# BAYLAN
## WATER METERS

# Mod-Bus Module


- RS485 Modbus communication
- Direct connection to Modbus system
- Inductive sensor reading
- Internal RTC
- Protection against removal

# MOD BUS MODULE

Modbus modules;which is designed to calculate value of Baylan mechanical water meter reading coil compatible. Counted values of consumption in the memory module saved and can be read with Modbus communication protocol.

## PROPERTIES

- RS485 Modbus communication
- Direct connection to Modbus system
- IP68 Protection class
- Inductive sensor reading
- Internal RTC
- Protection against removal
- 3 years guaranty


| Model Type | Model Definition |
|---|---|
| **Modbus Module** | Mechanical counter the consumption of to be counted and recorded. |

| Technical İnformation | |
|---|---|
| Power (2 Type) | 1-) Built-in Lithium battery 3V<br>2-) External 6V-30V DC supply (If there will be readings at frequent intervals, should be preferred. There is no protection in supply input, wrong connection can cause the device to fail permanently) |
| Battery Consumption | 10uA (Average) |
| Reading Pals | inductive sensor reading |
| Rteading Maximum | 99999,9 m3 |

| RS485 MODBUS COMMUNICATION | |
|---|---|
| Parameters | 8N1 9600 bps |
| Protocol | Modbus – ASCII or RTU |
| Adress | 1...255 |
| The maximum distance | 1000 m |

# MODBUS REGISTER MEMORY

| Register | Definition | Data Type | Property |
|---|---|---|---|
| 4001 - 4002 | Module Id Number | Float | Read only |
| 4003 - 4004 | Consumption(m3) | Float | Read/write |
| 4005 | Slave ID number | Int | Read/write |
| 4006 | interference info | Int | Read/write |
| 4007 | Second | Int | Read/write |
| 4008 | Minute | Int | Read/write |
| 4009 | Hour | Int | Read/write |
| 4010 | Day | Int | Read/write |
| 4011 | Month | Int | Read/write |
| 4012 | Year | Int | Read/write |
| 4013 | Maximum flowrate | Int | Read/write |
| 4014 | Battery status | Int | Read/write |
| 4015 | Version | Int | Readonly |
| 4016 | Reserved for future use | Int | Readonly |

** **Module ID** = The module ID that's been assigned to the AMR device during manufacture.

** **Consumption** = Represents the mechanical index, the value recognized by the inductive sensor. For ex : 1234 recognized determines the 123,4 m3 value.

** **Slave Id** = Address of module used in the Modbus communication

** **Interference info** = Value is “1” meter removed

** **Second, minute, hour** = Time info of module

** **Day, month, year** = Date info of module

** **Maximum flowrate** = The value of the maximum flow through the meter.

** **Battery status :** = Battery voltage level of the module. If the level 0xFF is full and 0x00 is empty

** **Version** = Embedded software version of the module.

** **Reserved** = Was left empty for future applications.

# FORMAT OF THE INFORMATION PACKAGE SENT

** **Module Id and consumption format**

4 Byte Format

| MSB | LSB | MSB | LSB |
|---|---|---|---|

LSB MSB

**For ex:** 1234567 define as float

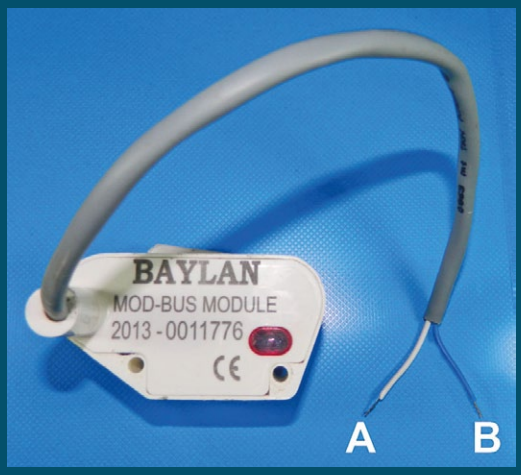
Low = 46136 = 0xB438

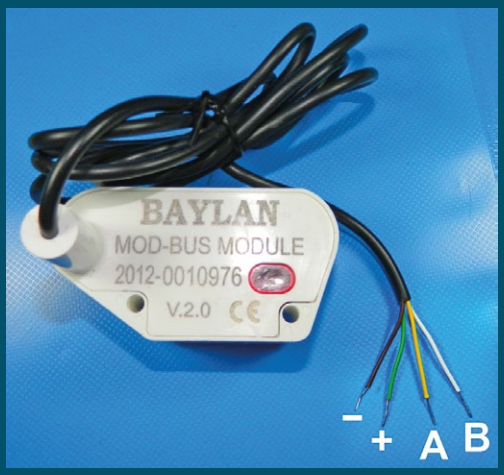
High = 18838 = 0x4996

| MSB | LSB | MSB | LSB |
|---|---|---|---|
| 0xB4 | 0x38 | 0x49 | 0x96 |

LSB MSB

** **Cable connection**




** **Other information**

2 Byte Format

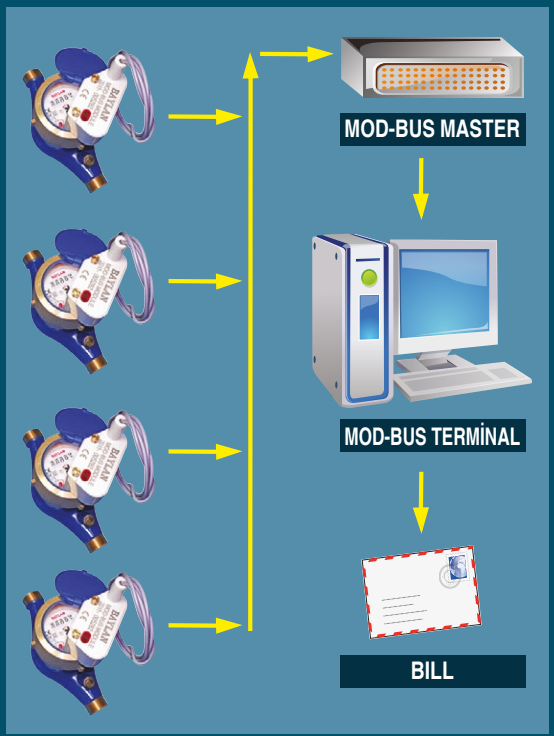
| MSB | LSB |
|---|---|

**Örnek:** 0x01 value

Low = 0x01

High = 0x00

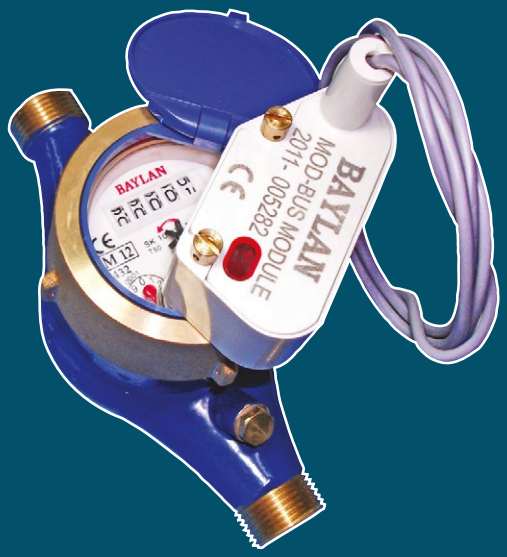
| MSB | LSB |
|---|---|
| 0x00 | 0x01 |



# THE USING FORMAT OF 06 AND 16 COMMANDS

**NOTE:** Consumption register and command 06 cannot be changed. Should be use command 16.

**For ex:** Tüketim maksimum 999999 değerini alabilir
High = 18804 = 0x4974
Low = 9200 = 0x23F0
Initially the low value(0x23F0) from high(0x23) to low(0xF0) must be written to 4003 address.
Also to the 4004 address high value(0x4974) from high(0x49) to low(0x74) must be written.




| Command | | Response | |
|---|---|---|---|
| Field name | ASCII | Field name | ASCII |
| Starting | : | Starting | : |
| Modbus Address | 0 1 | Modbus Adress | 0 1 |
| Function | 1 0 | Function | 1 0 |
| Starting Address MSB | 0 0 | Starting Address MSB | 0 0 |
| Starting Address LSB | 0 2 | Starting Address LSB | 0 2 |
| Register No MSB | 0 0 | Register No MSB | 0 0 |
| Register No LSB | 0 2 | Register No LSB | 0 2 |
| Byte count | 0 4 | LRC | E B |
| Data High | 2 3 | | CR-LF |
| Data Low | F 0 | | |
| Data High | 4 9 | | |
| Data Low | 7 4 | | |
| LRC | 1 7 | | |
| | CR-LF | | |

**NOTE =** The parts which are outside of consumption should be written in integer format.

**For ex :** While changing slave id at address 4005.
Slave Id = 56 = 0x38
High = 0 = 0x00
Low = 56 = 0x38
while writing to 4005, at first 0x00 and then 0x38 shoul be sent.

| **Command** | | **Response** | |
|---|---|---|---|
| Field name | ASCII | Field name | ASCII |
| Starting | : | Starting | : |
| Modbus Address | 0 1 | Modbus Address | 0 1 |
| Function | 0 6 | Function | 0 6 |
| Register No MSB | 0 0 | Register No MSB | 0 0 |
| Register No LSB | 0 4 | Register No LSB | 0 4 |
| Data High | 0 0 | Data High | 0 0 |
| Data Low | 3 8 | Data Low | 3 8 |
| LRC | | LRC | |
| | CR-LF | | CR-LF |

**** 03 Read the data of the module with command 03**

| **Command** | | **Response** | |
|---|---|---|---|
| Field name | ASCII | Field name | ASCII |
| Starting | : | Starting | : |
| Modbus Address | 0 1 | Modbus Address | 0 1 |
| Function | 0 3 | Function | 0 6 |
| Starting No MSB | 0 0 | BYTE count | 0 4 |
| Starting No LSB | 0 4 | Data High (Register 4005) | 0 0 |
| Register No MSB | 0 0 | Data Low (Register 4005) | 3 8 |
| Register No LSB | 0 2 | Data High (Register 4006) | 0 0 |
| LRC | | Data Low (Register 4006) | 0 0 |
| | CR-LF | LRC | |
| | | | CR-LF |

**NOTE:** Maximum number of registers that can be read is 16. The properties defined above may vary according to the mechanical structure/type of the water meter.
*"Due to continuous development of our products, we reserve the right to modify our product design or construction without prior notice."*

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