CHUTE SOURCE

ELECTRICAL INTERLOCK SYSTEM

SEPTEMBER 8 2021

Operation and installation of Electrical Interlock Doors

The purposes of Electrical Interlocked doors are as follows:

1. To insure that the doors are locked at all times.
2. To prevent a user from being hit by falling debris.
3. Provide for the safety of maintenance personnel working on compaction equipment or moving collection bins under the chute discharge.
4. In the event of fire, an optional heat detector located at the last intake or a smoke detector located in the discharge room, will electrically lock the doors.
5. Electrical interlocks can protect the client during an optional cleaning cycle.
6. The system can be interlocked to the trash compactor. Thus in the event of a compactor failure (compactor full, access door open, motor starter failure etc.) the interlock system can lock the floor panels thus preventing trash from filling up the chute.

OPERATION

The PLUG & PLAY doors are "lockup" style. Only a momentary touch of the door "UNLOCK" pushbutton is required. Thus, the user can use the same hand to open the chute door. An additional timer installed in the basement control panel limits the amount of time the door open solenoid is energized. This is to prevent someone from pushing the "UNLOCK" pushbutton and then walking away without ever opening the door. The factory default for this time is 6-seconds. This style of control conforms to the ADA (American Disabilities Act) single hand operation requirements.

Wiring of an Electrical Interlock system.

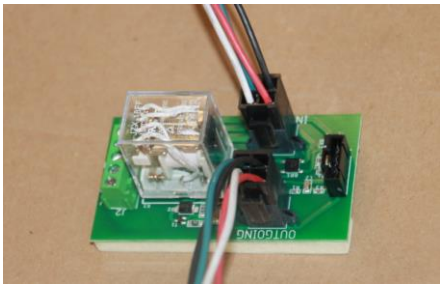
There are two industry standards to wiring an Electrical Interlock system. The first utilizes 120 volt power. This eliminates building height concerns BUT:

By code the wiring must be installed in conduit and must be installed by a licensed electrician. In locations governed by UL the floor panels can be interrupted as branch circuits and thus require individual fuse protection and UL labels at each floor.

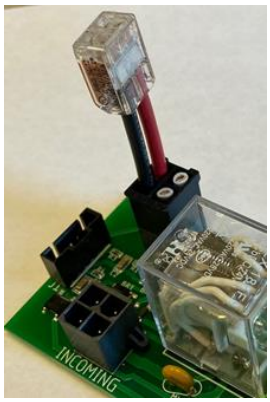
The second approach utilizes 24 volt CLASS 2 wiring. Because the CLASS 2 voltage is less than 50 volts it is not a UL requirement. The installation savings by this approach are considerable. There is also an operational savings as the Power Pack only requires a maximum of 1 amp. BUT:

Because of the low voltage, there is a limitation to the number of floors this system can handle without using a booster panel. This limitation is 600 vertical feet.
(All electrical wire has a resistance. The smaller the wire or longer the lead, the greater the resistance. 14 guage wire and a booster panel will double the vertical height limitation.) Chute Source EI control systems are based on floor to floor Class 2 wiring. The Control system also carries it's own UL label.

Chute Source's Plug and Play cables consists of a 14 guage, four conductor plenum cable in a MC Cable jacket. The cables have an additional foot of wire on each end for connection to the circuit board. The cable from the basement to the first floot is deliberately 7 to 10 feet longer than the drawings. This to allow flexability in positioning the control panel. Cables plug into a circuit board on each floor.



The circuit board is keyed so the cables can not inserted incorrectly. The board has a plug for the (INCOMING) previous floor and the (OUTGOING) next floor. The cables must not be reversed. The cable length is marked on each cable. The cable connecting the first floor panel with the basement has a threaded locking ring (squeeze fitting). This fitting is required because of the extra wall thickness of the polycarbonate control panel.



A terminating jumper must be installed on the last floor. This jumper is normally installed by the factory. If an optional heat detector is purchased, it replaces this jumper.

The floor to floor cables have a latch on each end. If the latch is missing or not snapped into place, it will prevent power from going up the chute. If the red or green light, on the basement power suppy, is on, there is 24 volts going up the chute. At any floor panel check the voltage between the red and white wire screw. If there is 24 VAC, the problem is higher up the building. If there is no voltage either there is a connection problem at this floor or a floor below this door. Once the offending cable is located call Chute Source for help without having to pull a new cable.

The last step is to connect the face plate ribbon cable. The cable is keyed. Push until you hear or feel the cable snap into place. Screw the face plate into its proper position. Do not leave the face place hinging by this cable.

If it is necessary to disconnect the ribbon cable, do not pull on the cable as this will most likely damage the cable. There is a snap connector on the side of the cable. Depress the tab and pull to release.

Electrical Interlock Power Supply:

The power supply that controls the electrical interlock system is generally located in the discharge room of the building. The panel has an illuminated ON/OFF selector switch that shows that there is power not only to the control panel but the floors as well. An optional smoke detector can be connected to this panel to lock the floor panels in the event of fire. An additional interlock connection is supplied to remove power from the floor panels in the event of a compactor fault. As an example, COMPACTOR FULL, ACCESS DOOR OPEN, HIGH OIL TEMPERATURE etc..

Operation:

Plug and Play doors are locked at all times. The activation of a single intake door will occur by pushing the UNLOCK push button and opening that specific door. All other intake doors will remain locked. A red LED indicator light will come on once the door is opened. Since a door interlock system allows only one door to be open, a miss-aligned door or broken roller switch will prevent all other floors from functioning. The red led identifies which door is open and thus assists in locating and servicing the offending door.

If the green READY light is not illuminated a door is already open on another floor or the system is being serviced in the rubbish room.

Available Options:

Heat Detector – This device comes premounted in a 4 x 4 junction box above the last door. An 18 inch Plug and Play cable must be field connected between the junction box and the last door.

Smoke Detector – This device comes prewired in a 4 x 4 junction box. A five foot plug and play cable connects the device to the control panel, no field wiring is required. The 5 foot cable allows the smoke detected to be mounted near the ceiling of the room.

Washdown – This system is designed to wash and disinfect the chute. The control is built into the control panel, so a separate panel does not need to be installed. The system can be supplied with or without an

MC Cable that connects the chute control in the basement with the water solenoid valve at the top of the chute. Plug and Play connects the wires in the basement and "LEVER" wire connectors are used at the top of the chute. The wires are color coded. The solenoid is controlled by low voltage 24 VAC power.