



## RS-H3-05 (K)\* M12

RFID reader | 125 kHz | Unique

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**Product Card**



*\* Letter K refers to a reader with a common cathode.*

## *Before use...*



*Please do not open the reader and do not make any changes. This results in loss of warranty.*



*In case of any questions please contact with us. We certainly answer to all questions and solve possible problems.*



*Please carefully read the following information before connecting the reader.*



*Please keep in mind, that there are factors as metal surfaces, which can affect on radio communication and correct reader operation. It is advisable to consult the mounting conditions before use with our staff.*



*Please contact with us before sending damaged products.*



*We offer possibility to change cable length and terminate it with a plug. Before make an order please contact with us to determine the details.*



## General information

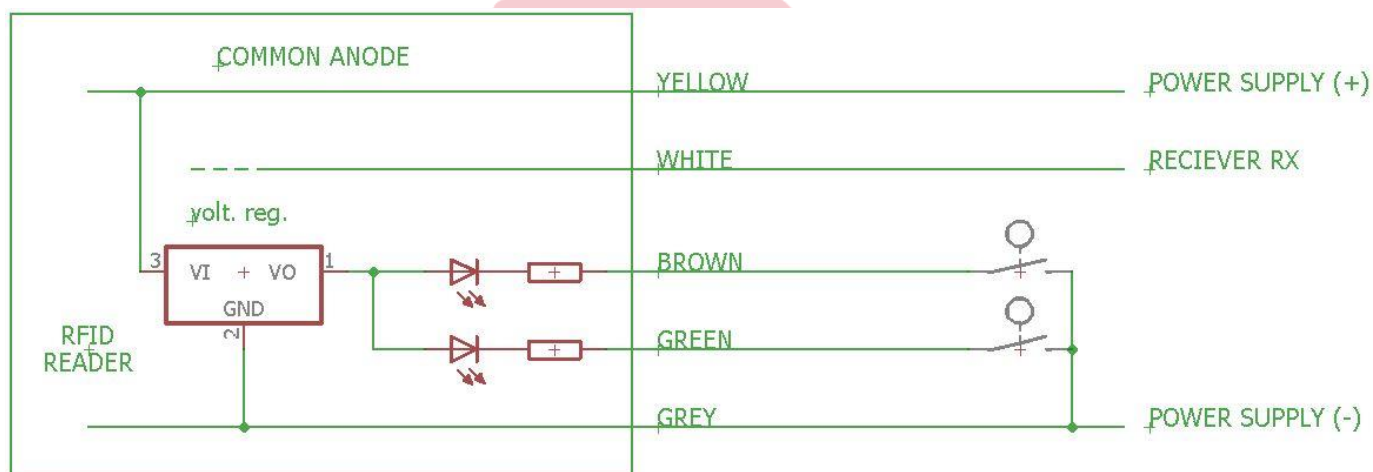
The RFID reader **RS-H3-05 (K) M12** reads identification data wireless of passive transponders (cards, tags, etc.) compatible with UNIQUE standard. The built-in two-color LED and Buzzer for any use. The red LED cannot be used to indicate failure or danger.

LEDs are powered by internal voltage regulator via built-in resistors. The light is on when the appropriate LED is connected to the minus of power supply.

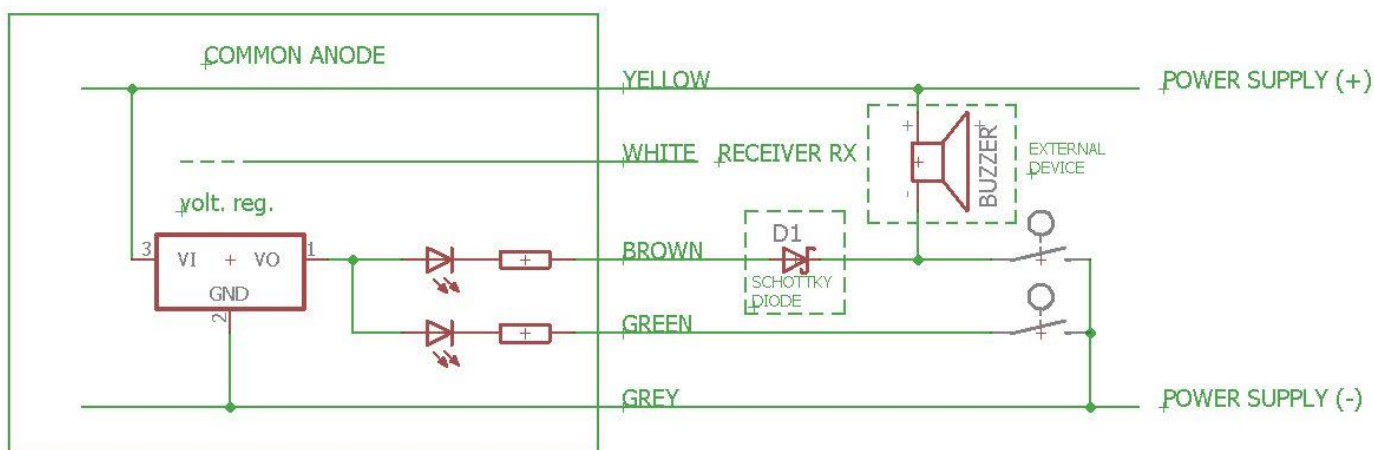
|               |   |                  |                                 |
|---------------|---|------------------|---------------------------------|
| <b>Grey</b>   | - | power supply (-) |                                 |
| <b>Yellow</b> | - | power supply (+) |                                 |
| <b>Green</b>  | - | green LED        | cathode (anode for „K” version) |
| <b>Brown</b>  | - | red LED          | cathode (anode for „K” version) |
| <b>White</b>  | - | TX               |                                 |

The reader should be connected according to the scheme "A". In case of necessity of simultaneous control of LED and other devices (e.g. Buzzer) connect the reader according to the scheme "B":

SCHEME A



SCHEME B



**For product with common cathode:** LED connected in series with a resistor 330R has a cathode connected to the negative power supply. LED is activated when is connected to plus of power supply. To connect more than 5V, it is advised to use external resistor to avoid exceeding the maximum LED current. Minimum value of resistor can be calculated from the formula:

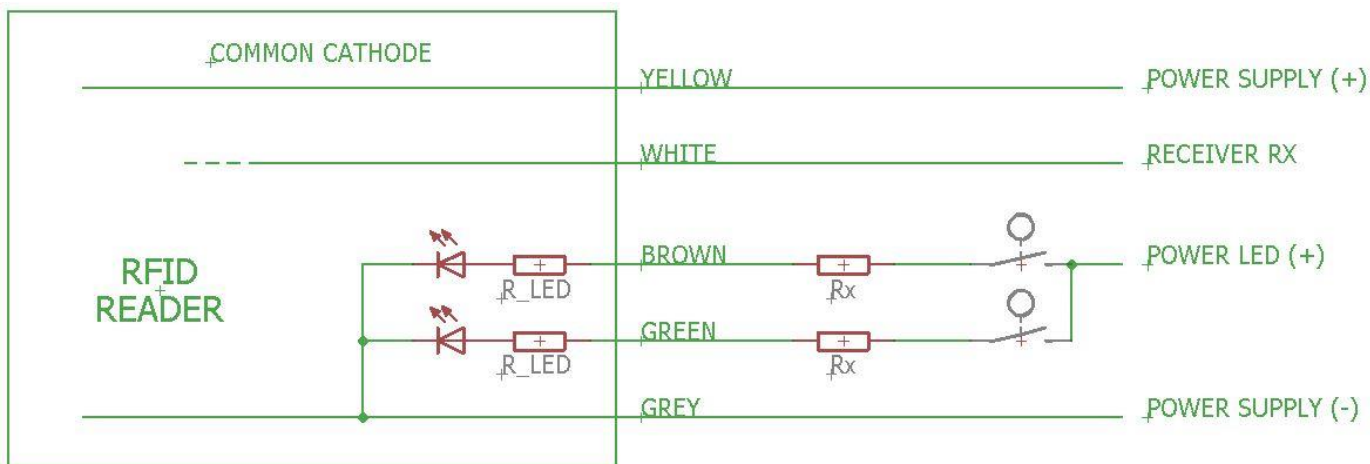
$$R_x = \frac{(U_s - 1.6V)}{I_d} - 330\Omega$$

where:

$R_x$  – External resistor                       $U_s$  – Power supply voltage of LED                       $I_d$  – LED current (max. 10mA)

Connect the reader according to the scheme „C”:

SCHEME C



## Data format

The read data (manufacturer code and serial number) after the correct parity bit check is sent as a 14-byte ASCII string via the RS-232 TTL open collector interface.

| START | manufacturer code ID |     | serial number SN |     | checksum CRC  |     | STOP |
|-------|----------------------|-----|------------------|-----|---------------|-----|------|
| 0x0A  | 2 ASCII signs        |     | 8 ASCII signs    |     | 2 ASCII signs |     | 0x0D |
|       | MSB                  | LSB | MSB              | LSB | MSB           | LSB |      |

Byte START and byte STOP help us identify the string we are receiving. Checksum is calculated as the XOR function of data read from the transponder.

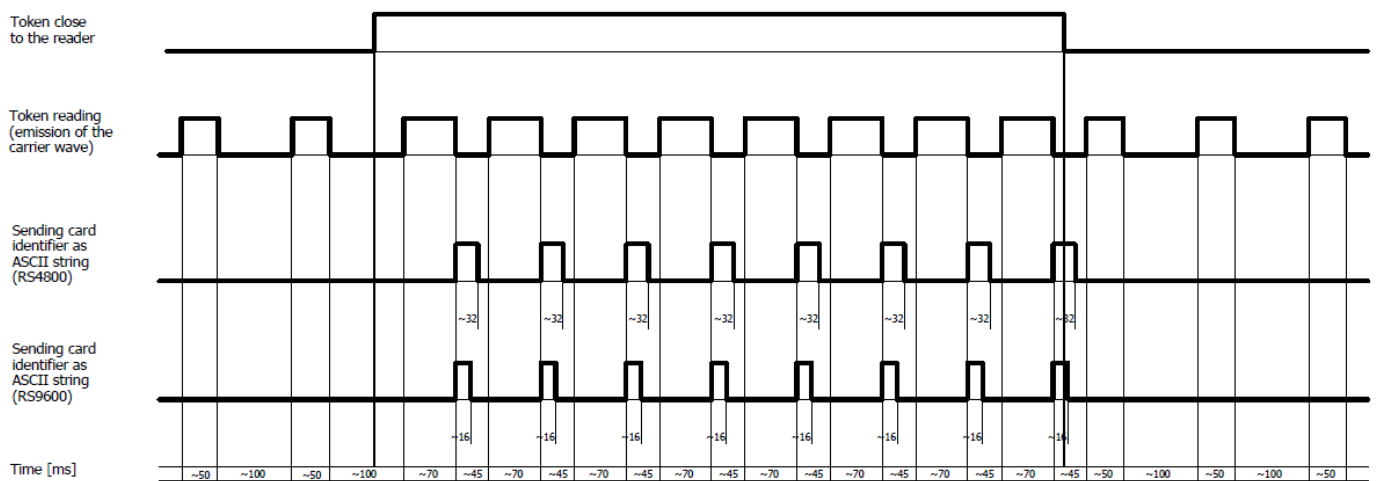
For example:

For code card ID = 54h i SN = 0025E588h

CRC = (54h) XOR (00h) XOR (25h) XOR (E5h) XOR (88H) = 1Ch

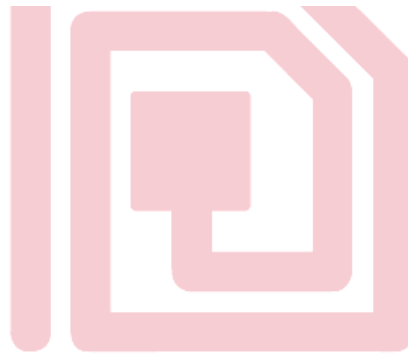
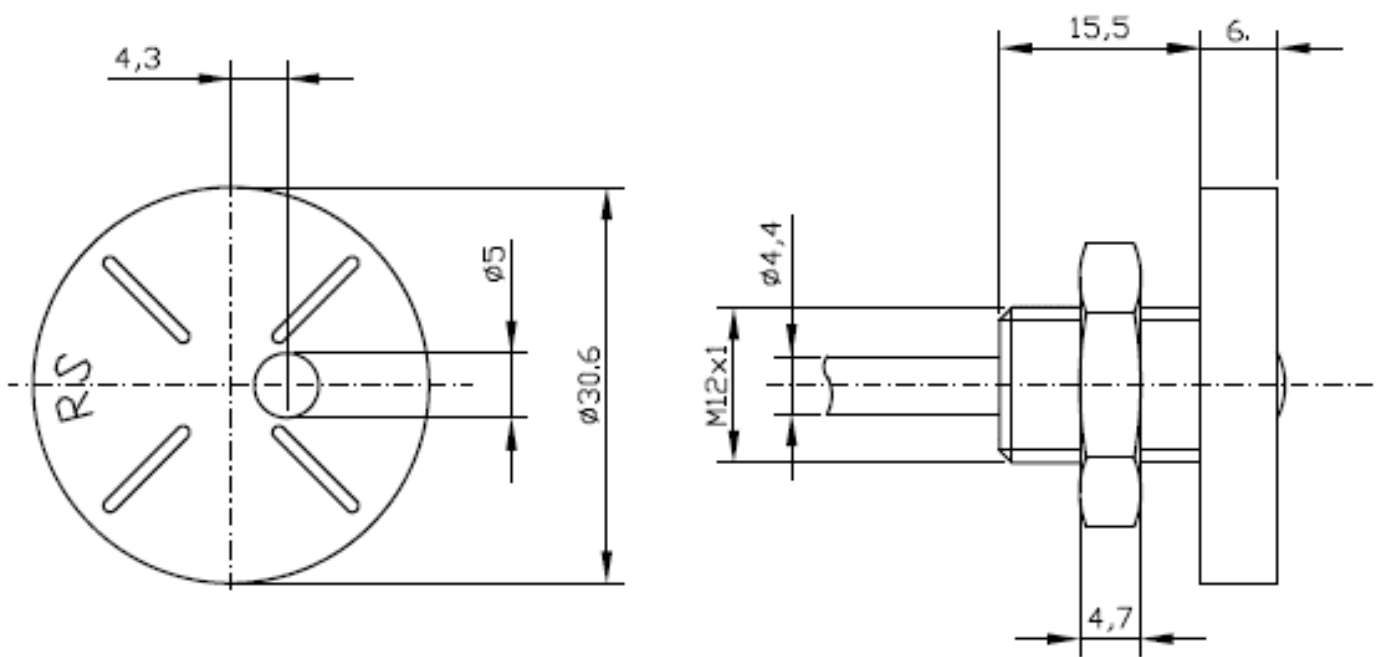
The following string will be output:

0x0A, 0x35, 0x34, 0x30, 0x30, 0x32, 0x35, 0x45, 0x35, 0x38, 0x31, 0x43, 0x0D



1. The reader is waiting for the proximity of the token (card) trying to read it at a frequency of about 6 times per second ( $\sim 50$  ms [checking the presence of the card] +  $\sim 100$  ms [gap between successive checks]).
2. After the token is approached, its identifier is read ( $\sim 70$  ms) and it is sent as ASCII character strings, in subsequent sequences ( $\sim 45$  ms).
3. After dismiss the token, the reader returns to the original reading about 6 times per second, waiting for the token to be re-approached.

## External dimensions



## Technical Data

|   |  |
|---|--|
| <b>Power supply</b>                                       | 6,5-30 V DC  |
| <b>Nominal power supply voltage</b>                       | 12 V DC  |
| <b>Peak current</b>                                       | 50 mA  |
| <b>Receiver current</b>                                   | 12 mA (without LED)  |
| <b>Green LED current</b>                                  | 10 mA (for „K” version do not exceed 15 mA)  |
| <b>Red LED current</b>                                    | 10 mA (for „K” version do not exceed 15 mA)  |
| <b>Frequency</b>  | 125 kHz  |
| <b>Type of transponder</b>                                | Manchester, 64 cycles per bit  |
| <b>Surface of the antenna</b>                             | 6,8 cm <sup>2</sup>  |
| <b>Reading range</b>                                      | ~4 cm  |
| <b>Frequency range of the reader</b>                      | 119-140 kHz  |
| <b>Nominal frequency of the reader</b>                    | 125 kHz  |
| <b>Reading frequency</b>                                  | 6/s for identification<br>2/s when transponder is in range of the reader   |
| <b>RS232</b>  | TTL – open collector, active state 0,<br>4800 bps, 8 bits, without parity and 1 stop<br>bit (8N1).<br>Possibility of ordering 9600bps version. |
| <b>Mounting method</b>                                    | M12 Thread – maximum substrate thickness<br>10,5 mm  |
| <b>Cable length</b>                                       | 0,4 m  |
| <b>The maximum length of power and signal connections</b> | 2 m  |
| <b>Reader temperature</b>                                 | -20° C<br>+55° C   |
| <b>ROHS</b>   | YES  |

**The device cannot be powered from the DC network. It must be connected to the power supply via a 1A short-circuit protection.**

**The device marking is located on the bottom of the housing.**