TS-HRW38 Ethernet / USB HID / RS232

1. General:

The TS-HRW38 is a reader / programmer module with integrated antenna for communication with contactless integrated circuit cards.
It is designed for using ISO15693, ISO 14443-3, Mifare Ultralight, Mifare Classic 1K and Mifare Classic 4K Transponders, all operating at 13,56MHz.

Data transmission between the TS-HRW38 module and the host computer takes place according the commands of

"GiS Programming Interface (SDK) for TS-HRW devices".

2. Description:

The device is available in different variants. Depending on your needs it can be ordered as automatic reading device (TS-HR38), as programmer device (TS-HW38) to modify contents of transponders or as composite device (TS-HRW38) with both functions activated.
See also **Section 6. Starting up** for more information about the usage of the device and controlling software.

2.1. Power Supply

The power supply depends on the interface used at the device.
If the USB Interface is used, power can be supplied by the 5V provided by the USB Bus.
If Ethernet or RS232 Interface is used, power is supplied by external 5V power supply.

2.2. Interface

The device uses a USB full speed interface 12MBit with hot plug support respectively a Ethernet interface with 10/100 MBit or RS232 interface at 19200 Baud.

2.3. Contactless Transceiver

The MF RC632 handles the transceiver functionality for ISO15693 and ISO14443 communication at 13.56 MHz. Modulation is ASK with 0/100% (Type A).

2.4. Microcontroller

The microcontroller is a 8bit AT90USB1287. Is uses 128KB Flash, 8KB RAM and 4KB E²Prom. It controls the MF RC632 via External memory interface and contains the USB interface and the RS232 serial interface. When equipped with Ethernet interface, it controls the XPort via serial interface. In order to avoid malfunction an external reset circuit is used.

2.5. Ethernet controller

The XPort embedded device server handles the Ethernet connectivity and communicates through serial port with the AT90USB1287.

2.6. Oscillator

There are two oscillators on board. 8 MHz for AT90USB1287 and 13.56 MHz for MF RC632. Frequency stability is both better than 100ppm.

2.7. Antenna

The antenna is designed as film PCB magnetic antenna placed inside the housing. It is driven by the MF RC632 and matched to 50 Ohm using coils, resistors and capacitors.