

MODULARM® DL-35™ Refrigerator/Freezer Door Alarm and Monitor INSTALLATION AND OPERATING MANUAL



NOTICE

Before you start, please read these instructions thoroughly in order to obtain maximum benefit from the capabilities offered by the DL-35.

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PRODUCT OVERVIEW

Kitchen Brains® patented Modularm® DL-35™ Freezer/Cooler Door Alarm and Monitor is a reduced-feature door monitoring system for walk-in freezer and cooler doors that saves energy, trains personnel to close doors, increases operator safety and operational efficiency, and helps to maintain product integrity. The DL-35 reduces coil icing, thus lowering maintenance costs and saving additional money.

The DL-35 offers the following functions:

- Visual and audible alarms when door is ajar
- Field adjustable door monitor settings
- Panic/entrapment alarm (requires optional IP-1 Push Illuminated button)
- Automatic control of interior compartment lights
- Replaces ordinary light and fan shutoff switches
- ETL listed



DL-35™ 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). An internal relay inside the DL-35 provides automatic control of compartment lights.

MONITORED CONDITIONS

| SYSTEM FUNCTION | DOOR CLOSED * (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 pg 9 | 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 installed and pressed |

*Door closed at any time always restores normal operation. (No Alarm, Lights Off.)

OPERATION OF THE OPTIONAL IP-1 ILLUMINATED PUSH BUTTON:



In order to increase product capabilities, the DL-35 has been designed to accept the IP-1, a low voltage, illuminated pushbutton, that incorporates a piezo horn, as an additional means of device activation. The IP1 is an optional accessory, that can be mounted inside the monitored compartment.

ADDED FUNCTIONALITY OFFERED BY THE IP-1

WITH THE DOOR OPEN:

IP-1 functions are dependent on the status of the Pushbutton Enable Jumper. (labeled "PB Jumper": See diagram on page 9).

If the Pushbutton Enable Jumper is not clipped (default), 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 during loading or unloading.

If the Pushbutton Enable jumper is clipped, pressing the IP-1 with the door open when a Door Ajar Alarm occurs, will not affect DL-35 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 Jumper. 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 to draw attention to the IP-1 and the Pushbutton Label. The Pushbutton Label instructs personnel inside the compartment to press the button in order to keep the lights on with the door closed (Label is in English and Spanish languages).

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) 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 after the IP-1 horn starts beeping the horn and the LED on the DL-35 activate immediately to draw attention the walk-in. The Automatic Panic Alarm is a safety feature that protects an individual who may have been injured or is otherwise disabled inside the walk-in.
5. **Manual Panic (Entrapment) Alarm:** Pressing the IP-1 for 3 seconds (as described on the Pushbutton Label) activates the LED and the audible alarm on the DL-35 as a safety feature for situations where personnel may be trapped inside the walk-in.

Note: In all above, exiting the compartment and closing the door automatically restores normal operation.

INSTALLING THE DL-35™ AND OPTIONAL IP-1

MOUNTING:

MAGNETIC CONTACTS:

1. **Installation Tip:** If desired, and if door configuration permits, the switch part of the Magnetic Contacts may be mounted inside the DL-35 enclosure. This will not affect operation of the Magnetic Contacts and will ensure a cleaner installation.
2. **Magnetic Contacts:** Magnetic Contacts may be mounted with adhesive backing or provided screws.
3. **Mount magnet part of Contact onto edge of door,** as far away from the hinged side as possible.
4. **The magnet part of the Contact may also be mounted onto the edge of the unhinged side of the door,** preferably as high on the door as possible to minimize the possibility of damage.
5. **Mount switch part of Contact onto door frame,** directly adjacent to the magnet, positioned so that Contacts close (make Contact) when door is closed.
6. **When mounted,** gap between magnet and switch should not exceed 1.25" when door is closed.

NOTE: Steel doors may reduce this operating gap. Position accordingly.

DL-35 ENCLOSURE:

1. **Remove the faceplate.**
2. **If switch part of Magnetic Contact is not mounted inside the DL-35,** the enclosure may be mounted in any appropriate location on the front of the walk-in.
3. **If switch part of Magnetic Contact is mounted inside DL-35,** position the DL-35 enclosure adjacent to the magnet mounted on the walk-in door and mount the switch on the side wall inside the enclosure, positioned so that Contacts close when the door is completely closed.
4. **A meter or resistance scale or a continuity checker is helpful in checking Magnetic Contacts for proper operation.** A temporary power cord to the DL-35 may also be used to help in positioning Contacts as follows: When contacts are placed properly, the LED on the DL-35 will turn on when door is open and turn off when door is closed.

IP-1 ILLUMINATED PUSHBUTTON:

1. **Mount the IP-1** inside the walk-in next to the unhinged side of the door frame.

CONNECTING THE DL-35™ AND OPTIONAL IP-1

NOTE: All line voltage and signaling wiring connected to the DL-35 through any side wall must be enclosed in conduit with suitable fittings for connection to the DL-35 enclosure.

LOW VOLTAGE CONNECTIONS (See the 2 Green Terminal Strips inside the unit.):

1. Strip insulation on wires by approximately ¼".
 - a. **Terminal Strip connections** is made by pressing down on the respective actuator button with a small screwdriver and inserting the wire into the hole below the actuator.
 - b. **Removing screwdriver pressure** will clamp the wire.
 - c. **Do not insert wire too far**, as you may clamp onto insulation.
 - d. **Tug gently on wires** to make sure connections are secure.
2. **Magnetic Contacts: Connected to the 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 DL-35.
3. **IP-1 Illuminated Pushbutton:** The Pushbutton comes with a pre-connected, 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 DL-35 circuit board.

NOTE: The path for this wiring, or any wiring which enters the DL-35 enclosure from within the monitored compartment, must be sealed with silicone to keep moisture out of the DL-35.

LINE VOLTAGE CONNECTIONS (Use top knockout for access.):

Connections are typically made through ½" thin wall conduit. Provide 120VAC for DL-35 operation and connect to black and white wires (Required current: 90mA.).

1. **Connect the green screw inside the DL-35 enclosure to earth ground.**
 - a. **Control contacts** for lights are dry contacts, normally open.
 - b. **Dry Contacts** function as switches and the DL-35 does not provide any power to the lights being controlled.
2. **Connect accordingly as shown on the diagram on page 9 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.
3. **When the DL-35 is being used to operate lights,** a standard light switch is no longer required, and any existing switches should be disconnected.

SETUP AND TEST

1. Apply power to the DL-35.

NOTE: If 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.

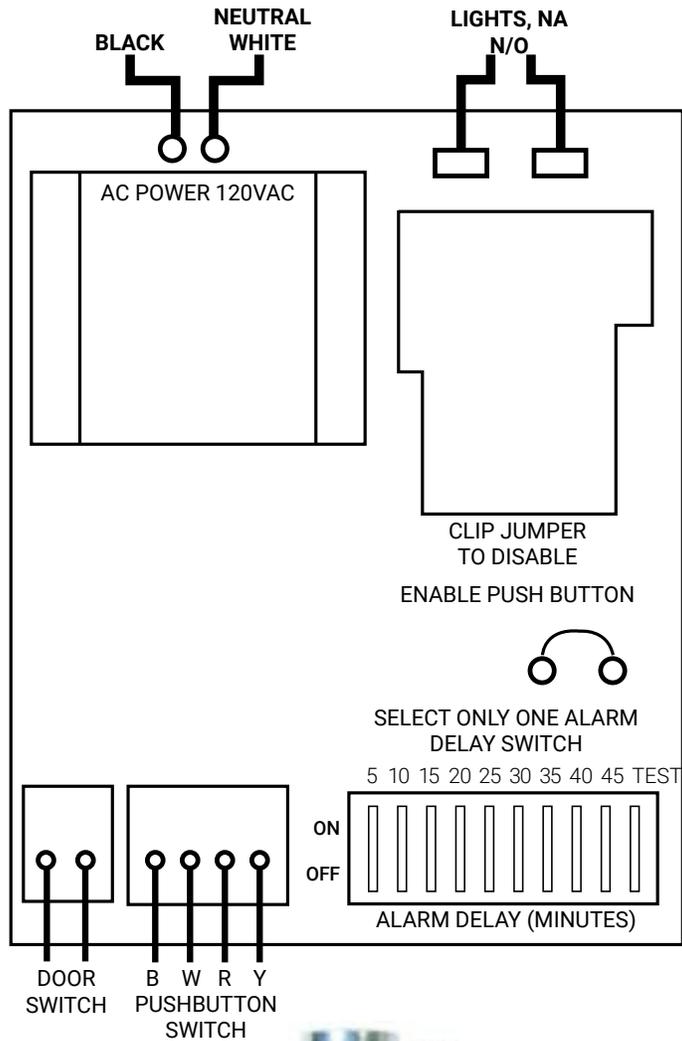
2. A 10 position Alarm Delay Adjust Dip Switch is provided for selecting the door ajar alarm delay and for testing. Range: 5 minutes to 45 minutes in 5 minute increments, selectable on switches 1 through 9. Switch 10 is a test switch, and when selected will cause the DL-35 to annunciate a door ajar condition in 5 seconds. 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.

3. Select the Test Switch and simulate various modes of operation to verify that the DL-35 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 through 9. Select only one switch or erroneous times will result. A switch must be selected for proper operation. Selection or changing of a switch or clipping the PB Enable jumper may be done with power on or off. Power outages will not affect user settings. Changes made in user settings with the door opened will be stored in program memory when the door is closed and will become active the next time the door is opened.

4. After adjusting and testing, mount the faceplate onto the enclosure using the provided screws. Installation is now complete.

DL-35™ DIAGRAM

DL-35™ DOOR MONITOR WIRING & SETUP DIAGRAM



INSTALLATION, GENERAL SAFETY MEASURES AND PRODUCT LIMITATIONS

- 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 Cooler/Freezer 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.
- 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, which are accessible on the Kitchen Brains website at www.kitchenbrains.com.
- **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.

SPECIFICATIONS



DL-35

DIMENSIONS

4.5" L x 4.5" W x 2.3" D

POWER SUPPLY

120VAC/60Hz @ 90mA max
20mA Quiescent
Surge Protected

AMBIENT TEMPERATURE

-10°C to 52°C (14°F to 126°F)

LIGHT CONTACTS

N/O, 30A @ 120VAC or 240VAC

CABLE LENGTH

30 meters Max

FUSE

Automatic resettable
Non-replaceable



IP-1

DIMENSIONS

4.5" L x 2.75" W x 2.0" D
(Dimensions include outdoor type single gang outlet box)

POWER SUPPLY

5-15VDC @ 20mA Max from DL-35

AMBIENT TEMPERATURE

-40°C to 40°C (-40°F to 104°F)

CABLE LENGTH

30 meters max

HUMIDITY

90% Noncondensing

MOUNTING

Outdoor, single gang outlet box

Alternate enclosure for mounting must be UL listed enclosure, providing multiple wire access hubs for running low voltage



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POWER SUPPLY

SURF: 2-5VDC @ 100mA max Metal:-
2-5VDC @ 0.5A max from DL-35

AMBIENT TEMPERATURE

-10°C to 52°C (14°F to 126°F)

CABLE LENGTH

30 meters max



ETL LISTED
CONFORMS TO
UL STD 464A
CERTIFIED TO
CAN/CSA STD C22.2 NO. 205



Modularm® DL-35™



Save the instructions for future reference.

24/7 Toll-Free Technical Support

In the U.S., Canada and the Caribbean

1-800-FASTRON (1-800-327-8766)

Elsewhere

1-203-377-4414

or

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