

**Biometrix Series 3000™**  
**Network Enabled**  
**Access Control Systems**



**Hardware**  
**Technical Manual**

Version: 060901.0-USC

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## **DISCLAIMER**

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## **TRADEMARKS**

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## **FCC STATEMENT**

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.



## **IMPORTANT NOTICE**

- This device should only be used with a UL approved power supply as described in the corresponding section of this manual.

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## **ABOUT THIS MANUAL**

### **INTRODUCTION**


This manual describes the technical characteristics and installation procedures for Biometrix Series 3000 devices and is updated for the latest model marketed at the date of its publication.

This manual has been divided into five main chapters for a better understanding of Biometrix Series 3000 components and functions:

- I. Electronic Components and Interfaces
- II. Hardware Components Accessible while in Use
- III. Hardware Components Accessible from the back-plate
- IV. Hardware Installation
- V. Safety Instructions

**Biometrix Series 3000 shall be alternatively named as “S3K” throughout this document.**

### **CAUTION AND WARNING NOTICES**

The symbol  is used in this manual to bring your attention to important information which could denote instances, conditions or procedures which if not handled or followed properly could result in damage to the unit and/or the rest of the associated installation and/or could result in serious injury or death.



#### **Read Instructions Before Installing Or Using This Device**

- **BEFORE INSTALLING, USING AND/OR ADDING DEVICES TO ONE OR MORE OF CONTROL LAN'S PRODUCTS, PLEASE BE SURE TO HAVE READ ALL THE INFORMATION CONTAINED IN THIS AND ALL OTHER MANUALS AND CDS INCLUDED IN THE PRODUCT'S PACKAGING.**
- **PLEASE BE CAREFUL TO READ THE “SAFETY INSTRUCTIONS” AT THE END OF THIS MANUAL BEFORE INSTALLING OR USING THIS DEVICE.**
- **THE SAFETY AND OPERATING INSTRUCTIONS SHOULD BE RETAINED FOR FUTURE REFERENCE**
- **BE SURE TO READ THE “LIMITED WARRANTY AND LIMITATION OF REMEDIES” AND THE “END USER LICENSE AGREEMENT” CONDITIONS AT THE END OF THIS MANUAL BEFORE INSTALLING OR USING THIS DEVICE.**

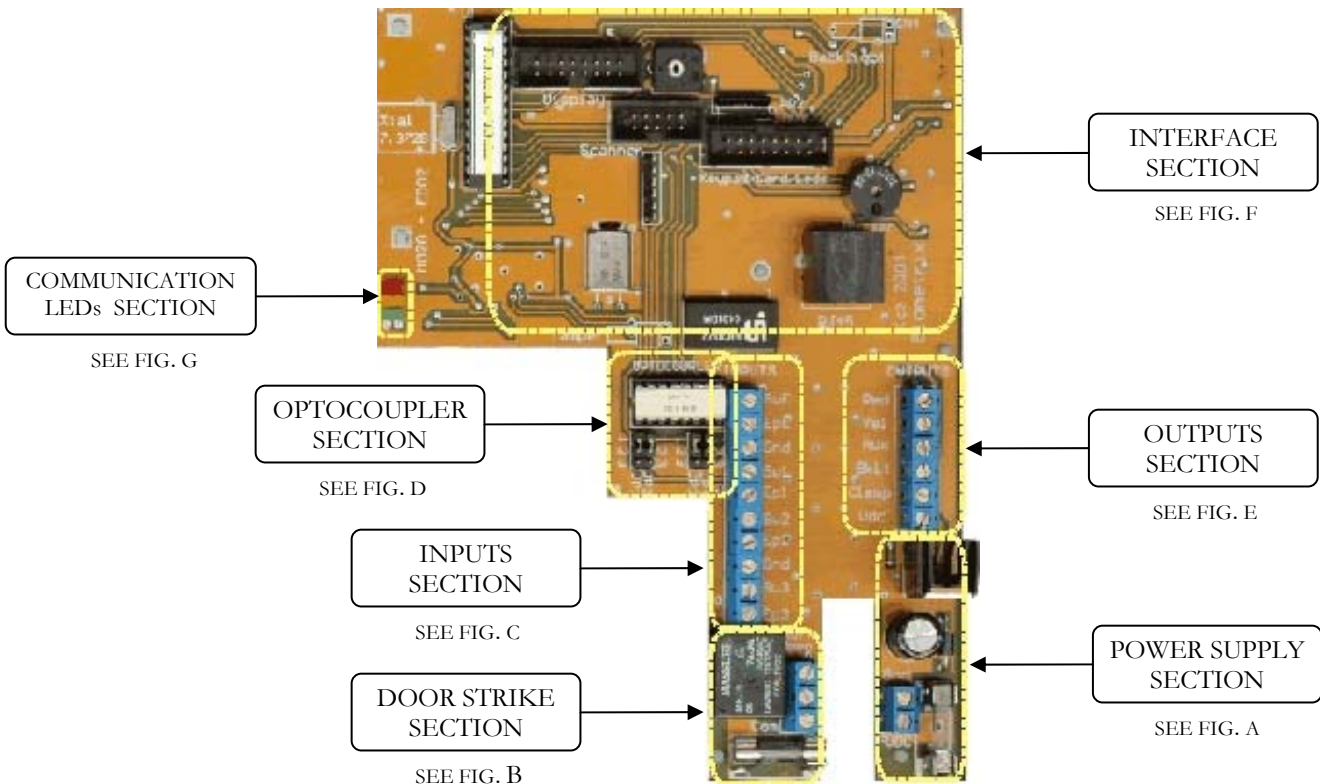
## Chapter I - ELECTRONIC COMPONENTS AND INTERFACES

This chapter is divided in eight sections describing S3K's mainboard, its components and interfaces.

1. Main Diagram
2. Wiring
3. Power Supply
4. Door Strike
5. Inputs
6. Outputs
7. Interfaces
8. Communication LEDs

### I.1 MAINBOARD DIAGRAM

For a better understanding of future references throughout this manual we have also divided S3K's mainboard into seven specific sections:



## I.2 WIRING

The different input and output connections used to attach external devices to the S3K should be defined before starting the installation. Connections to be used will vary depending on each specific application.

All electric wiring in the S3K must be made through the embedded terminal blocks of S3K's main board following the instructions outlined in this manual.

S3K's terminal blocks have a minimum of two and a maximum of ten contacts, which are designed to be used with solid or stranded gauges between 24AWG and 14AWG.

Follow the instructions below to wire the required terminals:



1. Make sure that there is no power supply connected to the S3K
2. After selecting the corresponding contact, loosen its screw until it reaches the top of the terminal (this is the standard position in new devices)



3. Strip 1/5 of an inch (5mm) of the cable insulation
4. Insert the bare wire into the selected contact from the side that is closer to the center of the mainboard and
5. Tighten the screw to fix the wire to the terminal



### **IMPORTANT**

- **WHEN INSTALLING, CONNECTING OR DISCONNECTING CABLES TO AN S3K, MAKE SURE THE POWER SUPPLY IS NOT CONNECTED TO AVOID INJURIES AND REDUCE THE RISK OF DAMAGING THE UNIT DUE TO ELECTRICAL SHORTS.**
- **BE CAREFUL NOT TO LEAVE STRIPPED WIRE AREAS OUTSIDE THE TERMINAL CONTACTS.**

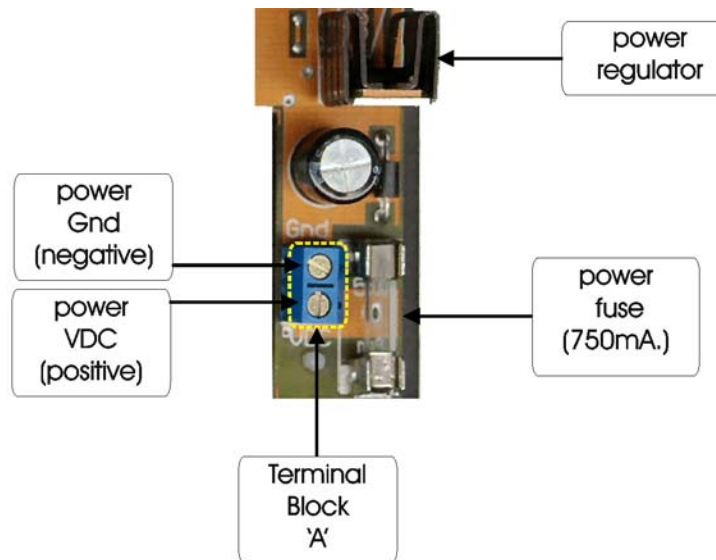
### I.3 POWER SUPPLY SECTION

This section of the mainboard includes the Power Supply Terminal Block 'A' (Fig. A), which has two contacts.

Please note that these contacts are labeled "Gnd" and "VDC" where:

Connect the negative cable from the power adaptor to contact "Gnd"

Connect the positive cable from the power adaptor to this contact "VDC"



**Fig. A – Power Supply Section**

Close to Terminal Block 'A' is the power supply protection fuse. If this fuse blows, first seek and correct the short circuit, overload, or other problem that could have caused the failure, and then replace the fuse with a similar 750mA. fuse.



#### **IMPORTANT**

- **NEVER PUT A POWER SUPPLY OR TRANSFORMER INSIDE OR CLOSE TO AN S3K**

### **I.3.1 POWER SUPPLY SELECTION**

Due to the multiple installation alternatives of S3Ks, a power supply is not included with this product.

S3K devices can be operated with unregulated power supplies ranging from 9 to 12 volts DC @ 500mA.

Though the amperage can be greater than 500mA, please note that unregulated power supplies will usually output a voltage slightly higher than rated; as 14 volts DC is an absolute maximum rating for S3K devices **a power supply of more than 12V DC should never be used.**



#### **IMPORTANT**

- **DO NOT CONNECT AN S3K TO AN AC OUTPUT POWER SUPPLY FOR S3KS OPERATE ON DIRECT CURRENT. AC IS NOT ACCEPTABLE AND WILL DAMAGE THE UNIT.**
- **THIS PRODUCT SHOULD BE USED WITH A UL APPROVED POWER SUPPLY.**

During operation, it is normal to feel a warm area on the right side of the S3K case. If you feel the area gets hot you must test the output voltage of the connected power supply, as it could be working abnormally or above the absolute maximum rating of 14 volts.

Though regulated power supplies are acceptable, unregulated ones are less expensive and generate less heat. As your S3K contains an on board voltage regulator, it can work with unregulated power.

For operational and cost reasons 9V DC @ 500mA unregulated, UL approved, power supplies from third party manufacturers are recommendable (i.e. CUI Inc. [www.cuistack.com](http://www.cuistack.com) - part # DPD090050-P5P-TC, which is available from third party distributors such as Digikey Corp. at [www.digikey.com](http://www.digikey.com) - under part # T413-P5P-ND). Please note that Control LAN does not guarantee or endorse CUI's power supplies in any way. Failure of CUI's or any other power supply is not covered by the Control LAN's limited warranty, neither is any damage to the S3K that could result from such failure. Control LAN doesn't endorse Digikey Corp. or any other electronics distributor; neither must the above mentioned be taken as advertisements.

You may run several S3Ks with a car or motorcycle 12V battery using a float battery charger for continuous, uninterrupted service. Fully charged lead-acid batteries can output up to 13.5 volts, which is acceptable. Make sure you use an auto-cutoff battery charger (also called float charger) in order to avoid overcharging the battery.



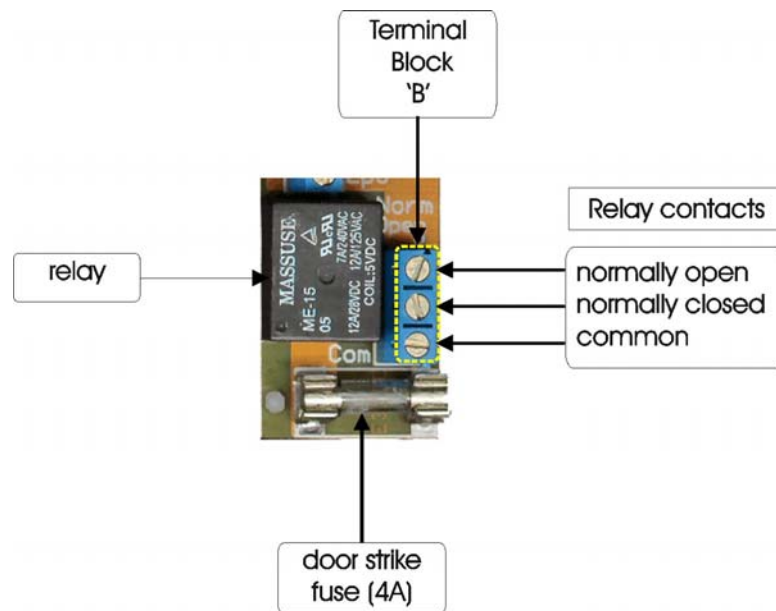
#### **IMPORTANT**

- **YOU MUST NOT CONNECT THE S3K TO THE SAME POWER SUPPLY USED FOR THE DOOR STRIKE.**
- **DOOR STRIKES USUALLY DRAW A HIGH CURRENT PEAK WHEN ENGAGED, WHICH WILL CAUSE A POWER SPIKE IN THE POWER SUPPLY AND CAN RESET OR BURN THE S3K. ALSO NOTE THAT SOME DOOR STRIKES MAY RUN ON AC POWER, WHICH IS NOT ACCEPTABLE FOR S3KS.**

## 1.4 DOOR STRIKE SECTION

In this section of the main-board you'll find Terminal Block 'B' (Fig. B), which has three contacts:

- The top contact of this Terminal Block, which is labeled 'Norm Open', is the 'normally open' output of the relay.
- The middle contact is the 'Normally Closed' output of the relay.
- The lower position of this Terminal Block, which is labeled 'Com' corresponds to the 'common' contact of the relay.



**Fig. B – Door Strike Section**

The relay that drives this terminal block is rated at 10A maximum, however, since door strikes usually draw less than 2A current, for security reasons the fuse that protects the door strike relay (which is next to Terminal Block 'B'), is a 4A fuse and should not be replaced by a higher rating fuse.

You can connect a load of up to 24V (AC or DC) @ 4A maximum to this terminal block.

### **! IMPORTANT**

- **NEVER PUT ANY PART OF THE S3K IN CONTACT WITH A VOLTAGE HIGHER THAN 24V.**
- **EVEN THOUGH IT'S PHYSICALLY POSSIBLE, NEVER DRIVE A MAINS LOAD (110V, 220V, ETC.) WITH THIS OUTPUT.**
- **DO NOT RUN ANY MAINS CABLES THROUGH OR NEAR AN S3K.**

### **1.4.1 DOOR STRIKE OPERATION**

There are two kinds of systems to activate an electric door lock:

#### **1.4.1.a 'CLOSED WHEN POWERED' DOOR LOCKS**

In such door locks the mechanism will remain open unless it is powered. This means that if for any reason the power fails, the lock will open to let people leave the facilities. To install this kind of door locks with S3Ks, follow these instructions:

Connect any of the two cables of the door strike power supply to any of the two door strike cables.

Connect the remaining cable of the door strike to the middle contact of Terminal Block B ('normally closed')

Connect Terminal Block B 'common' contact (labeled 'Com') to the remaining cable of the door strike power supply.



#### **IMPORTANT**

- **IF THE DOOR STRIKE YOU ARE USING WORKS WITH DC, YOU MUST ADD A SUITABLE REVERSE (CLAMPING) DIODE TO THE COIL.**

#### **1.4.1.b 'OPEN WHEN POWERED' DOOR LOCKS**

If you use an 'open when powered' door strike the mechanism will remain closed unless it is powered. This means that if for any reason the power fails, the door will remain closed. To install an 'open when powered' door strike with S3Ks, follow these instructions:

Connect any of the two cables of the door strike power supply to any of the two door strike cables.

Connect the remaining cable of the door strike to the top contact of Terminal Block 'B' (normally open)

Connect Terminal Block 'B' common contact (labeled 'Com') to the remaining cable of the door strike power supply.



1) In the default mode, with the jumpers in position 1-2, the inputs are fed by the onboard circuit. In this mode of operation:

- Active inputs are SwE, Sw1, Sw2 and Sw3.
- All inputs can be linked directly to external switches which must be connected between the input and ground.

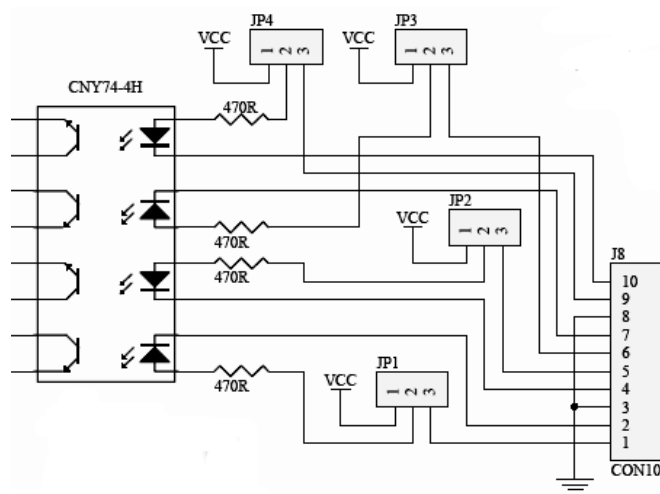
Sw1, Sw2 and Sw3 are standard switch inputs. The SwE input is reserved for new features to be added in future firmware updates.

You can leave all the jumpers in position 1-2 (default) and connect a switch or pushbutton between the input and one of the ground (Gnd) contacts in Terminal Block 'C' in order to simplify the connection. Please note that, although a single Gnd contact is enough to connect all inputs, a second Gnd contact is included to simplify wiring.

2) If the S3K and the switch or sensors you want to connect are separated by more than a few yards distance, you will have to select the full-optocoupling mode using external power and probably a couple of filtering resistors. In this case please consult an electronic technician or engineer.

In the fully optocoupled mode, with jumpers in position 2-3, the inputs have to be externally powered. In this mode of operation, EpE, Ep1, Ep2 and Ep3 become the 'externally powered' inputs, which are connected via an on board 470 Ohm resistor to the LED anode (in the optocoupler) and SwE, Sw1, Sw2 and Sw3 are directly linked to the LED cathode. If the external power supplied to these inputs is higher than 5V, you have to add a resistor whose value depends on the voltage of the power supply minus the 470 Ohms (which are already onboard). In general, the value of the resistor is the voltage of the external power supply times 100 minus 470. For example, a 12 V external power supply requires a  $(12 * 100 - 470) = 730$  Ohm resistor connected in series to the Ep(x) input. In case the result is not a standard resistor value, round it upwards to the following (higher) standard value.

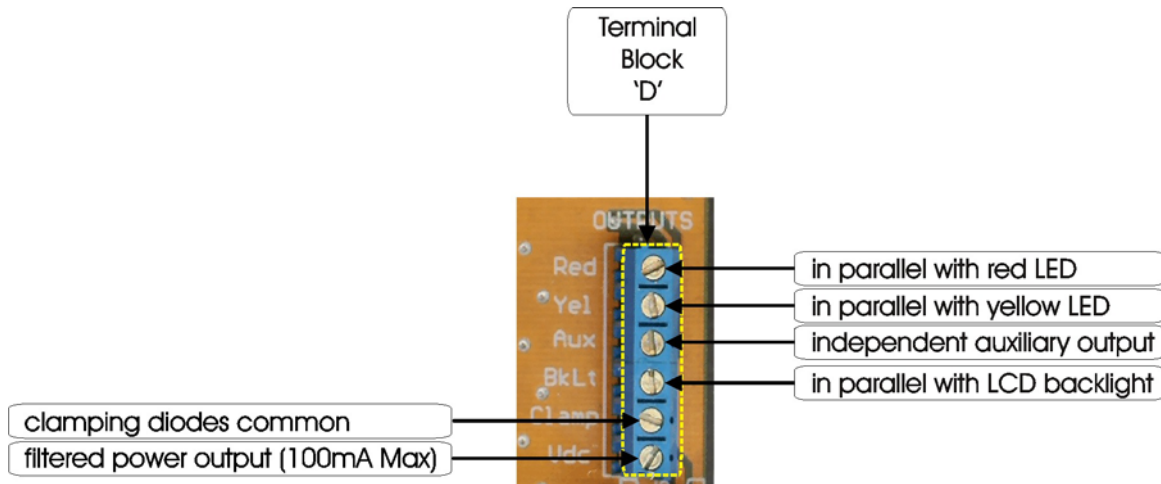
Please refer to Diagram I for an electronic scheme of the S3K input circuit.



**Diagram I – Electronic Diagram of S3K Inputs**

## I.6 OUTPUT SECTION

This section describes Terminal Block 'D' (Fig. E). This Terminal Block includes all the connectors for S3K outputs.



**Fig. E – Outputs Section**

All outputs included in this section are open collector and driven by BC817 transistors.

The total maximum current is 500mA and the external voltage must not exceed 24V DC. Current in excess of 500mA in any of these outputs will cause permanent damage to the S3K voiding its limited warranty. As these outputs are not internally protected, use of external optocouplers and/or fuses is necessary.



### **IMPORTANT**

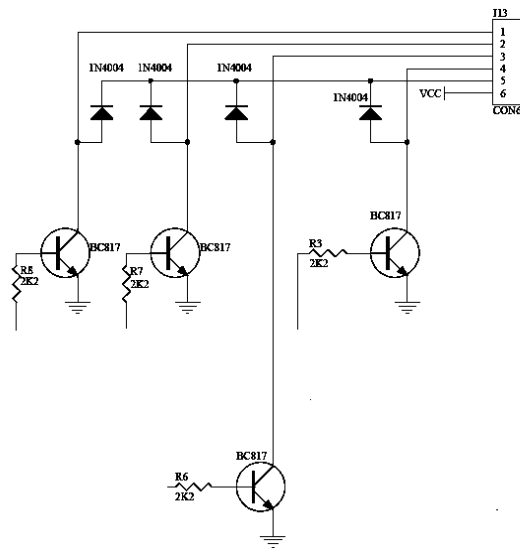
- **You MUST NOT CONNECT AN AC LOAD TO ANY S3K OUTPUT; THE ONLY EXCEPTION TO THIS RULE IS THAT YOU CAN, AND PROBABLY WILL, CONNECT AN AC LOAD TO THE DOOR STRIKE RELAY.**

The following are the contacts included in terminal block 'D':

- **Red:** Digital output working in parallel with the Red indicator LED
- **Yel:** Digital output working in parallel with the Yellow indicator LED
- **Aux:** Digital auxiliary output.
- **BkLt:** Digital output working in parallel with the LCD's backlight
- **Clamp:** Is the (1N4007) clamping diodes common.

- **VDC:** Is a power output that corresponds to the power supply input. It is fed by a 1N4007 polarity protection diode, the 750mA fuse, a ferrite bead and the 470 uF filter capacitor. The output voltage depends on the power supply and is not regulated in any way. You can draw a maximum of 100mA. from this output, enough to drive an auxiliary relay, whose coil should be rated at the same voltage of the power supply. A coil resistance should be used to prevent it from drawing more than 100mA. Please note that this output is not internally connected to the clamping diodes. If you use this output together with the Auxiliary output, you still need to short it to the Clamp output.

Please refer to Diagram II for an electronic scheme of the S3K output circuit

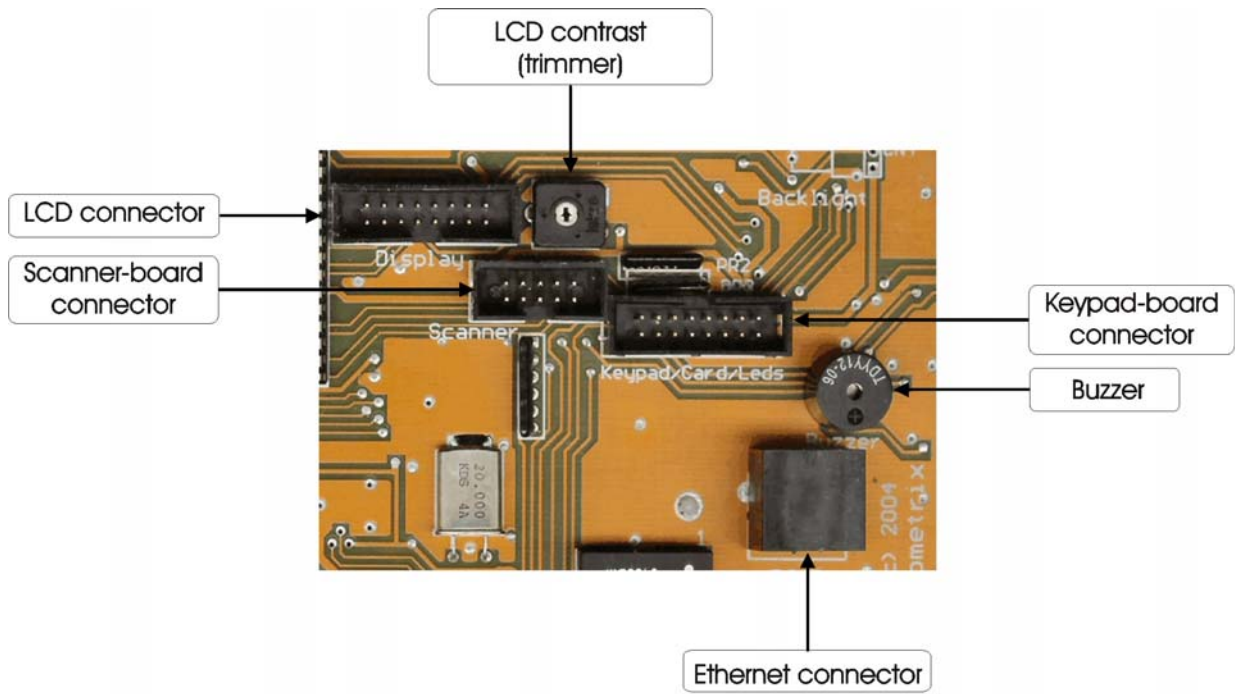


**Diagram II – Electronic Diagram of S3K Outputs**

**! Important**

- **NEVER PUT ANY CIRCUITS OR RELAYS CONNECTED TO THESE OUTPUTS, INSIDE THE S3K OR IN TOUCH WITH ITS SURFACE**

## **I.7 INTERFACE SECTION**



***Fig. F - Interface Section***

This section comprises a standard Ethernet connector (RJ45), three flat cable connectors, a buzzer and a display contrast trimmer.

### **I.7.1 ETHERNET CONNECTOR**

Use a Category 5+ patch cord cable to attach an S3K to any 10 Megabit compatible hub, router or switch (i.e. 10, 10/100 or 10/100/1000 Mbits).

You can also attach the S3K directly to a 10 Mbits compatible Ethernet adapter in your PC (i.e. 10, 10/100 or 10/100/1000 Mbits) by using an Ethernet crossover cable.

### **I.7.2 FLAT CABLE CONNECTORS**

#### **I.7.2.a LCD CONNECTOR**

The LCD male connector, marked on the board as 'Display', has sixteen contacts disposed in two rows of eight pins each. The central polarization slot prevents reverse connections. The LCD has a similar male connector on its back.

Any of the two female connectors of the cable labeled as 'D' must be plugged in the LCD connector (due to the polarization slot, it will only fit in the right position). The remaining connector of the cable should be plugged into the LCD embedded connector.

### **I.7.2.b SCANNER BOARD CONNECTOR**

The connector marked as 'Scanner' in the mainboard, has ten contacts arranged in two rows of five pins each. The central polarization slot prevents reverse connections. The scanner board has a similar male connector on its front. Link these two connectors using the ten connector (narrow) flat cable.

### **I.7.2.c KEYPAD BOARD CONNECTOR**

The Keypad board connector, marked on the mainboard as 'Keypad/Card/LEDs' is similar –but longer- than the LCD connector. Link the “keypad connector” in the mainboard to the connector in the “keypad board” using the flat narrow cable -ten wires-.



### **IMPORTANT**

- **MAKE SURE YOU DON'T CROSS-LINK THE LCD DISPLAY AND THE KEYPAD CONNECTORS.**
- **NOTICE THAT SHORTING THE LCD AND KEYPAD CONNECTORS EMBEDDED IN THE MAINBOARD WILL BURN THE S3K CIRCUITS.**

### **1.7.2 LCD CONTRAST TRIMMER**

This trimmer is used to adjust the contrast of the LCD under different installing conditions. The trimmer can be adjusted from the interior (as seen in Fig. F) and also from the back of the S3K by removing the label that reads '*Display Contrast/Remove Label*' on the back plate of the S3K; underneath that label you'll find a hole to access the trimmer internal switch. Use a small screwdriver (0.09”) to rotate the trimmer internal switch until the desired LCD contrast is obtained.



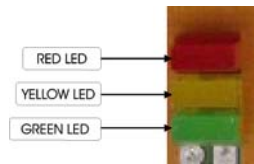
### **IMPORTANT**

- **THIS IS A SINGLE TURN TRIMMER; DO NOT TRY TO FORCE IT FOR IT WILL BE DAMAGED CAUSING THE FAILURE OF S3K'S LCD.**

### **I.7.3 BUZZER**

The 2.4 KHz. buzzer is used by S3K to give feedback on different events such as keystrokes, doors left opened, access denials, etc. The length of the sounding periods can be managed by the host software.

## **I.8 COMMUNICATION LEDS**



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***Fig. G – Communication LEDs***

These internal LEDs show the Ethernet communication status between the S3K and the host.

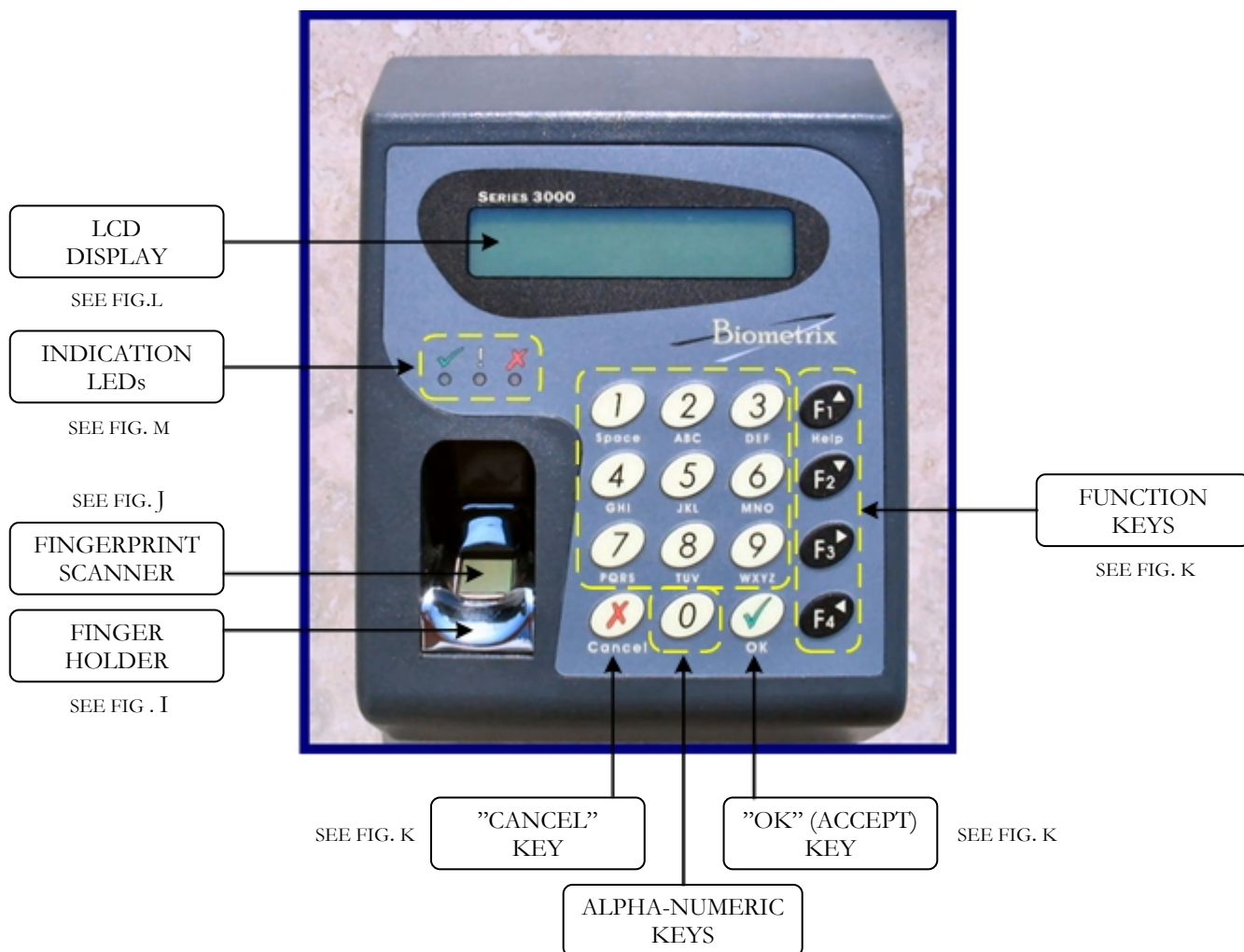
- The RED LED gives a “Network Fault” alert; light turns on if the network cable is unplugged or the connected hub is not working.
  - The YELLOW LED shows the “Network Receive” status; it blinks whenever a packet is received by the S3K.
  - The GREEN LED shows the “Network Send” status; it blinks whenever a packet is sent by the S3K.
-

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## Chapter II - HARDWARE COMPONENTS ACCESSIBLE WHILE IN USE

### II.1 FRONT COVER

Once the S3K is mounted, it allows the access to different input and output components from its front cover.



**Fig. H – S3K Front View**

### II.1.1 FINGER HOLDER

One of the main issues for obtaining satisfactory results in fingerprint matching is consistent positioning between the enrollment and the authentication processes.

Biometrix's proprietary finger holder, **Alufinger**, has been designed for such purpose with two unique features:



- An ergonomic design that comfortably fits most fingers and acts as a cradle to guide the user when positioning his finger each time he wants to be authenticated in an S3K.
- A tiny wedge, mounted on the top, which fixes the first joint of the user's finger in place. This wedge has two functions: a) prevents the finger from moving during the scanning process and b) guides the person in placing his finger in the same position every time he uses the system.

*Fig. 1 – Finger Holder*

Additionally, **Alufinger** acts as a signal enhancer for the fingerprint sensor, providing an accurate image to the system to optimize the performance of the matching process.

**TIP:** To avoid distorting the fingerprint image the finger should be directly positioned on the finger cradle instead of being slid into place. Once the finger is touching the sensor the first knuckle must be leaned on **AluFinger's** wedge.

Finger laying on Cradle

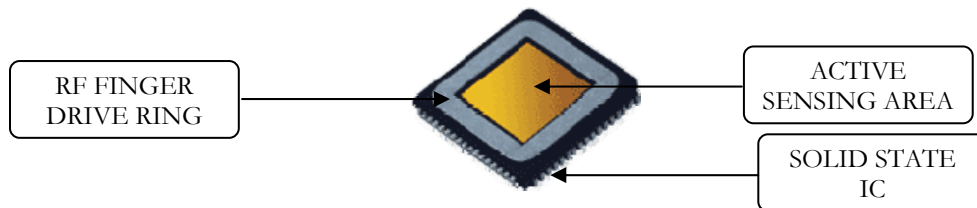
Finger's Joint



Wedge

Correct Finger Placement

## II.1.2 FINGERPRINT SCANNER



**Fig. J – Fingerprint Sensor**

S3K's fingerprint reader is a state-of-the-art solid state sensor. Using AuthenTec's proprietary "TruePrint Technology", this sensor uses a patented radio frequency (RF) technique that allows to generate an image of the live layer of the skin that is buried beneath the surface of the finger. This live subsurface layer is the source of the fingerprint pattern, and unlike the finger's surface it is rarely affected by external agents. This protected subsurface "true print" image is what "TruePrint Technology" captures. The image is generated by sending a very small RF signal through a peripheral Drive Ring on the chip and sensing the resulting effects on the portion of the finger touching the active sensing area of the chip.

A separate presentation explaining in detail how TruePrint Technology works can be downloaded from our web site at: [www.biometrix.net](http://www.biometrix.net)

### II.1.2.a RELIABILITY

TruePrint Technology sensors, due to their exceptionally strong ability to acquire accurate fingerprint images, can be used in heavy duty commercial applications -where failure to perform for even a small percentage of the population means a large number of unsatisfied customers-. TruePrint Technology differentiates itself from other fingerprint authentication technologies by its ability to work for everyone across a wide range of finger conditions and environments.

### II.1.2.b ROBUSTNESS

TruePrint Technology gives the following advantages to AuthenTec's sensors:

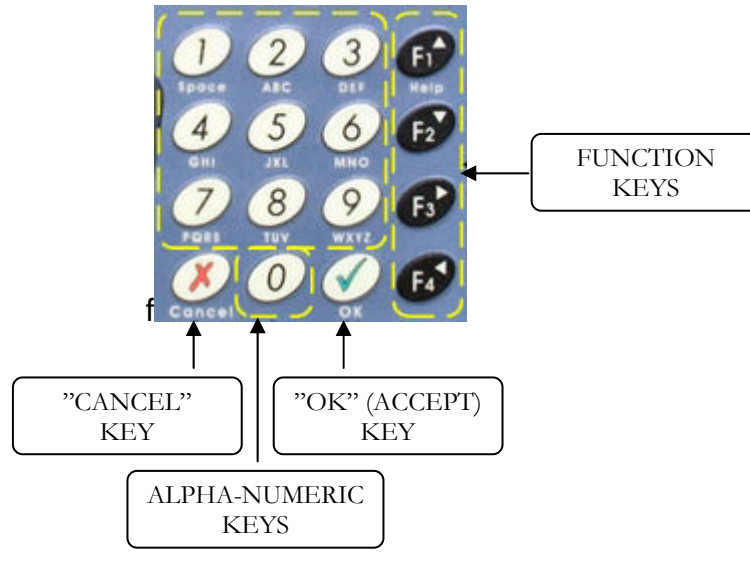
- Thicker protective surface coatings
- Higher electrostatic discharge (ESD) resistance
- Higher scratch and abrasion resistance
- Exceptional resistance to chemical and environmental hazards

### II.1.2.c BIOMETRIX PROPRIETARY ENHANCEMENTS

**Alufinger** acts as a signal enhancer for AuthenTec's sensors, producing a superb fingerprint image quality through TruePrint Technology.

**FlexImage** enhances the dynamical calibration of AuthenTec's sensors to obtain accurate images.

### II.1.3 KEYPAD



**Fig. K – Keypad**

S3K's keypad has the following characteristics:

- Type: Membrane switch
- Material: Polycarbonate
- Feedback: Metal Touch (Tactile feel) and Confirmation Tone
- 14 Oval-Shaped – Embossed Keys, with the following functions:
- 10 standard alpha-numeric keys
- 4 programmable function keys (F1, F2, F3, F4)
- 1 "Cancel Key" and
- 1 "OK" (or Accept) Key

## II.1.4. DISPLAY



**Fig. L – LCD Display**

S3K's LCD display has the following features:

- Two lines of twenty characters each
- Adjustable contrast -trimmer embedded on the mainboard, that can be reached without opening the case from a small hole in the back-plate-.
- Yellow backlight
- Fully programmable (text, turn on/off, changes to the state of the backlight, cursor on/off and shape)

## II.1.5 INDICATOR LEDES



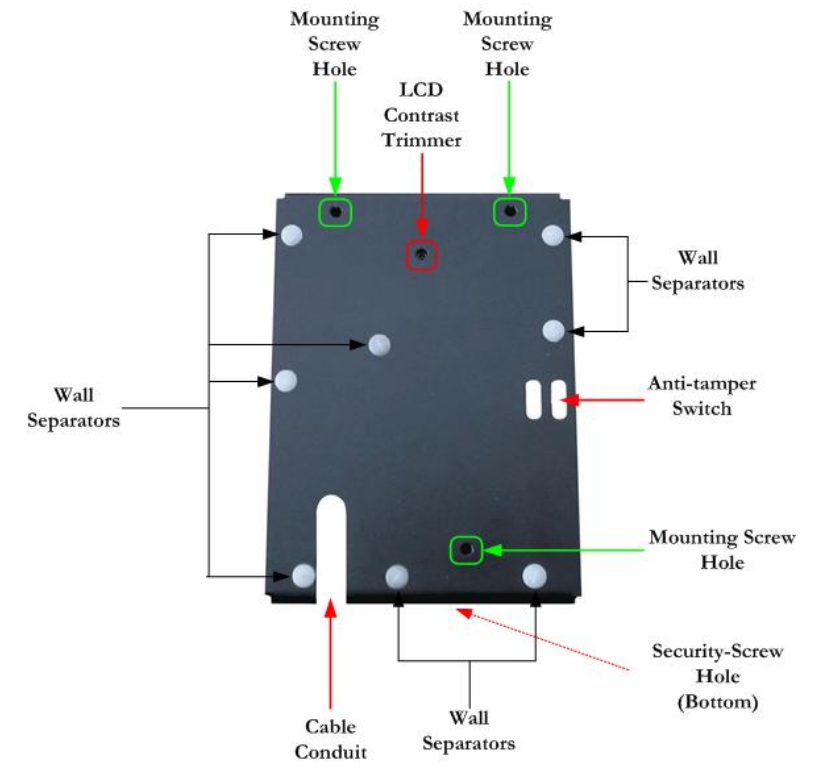
**Fig. M – Indicator LEDs**

Three indicator LEDs give additional feedback to the user. Its functionality is entirely programmable for each application.

The following are the usual functions programmed for these LEDs:

- The left green LED is meant to indicate a successful authentication with a granted access
- The middle yellow LED should indicate a successful authentication with a denied access
- The right red LED should indicate an unsuccessful authentication with a denied access

## Chapter III - HARDWARE COMPONENTS ACCESSIBLE FROM THE BACK-PLATE



**Fig. N – Back-Plate**

### **III.1 ANTI-TAMPER SWITCH**

The S3K units have an anti-tamper switch on the back of its case. This switch is activated if the front-case is opened and/or if the back-plate is removed from the wall. The resulting alarm signal can be sensed from the managing software.

### **III.2 LCD EXTERNAL CONTRAST TRIMMER**

Please refer to Interfaces Section above.

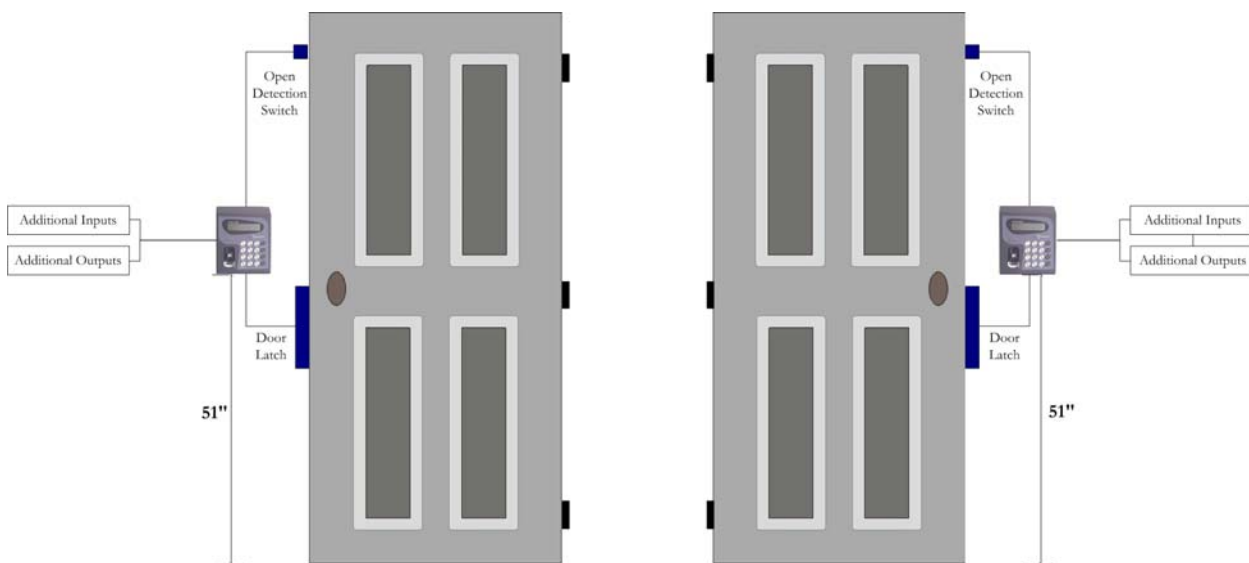
## CHAPTER IV - HARDWARE INSTALLATION

### IV.1 PHYSICAL LOCATION

Install S3K in a position where users can reach the device comfortably, not only to place their finger on the sensor but also to read the messages displayed on the LCD.

Take note of the following recommendations:

- Select a position where the power supply and network cables are accessible
- Install the S3K with its base at approximately 51 inches (1.30 meters) from the floor
- In door access installations mount the device at the side of the door close to the latch



**Fig. O – Recommended S3K Position for Door Access  
(Left and right hand side doors shown in Figure)**

In other type of access (i.e. turnstiles, revolving doors, etc.) select the right hand side of the path whenever possible.



***Fig. P – Recommended S3K Position for Turnstile Access***

- Keep S3K's display away from direct sunlight.
- When installing in public areas mount the device as directed in the Americans with Disabilities Act
- Always mount the device indoors or in a weather resistant housing.

**⚠ IMPORTANT**

- **THOUGH S3K IS A RUGGED DEVICE, IT IS NOT WEATHERPROOF.  
(CURRENTLY NONE OF THE FINGERPRINT SCANNERS IN THE MARKET ARE WATER RESISTANT)**

## IV.2 MOUNTING INSTRUCTIONS



### IMPORTANT

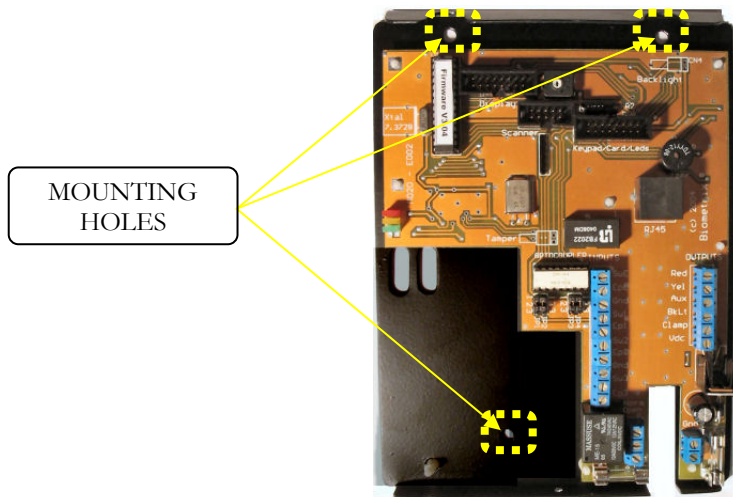
- **MAKE SURE THERE IS NO POWER CONNECTED TO THE UNIT DURING THE COMPLETE MOUNTING PROCESS**
- **BE CAREFUL NOT TO DAMAGE THE ELECTRONIC CIRCUITS DURING THE MOUNTING PROCEDURES**

To install an S3K device on a wall you:

1. Fix the back-plate to the wall
2. Connect the interface cables
3. Mount the front cover

### IV.2.1. FIXING THE BACK-PLATE TO THE WALL

To mount the back-plate on the wall follow the instructions below:



***Fig. Q – Back-Plate (Front) with Attached Mainboard***

- Hold the back-plate in the position you selected and align its sides to the door's frame,
- Draw the outline of the three mounting holes,
- Release the back-plate and drill out the outlined holes with a 3/16" bit,
- Put the back-plate again into the right position,
- Use 3/16" by 1½" round head screws to fix the back-plate to the wall.

## IV.2.2. CONNECTING THE INTERFACE CABLES

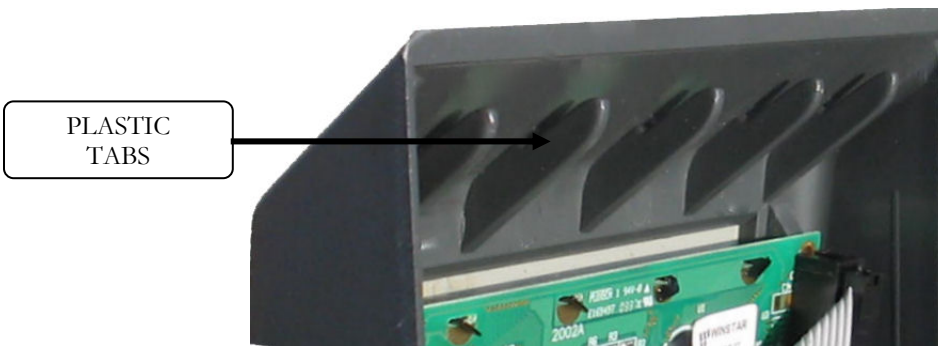
Connect the interface cables as follows:

- Connect the door strike input and output cables to the corresponding terminal blocks (shown in Figs. B, C and E)
- Place jumpers (shown in Fig. D) into the selected positions
- Connect both power supply cables to the related terminal block (shown in Fig. A)
- Connect the RJ45 cable to the S3K's mainboard connector (shown in Fig. F)
- Connect the three ribbon cables (keypad, fingerprint scanner and display) from the front case boards into the interface sockets (shown in Fig. F) as described in the Interface Section of this manual.

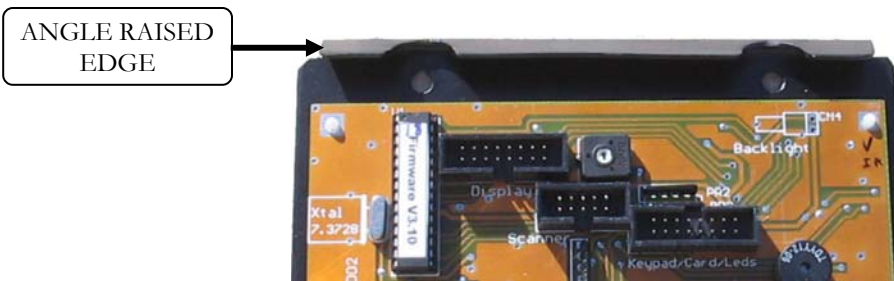
## IV.2.3. MOUNTING THE FRONT COVER

To mount the front cover and close the S3K unit, proceed as follows:

- Face the S3K cover with the mounted back-plate

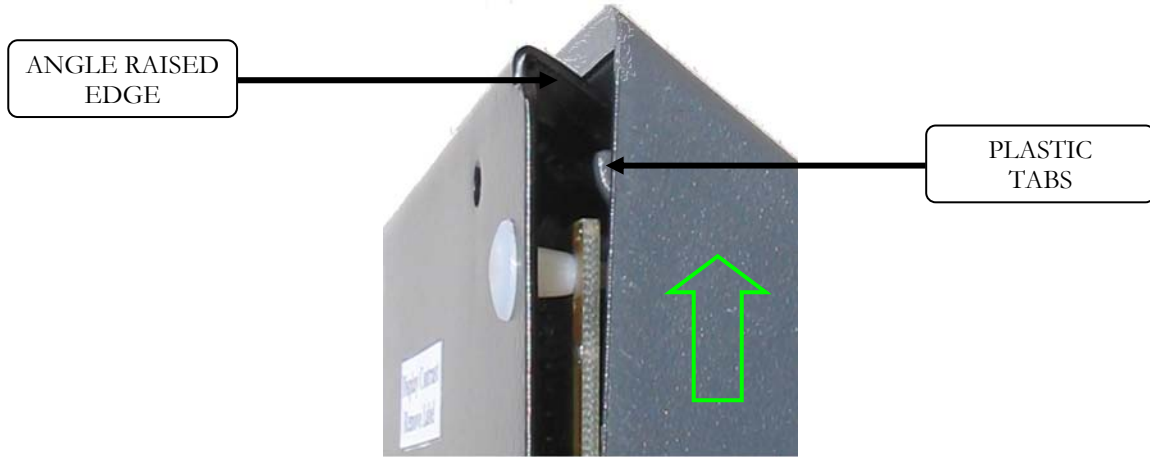


**Fig. R – Cover's Internal Top Edge**



**Fig. S – Back-Plate's Internal Top Edge**

- Align the upper plastic tabs (Fig. Q) of the top of the S3K cover with the angled edge of the back-plate (Fig.R),



**Fig. T – Mounting the Cover**

Move the S3K cover smoothly upwards (Fig.Q) pushing the base of the cover until it completely rests against the wall,

Use the screw marked as “B” to secure the cover.



**Fig. U – Closing the Unit**

## **CHAPTER V - CONNECTING THE DEVICE TO THE NETWORK (LAN)**

### **V.1 SETTING THE IP AND PORT NUMBERS**

Once you have physically mounted, installed and powered the S3K device you need to establish a connection with the existing LAN by assigning an IP to the unit.

Turn on the S3K while pressing any of the front keys.

This will set the device into *install mode*. You'll be able to set the selected IP at this time (four groups of three numbers each) by typing the corresponding numbers through the keypad.

Use the "OK" key to confirm the entry of the numbers of each group; the cursor will automatically jump to the next group of numbers. In case of mistake use the "CANCEL" key to delete.

Use the "CANCEL" key over a cleared group (000) to move to the previous one.

Use the "OK" key to confirm the IP number or the "CANCEL" key to re-enter it.

After confirming the selected IP you'll be asked for the port number to be used by the unit. Confirm the default value by pressing the "OK" key or follow the above "CANCEL" instructions to change that value.

Finally Accept or Discard the selections you made by answering to the "Accept Changes?" question using the "OK" or "CANCEL" key.

### **V.2 FINGERPRINT SENSOR CALIBRATION**

The fingerprint sensor used by S3K has been pre-calibrated for optimal performance. This calibration becomes the reference value for future fingerprint scans.

In the event that you have to replace the S3K's firmware pay special attention not to touch the sensor or the finger guide (Alufinger) while you power on the device for the first time after replacing the firmware.

If the S3K shows the message "ERR: Finger" during power up, either there is a finger touching the scanner or the unit is incorrectly calibrated.

In case that you need to reset the factory calibration, follow the instructions below:

- Power off the S3K
- Open the case.
- Unplug the scanner (10 conductor flat cable) from the mainboard. The socket is marked as SCANNER,
- Power up the S3K with the scanner cable unplugged -the LCD screen will read "Scanner Calib. Clear"-
- Power off the S3K
- Plug the scanner back into it's mainboard connector

- Power up the S3K again, making sure nothing is touching the finger guide. If something (i.e. a finger) is touching the finger guide or the scanner, an invalid calibration value will be saved to non volatile memory in the S3K. If this happens, you will have to repeat the whole calibration procedure described herein.

Done, the sensor is now correctly calibrated.

**Notice:**

- If there is a finger touching the scanner or the finger guide during power up, an "ERR: Finger" message will appear on the display even if the device is correctly calibrated.
- If an "ERR: Finger" message is displayed during power up even when no finger is touching the scanner the S3K requires recalibration.



## **SAFETY INSTRUCTIONS**

### **CAREFULLY READ ALL THE INSTRUCTIONS**

- All the safety and operating instructions should be read before the product is operated.
- All the operating and use instructions should be followed.
- The safety and operating instructions should be retained for future reference.

### **IMPORTANT: HEED WARNINGS**

- All warnings on the product and/or in the operating instructions should be adhered to.

### **IMPORTANT SAFEGUARDS**

- All the devices, cables, accessories, software media and the rest of the pieces of this product(s) (all of them in a whole or any part or a subset of parts referred from now on as “the product”) have been manufactured and tested with your safety in mind.
- However, improper use can result in potential damages, electrical shocks or fire hazards.
- To avoid defeating the safeguards that have been built into the product, please read and observe the following safety points when installing and using the product and save them for future reference. Observing the simple precautions discussed herein can help you get a safe operation of the product.

### **INSTALLATION**

For correct installation and mounting it is strongly recommended to use a trained, authorized Control LAN dealer personnel. The following are safety instructions regarding the installation of the product.

- Do not place this product on a slippery or tilted surface, or on an unstable cart, stand, tripod, bracket, table and the like.
- Any mounting of the product should follow the manufacturer’s instructions and recommendations using the mounting accessories provided or recommended by the manufacturer. Otherwise the product may slide or fall, causing serious injuries to persons, and serious damage to the product.
- The product should be situated away from heat sources such as radiators, heaters, stoves, or other products (including amplifiers) that produce heat.
- Do not use this product near water or bath tubs, wash bowls, kitchen sinks or laundry tubs.
- Set the unit away from rain, snow, direct sunlight, excessive dust and extreme temperatures.
- This product should not be placed in a built-in installation (i.e. a bookcase, a rack, etc.) unless proper ventilation is provided or the manufacturer’s instructions have been adhered to.

### **ELECTRICAL SAFETY**

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the system’s main board, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord
- Make sure that your power supply is set to the correct voltage for your area. If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- For products intended to operate from external power-supplies the manufacturer may or may not provide the corresponding power-supply.
- When the power-supply is not furnished as part of the product the technician in charge of the installation should strictly refer to manufacturer’s recommendations or specifications detailed in the installation or operating instructions.
- Operation at currents, voltages, cycles, amperages other than the recommended by the manufacturer will shorten the life of the unit, and might even cause a fire hazard.
- For products intended to operate from battery power or other sources not provided by the manufacturer of this product, refer to the operating instructions given by the corresponding suppliers.
- If the power supply is broken, do not try to fix it yourself; contact a qualified service technician or your retailer.
- Power-supply cords, which could be supplied with the product or not, should be routed so that they are not likely to be walked on or pinched by items placed upon or against them.
- Do not overload wall outlets, power-supplies, or extension cords as this can result in a risk of fire or electric shock.

- To prevent fire or shock hazards, do not expose this product to rain or moisture.
- Never spill liquid of any kind on the product. It is very important to protect the inside of the unit from liquids and small objects.
- Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock.
- In case of accidental liquid or small objects introduction to the interior of the product, unplug the unit immediately and have the product serviced by an authorized dealer.

### **ATTACHMENTS**

- Do not use any kind of attachments not certified or recommended by the manufacturer as they may cause hazards.

### **CLEANING SAFEGUARDS**

- Unplug this product from its power supply before cleaning.
- Do not use liquid cleaners or sprays cleaners.
- Refer to section “Cleaning Instructions” for additional cleaning recommendations.

### **SERVICING**

- Do not attempt to service or repair the unit. The manufacturer is not liable for any body harm or damage caused if unqualified persons attempt or perform test, service or alteration of the product or of any of its parts or open the back cover.
- Refer all service to authorized manufacturer’s dealers.

### **REPLACEMENT PARTS**

- When spare parts are required, be sure the service technician has used spare parts specified by the manufacturer or that have the same characteristics as the original parts.
- Unauthorized substitutions may result in fire, electric shock or other hazards.

### **SAFETY CHECK**

Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper and safe operating condition.

### **SPECIAL SAFETY WARNING ON LIQUID CRYSTAL DISPLAY (LCD)**

- If the product’s display is damaged, the liquid contained within the display may leak. Never ingest any of this liquid, as serious body injury or illness may result.
- Use large amounts of water to immediately wash off any liquid that have contacted any part of the body.
- Remove any liquid that has contacted your clothes by washing them immediately with synthetic detergent. Contact an authorized dealer immediately for further instructions regarding safe disposal (and replacement) of the damaged LCD.

### **CLEANING INSTRUCTIONS**

- Normally a dry, non-abrasive cloth will clean your product.
- If deeper cleaning is needed, please follow these guidelines: gently wipe down the front and sides of the product with a soft, non-abrasive cloth (cotton, etc.) lightly moistened with water. Dry with a second dry, soft, non-abrasive cloth.
- DO NOT apply pressure to the cabinet, keypad, display screen, sensor or any other exposed part of the product.
- DO NOT allow liquid directly touch sensors, keypads, screens or to enter the product through the ventilation slots, cables slots or any crevice.
- DO NOT use any strong or abrasive cleaners because they can scratch the exposed parts of the product, including screen, keypad, LEDs, sensor and the cabinet.
- DO NOT use any cleaners that contain ammonia, bleach, alcohol, benzene, acetone or thinners because they can damage and dull the surfaces.
- DO NOT scrub or rub the screen or cabinet. Wipe it gently.

**IMPORTANT:** For further information or assistance related to safety or cleaning instructions please refer to your nearest authorized dealer or contact the manufacturer at:

[CUSTOMERSUPPORT@CONTROLLAN.COM](mailto:CUSTOMERSUPPORT@CONTROLLAN.COM)

## **LIMITED WARRANTY AND LIMITATION OF REMEDIES**

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**CONTROL LAN WARRANTS THAT ANY HARDWARE PRODUCT(S) ACCOMPANYING THIS DOCUMENTATION WILL BE FREE FROM SIGNIFICANT DEFECTS IN MATERIALS AND WORKMANSHIP UNDER NORMAL USE FOR A PERIOD OF ONE (1) YEAR FROM THE ORIGINAL DATE OF PURCHASE.**

**CONTROL LAN WARRANTS THAT IF ANY SOFTWARE IS INCLUDED IN THE PRODUCT(S), IT WILL PERFORM SUBSTANTIALLY IN ACCORDANCE WITH THE APPLICABLE DOCUMENTATION, AND THAT ITS MEDIA WILL BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP FOR A PERIOD OF NINETY (90) DAYS FROM THE DATE OF ORIGINAL PURCHASE.**

Control LAN's entire liability and sole obligation, and the Licensee's or purchasers exclusive remedy for any breach of warranty, shall be, at Control LAN's option, either (a) return of the price paid, if any, (b) repair or replacement of the hardware or Software, provided that the hardware or the Software is returned to the original point of purchase, with a copy of the sales receipt. In this last case Control LAN will decide at it's sole discretion to repair the product using new or remanufactured components. Any replacement of a part of the product, hardware or Software, will be warranted for the remainder of the original warranty period or thirty (30) days, whichever is longer. Any replacement of an accessory included with the product (i.e., cables, power supplies, etc.) will be warranted for the remainder of the original warranty period. The replaced parts will become Control LAN's property. These remedies are void if failure in the product has resulted from accident, abuse, misapplication or any of the reasons detailed at the end of this section. Without limiting the foregoing, under no circumstances shall Control LAN be held liable for any delay or failure in performance resulting directly or indirectly from acts of nature or causes beyond its reasonable control, including, without limitation, Internet failures, computer equipment failures, telecommunication equipment failures, other equipment failures, electrical power failures, strikes, labor disputes, riots, insurrections, civil disturbances, shortages of labor or materials, fires, floods, storms, explosions, acts of God, war, terrorism, governmental actions, orders of domestic or foreign courts or tribunals, non-performance of third parties, or loss of or fluctuations in heat, light, or air conditioning.

**Warranty Service.** To obtain your remedy under this warranty you must deliver the defective product and the original sales receipt to the place of purchase. For purchases made directly from Control LAN, please contact a Control LAN Customer Support Center and obtain a Return Merchandise Authorization (RMA number) before returning the product to Control LAN. You must pre-pay shipping charges to return the product to Control LAN and insure the

shipment or accept the risk of loss or damage during shipment. Control LAN shall not be responsible for any returned product that is not packaged properly or is returned without a valid and visible RMA number.

**Product Failures Not Covered By This Warranty.** This warranty covers only defects in manufacturing that arise during normal use and proper care in an office or home environment. It does not cover, among others:

- Defects or damage that result from:
  - (a) use of the Products in a manner that is not normal or customary;
  - (b) improper operation or misuse;
  - (c) accident or neglect such as dropping the Products onto hard surfaces or improper cable plugging or pulling
  - (d) contact with water, rain, extreme humidity or heavy perspiration
  - (e) contact with sand, dirt or the like
  - (f) storage or operation under environmental conditions different from the specified by Control LAN
  - (g) contact with extreme heat or cold, or spills of food or liquid or
  - (h) use of corrosive, abrasive, or improper cleaning materials.
- Physical damage to the surface of the product(s), including scratches, cracks or other damage to a display screen, keypad, sensor, or other externally exposed parts.
- Cords that are stretched or that have any broken modular tabs.
- Software that is not tangibly embodied in media and that is purchased separately from products; such Software as the downloaded from the Internet comes "as is" without warranty.

**The present limited warranty shall also be automatically void for:**

- Product(s) that someone other than Control LAN (or its authorized resellers or service centers) has tested, adjusted, maintained, altered, modified or serviced in any way.
- Product(s) exposed to any misuse, improper modifications or repair, activity intended to circumvent the security devices incorporated into the hardware(s) or Software product(s), or criminal activity.
- Product(s) exposed to water, or moisture or temperature other than the specified by Control LAN for shipping or operation. The product(s) are designed to be weather proof but no fingerprint sensor currently supports all weather conditions, including direct rain or snow exposure.
- Product(s) exposed to high voltage surges from external sources such as power lines or other connected equipment.
- Product(s) with broken seals or evidences of tampering. Also opening the device(s) for purposes different from its installation as directed in this document automatically voids this warranty.
- Product(s) operating in combination with ancillary or peripheral equipment or Software not furnished or otherwise certified by Control LAN for use with the products ("ancillary equipment"), or any damage to the product or ancillary equipment as a result of such use. Among other things, "ancillary equipment" includes Software, batteries, chargers, adaptors, and power supplies not supplied or certified by Control LAN.
- Product(s) that has: (a) serial numbers or date tags removed, defaced, altered or obliterated; (b) board serial numbers that do not match each other, or board serial numbers that do not match the housing; or (c) nonconforming or non-Control LAN housings or parts.
- Product(s) with damage caused by the absence of ESD protection as recommended by Control LAN, if any.
- Product(s) that has been exposed to a current type or voltage other than the specified by Control LAN for the product(s).

#### **Basis of Bargain**

Warranty Disclaimers and Limited Liabilities set forth herein are fundamental elements of the basis of the agreement between Control LAN and you. Control LAN would not be able to provide the product on an economic basis without such limitations. Such Warranty Disclaimer and Limited Liability inure to the benefit of Control LAN's providers and licensor's.

#### **SOME OF THE DAMAGES REQUIRING SERVICE**

**Warning:** Do not hit or scratch the cabinet surface or exposed parts of the product as this causes permanent flaws on its operation and voids the warranty described in the Limited Warranty and Limitation of Remedies statement included in this document.

Unplug this product from the wall outlet and refer servicing to an authorized CLSC under the following conditions:

- If the power-supply cord or plug is damaged.
- If liquid has been spilled, or objects have fallen into the product.
- If the product has been exposed to rain or water.
- If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
- If the product has been dropped or the cabinet has been damaged.
- If the product exhibits a distinct change in performance.

PLEASE DIRECT ANY INQUIRES REGARDING LIMITED WARRANTY ISSUES TO: [CUSTOMERSUPPORT@CONTROLLAN.COM](mailto:CUSTOMERSUPPORT@CONTROLLAN.COM)

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-For this agreement purposes "Control LAN" means CONTROL LAN and its licensors, if any, and "Software" means the CONTROL LAN Software program(s) and third party Software programs, in each case, supplied herewith, and corresponding documentation, associated media, printed materials, and online or electronic documentation, and all updates or upgrades of the above that are provided to you.

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-You may install and use the Software on a single desktop computer that has any of the following Microsoft Windows PC operating systems: 98 (Second Edition), 2000 (Service Pack 4+), NT (Service Pack 6+), XP (Service Pack 1+), Small Business Server 2000+; notwithstanding anything contrary contained herein, you may not use the Software on any non-PC final application product or any embedded version of the above operating systems, including, but not limited to, mobile devices, internet appliances, set top boxes (STB), handhelds, PDAs, phones, web pads, tablets, game consoles, TVs, DVDs, gaming machines, home automation systems, ATMs, multimedia kiosks or any other consumer electronics devices or mobile/ cable/satellite/television or closed system based service.

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-You may not export the Software into any country prohibited by the United States Export Administration Act and the regulations there under.

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-You shall not use the Software to develop any Software or other technology having the same primary function as the Software, including but not limited to using the Software in any development or test procedure that seeks to develop like Software or other technology, or to determine if such Software or other technology performs in a similar manner as the Software, without written authorization by Control LAN.

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