

ARROW

MOBILE READING

 **maddalena**



Automatic

Remote

Reading

 on-board

Wireless



ISO 9001 - Cert. n° 0773/2



V. 1.05-05.07

ARROW - REMOTE READING SYSTEM

ARROW remote reading system enables direct reading of a number of meters without the need to access the meter directly and provides reading data for analysis systems, billing or other purposes. Remote meter reading is extremely useful in those cases where it is difficult to gain access to the meters. The key idea behind ARROW system lies in coupling each mechanical meter with a device (called ARROW radio module) which transmits the reading and other information. In this way, a radio receiving device can download and store the readings without gaining direct access to the point where the meter is actually installed.

BASIC ELEMENTS

- 1) **Meters equipped with a pulse emitter.** Every time the meter totalises a given volume the pulse emitter closes a contact, emitting a series of pulses which are proportional to the actual reading. It is important to note that the Arrow system can be applied to any type of meter (water, gas, electricity, heat, etc.) which has a pulse output.
- 2) **Arrow radio module device:** storage and radio transmission of meter reading data. It must be connected to each meter's pulse emitter (one radio module for every meter). The module is equipped with IrDA port for the initial setting. The module is contained in an **IP68** housing (watertight, no condensation).
- 3) The **reading system** consists of: a radio receiver, a Pocket Pc with ARROW Mobile software and cables. Usually one reading system is enough to manage a complete meter park.



HOW THE SYSTEM WORKS

First phase. In the first phase the system must be installed and implemented on the installed meters, according to the following steps.

- **Installation of meters suitable for remote reading** (equipped with a pulse emitter)..
- **Installation of ARROW radio modules** on the existing meters.
- **Initial programming of ARROW radio modules.** In order to operate, ARROW radio modules must be initially programmed with some essential parameters such as the meter reading at the time of installation, or the unit of measurement factor ("pulse value", for example: 100 lt every impulse). During the initial programming phase the radio modules installed in the meter park can be organized and divided in "reading round".



Second phase: use. The operational stage consists in the remote reading of the meters via radio modules: each radio module transmits the reading data every **8 seconds**, hence the reception and storage of the reading may be taken from a short distance away from the meter. The receiving distance depends on the installation conditions of the meters (see paragraph Transmission distance).

RADIO DEVICE – TECHNICAL CHARACTERISTICS

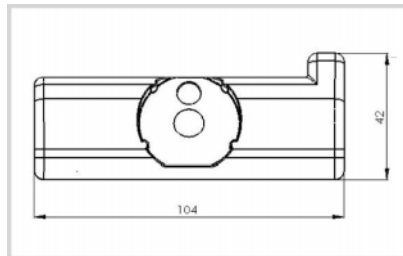
- Type of transmission	unidirectional radio system
- Transmission Frequency	868.95 MHz (Free frequency, used for data transmission)
- Frequency Modulation	Frequency Shifted Key
- Standard	EN 300 220
- CE Certification	CE RTTE R&TTE 1999/5/EC del 9/3/99
- Battery	2 Lithium batteries 3.6 Volt
- Battery lifetime	15 years
- Impulse Emitter	Reed Switch
- Working Temperature	-15°C +55°C
- Storage Temperature	-15°C +55°C
- Enclosure	IP 68
- Programming interface	Opto IrDA standard Diode
- Intrinsically Safety	according Eex ia IIA T3

TRANSMITTED DATA

The electronic module connected to the meter transmits the following data every **8 seconds**, the data is then received by a radio receiver connected to a hand-held terminal:

- Battery lifetime
- Present reading
- Periodical reading (automatically memorized at a certain date. Ex.: every 31.12)
- Suspected leak (The module detects if there is a constant detection of pulses every 15minutes in a period of 48 hours)
- Fraud allarm

DIMENSIONS OF THE RADIO DEVICE:



TRANSMISSION DISTANCE:

The transmission distance depends on the installation conditions of the Electronic modules.

Electronic module location	Max transmission distance (m)
Manhole	40 m
Cellar	60 m
Ground floor	100 m
Free field	400 m

SYSTEM FOR DATA COLLECTION

The data sent by the radio module is collected by a **portable radio receiver** connected to a Pocket Pc. The radio receiver has the following characteristics:

- Standard according to: ISO TC 294
- Frequency Modulation 868 MHz Frequency Shifted Key
- Power: rechargeable batteries



The **handheld terminal** is a Pocket Pc available in various compatible models. It is equipped with **ARROW Mobile software**, which supports Windows CE operating systems. The Pocket Pc can connect to external peripheral devices (IRDA optical interface and radio receiver) via the serial port using the necessary cable (Optional: Bluetooth version).

ARROW MOBILE SOFTWARE

ARROW Mobile software, provided with the system, is a PC Windows compatible software. The software is used to program each radio device, log the readings and manage the import/export data. The software is able to export the reading and data-base data to any other software, in ".txt" files format.

ARROW Mobile software can operate both in the installation phase and in the reading of the ARROW radio modules. It can also manage the meters which are not equipped with radio modules (manual reading), so that it is possible to arrange specific or mixed situations with only a part of the installed meters controlled by the remote system.



NETWORK RECEIVER – (Optional unit)

Radio receiver that allow to receive the transmitted data from the electronic units and to transmit them to the Hydrocenter unit via M-Bus Protocol. The **Hydrocenter** can be used to transmit all the memorized data to the operative unit using modem/GSM connection.

RICEIVER

Max capacity:1000 radio module.
Supplying: M-Bus time signal.



HYDROCENTER

Max capacity:12 receivers
Supplying: 220V 50Hz.



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