INSTRUCTION MANUAL
FOR
DAIHATSU MICROPROCESSOR-CONTROLLED
DOOR OPERATOR

MODEL: EDM18ZII / EDM30ZII

DAIHATSU DIESEL MFG. CO., LTD.
Daihatsu slide control
Start up settings

Alarm switch OFF
Close speed 1
Cushion 3
Open speed 4
TSTR 1
Braking 0
2X Dip/Sw UP
HO% 2
Torque 4
Open timer 9

8 X Dip/Sw:
1 UP
2 DOWN
3 DOWN
4 DOWN
5 DOWN
6 UP unless electric lock fitted, then DOWN
7 DOWN
8 DOWN

These settings must be performed before initial power up.

For initial commissioning remove activation plug (3 pin; pink, blue & white). Unit can be cycled using Test button on panel. Unit should drive closed on power up, and then it will require a signal to open. First open run should be at approximately 70% of full speed. Control will assess door weight and set the check points accordingly.

Should any settings require altering, the unit should be powered down; the settings adjusted and reapply power. A new set up run will be initiated to assess the new settings.

Sensors &c will require setting up, especially the ultrasonic safety sensors.
1. Features

High performance
• The DC motor remains cold during continuous door operation.
• Quick opening and closing. Maximum speed is 500 mm per second.
• The brushless moulded motor and the completely enclosed reduction gear are silent, durable, and maintenance-free.

Multiple functions
• Half-open
Installing the half-open switch allows the door to open halfway. The half-open stroke can be adjusted in 7 steps from 12.5% to 87.5% of the door stroke. The Automatic/Constant selector permits selection between automatic full/half-open opening and fixed half-opening. In the Automatic setting, the door is opened fully if the traffic is heavy (in terms of frequency) and halfway if it is light. In the Constant setting, the door is always opened halfway.

• Trouble detection
If a problem occurs with the door or the door drive system--e.g. jammed door, obstructed door, or broken drive belt, the door operator detects it, shuts off power to the motor, and generates an alarm; there are different alarms for different problems.

• Press-closing
When fully closed, the door presses against the frame, permitting no gap.

• Emergency door operation
Upon receipt of a signal from an emergency sensor (optional), the door operator opens or closes the door to the full extent according to the setting. With a 24-VDC battery pack (optional), this emergency door operation is available in the event of a power failure.

Automatic adjustments
• Braking position
The braking position is automatically adjusted to provide a constant braking force regardless of the door weight and door sliding resistance.

Safety
• Safe operation
If the door encounters an obstacle on the opening stroke, the power supply to the motor is shut off. When it is blocked on the closing stroke, it reverses to the full-open position, then starts to close at low speed again. If the door is blocked again, it stops and sounds an alarm.

• Emergency stop
Pressing an emergency stop switch (optional) stops the opening or closing door.
- **Optical safety system**
  A safety beam switch which operates as long as the door is open, can be used with this door operator.

- **Overload detection and automatic reset**
  If the door stays overloaded for 15 seconds or longer, the power to the motor is shut off and an alarm sounds. Door operation automatically resumes after 15 seconds.
External switches
Half-open selector switch

(HO) Installed for double-sliding or long-stroke doors. Turning this switch ON allows half-open door operation.

Panic switch (PS) Upon receipt of a signal from an emergency sensor (optional), this switch turns on to open or close the door (when 100V AC is supplied) with an alarm. With an optional battery pack, this emergency operation is available even if a power failure occurs.

Emergency stop switch (ES) Self-holding switch. Turning this switch on stops an opening or closing door. The door is released by turning this switch off. Push-button type.

Half-open switch (HS) Turning this switch on opens the door constantly half-way. For large-sized, long-stroke doors.

Ratchet switch (RS) Controlled by pulse signals. Opens with an ON pulse, and then closes with the next ON pulse. Available in kick, foot, and push-button types.

Safety beam switch (SB) Light controlled sensor switch. When an object blocks the beam running in front of the door, this switch turns on to stop the closing door and opens it again. This switch does not operate when the door is closed.

Sensor switch (SS) When turned on, the door opens. When turned off, the door closes. Available in heat, radar, or mat types.

3. Drive unit
To prevent slippage, the drive belt has teeth which engage with the reduction gear output pulley. The connector between the drive belt and the door is made of galvanized iron plate.
4. Door hanging brackets
The door hanging brackets are made of iron and are connected to the door with bolts. Each pulley has a greased, sealed ball bearing and a plastic tire. The rail is extruded aluminum.
For installation on fire doors, the pulley tires and rail are made of iron (EDM-30Z).

5. Sensor switch
Sensor switches are available in various types: heat, radar, infrared, ultrasonic, electronic mat, rubber mat, touch, loop coil, push-button, etc. Choose the one the most suited to the installation site.

6. Optional systems

**Battery-open system (BOZ)**
The door opens fully with an alarm when a power failure occurs. (Power supply to the motor continues for 25 seconds.)

**Battery-close system (BCZ)**
The door closes fully with an alarm when a power failure occurs. The door is then press-closed until the battery is exhausted (approx. 30 minutes). This system is useful for fire doors.

**Electromagnetic lock system (Li Z)** (unlocking upon receipt of power supply)
When the sensor switch turns on and power is supplied, the door is unlocked. The door is automatically locked when fully closed. When there is no power supply or when a power failure occurs, the door is locked.

**Electromagnetic lock system (L2Z)** (locking upon receipt of power supply)
When sensor switch turns on and power is cut off the door is unlocked. The door is automatically locked when fully closed. When there is no power supply or when a power failure occurs, the door is unlocked.
3. Half-open operation

For half-open door operation,

1) With the half-open adjuster, select one of the seven steps available within the range 12.5% to 87.5% of the full door stroke;
2) select between automatic full/half-open switching and constantly half-open with the Automatic/Constant switch; then
3) turn the external half-open selector switch ON.

Opening: When an ON signal is triggered by the sensor switch, the door opens at high speed and is braked to a halt to reach the half-open position. Power to the motor is shut off.

Closing: The door closes in the same manner as for normal closing.

With the Automatic/Constant switch in Automatic:
If the ON signal from the sensor switch continues for 7 seconds or longer, the Door Operator opens the door to the fully open position. If an ON signal is triggered on the closing stroke from the half-open position, the door reverses to the half-open position. But if another ON signal is received again on the next closing stroke, the door reverses and travels to the fully open position.
The above problems are just temporary. Remove the obstacle or repair. The door resumes normal operation automatically after about 15 seconds or after the sensor switch is turned ON then OFF.
Battery open/close system coupled with an electromagnetic lock

Four combinations are possible: BOL1Z, BOL2Z, BCL1Z, and BCL2Z.

Full-close/full-open relay

These relays provide check signals when the door is fully closed or fully opened. These signals operate indicators or buzzers.

4. Door Operation Principles

Conventional electrically-driven door operators detect the door stroke or braking position with position sensor switches. The Daihatsu Microprocessor-controlled Door Operator counts the number of pulses from the motor, and memorizes it as the door stroke. Based on this, the operator adjusts the braking position and half-open position. This eliminates the necessity of position sensor switches and manual of braking adjustments, etc.

Operating principles of the Daihatsu Microprocessor-controlled Door Operator.

Teaching (determining door stroke)

a. About 3 seconds after the power switch is turned ON, the open door starts to close at low speed and finally presses against the door frame to close completely. If the door is fully-closed when the power switch is turned on, the door is press-closed 3 seconds after the power ON.

b. Upon receipt of the first ON signal from the sensor switch, the Operator opens the door to about 70% of the door stroke at high speed, then brakes it to low speed until the door reaches the fully open position.

c. After the time preset on the open timer has expired, the operator closes the door at high speed, brakes it just before the fully closed position, and runs it at low speed until the door closes completely.

This is one cycle of the door stroke teaching process. Now the door stroke is stored in memory. This memory is cleared every time the power switch is turned OFF.

2. Normal door operation

When the teaching process is completed, the door starts to operate in the normal manner.
**Opening:** As soon as the sensor switch triggers an ON signal, the door starts to open at high speed. It then slows to low speed until it reaches the full open position, where it is held in position.

**Closing:** After the sensor switch triggers an OFF signal and the preset door-open time is complete, the door closes at high speed. At the end of the closing stroke, the door slows to low speed and stops in the completely closed position where pressure is applied to keep the door pressed against the frame. The braking position is adjusted automatically so that the low-speed zone is between 50 and 70 mm.

*If an ON signal is triggered while the door is closing, it quickly reverses open.*
5. Adjustments

1. Drive belt tension
If the drive belt becomes slack during operation it can foul other components. Keep the drive belt tight; loosen the lock nut and tighten the clamp nut (see right).

2. Stopper adjustment (for both opening and closing)

3. Door sliding resistance
Check for a high door sliding resistance.
4. Adjustment of control box

1. Switches and adjusters

- Safety beam switch (SS1) indicator
- DIP switches (R1 - R8)
- Door direction selector
- Automatic/constant half-open selector
- Door switch for opening process
- Half-open operation adjuster
- Open test push-button switch
- External switch (HS, RS, SS1) indicator
- Door switch timer for swing door
- Safety switch timer for swing door
- Alarm ON/OFF switch
- Braking indicator
- Cushioning indicator
- Opening speed adjuster
- Closing speed adjuster
- Braking timer
- Cushioning timer
- Opening speed adjuster
- Closing speed adjuster
2. Setting up before Initial stroke determining sequence
Set the following before turning on the 100V AC power source.

1) Door direction selector
Shift this selector depending on the door direction.
- Single-sliding, left-opening: Set to “Left”
- Single-sliding, right-opening: Set to “Right”

Double-sliding: Set to “Double”

2) DIP switches
S-1-S-8 Factory-set. To change the DIP switch setting, follow the instructions below.

S-1 If the door is equipped with an electromagnetic lock system, set S-1 to the lower position.

S-2, S-3: Braking stroke adjustment
Light-weight or short-stroke door
S-2: Lower, S-3: down Braking point: 120 mm away from the fully-closed position Door starts to close or open slowly (with 2 steps) Standard door
S-2: Lower, S-3: Upper Braking point: 200 mm away from the fully-closed position Heavy or long-stroke door
S-2: Upper, S-3: down Braking point: 300 mm away from the fully-closed position
- Fire protection door
S-2: Upper, S-3: Lower Braking point: 500 mm away from the fully-closed position

S-4 Press-opening ON/OFF
Factory-set to ON (upper position). For a swing door, set this switch to the upper position.
3) High-speed zone stroke adjuster
This adjusts the door high-speed range during the teaching process. Keep the high speed range to 70% or less of the door stroke. Otherwise, the door may hit the door frame at high speed.

3. Automatic stroke teaching
1. Turn the power supply ON. Three seconds later, the open door starts to close at low speed and finally presses against the door frame to close completely.
2. The power indicator (green) is lit.
3. Check door operation by pressing the test key.
Press the test key: stroke teaching process starts. The door opens through the specified zone at high speed, then, after a brake is applied, completes its opening at low speed. Next, the door starts to close at high speed and, after a brake is applied, it presses against the door frame to close completely.
4. Pressing the test button lights the sensor indicator (red)

5. Brake force adjustment: Adjust the brake force so that the low-speed zone is set to 50 - 100mm. If braking is excessively weak, the door hits the door frame at high speed, or, when the door stops moving in the reverse direction, it goes beyond the proper stopping point. If the braking is excessively strong, the door judders to stop. If the cushion mode is set to Auto (factory-setting), the slow-speed zone is automatically adjusted to 50 - 60 mm regardless of the slow-speed zone setting.

   - For proper adjustment, start with a low speed, then gradually increase the setting so that the slow-speed zone is at least 50mm. The closing speed must be slower than the opening speed, for the safety reasons.

8. Cushioning speed (low-speed) adjuster
   - This adjusts the door speed after a brake is applied. Use if the cushioning mode is “Fixed”. Normally adjust to 50 - 60 mm/sec. An excessively slow setting results in poor door operation. See the slow speed section in the teaching process.

9. Open timer
   - This adjusts the door-open time, from when the sensor turns OFF to when the door actually starts to close. The adjustment range is between 0.5 and 10 seconds. Normally set it to 1 - 2 seconds.
Set to the "short" side for a ratchet or push-button switch system door.

10. **Half-open operation switch** The half-open stroke can be chosen from the seven steps programmed between 12.5% to 87.5% of the door stroke. Selection between automatic switching of full and half opening should depend on the traffic, and fixed half-opening is also possible. Before making these selections, it is necessary to set the half-open selector switch that is installed externally.

11. **Alarm ON/OFF switch** Turn off this switch if an alarm is not necessary. Even in this case, the power indicator turns from green to red and starts blinking, providing a visual alarm.

12. **Sensor switch operation indicator** This indicator lights red when the sensor switch turns on. It is useful for checking sensor switch operation.

13. **Safety beam switch indicator** This indicator lights red when the safety beam switch turns on. If an object blocks the beam when the door is closing, the safety beam switch stops the door and opens it again. This switch does not function when the door is fully closed. Check the switch using this indicator.