unidirectional CSD connection with Meter Reading server.



4. The Modems need to be able be controlled by the SMS sent be MDM, so that MDM could control its online/offline, and monitor modem's signal level, IP address, status etc..
5. Modem must be remote configurable by SMS, so that operator could change its configuration without on-site service.

+70° C

-25° C

95% RH

EMC

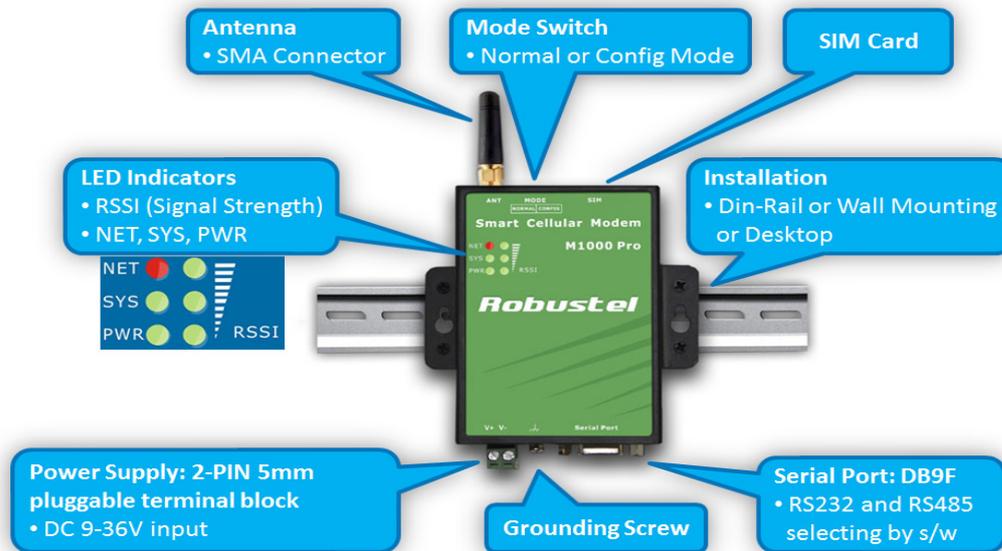


# Why Robustel?

## High Reliability and long lifespan

- Perfect EMC performance: Compliant to IEC61000-4 series standard to meet Smart Grid demand. It enable M1000 modem delivery perfect performance in harsh electromagnetic environment, such as surge, ESD, RF interference etc which might destroy the device or reduce service life.
- Wide Operation Temperature range from -25 to 70 degrees enable M1000 Pro could deliver solid performance both in outdoor or indoor application.
- 5% to 95% operation humidity.
- MTBF = 25 years.
- Embedded with world famous high quality Cinterion (Siemens) module.
- Industrial design: IP30 metal housing; terminal block power connector for solid connection.

## Easy to Maintenance and easy to install:



- Configure by SMS enable non-attendance on site.
- Auto modem status (Modem Name, IMEI, RSSI, IP) SMS report to user when IP change or reboot.
- Firmware upgrade via serial, configure file export/import via serial.
- DIN-Rail/Wall Mount optional.
- Auto GPRS TCP connection without AT command is needed.

## Low Cost:

- Embedded with Cinterion BGS2, M1000 Pro could offer 20% lower price compare to similar cellular modem.

## Low Power Consumption:

- Idle: 0.6-0.72 watt; Peak: 1.2-2.4 watt.

# Robustel

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