Description of V-Smart Operation

V-Smart is accessory to an access control systems. It consists of two major functional parts:

- Bioscrypt Inc.'s proprietary fingerprint-based biometric engine
- GemEasyLink 680SGEL, contactless smart card reader, and a micro controller that implements I/F between card reader and biometric engine.

Overall Operation

The characteristics of user's fingerprint, together with the data relevant for the access control ('template') are stored on the smart card. When user presents the smart card to the system, smart card reader reads the template and sends it to the biometric engine. Biometric engine enters verification mode, during which user is expected to present his finger to the fingerprint reader. Biometric engine then performs comparison between the received template, and features of acquired fingerprint image. The outcome of the verification is provided in audio/visual form to the user. In case of positive verification, biometric engine releases access control data to the access control panel.

V-Smart implements so called 'portable token' operation that enables each user to carry his own template. Therefore, templates are not stored in the system, and lost/stolen card is useless without owner's live finger presentation.

V-Smart is powered by 12 VDC (nominal), from the host system (battery).

Biometric Engine

The biometric engine is built around high-end 32-bit floating-point DSP, and semiconductor fingerprint reader. It has reach communication I/F that enables integration in almost all known types of access control systems (RS-232, RS-485, Wiegand).

It also has one service port (RS-232). The biometric engine is in standard EMI-coated enclosure, and is connected to power source, access control system, and smart card portion of V-Smart using pigtail cable.

GemEasyLink 680SGEL

The smart card reader implements MiFare™ standard for RF communication with smart cards (from MiFare family). It implements RS-232 I/F between host system and contactless smart card. Typical operating distance is 25mm.

The smart card reader uses coupler's RF output to radiate the magnetic field and power up compatible smart card. The coupler modulates the signal in order to send commands to smart card. The antenna also receives modulation from the card, acting as a field-disturbing device. The PCB loop antenna is tuned at factory to 13.56 MHz, with appropriate impedance value (50Ohm +/-10%), and proper Q factor. The PCB layout and quality of components ensure stability for the entire temperature range.

The 680SGEL is in separate enclosure, connected to biometric engine using pigtail cable.

Technical data:

- Power Supply 7-12 VDC, 120mA
- Serial I/F baud rate 1.2-76.8 kbaud
- Modulation ASK, Modified Miller, 106 kbit/s