

V-Station,A,G Description

V-Station is communication-reach, configurable Biometric Identification Device. The primary purpose is to serve as an accessory to a Physical Access Control System, and in some cases to provide a signal that can control low-power relay, therefore serving as a standalone Access Control System.

Basic modes of operation

It has following basic modes of operation:

1. One-To-One
In this mode, user provides information that device uses to find his template stored in the device, and to compare his fingerprint with the template. This information is typically provided by typing his user ID using the keypad.
2. One-To-One, Portable Token
In this mode user brings his template with him, on the contactless Smart Card. The template is send to the device through the Smart Card reader and the device compares it with presented fingerprint.
3. Enrollment
The device can serve as an enrollment station. During the enrollment, user presents finger(s) to the device; device forms the template, and pairs it with information required for the access control system. (User ID, Site Code etc.). The resulting information is stored either locally in the device, or on the portable token.

In all described modes (except the enrollment), the device can be configured for different actions upon verification, essentially to send verification outcome and/or user ID to an Access Control System using:

- Selectable RS-232 or RS-485 Host Channel
- RS-232 AUX Channel (service port)
- Wiegand Signaling
- 10BaseT Ethernet
- GP (5V) Output

The device supports sophisticated protocol on RS232/485 or Ethernet lines that can direct the device to perform different actions, some of which are listed below:

- Get status
- Change S/W
- Download templates
- Initiate verification against specific template

Block Diagram

Block diagram of V-Station is shown on the following figure:

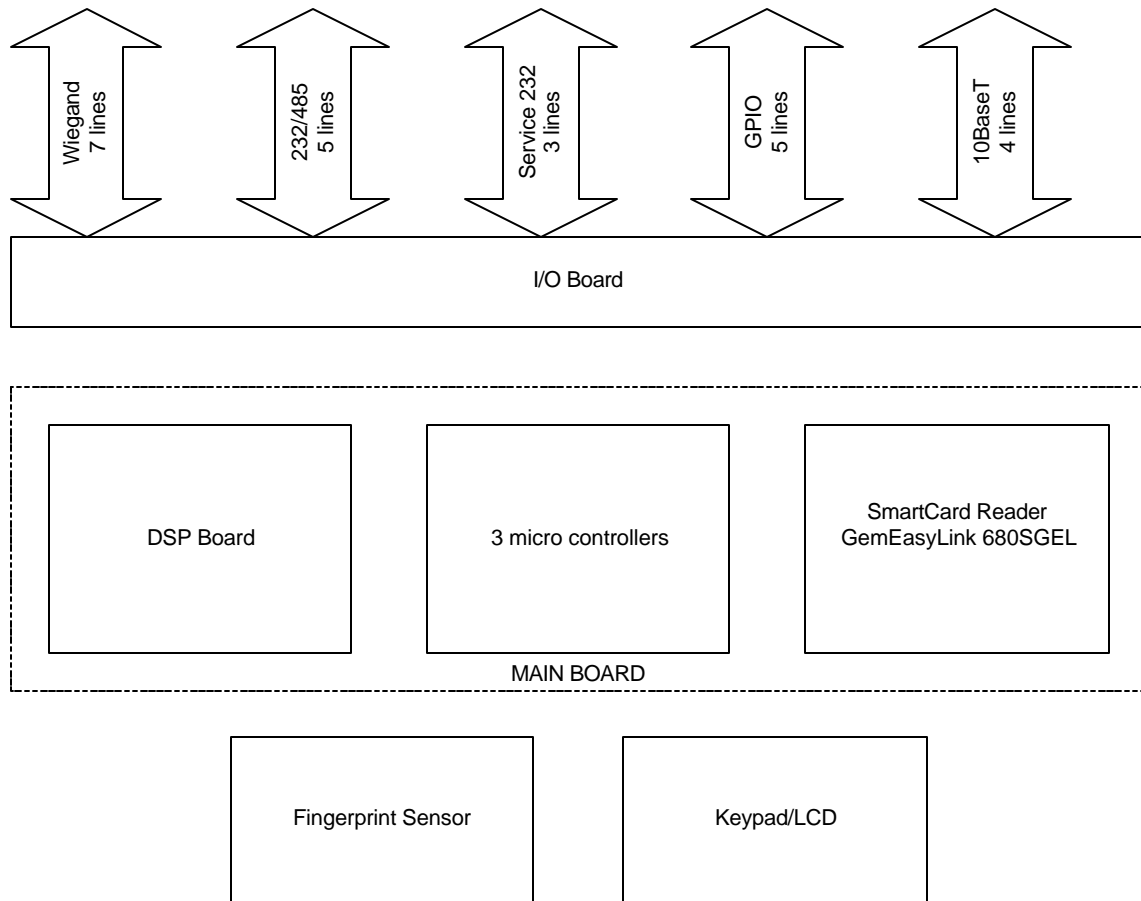


Figure 1

Description of interfaces

Physical I/F is implemented using set of terminal blocks and connectors.

Power supply

V-Station requires DC power supply, 12-24V.

The power consumption is < 500mA@12V

The power can be applied through the terminal block or through dedicated power jack.

Wiegand Interface

This is 7-wire interface accessible through terminal block, with following signals:

- Wiegand In 0
- Wiegand In 1
- Wiegand Out 0

- Wiegand Out 1
- Wiegand In LED
- Wiegand Out LED
- Wiegand GND

Host Interface

Host interface is configurable as Host RS-232 w/ or w/o flow control, or as Host RS-485. 4 signal lines and GND are provided on

- Terminal block
- Dedicated RJ-45 for Host RS-485
- Dedicated RJ-11 for Host RS-232

Alternate connection points (on the terminal block and connectors) are connected in parallel.

GPIO Interface

GPIO I/f is implemented as two 5V general-purpose outputs with 50mA source/sink capability, two 5V general-purpose inputs, and GND.

Ethernet Interface

10BaseT Ethernet connection is provided using standard RJ-45 connector w/ 4 signal lines.

Service Interface (Aux Port)

Service interface is implemented as dedicated RS-232, and is accessible through RJ-11 connector hidden behind secure door.

Design Overview

The device is implemented in plastic enclosure, without conductive paint, since it will hold in some configurations smart card reader.

It consists of two boards (I/O board which holds connection field, filtering and fuse, and V-station board that holds 3 plug-in boards, power supply and glue logic).

The LCD and the keypad are attached to V-Station board, as well as contactless Smart Card reader which is mechanically attached to V-Station enclosure.

EMC

EMC measures are implemented by enclosing critical components (DSP Board, two controllers and 10BaseT Transceiver) in metal shield with careful filtering of I/O signals. All connector signals on the I/O board are additionally filtered.

For the proper operation, device does not require shielded cables, although their use is encouraged.

The device has following clocks/oscillators:

- 25 MHz oscillator on DSP board, used also on the sensor board
- 50 MHz CPLD and SDRAM clock on DSP board (provided by DSP, based on 25MHz)
- 100 MHz DSP clock

- 10.59 MHz oscillator on the Micro #1
- 21.08 MHz clock on the Micro #1
- 7.37 MHz oscillator on the Micro #2 (keyboard and power manager handler)
- 7.37 MHz oscillator on the Micro #3
- 20 MHz oscillator for 10BaseT transceiver
- 14.7 MHz oscillator on the sensor board
- 16 MHz oscillator on the sensor board
- 25 MHz clock on the sensor board
- 14.7 MHz oscillator on the GEMPlus Smart Card Reader
- 13.56 MHz oscillator on the GEMPlus Smart Card Reader

GemEasyLink 680SGEL

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

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