# imall

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Tel: +86-755-8981 8866 Fax: +86-755-8427 6832 Email & Skype: info@chipsmall.com Web: www.chipsmall.com Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



**Emergency Stop Devices** 

# ER6022

For full product information, visit www.sti.com. Use the SpeedSPEC Code for quick access to the specific web age.

## **Rope Pull Emergency Stop Switch**

- Rope spans up to 80 m (262 ft.) means fewer number of switches required per application
- Tension indicator makes system setup and rope tension maintenance easy
- Contact arrangements of 2 N/C + 1 N/O, 3 N/C + 1 N/O or 2 N/C + 2 N/O
  IP67 (NEMA 6) enclosure enables the ER6022 switch to withstand water washdown cleaning
- Reset button—the blue reset button must be pushed in order to return to "machine run" condition following switch actuation by a pulled or slacked rope
- Indicator beacon—the optional dual indicator beacon, available in 24 VDC or 120 VAC, can be wired to flash red to indicate a tripped switch or glow a constant green to indicate a properly reset switch
- E-stop button—the ER6022 has two mounting positions where the optional E-stop button may be installed; the E-stop button may be added or replaced in the field
- Rubber bellows contain UV inhibitor making the switches suitable for outdoor applications



Conforms to IEC947-5-1, IEC947-5-5, EN418, UL508, BS5304 UL and C-UL listed, TUV certified

## Specifications

| Electrical                        | All Models   |  |  |  |
|-----------------------------------|--|--|--|--|
| Contact Configurations:           | 2 N/C + 1 N/O, 3 N/C + 1 N/O, 2 N/C + 2 N/O                    |  |  |  |
| Safety Contacts:                  | 2 N/C, 3 N/C   |  |  |  |
| Switching Ability                 | AC: 240 V–3 A, 120 V–6 A, Inductive, DC: 24 V–2.5 A, Inductive |  |  |  |
| Auxiliary Contacts:               | 1 N/O, 2 N/O   |  |  |  |
| Max Switching Current/Volt/Amp:   | 240 V/720 VA   |  |  |  |
| Minimum Current:                  | 5 V 5 mA DC  |  |  |  |
| Electrical Life:                  | 1 x 10 <sup>e</sup> minimum                                    |  |  |  |
| Mechanical                        |  |  |  |  |
| LED Indicator Beacon:             | 24 VDC, 120 VAC  |  |  |  |
| Mechanical                        | 1 million minimum  |  |  |  |
| Mounting:                         | Any position   |  |  |  |
| Mounting Hardware:                | 4 x M5 screws  |  |  |  |
| Max Rope Span:                    | 80 m (262 ft.)   |  |  |  |
| Operation Force:                  | < 125 N (28 lb.)   |  |  |  |
| Tensioning Force to Run Position: | 130 N (23 lb.) typical   |  |  |  |
| Case Material:                    | Die-cast aluminum alloy  |  |  |  |
| Eye Nut Material:                 | Stainless Steel  |  |  |  |
| Stainless Accessory Items:        | 304 Stainless Steel  |  |  |  |
| Wiring Entry:                     | 3 x M20 or 3 x 0.5 in. NPT                                     |  |  |  |
| Weight:                           | 880 g (31 oz.)   |  |  |  |
| Color:                            | Yellow   |  |  |  |
| Mechanical Life:                  | 1 x 10 <sup>6</sup> minimum                                    |  |  |  |
| Environmental                     |  |  |  |  |
| Protection:                       | IP67 (NEMA 6)  |  |  |  |
| Operating Temperature:            | -25 to 80°C (-13 to 176°F)                                     |  |  |  |
| Cleaning:                         | Water washdown   |  |  |  |
| Compliance                        |  |  |  |  |
| Standards:                        | IEC947-5-1, IEC947-5-5, EN418, UL508, BS5304                   |  |  |  |
| Approvals/Listings:               | CE marked for all applicable directives, UL and C-UL, TUV      |  |  |  |

Specifications are subject to change without notice.

Note: The safety contacts of the STI switches are described as normally closed (N/C)-

i.e., with the rope properly tensioned and the machine able to be started.





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## Operation



## Blue Reset Knob

A blue reset button is provided to easily return the unit back to its machine-run position after actuation.



### **Emergency Push Button**

The emergency push button may be installed or repositioned in the field. The ER6022 has two possible mounting positions for the emergency stop button.

## Installation Hardware Available



Installation Hardware

Individual hardware items may be purchased for specific installation requirements.

## **Contact Arrangements**



#### **RK Rope Tension Kit**

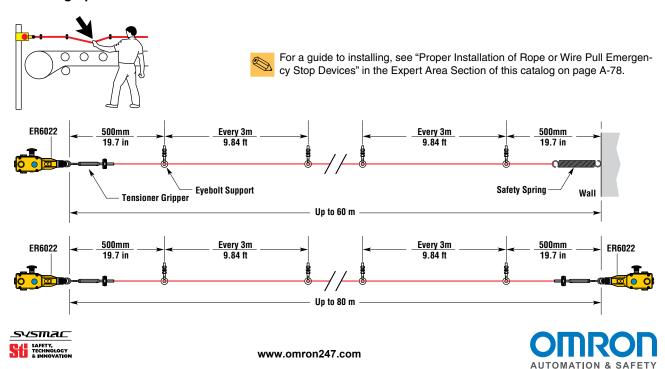
The RK Rope Tension Kit comes with all of the required hardware for most installations. A spring is required as shown in the installation example below. For up to 50 m rope span, one rope end is terminated with a thimble, permanent clamp, and quick link attached.

For over 50 m rope span, 2 Tension/Gripper assemblies are supplied (no quick link.)

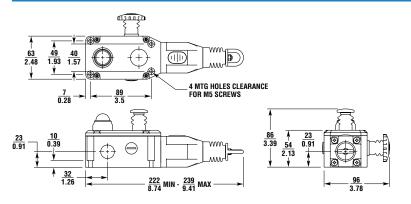
|                    | <u>0 mm</u> | <u>3.5</u><br>0.14 |               | <u>14.5</u> | 1     |
|--------------------|-------------|--------------------|---------------|-------------|-------|
|                    | 0 in        | 0.14               |               | 0.57        | Ō     |
| 2NC + 1NO Versions | Rope Slac   | k                  | Tension Range | Rope Pi     | ulled |
| 11/12              |             |                    |               |             |       |
| 21/22              |             |                    |               |             | -     |
| 33/34              |             |                    |               |             |       |
| 3NC + 1NO Versions | Rope Slac   | k l                | Tension Range | Rope Pu     | ulled |
| 11/12              |             |                    |               |             |       |
| 21/22              |             |                    |               |             |       |
| 33/34              |             |                    |               |             |       |
| 43/44              |             |                    |               |             |       |
| 2NC + 2NO Versions | Rope Slac   | k l                | Tension Range | Rope Pu     | ulled |
| 11/12              |             |                    |               |             |       |
| 21/22              |             |                    |               |             |       |
| 33/34              |             |                    |               |             |       |
| 43/44              |             |                    |               |             |       |

🗆 Contact Open 🛛 🗖 Contact Closed

## **Mounting Specification**

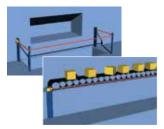


## Dimensions



## (mm/in.) Applications

Typical applications are on conveyor systems and across rotating machinery, and around hazardous areas.



## Ordering

| Model                           | E-stop       | Indicator Beacon  | Contacts      | Wiring Entry    | Part No.   |
|---------------------------------|--------------|-------------------|---------------|-----------------|------------|
| ER Switches with 3 pole contact |              |                   |               | <b>_</b>        |            |
| ER6022-021M                     | Not included | Not included      | 2 N/C + 1 N/O | 3 × M20         | 44506-5010 |
| ER6022-021N                     | Not included | Not included      | 2 N/C + 1 N/O | 3 x 1/2 in. NPT | 44506-5020 |
| ER6022-021ME                    | Included     | Not included      | 2 N/C + 1 N/O | 3 x M20         | 44506-5210 |
| ER6022-021NE                    | Included     | Not included      | 2 N/C + 1 N/O | 3 x 1/2 in. NPT | 44506-5220 |
| ER6022-021MEL                   | Included     | Included          | 2 N/C + 1 N/O | 3 x M20         | 44506-5410 |
| ER6022-021NEL                   | Included     | Included          | 2 N/C + 1 N/O | 3 x 1/2 in. NPT | 44506-5420 |
| ER6022-021NELAC                 | Included     | Included, 120 VAC | 2 N/C + 1 N/O | 1/2" NPT        | 44506-5423 |
| ER Switches with 4 pole contact | blocks       |                   |               |                 |            |
| ER6022-031M                     | Not included | Not included      | 3 N/C + 1 N/O | M20             | 44506-5050 |
| ER6022-031N                     | Not included | Not included      | 3 N/C + 1 N/O | 1/2 in. NPT     | 44506-5060 |
| ER6022-022M                     | Not included | Not included      | 2 N/C + 2 N/O | M20             | 44506-5070 |
| ER6022-022N                     | Not included | Not included      | 2 N/C + 2 N/O | 1/2 in. NPT     | 44506-5080 |
| ER6022-031ML                    | Not included | Included, 24 VDC  | 3 N/C + 1 N/O | M20             | 44506-5150 |
| ER6022-031NL                    | Not included | Included, 24 VDC  | 3 N/C + 1 N/O | 1/2 in. NPT     | 44506-5160 |
| ER6022-022ML                    | Not included | Included, 24 VDC  | 2 N/C + 2 N/O | M20             | 44506-5170 |
| ER6022-022NL                    | Not included | Included, 24 VDC  | 2 N/C + 2 N/O | 1/2 in. NPT     | 44506-5180 |
| ER6022-031ME                    | Included     | Not included      | 3 N/C + 1 N/O | M20             | 44506-5250 |
| ER6022-031NE                    | Included     | Not included      | 3 N/C + 1 N/O | 1/2 in. NPT     | 44506-5260 |
| ER6022-022ME                    | Included     | Not included      | 2 N/C + 2 N/O | M20             | 44506-5270 |
| ER6022-022NE                    | Included     | Not included      | 2 N/C + 2 N/O | 1/2 in. NPT     | 44506-5280 |
| ER6022-031MEL                   | Included     | Included, 24 VDC  | 3 N/C + 1 N/O | M20             | 44506-5450 |
| ER6022-031NEL                   | Included     | Included, 24 VDC  | 3 N/C + 1 N/O | 1/2 in. NPT     | 44506-5460 |
| ER6022-022MEL                   | Included     | Included, 24 VDC  | 2 N/C + 2 N/O | M20             | 44506-5470 |
| ER6022-022NEL                   | Included     | Included, 24 VDC  | 2 N/C + 2 N/O | 1/2 in. NPT     | 44506-5480 |
| ER6022-031NELAC                 | Included     | Included, 120 VAC | 3 N/C + 1 N/O | 1/2 in. NPT     | 44506-5463 |
| ER6022-022NELAC                 | Included     | Included, 120 VAC | 2 N/C + 2 N/O | 1/2 in. NPT     | 44506-5483 |

| Accessories                  |               | Part No.      | Accessories                     |                 |            |  |
|------------------------------|---------------|---------------|---------------------------------|-----------------|------------|--|
| Stainless Steel Rope<br>Kits | Quick<br>Link | Eye-<br>bolts | Tension/<br>Gripper<br>Assembly | Allen<br>Wrench |            | SM06-SL500<br>SM06-SL510<br>SM06-SL510 |
| RK5, 5 m Kit                 | Yes           | 3             | 1                               | 1               | 44506-2705 | (consult facto                         |
| RK10, 10 m Kit               | Yes           | 5             | 1                               | 1               | 44506-2710 | SM06-TK00,                             |
| RK15, 15 m Kit               | Yes           | 7             | 1                               | 1               | 44506-2715 | 4 Thimbles)                            |
| RK20, 20 m Kit               | Yes           | 9             | 1                               | 1               | 44506-2720 | SM06-TG00,                             |
| RK30, 30 m Kit               | Yes           | 12            | 1                               | 1               | 44506-2730 | SM06-EB10,                             |
| RK50, 50 m Kit               | Yes           | 20            | 1                               | 1               | 44506-2750 | SM06-EB20,                             |
| RK80, 80 m Kit               | No            | 30            | 2                               | 2               | 44506-2780 | SM06-DL20,                             |
| RK100, 100 m Kit             | No            | 37            | 2                               | 2               | 44506-2711 | SM06-DL21,                             |
| RK126, 126 m Kit             | No            | 45            | 2                               | 2               | 44505-2726 | SM06-THSS,<br>SM06-THGV,               |
| Rope Only                    | <u>.</u>      |               |                                 |                 |            | SM06-QLSS,                             |
| R5M, 5 m Rope Only           |               |               |                                 |                 | 44506-3705 | SM06-TB30,                             |
| R10M, 10 m Rope Only         |               |               |                                 |                 | 44506-3710 | SM06-TB31,                             |
| R20M, 20 m Rope Only         |               |               |                                 |                 | 44506-3720 | SM06-SP30,                             |
| R30M, 30 m Rope Only         |               |               |                                 |                 | 44506-3730 | SM06-SP50,                             |
| R50M, 50 m Rope Only         |               |               |                                 |                 | 44506-3750 | SM06-RPSS,                             |
| R80M, 80 m Rope Only         |               |               |                                 |                 | 44506-3780 | SM06-ES60,                             |
| R100M, 100 m Rope Only       |               |               |                                 |                 | 44506-3711 | SM06-LF40,                             |
| R126M, 126 m Rope Only       |               |               |                                 |                 | 44506-3726 | SM06-LF41,                             |

| Accessories   | Part No.   |
|---|------------|
| SM06-SL500, Replacement Lid 24 VDC                        | 44506-5700 |
| SM06-SL510, Replacement Lid/LED 24 VDC                    | 44506-5710 |
| SM06-SL510AC, Replacement Lid/LED 120 VAC                 | 44506-5711 |
| (consult factory for complete switch with 120 VAC beacon) |            |
| SM06-TK00, Tensioner Kit (Turnbuckle, 8 Rope Grips &      | 44506-0700 |
| 4 Thimbles)   |            |
| SM06-TG00, Tensioner Gripper, Stainless Steel             | 44506-4700 |
| SM06-EB10, Eye Bolt, Stainless Steel, 8 per pack          | 44506-4710 |
| SM06-EB20, Eye Bolt, Galvanized                           | 44506-0720 |
| SM06-DL20, Double Loop Clip, Stainless Steel, 4 per pack  | 44506-4720 |
| SM06-DL21, Double Loop Clip, Galvanized, 4 per pack       | 44506-4721 |
| SM06-THSS, Thimble, Stainless Steel, 4 per pack           | 44506-4770 |
| SM06-THGV, Thimble, Galvanized, 4 per pack                | 44506-4771 |
| SM06-QLSS, Quick Link, Stainless Steel                    | 44506-4772 |
| SM06-TB30, Turnbuckle, Stainless Steel                    | 44506-4730 |
| SM06-TB31, Turnbuckle, Galvanized                         | 44506-4731 |
| SM06-SP30, Spring, Galvanized                             | 44506-0730 |
| SM06-SP50, Spring, Stainless Steel                        | 44506-4750 |
| SM06-RPSS, Rope Pulley, Stainless Steel                   | 44506-4780 |
| SM06-ES60, E-Stop Mechanism                               | 44506-4760 |
| SM06-LF40, Replacement LED Indicator Beacon, 24 VDC       | 44506-4740 |
| SM06-LF41, Replacement LED Indicator Beacon, 120 VAC      | 44506-4741 |



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## **Safety Precautions**

### **Operating instructions**

Installation must be in accordance with the following steps and stated specifications and should be carried out by suitably competent personnel. Adherence to the recommended maintenance instructions forms part of the warranty.



WARNING Do not defeat, tamper, remove or bypass this unit. Severe injury to personnel could result.

## **Optional 24 VDC Indicator Beacon**

When +24VDC is applied to the **red** wire, the beacon will illuminate red and flash.

When +24 VDC is applied to the  $\ensuremath{\textit{green}}$  wire, the beacon will illuminate green.



#### **Optional 120 VAC Indicator Beacon**

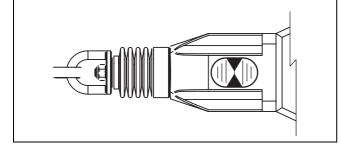
When +120VAC is applied to the **red** wire, the beacon will illuminate red and flash.

When +120 VAC is applied to the  $\ensuremath{\textbf{green}}$  wire, the beacon will illuminate green.



### **Tension Indicator**

Indicator shown with steel rope properly adjusted.



## 

 Installation of all Safety Rope Switch systems must be in accordance with a risk assessment for the individual application. Installation must only be carried out by competent personnel and in accordance with these instructions.

- 2. Rope support eyebolts must be fitted at 2.5 m. min. to 3 m. max. intervals along all rope lengths between switches. The rope must be supported no more than 500 mm from the switch eyebolt or Safety Spring (if used). It is important that this first 500 mm is not used as part of the active protection coverage.
- 3.M5 mounting bolts must be used to fix the switches. Tightening torque for mounting bolts to ensure reliable fixing is 4 Nm. Tightening torque for the lid screws, conduit entry plugs and cable glands must be 1.5 Nm to ensure IP seal. Only use correct sizing glands for conduit entry and cable outside diameter.
- 4. Tensioning of rope is achieved by use of tensioner / gripper assemblies. Upon installation, tension to mid-position as indicated by the red arrows in the viewing window of each switch. Check operation for all switches and the control circuits by puling the rope at various locations along the active protection area and resetting each switch by depressing the Blue Reset button. Ensure each time that the switches latch off and require manual resetting by depressing the Blue Reset button. Increase the system tension further, if required, depending upon the checks along the active length of coverage. If fitted with a Mushroom type E-Stop button (Red) then test and reset each switch to ensure function of control circuits. Typical operational conditions for successful operation of system is less than 75 N. pulling force and less than 150 mm deflection of rope between eyebolt supports. If the optional LED is fitted but is not used, ensure that the conductors remain coiled and tied to the tie hole in the LED flange.
- 5. Every week: Check correct operation of system at locations along all coverage length. Check for nominal tension setting, re-tension rope if necessary. Every 6 months: Isolate power and remove cover. Check screw terminal tightness and check for signs of moisture ingress. Never attempt to repair any switch.





## Terms and Conditions of Sale

- 1. Offer; Acceptance. These terms and conditions (these "Terms") are deemed part of all quotes, agreements, purchase orders, acknowledgments, price lists, catalogs, manuals, brochures and other documents, whether electronic or in catalogs, manuals, brochures and other documents, whether electronic or in writing, relating to the sale of products or services (collectively, the "Products") by Omron Electronics LLC and its subsidiary companies ("Omron"). Omron objects to any terms or conditions proposed in Buyer's purchase order or other documents which are inconsistent with, or in addition to, these Terms. Prices: Payment Terms, All prices stated are current, subject to change without notice by Omron. Omron reserves the right to increase or decrease prices on any unshipped portions of outstanding orders. Payments for Products are due net 30 days unless otherwise stated in the invoice. Discounts, Cash discounts, if any, will apply only on the net amount of invoices sent to Buyer after deducting transportation charges, taxes and duties, and will be allowed only if (i) the invoice is paid according to Omron's payment terms and (ii) Buyer has no past due amounts.
- 2
- 3.
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  - constitute delivery to Buyer; c. All sales and shipments of Products shall be FOB shipping point (unless oth-
- c. All sales and shipments of Products shall be FOB shipping point (unless otherwise stated in writing by Omron), at which point title and risk of loss shall pass from Omron to Buyer; provided that Omron shall retain a security interest in the Products until the full purchase price is paid;
  d. Delivery and shipping dates are estimates only; and
  e. Omron will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.
  12. <u>Claims</u>. Any claim by Buyer against Omron for shortage or damage to the Products occurring before delivery to the carrier must be presented in writing to Omron within 30 days of receipt of shipment and include the original transportation bill signed by the carrier received the Products
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## Certain Precautions on Specifications and Use

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inent, and installations subject to separate industry or government regulations. (iv) Systems, machines and equipment that could present a risk to life or prop erty. Please know and observe all prohibitions of use applicable to this Prod-

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO

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