

SM060-TK7 Data Sheet

LIT-12014157



Model

SM060-TK7: 70 in.lb. (8 Nm) with fail safe - Enerdrive, with FT6 cable




Features

- Brushless DC-driven motor (impedance protected)
- Contactless feedback positioner
- Mounts easily on round shafts
- Manual clutch
- Maintenance-free
- Position indicator
- Fail safe by Enerdrive System
- Auto-stroke
- Cable
- ½" (16mm) BX conduit connector (optional)



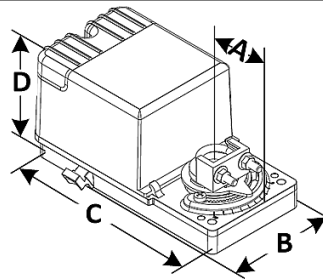
TK7 Series

Technical Specifications

| Description | SM060-TK7 |
|-----------------------------------|---|
| Torque | 70 in.lb. [8 Nm] at rated voltage |
| Holding Torque | 70 in.lb. [8 Nm] at rated voltage |
| Running Time (for 90° Rotation) | 6 seconds torque independent |
| Fail Safe (Enerdrive) | Yes |
| Fail Safe Runtime (0° to 90°) | 7 seconds |
| Capacitor Charge Time on Power-up | 100 seconds |
| Power Consumption | 33VA peak, 15W (during operation), 2W (at rest) |
| Power Supply | 22 to 26 Vac 28 to 32 Vdc 50/60Hz |
| Transformer Requirements | Class 2; min. 26VA |
| Cable | 5-wire FT6 plenum cable (18AWG) with strain release (NP NEP617-1) |
| Electrical Connection | 18 AWG [0.82mm ²], 39.5" (1m) long |
| Control Signals | 2-10Vdc (default) or 4-20mA (DIP switch selectable) / 24VAC floating |
| Feedback Signals | 2-10Vdc (DIP switch selectable) or 4-20mA (default) |
| Angle of Rotation | 0° to 90°, mechanically and electronically adjustable (default: 90° stroke) |
| Direction of Rotation | Reversible, CW: Clockwise, CCW: Counterclockwise (default: CW) |
| Cycles | 100,000 full cycles, 1,500,000 repositions |
| Noise Produced | 45 dB(A) |
| Ingress Protection | IP54 equivalent to Nema type 3S |
| Operating Temperature | 0°F to +122°F [-18°C to +50°C] |
| Storage Temperature | -22°F to +122°F [-30°C to +50°C] |
| Relative Humidity | 5 to 95% non-condensing |
| Weight | 2.5 lb [1.1 kg] |
| Purpose and Action of Control | Type 1 operating control, electric actuator |
| Construction of Control | Independently mounted |
| Pollution Degree | 2 |
| Impulse Voltage | 330V |
| Quality Management System | ISO 9001:2015 |
| Certification |  Complies to standards: UL 60730-1 & UL 60730-2-14, CSA E60730-1 & CSA E60730-2-14 |
| |  Complies to Low Voltage Directive & Electromagnetic Compatibility Directive |
| |  Complies to Electrical Equipment (Safety) Regulations & Electromagnetic Compatibility Regulations |

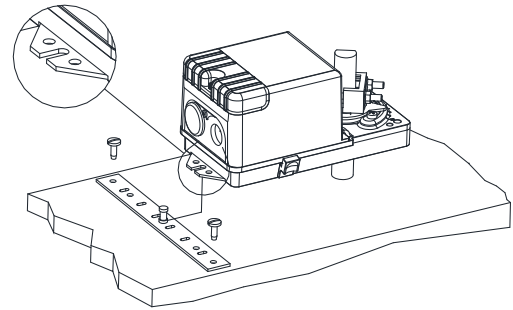
Dimensions

A = 1.50" (38mm)
 B = 3.64" (93mm)
 C = 6.60" (168mm)
 D = 3.02" (77mm)



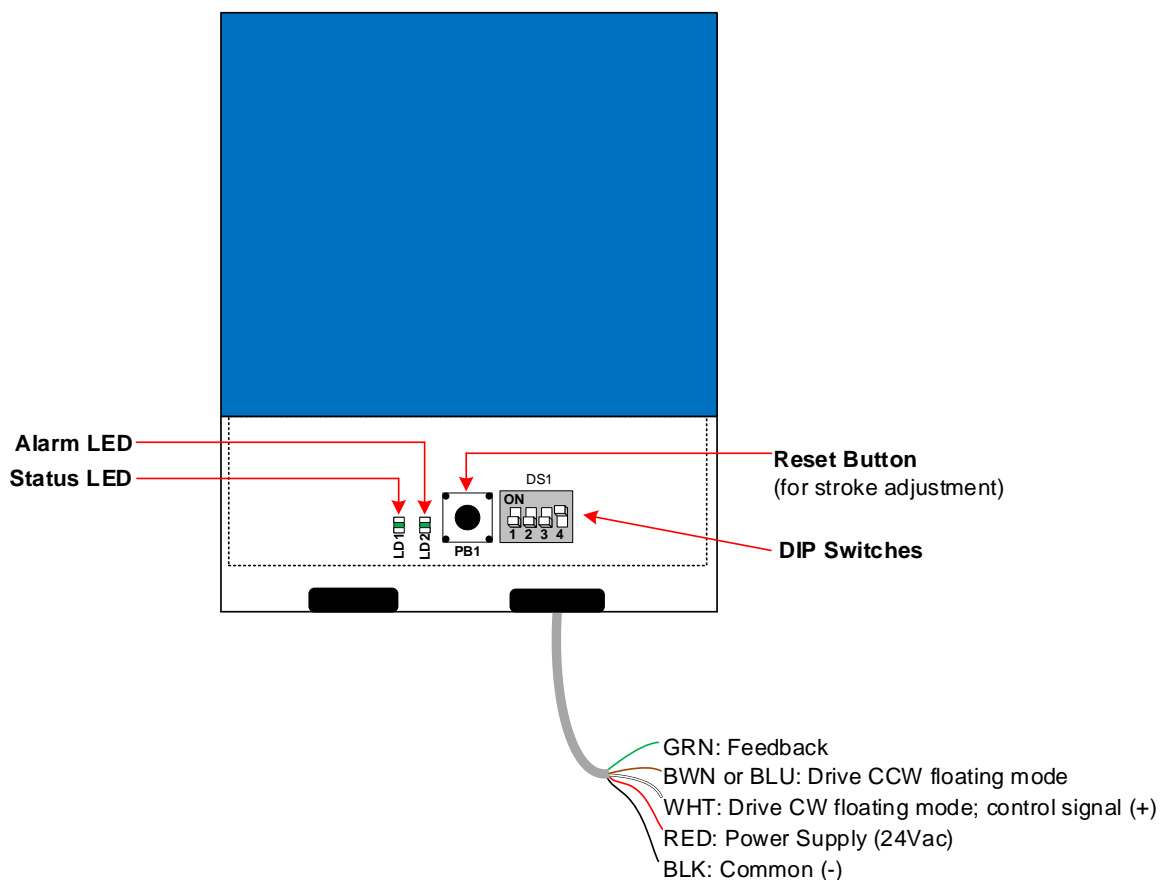
Mechanical Installation

1. Manually close the damper blades and position the actuator to 0° or 90°.
2. Slide the actuator onto the shaft.
3. Tighten the nuts on the "U" bolt to the shaft with an 8mm wrench to a torque of 60 in-lb [6.7 Nm].
4. Slide the mounting bracket under the actuator. Ensure free movement of the slot at the base of the actuator. Place the bracket pin at mid-distance of the slot.
5. Affix the bracket to the ductwork with #8 self-tapping screws.



Wiring

We strongly recommend wiring all products to a separate grounded transformer, and that transformer shall service only these products. This precaution will prevent interference and damage to incompatible equipment.



Settings

DIP Switches

| # | Feature | OFF | ON |
|---|----------------------|----------------|-------------|
| 1 | Rotation | CW * | CCW |
| 2 | Fail-safe return | at 0° * | at 90° |
| 3 | Control Input signal | Vdc * | mA |
| 4 | Feedback | Vdc | mA * |

* = default

Status LED

| State | Description |
|-------------|-------------------------------|
| ON | Auto-stroke |
| Flash | Normal operation |
| Rapid flash | During charging of capacitors |

Alarm LED

| State | Description |
|-------|-----------------------------------|
| Flash | Error or Configuration mode |

Normal Operation

The status LED will indicate the selected control mode:

| Control State | Number of Status LED Pulses |
|----------------------------|-----------------------------|
| Analog | 1 |
| Digital ON/OFF or floating | 2 |
| PWM 5 seconds | 3 |
| PWM 25 seconds | 4 |

Configuration Instructions

- Set all the dip switches to OFF, then press and hold the push button (PB1) for 5 seconds. The red alarm LED will blink with one pulse, meaning that the first menu (Control State) is now accessible.
- Select the desired control mode by setting the associated dip switch to ON. In the absence of a selection, the control state menu shall remain unchanged.

| Menu | Number of Alarm LED Pulses | Dip Switch 1 | Dip Switch 2 | Dip Switch 3 | Dip Switch 4 |
|---------------|----------------------------|-------------------------|---------------------------------|---------------|---------------|
| Control State | 1 | Analog (Modulating)* | Digital (On/Off or floating) | PWM (5 sec) | PWM (25 sec) |
| Zero Span | 2 | 2-10Vdc* | 0-10Vdc | Minimum value | Maximum value |

* Default factory settings

- To navigate through the configuration menus, press and release the push button (PB1).
 - Press again to access the second menu (Zero Span). There will be 2 pulses on the alarm LED.
 - Press again to go back to the first menu (Control State).
- To change the span range to something other than 2-10Vdc or 0-10Vdc, access the Zero Span menu and do the following:
 - Input the desired minimum voltage to the white wire, then set dip switch 3 to ON.
 - Input the desired maximum voltage to the white wire, then set dip switch 4 to ON.
 - The maximum voltage must be at least 3V greater than the minimum voltage, and they must both lie within 0 to 10V.
- To leave the configuration menu and save any changes, press and hold the push button (PB1) for 5 seconds.
- To undo changes and reset the settings back to the factory default, press and hold the push button (PB1) for about 15 seconds.

Stroke Adjustment

As a default, the auto-stroke feature is disabled and can only be activated manually.

To initiate an auto-stroke process, press and release the reset button while the unit is in normal operating mode (status LED flashes slowly 1Hz). The status (green) LED will remain lit.

The actuator travels in both directions to find its limit and position itself according to the demand.

The LEDs will extinguish when the process is complete. The status LED will then continue flashing slowly (1Hz).

List of Alarms

| Number of Alarm LED Pulses | Alarm | Issues | Solution |
|----------------------------|-------------|--|---|
| 1 | Power fail | The actuator is not receiving any power and is shutting off. | Ensure the actuator is properly connected to the power supply source. |
| 2 | Auto-stroke | 1. The actuator auto-stroke is not at a minimum of 30°. 2. The actuator auto-stroke has not been performed yet, causing the actuator to go into an alarm state. | Press the push button (PB1) and ensure that the span is greater than 30°. |
| 3 | Over-torque | The actuator over torque is at 25% of its nominal torque. | Ensure that the actuator is not trying to rotate with more than 25% of its nominal torque. Then, press the push button (PB1) to trigger an auto-stroke and clear the alarm. |
| 4 | Clutch | The clutch is engaged, and the motor is turning. | Turn off the actuator, manually release the clutch and turn the power back on. <i>(This alarm will be cleared, and the actuator will return to normal operation after 1 minute.)</i> |
| 5 | Hardware | 1. The NVM is corrupt. 2. There is no magnet installed. 3. The GMR sensor failed. | 1. Visually inspect the NVM IC, remove any dust or debris from it, then perform a power cycle. 2. Ensure that the magnet is installed at a proper distance not touching the PCB or is not too far from it. It is recommended to keep it 1-2mm away. Once confirmed, perform a power cycle. 3. Visually inspect the TLI IC, remove any dust or debris from it, then perform a power cycle. |
| 6 | Motor fault | The motor driver is not working properly. | 1. Turn off the actuator, perform a visual inspection and remove any dust or debris from it. Try again. 2. Turn off the actuator, ensure that there is no short circuit and that the voltage supply is at an optimal level, then turn the actuator back on. |



Recycling at end of life: please return this product to your local distributor for recycling.