



PREPAID WATER METERING SYSTEM

Walk in the desert,
You will realize the cost of Water



Utility Systems has developed the world's first commercially available prepaid water metering system that is approved by the Standard Transfer Specification (STS) Association and conforms to IEC 62055-41 and 62055-51 standards.

The Utility Systems prepaid metering system is not proprietary token or card based, but is based on an open architecture complying with these IEC standards which govern. This standard is used in over 80 countries world-wide.

Having an open architecture system means that water service providers who acquire such a system are not locked into a proprietary system and dependent on one supplier, but can in future purchase metering products and implement vending systems from any other manufacturer whose products conform to the same standards. This ensures that prices remain keen, and that suppliers are constantly challenged to provide the best and the most cost effective technology.

The STS approach adopted by Utility Systems allows for multiple vending options through a wide variety of STS compliant vendors. The Utility Systems prepayment metering system also incorporates a radio frequency and GSM based data and command transfer system, so enabling two-way communication between the water service provider and the meter, a feature not available in most other prepaid water systems.



Water Management Device (WMD)

The primary product in this system is referred to as a Water Management Device (WMD).

It contains an electronically controlled valve and microprocessor with embedded firmware that enables it, when connected to a pulse output water meter, to perform a number of metering functions in addition to those usually associated with a prepaid metering system.

Key functions and features:

- » Monitors and controls water consumption
- » Has a short range radio used to communicate with the User Interface Unit (UIU), the Data Collector or the Field Service Terminal
- » Logs and stores water consumption data over an extended period
- » Stores a log of cumulative month-end consumption data suitable to be used for billing purposes
- » Detects and warns of possible consumer side leaks
- » Detects tamper

The WMD product is usually housed in a meter box assembly incorporating an incoming stopcock, a water meter, piping and the WMD.

The WMD's primary function is to monitor and manage domestic water consumption. The water consumption is monitored directly from the pulse output of a conventional water meter via a fully electronic pick up. This ensures high accuracy, reliability and long life. The WMD is also able to interface to standard reed switch and electronic pulse output sensors.

WMD, in addition to the prepayment functionality, can also manage the consumer's water consumption through the use of a real time clock and an integrated, low power, self-latching diaphragm valve.

The WMD contains a bi-directional radio which can be used to communicate with the WMD and to give it commands. The bi-directional communication ability of the WMD provides the infrastructure to allow for real time control over the consumer's water supply.

User Interface Unit (UIU)

This is the remote display unit installed within the consumer's home that provides the gateway into the WMD installed outside the premises. The function of the UIU is to:

- » Remotely display the meter reading as reflected by the WMD
- » Display remaining allocation available to the consumer
- » Allow for prepayment Top up / Credit token entry
- » Provide various alarms for the consumer, such as leak and tamper
- » Display the WMD serial number.



Prepayment/Top Up Credit Vending

In many cases municipalities and other water service providers want to provide the consumer with the ability to purchase credit themselves, without having to have the meter read and a bill sent out, or what is commonly referred to a prepayment metering.

The WMD, is based on the STS Association standard, and regulates the manner in which a 20 digit token is to be issued

The implementation of STS based prepayment system allows for the following:

- » The consumer having full control of their own specific water needs
- » The deployment of a non-proprietary vending infrastructure
- » Utility banking hall based vending
- » Internet-based vending
- » The use of existing 3rd party vending infrastructure which, provided the relevant commercial contracts are in place, could include :
 - » A current STS electricity vending station including XML –vend based vending platforms
 - » An independent vendor, such as EasyPay or Blue Label Technologies
 - » Internet vending
 - » Points of sale
 - » Cell phone/sms based vending

Reports

Utility Systems can provide a standard set of reports which are updated and available immediately on-line. Further customised reports can be obtained by arrangement.

The standard reports include reports on:

- » Transactions by customer vending point
- » Sales summaries by day and month
- » Monthly management summary
- » Exceptions reports on low or non- existent purchasing patterns



Data Collector

The second tier within the Utility System prepaid metering or AMI infrastructure, is the Data Collector.

The system can be scaled to suit most requirements, from a walk by / drive by, to a fully fledged automated real time GSM based implementation.

The system protocol is based on a highly reliable radio link. The various end products, such as Water Management Devices (WMD), transmit a predefined message via radio frequency and according to a programmed time schedule.

The WMD message is then received by a Data Collector. The Data Collector can be either in the form of an ever present fixed network, or in a periodic or randomly available 'walk by/ drive by' type Network.

The data collected within the network is then transferred via a secondary communication link to a server. This secondary communication link includes USB, GSM and type connectivity.

The Data Collector will not only collect the data provided by the WMD, but will also interact with the WMD and transfer relevant configuration parameters or commands. The interaction can be set to be either selective to a single or a small selection of WMDs or broadcast to all WMDs within range.

Head End Software

The USC Head end software has been developed with the intention of providing a simple interface between the municipality and the USC AMR / AMI system.

The WMD data collected by the various data collectors can be downloaded either directly into a local data base via a USB connection, or into the server's data base via a time scheduled GPRS link. The USB and GPRS implementations have been developed in-house by USC, and numerous such installations exist.

The protocol and implementation allows for a wide variety of system configurations to be supported, ranging from localised gated communities, through urban municipalities and even wide spread rural systems.

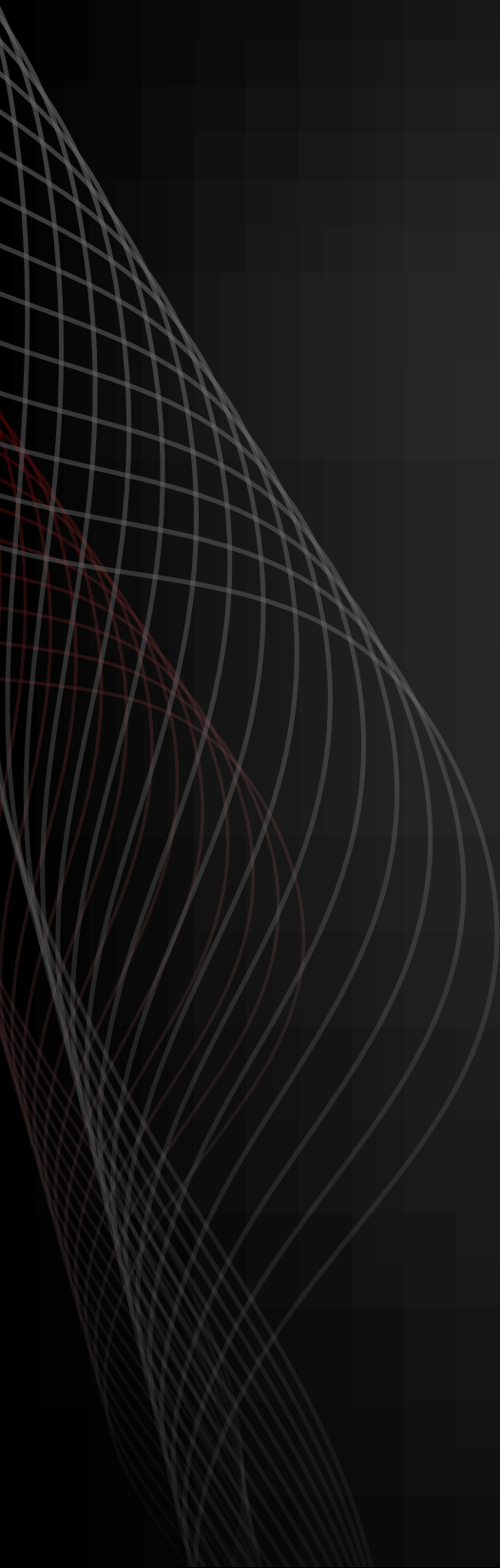
Features

- » Drive by
- » Fixed network
- » Leak detection
- » Comprehensive data on consumption
- » Optional audible feedback on UIU
- » UIU and WMD split for added convenience
- » Programmable free daily allocation supported either directly on the WMD or via the vending
- » Pressure tested to 16 bar operation with 24 Bar protection
- » STS compliant encryption
- » Battery indicator
- » Numerical feedback keypad
- » Automated control of full-pressure (mains) or semi-pressure (tank) systems
- » Laptop interrogation, testing and re-programming in the field using the low cost Field Service Terminal (FST)
- » Optional AMR (Automatic Meter Readings) by radio link
- » Supplied pre-programmed to order, but can be reprogrammed in the field or stores
- » Daily or monthly limitation between 10 litres to 50,000 litres
- » Hourly consumption logging (120 days FIFO)
- » Incorporates tamper-proofing measures
- » Daily carry-over of unused allocation within month
- » Indefinite daily carry-over
- » Robust keypad
- » Multiple vendor support, Prepaid World, Prepaid Meters, Netvendor, Landis & Gyr, etc.
- » Multi vending infrastructure, Utility banking hall, Point of Sale (POS), SMS, WEB, scratch card etc.
- » Vending via 3rd party, Corner store café, Petrol station, Grocery store chain etc.
- » Pressure range 0.5 bar to 16 bar
- » Data logger – 120 days reading FIFO
- » Battery Life 7 to 10 years

The Utility Systems Prepaid Metering system is extremely versatile, and capable of addressing a wide range of metering options. It is a tried and tested system, with a very large deployment.

With its team of experienced product development engineers, and years of metering experience, Utility Systems is confident of staying at the cutting edge of technology.





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