DAC-55™ DOOR MONITOR INSTALLATION INSTRUCTIONS **Patented: US Pat. #6,401,466**

Thank you for purchasing the *DAC-55* Walk-in Door Monitor. This product was designed with four objectives: energy savings, operator safety, to make certain normally manual functions automatic and to train personnel to keep door closed. When fully utilized, the *DAC-55* integrates a Door Ajar Alarm, a Panic (Entrapment) Alarm, control of refrigeration operation (relative to the status of the door), and automatic control of compartment lights into a single unit that is easy to install and use. Most importantly, it addresses issues for which it is designed at the right location: at the door itself. **Please read these instructions thoroughly in order to obtain maximum benefit from the capabilities that this product offers.**

OPERATION:

Status of the door is monitored with provided low voltage magnetic contacts. Additional contacts may be added to monitor multiple doors. (A low current electromechanical switch, opening when the door is opened may also be utilized.) Three internal relays provide independent control of Solenoid Valve, Evaporator Fans & Compartment Lights. An alarm relay is also provided for remote notification.

MONITORED CONDITIONS

SYSTEM FUNCTIONS	DOOR CLOSED *1 (NORMAL OPERATION)	DOOR OPENED	DOOR OPENED FOR TOO LONG (ALARM DELAY TIMES OUT)	DOOR CLOSED
DOOR AJAR ALARM	NO ALARM	AUDIBLE ALARM DELAY ACTIVATES. (FIELD ADJUSTABLE, 5-50 MINUTES.) (SEE DIAGRAM ON BACK.) (STROBE, ***2**, AND/OR ALARM RELAY, ***3,** MAY ACTIVATE.)	AUDIBLE ALARM ACTIVATES.	ALARM FUNCTIONS RESET. NO ALARM.
INTERIOR LIGHTS	OFF	ON	ON	LIGHTS TURN OFF 40 SECONDS AFTER DOOR IS CLOSED. (UNLESS OPTIONAL IP-155 IS PRESSED IF INSTALLED. SEE BELOW)
REFRIGERATION SYSTEM	ON	REFRIG. OPERATION MAY BE INTERRUPTED DEPENDING UPON SETTINGS OF USER SELECTABLE PARAMETERS. ***4**	IF REFRIG. OPERATION HAS BEEN INTERRUPTED & DOOR REMAINS OPEN FOR 40 SEC. AFTER AUD. SOUNDS,REFRIG, WILL AUTOMATICALLY RESTART. (AUTO RESTART)	ON

***1** Door closed at any time always restores normal operation. (No Alarm, Lights Off, Refrigeration On.)
***2** Use **Strobe Select Pin Jumper (See Diagram on back of instructions)** to select Strobe operation: **Instant** = Strobe activates when door is first open, **Delay** = Strobe activates when audible sounds.
***3** Use **Instant On Alarm Relay Switch (See Diagram on back of instructions)** to select relay operation: **ON** = Relay activates when door is open. (For connection to an energy management system.) **OFF** = Relay activates when audible sounds. (For secondary alarm annunciation.)
***4** User selectable parameters for configuring refrigeration interruption are: **(See Diagram on back of instructions.)**

A) Refrigeration Shutoff Pre-Delay Adjustment – Screwdriver adjustment providing a **means for creating a period of time from when the door is opened to when fans and solenoid shut off**. Prevents refrigeration from being turned off & on every time door is opened and closed. Useful for applications such as foodservice where frequent short duration opening and closing of doors is the norm. (Range: 1-120 seconds)

B) Constant On Refrigeration Switch - When selected **(ON)**, overrides the Refrigeration Shutoff Pre-Delay Adjustment and **keeps refrigeration operating whenever the door is open.**

C) Fan Shutoff Switch – Provides capability of separating evaporator fans operation from solenoid operation. When selected **(ON)**, fans will shut off immediately when the door is opened, but the solenoid will continue to respond to the settings of the **Refrigeration Shutoff Pre-Delay Adjustment** or the **Constant On Refrigeration Switch**. When not selected **(OFF)**, fans & solenoid both operate identically.

OPERATION OF THE OPTIONAL IP-1 ILLUMINATED PUSHBUTTON: MOUNTS INSIDE OF WALK-IN!!

In order to increase product capabilities, the *DAC-55* has been designed to accept a low voltage, Illuminated Pushbutton as an additional means of device activation. The Illuminated Pushbutton is an optional accessory, (Part # IP-1), and when utilized, is to be mounted **inside** of the monitored compartment. A piezo horn is also incorporated into the IP-1. Added functionality offered by the IP-1 is as follows:

WITH THE DOOR OPEN: With the door opened, IP-1 functions are dependent on the position of the **Pushbutton Enable Switch**. **(See Diagram on back of instructions.)** If the **Pushbutton Enable Switch is (ON),** pressing the IP-1 with the door open when a Door Ajar Alarm occurs **will** reset the alarm and restart the alarm delay timer. This can be done repeatedly and is useful when a door is opened for a prolonged period of time such as loading or unloading. If the **Pushbutton Enable Switch is (OFF)**, pressing the *IP*-1 with the door open **will not** affect *DAC-55* or compartment operation. Therefore, when a Door Ajar Alarm occurs, the door must be closed to terminate the alarm and restore normal operation.

WITH THE DOOR CLOSED: (Operation of the IP-1 with the door closed is not affected by the **Pushbutton Enable Switch** or by any other variable parameter settings. **IP-1 functions with the door closed are always as follows:)**

When the door is first closed, the Horn in the IP-1 beeps on and off so as to draw attention to the IP-1 and to the Pushbutton Label. The Pushbutton Label instructs personnel inside of the compartment to press the button in order to keep the lights on and to turn off refrigeration with the door closed. (Label is in English and Spanish.)

1. If the IP-1 is **not** pressed within 40 seconds, the horn stops beeping and the lights turn off automatically.
2. Pressing the IP-1 with the door closed keeps interior lights on (or turns them on if they are off), shuts refrigeration off (Fans & Solenoid) and starts the **Automatic Panic Alarm** timer. (Timer delay is 20 minutes, non-adjustable.)
3. If personnel remain in the compartment for 20 minutes with the door closed, the IP-1 Horn begins to beep again. **Re-pressing** the button silences the horn and resets and restarts the **Automatic Panic Alarm** Timer. This may be done repeatedly.
4. **Automatic Panic Alarm** - If the button is not re-pressed within 40 seconds from when the IP-1 horn begins to beep, the horn and the strobe light on the *DAC-55* activate immediately to draw attention to the walk-in. Alarm relay activates as well. **AUTOMATIC PANIC ALARM IS A SAFETY FEATURE** to protect an individual who may have been injured or is otherwise disabled inside of the compartment and cannot re-press the IP-1.
5. **Manual Panic (Entrapment) Alarm** – Activated by pressing the IP-1 for 2 seconds (as described on the Pushbutton Label). This causes immediate activation of strobe light, audible alarm & alarm relay and is **PROVIDED AS A SAFETY FEATURE** for situations where personnel may be trapped inside of the walk-in.

INSTALLATION:

MOUNTING:

1) MAGNETIC CONTACTS: INSTALLATION TIP: IF DESIRED, AND IF DOOR CONFIGURATION PERMITS, SWITCH PART OF MAGNETIC CONTACTS MAY BE MOUNTED *INSIDE* OF *DAC-55* ENCLOSURE. THIS WILL NOT AFFECT OPERATION OF CONTACTS AND WILL MAKE FOR A CLEANER INSTALLATION. Provided Magnetic Contacts may be mounted with adhesive backing or with provided screws. Mount magnet part of contact onto top edge of door, as far away from the hinged side as possible. Mount switch part of contact onto door frame, directly above magnet, positioned so that **contacts close (make contact) when door is closed**. When mounted, gap between magnet & switch should not exceed 1.25" when door is closed. **Note: On steel doors, the steel of the door may reduce this operating gap. Position accordingly.**

2) *DAC-55* ENCLOSURE: Remove the faceplate. If switch part of magnetic contact is not mounted inside of the *DAC-55*, the enclosure may be mounted in any appropriate location on the front of the walk-in. If switch part of contact is mounted inside of *DAC-55*, position the *DAC-55* enclosure above the magnet mounted on the walk-in door and mount the switch on the inside bottom wall of the *DAC-55* enclosure, positioned so that **contacts close when door is closed**. A meter on resistance scale or a continuity checker is helpful in checking magnetic contacts for proper operation. A temporary power cord may also be used to help in positioning contacts as follows: Have strobe pin jumper in instant position. When contacts are placed properly, strobe will turn on when door is open and turn off when door is closed.

3) IP-1 ILLUMINATED PUSHBUTTON: Mount the IP-1 **inside** of the walk-in adjacent to the unhinged side of the door frame.

WIRING: (See Diagram on back of Instructions)

NOTE: ALL LINE VOLTAGE AND SIGNALING WIRING CONNECTED TO THE DAC-55 THROUGH ANY SIDE WALL MUST BE ENCLOSED IN CONDUIT WITH SUITABLE FITTINGS FOR CONNECTION OF CONDUIT TO THE DAC-55 ENCLOSURE.

LOW VOLTAGE CONNECTIONS: (See the 4 Green Terminal Strips inside of unit.) Strip insulation on all low voltage wires approx. ¼". Terminal Strip connections are made by pressing down on the respective actuator button with a small screwdriver and inserting the wire into the hole below the actuator. Removing screwdriver pressure will clamp the wire. Do not insert wire too far or you may clamp onto insulation. Tug gently on wires to make sure connections are secure.

1) **MAGNETIC CONTACTS:** Connect to **Door Switch** Terminal Strip. **Note:** Multiple Contacts wired in series may be used for multi-door compartments. Any door so connected and opened or closed will be sensed by the *DAC-55*.
2) **IP-1 ILLUMINATED PUSHBUTTON:** The IP-1 comes with an 8' length of 4 conductor wire. Connect to the **PB Switch** Terminal Strip, observing the color code as shown on the diagram on the back of these instructions. (Left to right, black, white, red & yellow.) The color code is also printed on the *DAC-55* circuit board. **NOTE: The path for this wiring or any wiring which enters the *DAC-55* enclosure from within the monitored compartment must be sealed with silicone to keep moisture out of the *DAC-55.***
3) **DATALARM PORT: (**Used only if interconnecting the *DAC-55* to the **Datalarm Temperature Monitoring/Datalogging System**.) "Ground" and "Out" connections send a signal from the *DAC-55* to the Datalarm for Door Ajar and Panic Alarm conditions (For activation of "Check Door" function on the Datalarm). "Ground" and "In" connections send a signal from the Datalarm to the *DAC-55* to make the Horn and Strobe on the *DAC-55* activate in a temperature alarm condition. Either or both functions may be utilized as required. Connect accordingly. (See Datalarm Instructions for additional information.)
4) **ALARM RELAY:** Normally open and normally closed dry contacts are provided. Connect to energy management system or to remote notification equipment if so desired.

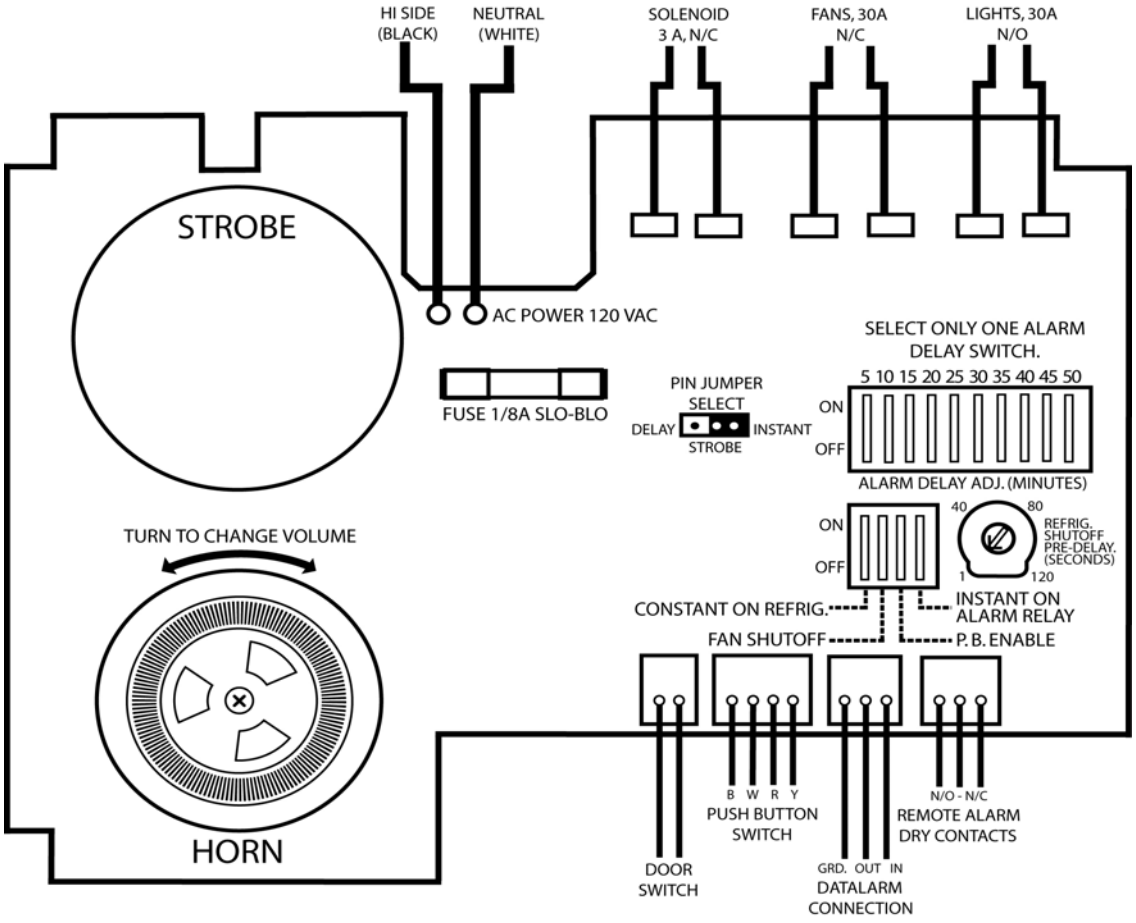
LINE VOLTAGE CONNECTIONS: (Use top knockout for access.) Connections are typically made through ½" thin wall conduit. Provide 120VAC for *DAC-55* operation and connect to 18 ga. black & white wires. (Current required: 80ma.) Connect the provided 18 gauge. green wire to earth ground. Control contacts for fans & solenoid are dry normally closed and for lights are dry normally open. **Dry Contacts function as switches and the DAC-55 does not provide any power to the devices being controlled.** Connect accordingly as shown on diagram using insulated female .250" connectors sized for the gauge of wire that you are using. It is recommended that wiring be kept short, approximately 6-8" in length. When the *DAC-55* is being used to operate lights, a standard light switch is no longer required, and any existing switches should be disconnected.

SETUP & TEST:

1) Apply power to *DAC-55*. **Note:** If the door is closed when powered up, interior lights will turn on for 40 seconds and then shut off. This is a safety feature to insure that lights will turn back on if a momentary power failure occurs while there are personnel in the compartment.
2) Determine your desired sequence of *DAC-55* operation and set adjustments accordingly. **(See Operation description on front page of instructions.)** Selections on the 4 position Dip Switch may be combined to produce the desired operation. (Press in on the top of the respective Dip Switch to select its function.) **Note: Selecting Constant On Refrigeration Switch & Fan Shutoff Switch at the same time is <u>not a recommended mode of operation</u> as compressor damage may result. Additionally, if the Fan Shutoff Switch is selected & Constant On Refrigeration is not selected, the Refrigeration Shutoff Pre-Delay setting should not exceed 15 seconds, as a longer delay time may also cause compressor damage. It is the responsibility of the refrigeration technician to determine proper operation.** Adjustments and selections may be made with power on or off. Power outages will not affect user settings. Changes made in user settings with the door opened will store in program memory when the door is closed and will affect operation when the door is next opened.
3) Select the desired door ajar alarm delay using the 10 position **Alarm Delay Adjust** dip switch. (Range: 5 minutes to 50 minutes in 5 minute increments.) Select **<u>one</u>** switch for the desired delay. **SELECT ONLY ONE SWITCH OR ERRONEOUS TIMES WILL RESULT. A SWITCH <u>MUST</u> BE SELECTED FOR PROPER OPERATION.**
4) Simulate various modes of operation to verify that the *DAC-55* functions as intended in accordance with selected settings. If a 5 minute alarm delay is not selected, it may be helpful to temporarily set the **Alarm Delay Adjust** to the 5 minute position so that testing can be completed in as little time as possible. Once testing is completed and operation is verified, return the **Alarm Delay Adjust** to the desired delay.

5) After adjusting and testing, mount the faceplate onto the enclosure and re-fasten with the provided screws. Make sure that the faceplate is seated onto the 4 nylon standoffs and the 2 metal standoffs that it mounts against. You may have to "wiggle" the strobe to seat the faceplate properly. Also, make sure that there are no wires pinched between the faceplate and any of the standoffs. Installation is now complete.

***DAC-55*™ DOOR MONITOR WIRING & SETUP DIAGRAM**



SPECIFICATIONS:

Dimensions: 8"L x 6"W x 1.8"D
Power:* 120VAC @ 80ma. Surge Protected
Fan Contacts: N/C, 30A. @ 120VAC or 240VAC
Solenoid Contacts: N/C, 3A. @ 120VAC or 240VAC
Light Contacts: N/O, 30A. @ 120VAC or 240VAC
Alarm Contacts: N/O & N/C, 1A. @ 12VDC
Fuse: 1/8A. slo-blo (CDG 1/8)
***Other operating voltages available.

Warranty: All systems and components manufactured by Modularm Corporation are warranted to be free from defects in material and workmanship under normal use and service for a period of one year from date of installation. If, during this time period and after examination, any Modularm system or component appears to be defective, Modularm agrees to repair or replace same. This warranty shall not apply to any system or component that has been altered or repaired by anyone other than a factory authorized representative. Modularm Corporation limits this warranty only to those systems and components which it specifically manufactures, and its sole liability shall be to repair or replace these components in accordance with the aforementioned terms, and assumes no additional liabilities. No other warranty is expressed or implied regarding the sale or use of Modularm systems and components.