

### M<sup>3</sup>-S

● **SINCE more than 10 years** AP Systems is deeply involved in supplying high level communication solutions for the AMR market.

Up to the present more than 350.000 AP Systems communication devices have been successfully provided and put on field by the most important european energy distributors.

Today AP Systems is proposing its new complete multi metering communication system: the most advanced metering management system on the market, **allowing gas, water, heat, electricity telemetering and streetlight management at the same time, with the same infrastructure.**

**M<sup>3</sup>-S** is a complete and MODULAR system, for automatic meter management and reading. IT TAKES ADVANTAGES FROM AP SYSTEMS' LONG TERM EXPERIENCE IN TELEMETERING COMMUNICATION SYSTEMS.

Beyond merely reducing costs of manual reading, there's a lot of strategical reasons why energy distributors are investing in AMR solutions:

- improvement of readings reliability and accuracy (requested by EEC)
- reduction of estimated readings (requested by EEC)
- readings frequency improvement (requested by EEC)
- possibility to converge data coming from different types of users (gas, electricity, heat, water) on a common communication infrastructure
- constant service and security monitoring
- possibility of automated remote inspection
- immediate detection of service problems
- reduction of claims and frauds
- easy installation, configuration and maintenance of the system devices
- innovative marketing strategies on energy price plans
- possibility of herogation interruption (in case of frauds or for security reasons) by remote connection
- value added services to customers (on-line information, web billing, etc...)
- possibility to perform reliable and precise statistical studies on the most recent data

**... A modern automatic meter reading system should allow this!**





### M<sup>3</sup>-S main concepts are:

- Telemetry and management of different meters at the same time and streetlight management with value added features:
  - wireless and wired networks management,
  - TCP/IP network extension on all networks,
  - Easiest installation,
  - easily programmable application sw tools to fit all application requirements (pre billing calculations, customized features, installation and maintenance facilities, etc...)
- Open technologies: the ICT market is moving very fast. M<sup>3</sup>-S is ready to easily embed new communication technologies and to move with the market, both on wireless and wired solutions.
- Open protocols: not only DLMS cosem can be used. Also proprietary M<sup>3</sup>-S protocols are public and open-source.
- High level features: all M<sup>3</sup>-S components are the actual state-of-the-art, with a lot of value added features to increase system reliability and installation and maintenance facilities.
- Various versions of devices are available: for only gas/water metering, only electricity metering or multi metering.

## M<sup>3</sup>-S: system components

### ● M<sup>3</sup>-C - THE open-technology concentrator

**M<sup>3</sup>-C IS A LONG RANGE** communication (GSM/GPRS/EDGE/ETHERNET) – short range communication (zigbee/PLC) concentrator & gateway.

It collects and manages all data coming from connected devices, saving them in the embedded FLASH memory and provides them to the central software through the long range networks. **M<sup>3</sup>-C** is the most important device of the AMR system: it represents the link between the central software and the remote devices.

It takes advantages from virtual ip features on non ip-native networks (such as zigbee and plc). All network devices are univocally identified as in a TCP/IP network, even avoiding the heavy TCP/IP overheads.

**M<sup>3</sup>-C is the local network manager:** it builds up the local networks and takes care that all devices are active and working. In the case of communication faults, alarms are managed and communicated to the central software. **M<sup>3</sup>-C** also takes care about synchronisation of all the sub-devices, thanks to the embedded Real Time Clock and syncro mechanism.

In **StreetLight** management applications, **M<sup>3</sup>-C** also embeds the astronomical clock management.

**M<sup>3</sup>-C allows the easiest REMOTE CONFIGURABILITY OF ALL ITS FEATURES: ONCE INSTALLED IT DOES'NT NEED ANY LOCAL MAINTENANCE.**

The **EMBEDDED FLASH MEMORY (FROM 128MB ON) ALLOWS TO LOCALLY MANAGE AND SAVE A LOT OF DATA**, with smart data recovery and FLASH memory wear-levelling features helping in memory reliability improvement.

All application criteria are freely configurable by remote, through TCP/IP Socket or GSM data call. The application software layer can be personalized, by using an innovative scripting language called "LUA". This allows system integrators and energy distributors to easily customize the application criteria themself.

#### Different versions are available:

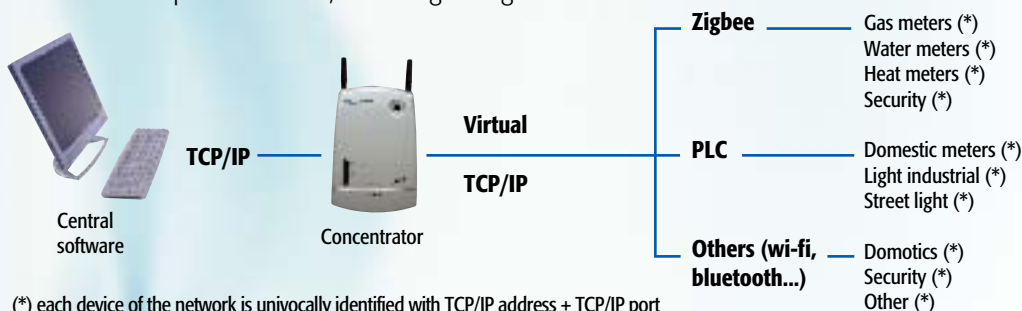
- Electricity management
- GAS, Water, Heat management
- Street Light management
- Multimetering
- etc...

### ● M<sup>3</sup>-T: zig bee meter terminal

It can be connected to the meter pulse generator via cable or it can be directly embedded into the meter. Allows more than 12 years working time, with remote configurable parameters and the most easy-to-install procedures, through a zig bee based management system. It is also available as a "router", with more performant battery pack.

Also PLC-to-ZigBee repeaters are available, allowing convergence between the two technologies.

● **M<sup>3</sup>-SW:** the central software allows to easily manage, configure and maintain all system components. It can be supplied as a maintenance and management software module, or even as a complete software, including billing.





### M<sup>3</sup>-S: system applications

#### ● ELECTRICITY AMR & AMM

AP SYSTEMS HAS A LONG TERM EXPERIENCE IN COMMUNICATION DEVICES FOR ELECTRICAL AMR & AMM. This is the reason why M<sup>3</sup>-S is the state-of-the-art in Automatic Meter Reading, managing a multitude of different meter models at the same time. The high level versatility of its components, the great reliability of its devices and the use of the latest communication technologies make M<sup>3</sup>-S the most advanced AMR system on the market. THE CONCENTRATOR EMBEDS A powerful powerline communication chipset: the semitech simac, allowing compatibility with most of the meter types actually on field. Different protocols can be implemented, maximising the efficiency of the system.

#### ● GAS WATER AND HEAT AMR & AMM

One of the most important advantages of M<sup>3</sup>-S System is the convergence between different wired and wireless technologies. Electricity, Gas, Water and Heat meters can be read at the same time, With the same infrastructure. This is what we call "Open Technology"!

A powerful RF communication technology is used to manage remote meters: ZigBee is able to build up smart "MESH" networks and subnets, adding a very important the value added feature: the VIRTUAL IP. This allow each meter to be recognized as a standard IP network member.

Every meter with pulse transmitter can be integrated in the system, by using M<sup>3</sup>-T as an external terminal, by integrating M<sup>3</sup>-T into the meter or by using different ZigBee Terminals.

#### ● STREET LIGHT MANAGEMENT

Taking advantages from the PLC communication features of M<sup>3</sup>-C, the Multi Metering Management System can also be used in Street LIGHT management.

An innovative type of electronic ballast has been developed, to be integrated in the M<sup>3</sup>-S system, allowing following features

#### Energy efficiency improvement

The electronic ballast manages each lamp and it can provide to the lamp exactly the right quantity of energy, with no energy waste EVEN DURING the critical initial burning phases

#### Management and maintenance costs reduction

The optimisation on power supply allows lamp life to increase up to 50%, drastically reducing the failures.

This slashes down maintenance costs.

#### Real time management of each single lamp

The punctual plant management from a remote central software allows to real time manage each single lamp, optimizing features and allowing more sophisticated territory lighting plans, based on several data (time, environmental information, meteorology, seasons, etc)

#### Environmental Safeguard

Even by improving service quality, the energetic efficiency increase allows to reduce electricity consumption. This way CO<sub>2</sub> production is drastically reduced, this is very important for our environment, for meeting requirements of Kyoto Protocol and in order to obtain white certificates.