User manual

9CD 3.0

Version	Date	Author	Description
V1.00	1.10.2020	Sko	First version

Contents

1. Introduction

9CD 3.0 is a Radio Frequency Identification (RFID) -reader to automatically and uniquely identify and track inventory and assets. Transponders can be read without line of sight. Read range can be up to a several centimeters depending on transponder size and shape.

2. Technical Specification

2.1. Operating voltage, power, electrical interfaces

Current consumption is 100 mA max.

Operating voltage range are 10 – 30 VDC.

2.2. Functions and properties

2.2.1. Product description

Reader supports Mifare Classic 13,56 MHz technology. The reader is controlled with serial communication commands or depending on software it can function independently.

2.2.2. Buzzer

Buzzer is optional. Its controls can be connected to I/O interfaces.

2.2.3. Printed Circuit Board

The reader has 4 mounting holes in the PCB.

2.3. Interfaces

2.3.1. Reader Interface

The reader is equipped with RS232.

2.3.2. Interface output

The reader uses Idesco serial communication protocol.

2.4. Performance

2.4.1. Reading distance

Reading distance up to several centimeters.

2.4.2. Communication

Each command must be preceded by 0x02 and followed by 0x03. Version Query is for example '0x02'Q'0x03'
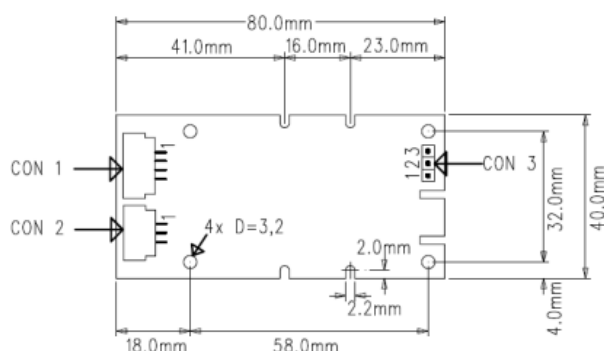
2.4.3. Command Set

IDESCO

Command	Description	Mifare® low level
'Q'	Version Query	
'h'	HALT	
s2'	Select cascade level 2	Select 1 and 2
'C'	Select and RATS	
'ds'	Deselect PICC	
'fp'	Format PICC	
'rs'	RATS	
'ld'	Login DESfire [crypto mode, key number PICC, key number XMEGA]	Authentication
'ck'	change key PICC [key type, key index, new key, old key]	
'cr'	change reader key [key type, key index, new key]	
'sa'	AID select [application ID]	
'ca'	AID create [application ID, security settings]	
'da'	AID delete [application ID]	
'la'	List Applications	
'cf'	File create [file type, file ID, settings]	Settings depend on file type
'df'	File delete [file]	
'gf'	Get File Settings [file]	
'lf'	List Files	
'rf'	Read File [file, offset, length]	Read
'wf'	Write File [file, offset, data]	Write
'ct'	Credit	
'dt'	Debit	
'gv'	Get value	
'cfv'	Create value file	
'gV'	Mifare Desfire Version Query	
'gu'	Get card UID	
's'	Select cascade level 1	
'l'	Login Mifare Classic [sector, keytype, key]	
'r'	Read Mifare Classic [block]	
'w'	Write Mifare Classic [block, data]	
'lp or lx or 'ls'	Mifare Plus login	
'rt'	Mifare Plus reset	
'rp'	Mifare Plus Read	
'wr'	Write Mifare Plus	
'wa'	Write Mifare Plus AES key	
'wp'	Write perso Mifare Plus	
'cp'	Mifare Plus Commit perso	
'baud'	Baud [00, 01, 02, 03, 04, 05]	00 = 9600 baud 01 = 19200 baud 02 = 38400 baud 03 = 57600 baud 04 = 115200 baud 05 = 1200 baud
'dg'	Green led	

'dr'	Red led	
'dn'	Leds off	
'db'	Buzzer on	
'dq'	Buzzer off	
'pon'	Antenna power on	
'poff'	Antenna power off	

2.5. Connector for power, serial communication and antenna

The connectors are shown in picture 1.

Picture 1. Connectors for power, serial communication and antenna

The connector type for power & data is S4B-XH-SM4-TB and S3B-XH-SM4-TB for antenna. Both con-nectors are manufactured by JST.

2.1. Antenna

The used Idesco antenna types are ATH or ATHC. ATH is a rectangular antenna on printed circuit board. ATHC antenna is round plastic cylinder with a diameter of 13.5mm and length of 30mm. The length of cable in both antennas can be up to 17cm.

2.2. Host Device

9CD3.0 has power supply regulation. It uses regulated 10VDC – 30VDC voltage supply which is supplied by host device.

2.3. Labelling instructions

The FCC and ISED certification label of a module shall be clearly visible at all times when installed in the host product; otherwise, the host product must be labelled to display the FCC and ISED certification number for the module, preceded by the word "contains" or similar wording expressing the same meaning, as follows:

Contains FCC-ID: UJR9CD30
Contains IC: 6701A-9CD30

The module and antenna are labelled according to FCC and ISED certification requirements.

2.4. Installation

9CD 3.0 must be professionally installed.

The only permitted antenna types are ATH and ATHC.

Due to the unique market and function targeted by this product, this product needs a trained professional engineer to configure and integrate this product into the final host configuration.

The product will not be sold via retail or directly to the general public or by mail order. It will be sold to *authorized dealers or installers only*.

The intended use of this product is not for consumers and general public.

9CD 3.0 and antenna must be installed correctly. The tag can only be read when it is within the reading distance of the antenna, which is less than a few centimeters depending on tag type.

The product will be installed inside the host system. It will not be possible to replace either 9CD3.0 or ATH(C) or both later without disassembling the host system first.

The installation requires special knowledge of the host system, its functions and operations.

This product can be installed by licensed professionals.

3. FCC and ISED Statements

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.