OPERATION MANUAL

AUTOMATIC SLIDING DOOR OPERATOR

Microcomputer Control Type

MODEL - CS005
Motor - M005 (Hypoid gear type)

Before using this door operator, you should first thoroughly read this manual and keep for future reference.
1. FEATURES

1. Digital counter for door cycles
   The digital counter on the microcomputer control box counts the number of cycles the door completes over its life. A cycle is one movement open and then closed. This number is memorised even if the power is turned OFF. This counter is useful for maintenance requirements. Maximum Value for counter: 9,999,999.

2. Electronic Motor lock
   The control circuit for the optional electronic lock (Motor Lock - LK01) has been built into the controller. The lock is easily attached to the CS Motor - M005 before or after door installation. The door lock engages when the door is closed and securely locks the door. This operation is controlled by the CS microcomputer when the door is activated to Open.

3. Simple movement setting adjustment
   Accessory screwdriver supplied with controller allows easy adjustment of the following basic movement settings:
   • Door hold open timer
   • Door closing speed
   • Slow close distance
   • Direction of door opening

4. Test button switch
   The test button switch (White) for door opening and closing is provided on the microcomputer control box. The hold timer, door opening and closing speed are easily checked with this switch.

5. Various functions
   There are a variety of extra functions that are available on the microcomputer that are not supplied for use with the doors.
   • Opening adjust width
   • Breakaway function
   • 24V AC
   The use of these extra functions requires the supply of an additional wiring loom (L003) from CS FOR DOORS. An electrician will be required to wire the activation gear to work with these functions.

6. Push to Open
   When the door is pushed open manually a short distance, the controller will take over and automatically open and close the door through a standard open cycle. This can only be done if the motor lock is disengaged.

7. Obstacle detection
   When the door closes and runs into an object it will stop and reopen. When it closes the second time it will slow and check if the obstacle is still present before continuing to close.
### 2. SPECIFICATIONS (Motor M005 – Microcomputer control box C005)

**MODEL**  M005 (Telescopic)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>AC 220V ± 10% 3A 50/60Hz  □  AC 120V ± 10% 3A 50/60Hz □</td>
</tr>
<tr>
<td>Applicable types</td>
<td>ADD-ON DC, CN</td>
</tr>
<tr>
<td>Max. door weight</td>
<td>DC type: 100 kg (220 lb) for Single door leaf, 60kg (130 lb) x 2 for Bi-Parting</td>
</tr>
<tr>
<td>Safety function</td>
<td>Safety turn in full speed section  Safety stop in slow speed section</td>
</tr>
<tr>
<td>Opening speed</td>
<td>Fast (500mm/sec, 20”/sec) / Slow (400mm/sec, 16”/sec) selectable by DIP switch</td>
</tr>
<tr>
<td>Closing speed</td>
<td>100<del>500mm/sec (4</del>20”/sec) is adjustable on controller</td>
</tr>
<tr>
<td>Slow close speed</td>
<td>20mm/sec (1”/sec). Speed is fixed after slowing down</td>
</tr>
<tr>
<td>Brake position</td>
<td>Automatically set according to door weight</td>
</tr>
<tr>
<td>Slow speed distance</td>
<td>Position 0-55mm (2-3/16”) from close where door speed starts to slow. Position is adjustable on controller</td>
</tr>
<tr>
<td>Hold time</td>
<td>Time door is held open. Adjustable between 0~10sec on controller</td>
</tr>
<tr>
<td>Door opening width</td>
<td>Adjustable to 10~100% as an extra function (CS supply as 100%, adjustability is additional extra).</td>
</tr>
<tr>
<td>In power failure</td>
<td>Door can be opened manually by hand under 30N (3kgf, 7lbf) when power is lost. No battery backup available by CS.</td>
</tr>
<tr>
<td>Power consumption</td>
<td>Opening &amp; closing: 30W</td>
</tr>
<tr>
<td>Max output</td>
<td>20W</td>
</tr>
<tr>
<td>Insulation voltage</td>
<td>AC1000 (50Hz) 1 min</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>0<del>40°C (0</del>104°F), humidity 25~75% No dew</td>
</tr>
</tbody>
</table>
3. **WIRING**

1. Example wiring – Optional parts are marked with •

   ![Wiring Diagram]

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<table>
<thead>
<tr>
<th>DIP SWITCHES</th>
<th>LOCK TYPE</th>
<th>POWER FAIL (When lock fitted)</th>
<th>FIRST POWER UP</th>
<th>DOOR FUNCTION</th>
<th>INTERNAL BRAKE</th>
<th>MOTOR TYPE</th>
<th>OBSTACLE DETECTION</th>
<th>OPENING SPEED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UP</strong></td>
<td>DL</td>
<td>DOOR UNLOCKS</td>
<td>DOOR OPENS</td>
<td>FULL AUTO</td>
<td>DETERMINED BY CHOICE FROM DIP SW 5 - SEE INSTRUCTIONS</td>
<td>07</td>
<td>LOW SENSITIVITY</td>
<td>FAST</td>
</tr>
<tr>
<td><strong>DOWN</strong></td>
<td>KL</td>
<td>DOOR STAYS LOCKED</td>
<td>DOOR CLOSES</td>
<td>FULL OPEN, AUTO CLOSE</td>
<td></td>
<td>06</td>
<td>HIGH SENSITIVITY</td>
<td>SLOW</td>
</tr>
</tbody>
</table>

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### Inputs

- Activation SW 1
- Activation SW 2
- Power Outlet 120/230VAC-3A
4. TRANSFORMER INPUT CONNECTIONS (Input • Output)

1. Activation Switch (2 supplied with unit)
   Lead output wires of activation device such as sensor switch, button etc., to be connected to this input plug in track. Two 5m 4-core wires will be supplied with the correct terminal connection to plug into the input.
   - The door opens and closes when signalled from the activation device.

2. Lock Switch – (If optional lock is attached)
   Lead output wires of activation device such as sensor switch, button etc., to be connected to this input plug in track. A single 5m (16ft) 2-core wire will be supplied with correct terminal connection to plug into the input.
   - When the lock switch is turned ON the lock will engage
   - Lock will automatically disable, and the door opens when the activation switch is on. Lock will automatically re-engage when closed.
   - When the lock switch is turned OFF the door can be pushed open.

3. Safety Beams – (Optional upon order)
   Safety beams can be applied to the auto door unit upon request. These will be supplied with the unit.
   - Only during a closing movement, the door will open and stay open while the beam lines are broken (When something is in/crossing the walkway).
   - The beams are only active while the door is open/closing. When the door is fully closed, breaking the beams will not open the door.

4. Advanced Features – (Optional upon order)
   The following advanced features can be applied to the auto door unit upon request. The wire loom - L003 will need to be ordered from CS to be able to wire/connect the activation devices to the controller:
   - OUTPUT 24VAC 0.5A
     24V AC is supplied from this output for an auxiliary device requiring power.
     - Terminal A and H on advanced input plug (A is line, H is neutral)
   - BREAKAWAY
     When breakaway is active, power is cut to the motor and the door is operated as a manual slider. Power is still connected to the controller and motor acts as a soft-open/close device to avoid pinching fingers when operating the door by hand. When the switch is turned off the door resumes normal operation.
     - Connect activation device to Terminal C and G on advanced input plug.
OPENING WIDTH ADJUSTMENT
Connect wire of a variable resistor of up to 1K Ω for door opening width adjust to be connected to this INPUT. It adjusts the door opening width. To widen, turn it clockwise.
- Terminal E and F on advanced input Plug.

5. MICROCOMPUTER CONTROL BOX HP-17H2

ADJUSTMENT OF HP-17H2
1. HOLD OPEN TIMER (SEC)
The hold open timer sets the duration the door stays in the pocket after opening before the door starts to close. This only applies when the activate switch (sensor etc.) turns OFF, otherwise the door will stay open. The hold open time is adjustable from 0 to 10 seconds on the front of the controller.

2. CLOSING SPEED (mm/S)
The speed the door closes is adjustable on the controller through the potentiometer on the front. The closing speed can be set to 100~500mm/sec (4~20”/sec). The speed is set at 250mm/sec (10”/sec) when delivered.

<table>
<thead>
<tr>
<th>Recommended closing speed</th>
<th>Over speed range (caution required)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min. speed</td>
<td>Upper limit speed</td>
</tr>
<tr>
<td>Approx 100mm/sec (4”/sec)</td>
<td>Approx 250mm/sec (10”/sec)</td>
</tr>
</tbody>
</table>

Approx 300~350 mm/sec (12~14”/sec)
Max. speed Approx 500mm/sec (20”/sec)
3. SLOW CLOSE DISTANCE (%)
The slow close distance sets the door deceleration start position 0 ~ 100% (25mm ~ 355mm, 1”~14”). The closing distance is adjustable using the potentiometer on the front of the controller. The position is set at 50% when delivered.

4. OPENING DIRECTION
The slide switch sets the door opening direction as viewed from componentry access side of the door operator. Set the direction before turning ON the power supply for safety. The direction cannot change if the power is already ON.

- Left Hand: Move slider to Position L (Pocket is on Left, Opening side on Right)
- Right Hand: Move slider to Position R (Pocket is on Right, Opening side on Left)
- Bi-Parting: Set as left hand as standard - Position L
If the power is turned OFF again, wait for about 5 seconds before turning ON again

**DOOR HANDLING**

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5. TEST BUTTON
The test button allows you to open and close the door without an activation switch. This allows controller functionality to be checked while accessing the controller without an activation switch.

This button also resets the digital counter for door opening and closing. See document section - **HOW TO RESET THE CYCLE COUNT**

6. MONITOR (MAX. 9,999,999)
This digital counter shows the number of door opening and closing sequences or cycles the controller has completed. This counter reaches a maximum value of 9,999,999. The cycle number is memorized even if the power supply is turned OFF. The cycle count is useful when the auto unit is undergoing repairs or setting maintenance sequels.
This number can be reset, see document section - *HOW TO RESET THE CYCLE COUNT*

7. **18PIN FEMALE CONNECTION**
   Connection point for the 18pin male connector plug from the transformer input pack. Connects the power, safety beams, and activation devices from the transformer plugs to the controller.

8. **8PIN FEMALE CONNECTION**
   Connection point for the 8pin male connector plug from the CS motor M005.

9. **4PIN FEMALE CONNECTION**
   Connection point for the 4pin male connector plug from the optional motor lock - LK01

10. **DIP SWITCH**
    Adjustable dip switches on top of controller. See document section - *DIP SWITCH FUNCTIONS* for more details.

11. **ACCESSORY SCREWDRIVER**
    All adjustments of hold open timer, closing speed, slow close distance, opening direction are done using this screwdriver. Adjustments using other screwdrivers may damage the setting turn pots.

Remove the accessory screwdriver using the diagram below:

![Diagram showing how to remove the accessory screwdriver](image-url)
The digital LED monitor on the microcomputer control box CS005 shows the following setting values:

(1) Monitor

![Monitor Display](image)

(2) Display information during initial (first) movement

**TEACH:** During initial movement

-Controller is learning the open and closed positions of the door.

(3) Adjusting the settings for hold open timer, closing speed and slow close distance

1. Setting information for opening & closing times (*when door is fully closed*) are displayed on the LED monitor

2. When adjusting the hold time (0~10 sec)

   ![Adjustment Settings](image)

   **HLD:** Hold time is variable every 0.5 sec between 0 to 10 seconds on adjustment screw pot.
③ Setting of closing speed -100~500mm/s (4~20”/s)

\[100 \sim 500\] \text{CLS} \sim \text{CLS}500

CLS: Closing speed variable every 25mm/s (1”) between 100 to 500mm/s (4” to 20”/s) on adjustment screw pot.

④ Setting of slow close distance after braking (0~100%)

\[0 \sim 100\] \text{SCd} \sim \text{SCd}100

SCd: Slow close distance variable every 5% between 0% up to 100% on adjustment screw pot.

(4) During opening and closing the LED monitor will display the following information.

① During opening
\[0PS500\]
Opening speed setting 500mm/s (20”/s) (Adjustable on dip switch)

② Braking on opening
\[SCd8860\]
Second distance setting 60%

③ When fully closing
\[HLD884.0\]
\[HLD880.0\]
When opened by activation device. Will count down in 0.5 sec increments from present setting (4 sec in image example)

④ During closing
\[CLS8200\]
Closing speed setting 200mm/s (8”/s)

⑤ Braking on closing
\[SCd8860\]
Second distance setting 60%

⑥ Displays the number of completed open/close cycles when door is fully closed
\[99999999\]
6. DIP SWITCH FUNCTIONS

**WARNING:**

*Turn off the power to the controller before changing any of the dip switch settings.*
*Changing the settings while power is ON can irreversibly damage the controller.*

Turn OFF the power. Wait 5 seconds for the power to drain from the controller and be completely off. Change the settings that are required on the dip switches. Turn power back ON to the controller for settings to be applied.

### DIP SWITCH 1: OPENING SPEED

Setting for adjusting the door opening speed.

<table>
<thead>
<tr>
<th>State</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON (UP)</td>
<td>FAST: 500mm/sec (20”/s). In closer mode: 350mm/sec (14”/s)</td>
</tr>
<tr>
<td>OFF (DOWN)</td>
<td>SLOW: 400mm/sec 16”/s). In closer mode: 200mm/sec (8”/s)</td>
</tr>
</tbody>
</table>

### DIP SWITCH 2: OBSTACLE DETECTION

Setting for adjusting the sensitivity of obstacle detection, which re-opens the door when meeting a person or object. The sensitivity for obstacle detection while the door is moving at a set speed can be adjusted to the following.

<table>
<thead>
<tr>
<th>State</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON (UP)</td>
<td>STANDARD - If the set speed is decreased by more than 75% for 0.5 sec, the door re-opens. (In closer mode: decreased by more than 20% for 0.5 sec)</td>
</tr>
<tr>
<td>OFF (DOWN)</td>
<td>HIGH - If the set speed is decreased by more than 60% for 0.5 sec, the door re-opens. (In closer mode: decreased by more than 20% for 0.5 sec)</td>
</tr>
</tbody>
</table>

### DIP SWITCH 3: MOTOR TYPE

The CS005 Microcontroller can combine with either the CS motor M005 and M007

<table>
<thead>
<tr>
<th>State</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON (UP)</td>
<td>M007 - In case auto door is using CS motor M007</td>
</tr>
<tr>
<td>OFF (DOWN)</td>
<td>M005 - In case auto door is using M005</td>
</tr>
</tbody>
</table>
DIP SWITCH 4: FUNCTION - Dependent on selection of dip switch 5.
If dip switch 5 is ON/UP (Auto Door Mode)
PUSH TO OPEN
When the door is fully closed. If door is opened 20mm (3/4”) by hand, the door can be set to self-open or stay closed.

<table>
<thead>
<tr>
<th>State</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON (UP)</td>
<td>Close – <em>(Setting for optional lock)</em> The door remains closed even if it is opened 20mm (3/4”) by hand</td>
</tr>
<tr>
<td>OFF (DOWN)</td>
<td>Open – the door completes an open/close cycle if it is opened 20mm (3/4”) by hand.</td>
</tr>
</tbody>
</table>

If dip switch 5 is OFF/DOWN (Closer Mode)
PUSH TO CLOSE
If dip switch 4 is turned on the door will continuously push against the closing jamb. While in closer mode regardless of the setting of dip switch 4, when the door is opened 20mm (3/4”) by hand the door completes an open/close cycle

<table>
<thead>
<tr>
<th>State</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON (UP)</td>
<td>With pressing (continuous push to close)</td>
</tr>
<tr>
<td>OFF(DOWN)</td>
<td>No pressing</td>
</tr>
</tbody>
</table>

DIP SWITCH 5: DOOR FUNCTION
Selection of whether the microcontroller acts as an automatic door operator or a door closer.

<table>
<thead>
<tr>
<th>State</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON (UP)</td>
<td>AUTODOOR: Automatic door operator</td>
</tr>
<tr>
<td>OFF(DOWN)</td>
<td>CLOSER: Door closer</td>
</tr>
</tbody>
</table>

DIP SWITCH 6: DIRECTION OF FIRST MOVE
The direction of the initial door movement is selectable when the power is turned ON.

<table>
<thead>
<tr>
<th>State</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON (UP)</td>
<td>OPEN - The door starts opening when the power is turned ON.</td>
</tr>
<tr>
<td>OFF (DOWN)</td>
<td>CLOSE: The door starts closing when the power is turned ON.</td>
</tr>
</tbody>
</table>

DIP SWITCH 7: POWER FAILURE MODE OF LOCK
This switch is set for the optional door lock. It sets the type of door lock the microcontroller is required to operate. Either the power failure safe type “unlocked” or power failure secure type “locked”.

<table>
<thead>
<tr>
<th>State</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON (UP)</td>
<td>UNLOCK – Set as standard for CS motor lock LK001.</td>
</tr>
<tr>
<td>OFF (DOWN)</td>
<td>LOCK – Available upon request.</td>
</tr>
</tbody>
</table>
DIP SWITCH 8: LOCK LK001 or LK002
Selected by the lock LK001 type, or Hypoid lock (LK002) which is connected to the 4pin male connector plug on the microcontroller.

State  Setting
ON (UP)  DL TYPE: The lock DL type (or PL type) is connected.
OFF (DOWN)  KL TYPE: The Hypoid lock type is connected.

NOTE:
The DIP switches are pre-set when delivered. Take a photo of your setting before attempting to reset the cycle count. Remember to remove the power from the controller when adjusting dip switch settings.

HOW TO RESET THE CYCLE COUNT
- Turn DIP SWITCH 6 ON/UP if the digital counter is to be reset.
- Hold Test Button for 3 seconds
- Cycle count will reset
- Door will start a new learning sequence to find open and closed positions.

If dip switch 6 is OFF/Down when the test button is pressed the door will only start a new learning sequence for open and closed positions. The cycle count will NOT be reset.
7. HYPOID GEAR MOTOR SH-17H

Motor SH-17H

1. D connector (8 pin male plug)
   Lead the wire of D connector to the 8-pin female connector of the microcomputer control box CS005

2. F connector (4 pin male plug)
   The connector is for optional motor lock - LK01. Lead the wire of the lock to the F connector to the 4-pin female connector of the microcomputer control box CS005. The door automatically locks when the door is in fully closed position. The lock is unlocked and the door opens and closes when the activate switch is turned ON.

3. Motor Mounts
   Aluminium casting with rubber inserts fits the motor to the track and allows easy removal of the motor for maintenance.
   Motor removal: once belt is removed from motor pulley.
   - Disconnect motor and lock connectors from controller.
   - Slide motor in direction away from pulley
   - Lift pulley end out of motor mount towards you.
   - Pull rear flange out of motor mount and remove.
   - Follow steps in reverse to remount motor.
8. CHECKS TO MAKE BEFORE POWER IS CONNECTED TO THE UNIT

1. Setting and checks before the power is turned ON
   1) Set the door opening direction by the selector (L: Left Hand, R: Right Hand) provided on the microcomputer control box CS005 (PAGE 7)
      DO NOT CHANGE SWITCH WHILE POWER IS ON TO AVOID CONTROLLER DAMAGE
      Turn power OFF, wait 5 sec to drain power. Change setting and reconnect power.

   2) Make sure ‘HOLD OPEN’ adjustment pot is set to the desired position.

   3) Manually check smooth running of the door by pushing it between the open and closed positions.

   5) Check whether all wires are fully connected to the proper positions. Check the activation wires are connected properly into the transformer input plugs.

   4) Check that there is no looseness or other problems with the rest of the componentry regarding screws and wires.

   5) Move door to the centre of the opening – ready to connect the power.

2. Initial movement at power ON
   1) When power is turned ON, the red LED display shows door opening and closing times.

   2) The door moves according to dip switch 6

   3) During the initial movement – When activation devices are off
      - The door when fully open, starts closing after the pre-set hold open period.
      - When closed, the microcomputer memorises the distance the door has traveled to the closed position.
      - The slow close distance is then automatically set by the microcomputer.

   4) Pushing the test button TB allows opening and closing automatically of the door.

   5) Set the HOLD TIMER (SEC), CLOSING SPEED (MM/SEC) and SECOND DISTANCE (%).

NOTE:
If for any reason the distance the door is required to travel has changed, then the controller setting will need to be relearnt. Turn OFF the power and turn ON again after 5 seconds. The door will start the initial learning movement and then follow the normal operation procedure.
### 9. DISPLAY INFORMATION FOR ERROR CODES/FAUL TS

Fault list for microcomputer control box CS005

Error codes are displayed on the LED display as [Err xx]. The following two numbers after the “Err” notation indicates the error that has occurred.

The following list of error codes can be indicated on the CS005 Microcontroller.

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Error/Fault Observed</th>
<th>Error/Fault Detection</th>
<th>How to Clear Error/Fault</th>
<th>Likely Cause for Error/Fault</th>
</tr>
</thead>
</table>
| 02         | Power overvoltage     | Inside rectifier voltage is over DC255V for 10 sec. or more | Inside rectifier voltage is under DC225V for 1 sec. or less | • High power supply voltage (AC180V or over)  
• Excessive inertia due to heavy door weight |
| 03         | Power supply low voltage | Inside rectifier voltage is less than DC50V for 3 sec. or more | Inside rectifier voltage is less than DC50V for 1 sec. or more | • Input AC power supply is low voltage (AC36V or less) |
| 05         | Motor sensor is abnormal | Either motor sensor (U, V, W) is low or high for 5 sec or more | Remove power. Wait 5 seconds and reconnect power | • Motor connector is missing  
• Wire for motor sensor is broken  
• Motor is out of order |
| 06         | Motor sensor U is abnormal | Motor sensor U has not changed for more than 5 sec. during motor operation | Remove power. Wait 5 seconds and reconnect power | • Motor connector is missing  
• Motor wire is broken  
• Motor is out of order  
• Motor shaft is locked |
| 07         | Motor sensor V is abnormal | Motor sensor V has not changed for more than 5 sec. during motor operation | Remove power. Wait 5 seconds and reconnect power | Normally it does not occur |
| 08         | Motor sensor W is abnormal | Motor sensor W has not changed for more than 5 sec. during motor operation | Remove power. Wait 5 seconds and reconnect power | |
| 11         | EEPROM is abnormal | Communication to internal memory failed | Remove power. Wait 5 seconds and reconnect power | • Memory in substrate is abnormal |
| 12         | IPM is abnormal | IPM (power module) abnormal condition is more than 1 sec. | Remove power. Wait 5 seconds and reconnect power | • Memory in substrate is abnormal |
| 02         | Overload Fault | Door under operation stops more than 2 sec. due to external pressure | Run door though standard open/close cycle | • Due to obstacle and wearing rollers, running resistance is big |