

ISIMET

5000 – 6000 Series

Shop Controller



Installation, Maintenance, Operations, and Start-up Instructions



The 5000 / 6000 Series Shop Controllers can be utilized to control multiple utility services, gas and electrical convenience outlets that are commonly used in either educational, research or medical facilities. The 5000 / 6000 Series Controllers are standard fitted from 4 – 9 output circuits depending upon the project requirements. Units can be custom expanded to up to twenty (20) outputs. This series of the Shop Controller is also ideally suited for use in the shop classrooms to activate such devices as table saws, grinders, and other power tools in the classroom.

ISIMET

Shop Controller
Installation, Maintenance, Operations, and Startup Instructions

Copyright © 2010 **ISIMET**, LLC.

All rights reserved.

Patent 6,757,589 B1

6,990,393 B2

This document is copyrighted. This document may not, in whole or part, be copied, duplicated, reproduced, translated, electronically stored, or reduced to machine readable form without prior written consent from **ISIMET**, LLC.

Although the material contained herein has been carefully reviewed, **ISIMET**, LLC does not warrant it to be free of errors or omissions. **ISIMET** reserves the right to make corrections, updates, revisions, or changes to the information contained herein.

ISIMET is a trademark of **ISIMET**, LLC.

Warranty:

ISIMET will repair or replace any defective parts or workmanship of this product for a period of one year from date of installation. The P.C. Board has a two year limited warranty. Damage caused by incorrect installation or improper usage is not warranted. Failure to follow recommended installation, operation, and/or maintenance procedures listed in this manual may void product warranty. Recovery rights shall be limited to the total sum of the amounts paid for the product by the purchaser.

EXTENDED WARRANTY:

ISIMET will extend the warranty of this product to a period of two years from date of installation when installation complies with all start up and routine maintenance procedures. Refer to Extended Warranty Policy.

Limits of Liability:

ISIMET's liability shall be limited to costs of repair or replacement parts. The Laboratory Service Panel and Utility Controller are not intended for usage other than those expressly described in this manual. ISIMET shall not be liable for damage or injury caused by the improper use of the product.

ISIMET does not warrant against or assume liability for failure of operation or lack of notification to secondary integrated monitoring systems. The system should be thoroughly tested and adjustments made at time of initial operation. Periodic testing should be conducted by the user to assure that all components function and operate according to specifications.

Care should be taken in the installation of this product. ISIMET shall not be liable for damage or injury caused from the improper installation of the product.

Warranty is Subject to Compliance with Specific Installation Requirements.

DISCLAIMER OF IMPLIED WARRANTY:

THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION HEREIN. SELLER DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OF THE GOODS OR OF THE FITNESS OF THE GOODS FOR ANY PURPOSE, AND BUYER AGREES THAT THE GOODS ARE SOLD "AS IS."

Printed in the United States of America.

Table of Contents:

	Page
Warranty	2
General Product Information	4
Assembly, Compliance and Registration Information	4
Pre-Installation Information	4
Model Number Description	5
Shop Controller Illustrations and Parts List	6
Fuse Specifications	6
Door Panel Illustration and Parts List	6
Installing the Shop Controller	7
Installing the Electrical Conduit at the Controller	8
Wiring the Shop Controller	8
Connecting Controlled Utility Services	9
Connecting "EMS" Wiring	9
Connecting Alarm Wiring	10
Connecting Optional Components	10
Removing & Re-installing the Door Panel	11
Connecting the Door Cable	11
Start-Up Checklist	12
Start-Up Test Preliminary Information	12
Start-Up Tests	13
Equipment Operation	14
Troubleshooting	15
Equipment Maintenance	16
Jumper Configuration	17
Optional Input/Output Configuration	18
Electrical Schematics	19

Table of Figures

	Page
Figure 1 - Model Numbers	5
Figure 2 - Shop Controller	6
Figure 3 - Door Panel	6
Figure 4 - Flush Mounted Controller	7
Figure 5 - Surface Mounted Controller	7
Figure 6 - Controller Knock-Out Holes	8
Figure 7 - Junction Box	8
Figure 8 - Installing the Door Panel	11
Figure 9 - Cable to Interconnect Board Configuration	11
Figure 10 - PC Board "ems" Configurations	12
Figure 11 - PC Board Jumper - Connector Configurations	17
Figure 12 - Wiring Diagram with Aux. Circuit 4 (Fan Configuration)	19

General Product Information

The Shop Controller is a multi-output safety device that grants local, absolute authority to the instructor to determine those utilities or devices that are to be used during the class-day while restricting unauthorized student use of devices. The device regulates the control of various shop equipment and electrical outlets within a classroom. A keyed switch provides for security against unauthorized use of the system.

Construction:

All electrical components are pre-assembled, wired, and mounted. The Electronic Controller is assembled within the Utility Controller compartment.

Caution: Do not drop the assembly or expose it to the environment.

Assembly, Compliance and Registration Information

All Shop Controllers are assembled to permit limited field configurations of the operating system. A Configuration information sheet should be included with this packet. Options requiring additional instructions and/or assembly parts are shipped within the component package. Refer to Equipment Specifications to verify that ALL components conform to these requirements.

The output circuits of the Shop Controller provides 24 VAC control signals to solenoids and relays to activate and engage the various utilities. *ISIMET* provides a full line of Companion Enclosures and fittings. It is recommended that these items be included in the system design, but when the installer elects to provide these fitting from other sources, that compliance with Product specifications be confirmed prior to installation.

Enclosed with this Manual is a separate registration form. The front of the form is for equipment warranty registration. The back is a copy of the equipment start-up checklist. To ensure proper warranty of the product, it is important that you complete both sides of the form and either mail or fax to *ISIMET* within 30 days of installation.

Pre-Installation Information

The Shop Controller is not provided with a protective cover for the enclosure opening if the door is to be removed for protection during construction phases of the facility so that no debris enters the enclosure. Protection should in these cases be field provided. A wrap protects each PCB. Care should be taken to assure that protective covers are not removed until final assembly and testing.

Locating and Positioning the Shop Controller

Prior to installation, verify ADA (Americans with Disabilities Act) dimensions and compliance requirements. For best results:

Install the Wall Panel in the room where the utility services are controlled, at or near an exit and accessible to occupants of the room.

Mount the vertical center of the service switches on the Wall Panel to the ADA-required maximum height.

Trim Kit (Flush Mount only)

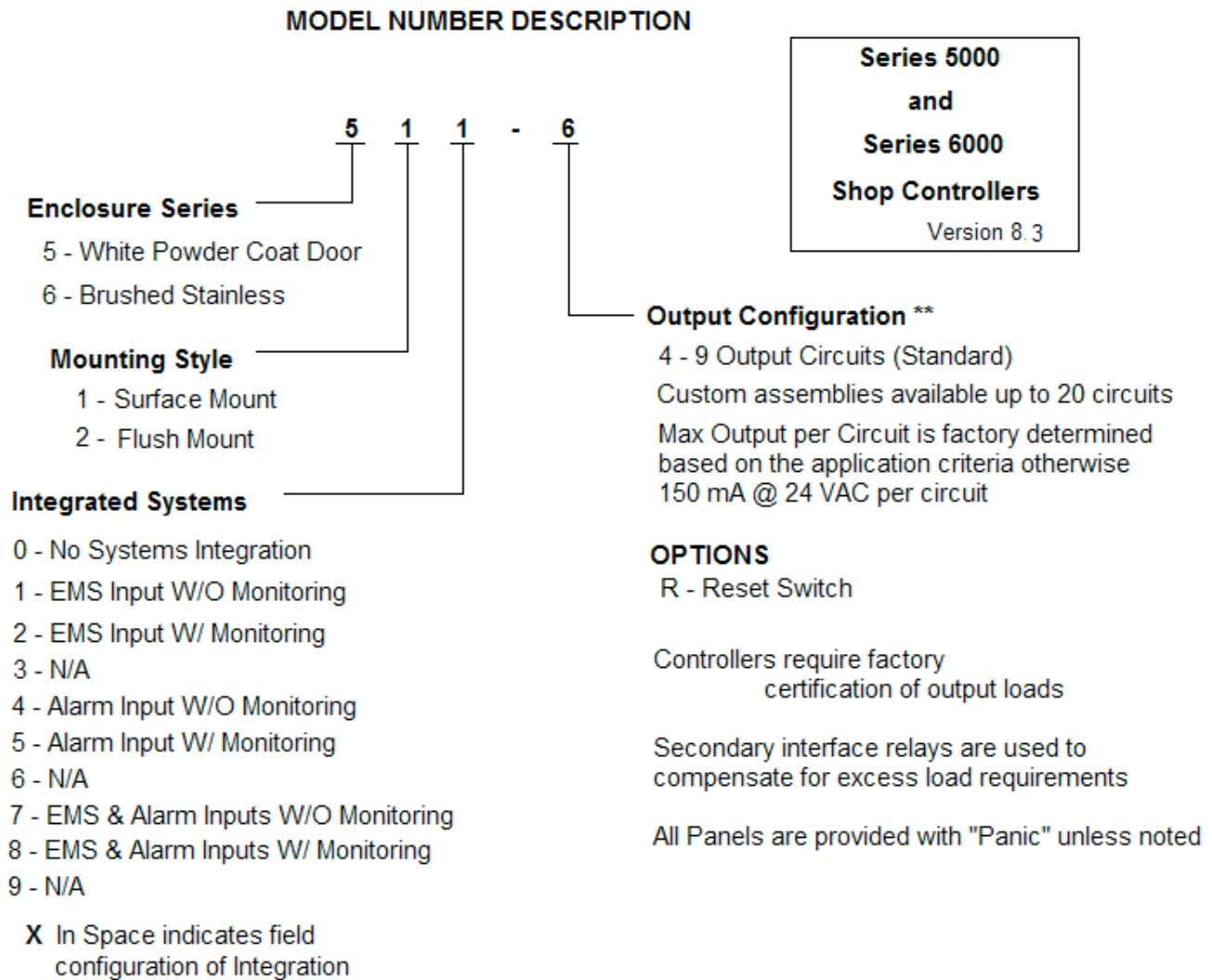
A Trim Kit is provided with flush mounted units, and is provided with separate installation instructions. Verify installation requirements prior to installation of the unit. Store the Trim Kit in a protected location, out of the weather, until installation.

Upon Receipt of Product

Each Shop Controller is assembled specifically for an individual application. All primary components have the same serial number.

Check components for damage. Notify *ISIMET* immediately of any damaged components. Check package and product name plates to determine if all components were shipped correctly. Store uninstalled components in a protected environment, out of the weather.

Figure 1



Enclosure Specifications and Dimensions:

The 5000 / 6000 Series Enclosure thru 6 circuits is 16 X 14 X 6 plus 0.625" door flange, for units 7 thru 9 circuits, the unit is within a 18 X 18 X 6 enclosure. Custom fabrications are available to provide greater than 9 circuits within a 24 X 24 X 6 enclosure. Flush Trim adds 3.5 inches to both height and width Wall Surface dimensions. The NEMA 1 enclosures may be either surface or flush mounted. Labeling on the Shop Controller door panel is customized to the specific purpose.

Shop Controller Illustrations and Parts Lists

Figure 2 - Shop Controller

Shop Controller Primary Components

- 1 - Electronic Controller PCB
- 2 - 24 VAC Transformer
- 3 - Wiring Junction Cover
- 6 - Control Switch S - 3
- 8 - Fuse Holder FH - 2
- 9 - Upper hinge pin assembly
- 10 - Lower hinge pin assembly
- 11 - Recess Mounting Flanges (4) (See Figure 4)
- 12 - Surface Mounting Flanges (2) (See Figure 5)
- 13 - 8-32 Self-Starting Screws (See Figure 4)
- 14 - Transformer Plug - Plug 1 (See Figure 12)
- 23 - Output Terminals

Designator after part description references the component part number.

Fuse Specifications @ each pcb

- | | | | |
|--------|-------------------|--------|--------------------|
| Fuse 1 | 5 X 20m | 5 Amp. | PC Board (typical) |
| Fuse 2 | 3AG .25" X 1.25" | 15 Amp | Control Panel |
| Fuse 3 | 2 AG .177" X .57" | 500 mA | PC Board |

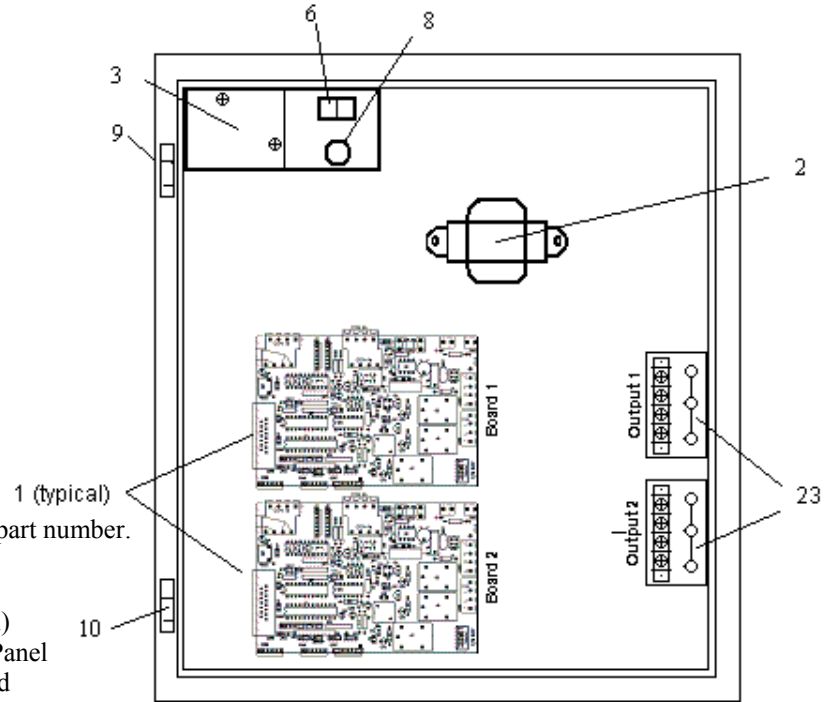


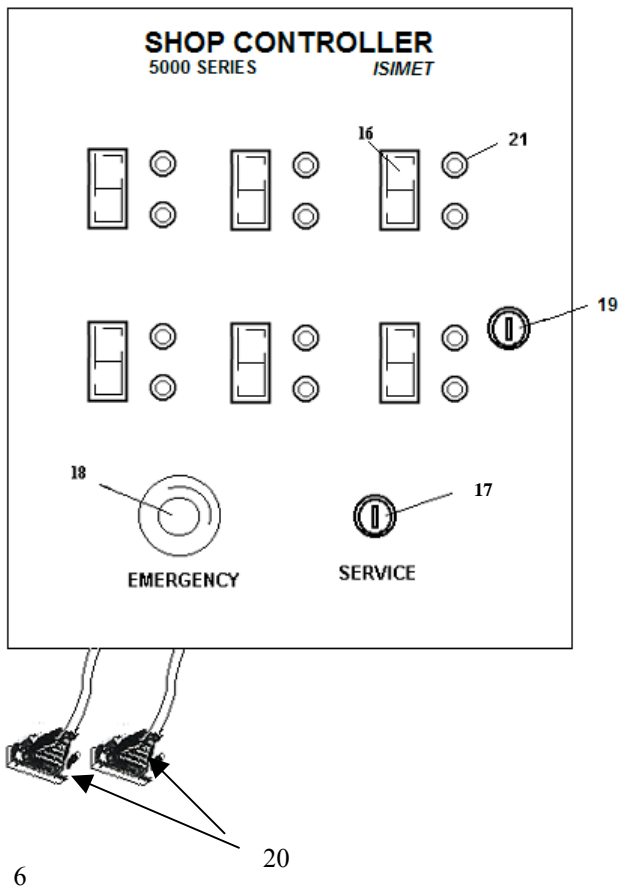
Figure 3 Typical Door Panel

Switch layout depends upon the required number of output circuits.
Six (6) shown W/ two (2) cables

Door Panel Primary Components

- 16 - Service Switch (6) S - 4
- 17 - Keyed Switch S - 1
- 18 - Panic Button S - 5
- 19 - Door Panel Keyed Lock
- 20 - Door Panel Plug TER - 6 See Fig. 9
- 21 - LEDs (12)

Designator after part description references the component part number.



Installing the Shop Controller

There are two options for mounting the Shop Controller: Flush Mounted and Surface Mounted. Note: Mounting instructions for custom assemblies including circuits in excess of 12 outputs are provided with the unit separately.

Flush Mounted (Figure 4)

Prior to installation:

- The Controller easily mounts between two wall studs within a minimum 6" wall cavity for flush mounting. If stud spacing is greater than that required for the mounting of the controller, add studs to insure a secured mounting.
- The studs should be facing to facilitate securing the controller.
- Predetermine wall finish so that the face lip of the enclosure aligns flush with the finished wall surface.

To install:

1. Using the self-starting screws (13), mount the flanges at each side and at the top and bottom of the enclosure.
2. Attach the enclosure to the wall studs with field-provided sheet metal screws. (See Figure 4)
3. Level the Controller.

Notes:

- The Door Panel, when mounted onto the Controller, should protrude beyond the wall surface about 1/4". Care should be taken at installation time to ensure that this occurs.
- A Flush Mounting Trim Flange is provided with each flush mounted unit. Separate installation instructions and hardware are included with this kit. Semi and Flush Trim adds 3.5 inches to both Height and Width Wall Surface dimensions.

Surface Mounted (Figure 5)

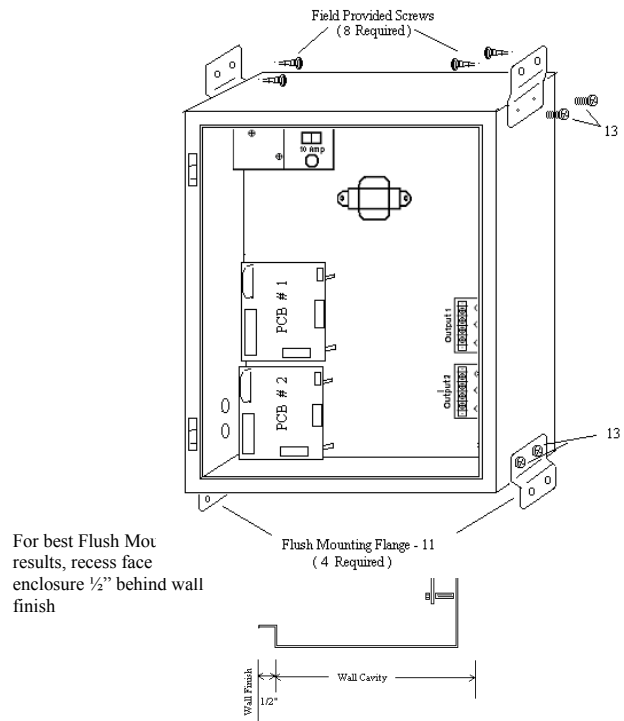
Prior to installation:

- Wall finishes must be complete.
- The wall cavity must have sufficient backing or support to ensure a firm mounting of the controller to the wall surface.

To install:

1. Secure the surface mount flanges to the back of the enclosure with the self-starting screws (13).
2. Use the field-provided screws to attach the enclosure by the flanges to the wall surface.
3. Level the Controller.

Figure 4 - Flush Mounted



Clearance around Enclosure:

Care should be taken to allow 1/2" clearance from wall framing and sheet-rock or other wall surface material around the outer surface of the unit to permit the trim to be properly installed.

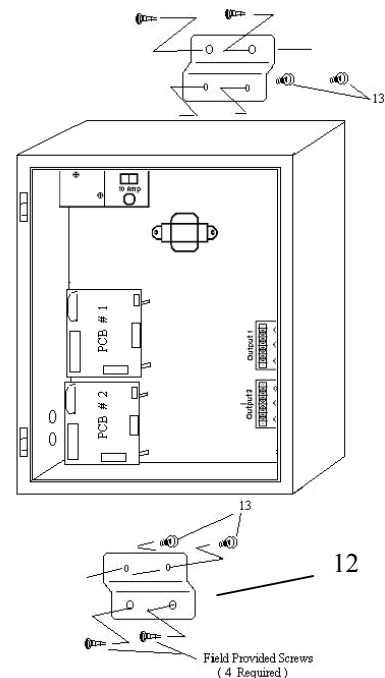


Figure 5 - Surface Mounted

Installing the Electrical Conduit at the Shop Controller

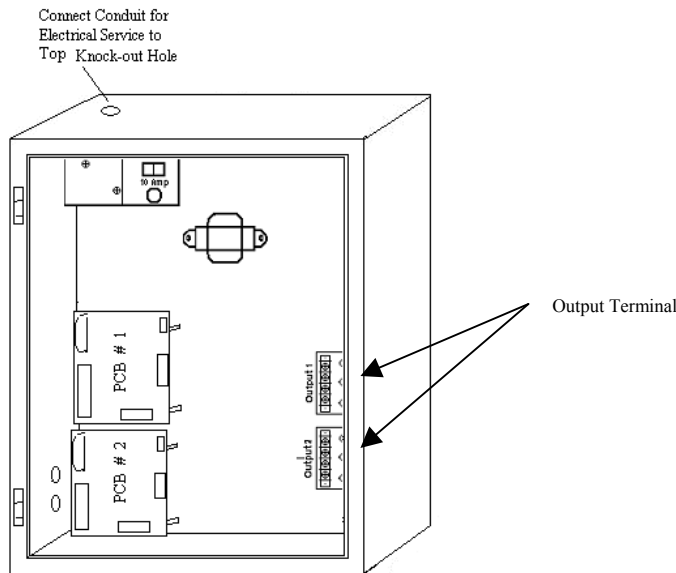
Several knock-out holes for connecting the conduits are located at the top and at each side of the Shop Controller.

- Connect rigid conduit for the required 120 VAC electrical service at the top right or side opening as indicated in Figure 6.
- Connect conduit for integrated services such as “ems” (Energy Management System) and building alarm at the top of the enclosure.
- Connect conduit for the controlled utility services to the upper left top or left side of the enclosure.

Important!

- All local electrical codes must be followed when connecting the conduit to the service panel.
- Do not install wiring or cable for integrated systems, remote panic assemblies or other interface wiring within conduit for either 24-vac control or 120-vac line voltage. Each wiring system should be housed in independent conduit and not bundled with wiring for other systems.

Figure 6 –Shop Controller knock-out Holes



NOTE: This Unit is provided with an Output Terminal per pcb as shown in Figure 6.

Panel holes for output circuits, remote panic assemblies and other integrations must be field provided.

Reset fuses may be included in the Output Terminal, and are intended to prevent circuit overload due to solenoid coil failure. Do not bypass or exceed output rating for the resets. Resets are integrally wired for specific use of the output circuit.

Wiring the Shop Controller

Important!

Verify that the electrical supply is disconnected prior to connecting wiring to the Controller.

To wire the Shop Controller:

1. Remove the junction box cover (Item 3, FIG. 2) from the panel surface.
2. Make final connections to the 120 VAC electrical service to wiring within the junction box. Verify that line wiring (Black), neutral (White), and ground wire (Green) are correctly connected. Minimum recommended wire size is 14 AWG.
3. Replace the junction box cover before activating or testing the unit.

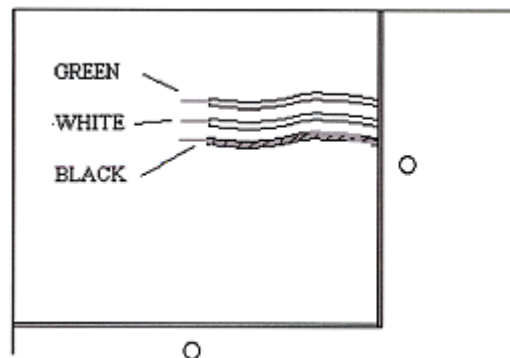


Figure 7 - Junction Box

Connecting Controlled Utility Services

All Shop Controllers should be provided with *ISIMET* Companion Enclosures and/or fittings. When the installation design specifies connections to existing equipment, then compliance with Product specifications must be confirmed prior to installation. The unit is equipped for 24 VAC output for control of the devices. Connect wiring for these devices to the output terminals on the respective PC Board. Refer to Figure 12 for terminal post configurations.

NOTE: Place relays and solenoids in areas that are easily accessible for future maintenance.

WARNING: To insure that the current rating of the unit is not exceeded, only *ISIMET* Companion Enclosures, relays and Fittings should be connected to the system. These systems should be designed so that operating amperage does not exceed equipment rating. Consult an *ISIMET* Service Representative if there are questions pertaining to these wiring connection requirements.

All *ISIMET* Applications use zero differential normally closed solenoids for piping sizes through 1" and with all natural gas services. If solenoids other than those provided by *ISIMET* are used in the application, it is **STRONGLY** recommended that only this type of solenoid be provided. Additionally, it is recommended that if compliance with product specifications is not factory certified, then operating power for the solenoid should be provided from sources other than the Utility Controller.

All *ISIMET* Applications use mechanically held Square D Multi-pole Lighting Contactors to control the 120 VAC circuits to the convenience outlets. Square D - Definite Purpose Contactors are used when a controlled device load demand exceeds normal operating amperes. All E-Series and ELC-Series Companion Enclosures are equipped with an interface relay to enable the Utility Controller's output circuit to operate the contactors. If relays or contactors other than those provided by *ISIMET* are used in the application, it is **STRONGLY** recommended that only this type of contactor be provided. Additionally, an interface relay will need to be provided to insure compliance with application installation requirements.

Connections to "ems" and "alarm" for Multi-Output Units should be made at each PCB unless a central timing system or monitoring system is utilized for all modules. In such cases, the unit must be specified as such, having a local "ems" and/or "alarm" connection as stated in this manual. Otherwise, refer to Configuration diagrams on page 17 for specific PCB connections.

Connecting "ems" (energy management system)

Note: Refer to PCB "ems" Configuration details on Figure 10, Page 12 for locations and placements of "ems" config. jumpers.

"ems" Input (Central connection point).

- The unit is factory configured to operate without an "ems" signal. The jumper at JP 2 is placed across the right two posts.
- The Shop Controller is readily fitted for integration to a building "ems" system. Make connections accordingly to "ems" input posts on CON4-a, terminal 3 & 4 (FIG. 11) on each pcb.
- If "ems" input is utilized for time sequence operation, move the jumper at JP 2 to the left.
- If 24-vac "ems" input is utilized, then referring to the configuration details, remove if in place the jumper at JP 4-A.
- If 5-vdc "ems" input is utilized, then place the jumper at JP 4-A.

"ems" Monitoring Output (Central connection point)

- Dry contact points are available on CON4-a, terminal 1 & 2; "ems Monitoring" (FIG. 11) for integration to a building "ems" system. These contacts close upon panic, providing an output signal to that system. Make the proper connections to these terminal posts.

CAUTION: Verify "ems" input control voltage available and confirm that configuration jumpers on the PCB has been properly configured prior to placing the unit in operation. See **Start Up Test Preliminary Information** on page 12 for description of the "ems" and "alarm" configurations and configuration diagrams on pages 17 & 18.

PC Board LED Indicator Chart:

Refer to configuration chart on page 17 for locations

LED Description	Function	Comments regarding illumination
Panic	Indicates System is in “panic”	Unit will not function until RESET
ems	Indicates “ems” operation	Unit will not function unless illuminated
ALARM	Indicates System is in “alarm”	Unit will not function or reset until “alarm” signal is withdrawn
LED 6	Output Circuit 1	Indicates Output 1 is active
LED 5	Output Circuit 2	Indicates Output 2 is active
LED 4	Output Circuit 3	Indicates Output 3 is active

Connecting Alarm Wiring

Note: Refer to PC Board Configuration details on Pages 20 & 21 for location and placement of all configuration jumpers.

Alarm Input (Central connection point)

- The unit will operate without an “alarm” input signal.
- Providing an input signal from the alarm system will disable the Controller upon a fire alarm.

Auxiliary Panic Input

- Optional Panic Input posts are available on the PCB at CON 1-a (Figure 18). One or more *ISIMET* Remote Panic Buttons can be connected in parallel at posts 3 & 4 at CON 1 on each pcb. Where multiple pcb’s are utilized in the Controller then each Panic terminal must be isolated per pcb.

Isolated Panic Input

- A single isolated input signal, such as the *ISIMET* Emergency Shower Monitoring Station or a “user defined” monitoring device, can be connected at posts 1 & 2 at CON 1 on each pcb. Upon receipt of an input signal, the unit will be placed into “Panic”.

Monitoring Outputs:

- Optional 24-vac output or reconfigured dry contact points are available for monitoring by the building alarm system. The contacts close upon panic, providing an output signal to that system. Make the proper connections to these terminal posts. The unit is standard configured for dry contact output.
- If the 24-vac contact configuration is desired, refer to configuration details for placement of the jumpers at JP 11.

CAUTION: Verify “Alarm” and “Isolated Panic” input control voltage available and confirm that configuration jumpers on the PCB have been properly configured prior to placing the unit in operation. See **Start Up Test Preliminary Information** on page 12 for description of the “ems” and “alarm” configurations and configuration diagrams on pages 17 & 18.

Connecting Optional Monitoring, ADD-ON Module & Response Components:

ISIMET provides a full line of monitoring light arrays and panels for integration with the safety control system.

- Monitoring Lights are connected in parallel to the output circuit on Output Terminal at each output source.
- The Monitoring Beacon or Remote Monitoring Station is connected at the “Alarm Monitoring” terminals on the PC board.
- Remote panic assemblies are connected on the PC Board at CON 1a; posts 3 & 4.

Wiring configurations for each optional component is provided with that device.

Refer to configuration diagrams on pages 17 & 18 and typical wiring schematics on page 19 for details on these connections.

Removing and Reinstalling the Door Panel

If the Door Panel is to be removed from the unit, refer to step by step instructions below.

In reverse order, perform steps 1 through 4 to remove the Door Panel. If the Panel is to be removed during the construction phase, the protective cover should be securely placed over the enclosure opening.

Installing Flush Door Trim

If the Shop Controller is Flush Mounted, a Trim Kit is provided separately. Refer to installation directions provided with that component.

To install the Door Panel **Figure 8**

To install the Door Panel on the Enclosure:

1. Position the door at 90° – 100° of enclosure.
2. Slide top hinge pin onto fixed hinge post at top of door.
3. Slide lower hinge pin toward lower spring hinge mechanism with hinge pin lever in retract position.
4. With lower hinge pin in position, turn hinge pin lever outward and down, then turn inward to the extend lock position.

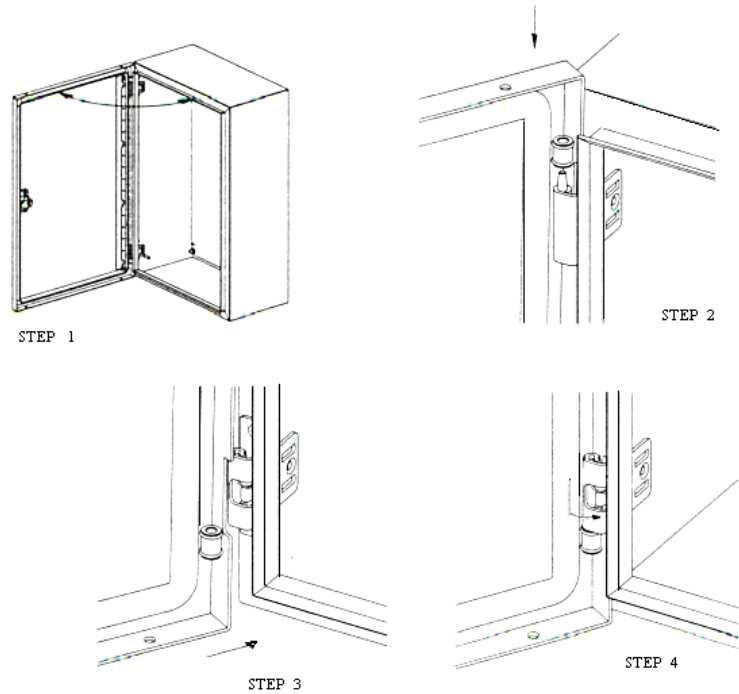
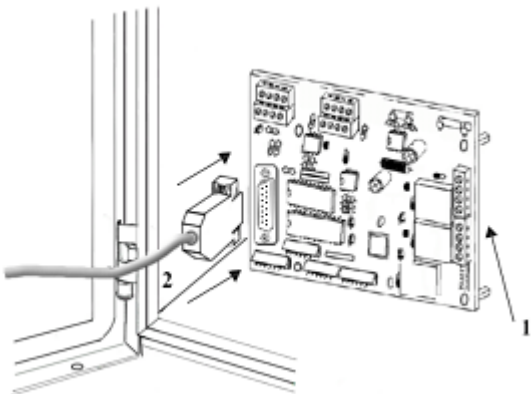


Figure 9 - Inner-connect cable @ the pcb

Units are provided with a panel – to pcb configuration board to cable diagram. Units have wiring harnesses from switches to individual PC boards labeled accordingly.



Start-Up Checklist

Caution!

- **Before activating utility services and placing the Shop Controller into operation, complete the following checks and tests. Verify that ALL installation procedures and Line Voltage, EMS, Alarm, Remote Relays, and/or Solenoids conform to Equipment Specifications.**
- Examine electrical wiring at junction box to verify that ALL wiring is correctly connected.
- Test Output circuits at **Terminals** to verify that field wiring or connected devices are wired correctly and that no direct short exists. (A direct short in this wiring will cause damage to the unit.)
- Verify that the cable and plug from the wall box is firmly secured to its terminal.
- Examine Wall Panel factory wiring to ensure that it was not damaged or loosened during shipping or installation.
- If unit is integrated with “EMS”, verify that wiring is installed at correct terminal posts. Verify that “EMS” voltage conforms to unit specifications.
- If unit is integrated with an alarm system, verify that wiring connections, voltage requirements, and alarm system conform to unit specifications.
- If unit is integrated with a Remote Panic Button, each pcb should be connected and this wiring should not be routed in conduit with any other control or operating power wiring.

Start Up Test Preliminary Information

Caution!

- Do not proceed with equipment start-up until the Start-Up Checklist has been completed.
- Before commencing these Start-Up tests, turn the control switch to the OFF position.
- If the unit is integrated with a building alarm system, disconnect wiring from posts “alarm monitoring” at Terminal 3.

This unit was factory tested, but the manufacturer recommends that the installer perform these tests to ensure that the unit did not sustain damage during shipment or installation.

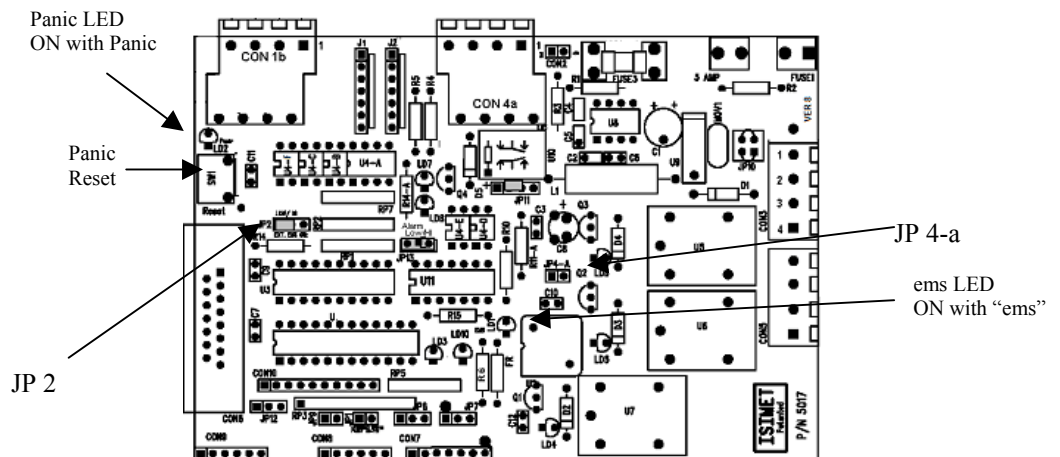
- Perform Start-Up Tests with the Door Panel open.
- The unit is factory configured to accept a 24 VAC “ems” timing control input signal and is set to LOW at JP 2 (jumper is at the right two posts) so that the unit can operate without an “ems” signal. If “ems” is active at the time of this test, place the jumper across the left two posts.
- With the control switch ON, “ems” LED on the PCB should illuminate. If yes, the remainder of the “ems” test can be skipped. If not, check circuitry for proper operating power at CON 3, posts 1 & 2. 24 VAC should be present. Next, check the PCB fuse. If the fuse is functional, then 5 VDC should be read across the 2 pins on CON 2. Care should taken not to short across these two pins. If not, re-verify that fuse 1 is operational and if so, then contact an *ISIMET* factory representative.
- If the “ems” signal is provided as 5 VDC, place a jumper at JP 4a. Caution: DO NOT leave this jumper in place if the unit will be time controlled by a 24 VAC input signal. Additional jumpers are provided with the keys in the door packet.

Figure 10

PCB “ems” Configuration

Refer to PCB Configuration for more detail on integrated input signals.

Note: All other PC Board configurations are discussed on pages 17 & 18.



Start-Up Tests

A. Testing the Control Wiring and Service Switches

1. Turn the control switch to the **ON** position. (Item 6 on FIG. 2) It should be illuminated. If it is not, check current at wiring within the junction box. Voltage should read 120 VAC. If it does not, consult an electrician before continuing this testing.
2. Turn the first service switch to the **ON** position. The other switches should be **OFF**. (Items 16, FIG. 3)
3. Insert the key at the keyed service switch and turn clockwise and release. The green indicating light above the service switch should be illuminated. This indicates that the service is active. Also, the corresponding LED on the PCB will illuminate.
4. Using testing probes, verify that the corresponding terminal posts on the corresponding PCB are energized. Turn the switch **OFF**. Note: The PC Board is equipped with a 5 X 20 mm -5 amp output fuse. If no voltage is present at the posts, check for a damaged fuse.
5. Repeat steps 3 and 4 for the remainder of the service switches, as well as any Auxiliary Circuits, except that these circuits have no door panel LED indicator.
6. Turn all service switches **ON**. Again engage the keyed service switch. All services should be **ON**. All green indicating lights should be illuminated. Verify **ALL** power loads with test probe.
7. Turn service switches **OFF**.

B. Testing the Alarm System

1. If the unit is integrated with an alarm system:
 - a. Verify that the alarm system is OFF or that the unit has not been fully integrated with the alarm system.
 - b. Disconnect the alarm wiring from the PC board.
 - c. Press and release the red panic button. **ALL** door panel indicating lights should be illuminated. **If not integrated with an alarm system, skip the remainder of this test.**
 - d. Use test probes to check current at ‘alarm monitor’ posts (FIG. 11). Dependent on configuration, either continuity or 24 VAC should be present across these posts while in ‘Panic’.
2. Press the reset switch on the PC board. The Door Panel indicators should **ALL** lose illumination.
3. Re-check continuity or voltage. None should be evident.

Reset Configuration: The unit can be field configured to either require reset after panic at the PC Board Reset or by re-keying the door key switch. Placing a jumper across JP 1 will permit reset from the door key switch. Removing the jumper disables this feature. Refer to pages 17 & 18 for locations of this jumper.

Remote Panic Assembly: The unit will accept integration of an *ISIMET* Remote Panic Assembly. If one is provided, wiring connections can be made at CON 1b on the PCB. Directions are provided with that remote assembly.

C. Testing the “EMS” and alarm Input signals

The unit has been factory tested to assure that both “ems” and “alarm” Inputs perform correctly. Field verify that jumpers on the PC Board are correctly configured to accept correctly provided input signals. Verify that the “ems” LED is illuminated.

D. Testing the Building’s Utility Systems & Equipment

1. Turn **ALL** control switches **ON** and engage the keyed service switch.
2. Field-test **ALL** utility and appliance outlets to confirm that services have become active.
3. Turn the switch for each utility to **OFF**. Verify that the specific utility outlets are not active or “**ON**”.

E. Test Completion

The unit should now be fully operable. If it is not, contact an *ISIMET* Service Representative.

1. Turn the Control Switch **OFF**.
2. Verify that all PCB jumpers are correctly configured for the intended application.
3. Reconnect **ALL** integrated services.
4. Replace **ALL** panels and covers.
5. Turn the Control Switch **ON**.
6. Close and lock the Door Panel.

Equipment Operation

CAUTION: Having outlets such as Gas Turrets Open when Services are activated can result in injury or death. Verify that these outlets are closed prior to activating the unit.

Note: The Shop Controller should be operated by a supervisor possessing only the service switch key. Once the unit has been thoroughly tested, the installer should provide keys on separate rings to the property owners, administrators or their representatives. The Controller is intended to function as a control system for the utility services and devices located within the room. The keyed switch provides for security against unauthorized use of the services.

To Activate One or More of the Services Controlled by the Unit:

1. Turn **ON** the corresponding switch for the service you wish to activate.
2. Insert the key in the switch labeled "SERVICE" and turn to the right and release. The service has been activated and the green light "LED" above the switch will illuminate.
3. Remove the key and place it in a secured location.
4. Fan circuit will operate without re-keying after first keying of the unit once ems is active.

To Turn a Service OFF:

Turn the appropriate switch to **OFF**. It is not necessary to reinsert the key.

Notes:

- You must reinsert the key to reactivate services that were deactivated by turning the switch to **OFF**.
- A service left **ON** remains **ON** until its switch is turned **OFF**.

In Case of an Emergency:

Press the red panic button on the door panel. This will disable the panel and **ALL** services. All LEDs on the door panel will be illuminated, indicating the source of the alarm signal. If the unit is integrated with the building alarm, an alarm signal will be sent to that system. Once the panic button is pressed, either the door panel must be opened in order to press the reset switch located within the panel; or if configured for re-keying, the door panel keyed switch will reset from panic. Also, the door panel LEDs will remain lit until reset is accomplished. Panic will turn Fan circuit ON.

If You Cannot Activate the Services:

Check for one of these signals: There may not be an electronic signal from the building "ems" (Energy Management System); there may be an "Alarm" signal from the building alarm system; there may be an Isolated Panic Signal from an integrated system; or the system may be in the "panic" state. When the unit is integrated with either this "ems" and/or the Alarm system, a second level of security is in place because, without an electronic activation signal from the "ems" or a signal from the Alarm, the unit **WILL NOT** function. Unauthorized access to the services is prevented during times when the building or classroom is normally unoccupied.

At the End of the Day:

ISIMET recommends that each service switch on the door panel be turned **OFF** prior to exiting the room. Also, the service key should be removed and placed in a secured location. The unit, when integrated with an "ems", provides a secondary safety feature that automatically turns **OFF** any services left **ON** at the end of the "ems" cycle. If, when re-entering the room, you notice that a Red LED is illuminated, you will be reminded that that service was previously left active after exiting the room.

If an ISIMET Integration Interrupt & Time Control Device is Connected to the Unit:

This timer will provide the electronic signal necessary to activate the unit and can be provided in lieu of "ems". The On/Off enabling function is similar to that of "ems" integration. Refer to **Equipment Specifications** to determine whether a timer is provided.

Troubleshooting

If the Shop Controller fails to energize, follow these procedures: Refer to LED Config. Chart on page 10.

- Verify that the Shop Controller has correct line voltage connected. With the control switch (16) in the **ON** position, the switch should be illuminated. If it is not, check the wiring connections. Remove the wiring junction-box cover and examine wiring connections.
- Examine the removable fuse on the Service Panel. If it is damaged, replace it. Verify fuse rating with **Equipment Specifications**. Multi-Pack Models use a 5 amp fuse for PC Board fuse 1 and a 250 mA or 500 mA for fuse 3, and 15 amp fuse at the Control Panel fuse holder.
- Verify that the Wall Panel plug is securely connected to the terminal.
- Check the wiring terminals on the wall panel to verify that none have become damaged or disconnected during installation. Reconnect, if necessary.
- If “ems” is integrated, verify that the Shop Controller is receiving the correct volt signal at the PC board, “ems Input” posts
Refer to **Equipment Specifications** and the “EMS” connection section of this manual for these requirements and additional tests to conduct. In most cases, the failure of the system is the result of a lack of proper signaling from an “EMS”. The “ems” LED on the PCB should be illuminated.
- If either the “panic” or “alarm” LED is illuminated, the system will not function. Verify that no input signal has disabled the unit. If the “panic” LED is **ON**, press the panic reset switch on the PCB.
- With Door Panel switches in the **ON** position and the keyed switch activated, check the Door Panel LEDs.

If Door Panel LEDs are illuminated:

1. Check current at service utility Terminal on each PCB (refer to configuration diagram on page 17). You should read the correct voltage at these terminal posts. If not, check Fuse 1 on the PCB. Fuse is 5 amp.
2. If you do not read the correct voltage, contact an **ISIMET** Service Representative.
3. If you read the correct voltage, test the remote relay and/or solenoids to verify that they are operational.

If Door Panel LEDs are not illuminated:

1. Examine the PCB. One PCB mounted LED (LED 5, 6, or 7) should be illuminated. If it is not, check the removable panel mounted fuse. It is either a 250 mA or a 500 mA fuse (fuse 3).
2. If the fuse is damaged, replace it.
3. If the LED still does not illuminate, contact an **ISIMET** Service Representative.

In many cases, failure of the system is the result of improper connection of a remote service or device, such as a remote relay, solenoid, “EMS”, or building alarm. Refer to **Equipment Specifications** to confirm that correct connections to these services and devices have been made.

Notes:

- It is not uncommon for the Shop Controller to enter the “Panic State” when first activated when the control switch is turned **ON** and an input signal is received. Pressing the RESET Switch or engaging the key switch will immediately return the controller to the correct “Waiting State”.
- Damage to the Electronic Controller and other components can occur from improperly connecting the services, overloading the output circuits, or failing to follow all start-up tests and checklists.
- In **ALL** cases, if the system fails or you have questions about the equipment, contact an **ISIMET** Service Representative.
- If the results of all test procedures is positive, but utilities will not activate, **ISIMET** recommends that you examine and test the various utility services controlled by the unit to verify that they are operational and active.

CAUTION:

The output circuits of the Shop Controller provides 24 VAC control signals to solenoids and relays to activate and engage the various utilities. **ISIMET** provides a full line of Companion Enclosures and fittings. It is recommended that these items be included in the system design, but when the installer elects to provide these fitting from other sources, that compliance with Product specifications be confirmed prior to installation.

If utilities or controlled devices remain operational after the service switch is disengaged, check for the following before placing the unit into full operation:

- A defect in the remote relay or solenoid
- Tampering
- The remote relay unit has a control switch with a manual operation position and the switch is in the manual position.

If utilities or devices continue to be active or if you have a question about the operation of the unit, contact an **ISIMET** Service Representative immediately.

Equipment Maintenance

- ❑ The Shop Controller should have semi-annual inspections.
- ❑ **ISIMET** recommends opening the service panel and turning **OFF** the control switch prior to long periods of inactivity in the building.
- ❑ Prior to anticipated activity within the building, **ISIMET** recommends that you conduct a brief test of the control system by performing Start-Up Test Procedure A and Step 1 of Procedure B on page 13 of this manual.
- ❑ If examination of the unit indicates tampering, **ISIMET** recommends that you first review the Start-Up Checklist, then conduct **ALL** Start-Up tests.
- ❑ The Door Panel lock is not keyed the same as the keyed service switch. **ISIMET** recommends that the door panel key be kept separate from the service switch key and in a secured location. The door panel key should be available only to those needing access to the interior of the unit for the purposes of maintenance or service. **ISIMET** recommends that the door panel remain locked unless service is preformed.

If you have any questions regarding the operation and maintenance of the Shop Controller, please contact an **ISIMET** Service Representative.

The enclosure has a NEMA 1 rating. It is not intended for use in wet areas. Exercise caution to prevent exposure of the interior compartment of the enclosure to moisture. If moisture is present within the enclosure, **ISIMET** recommends that that control switch be turned **OFF**, power be disconnected from the unit until the source of the moisture is determined, and all moisture is removed from the compartment.

The electronic controller (PCB) is sensitive to moisture, dust, debris and other air-borne particles. Do not expose the interior compartment of the enclosure. During the semi-annual inspection, if dust or other material is present, **ISIMET** recommends that you remove all foreign matter before operating the unit.

If the Unit fails to operate, we recommend that you check the power supply to the unit. With the control switch in the ON position, it should be illuminated if power is on to the unit. If not, check the service breaker.

If the control switch is illuminated, check the fuse on the control panel at fuse holder. If the fuse is not damaged, and the “ems” LED on the circuit board is not illuminated, then you should verify that the unit is receiving the proper “ems” and “alarm” signals. We recommend that you perform the Start-Up Checklist and Start-Up Tests.

If the unit still does not function, we recommend that you check the two fuses on the circuit board. The input fuse is either a 2AG 250 mA or a 500 mA. The output circuit fuse is a 5 X 20 5 amp fuse. The unit will not function with either fuse damaged. If damaged, replace the fuse.

If the unit still fails to operate, we recommend that you contact your local Service Representative.

Removing the Door Panel

Before removing the Door Panel, turn power OFF at the control switch.

Follow steps 1 – 4 in reverse as shown in Figure 8.

Instructions for Re-coating the Enclosure

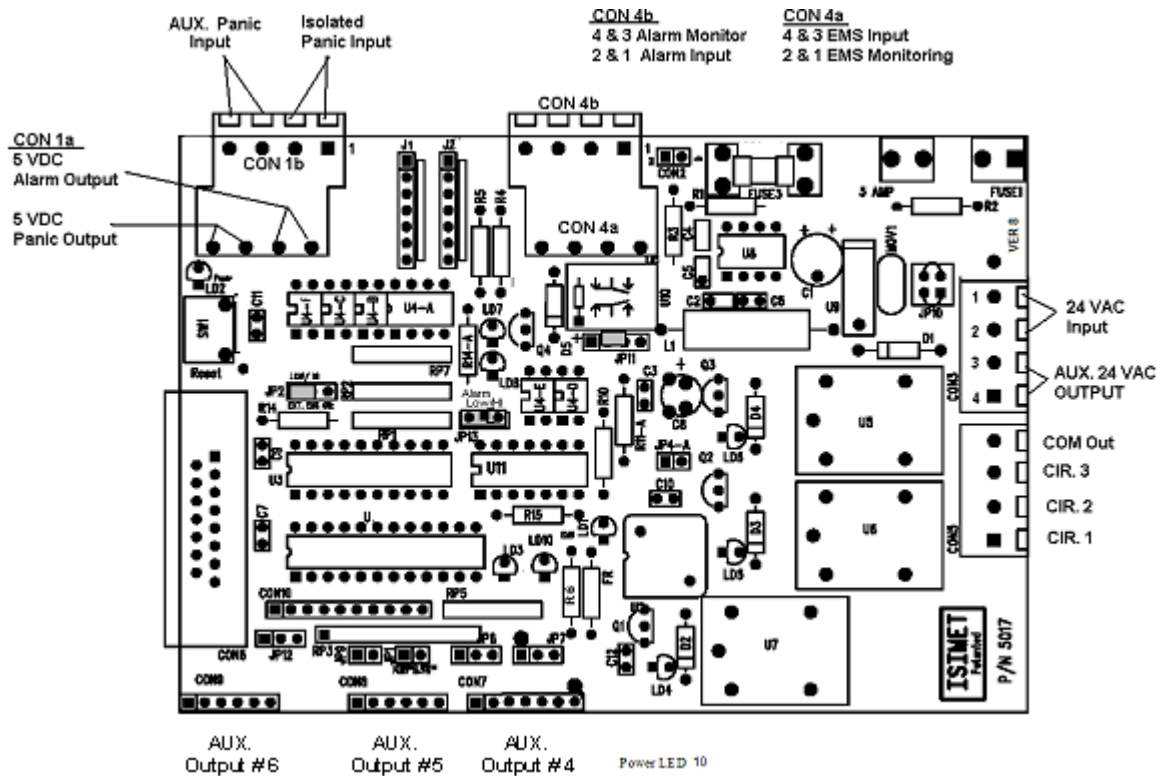
If the finish surface of the enclosure or door panel becomes scratched, follow this procedure to repair the surface.

- Most standard, good quality paints can be used to re-coat the polyester powder finish.
- For best results, correct surface preparation before re-coating is essential. Follow instructions provided by your paint manufacturer.
- Wipe surfaces to be painted with either xylene or lacquer thinner solvent.
- Allow surface to flash dry prior to painting.
- Follow paint manufacturer’s instructions for applying paint.
- Allow paint to cure adequately. Consult the paint manufacturer for proper cure time and hardness.

ISIMET Shop Controller PCB Version 8.3 - Jumper Configuration

Optional Input / Output Signal Configurations

Figure 11



Jumper Post – Connection Configuration

CON 2 - Aux. 5 VDC Output

(Use only by Written Instruction)

Caution: DO NOT Place a Jumper Across this Connector.

JP 1 - Key Reset Option

Jumper in Place = Standard (Allows Key Switch to Reset after Panic)

Jumper Removed = Requires Reset Only by Switch on PC Board

JP 4a - CON 4a EMS Input Pins 4 & 3

Place Jumper Only When Input is 5 VDC; Otherwise Remove Jumper

JP 2 - EMS Active Option

RIGHT = No EMS Signal Required for Operation

LEFT = EMS Signal Required for Operation

CON 10 LS series RF Input (optional)
Standard config.

Ten pin connector permits RF Input Module to be integrated into the unit.
Jumpers across pins 5 & 6; 7 & 8; 9 & 10

Optional Input / Output Signal Configurations

JP 11	Panic Output	<p>1 – jumper placed, center posts only- dry contact configuration (standard). (dry contact connection points @ “alarm monitoring” posts @ PC Board)</p> <p>Application: Provides for dry contact point for use by building alarm system. 2- jumpers placed, one each @ posts 1 & 2 and 3 & 4- config. (24-vac output signal is provided @ “alarm monitoring” posts @ PC Board)</p> <p>Application: Provides signal for ISIMET Monitoring Beacon or Remote Monitoring Station.</p>
CON 1b	AUX. Panic Input	<p>Connect leads from added Remote Panic Buttons or other monitoring components. Application: ie. <i>ISIMET</i> Shower Monitor Unit without “Time Delay” feature</p>
	Isolated Panic Input	<p>Connect input signal leads from panic signal source Application: ie. <i>ISIMET</i> Shower Monitor Unit with “Time Delay” feature</p>
CON 1a	Panic Output	<p>Provides 5 VDC output signal upon “Panic” for use with integrated building systems. For integration with “User Defined” Applications.</p>
CON 9 (JP 9)	W/O Panic Aux. Output <u>JP 9</u> Jumper inplace	<p>Provides connection point for optional output circuit where panic is omitted from unit Application: LA Companion Controller.</p>
JP 12	Panic Input	<p>Configures CON 6 for Momentary Panic Input (factory configuration only)</p>

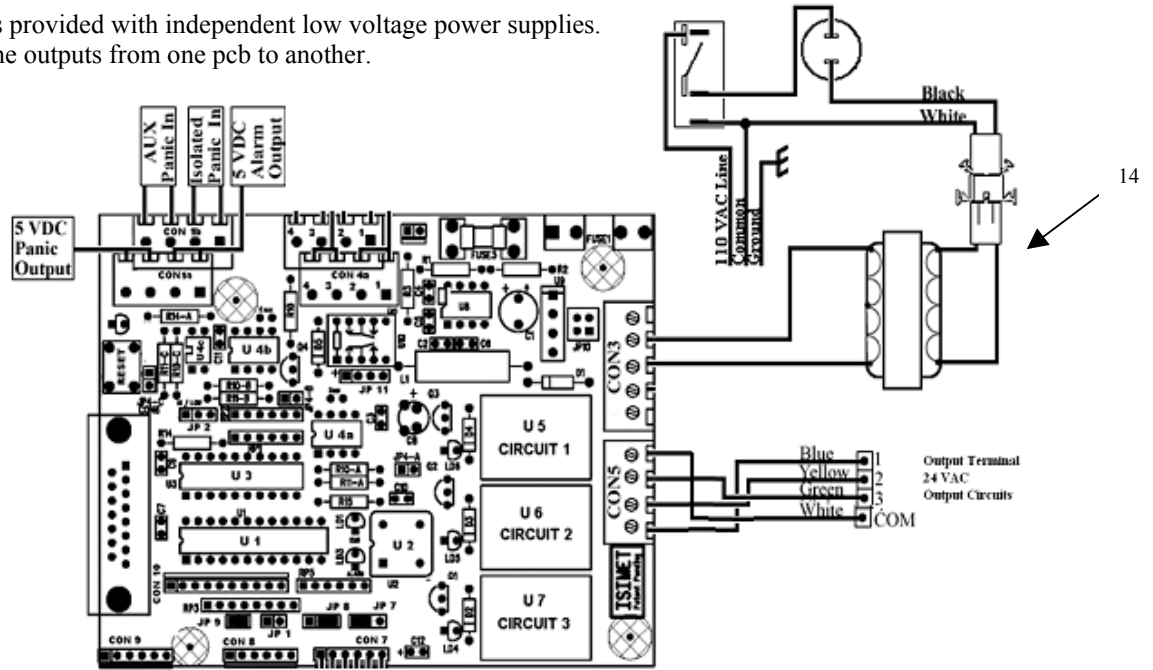
NOTE: “User Defined” Applications refer to integration with other types of facility control and/or monitoring systems where either 24 vac or 5 vdc input control signals are required. Not intended for uses where operational power is required. When in question as to compatibility between the ISIMET Control System and desired integrated system, contact an ISIMET Sales Representative or the factory.

Electrical Schematics

Figure 12-Wiring Diagram

Outputs for each pcb are terminated to an Output Terminal as shown.
In some cases the transformer plug shown is replaced by a transformed terminal.

CAUTION: Each pcb is provided with independent low voltage power supplies.
DO NOT interconnect the outputs from one pcb to another.



Typical Installation Configurations:

The system is designed to operate all output circuits at 24 VAC. Typically, operating and control power for solenoids are provided through output circuits. Output circuits controlling electrical outlets are intended to provide control power only, and an interface relay is provided for that purpose. Consult installation instructions for the various companion enclosures provided with the unit.

Electrical – 120 VAC, 15 amp dedicated circuit, 14 AWG minimum

Natural Gas - 5 oz. max.

Domestic Water

Other Services: Refer to special instructions enclosed where applicable.

Output relay rating max. 1.5 amp at 24 VAC 18 AWG minimum

CAUTION!

- ❑ **Installation must comply with all local codes and ordinances.**
- ❑ **Connect only 120 VAC to this equipment.**
- ❑ **Refer to Model Number Description for Model Designators.**

Where controlled devices are not provided by *ISIMET*, output circuits should only provide control power and not operating power. Refer to compliance statements provided with the unit in cases where components are provided by others or contact *ISIMET* for additional instructions.

ISIMET believes that sole and local authority means that the primary operator or the instructors should have the sole authority to start and stop the utility services within the immediate area of use during normal usage. This should distinguish this type of operating environment from that where a single emergency shut-down device is located remotely from the areas of use. As an example, the *ISIMET* system is not specifically intended for use in applications where a master shut-down and re-instate device is located away from areas of normal use. *ISIMET's* opinion is that in such cases there is risk that the operator of the system during re-start may inadvertently activate utilities in an unoccupied area that is remote from the present occupancy, thus creating the risk of fire or where the utility is fuel gas.

CAUTION:

ISIMET DOES NOT recommend that service to emergency and/or safety devices, such as emergency showers and eyewashes, be controlled by the Utility Controller System or Solenoids. Such devices are intended to operate independent of restrictive authority operation as is the case with the design of this unit. *ISIMET* makes available components for the monitoring of such safety devices. Please contact *ISIMET* regarding any questions regarding this type of application.



ISIMET, LLC

**103 W. CJ Wise Parkway
PO Box 129 (Mailing)
Naples, TX 75568**

**Phone (866) 897-0737
Fax (903) 897-0740**

www.ISIMET.com

**Innovative Systems
Integrating
Mechanical and Electrical
Technology**