

DORMA Automatics, Inc.

924 Sherwood Drive
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<http://www.dorma-usa.com>



ARCHITECTURAL SPECIFICATION ED-700

SECTION 08460 – Automatic Entrance Doors

DORMA Automatics, Inc. Series ED-700 (Surface Applied) LOW ENERGY OPERATING SYSTEM FOR SWINGING DOORS

1.01 SUMMARY:

A. Section Includes: Furnish and install low energy operating system for swinging door(s) in accordance with plans and specifications.

B. Related Work:

1. Section 07900 - Caulking
2. Section 08400 - Entrances and Storefronts
3. Section 08710 - Finish Hardware
4. Section 08800 – Glass & Glazing
5. Section 16120 - Electrical Supply and Termination

1.02 REFERENCES:

- A. ETL/SEMKO (ETL), 70 Codman Hill Road, Boxborough, MA 01719; 800-967-5352, Fax: 800-813-9442333
- B. American National Standards Institute (ANSI), 11 W. 42nd St., 13th Floor, New York, NY 10036; 212-642-4900, Fax: 212-398-0023.
- C. Builders' Hardware Manufacturers Association (BHMA), 355 Lexington Ave., New York, NY 10017; 212-661-4261, Fax: 212-370-9047.
- D. National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02269, 800-344-3555; 617-770-3000, Fax: 617-984-7057.
- E. American Association of Automatic Door Manufacturers (AAADM), 1300 Sumner Avenue, Cleveland, OH 44115-2851; 216-241-7333, Fax: 216-241-0105.

1.03 SUBMITTALS:

- A. Product Data: Submit manufacturer's product data, standard details and installation instructions for all materials provided in this specification.
- B. Shop Drawings: Submit shop drawings that document: profiles, joining methods, product components, anchorage details, adjacent construction interface, dimensions and necessary wiring and electrical requirements.
- C. Samples: Reasonably sized to adequately represent materials and finishes.

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1.04 QUALITY ASSURANCE:

A. Automatic operating system for swinging door(s) shall be certified by the manufacturer to meet performance design criteria according to the following test standards: [select, if applicable]:

1. ANSI / BHMA A156.19.
2. ETL Listed / UL 325.
4. CUL/ETL Certified (equivalent to CSA certified).

1.05 WARRANTY/GUARANTEES:

A. Manufacturer's Standard Warranty: Warranted materials shall be free of defects in material and workmanship for a period of one year from date of installation.

2.01 MANUFACTURER:

- A. DORMA Automatics, Inc.
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E-Mail address: automatics@dorma-usa.com

2.02 LOW ENERGY OPERATING SYSTEM FOR SWINGING DOOR(S):

A. Operating System: Shall be DORMA ED-700. The system shall consist of electromechanical low energy swing door operator enclosed in an aluminum header – 5.5"W x 5"H x length required or 30" minimum, (139.7 mm x 127 mm x required length or 762 mm), connecting hardware, actuating controls, and On-Off-Hold Open switch. The operator will allow both manual opening of the door, and/or provide controlled power opening of the door in response to an input signal. Additionally, it will offer controlled closing of the door at all times – with or without 120VAC power. The system shall be completely engineered and manufactured by DORMA Automatics, Inc. All operator components shall be factory assembled, fully adjusted and tested. The system shall be installed and adjusted in accordance with ANSI A156.19.

B. Door Operation: The ED-700 will provide one or more of the following door operations:

Manual Operation: The force required (to overcome) the mechanics of the motor/gear drive and the closing spring shall be field adjustable from a minimum of 5lbf. (21N) to maximum 15 lbf. (67N). Note: The closing force will vary with this adjustment. When the operator does not have 120 VAC power, it will physically operate in a manual mode.

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Powered Operation: When an input signal is applied to the actuating input, the operator will initiate powered opening of the door - accelerate to an open speed - at the open check point decelerate the open speed to the open check speed - then change from open check speed to final open speed as the operator rotation is stopped by the internal hard stop.

The unit will remain in this position until all actuating input signals have cleared and time delay(s) have expired - then will begin closing under spring power at closing speed - and at the close checkpoint reduce the closing speed to close check speed. Optional "Power Assist Close," available as an add-on module, will apply motor power to assist spring closing. Closing force will not exceed 15 lbf. (67N).

In both modes of operation, the final 10° of door closing shall not occur in less than 1.5 seconds.

The operator control will be an existing analog unit readily available from a reliable and experienced control board manufacturer. The operator will power open the door in response to a slight initial manual movement of the door, followed by automatic controlled spring closing; Knowing-act Opening – a push plate, pushbutton, key switch or similar switch is actuated and the operator power opens the door, followed by automatic controlled spring closing; Automatic Opening – a non-contact sensor (motion detector, etc.) will detect an approaching pedestrian and will automatically open the door, followed by automatic controlled spring closing.

Opening force, Open speed, Back Check speed, Closing speed, and time delay shall be individually adjustable within ANSI / BHMA A156.19 requirements.

C. Aluminum Extrusion Finish: Standard anodized finish shall be [select one: 204-R1 Class-II Clear anodize or 313-R1 Class-I Dark Bronze anodize]. [Special anodic finishes, special paint finishes and metal clad finishes are available upon request. Specify type and color of each finish desired].

2.03 Component Descriptions:

A. Motor/Gear Drive with Closing Spring and Open Stop:

The motor will be a 90VDC permanent magnet unit connected to a gear reduction assembly with an output shaft capable of 240° of total rotation. At the end of rotation an operator mounted stop is provided to determine the full open position of the operator and door. The stop shall be capable of withstanding reasonable abuse during normal operation. A closing spring is included in the assembly to return the operator from the full open position to the rest or door closed position.

B. Control:

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At a minimum, the operator control shall include the following inputs:

- a. Actuate: will initiate [subject to other inputs] an opening cycle of the operator, and will initiate a time delay to begin upon the input signal releasing. This input is always active, again subject to other inputs.
- b. Presence Sensor: Will either:
 - Inhibit the operator opening if it is closed, or
 - Hold the operator open if it is fully open. This input is ignored while the operator is in close speed, and for a time delay, adjusted on the control, thereafter.
 - Provides data line output for industry standard dual-zone presence sensors.
- c. Swing Sensor: is enabled when the operator is in open speed, and if triggered during this mode, will cause the operator to: a.) Stop and resume opening when sensor clears; or b.) Stop and seek full open at a reduced speed. It is not active when the door is in open check speed.
- d. ON/OFF/HOLD OPEN Switch: to enable either automatic operation of the operator, and/or, open the operator to full open and remain continuously until the switch status is changed.
- e. LED indicators shall be provided adjacent to each of the above inputs, indicating status. The following inputs will not require indicators.
 - Operator Position Switch: A switch mounted in the operator used to indicate a defined door position. For the analog control, this switch will be at the open checkpoint, and a second switch will be required at the close checkpoint. The switches will be field adjustable.
- f. Internally, the control shall be capable of sensing and responding to the following:
 - Push-and-Go: The operator has been manually pushed in the open direction
 - Opening Obstacle: The operator has been inhibited during powered opening
 - Closing Obstacle: The operator has been inhibited during closing
- g. Additionally, the control shall provide some convenient method for enabling/disabling the above sensing modes.

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- h. All of the inputs shall be configured such that two controls may be connected in parallel with any or all of the inputs, and proper functionality shall continue.

The control shall provide the following outputs:

- +24VDC: to provide limited power for auxiliary equipment (sensors, locks, etc.); 2A max.
 - Motor: to either provide voltage to power the motor, or to shunt motor-generated voltage
 - Lock Relay Driver: to control automatic locking, including time delay between unlock and door opening.
 - Signal: to indicate door is open (used for door status and sensor dual-zone control).
- i. At a minimum, the operator control shall provide the following adjustments:
1. Acceleration: The ramp rate of motor voltage (increasing) applied when initiating an open cycle, whether from full closed or from partially closed (recycle).
 2. Open Speed: The motor voltage applied during the open cycle.
 3. Open Force: The motor current applied during the open cycle.
 4. Deceleration: The ramp rate of motor voltage (decreasing) when changing from open speed to open check speed.
 5. Open Check Speed: The motor voltage applied during the open cycle after the checkpoint has been reached, and before the full open position.
 6. Final Speed: The motor voltage applied as the operator reaches the full open position, and remains applied until the close cycle has been initiated.
 7. Close Speed: The shunting of the motor-generated voltage during the closing cycle.
 8. Sensor Time Delay: The length of time the door remains open in response to an Actuate Sensor signal, and after all inputs have been cleared.
 9. Lock Out Time Delay: An adjustable length of time, during door closing, that the presence sensor input is disabled.
 10. Lock Delay: The length of time between receipt of an actuating signal and the initiation of operator open speed. Note: The Lock/Vestibule output status is changed immediately upon receipt of the actuating signal.

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11. Open Obstruction: The threshold force required to inhibit the opening cycle before the control responds by reducing the open speed.
 12. Close Obstruction: The threshold speed, during closing, required to initiate a re-open cycle.
- j. Traditional potentiometers will be used for the specified control adjustments, for a total of nine (9) individual single-turn potentiometers. Small switches will be used for "Push-and-Go," "Close Obstruction" and "Lock Delay."

The Potentiometer functions follow:

1. Acceleration: Open acceleration adjustment. Sets motor acceleration to open speed setting.
2. Deceleration: Open deceleration adjustment. Determines how quickly the door slows after the open check switch is activated.
3. Speed: Open speed adjustment. Sets the open speed of the operator from start to open check.
4. Check: Open speed check adjustment. Sets the speed after the open check switch falls onto the cam flat (approximately 80°).
5. Hold: Hold voltage function. Control switches to hold-open voltage after a nominal 12 second delay from activate or immediately after OBST or Stop-and-Seek input.
6. Delay: Time delay adjustment to begin closing after release of activating switches (1-30 sec).
7. Lock Out: Lock out time delay. Sets the length of time to ignore the safety sensor during door closing.
8. Limit: Torque limiting. Controls the amount of opening force.
9. Obstruction: Sensitivity to an obstruction during opening

On/Off selectable jumper blocks are used for the following functions:

10. Push & Go: A slight push and/or pull on the door in the direction of opening will initiate a powered open cycle of the operator.
11. T stop: An obstruction during closing speed will initiate a re-open cycle of the door.

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12. Lock Delay Enable: A slight delay is required to allow an automatic lock to unlock, eliminating any mechanical bind, before the door begins to open.

D. Mounting Base plate and Assembly Enclosure

The components shall be aesthetically acceptable and capable of changing the operator hand and direction of swing in the field or shop. The completed assembly shall be capable of withstanding normal exterior installation conditions.

E. Door Connecting Hardware and Miscellaneous Installation Hardware

Use of existing DORMA components such as push arms and slide track pull channels will be used and are compatible with the EDA system.

2.04 OPERATING CONDITIONS:

A. Climatic Conditions: All automatic operating system components shall operate between -5 F (-20 C) and +120 F (48 C) in all climatic conditions.

2.05 RELATED WORK REQUIREMENTS:

A. Electrical: 120 VAC, 60 Hz, 5 Amp service provided to the header.

3.01 INSPECTION:

A. The installer shall verify that the installation area is dry, clean and free of foreign matter. Check as-built conditions and verify the manufacturer's automatic operating system details for accuracy to fit the frame assembly prior to fabrication. Report [in writing] to the Contractor any detrimental conditions to the proper functioning of the low energy operating system. Installation shall proceed once any unsatisfactory conditions have been corrected and in accordance to the manufacturer's recommendations.

3.02 INSTALLATION:

A. Installation shall be by an installer approved and trained by the manufacturer in strict accordance with the manufacturer's instructions and fire marshal's listing requirements.

B. Comply with the low energy operating system manufacturer's recommendations and/or installation guide when installing the system. Mount units plumb, level and secure.

C. Provide all fasteners required for installation of the low energy operating system.

D. Adjustment and Cleaning: After repeated operation of the completed installation, inspect door operators and controls for optimum operating condition and safety. Clean all metal surfaces promptly after installation.

E. Explain and review the Owner's Manual.