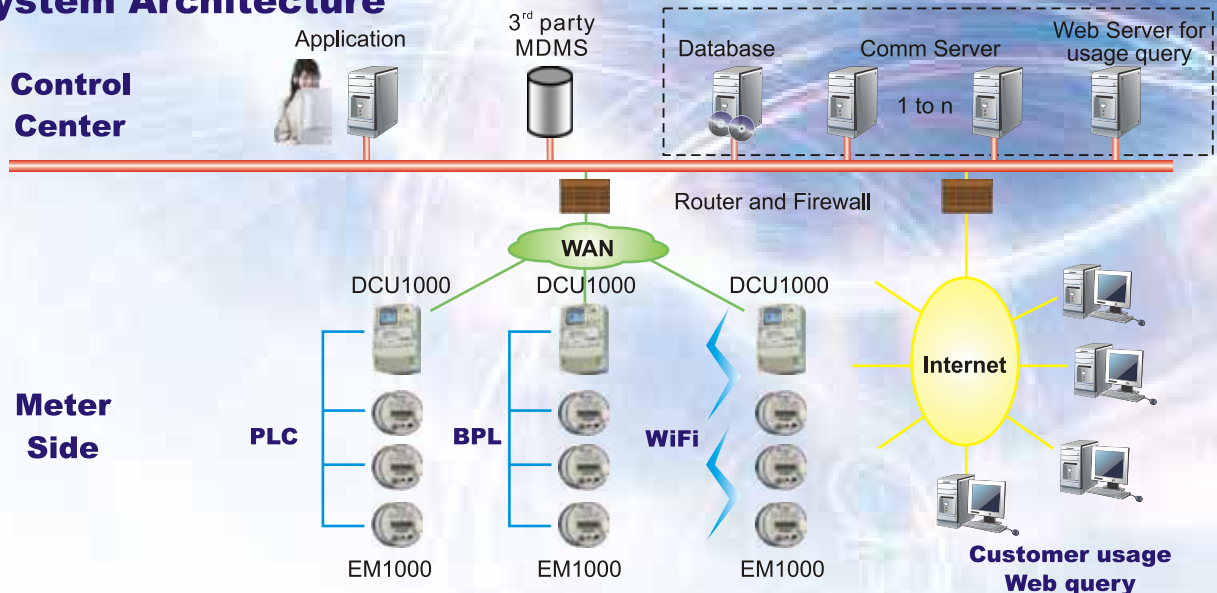# Data Concentrator DCU1000 for Advanced Metering Infrastructure (AMI)

The AMI is consisted of DCU1000 concentrator and a series of smart meters. Its Plug&play and auto-routing features greatly simplify the system installation process. The communication interface to meters can be chosen to PLC, BPL (Broadband PLC) or WiFi, such flexibility will extend the AMI feasibility for different site situation. Not only the regular billing data but also the load profile, meter events, meter real time registers can be managed by the AMI. Up-link support GPRS/GSM and Ethernet which can leverage the existing WAN infrastructure to speed-up and cost down for the AMI deployment. The special design of RF Mesh between concentrators can reduce the WAN communication cost dramatically. Some advanced features of AMI including: outage report, time-synchronization, TOU setting, remote on/off and I-HD (In-home display) are (or will) also supported.

AMI System Architecture

Data Concentrator Unit DCU1000

Features

- Up to 100 meters Management：meter auto registration, meter time synchronization, regular meter data polling, meter event logging, meter profile logging.
- Auto registration to center station.
- Support functions：regular reading, on-demand reading, outage report, TOU reading, demand reset, TOU setting.
- PLC、BPL、WiFi to meter communication；Ethernet、GPRS to center communication.
- Friendly graphic LCD display and local IEC1107, RS-485 ports for on-site operation and setting.
- Long life battery for clock and chargeable battery for outage detection.

Specification

Meter communication	PLC or BPL or WiFi, support ANSI C12.22 protocol
Uplink communication	Ethernet or GPRS/GSM
On-site comm.	RS-485×1, IrDA×1, for on-site operation
Concentrator RF Mesh	Can establish Mesh network to one concentrator then proceeding uplink communication
Meter plug and play	Meter plug & play, for registration
Meter auto-routing	Meters auto-routing
Meters connection	100 units
Data saving	Billing data, load profile, alarm/caution saving
Data storage capacity	90M byte NAND Flash, 100 unit meters which can be save billing data for 360 days, 2,000 alarm data, 920,000 load profile and can be expanded to 2G byte with SD card
Concentrator unusual detection	DI for illegal case open, power outage detection, Meter emergency alarm. Can set to report back immediately
TOU download	Support ANSI C12.18 , TOU data can be downloaded to meters

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Meter register data reading	Real time registers of meter can be read and uploaded
Meter time correction	To configured synchronize with time server for both concentrator & meter
Power supply	90-380 Vac ±10%
Temperature and Humidity	0-50℃、0-95% RH non-condensing
Tolerance	Surge：6 kV、ESD：contact 8 kV, air 15 kV、EFT：4 kV
Electromagnetic induction	EN-61000
Display	320×200 65536 colors, wide temperature 3" LCD
Output/Input	2 DI：Relay (Source can be provided by concentrator), 2DO：relay withstand 240 Vac 130 mA
RTC	1200 mAh extra battery, can keep supply RTC power for 10 years when power outage
Extra battery	700 mAh chargable battery, concentrator can work more then 10 minutes when in power outage
Memory device	DDR SD RAM：128M byte、NAND Flash：128M byte
Expand port	USB ×1 for on-site operation and data backup
Size	W 180 mm × H 2900 mm × L 95 mm

Single Phase Multi-function Electricity Meter EM1000

Features

- IEC 62053-22, ANSI C12.20, Class 0.5 revenue accuracy.
- Wide range of current measurement (from 0.0015 Ib to 6.67 Ib).
- Bi-directional energy measurement.
- Multi-tariff with TOU (up to 4 tariffs).
- Full power parameters measurement.
- Four quadrant measurement.
- Configurable block or rolling demand.
- Configurable crystal or power line time-base.

Specification

Power	88~276Vac, 50/60 Hz
Accuracy	Class 0.5 (IEC 62053-22 or ANSI C12.20)
Voltage Range	Voltage 88~276 Vac
Current Range	Ib:30 A; Imax:200 A
Starting Current	45 mA
Temperature range	Storage：-40℃~+85℃; Display full operation from -30 to +70℃
Humidity range	<=95%
Primary time base	Power line frequency (50/60 Hz), software configurable to crystal
Secondary time base	< 0.01%
Meter base	Form 2S
Battery	LiSOCl$_2$, 950 mAhr
Communication port	ANSI Type II optical port
Communication option board	RS-485, PLC, BPL, WiFi
Application standard	ANSI C12.1, ANSI C12.10, ANSI C12.18, ANSI C12.19, ANSI C12.20
TOU	4 tariff with season, day type, and time zone settings
Programming software	MeterGen for meter configuration, MeterComm for DAP communication, LoadProfiler for load curve report. 3 level security protection.
Communication protocol	ANSI C12.18, ANSI C12.19(with Modem option), ModBus(with RS-485 option)
Surge voltage withstand	ANSI C62.41, IEC 61000-4-5
Calibration	Automatic software calibration
Dimension	153.5mm(H) x 176.5mm(W) x 176.5mm(L)
Net weight	1.1 Kg