

Automatic Meter Reading (AMR) products.

Telematics Wireless, in cooperation with one of the leading producers of utility meters, has developed an advanced AMR system, suitable for remote reading of electricity, water and gas meters. The products are based on communication techniques specifically adapted to operate in an extremely noisy radio environment, especially challenging in dense urban areas. The system is designed for implementation in several configurations:

1. Fixed network
2. Drive-by reading
3. Walk-by reading

The system utilizes frequency bands allocated for Short Range devices in 902 – 928 MHz and 868 – 870 MHz range. Other ranges are available upon request.

TransMeter

The basic component in each configuration is the **TransMeter** – the miniature low cost transceiver easily connected to the utility meter. The TransMeter transforms the reading of the meter to the short data string, which is periodically or by demand transmitted to the one of several types of system's receivers and then relayed to the main computer for further processing.

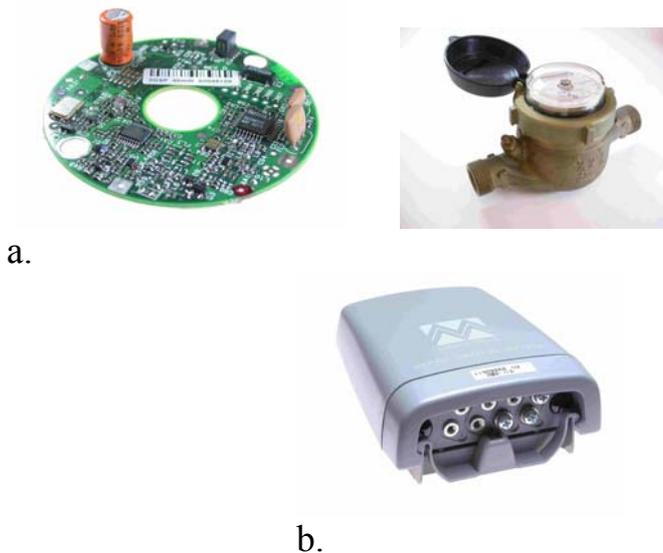


Figure 1. TransMeter configuration as Built-in module in Water Meter (a) and as Stand Alone module (b).

TransMeter's design is based on most advanced miniaturization techniques, incorporating ASIC component to provide extremely miniature and low-cost product without compromising the performance. The module is designed to work over 7 years on an internal battery. Its installation is simple and its operation does not require highly trained professionals.

TransMeter serves as an integral part of each of 3 systems, adapted to answer to the different operational and installation conditions:

- Concentrated reading in dense urban environment (Fixed Network) – in this configuration the system transmits the information to the “concentrator”, (either directly or through repeaters) which transfers the data to the Center.
- Drive-by reading – in this configuration the user can collect and read the information transmitted from the reader while driving the car at the speed of up to 80 km/h. The received data is transmitted from the vehicle directly to the Center.
- Walk-by reading – in this case the reading is performed while walking by the person holding a palm receiver. This system enables programming of the TransMeter with various parameters, e.g. customer ID, reader number, status, configuration etc.

Fixed Area Network

This wireless system enables remote utility meter reading in dense urban environment, with maximum convenience and without user involvement. The system enables practically continuous access to the data and alert in case of irregular operational condition, tempering attempt or system's components malfunction.

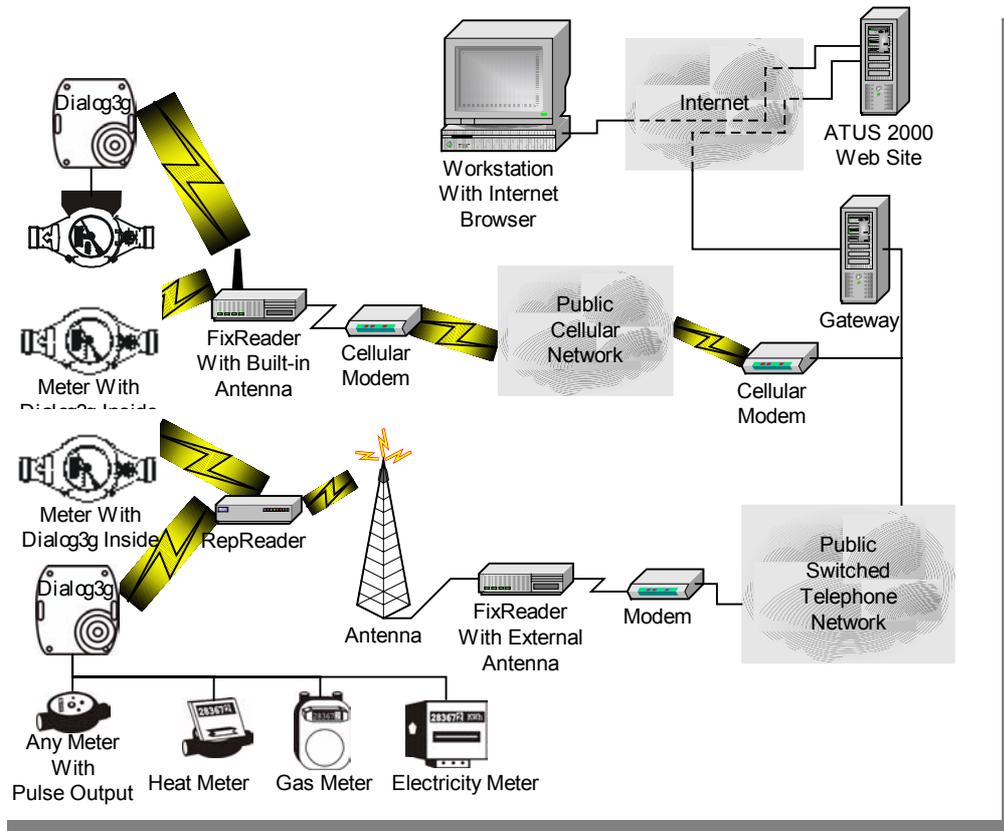
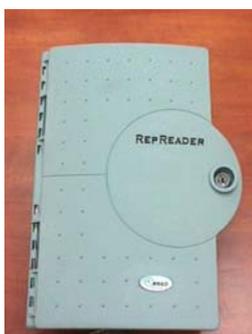


Figure2. Fixed Area Network configuration

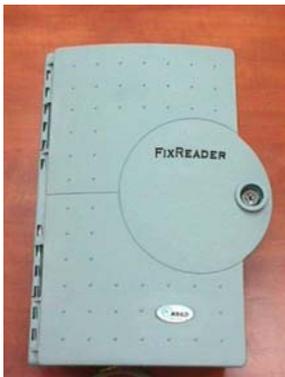
The system is comprised of the following components:

- **TransMeter** – attached to the reader and transmits the reading using short transmissions and special protocol which insures reliable data transfer without mutual interference with other TransMeters operation in the same area. The units are connected to each reader in the building and are periodically transmitting the required information to the RepReader or FixReader.
- **RepReader** – is a repeater, which receives the data from several TransMeters and relays this data to the local concentrator. The RepReaders may be installed at different locations in the building to insure reliable reception of information from several readers and signal amplification and further relay.



RepReader is powered either by long-life (several years) lithium battery or from local power line and does not require maintenance. It provides effective and cost-saving utilization of communication infrastructure at the locations with multiple users.

- **FixReader** – serves as a “smart” local data concentrator, receiving information directly from TransMeters and/or from RepReaders and transfers it to the Center, using either cellular (GSM), telephone line w/modem or another communication link.



FixReader “handles” up to 8,000 meters, including the meter information, ID numbers, alerts and malfunctions.

Drive-by system

Essential component of this configuration in addition to TransMeter is **CAReader**. CAReader performs automatic reception of the data, transmitted from the readers while driving at the speed of up to 80km/h. This data is further transferred to the Center either using smart card installed in the unit, or via GSM modem, or using RS232 interface to the external terminal.

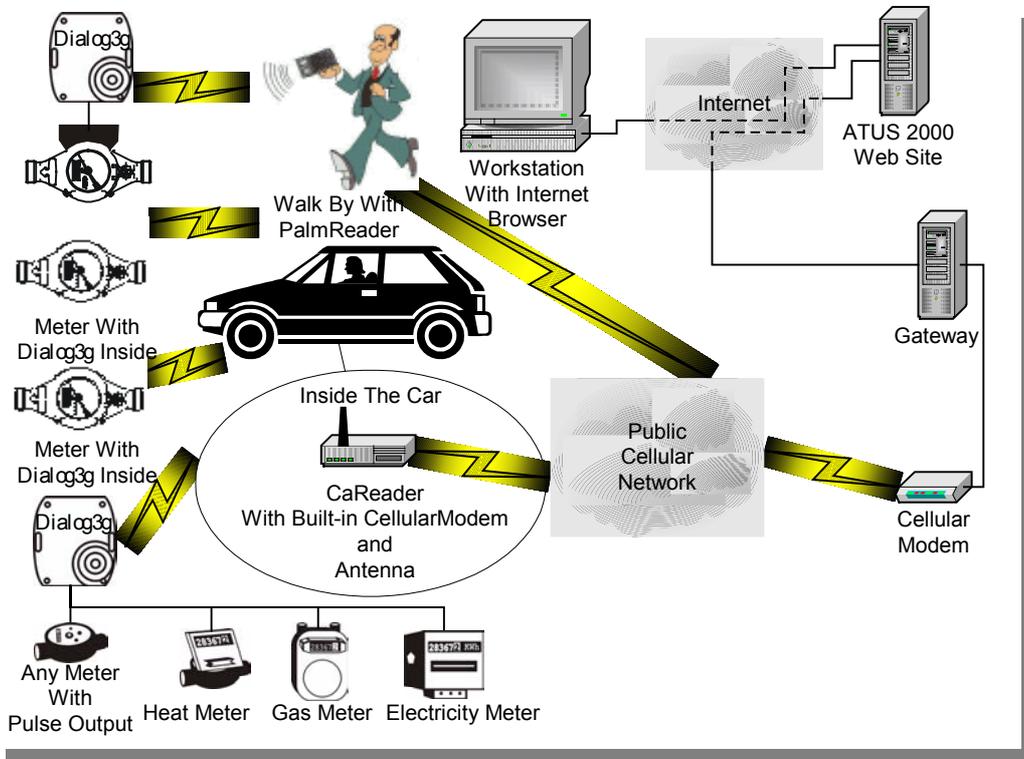


Figure3. Drive-by and Walk-by configuration

CaReader's mechanical configuration enables easy installation in the vehicle and is powered from the vehicle's accumulator.



CaReader collects data from up to 8,000 meters. When required, it provides two-way communication with the TransMeter for programming and change of parameters.

Walk-by system

This configuration enables remote meter reading while walking. This is achieved using small transceiver called **PalmReader** connected to standard hand-held terminal. PalmReader is carried on the belt of the operator and receives the data transmitted from the meters in its vicinity. The data, collected by PalmReader is displayed and can be verified at any time. PalmReader also serves as a Programming device for the TransMeter.