

**MODULARM**

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## INSTALLATION GUIDE

# DAC-55™ Door Monitor



Save the instructions  
for future reference.  
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**1-800-243-9271**  
(from the U.S., Canada and the Caribbean)

## NOTICES

**Before you start, please read these instructions thoroughly in order to obtain maximum benefit from the capabilities that this product offers.**

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.

## 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, 5-45 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 10 minutes after door is closed. (Unless optional IP-1 is pressed if installed. See page 3).
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)	Refrigeration will resume in 8-10 seconds if it had been interrupted, once the door has closed.

\*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 operation with the door closed is 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 after 10 minutes.
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 repressed 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 repress 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.

## INSTALLATION: MOUNTING (Continued):

3. **IP-1 ILLUMINATED PUSHBUTTON:** Mount the IP-1 **inside** of the walk-in next 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 TO THE DAC-55 ENCLOSURE. ALL CONDUIT FITTINGS WHICH ENTER THE ENCLOSURE MUST BE CAPPED BY A PLASTIC BUSHING.**

**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 or insulating foam 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 AWG black & white wires. (Current required: 80mA) Connect the provided 18 AWG green wire to earth ground. Control contacts for fans & solenoid are dry contacts, normally closed and for lights are dry contacts, normally open. **Dry Contacts function only 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:

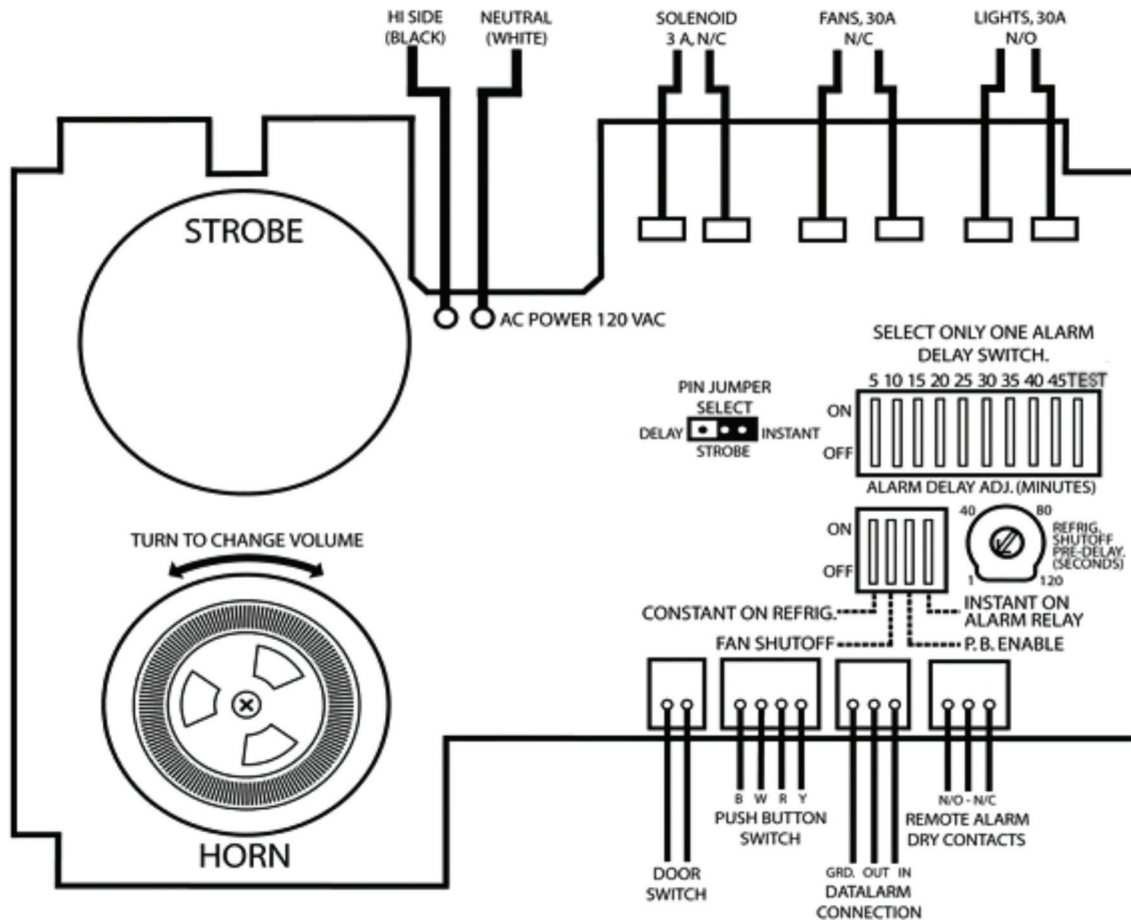
1. Apply power to DAC-55.  
**NOTE:** If the door is closed when powered up, interior lights will turn on for 10 minutes and then shut off. This is a safety feature to insure that lights will turn back on if a momentary power failure, such as from a thunderstorm, occurs while there are personnel in the 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 not a recommended mode of operation** 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.

3. A 10 position **Alarm Delay Adjust** dip switch is provided for selecting the door ajar alarm delay and for testing. (Range: 5 minutes to 45 minutes in 5 minute increments, selectable on switches 1 thru 9. **Switch 10 is a Test Switch, and when selected, will cause the DAC-55 to annunciate a door ajar condition in 5 seconds. The Test Switch also overrides any Refrigeration Shutoff Pre-Delay setting and turns off refrigeration in 1 second.** The Test Switch is provided as a means of quickly verifying device operation. If a 5 second time delay is desired for normal usage, the Test Switch may also be used as an operating mode.
4. Select the Test Switch and simulate various modes of operation to verify that the DAC-55 functions as intended in accordance with selected settings. Once testing is completed and operation is verified, de-select the Test Switch (unless you are using it for desired operation) and select the desired door ajar alarm delay using **ONLY ONE** of switches 1 thru 9.

**SELECT ONLY ONE SWITCH OR ERRONEOUS TIMES WILL RESULT. A SWITCH MUST BE SELECTED FOR PROPER OPERATION.**

5. Adjustments and selections of any settings 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.
6. 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



## GENERAL SAFETY MEASURES & PRODUCT LIMITATIONS - INSTALLATION

- This product ("Product") must be installed by a licensed electrician experienced in working in the types of environments for which this Product is intended to be utilized; specifically, commercial walk-in coolers and freezers ("Equipment").
- Personnel installing the Product must carefully and completely read the Operating and Installation Instructions ("Instructions"), and instructions and specifications of the Equipment manufacturers, before attempting to operate and install the Product. Failure to comply with the Instructions, and the Instructions and specifications of the Equipment manufacturers, may result in personal injury and/or property damage and may void the warranty of the Product. Retain the Instructions for future reference.
- The Product shall only be used for the purposes described in the Instructions.
- During Installation of the Product, all applicable laws, regulations and industry rules, including local electrical and safety codes, the National Electric Code (NEC) and the Occupational Safety and Health Act (OSHA), must be strictly followed. Consistent therewith, follow applicable electrical codes regarding running of low voltage wiring and high voltage wiring in separate conduits and use appropriately rated wire (insulation type, voltage rating and wire gauge) for all connections. Supply connection wiring must be rated at least 90°C. Use copper conductors only.
- The enclosure used for mounting the Product must be properly grounded according to electrical code.
- Confirm that the power source conforms to the requirements of the Product before connecting.
- Do not exceed the rated limits of the Product. Refer to the Product specifications for suitability of the Product to the application.
- The Product is not suitable for use in wet locations. Do not expose the Product to water, moisture or condensation. In no event should the Product be exposed to environments where sudden temperature changes with high humidity may result in the formation of condensation.
- **Any openings in the walls, ceiling or floor of the Equipment for wiring or other reason must be sealed (made airtight and watertight) with appropriate materials (e.g., silicone, caulk or foam), both on the outside and inside of the Equipment, to prevent moisture or condensation from entering the compartment of the Equipment and forming and accumulating on the interior walls of the compartment and the contents of the compartment, including the Product. Failure to properly seal such openings may (i) result in damage to the Equipment and contents of the compartment (ii) pose a safety hazard and (iii) void the warranty of the Product.**
- **To prevent moisture or condensation from entering or forming in the enclosure used for the Product, any openings in this enclosure (for wiring access or other purpose) must be appropriately sealed with materials such as silicone, caulk or foam.**
- Installation of the Product should be inspected and the Product tested by qualified personnel to ensure the Product performs safely and in accordance with the Product specifications. Periodic testing of the Product should be performed on an ongoing basis (at least quarterly) to ensure the Product continues to perform properly.
- All personnel operating, maintaining, repairing or interfacing with the Product must be instructed in the use of the Product and provided with the Instructions. The Instructions must be kept in an accessible location for easy reference.
- **WARNING:** Hazard of electric shock! Power sources must be turned off or otherwise disconnected prior to installation or servicing of the Product. Lock and tag power disconnects to prevent an unexpected application of power.

## NOTES

**SPECIFICATIONS**

**DIMENSIONS**

8" L x 6" W x 1.8 D

**POWER\***

120VAC @ 80mA max, 20mA quiescent  
Surge Protected

\*Other operating voltages available.

**FAN CONTACTS**

N/O, 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



229-40073



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**WARRANTY**

Kitchen Brains warrants that its products shall not fail to function in accordance with their specifications because of defects in material or workmanship, for the following warranty periods:

- i. New Products: New Products consisting of microprocessor based controllers, timers, data-loggers or remote monitoring devices for 1 year from date of purchase.
- ii. Sensors and Accessories: Sensors and accessories (consisting of probes, wireless sensors, hoses, relays, switches, mounting hardware or accessories) for 90 days from date of purchase.

For complete details consult [www.kitchenbrains.com/warranty](http://www.kitchenbrains.com/warranty)

**PATENTS**

The products manufactured by Kitchen Brains are protected under one or more of the following U.S. Patents:

5,331,575	5,539,671	5,711,606	5,723,846
5,726,424	5,875,430	6,142,666	6,339,930
6,401,466	6,401,467	6,581,391	7,015,433
7,145,463	7,650,833	7,877,291	8,060,408

Plus foreign patents and patents pending. Plus licensed patent 5,973,297