



SOFTWARE CONTROL SERVICES (PTY) LTD

475 King's Highway, Lynnwood
P.O.Box 36675, Menlo Park
Pretoria, South Africa
0102

(t) +27 12 348 7301
(f) +27 12 348 1129
(e) techsupport@softconserv.com
www.softconserv.com

Card Printer.

Version 0. 1

Prepared by: Michael Davis- Hannibal

Softcon Software Control Services (Pty) Ltd.

7 March 2017



Revision History

Name	Date	Reason For Changes	Version
MDH	22-Oct-10	Initial document	0.1

Contents

1. General.....	3
2. Printing Process	4
a. Thermal transfer.....	4
b. Dye sublimation.....	4
c. Reverse image technology.....	4
d. Thermal Rewrite print process	4
3. Options	5
4. Applications.....	5
5. References	5

1. General

Card printers, often also called plastic-card printers, are electronic desktop printers with single card feeders which print and personalize plastic cards. In this respect they differ from, for example, label printers which have a continuous supply feed. Card dimensions are usually 85.60 × 53.98 mm, standardized under ISO/IEC 7810 as ID-1. This format is also used in EC-cards, telephone cards, European Union drivers' licenses and health insurance cards. This is commonly known as the bank card format. Card printers are controlled by corresponding printer drivers or by means of a specific programming language.

2. Printing Process

The principle is the same for practically all card printers: the plastic card is passed through a thermal print head at the same time as a colour ribbon. The colour from the ribbon is transferred onto the card through the heat given out from the print head. The standard performance for card printing is 300 dpi (300 dots per inch, equivalent to 11.8 dots per mm). There are different printing processes, which vary in their detail.

a. Thermal transfer

The thermal transfer process is mainly used to personalize pre-printed plastic cards in monochrome. The colour is “transferred” from the (monochrome) colour ribbon onto the card.

b. Dye sublimation

The dye sublimation process uses four panels of colour according to the CMYK colour ribbon. The card to be printed passes under the print head several times each time with the corresponding ribbon panel. Each colour in turn is diffused (sublimated) directly onto the card. Thus it is possible to produce a high depth of colour (up to 16 million shades) on the card. Afterwards a transparent overlay (O) also known as a topcoat (T) is placed over the card to protect it from mechanical wear and tear and to render the printed image UV resistant.

c. Reverse image technology

Reverse image technology has become the standard for high-security card applications that use contact and contactless smart chip cards. The technology prints images onto the underside of a special film that fuses to the surface of a card through heat and pressure. Since this process transfers dyes and resins directly onto a smooth, flexible film, the print-head never comes in contact with the card surface itself. As such, card surface interruptions such as smart chips, ridges caused by internal RFID antennae and debris do not affect print quality. Even printing over the edge is possible.

d. Thermal Rewrite print process

The thermal rewrite print process is an exception. In contrast to the majority of other card printers, in the rewrite process the card is not personalized through the use of a colour ribbon, but by activating a thermal sensitive foil within the card itself. These cards can be repeatedly personalized, erased and rewritten. The most frequent use of these is in chip-based student identity cards, whose validity changes every semester.

3. Options

Alongside the basic function of printing cards, card printers can also read and encode magnetic strips as well as contact and contact free RFID chip cards. Thus card printers enable the encoding of plastic cards both visually and logically.

There is a difference between single and double sided card printers with an automatic flipping station. Plastic cards can also be laminated after printing. Plastic cards are laminated after printing to achieve a considerable increase in durability and a greater degree of counterfeit prevention.

4. Applications

Alongside the traditional uses in time attendance and access control (in particular with photo personalization), countless other applications have been found for plastic cards, e.g. for personalized customer and members' cards, for sports ticketing and in local public transport systems for the production of season tickets, for the production of school and college identity cards as well as for the production of national ID cards.

5. References

- en.wikipedia.org