Emergency Stop Grab Wire Safety Switch
LineStrong3

Switch operational description
LineStrong3 is an emergency stop grab wire safety switch used for easy reach of an emergency stop along machines, conveyors and processes. LineStrong3 is a quite robust switch that can handle long wires, up to 250 meters on a single switch. A grab wire emergency stop is easier to install than a system of several emergency stop buttons along a carriage path. LineStrong3 can be used as protection, for example along conveyors, with low risks where the wire can be installed at waist height in front of the conveyor, which provides an emergency stop if someone walks or falls towards the conveyor.

LineStrong3 has double switching in both directions of the wire. If someone pulls the wire or if the wire is broken, the switch goes to a safe state, e.g. the machine is stopped.

After a safe state the LineStrong3 needs to be reset to be able to run again and this is made on the local reset button. Additional features on the LineStrong3 is a "normal" emergency stop fitted on the top of the grab wire safety switch and also a two coloured LED for indication.

LineStrong3 is equipped with an indication of how taut the wire is, which make the installation and adjustment easy.

Material
Depending on the environment where the switch will be used, different materials can be chosen for the LineStrong3. The basic version has a rugged yellow die cast housing with a rating of IP67. In severe applications as for food processing and chemical industry, there is a LineStrong3Z with a total rugged stainless steel 316 body. This version has IP69K enclosure protection (maintained by a double seal lid gasket and seals) and can be high pressure hosed with detergent at high temperature.

Positive forced disconnected contacts
A positive forced contact provides a forced disconnect of the safety contacts when the wire is being pulled or broken. The design of the LineStrong3 ensures that the contacts will not fail or be held in a normally closed position, due to failure of the spring mechanism or that welding/sticking of the contacts can occur. The LineStrong3 switch has 4NC and 2NO.

Safety level
The forced disconnected contacts provide a high level of safety. To achieve a maximum safety level in the connection with the machine control system, it is recommended that the LineStrong3 is monitored by an appropriate ABB Jokab Safety relay, Pluto safety-PLC or a Vital system.

Explosion Proof version (X)
LineStrong3 also exist in versions with certified explosion proof contact block (X-versions). LineStrong3LZX/RZX/DZX have a stainless steel body and can be used in European Zone 1, 2, 21, 22 environments (Gas and Dust). Preassembled with 3 meter cable.

Regulations and Standards
The LineStrong3 is designed and approved in accordance to relevant standards. Examples of relevant standards are IEC/EN 60947-5-1, IEC/EN 60947-5-5, EN 62061, UL 508, EN ISO 13850 and EN ISO 13849-1.
Single Wire
LineStrong3L/3R and LineStrong3LZ/3RZ

**LineStrong3L/3R - Standard version**
The Lonestrong3L/3R are two different versions depending on installation.

L - "Left hand" - is the version of LineStrong3 where the placement of the grab wire switch is to the left in the installation.
R - "Right hand" - is the version of LineStrong3 where the placement of the grab wire switch is to the right in the installation.

Both versions have die-cast housings and are robust to severe indoor or outdoor use. LineStrong3L/3R are designed to protect a length up to 100 meters on a single switch. If two switches are used together, up to 125 meters. A two colour LED ensures switch status can be seen easily from a distance. They have 4NC and 2NO contacts to ensure flexibility with all modern control application.

**LineStrong3LZ/3RZ - Stainless steel version**
The Lonestrong3LZ/3RZ are two stainless steel switches with different installations possibilities.

L - "Left hand" - is the version of LineStrong3Z where the placement of the grab wire switch is to the left in the installation.
R - "Right hand" - is the version of LineStrong3Z where the placement of the grab wire switch is to the right in the installation.

Both versions are in stainless steel 316 housings and are designed specifically to withstand the tough environments found in the food and pharmaceutical industries. LineStrong3LZ/3RZ are designed to protect a length up to 100 meters on a single switch. If two switches are used together, up to 125 meters. A two colour LED ensures switch status can be seen easily from a distance. They have 4NC and 2NO contacts to ensure flexibility with all modern control application.
Double Wire
LineStrong3D and LineStrong3DZ

LineStrong3D - Standard version
The Linestrong3D is a third version of the Linstrong3. With wire entries from both sides of the grab wire switch, LineStrong3D can be used for a long protection length. The LineStrong3D has a die-cast housing and is robust to manage severe indoor or outdoor use. LineStrong3D is designed to protect a length up to 200 meters on a single switch. If several switches are used together, it will be possible with a length up to 125 meters between the switches. A two colour LED ensures switch status can be seen easily from a distance. LineStrong3D have 4NC and 2NO contacts to ensure flexibility with all modern control application.

LineStrong3DZ - Stainless steel version
The Linestrong3DZ is a third version of the Linstrong3Z. As a stainless steel version with wire entries on both sides of the grab wire switch, LineStrong3DZ can be used for a long protection length.

The LineStrong3DZ has stainless steel 316 housing and is designed specifically to withstand the tough environments found in the food and pharmaceutical industries. LineStrong3DZ is designed to protect a length up to 200 meters on a single switch. If several switches are used together it will be possible with a length up to 125 meters between the switches. A two colour LED ensures switch status can be seen easily from a distance. LineStrong3DZ have 4NC and 2NO contacts to ensure flexibility with all modern control application.

Dimensions LineStrong3D and LineStrong3DZ

Double Wire
LineStrong3D and LineStrong3DZ

LineStrong3D - Standard version
The Linestrong3D is a third version of the Linstrong3. With wire entries from both sides of the grab wire switch, LineStrong3D can be used for a long protection length. The LineStrong3D has a die-cast housing and is robust to manage severe indoor or outdoor use. LineStrong3D is designed to protect a length up to 200 meters on a single switch. If several switches are used together, it will be possible with a length up to 125 meters between the switches. A two colour LED ensures switch status can be seen easily from a distance. LineStrong3D have 4NC and 2NO contacts to ensure flexibility with all modern control application.

LineStrong3DZ - Stainless steel version
The Linestrong3DZ is a third version of the Linstrong3Z. As a stainless steel version with wire entries on both sides of the grab wire switch, LineStrong3DZ can be used for a long protection length.

The LineStrong3DZ has stainless steel 316 housing and is designed specifically to withstand the tough environments found in the food and pharmaceutical industries. LineStrong3DZ is designed to protect a length up to 200 meters on a single switch. If several switches are used together it will be possible with a length up to 125 meters between the switches. A two colour LED ensures switch status can be seen easily from a distance. LineStrong3DZ have 4NC and 2NO contacts to ensure flexibility with all modern control application.
## Technical data – LineStrong3 series

<table>
<thead>
<tr>
<th>Article number</th>
</tr>
</thead>
<tbody>
<tr>
<td>LineStrong3L</td>
</tr>
<tr>
<td>LineStrong3R</td>
</tr>
<tr>
<td>LineStrong3LZ</td>
</tr>
<tr>
<td>LineStrong3RZ</td>
</tr>
<tr>
<td>LineStrong3LZX (EX)</td>
</tr>
<tr>
<td>LineStrong3RZX (EX)</td>
</tr>
<tr>
<td>LineStrong3D</td>
</tr>
<tr>
<td>LineStrong3DZ</td>
</tr>
<tr>
<td>LineStrong3DZX (EX)</td>
</tr>
</tbody>
</table>

### Level of Safety
- **EN ISO 13849-1**: Up to PL e, Cat. 4 depending upon system architecture
- **EN 62061**: Up to SIL3 depending upon system architecture

### Safety data
- **Mechanical reliability B_{10d}**: 1.5 x 10^6 operations at 100mA load 21 years
- **Proof test interval (life) MTTF_d**: 214 years (8 cycles per hour/24 hours per day/365 days)

### Wire span
- LineStrong3L/R/LZ(X)/RZ(X): Up to 125 m
- LineStrong3D/DZ(X): Up to 250 m

### Wire tension device
- Tensioner / Gripper- Quick Fixing

### Wire type
- PVC sheath steel wire 4.0 mm outside diameter

### Torque settings
- Mounting M5 4.0Nm, Lid T20 Torx M4 1.5Nm, Terminals 1.0Nm

### Termination
- Clamp up to 2.5 mm² conductors

### Tension force (typical mid setting)
- 130N

### Tension operating force (wire pulled)
- < 125N < 300 mm deflection

### Short circuit overload Protection
- Fuse externally 10A (FF)

### Rated insulation/withstand voltages
- 500VAC / 2500VAC

### Utilisation category
- AC15 A300 3A

### Vibration resistance
- 10-500Hz 0.35 mm

### Shock resistance
- 15 g 11 ms

### Thermal current (Ith)
- 10A

### LED
- 24 VDC

### Contact type
- IEC/EN 60947-5-1 double break Typ Zb snap action

### Contact material
- Silver

### Conduit entries
- 4 x M20 x 1.5

### Enclosure classification
- LineStrong3D/L/R: IP67
- LineStrong3LZ(X)/RZ(X)/DZ(X): IP69K and IP67

### Ambient temperature:
- LineStrong3L/R/D: -25°C to +80°C
- LineStrong3LZ(X)/RZ(X)/DZ(X): -25°C to +80°C (100°C cleaning)

### Enclosure material/cover:
- LineStrong3L/R/D: Die cast painted yellow
- LineStrong3LZ(X)/RZ(X)/DZ(X): Stainless steel 316

### Mounting position
- Any

### Mounting bolts
- 4 x M5

### Explosion Proof version (X)
- Classification: Ex d IIC T6 (-20°C ≤ Ta ≤ +60°C) Gb Ex tb IIIIC T85°C (-20°C ≤ Ta ≤ +60°C) Db
- Rated Voltage: 250V AC/DC
- Rated Current: 2 pole 4A
- 4 pole 2.5A