



IDT Sapphire™ Hardware Manual



IDTSapphire Hardware Manual

Leading Biometric Terminal for Access Control Systems

Copyright © IdentityTech Solutions Ltd. 2012

All rights reserved. No parts of this work may be reproduced in any form or by any means - graphic, electronic, or mechanical, including photocopying, recording, taping, or information storage and retrieval systems - without the written permission of IdentityTech Solutions Ltd.

While every precaution has been taken in the preparation of this document, IdentityTech Solutions assumes no responsibility for errors or omissions, or for damages resulting from the use of information contained in this document or from the use of programs and source code that may accompany it. In no event shall the publisher and the author be liable for any loss of profit or any other commercial damage caused or alleged to have been caused directly or indirectly by this document.

Contents

1.	Introduction	5
1.1.	Overview	5
1.2.	General Features.....	5
1.3.	Modes of Operation.....	6
2.	Hardware Layout.....	8
2.1.	Terminal Layout - Front View	8
2.2.	Terminal Layout - Back View	9
2.4.	Terminal Layout – I/O Connection Terminal Block.....	10
2.5.	Terminal Layout – In-Wall \ Wall Mounting.....	12
3.	Output Relay Wiring.....	13

Part I

Introduction

1. Introduction

IDT Sapphire™ - The only true Physical Access Control recognition terminal using the cutting edge of biometric authentication technology, The Palm Secure™ - Palm Vein Recognition.

The IDT Sapphire™ and the accommodating IdentityManage™ software solution offer a complete Identity Management solution both for indoor and outdoor environments.

1.1. Overview

IDT Sapphire™ incorporates precision Biometric technologies into ergonomic computer peripherals that deliver unparalleled performance, reliability and convenience.

This Modular Physical Access Control Terminal integrates the industry's best performing biometric technology offered in a rugged, elegant design, with the industry's required interfaces.

Manufactured to meet the most rugged standard in the market, the IDT Sapphire is IP65 rated and anti-vandal casing.

1.2. General Features

- Full stand-alone capabilities
- On board two sensor management – IN/OUT
- Internal SQLite db.
- Easy integration into third party hardware and software.
- Critical information is Secured and encrypted
- Encrypted communications
- IP65, Anti Vandal with Tamper alerts
- Robust design- anti vandal casing, IP65 (suitable for outdoor use, water proof)
- Full feature Capacitive Touch Screen
- Real Time Clock
- Function memory capabilities
- Easy installation kit
- 1 GHz processor
- TCP/IP
- 1 Gb NAND Flash
- Door status input
- 2 Gb DDR
- Request Exit button interface
- POE
- Break Glass (for fire regulations)
- Full Audio
- Power LED interface for video capture
- CMOS camera input
- On Board Modem
- Analog camera input
- 3 power sources- power supply, POE, Battery
- Video out
- 3.5" capacitive touch screen support
- USB host
- Support Finger Print, Facial & Palm Vein
- RS232/485
- On board relay unit
- Wiegand IN/OUT (26-512 Bit)
- Operating temperature -30 to +70 C

1.3. Modes of Operation

- Multi Factor Authentication
- Identification and Verification.
- Integrated Contactless smart card – Iclass, Mifare and Proximity.
- 1:1 < 100 ms
- 1:500 < 2 second
- Server matching engine for over 1000 users available only when operated through Server / Client mode.
- Internal Log file- 500,000 last events

The IDT Sapphire™ support also different Access Modes:

- Hand Only.
- PIN Only.
- Card Only.
- PIN or Hand.
- PIN and Hand.
- Card or Hand.
- Card and Hand.
- PIN or card or Hand.
- PIN and card and Hand.

The IDT Sapphire™ support also different controlled Door States and status:

- Strike Time—The time duration that the strike relay will be energized for in the case of an access grant
- Held Open Time—After an access grant and a subsequent opening of the door contact, the time in which the door contact must be closed before an alarm state is reported
- Forced Open Time - the door status changed , without any access granted activity forced open alarm is generated

Part II

Hardware layout

2. Hardware Layout

2.1. Terminal Layout - Front View

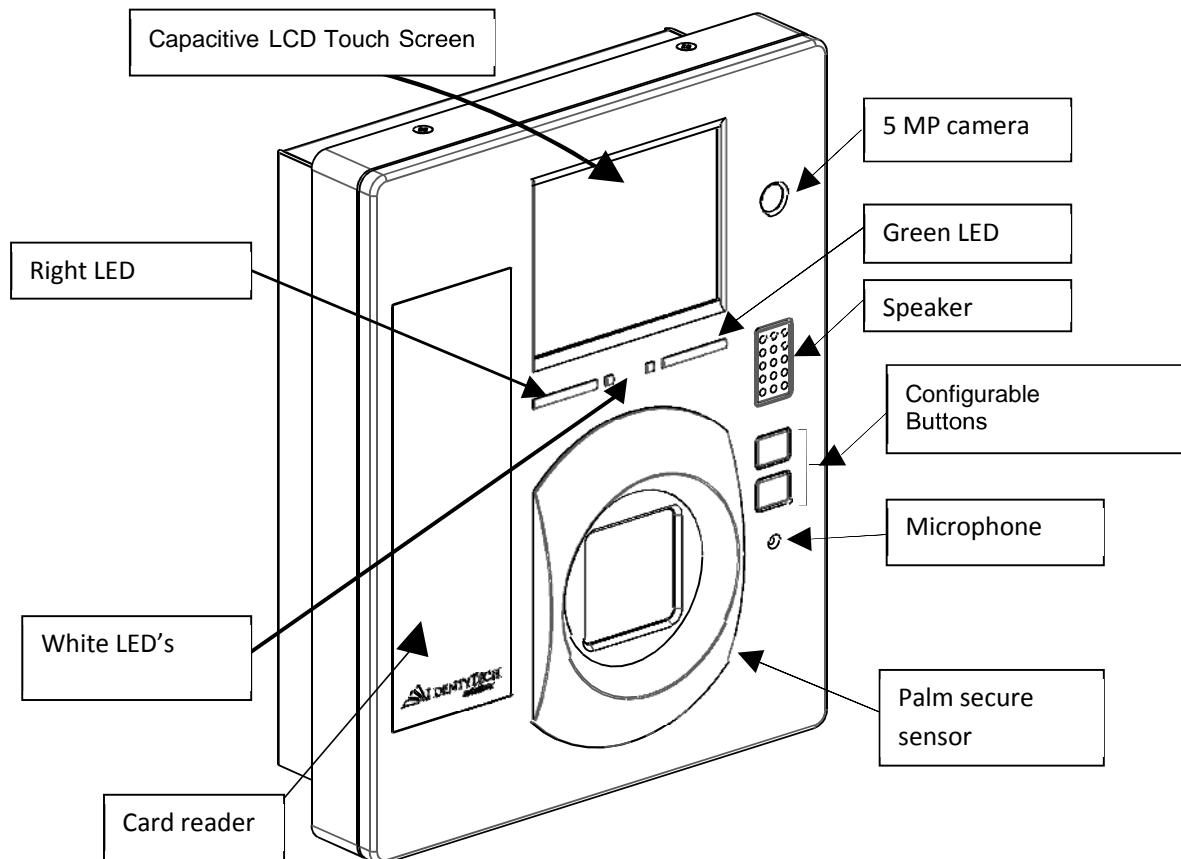


Figure 2.1 IDT Sapphire Front View.

Terminal Front Elements

- Build in Camera - 5 Mega Pixel CMOS camera for intercom mode ,ability to capture image and record clip (Please note: Camera is additional module and not supplied as a standard)
- Capacitive LCD Touch Screen
- Configurable Buttons
- Microphone
- Speaker
- Palm Secure Sensor
- Card Reader
- White Led LED's
- Red Led
- Green Led

2.2. Terminal Layout - Back View

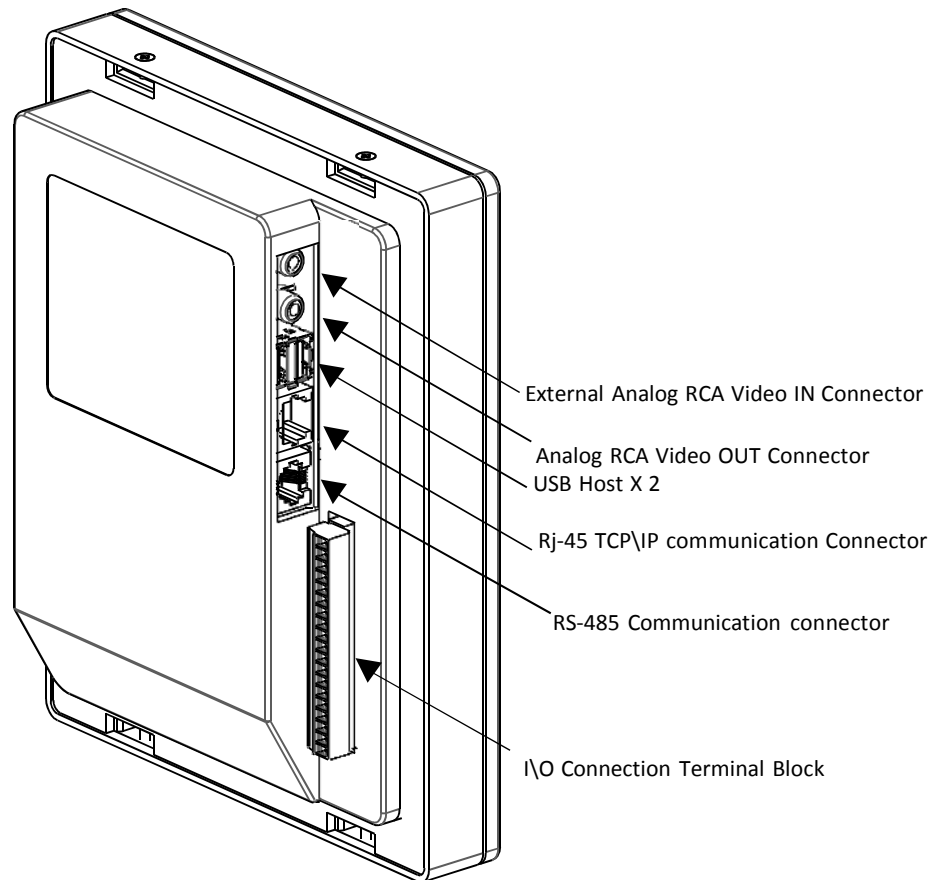


Figure 2.2 IDT Sapphire Back View.

Terminal Back Elements

- I\O Connection Terminal Block (*see Section 2.2*).
- RS- 485 Communication connector.
- Rj- 45 TCP\IP communication Connector.
- USB Host X 2.
- Analog RCA Video OUT Connector.
- External Analog RCA Video IN Connector.
- External Analog RCA Video IN Connector.

2.3. Terminal Layout – I/O Connection Terminal Block

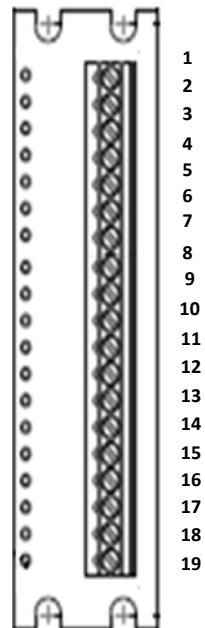


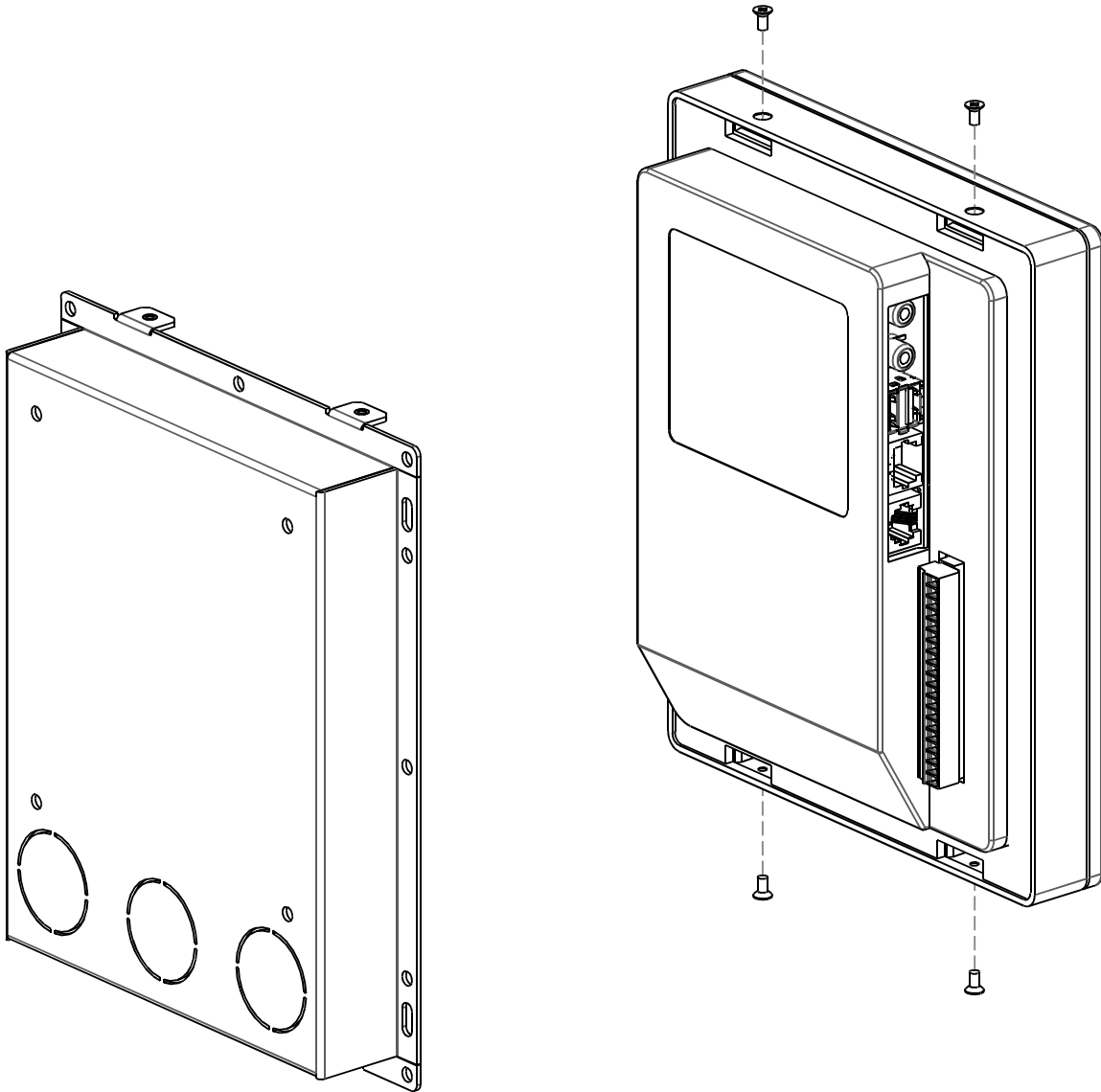
Figure 2.4 I\O Connection Terminal Block Numbering

I/O Terminal Block Connectors

- Terminal Main Power 12 v DC power Supply.
- Door Strike Relay Connectors (NO,C,NC).
- Door Status Connector.
- Door Exit Push Button Connector.
- Door Breaking Glass Box Connector.
- External Analog RCA Video IN Connector.
- External Analog RCA Video IN Connector.
- Wiegand Communication to 3rd Party Equipment Connector.

IDT Sapphire I\O Terminal Connections Table			
I\O Connection Terminal Block			
Function	Label	Type	Position
Wiegand O U T Communication to 3rd Party Controller	DO 1	Wiegand Data OUT 1	1
	DO 0	Wiegand Data OUT 0	2
Wiegand IN Communication to 3rd Party Reader	DI 1	Wiegand Data IN 1	3
	DI 0	Wiegand Data IN 0	4
PSTN Line	NC	PSTN Tip	5
	NO	PSTN Ring	6
3rd Party Fire Alarm System Input (Normally Closed)	FA	Fire Alarm Input Return (GND)	7
	FAR	Fire Alarm Input	8
Door Breaking Glass Box (Normally Closed)	BGR	Breaking Glass Box Return (GND)	9
	BG	Breaking Glass Box	10
Door Exit Push Button (Normally Open)	EPBR	Exit Push Button Return (GND)	11
	EPB	Exit Push Button	12
Door Status Connection (Normally Closed)	DSR	Door Status Return (GND)	13
	DS	Door Status	14
Door StrikeRelay Connection	NC	Relay NC (Normaly Close)	15
	C	Relay C (Common)	16
	NO	Relay NO (Normaly Open)	17
12 v DC power Supply	GND	Ground (Terminal Power)	18
	VDC	VDC (Terminal Power)	19

2.4. Terminal Layout – In-Wall \ Wall Mounting



3. Output Relay Wiring

The Baseboard has one output relay onboard, this relay is dedicated strike relay. The Secure I\O has two output relays onboard, both relays are dedicated strike relay, The Secure I\O can support a mixture of uses of onboard and on external relay modules.

Typically, doors are held closed and released by one of two methods (Fail Safe or Fail secure).
Failsafe – Locked when powered; Fail-secure – Unlocked when Powered.

- A. Failsafe locks and strikes require power to lock. When power is interrupted by an access control unit or power outage, the door will unlock. Failsafe locks are often used for life safety applications such as the access control of perimeter fire rated exit doors and high rise building stairwell doors where the locks are automatically released by a signal from the building fire life safety command center during an emergency or building power outage. When used on interior doors that do not require connection to the life safety command center, a battery back-up power supply may be used to provide continuous power to electric locks and strikes during a power outage.
- B. Fail secure locks and strikes require power to unlock. When powered by use of an access control controller, the door unlocks. The door will lock or stay locked during a building power outage. A battery back-up power supply may be provided to ensure continued operation during loss of building power. This architecture is typically used for high security applications where fail-secure locks are not permitted on fire rated doors because they do not unlock during an emergency or power loss.
- C. An electric door strike is installed in the door frame, replacing the mechanical strike plate. This type of strike has a “gate” that is normally held closed and is released by command from the terminal. This allows the door to be opened .
- D. A second type of lock is an electro-magnetic lock which is a two piece device mounted on the perimeter of the door. A solid plate is mounted to the door and an electro-magnetic lock is mounted adjacent to the plate on the frame of the door. The electro-magnetic lock firmly holds the plate mounted to the door, holding it closed until the power is removed by the Terminal, allowing the door to be opened.

Most electric locks are available in two configurations, Fail-Safe and Fail-Secure .
Fail-Safe locks require power to hold the door closed and will release the door when power is removed. This type of lock will open the door if a power outage occurs. This is desirable for doors used as emergency exits.

Fail-Secure locks hold the door closed automatically and require power to release the door. This type of lock is desirable for securing doors in high security applications .

Electro-Magnetic locks are typically only available in the Fail-Safe configuration. Electric locks are also available in a range of operating voltages. 12 volts DC or 24 volts DC are the most common .

AC power strikes are also available but are not widely used because of the difficulty in connecting.

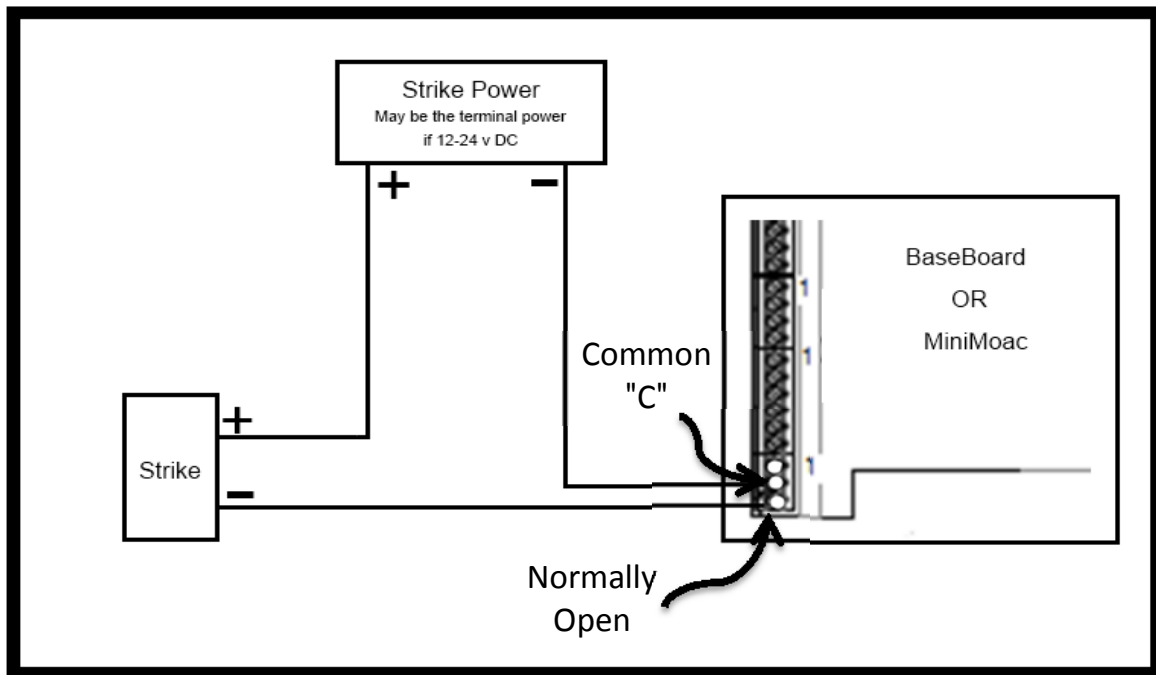


Figure 3 Strike wiring – Fail Secure

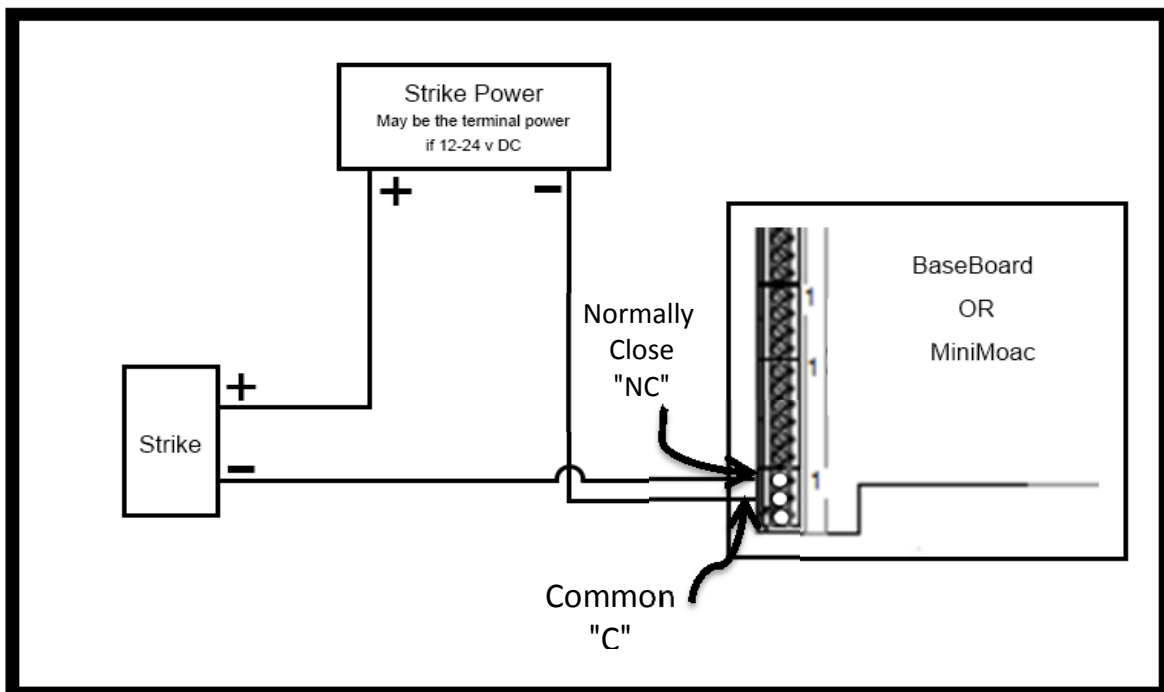


Figure 3.1 Strike wiring – Fail Safe