

aircom

New Generation M2M Solution in Energy Management

aircom Water+Gas

Aircom has been designed to read the mechanical meters remotely. It is a compact data collection module that is remote communication based. By the virtue of its advanced functional features, Aircom provides data to utilities regarding subscribers' consumption profiles and enables utilities to collect-analyze data for their future investments. Aircom's safety level is high as it has magnetic trick-proof. Aircom has a system that detects displaces, so it does not allow fraudulent usage. It can hold consumption datum and penalty cases in it's memory for 32 months. By virtue of its simplified installation and configuration; utilities' operations become easier and more effective. Reading issues of utilities get eliminated with Aircom's remote reading functionality. By having high protection class (IP 68), it is not affected from any external conditions (humidity, rain, mud, sunlight etc.) and it gives continuous service to the utilities. Aircom also has been certified with ATEX against the risk of explosion in inflammable environments. Aircom provides accurate solutions to read the meters installed at locations that are hard to access. It saves the utilities on reading staff cost. It serves the utilities with its full functions up to 10 years, by having a high capacity battery without the need of any external power supply.

aircom's Functions



Peak and Over Consumption

It indicates top 5 consumption levels in a selected time range. It gives out warnings when the consumption is below or above a elected threshold value.



Subscriber Profile

NB-IoT Aircom indicates subscribers' consumption profiles by flow rate based consumption analysis.



Reverse Consumption

It gives a warning in the case of a reverse consumption at the meter.



Mechanical Index

It indicates the value of the meter's current mechanical index.



Hourly Records

All data is registered by NB-IoT Aircom at specified time periods of hourly/monthly/annually.



Intervention Detection

It gives warnings in the case of any external intervention and manipulation.



Flowrate, Operation Duration

It gives flow rate values of the meter and reports interval based information.



Availability

With the help of a pulse output Aircom is mountable on all gas and water meters.



NFC

NFC is used for service and installation procedures. Matching up with the meter, performing operational functions, making basic checks, updates in the field and data transmission even if there is no power on module.



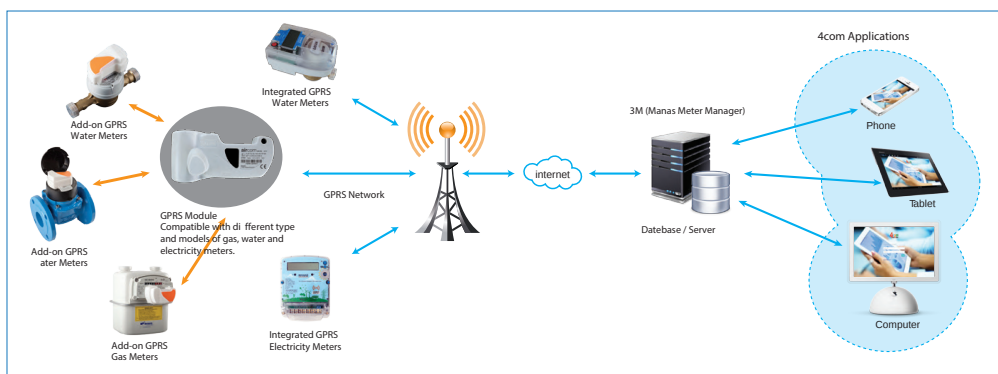
aircom's GPRS

- > GPRS technology, General Packet Radio Service, provides the basic GSM upgrade technology used to provide packet data at up to 172 kbps.

Use of GSM, GPRS and Internet is a promising and emerging approach in design of metering applications involving remote data access. Such applications cover wide areas that involve utilities and customer services etc. Successful use of GPRS, available over GSM network, can be found in many M2M applications.

GPRS technology brings a number of benefits for users and network operators alike over the basic GSM system. It was widely deployed to provide a realistic data capability via cellular telecommunications technology.

Simchip is also available, sim chip is used in Aircom which has longer product life time and is more suitable for tough field conditions. This work is carried out on the platform of M2M.





aircom's LoRa

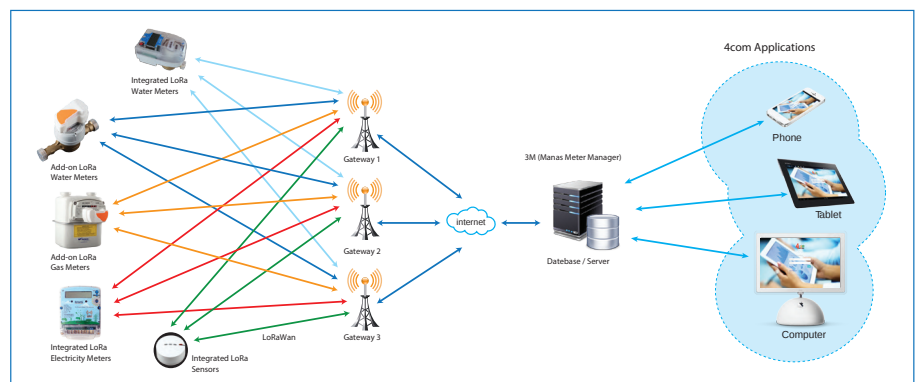
- > LoRa module can be used in communicating for long distance. There is also BLE module for short distance.

LoRa

LoRa RF modulation and LoRaWAN protocol is used for WAN communication. LoRa is the physical layer or the wireless modulation utilized to create the long range communication link. LoRaWAN defines the communication protocol and system architecture for the network while the LoRa physical layer enables the long-range communication link. The protocol and network architecture have the most influence in determining the battery lifetime of a node, the network capacity, the quality of service, the security, and the variety of applications served by the network. LoRaWAN provides Adaptive Data Rate (ADR) method can accommodate changes in the network infrastructure and support varying path loss. To maximize both battery life of end devices and overall network capacity, the LoRa network infrastructure manages the data rate and RF output for each end-device individually by implementing ADR.

Bluetooth Low Energy (BLE)

Bluetooth Low Energy (BLE) is used for NAN communication. Bluetooth LE provides low power local communication to read modules data and also device firmware can be upgraded by using BLE communication. It is widely applicable to use for service and installation operations.





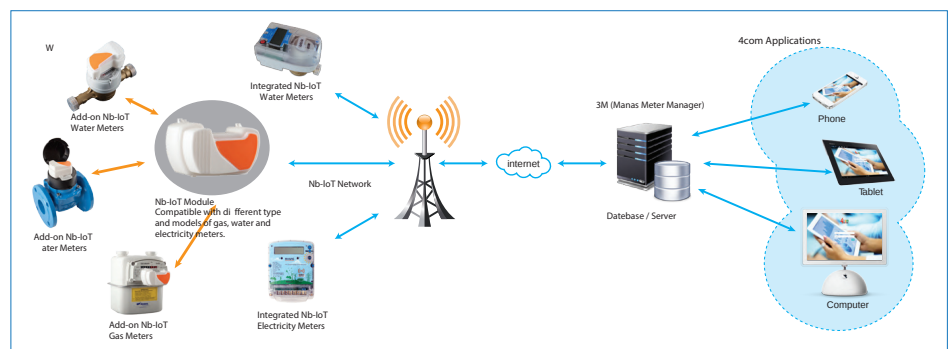
aircom's NB-IoT

> NarrowBand IoT (NB-IoT) is a Low Power Wide Area Network (LPWAN) radio technology standard developed to enable a wide range of devices and services to be connected using cellular telecommunications bands. NB-IoT is a narrowband radio technology designed for the Internet of Things (IoT). Aircom provides direct internet connection via cellular based station thanks to NB-IoT technology. All measured and calculated data are stored in Aircom's internal memory and send to server system via internet.

> *NB-IoT provides:*

- Low power
- Low cost
- Extended coverage
- Long battery life
- Enabling a large number of connected devices

Simchip is also available, sim chip is used in Aircom which has longer product life time and is more suitable for tough field conditions. This work is carried out on the platform of M2M.



GSM operators used for NB-IoT aircom

Turkey- Turkcell, Vodafone, TurkTelekom / Spain - Telefonica / Egypt - Vodafone / Dubai - Etisalat / Saudi Arabia - STC / Oman- Oman Tel

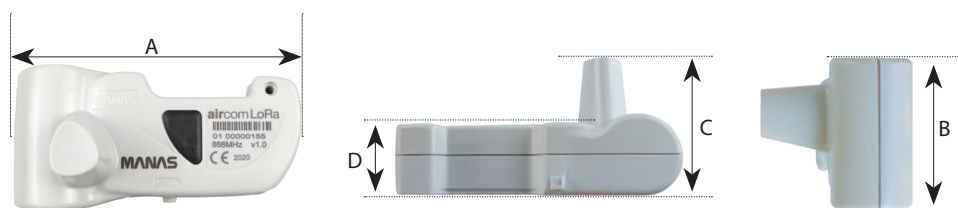
Note: Tested with Ericsson and Huawei infrastructures.

aircom Properties

Battery Life (one message a day)	GPRS	7+ Years
	LoRa	10+ Years
	NB-IoT	10+ Years
Battery Type		Lithium C/ A/ AA Size
Frequency	GPRS	850-900-1800-1900 MHz
	LoRa	433-868 MHz
	NB-IoT	700-800-900-1800 MHz
Operating Temperature		-10°C / +50°C
Protection Class		IP68
Magnetic Detection		available
Removal Detection		available
Weight	Aircom	~230 gr
	Aircom Mini	~135 gr

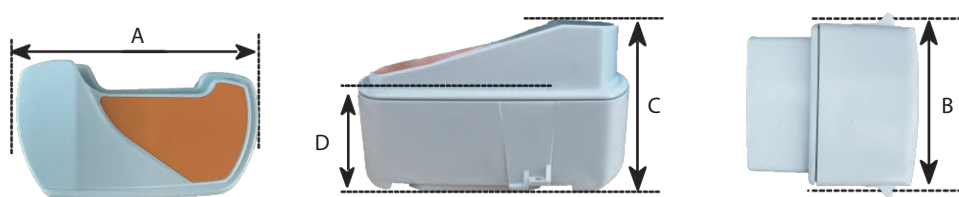
Aircom Sizes

Size (mm)	
A	121,5
B	61
C	60
D	29



Aircom Mini Sizes

Size (mm)	
A	92,4
B	59
C	51
D	32



aircom Versions



Wall mounted option



External antenna option



Valve applied option

aircom Installation



Mount the Aircom onto the meter



Tighten the provided screw



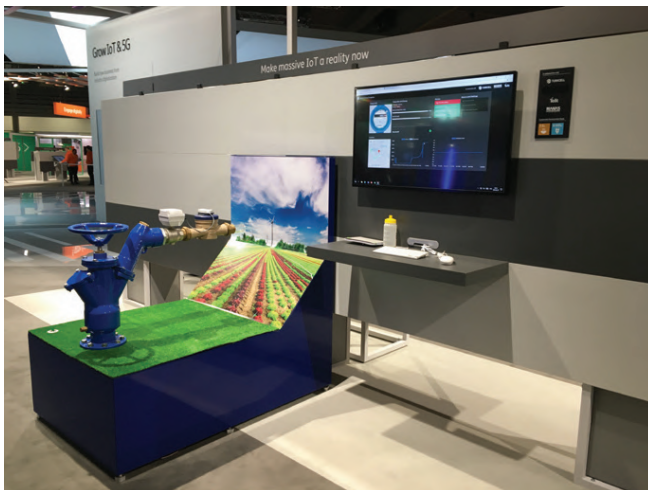
Place the penalty seal strip in the slot which is on the Aircom. Installation is completed. Aircom is ready to be configured with a hand-held terminal.

3M (Manas Meter Manager)

- > Enables us to collect data from all devices (Water, Gas, Electricity, Heat) on site
Coded with Java
- > Dynamic analyzes of collected meter data
- > Ability to send alarms to users via text message and e-mail
- > Ability to work as Cloud service or Private Server
- > System is compatible of communicating with most of the known auxiliary interfaces (MBUS, TCP/IP, GPRS, RS232 etc.) NB-IoT, LoRa
- > The system runs on all Operating system (Windows, Linux etc.)

Common Criteria

- > EAL3 certificate for security functions
- > Infrastructure is suitable for big data. It is supported with Mongo DB
- > The system can manage LoRa private network(module, gateway).
- > Layered structure(listener, database, analyze, web service)



4Com Web Application Features

- > Coded with PHP
- > Database support of Oracle, Mysql and Postgre SQL
- > User Friendly and Responsive Thema
- > Ability to demonstrate meters with their geographical locations
- > GUI based and web systems architecture.
- > Fully modular and parametric.
- > Multilingual application. Turkish, English and Arabic, Greek versions are currently available.
- > Provides security by utilizing user groups, roles and comprehensive authorization mechanism
- > The system operates on all browsers (IE, Chrome, Opera etc.)
- > Uses IReport system
- > SPICE Level 2 Certificate
- > Supported Mobile Applications(IOS & Android)



Mobile Application

- > All type meters are supported.
- > Hourly / Daily / Monthly consumptions could be followed.
- > Quality of Signal.
- > Open – Close Valve order could be sent remotely to the meters that have open – close mechanism.
- > The alarms could be displayed.



