ACS

Pulse mode CASHLESS RFID READER

for RFID - MIFARE® Cards and Keys

User Manual

CE

CONTENTS

STORICO REVISIONI			
Revisione n°	**Data**	**Modifica**	**Note**
Rev. 1.00 (Creazione)	26.04.13	Creazione	
Rev. 1.01	26.04.13	Nuovi moduli Round e Square	
Rev. 1.02	22.07.15	Cambiato frontespizio	
Rev. 1.03	21.01.20	Nuovo modello multi-supporto: Card e Chiavette	

Dear Sirs,

we would like to thank you and congratulate for your choice.

We trust that you will appreciate the quality and performance of the ACS Cashless Reader for RFID Cards/Keys.

> *Please read carefully this handbook, to obtain the most from your machine*

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1. Package content

The Alberici Cashless System ACS is made up by:

1. As many read / write (RW) modules as requested
2. As many empty Cards/Keys as requested

Notice: if you are not owning the Programming Kit K-P10-000009 ACS Reader , and the Programming interface K-P4N-000007 for ACR Cards/Keys, it will be necessary to place an order for it to be able to initialize the ACS module and the RFID s.

This product has been packed with the utmost care. In the case that you receive it damaged or incomplete, please notify immediately your findings to the Carrier.

2. Introduction

The Alberici Cashless System (ACS) is designed to read or write data on the chip transponder (Tag) built into the Card/Key-shaped support. Data get stored in the form of units of credit..

The Card/Key can be read or written (R/W) only by the RW module sharing the same password (PIN) of the Card/Key. Each Card/Key and each RW module can be initialized only by means of the programmers. Cards/Keys are available in various colours: green, yellow, blue, red, white (recommended for the Service Cards/Keys) and black (recommended for the Master Card/Key).

The ACS makes use of the secure and reliable MIFARE® technology. Exchange of data occurs through radio-frequency signals (RFID): no direct contact is made between components prevent wear-out of the system . The Keys are waterproof, resistant and non-reproducible.

The system is ideal for such applications like:

- Automatic distributors
- Car-wash plants
- Automatic Laundrettes
- Gyms and swimming-pools

- Access controls
- Theme parks
- Parking places
- Internet kiosks

The chip transponder contains 45 blocks, 16 bytes each. It can therefore store up to 720 bytes.

Each RW module must control only the Cards/Keys that have been initialized for that particular module, and inversely each Card/Key must be compatible only with the RW modules for which they have been initialized. To this aim, the system is designed so as to make the Cards/Keys accessible only through password (PIN).

The ACS module must therefore be initialized by making use of the Programmer Kit for Peripheral Units (K-P10-000009) and of the "cctalk-mifare.exe" software provided. At this stage, the 6-digit PIN must be given: the RW reader shall compare its PIN with the one of the inserted Card/Key; if their PINs are not the same, the Card/Key with such ACS reader (see Section 6.1).

If lost, the password (PIN) cannot be retrieved, not even by Alberici S.p.A.: once the password has been produced for the RW module, it must properly be recorded and kept secret.

To initialize the Cards/Keys that will work with the relevant ACS module, the ACR Cards/Keys Programmer (K-P4N- 000007), as well as the "cctalk-mifare.exe" software, must be used. The software itself shall ask to give the Card/Key, laying on the programmer interface, the same PIN as the one given to the RW reader that it must work in conjunction with.
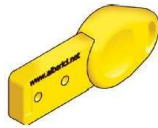
3.   Parts denomination

ACS (Read-Write) Module

*The ACS module contains the
RFID aerial and its board.*

**Key with built-in
transponder chip**

**Cards with built-in
transponder chip**

*he Card / Key bears the transponder chip, it is
waterproof and easily portable. Memory 720 bytes.*

Accessories (to be ordered separately)

**Universal programmer
for ACS reader)**
(ref. K-P10-000009)

PC-connection through USB or RS232 port

**ACR Programmer
for RFID Cards/Keys**
(ref. K-P4N-000007)

**Key-Loader One for
charging credits on (only) Keys**
(ref.TB-L6A2)

230 Vac powered

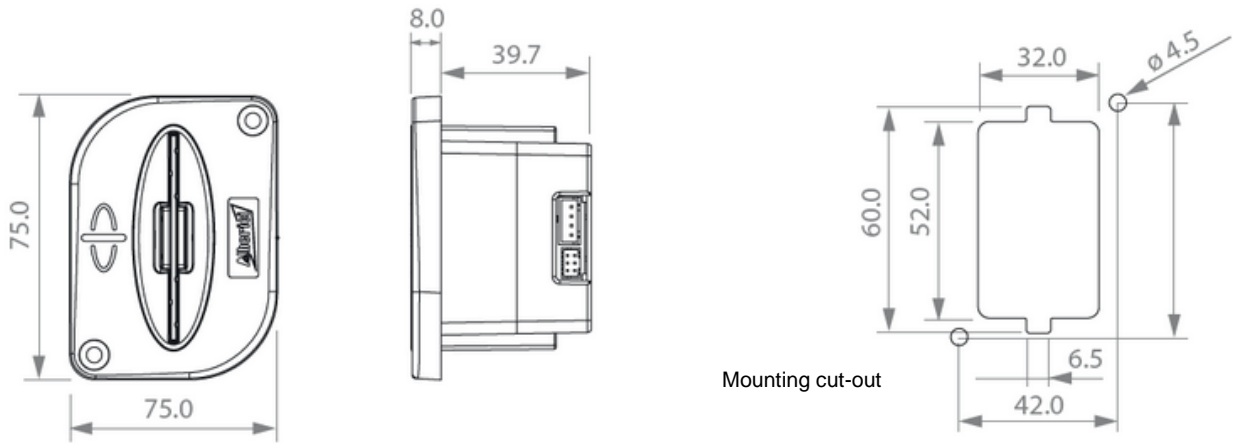# 4.   Product description

4.1   General data

- RW Module

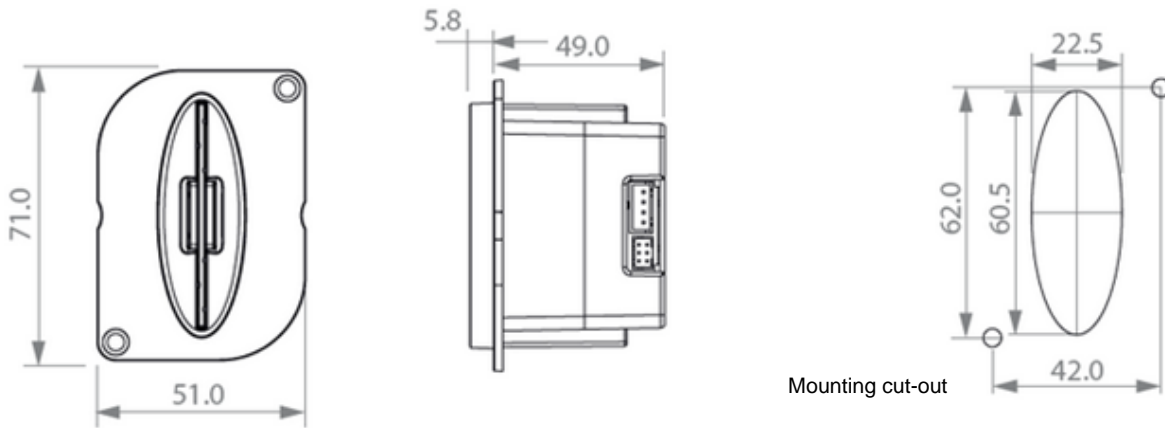| Weight	0,555 Kg
Power supply	12 Vdc
Current draw	Max 150 mA (when writing)
Operating temperature	-10° C / +50°C
Humidity	10-90% non condensed

- Key

Dimensions W x H x D (mm)	54 x 23 x 9
Memory storage capacity	720 bytes

4.2 Size

Installation with bezel

Mounting cut-out

Installation without bezel

Mounting cut-out

5. Connections

CN1 - power and data socket:

4= +12V

3= not used

2= Gnd

1= Credit Pulse (active low)
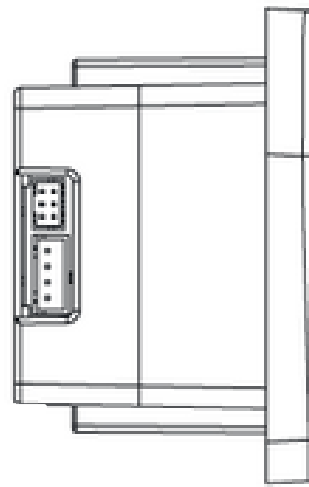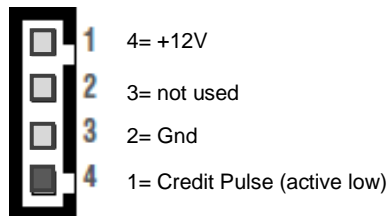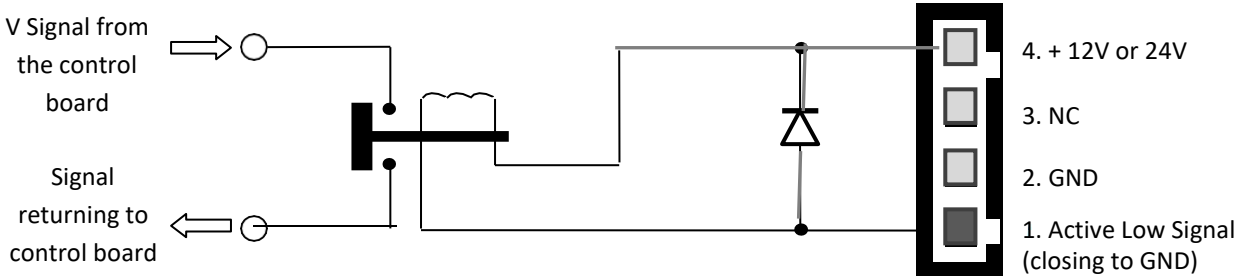
The control board that reads the reader pulse signal must match by Open Collector circuit (i.e. pull-up resistor), exactly as with a pulse mode coin acceptor, as shown in the diagram below:

CONTROL BOARD

+ 12 V

4. + 12V or +24V
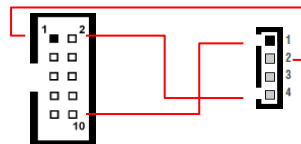
3. NC

2. GND

1. Active Low Signal (closing to GND)
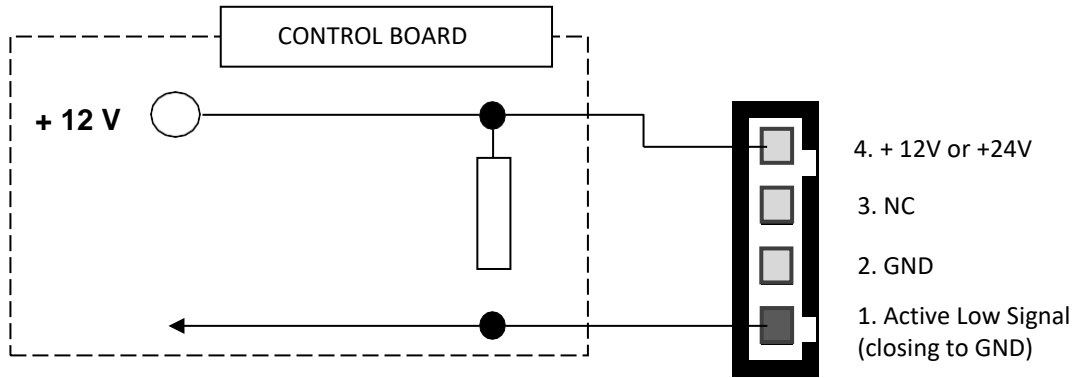
To make use of the ACS reader as replacement to a mechanical coin acceptor, whose switch simply provides a short-circuit when a coin is accepted, it is necessary to interpose a relay as shown below:

V Signal from the control board

Signal returning to control board

4. + 12V or 24V

3. NC

2. GND

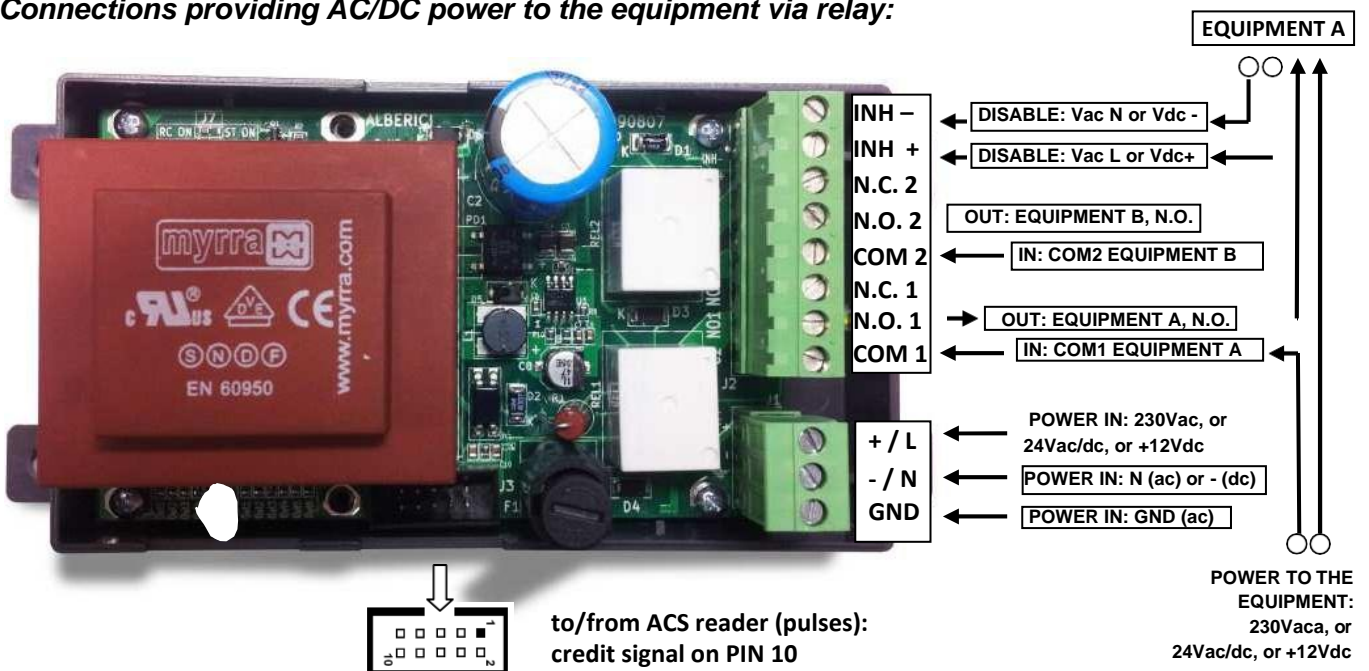1. Active Low Signal (closing to GND)

NOTICE: to power the ACS reader, in this latter case it might be convenient to use the Servo MKII Board, which is available for inputs at 230 V a.c., or 24 V a.c., or 24 V d.c., or else 12 V d.c.

USE WITH SERVO PC BOARD: the Servo pcb is available for 230 Vac power, or for 24 Vac/dc, or for 12 V dc. It provides power to the ACS antenna, and activates the 8Amp relay contacts when the Card/Key is inserted and the service request is activated.

The Servo pcb can be connected in any of the two ways described below, using one 4p/10p cable as in the picture beside (cable not provided).

Connections providing AC/DC power to the equipment via relay:

EQUIPMENT A

INH –   DISABLE: Vac N or Vdc -

INH +   DISABLE: Vac L or Vdc+

N.C. 2

N.O. 2   OUT: EQUIPMENT B, N.O.

COM 2   IN: COM2 EQUIPMENT B

N.C. 1

N.O. 1   OUT: EQUIPMENT A, N.O.

COM 1   IN: COM1 EQUIPMENT A

+ / L   POWER IN: 230Vac, or 24Vac/dc, or +12Vdc

- / N   POWER IN: N (ac) or - (dc)

GND   POWER IN: GND (ac)

POWER TO THE EQUIPMENT: 230Vaca, or 24Vac/dc, or +12Vdc

to/from ACS reader (pulses): credit signal on PIN 10

Connections providing clean contact to the equipment via relay:

INH − ← DISABLE: Vac N o Vdc -
INH + ← DISABLE: Vac L o Vdc+
N.C. 2
N.O. 2 OUT: EQUIPMENT B, N.O.
COM 2 ← IN: COM2 EQUIPMENT B
N.C. 1
N.O. 1 → OUT: EQUIPMENT A, N.O.
COM 1 ← IN: COM1 EQUIPMENT A

EQUIP MENT A

+ / L ← POWER IN: 230Vac, or 24Vac/dc, or +12Vdc
- / N ← POWER IN: N (ac) or - (dc)
GND ← POWER IN: GND (ac)

to/from ACS reader (pulses): credit signal on PIN 10
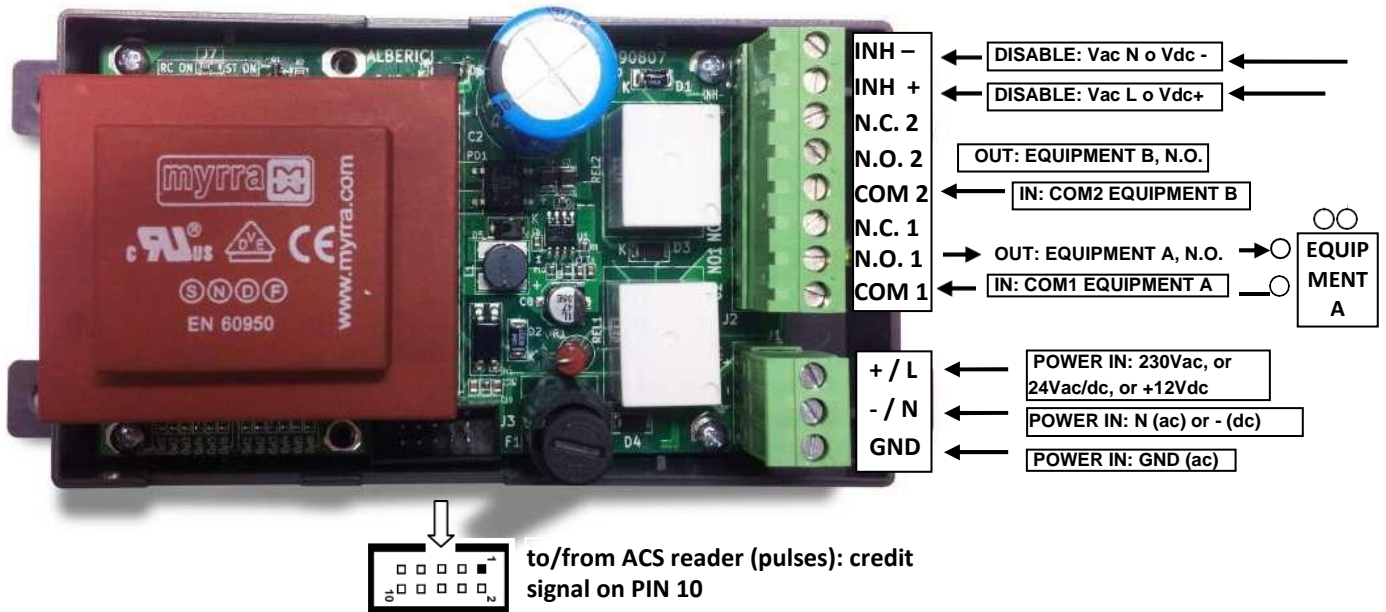
Do not forget to program the credit value in the ACS antenna (RW module). Such amount will be deducted from the total credit in the Card/Key at each activation (see section 6).

6. Initializing the system

If the PC does not contain the USB drivers, please install them before connecting the reader (antenna) programming kit to the PC.
The drivers can be found in the software-CD which is part of the package. The programming software *"cctalk-mifare.exe"* can be found on the same CD.
Such drivers can also be downloaded from the Download Area available in www.alberici-net: Programming Kits / Driver USB / Silicon Labs 2K3 XP Vista 7.rar.
Then from the Start menu of the PC, go to Device Manager (in XP, through System): in the Controller USB or Gate (COM and LPT) list, find the programming interface (USB Serial Converter, or USB Serial Port), and double-click on it. In the window that opens up, choose Driver, click on Driver Update and follow the instructions appearing by and by.

Connecting the reader programming kit (cod. K-P10-000009)

USB
RS232
12Vdc in

- Connect the power supply box to the 12 Vdc input of the interface.

- Connect the USB cable to the PC and to the USB-A socket of the interface; or else, use the RS232 cable.

- Connect the 4p (3 wires) cable between the cctalk 4p socket of the programming interface and the 4p socket behind the Card/Key reader.

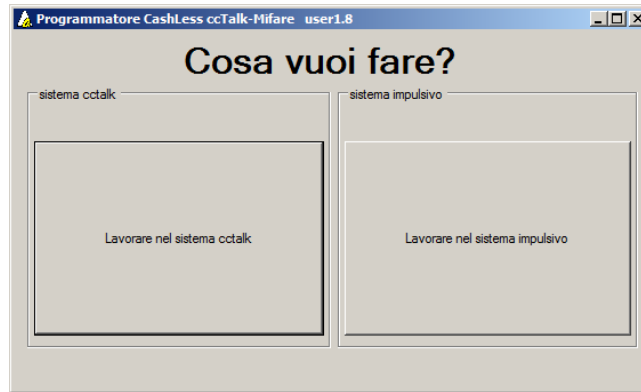## 6.1 Initializing the ACS (R/W) module:

Copy the application "*cctalk-mifare.exe*" from the software-CD, and paste it on your PC Desktop.

Connect the ACS (aerial) module to be initialized to the RS232 Port or to a USB Port of your PC, through the K-P10-000009 Programmer kit interface (see Section 5).
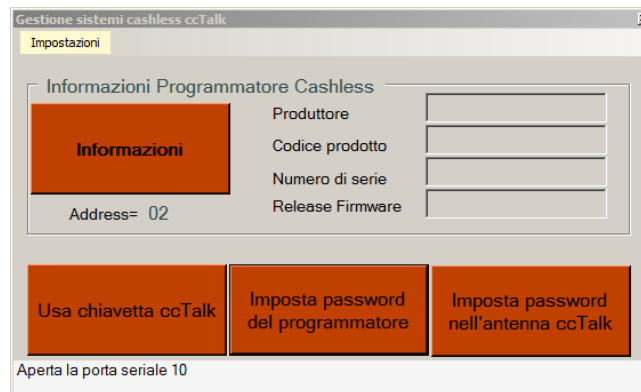
Open up the program "*cctalk-mifare.exe*".

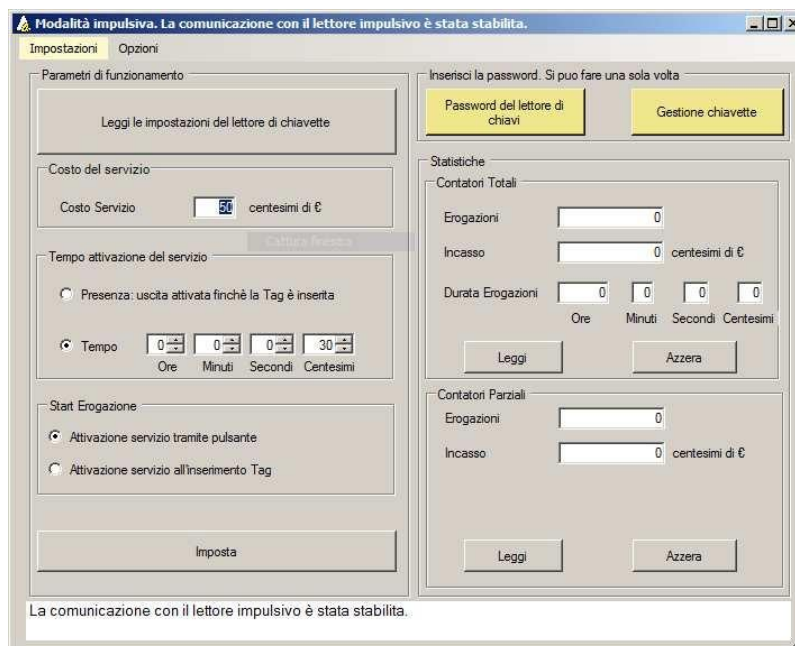The following prompt will be displaying:

Choose "Sistema Impulsivo" ('operate in Pulse mode'). The following window will appear:

Check that the application reads from the right USB Port: click 'Impostazioni > Porta seriale' ('Setup > Serial Port')', write the right Port nr. (ex. nr. 10) in the white box, and confirm by the OK button. If you connect through RS232, COM Port will most likely be COM 1.
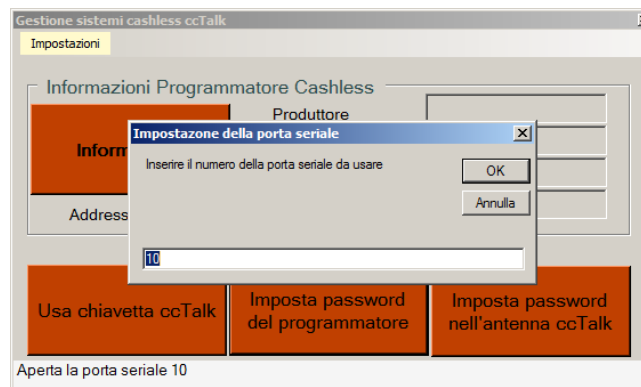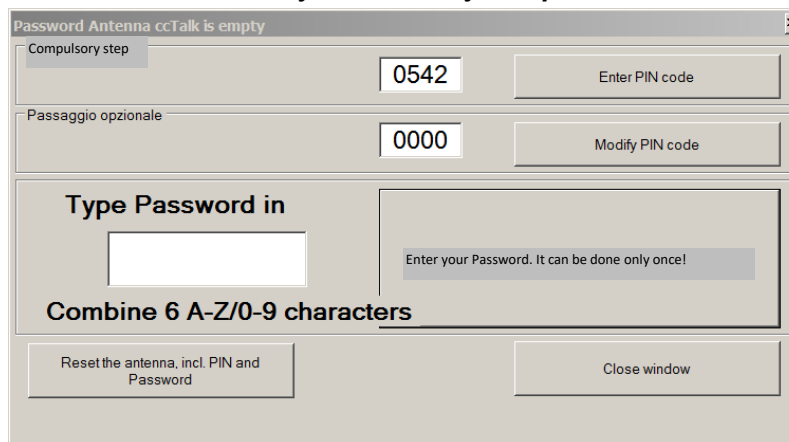

The window bottom bar will prompt you to switch off and on. Press twice the green button of the programmer interface, and then wait until communication has been set. The following window shall be displayed:

Impostazioni   Opzioni

Parametri di funzionamento

Leggi le impostazioni del lettore di chiavette

Costo del servizio

Costo Servizio   50   centesimi di €

Tempo attivazione del servizio

○ Presenza: uscita attivata finchè la Tag è inserita

● Tempo   0   0   0   30
          Ore Minuti Secondi Centesimi

Start Erogazione
● Attivazione servizio tramite pulsante
○ Attivazione servizio all'inserimento Tag

Imposta

Inserisci la password. Si puo fare una sola volta

Password del lettore di chiavi   Gestione chiavette

Statistiche
Contatori Totali

Erogazioni   0
Incasso   0   centesimi di €
Durata Erogazioni   0   0   0   0
                  Ore Minuti Secondi Centesimi

Leggi   Azzera

Contatori Parziali
Erogazioni   0
Incasso   0   centesimi di €

Leggi   Azzera

La comunicazione con il lettore impulsivo è stata stabilita.

Press the button "Password del lettore di chiavi" ('Card/Key Reader Password'): type your Master Card/Key PIN in the box beside "Inserisci PIN" ("Enter PIN code"). You will need to type this PIN code, even if you want to modify it. In the box "Digitazione Password" ('Type Password in'), write your 6-digit combination that will identify this ACS unit from now on, and that shall be used as well to brand the Cards/Keys that must work in conjunction with it. The digits can be any alpha-numerical character (0-9, A-Z). Click the button "Inserisci il codice. Lo si può fare una sola volta!" ('Enter your password. It can be done only once!'), and "Chiudi" ('Close window').

IMPORTANT INFORMATION: THE PASSWORD CAN BE PROGRAMMED ONLY ONCE FOR THE CARDS/KEYS!!! do not lose/forget the initialization password attributed to the antenna. It cannot be recovered! This password allows operation only to the Cards/Keys marked by the same password.
It is possible to reset Password and PIN of the antenna (button "Reset the antenna Password and PIN"), but in that case all the Cards/Keys branded by that password will become useless.

Password Antenna ccTalk is empty

Compulsory step
0542   Enter PIN code

Passaggio opzionale
0000   Modify PIN code

Type Password in

[   ]   Enter your Password. It can be done only once!

Combine 6 A-Z/0-9 characters

Reset the antenna, incl. PIN and Password   Close window

The previous window will be restored: it is now possible to set up the ACS Reader according to the needs:
- "Costo del servizio" ('Cost of Service'): this is the value of the credit Pulse, and it must be espressed in hundredths of Euro, i.e. 2 € = 200 units of credit.
- "Modalità di servizio" ('Service mode'): output signal while the key is in (tick "Presenza" = 'Present') *vs* output signal when the inserted key gets removed (uncheck "Presenza" = 'Present').
- "Tempo attivazione del servizio" ('Service running time'): can be set up to around 10 hours when configured to operate as timer control; or in hundredths of second when configured as single or multiple pulses activator.
- "Modalità di attivazione" ('Service activation mode'): automatic when the key is inserted/removed

Press the button "Imposta" ('Set up') to end the setting of the Pulse ACS Module, and disconnect it.

Later on, the configuration of the Pulse ACS module can be checked by pressing the button "Leggere le impostazioni del Lettore di chiavette" ('Read the Key reader setup').

It is now possible to initialize the RFID Master / User / Service Card/Keys.

6.2   Initializing the User / Master / Service Cards/Keys, and loading credit (*) :

6.2.1 Initialization:

Make use of the ACR programmer (K-P4N-000007).

NOTICE: keep at hand the 6-digit code that has been used to initialize the Card/Key reader must be known.

Connect the ACR programmer box to a USB Port of your PC: it will take about 1 minute to install the drivers and get the programming box ready for use.
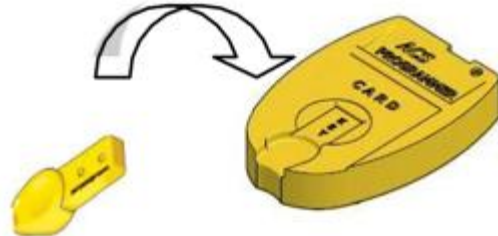
In case the programming unit should not find the USB drivers in your PC, they are in the software-CD included, or from the Download Area of www.alberici.net (Download Area / Programmer Kits / Driver Silicon Lab 2K3 XP Vista 7.rar).
From the Start button at the bottom-left of your PC, select Control Panel, then Device Management: among the "Ports (COM and LPT) list, find out the programmer box "Silicon Labs", and double click it. In the setting window that opens up, choose the tag "Driver", and click "Update driver": follow the instructions displaying on your pc screen. When the programmer box is ready, its pilot light will turn from red colour to green.

Start the program "*cctalk-mifare.exe*" . The following prompt will be displaying:
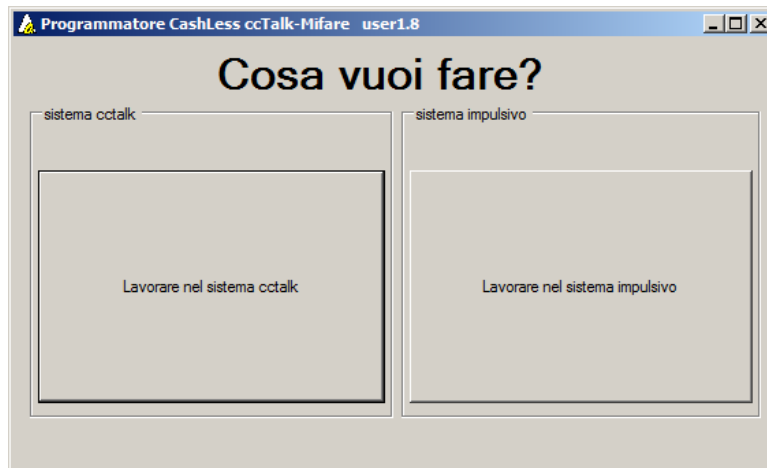

(*) An independent option to load credits (only on Keys, not on Cards!) is the ACS Key-Loader One device, that allows to initialize User Keys and recharge them with credits without using the PC. The Key Loader is supplied with itws own power box, so it just needs be connected to a standard 110-240V mains socket.
**Please see the relevant ACS Key Loader manual for details on how to use it.**

Choose 'Lavorare nel sistema ccTalk' ('Operate in ccTalk mode'), then the window below will appear:
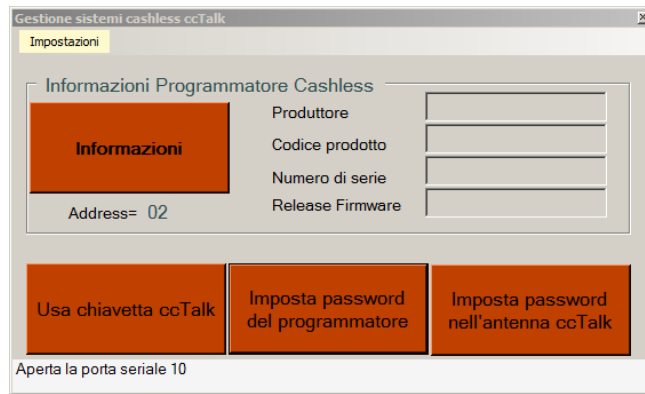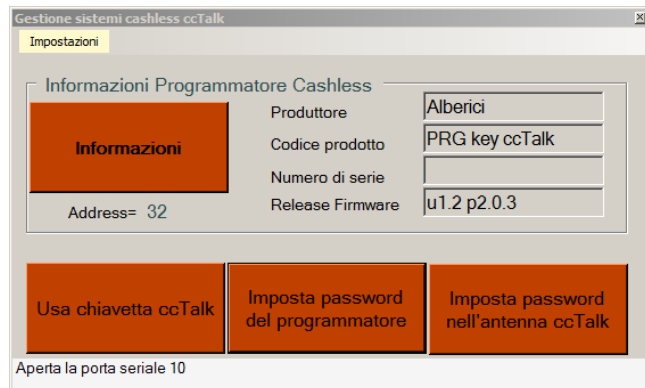

Check that the application reads from the right USB Port: click 'Impostazioni > Porta seriale' ('Setup > Serial Port')', type down the right Port nr. (ex. nr. 10), and confirm by the OK button.
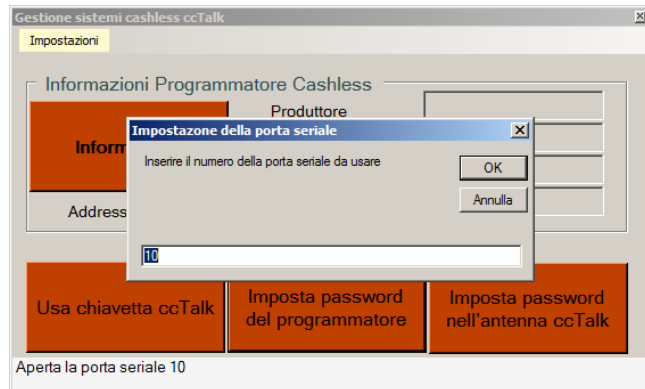
Lay one User Card/Key on the ACR programmer shaped seat.
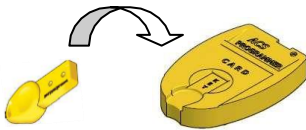
Click "Imposta password del programmatore' ('Set the Card/Key reader code in the programmer box'),


and write in the white box the 6-digit code of the ACS reader to which the Card/Key must be matched: i.e., if the ACS reader to which the Card/Key must be matched has been initialized with Password 123456, the same figure must be entered:
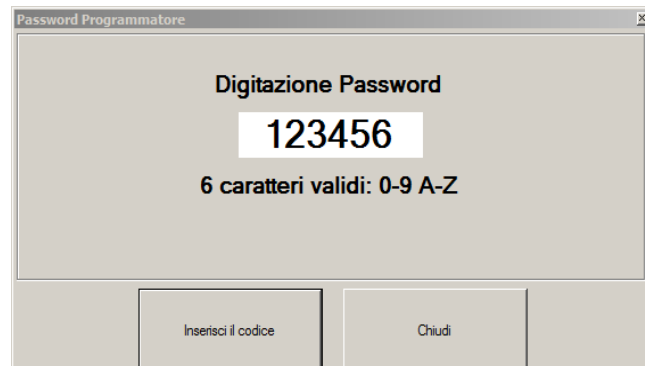

To end this step, click 'Inserisci il codice' ('Enter PIN code') and 'Chiudi' ('Close Window').

Click the button 'Usa chiavetta ccTalk' ('Manage cctalk Card/Key'): the Tag management window will appear.
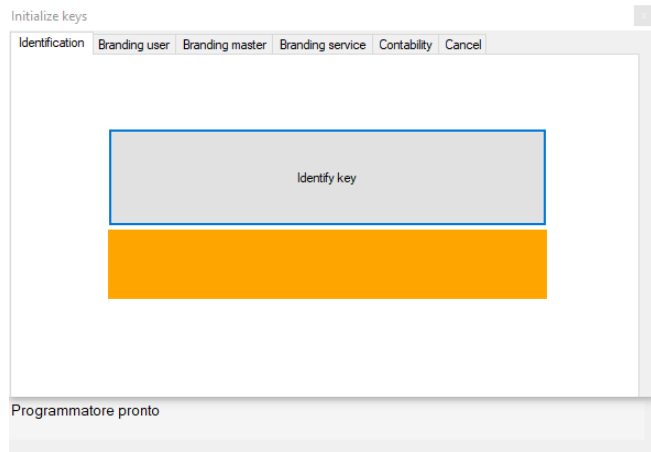
Click 'Identifica chiavetta' ('Identify this Card/Key'). If the Card/Key is not compatible, the message 'Chiavetta non associata Alberici' ('Card/Key not compatible with Alberici reader') will appear. If the Card/Key has not yet been initialized, the orange bar in the side window shall appear, showing 'Chiave ancora da abbinare a questa password' ('Virgin Card/Key, not yet matching this Password). An additional window will ask whether the card/key must be matched to the antenna reader - and branded as User or Master or Service -   or not:
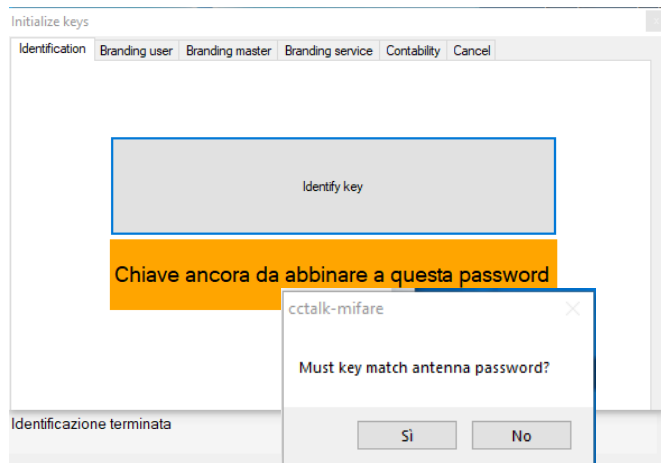

Click 'Sì' ('Yes') to proceed, or else click 'No' to leave.


5.2.2 Branding the Card / Key:

 Choose your preferred option among:
'**Branding User Card/Key**','**Branding Master Card/Key**', and '**Branding Service Card/Key**'.

Supposing the Card / Key must be branded as User, choose "Branding User". The side window will appear:
click the orange-lit button and wait until the confirmation message (at the bottom against green background: 'Scrittura Tag OK') confirms that the Tag has been correctly branded.
It is now possible to load it with credits by the button 'Impostazione crediti nella chiave utente' ('Set credits in the User'), or to remove it and go on with another User one, or brand a new Card/Key as Master or Service.
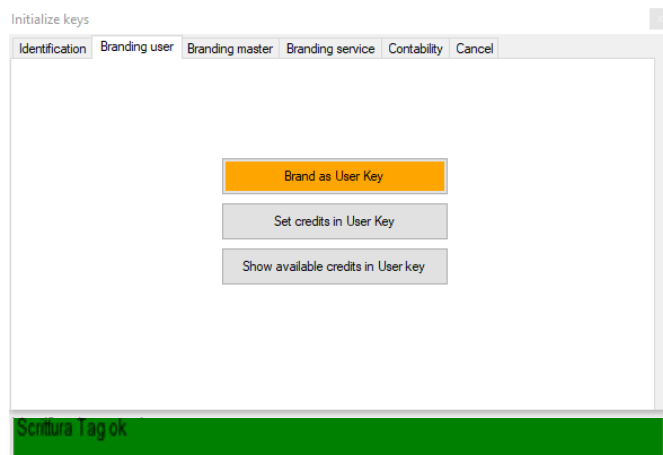
If the User Key has been previously initialized to work with the same reader (i.e. with code 123456), the message 'Identificata chiave Utente' ('User key identified') will be displayed, and it will be possible only to check credits by the button 'Visualizzazione crediti nellchiave Utente' ('Display credits existing in the User key'), or to load credits by the button 'Impostazione crediti nella chiave utente' ('Set credits in the User key').
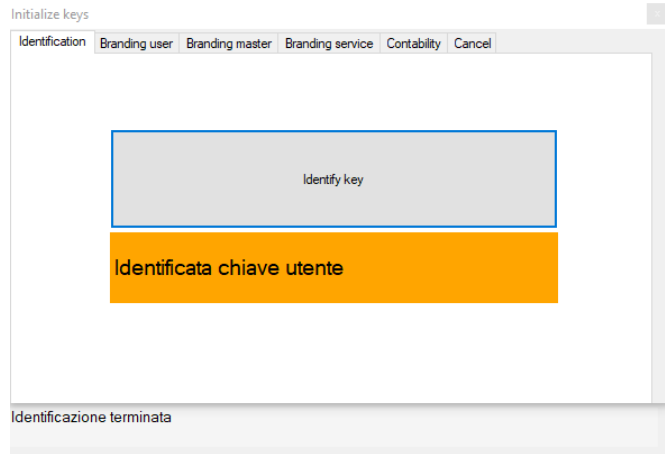
5.2.3 Filling the User Card/Key with credits:
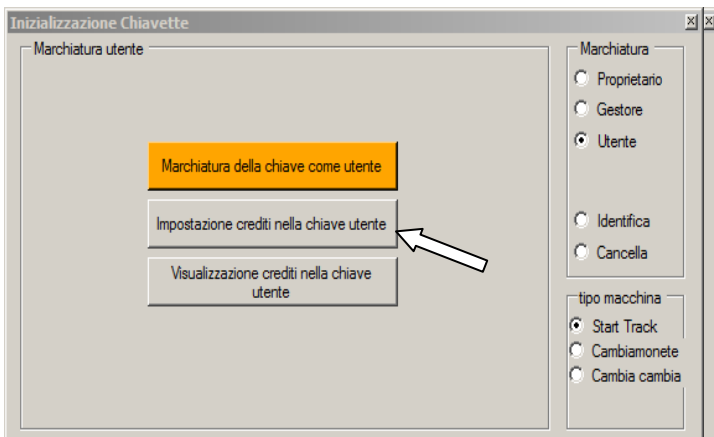
Choose 'Impostazione crediti nella chiave utente' ('Set up credits'), then type the credit amount in the white box opening up.
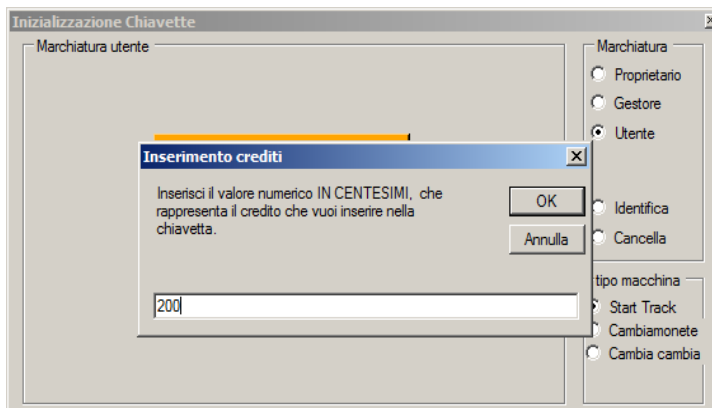
Credit amount must be written in hundredths of the currency unit, i.e.: 1 € = 100 credit units.

Confirm by the OK button, and repeat the steps to fill other initialized User Card/Keys with credit. Or else, close down the windows by clicking on the crossed boxes at top-right corners of each window.

The bottom bar in the main window will confirm: "Operazione eseguita / Scrittura tag ok" ('Operation achieved / Tag has been initialized').

☞ If one new or several new Cards/Keys must match a different reader, take care to set the 6-digit code of this Card/Key reader before initializing this/these User Card/Key(s).

5.2.4 **Self-service credit refill:** the initialized User Card/Key(s) can be charged with credit also through self-service re-load, if the circuit hosting the ACS reader is connected to a ccTalk coin acceptor, and if its control board is properly programmed. In such a case, it will be enough to insert the User Card/Key in the reader slot without activating any service; then insert the coins in the coin acceptor > the board display would ask if the amount should be used to load the Card/Key or to start a service > choose and press the relevant pushbutton: the amount entered will be loaded to the RFID Card/Key.

7.   Operation

When the device is connected and powered, the blue pilot lights up. If the module has not been yet initialized, it will flash blue.

When the key is inside the module slot, it lights up green, and reads the data contained. If the credit content is void, the module light will be flashing green.
It will flash red if the password of the key does not match the password of the ACS reader module.

When the transmission of the data from the key reader to the control board is in progress, the reader light flashes yellow. It turns again to green after the transmission has ended.

- Insert the Card or the Key.
- The reader detects the presence (or insertion and removal) of the RFID Key: if this one is filled with enough credits, the reader sends out immediately the credit pulse (Active level Low) through pin 1 of CN1.
- The ACS reader will flash yellow as long as the credit signal remains active.
- As the reader receives the credit pulse, it takes off the equivalent of one credit from the amount stored in the User Key.

8.   Guarantee

The manufacturer will fix malfunctions arising from production faults in this machine or parts of it within 12 months from the date of sale.

All communications referring to guarantee repairs or replacements must be accompanied by the product serial number and the copy of the sale invoice.
To obtain your guarantee repair, please send the part to the Dealer where you purchased the machine, together with the following documents:
- copy of the sale invoice
- delivery note stating "returned for guarantee repair"
- detailed report of the problem found and the circumstances in which it occurs.

Before sending the product, please get in touch with your Dealer or with Alberici S.p.a. (+39 051 944300); very often malfunctions can be fixed via a simple phone call, saving you costs and time.

Alberici S.p.a. will verify that warranty is applicable, i.e. that problem is not caused by:
- transport damages
- damages from incorrect installation or wrong configuration
- installation in premises or areas not complying with the prescribed safety requirements
- intentional or unwilled tampering
- wrong or careless use or maintenance
- non-compliance with precautions prescribed (see Chapter 4. Caution)
- natural disasters, vandalisms, intentional or unintentional damage

Guarantee is considered automatically expired if outer and inner labels are missing. Transport costs of repaired products are at the Customer's charge.

9.   Customer Service

Alberici S.p.a. will be pleased to offer all the necessary information on use, ordinary maintenance and technical service.
Please call (+39) 051 944300 and specify if your request concerns information on use or technical support.