

Easy key/R

The non-contact data collection

Examples:

To use the easy key/R you need the transponders. Each transponder is unique, a one-of-a-kind electronic key. More than 4 Billions different codes are possible.

Different transponder models are available:

- key chain model 43x33x8 mm
- credit card format 54x85x1 mm
- glass tag 3x12 mm

Technical Specifications:

Power consumption:	approx. 35mA
Power supply:	5 volts DC \pm 5%
Transponder frequency:	125 kHz
No. of available codes:	4, 294, 967, 294
Transponder response time:	approx. 0.2 seconds
Operating temperature:	-10°C to +65°C
Reading range:	approx. 150mW
Antenna transmitting power:	approx. 150mW
Dimensions:	80 mm x 10 mm
Approvals:	BZT No.G750 693H CE and TUV

Parts List:

- 1 manual
- 1 easy key/R electronic module
- 1 computer disc with demonstration software

General Information:

The easy key/R system is based on non-contact transponder technology. The compact electronics is manufactured with state-of-the-art SMD technology. With its ring-like antenna the easy key /R can recognize every offered key code within the reading range. Via the serial interface RS232 (TTL level) the module can be connected to every PC System. With the demo and application programs on the enclosed computer disc recording and processing of the transponder codes is possible. With specific programs almost unlimited applications are possible like e.g. data collection of moving

objects, persons, time registration, access control, user accounts, etc.

Every transponder is unique. Its code is programmed in a microchip and cannot be changed. 4,294,967,294 (2^{32}) different ssscodes are possible. By its antenna the electronics of the easy key /R recognizes the code already within a distance of approx. 50-70 mm between antenna and transponder. The code is then transmitted to the PC via an RS232 interface.

Brief Physical Background:

The antenna emits an extremely weak low-frequency magnetic field (approx.150mW at 125 kHz). This LF field stimulates an oscillator circuit on the transponder chip. The oscillator circuit is used as power supply for the electronics of the transponder. The activated transponder emits its code pattern to the resonance field. This modulation of the LF field can be received and analyzed by the easy key /R.

The electronics of the easy key /R is located on a circular board with a diameter of 80 mm and integrated antenna. Optionally the antenna can be installed separately from the electronics. You need transponders to operate the easy key /R. Different transponder models are available: key chain model, approx.43x33x8 mm, credit card model 54x85x1 mm, or glass tag 3x12 mm. The reading range is proportionally to the size of the transponder.

Installation Instructions:

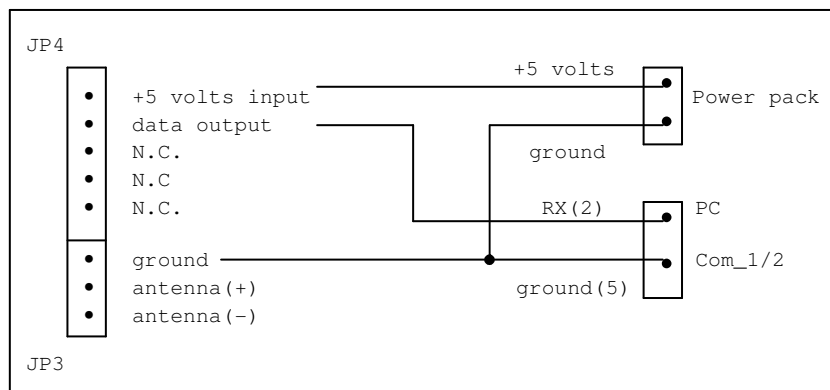
- Easy key /R is a control device with a Type 1 functionality in accordance with EN 60730 (VDE 0631).
- During installation, ensure the easy key /R remains free of dust and moisture.
- Install a 300mA slow-blow fuse to the supply circuit.
- The connection wire between the easy key /R and PC should be not longer than 5 meters.

The following diagram depicts the easy key /R with the connectors JP4 and JP3.

To this pins the connection wires can be soldered directly or plugged with a 2.54 mm (1 inch) grid connector.

Connection to the PC:

To connect the easy key /R to a PC use the following connection scheme. The pin notation of the COM interface refers to a 9-pin connector.



When installing the easy key /R, notice that the casing is in accordance with the EN60730 standard!

Serial Interface:

The transmission specifications are fixed and can not be changed:
 9,600 baud,
 8 data bits,
 1 stop bit,
 no parity bit.

Neither handshake wires nor software are supported.

Due to the physical conditions of the transponders and the used frequency, the intermediate time between the transmission of two data strings is approx. 66 ms. The transmission of one complete data string including formatting characters lasts approx. 14 ms.

Note: The data string can be depicted with a standard terminal or a terminal emulation.

Operation and Software Installation:

Once you have connected the easy key /R in accordance with the schematic diagram, you are ready to put the system into operation.

- Switch on your PC and supply power to the easy key /R.
- Insert the enclosed software disc in your disc drive.
- Change to that disc drive (drive A: or B:)
- Start the program.
- Follow the instructions on the screen.

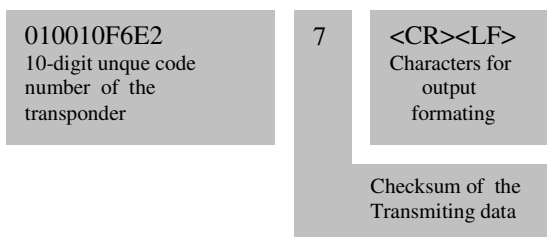
If you now apply a transponder range to the easy key /R within the reading of the antenna, the LED will flash at a fast interval. To achieve maximum range the transponder has to be oriented parallel to the antenna.

Data Output Format:

When a valid transponder within the reading range of the easy key/R antenna is recognized, a character string is emitted. The sum of the digits of the transponder data is checked to make no false data can be transmitted.

The data string sent to the PC is assembled from the received bit pattern of the transponder. The data segment of transponder contains 40 bits. Each 4 bits are transferred to an ASCII-character. By this the HEX digits 0-9 and A-F are representable. The final data string consists of 10 HEX digits plus a check sum and two format characters (CR/LF).

Example:



The checksum is build from the sum of the first 10 digits

$(0+1+0+0+1+F+6+E+2) = 27$ [HEX],
 where only the lower half byte is send (here the digit 7). The sent checksum is compared with a checksum calculated by the received data to notice and filter out false transmissions.

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