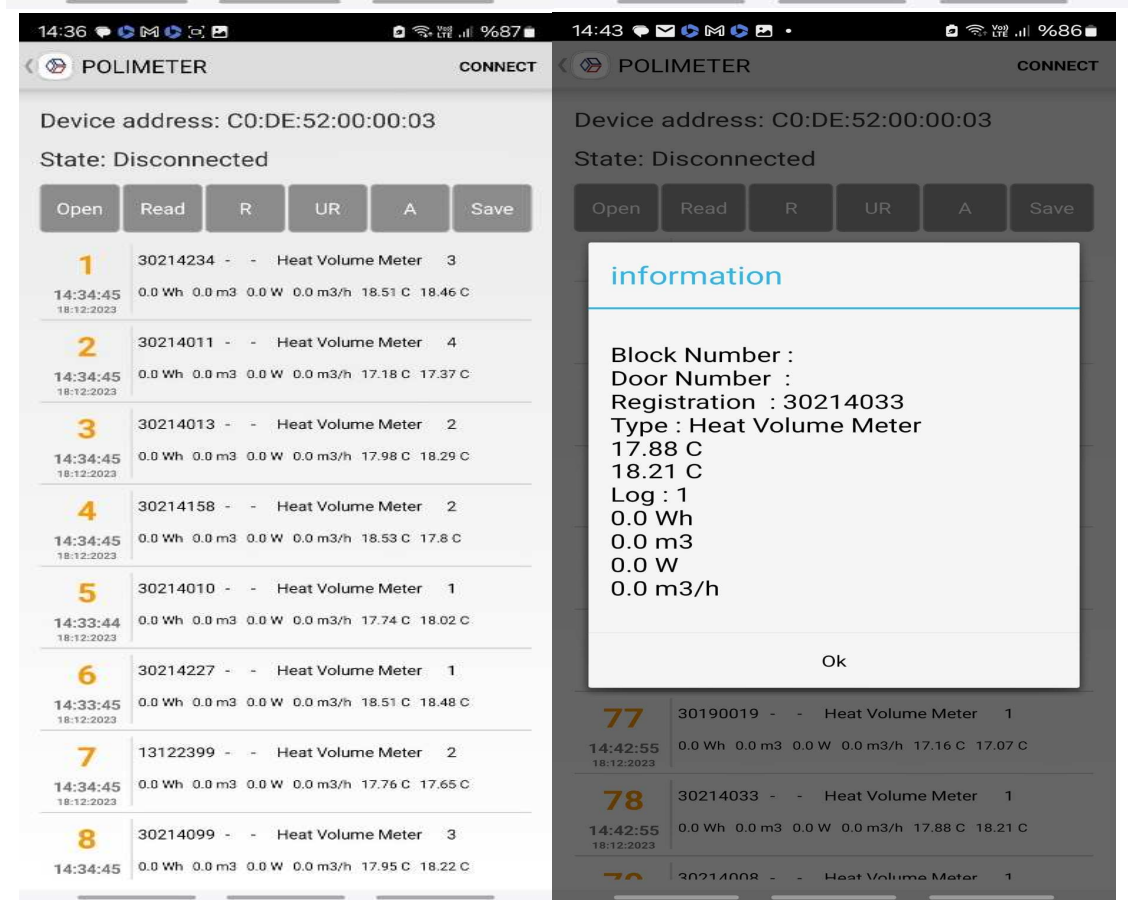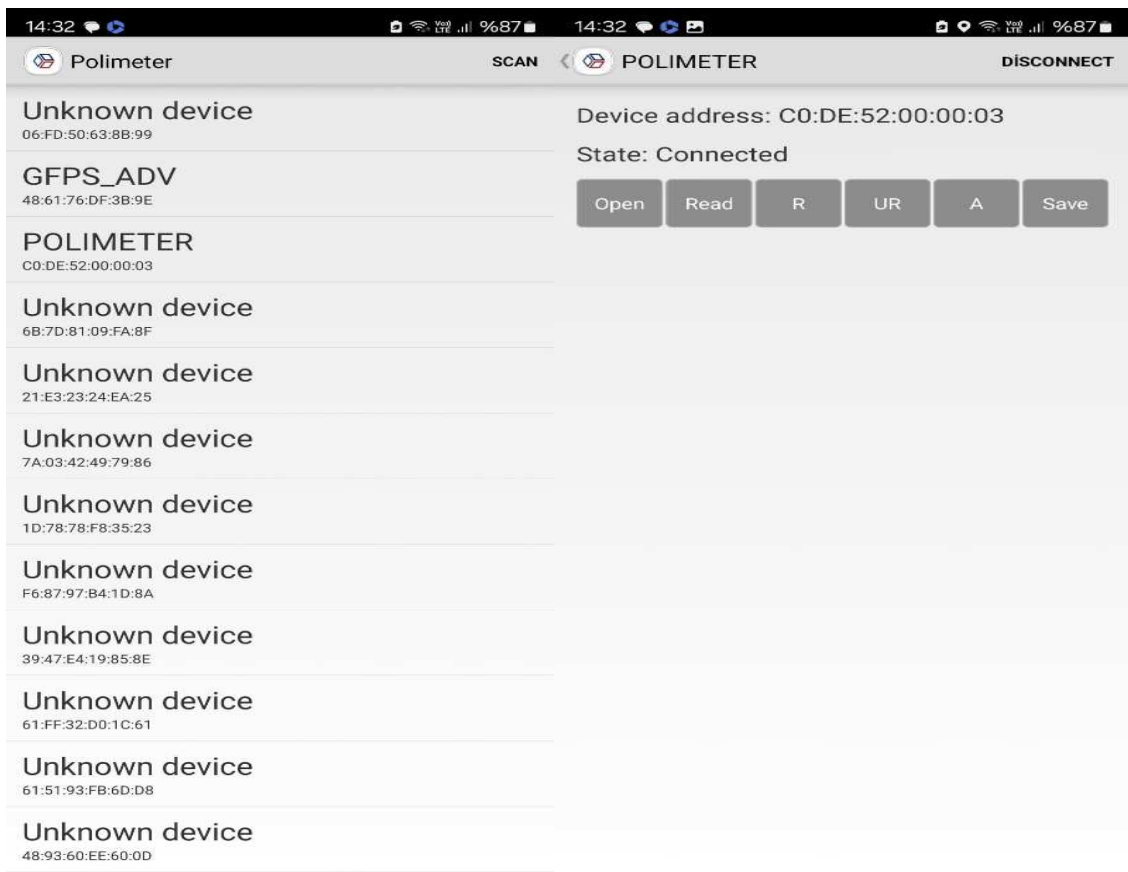**Wireless M-Bus Feature:**

1. It is an international meter reading protocol.
2. All meters with Wireless M-Bus are compatible with each other in terms of hardware and software. For example: Any software or handheld terminal that reads the ITRON brand water meter will also read Polimeter and other brands. You do not have to produce separate solutions for each brand.
3. Data Security is the most advanced communication system.
4. It is completely user friendly. It automatically sends data periodically.
5. Wireless M-Bus gateways or handheld terminals are quite cheap.
6. International Meter Reading Standards OMS system accepts Wireless M-Bus meters within the OMS standard, but LoRa and LoRaWaN systems are outside the international OMS standard.
7. In accordance with the OMS standard, the meter sends the consumption and its unit (123.456Kwh) using the OMS standard. Other wireless communication systems have left this format to the manufacturer outside the OMS standard, which eliminates software-hardware compatibility.
8. In long distances or in places where the RF signal cannot reach within the building, data can be reached over long distances by using an RF signal repeater. The cost of Repeater is quite cheap.

Screenshot 1 (top left)

14:32
Polimeter SCAN

Unknown device
06:FD:50:63:8B:99

GFPS_ADV
48:61:76:DF:3B:9E

POLIMETER
C0:DE:52:00:00:03

Unknown device
6B:7D:81:09:FA:8F

Unknown device
21:E3:23:24:EA:25

Unknown device
7A:03:42:49:79:86

Unknown device
1D:78:78:F8:35:23

Unknown device
F6:87:97:B4:1D:8A

Unknown device
39:47:E4:19:85:8E

Unknown device
61:FF:32:D0:1C:61

Unknown device
61:51:93:FB:6D:D8

Unknown device
48:93:60:EE:60:0D

Screenshot 2 (top right)

14:32
POLIMETER DİSCONNECT

Device address: C0:DE:52:00:00:03
State: Connected

Open | Read | R | UR | A | Save

Screenshot 3 (bottom left)

14:36
POLIMETER CONNECT

Device address: C0:DE:52:00:00:03
State: Disconnected

Open | Read | R | UR | A | Save

1 30214234 - - Heat Volume Meter 3
14:34:45 0.0 Wh 0.0 m3 0.0 W 0.0 m3/h 18.51 C 18.46 C
18:12:2023

2 30214011 - - Heat Volume Meter 4
14:34:45 0.0 Wh 0.0 m3 0.0 W 0.0 m3/h 17.18 C 17.37 C
18:12:2023

3 30214013 - - Heat Volume Meter 2
14:34:45 0.0 Wh 0.0 m3 0.0 W 0.0 m3/h 17.98 C 18.29 C
18:12:2023

4 30214158 - - Heat Volume Meter 2
14:34:45 0.0 Wh 0.0 m3 0.0 W 0.0 m3/h 18.53 C 17.8 C
18:12:2023

5 30214010 - - Heat Volume Meter 1
14:33:44 0.0 Wh 0.0 m3 0.0 W 0.0 m3/h 17.74 C 18.02 C
18:12:2023

6 30214227 - - Heat Volume Meter 1
14:33:45 0.0 Wh 0.0 m3 0.0 W 0.0 m3/h 18.51 C 18.48 C
18:12:2023

7 13122399 - - Heat Volume Meter 2
14:34:45 0.0 Wh 0.0 m3 0.0 W 0.0 m3/h 17.76 C 17.65 C
18:12:2023

8 30214099 - - Heat Volume Meter 3
14:34:45 0.0 Wh 0.0 m3 0.0 W 0.0 m3/h 17.95 C 18.22 C

Screenshot 4 (bottom right)

14:43
POLIMETER CONNECT

Device address: C0:DE:52:00:00:03
State: Disconnected

Open | Read | R | UR | A | Save

information

Block Number :
Door Number :
Registration : 30214033
Type : Heat Volume Meter
17.88 C
18.21 C
Log : 1
0.0 Wh
0.0 m3
0.0 W
0.0 m3/h

Ok

77 30190019 - - Heat Volume Meter 1
14:42:55 0.0 Wh 0.0 m3 0.0 W 0.0 m3/h 17.16 C 17.07 C
18:12:2023

78 30214033 - - Heat Volume Meter 1
14:42:55 0.0 Wh 0.0 m3 0.0 W 0.0 m3/h 17.88 C 18.21 C
18:12:2023

79 30214008 - - Heat Volume Meter 1

1. Reading possibility with internal 3 rechargeable batteries.
2. Ability to work with Android compatible devices via Bluetooth mobile connection.
3. Ability to charge and take readings with Universal USB TYPE C connector.
4. Supporting up to 13 DB antenna power with SMA antenna output.
5. Slider ON / OFF button.
6. Capacity to read 8 meters per second.
7. Transferring data to long distance gateways as a Wireless M-Bus Repeater.
8. Compatible with walking by reading reading systems.
9. Uploading files from Excel to mobile software and sending the read file to the center.
10. Easy installation; Easy and fast installation on Android compatible mobile phones.

2.1 Standards

Wireless M-Bus is used for remote meter reading of water, gas, heat and electricity meters in Europe. Wireless M-Bus is more competitive in cost as wired M-Bus's interface with two wires. Named as Wireless M-Bus, it is defined in pr EN13757-4:2011, works in the band of 169, 433 and 868 MHz .Meanwhile, Wireless M-bus modules should comply with the European test standard of EN 300 220.

(Ⅰ)Operating modes

Wireless M-Bus complies with EN 13757-4:2011protocol and operates in six modes, as shown: ModeS'Stationary' ModeT'frequent Transmit' ModeR2'frequent Receive' ModeC'Compact' ModeN'NarrowbandVHF' ModeF'Frequentreceive and transmit.

ModeT

In the T mode, the meter will periodically send data spontaneously, transmission rate of meter is 100 kbps, and rate of concentrator is 32.768 kbps. Mode T is divided into T1 and T2. In mode T1, the meter does not receive any data, but periodically report data, and then it will enter into a low power state. Thus it forms an operating cycle as just described. T1 is a one-way communication mode. In mode T2, after periodically reporting data, the meter will receive data only in the very short time. If there is no data during this period, meter will enter into a low power state. Otherwise, meter will start a two-way communication with concentrator.

(Ⅱ)Wireless Link layer

EN13757-4defines the AandBlinklayer formats, they are described as below. FormatA This data format can be applied to any kind of operating modes.

The first segment format:

L-field	C-field	M-field	A-field	CRC-field
1 byte	1 byte	2 bytes	6 bytes	2 bytes

The second segment format:

CI-field	Data-field	CRC-field
1 byte	15 bytes or $(((L - 9) \% 16) - 1)$ bytes	2 bytes

The Nth segment format:

Data-field	CRC-field
16 bytes or $((L - 9) \% 16)$ bytes	2 bytes

The second and nth segments are optional data, they are selected according to the length of application layer data.

FormatB

Format B is only used for mode C,N andF.

The first segment format:

L-field	C-field	M-field	A-field
1 byte	1 byte	2 bytes	6 bytes

The second segment format:

CI-field	Data-field	CRC-field
1 byte	115 bytes or (L – 12) bytes	2 bytes

The third segment format:

Data-field	CRC-field
(L – 129) bytes	2 bytes

Definition of data items:

L-field: Length of data package,

C-field: Indicating the communication status,

M-field: Vendor code of itself,

A-field: ID of itself,

CI-field: Control word, used for upper layer,

CRC-field: Check Word,

(Ⅲ) Packet Header

There are two kinds of data packet header in the application layer, one is long packet header, and the other is short packet header. CI is used to represent which packet header the data is.

The data format of short packet header

ACC	STS	Conf
1 byte	1 byte	2 bytes

CI of short packet header has 0x5A, 0x61, 0x65, 0x6A, 0x6E, 0x74, 0x7A,0x7B, 0x7D, 0x7F and 0x8A.

The data format of long packet header

Identification Number	Manufacturer ID	Version	Device Type	ACC	STS	Conf
4 byte	2 byte	1bytes	1 bytes	1 bytes	1 bytes	2 bytes

CI of long packet header has 0x5B, 0x60, 0x64,0x6B, 0x6C, 0x6D, 0x6F, 0x72, 0x73, 0x75, 0x7C, 0x7E, 0x80, 0x84, 0x85 and x8B.

Identification Number: It is the only 8 BCD code.

Manufacturer ID: It is manufacturer Code.

Version: Version information.

Device Type: It is used to express the attribute of meter.

ACC: It is serial number of data packet, which is used to describe communication sequence.

STS: Status word.

Conf: It is used to describe the encryption information.