

Technical Data

TowiTek Universal RFID-Antenne

Dimensions of the antenna:	50 x 50 x 5mm, 1,5 m cable length
Power requirements	3,3 – 5V DC (20mA max)
data interface:	seriell TTL, 9600bps / 8N1
ambient temperature:	0°C 40°C (no condensing moisture)
RFID frequency:	125kHz
transponder compatibility:	TowiTek transponders EM410x compatible ROM transponders

Disposal after end of using life for this product

Electronic devices of all kinds must not be disposed thru regular household waste disposal but should be turned in to a collection point for proper recycling. Please check with your local requirements.



Limited Warranty

This product was designed and manufactured with great care and comes with a warranty against material or manufacturing defects at time of purchase. This warranty is valid for 24 months starting with the day of purchase and can be claimed with original sales receipt. The warranty of TowiTek is limited to cost free repairing or replacement of the defective unit. Expenses and risk of transportation; compensation for installation and de-installation and all other expenses which may be related to the repair or exchange of this product are not refunded by TowiTek. The liability for consequential damages resulting from the use of this product – no matter of which exact kind – is generally ruled out.

Thank you for purchasing this product of TowiTek!
This user guide contains many important instructions on safe and proper use of this product. The purpose of this user guide is to make sure you always will get best performance and a reliable operation of your new product.

PLEASE FULLY READ THIS USER GUIDE!

The handling of products operating with electric current requires you to follow the rules from VDE such as VDE 0100, VDE0550/0551, VDE 0700, VDE 0711 and VDE 0860 or other local rules in your country.

- TowiTek modules are not designed and authorized for use in life support or life saving applications! Do not use the product for applications in which a temporary or permanent failure or malfunction could cause damage to persons or property.
- If the module is used to switch currents greater 24V it is necessary to have the installation done with no voltage applied and performed by a trained professional authorized for such work. The module may only be used in such application if it was installed in a safe to touch enclosure.
- The module must only be used in dry and clean environment. The use near water, heavy dirt and/or high humidity is dangerous and not permitted.
- The product must not be used in conjunction with any type of flammable liquid or gas or other environment with risk of spark triggered explosions.
- Never exceed the limits or ratings listed in the 'Technical Data' section at the end of this user guide.
- If the module is used in schools or educational facilities or similar institutions the operation must be supervised by trained and authorized staff.
- The product itself and all parts thereof (including packing material) are not suitable toys for children! (choking hazard, risk of electric shock, ...)

TowiTek Universal RFID-Antenna for C-Control

Nr. 19 15 53



User Manual

www.conrad.com

Intended use for this product

The TowiTek universal RFID antenna detects and reads the ROM ID-Signature of passive transponders. The decoded and validated data is transmitted via a TTL compatible serial interface for easy processing by another data processing system.

Special features of the RFID-Antenna

- compatible with TowiTek and EM410x ROM transponders (64/40 Bit)
- compact size
- low power consumption
- cost efficient and reliable RFID reader for many applications

Operational instructions

Pin assignment on the connection cable

The three inner wires of the connection cable are color coded and assigned as follows:

blue	supply voltage 0V (GND)
red	supply voltage 3.3 – 5 V (VCC)
yellow	serial data output

Important notice: High frequency noise (ripple) on the power supply can reduce the reading range of the antenna.

Principle of operation

The RFID antenna will start generating a 125kHz electromagnetic field immediately after applying power to the unit. Transponders getting within reading range of the antenna will be automatically detected and read.

Upon reading the 64 bit signature of the transponder the data integrity is validated by checking the header and parity bits.

If all checksum information is found correct the 40 bit of the serial number information are transmitted as 5 byte string via the serial interface.

The serial interface works according to common standard but for reference the details will be explained here:

The serial data transmission uses a bitrate of 9600 bits per second which is equal to 104µS per bit.

Each byte transmission is started with a start bit at low level. (0V)

Following the start bit 8 data bits are sent with the least significant bit (LSB) transmitted first. A logical '1' is represented with high level (VCC), a logical '0' with low level (0V)

Each byte transmitted ends with a stop bit at high level (VCC)

5 Bytes are transmitted in a straight sequence.

If the transponder remains within reading range of the Antenna, the ID data will be sent continuously at a rate of approximately 5 times per second. The transmission will only end after the transponder has been removed from the reading range.

A detailed description of the raw data format of the transponders and transponder technology in general can be found in datasheets for the EM4102 transponder easily found with internet research.

Important notice:

The polarity of the serial data transmission using TTL levels is reversed in comparison with the RS-232 levels used for PC data transmission. For transmitting the RFID-ID data from the antenna to a PC it is necessary to use an inverting level converter such as for example MAX232.

The manuals and documentation for our products is constantly improved and translations to other foreign languages may become available.

Please make sure to check for the latest versions at www.conrad.com

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EU-Declaration of conformity

The company

TowiTek HK Ltd.

**ROOM 1613, 16/F.
TAI YAU BUILDING
181 JOHNSTON ROAD
WANCHAI, HONG KONG**

declares in their own responsibility that the product

Universal RFID-Antenna BN 19 15 53

complies to the standards

EN 55022 (EMV emission)
EN 61000-6-1 (EMV tolerance)

The above named company keeps records
with confirm the compliance to the standards

A handwritten signature in black ink, appearing to read '刘洪泉'.

Liu Hong Quan
(managing director)

Shenzhen 15-12-2008