

SECTION 08 71 13 – COMMERCIAL DOOR OPERATORS PULSE 200 SERIES DIRECT DRIVE DC DOOR OPERATOR

PART 1 – GENERAL

1.1 SUMMARY

Provide a direct-drive commercial door operator consisting of a DC electric motor directly coupled to a hollow shaft worm gear reducer. The continuous duty 1/2, 3/8 HP, 90 V DC, 1750 rpm, IP44 rated motor shall operate from 110–130 V AC or 208–240 V AC, 1 phase, 60 Hz power.

1.2 REFERENCES

- A. UL 325.
- B. Manufacturer's installation manual.
- C. Applicable electrical codes.

1.3 SUBMITTALS

- A. Product data.
- B. Shop drawings.
- C. Wiring diagrams.
- D. Operation and maintenance manuals.
- E. Warranty documentation.

1.4 QUALITY ASSURANCE

- A. Installer shall be trained and experienced with UL 325 requirements.
- B. Door shall be properly balanced with limit brackets or bumper springs installed.
- C. Structural support shall be adequate to withstand torque arm forces.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Store products in original packaging; protect from moisture and impact.
- B. Store batteries in temperature-controlled conditions; avoid extreme heat or cold.

1.6 WARRANTY

- A. Provide a two-year or 250,000-cycle warranty, whichever occurs first.

PART 2 – PRODUCT

2.1 MANUFACTURER

iControls Inc., Richmond Hill, Ontario, Canada (iControlsGlobal.com).

2.2 MOTOR AND GEARBOX

- A. Operator shall include a 90 V DC motor available in ½, 3/8 HP ratings.
- B. Worm gearbox reducer shall be available in 30:1, 40:1, or 50:1 ratio.
- C. Gearbox sizes shall include Size 50 with 1" shaft entry, or Size 75 with 1¼" shaft entry.

2.3 CONTROL PANEL

- A. Provide a programmable, wall-mountable NEMA 4X control panel with LCD display and OPEN, CLOSE, and STOP buttons.
- B. Control voltage shall be 24 V DC.

2.4 BATTERY BACKUP SYSTEM

- A. Operator shall include a 24 V battery backup system with two 2.3 Ah batteries.
- B. Constant-pressure on OPEN or CLOSE buttons for operation.

2.5 MECHANICAL BACKUP SYSTEM

- A. 9/16" hex shaft on bottom of motor shall be included for redundant mechanical backup.
- B. An optional chain hoist shall be available for manual operation when battery backup is depleted.
- C. Chain hoist shall attach directly to the motor and be operable from floor level.
- D. Two color-coded cords shall be provided to engage and disengage the chain hoist, with an interlock switch that cuts power to the motor upon chain-hoist engagement.

2.6 PROGRAMMABLE SPEED SETTINGS

- A. Open and close speeds shall be adjustable through the control panel user interface.
- B. Maximum open speed shall be up to 24"/s; maximum close speed up to 16"/s, depending on shaft size, drum size, door size, door weight and application.
- C. Soft start/stop and programmable ramp distances for smooth acceleration/deceleration to reduce mechanical wear.

2.7 ENCODER SYSTEM

- A. A gearbox-mounted encoder shall provide precise limit setting and support left or right-side mounting.
- B. Encoder shall support advanced door control functionality.
- C. Encoder shall sense any lack of motion of the door and halt operation.

2.8 FORCE MONITORING

- A. Operator shall include intelligent force monitoring that detects obstructions or jams.
- B. Door shall stop during opening and stop and reverse during closing when excessive force is detected.
- C. Force sensitivity shall be adjustable through the control panel.

2.9 SAFETY MONITORING DEVICES

- A. Provide a reflective photo eye kit for safety monitoring.

2.10 BALANCE DOOR CHECK

- A. A feature shall be provided to detect whether the door is properly balanced.
- B. When activated, the encoder shall complete a low-speed cycle and analyze the current required to open and close the door. The same or similar numbers indicate a balanced door.

2.11 ADDITIONAL FEATURES AND OPTIONS

- A. Additional features include door lock activation, programmable closing timer, voltage selection, door close warning and a weather protection option.
- B. Features shall be as specified in manufacturer documentation.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify door balance and smooth operation prior to installation.
- B. Confirm clearances: minimum 6" from shaft end, 18" below shaft, and 3" exposed keyed shaft.
- C. Verify structural support for supplied torque arm attachment.

3.2 INSTALLATION

- A. Install limit brackets or bumper/pusher springs prior to operator installation.
- B. Install shaft collar and bent key, mount operator onto keyed shaft.
- C. Secure torque arm to structural support using supplied hardware.
- D. Mount control panel minimum 5 ft above floor and within sight of the door.
- E. Install photo eye no more than 6" above floor; align using indicator LEDs.
- F. Complete wiring in accordance with manufacturer diagrams and electrical codes.

3.3 ADJUSTMENT AND TESTING

- A. Power system and run self-diagnostic.
- B. Program limits, speeds, forces, and timer-to-close settings.
- C. Verify photo eye alignment and safety reversal function.
- D. Test battery backup operation.

3.4 CLOSEOUT

- A. Provide manuals and warranty documentation.
- B. Train owner's personnel in operation and maintenance.