# NETRONIX◀

**Technical Data Sheet**

# UM-WIE
UMWIE-doc-01.02
In reference to UMWIE-c-01.03
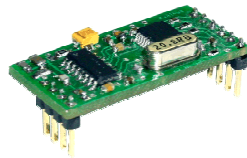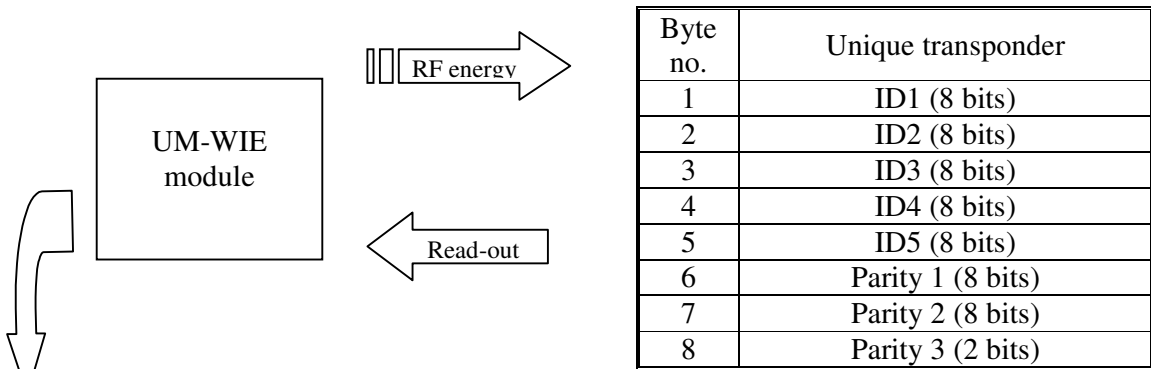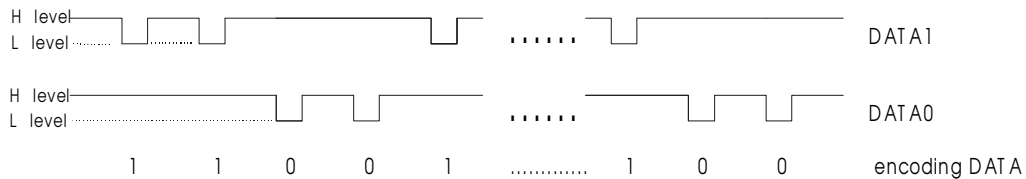
## <u>Contents</u>

### Introduction

UM-WIE module operates on principle of the contact less unique data acquiring from UNIQUE (RFID) transponders. Data is processed suitably and next transmitted in serial form to the master unit. Additionally indication LED can be connected to the reader signaling successful information reading from transponder.

The principle of module operation:
Applying the transponder to reader – read-out (from transponder) – data transmission (to master unit).

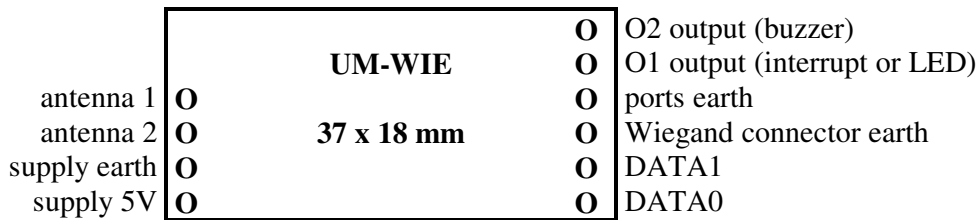| Byte no. | Unique transponder |
|----------|--------------------|
| 1 | ID1 (8 bits) |
| 2 | ID2 (8 bits) |
| 3 | ID3 (8 bits) |
| 4 | ID4 (8 bits) |
| 5 | ID5 (8 bits) |
| 6 | Parity 1 (8 bits) |
| 7 | Parity 2 (8 bits) |
| 8 | Parity 3 (2 bits) |

The response received:

Connect the antenna to UM-WIE module in form of air coil, which will produce electromagnetic field and supply the transponder located in this field.

### Specifications

Supply voltage Vdd............................................................ 4.5...5.5 V
Supply current................................................................... 5...55 mA
Module rated operating radio frequency............................ 125 kHz
Modulation type of data received from transponder............ Manchester
Baud rate of data received from transponder...................... RF/64 (1953 b/s)
Output current capacity: DATA0,1; LED and buzzer.......... 15 mA
Outputs type: DATA0 and DATA1..................................... open collector
Max allowable polarization voltage: DATA0 and DATA1    Vdd+0.5 V
Transponder read-out distance............................................ 8...10 cm
Maximum read-out frequency............................................. 2 transponder red-outs/sec
Transmission parameters to master unit.............................. complies with Wiegand 37 protocol
Pulse with (L level)........................................................... 100 µs
Distance between pulses (H level)...................................... 1 ms
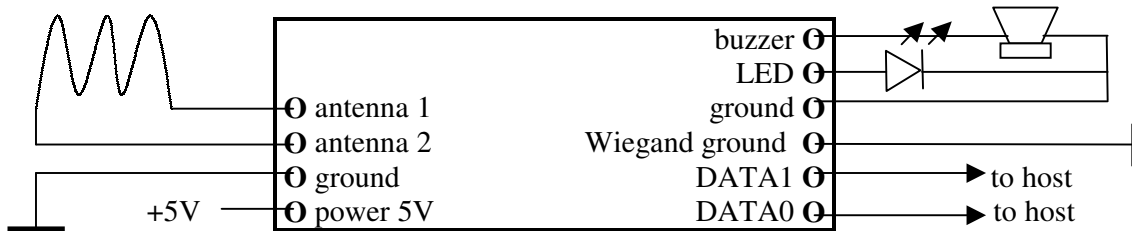
## Pin description

antenna1, antenna2 . . . . . . . . .   external antenna with inductance of ca. 1mH
supply earth and supply (5V). .   module supply
O2 output . . . . . . . . . . . . . . . .   after successful transponder read-out, the reader activates
                                          external buzzer for ca. 100 ms (active H)
O1 output . . . . . . . . . . . . . . . .   interrupt or LED – after successful transponder read-out, the
                                          reader sets output in logical one state for ca. 400 ms
                                          (interrupt triggering with rise slope)
port earth. . . . . . . . . . . . . . . .   earth of O1 and O2
RS interface earth . . . . . . . . . .   earth of RS-TX
DATA0 and DATA1. . . . . . . .   These outputs are used for module to serial data sending,
                                          after successful transponder read-out.

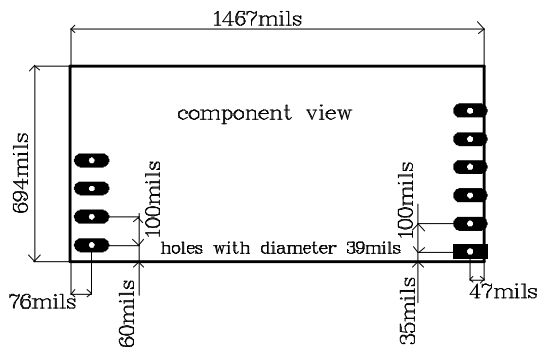|  |  |  | |  |
|---|---|---|---|---|
| | | | **O** | O2 output (buzzer) |
| | **UM-WIE** | | **O** | O1 output (interrupt or LED) |
| antenna 1 | **O** | | **O** | ports earth |
| antenna 2 | **O** | **37 x 18 mm** | **O** | Wiegand connector earth |
| supply earth | **O** | | **O** | DATA1 |
| supply 5V | **O** | | **O** | DATA0 |

Pin assignment element side view

## Connection diagram



## PCB dimensions

### Frame format of serial transmission for UM-WIE

The frame format complies with the 37 bits WIEGAND protocol specification. During operation, reader tries to read data from transponder cyclically. In case of no successful reading (the bus does not see the reader), it does not send data. In case of successful transponder reading, UM-WIE begins to send data via the Wiegand bus.
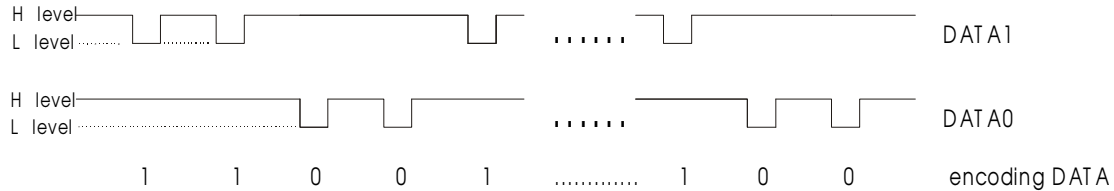


The pulses total number is equal to 37 (L level). The first sent bit defines bits parity in range from 2 to 18. The meaning of the last bit is bits parity in range from 18 to 36.
It means, that 2 bits of 37 assure transmission correctness. Information is saved in bit range from 2 do 36, it gives totally 35 information bits.
In case of UM-WIE module, 35 LSBytes are sent, with information written in transponder.

**Unique transponder description**

The Unique transponder (EM Microelectronic standard – Marin SA, H4102) comprises 5 bytes with laser written unique ID number. Correctness of read-out data process is protected with parities written in 2 subsequent bytes. It gives 40 bytes of unique ID number. Owing to the UM-WIE reader, the transponder reads the ID number, verifies read-out correctness automatically and next sends this number to master unit via serial interface port.

| Byte no. | Unique transponder |
|----------|--------------------|
| 1 | ID1 (8 bits) |
| 2 | ID2 (8 bits) |
| 3 | ID3 (8 bits) |
| 4 | ID4 (8 bits) |
| 5 | ID5 (8 bits) |
| 6 | Parity 1 (8 bits) |
| 8 | Parity 2 (6 bits) |

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