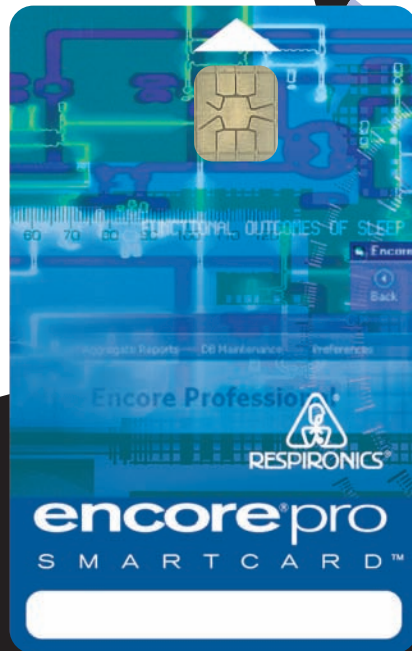
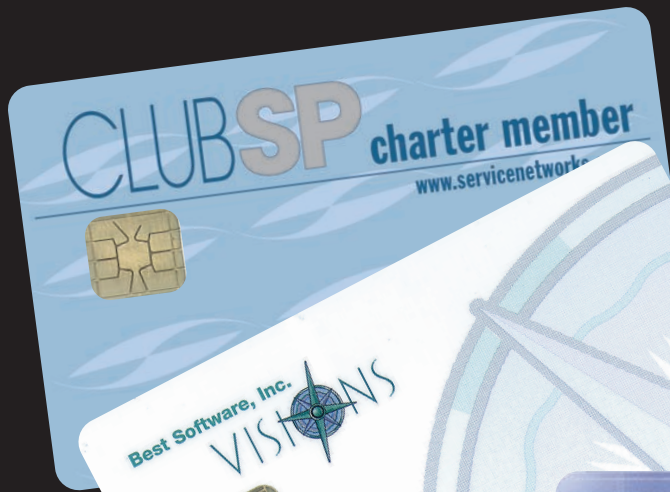


# ▶ CUSTOM SMART CARDS



DAWAR  
technologies  
the ultimate impression

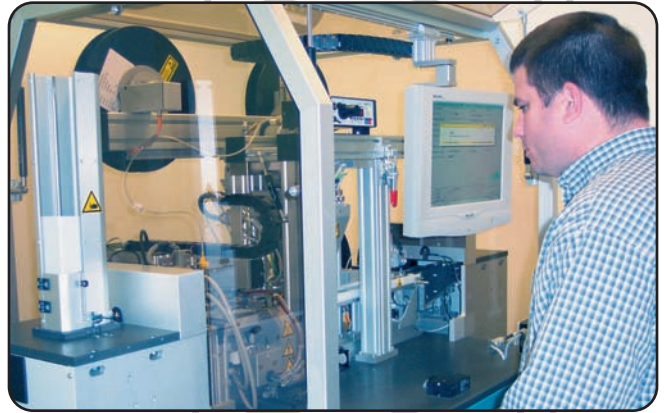
# Dawar Technologies can work with you in three ways:

1.

## ***Need A Custom Smart Card Supplier?***

**Dawar Technologies can manufacture Custom Smart Cards for you meeting your exact requirements.**

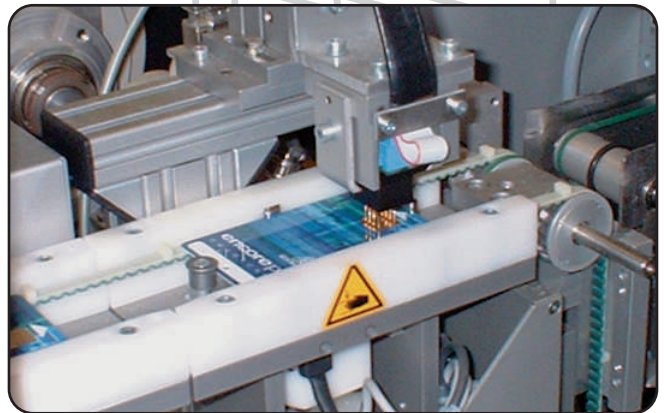
- **Milling, Implanting, Testing, and Encoding of Modules**
- **Printing/Die Cutting for Custom Graphics**
- **Cold bonding technology, resulting in a stronger bond and eliminating back-side "dimple" that results from hot melt bonding.**
- **SIM (GSM) CARDS**
- **Licensed Window's Powered Smart Card Manufacturer (inquire about developer cards)**



2.

## ***Need A System Integrator?***

**We have strategic partners who specialize in custom software and Smart Card systems. If you need help with your software system, we will bring in a partner.**

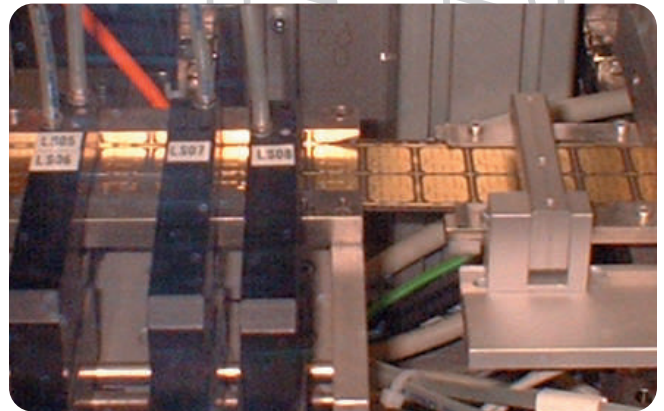


3.

## ***Need A Longer-Term Business Partner For Your Smart Card Manufacturing Requirements?***

**We can flexibly adapt our manufacturing processes to best serve your Smart Card needs. If additional equipment is required, we will make strategic investments in return for appropriate purchase commitments.**

**Dawar Technologies has a long history of close relationships with many key clients. We understand the importance of providing the Smart Cards you need reliably and economically. And we are not afraid to suggest product or process improvements to make your business more profitable.**



# Dawar Technologies' Custom Smart Cards

Simply put, Smart Cards are credit card sized cards that contain an imbedded module capable of storing data, executing programs and/or "making decisions" based on programs, protocols, and data on the modules.

## Several Varieties:

**SERIAL MEMORY MODULES** are the simplest variety. They contain a serial EEPROM for data storage. Serial memory modules can have different data capacities. They are easily written to and read from using well-documented communications protocols and are easily handled and highly transportable, fitting very neatly in a wallet or pocketbook or mailing envelope.

**SECURE MEMORY MODULES** build upon the functionality of the serial memory modules by adding pin or password protection and optional encryption to the data on the card.

**CPU MODULES (Secure Microcontrollers),** are even more advanced. CPU cards are essentially a computer imbedded in a card. They have a CPU, ROM (for an operating system and applications), EPROM or EEPROM (for applications and data), and RAM for executing applications on the card.

The capabilities of smart cards in the future are only limited by the imagination of the developers. Dawar Technologies is uniquely positioned as a manufacturer of smart cards capable of performing both long and short production runs to best meet our customers' needs. We have sourced a vast variety of modules to provide the best solution to our customers. We provide custom plastic, from blank white cards to cards with four colors on both sides, and encoding and personalization services as needed. We are capable of providing a smart card solution that can meet the needs of small, medium, and large customers.



## GRAPHIC DESIGN

Dawar has a full service capability that can work from a conceptual idea, supplied art or an engineering drawing, resulting in a manufactured product that brings your project to life. Dawar's graphic designers have over 70 years of combined design experience to create products that meet or exceed customers' expectations. Dawar's fully equipped design department augments the engineering and manufacturing of smart cards. We customize every aspect of the manufacturing process to the requirements of the customer.

- Support AutoCAD/LT, Corel Draw, Adobe Illustrator & Pagemaker, Macromedia Freehand and QuarkXPress
- MAC and PC Computer Platforms
- Our graphic designers are available for "Brainstorming" sessions with your marketing and engineering staff.
- Tradition of typographic excellence (extensive library of type fonts)
- Strong and effective communication with engineering team throughout the complete design phase

## PROTOTYPES

Dawar can manufacture to your requirements (quantity and lead time). Even if you only need a single card, we will gladly comply with that request.

**C U S T O M   S M A R T   C A R D S**

## Dawar Technologies' Custom Smart Cards

Simply put, Smart Cards are credit card sized cards that contain an imbedded module capable of storing data, executing programs and/or "making decisions" based on programs, protocols, and data on the modules.

### Several Varieties:

**Serial Memory Modules** are the simplest variety. They contain a serial EEPROM for data storage. Serial memory modules can have different data capacities, ranging from 128 bytes to 128 kilobytes. They are easily written to and read from using well-documented communications protocols. The advantage of serial memory cards is that they are easily handled and highly transportable, fitting very neatly in a wallet or pocketbook or mailing envelope.

One of our largest customers for smart cards uses a 32 KB serial memory card for collecting data from and programming of home medical equipment. When the card is inserted in the device during operation, it collects usage statistics. The patient can then remove the card from the device and take it to the physician, who collects the data from the card using a PC with a smart card reader and the proper software. After configuration data has been added to the smart card, the patient can reinsert it into the devices and the configuration changes are automatically made. All this without ever moving bulky equipment or having to send a technician to the patient's residence!

**Secure Memory Modules** build upon the functionality of the serial memory modules by adding pin or password protection and optional encryption to the data on the card. Secure memory modules can have simple 2-bit pins (that protect writing or modifying of data) to a 16-bit password with data encryption (accomplished through a built-in cryptography processor) that protects both reading and writing. The addition of data protection usually reduces the data capacity of the module. The data capacities of secure memory have not reached the levels of serial memories, with most below 32 KB, though higher capacity modules will be available in the future.

Another customer of Dawar Technologies uses a secure memory module with 2-bit protection to handle registration at trade shows. Attendees at shows are given a card that has their contact information that they provided in an online registration process. Presenters and booths are given readers, attached to laptops or PDA's. As attendees traverse the show, they insert their cards in readers at booths and presentations, which collect their contact information and add award points to the card. The points are redeemable during the same show for giveaways and prizes. The pin code protects against unauthorized modification of the data on the card. At the end of the show, presenters and booth maintainers return their devices and receive the contact information from all the smart cards inserted in an electronic format, usually a spreadsheet file. This use of smart cards enables the presenters at a show to leave with a searchable and sortable electronic file with a much broader and more uniform set of data than can be accomplished with a stack of business cards.

**CPU Modules**, also called **Secure Microcontrollers**, are even more advanced. CPU cards are essentially a computer imbedded in a card. They have a CPU, ROM (for an operating system and applications), EPROM or EEPROM (for applications and data), and RAM for executing applications on the card. Most CPU cards have an additional cryptography processor to perform DES, 3DES, RSA, PKI and other cryptographic functions. CPU cards are capable of hosting and executing applications, in addition to storing data, enabling them to use software to "make decisions". In order to host applications, the card needs a specialized operating system, most notably JavaCard (which uses a subset of the Java programming language), MULTOS, and Windows for Smart Cards (which integrates with Microsoft Visual Studio programming tools). The only limits to what can be done with microcontroller cards are in the physical limitations of the hardware (I/O, RAM, ROM, and EEPROM).

One customer of Dawar Technologies uses a Windows Powered Smart Card with custom application as a programmable smart security key card for physical access to buildings and rooms within buildings. Another has used CPU cards in trials for a Health Care/HMO access card that would be capable for hosting health care history and processing payment information, among other things.

The capabilities of smart cards in the future are only limited by the imagination of the developers. Dawar Technologies is uniquely positioned as a manufacturer of smart cards capable of performing both long and short production runs to best meet our customers' needs. We have sourced a vast variety of modules to provide the best solution to our customers. We provide custom plastic, from blank white cards to cards with four colors on both sides, and encoding and personalization services as needed. Additionally, we have developed relationships with software solution providers capable of meeting our customers' software needs both on the smart cards and on the terminal connected to the card. We are capable of providing a smart card solution that can meet the needs of small, medium, and large customers.

**DAWAR**  
technologies

the ultimate impression

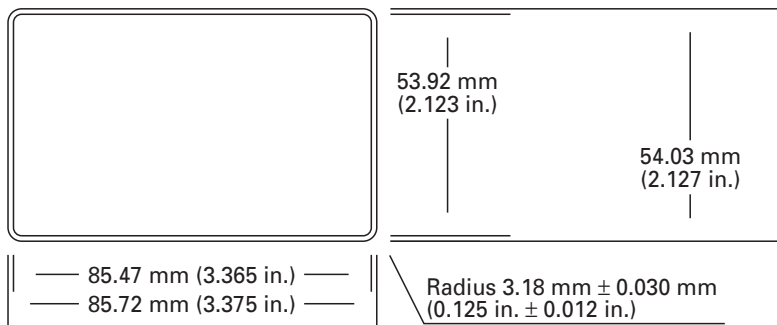
1020 Ridge Avenue, Pittsburgh, PA 15233  
1-800-366-1904 • 412-322-9900 / FAX: 412-322-9958  
sales@dawar.com / www.dawar.com

C U S T O M S M A R T C A R D S

## Physical Dimensions Of A Smart Card

The following standards are from ISO 7810 "Identification Cards Physical Characteristics".

All points on the edges of the card in the finished state, except for the rounded corners, shall fall between two concentric, similarly aligned rectangles as shown below.



### Card Thickness

The thickness of the card shall be 0.76 mm,  $\pm 0.08$  mm (0.030 in.,  $\pm 0.003$  in.).

### Card Edges

Edge burrs normal to the card face shall not exceed 0.08 mm (0.003 in.) above the card surface.

### Card Construction

The card may be made of solid, laminated, or bonded materials, with or without inserts.

## Chip Module Location And Contacts

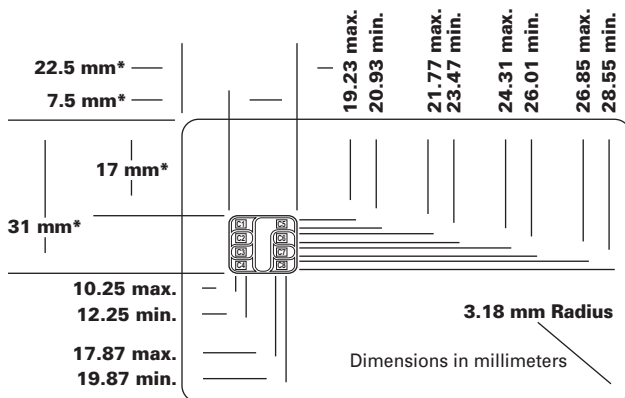
The following standards are from ISO 7816-2 "Identification Cards — Integrated Circuit(s) Cards with Contacts".

### Location Of The Contacts

There are eight contacts on the chip module. The chip module must be implanted in the card so that the eight contacts (referred to as C1 to C8) are located as shown.

### Designing Card Graphics

When designing the graphics for your Smart Card, you want to consider where the chip module will be placed. In general, cards are printed and die cut first. These pre-printed cards are then loaded into a machine for the precise milling of a cavity and implanting the chip module into the cavity.



*\*Milling Range of the Chip Cavity per Equipment Manufacturer*

## DAWAR TECHNOLOGIES

Dawar Technologies is a custom manufacturer of Smart Cards for many industries and applications including telecommunications, health care, public transit, access control, personal identification, and scientific research.

Unlike some of our larger competitors who sell proprietary solutions involving Smart Cards, we are manufacturing specialists focusing solely on delivering Smart Cards customized to your requirements. Our Credo is ***“Do it right the first time, every time, in whatever quantity our customer needs right now.”***

We are ISO 9001 compliant and are dedicated to continuous and total customer satisfaction.

## HISTORY

Dawar began operation in 1883 as a printer and typographer under the name Davis & Warde. For many years, the firm produced very high quality annual reports and corporate brochures for Pittsburgh-based Fortune 500 companies and others. The company began a transformation from typography and printing to screen printing in the 1980's in search of more profitable growth opportunities.

The screen printing activities were conducted under the name Dawar Technologies, a shortened combination of the original Davis & Warde name. By the mid 1990's, the transformation from Davis & Warde to Dawar Technologies was complete.

With this transformation, Dawar Technologies has expanded into additional product lines including manufacturing custom Smart Cards. Dawar has been, and continues to be, privately owned by a group of investors (including members of management) located primarily in the Pittsburgh area.



**DAWAR**  
technologies  
the ultimate impression

1020 Ridge Avenue, Pittsburgh, PA 15233  
1-800-366-1904 • 412-322-9900 / FAX: 412-322-9958  
sales@dawar.com / www.dawar.com

**DAWAR TECHNOLOGIES**