1 Mounting

**Caution:** Check that no liquids, dust or conductive objects can fall into the starter.

The STB Soft Starter must be mounted vertically, allow sufficient space above and below the starter for suitable airflow. Do not mount the starter near other heat sources. Surrounding air temperature in the cabinet should not exceed 40°C, the starter is rated to operate over a temperature range of 0°C to +40°C.

### 1.1 Environment

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temperature</td>
<td>0°C to +40°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-25°C to +70°C</td>
</tr>
<tr>
<td>Installation place</td>
<td>Don’t install at direct sun light, where there are conductive dust, corrosive gas, vibration or water and also in salty environmental.</td>
</tr>
<tr>
<td>Altitude</td>
<td>Up to 1000 meter over sea level. For higher altitude reduce the nominal current of 2% for each 100m over 1000m</td>
</tr>
<tr>
<td>Humidity</td>
<td>From 5 to 95% without condense and ice</td>
</tr>
</tbody>
</table>

### 1.2 Dimensions and Fixing holes STB 6-12 and STB 22-32

![Dimensions and Fixing holes STB 6-12 and STB 22-32](image)
# 2 Technical Data

## Selection Table

<table>
<thead>
<tr>
<th>Model Code</th>
<th>6A</th>
<th>12A</th>
<th>22A</th>
<th>32A</th>
<th>Line Voltage</th>
<th>Ramp Time</th>
<th>Kick Start (ms) at 70%</th>
<th>Initial Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>STB006 2xxx</td>
<td>STB 012 20x0</td>
<td>STB 022 20x0</td>
<td>STB 032 20x0</td>
<td>208-240V AC Max</td>
<td>0.6-15 Sec</td>
<td>0-100-200-300</td>
<td>0-80%</td>
<td></td>
</tr>
<tr>
<td>STB006 4xxx</td>
<td>STB 012 40x0</td>
<td>STB 022 40x0</td>
<td>STB 032 40x0</td>
<td>400-480V AC Max</td>
<td>0.6-15 Sec</td>
<td>0-100-200-300</td>
<td>0-80%</td>
<td></td>
</tr>
</tbody>
</table>

## Technical Data

### Operational Max Current

<table>
<thead>
<tr>
<th>Model Code</th>
<th>STB006</th>
<th>STB012</th>
<th>STB022</th>
<th>STB032</th>
</tr>
</thead>
<tbody>
<tr>
<td>6A AC3</td>
<td>18A</td>
<td>36A</td>
<td>66A</td>
<td>96A</td>
</tr>
</tbody>
</table>

### Leakage Current

| Minimum working current | 100mA | 100mA | 100mA | 100mA |

### Start/Stop

| Start/Stop | 20 | 10 | 15 | 10 |

### Motor ratings

- **240V**
  - 1,6 HP / 1,2Kw
  - 3,2 HP / 2,3Kw
  - 5,8 HP / 4,2Kw
  - 8,4 HP / 6,1Kw
- **480V**
  - 3,2 HP / 2,3Kw
  - 6,3 HP / 4,6Kw
  - 11,6 HP / 8,4 Kw
  - 16,8 HP / 12.3Kw

## Digital Input Voltage Range

- 24VDC max

## Relay Output

- 500mA 125V max

## Control Current

- 20mA

## Response time max

- 200 mSec max

## 3 Connections

**Warning:** Before connecting or disconnecting the unit check that power and control cables are isolated from voltage sources.

**Tightening torque:** min 0.5 Nm - max 0.6 Nm

**Conductor section max:** 6 mm² - AWG 10

### Terminal Blocks

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>Line Input Phase 1</td>
</tr>
<tr>
<td>L2</td>
<td>Line Input Phase 2</td>
</tr>
<tr>
<td>L3</td>
<td>Line Input Phase 3</td>
</tr>
<tr>
<td>U/T1</td>
<td>Motor Output Phase U</td>
</tr>
<tr>
<td>V/T2</td>
<td>Motor Output Phase V</td>
</tr>
<tr>
<td>W/T3</td>
<td>Motor Output Phase W</td>
</tr>
</tbody>
</table>

## 3.1 Command Terminals and Dip Switch

**Warning:** Before connecting or disconnecting the unit check that power and control cables are isolated from voltage sources.

1. **ON** = Kick Start 100msec.*
2. **ON** = Kick Start 200msec.*
3. Relay Configuration:
   - **OFF** = The Relay is energized when an Alarm occurs
   - **ON** = The Relay is energized when internal bypass Relay are closed
4. **Start/Stop**
   - **ON** = Start when L1-L2-L3 is present
   - **Off** = Start via terminals 4 and 5.

*If switch 1 and 2 are ON kick Start is 300msec. if both Off is 0 mSec.*
<table>
<thead>
<tr>
<th>Command</th>
<th>Description STB 6-12A</th>
<th>STB 22-32A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Output relay (Max 500mA, 125Vac) <strong>NC</strong></td>
<td>Common Relay Output <strong>C</strong></td>
</tr>
<tr>
<td>2</td>
<td>Output relay (Max 500mA, 125Vac) <strong>NO</strong></td>
<td>Output relay (Max 500mA, 125Vac) <strong>NC</strong></td>
</tr>
<tr>
<td>3</td>
<td>Common Relay Output <strong>C</strong></td>
<td>Output relay (Max 500mA, 125Vac) <strong>NO</strong></td>
</tr>
<tr>
<td>4</td>
<td>GND for digital Input</td>
<td>GND for digital Input</td>
</tr>
<tr>
<td>5</td>
<td>Digital Input: Start/Stop (4 to 24V AC/DC)</td>
<td>Digital Input: Start/Stop (4 to 24V AC/DC)</td>
</tr>
</tbody>
</table>

### 3.2 Diagram of connection

Caution: this procedure must be performed only by qualified persons

![Diagram of connection](image)

### 4 Digital Input

The STB Soft Starter has 1 digital inputs opto-isolated to 24Vdc. You can activate the inputs with an external source for example the PLC.

- **Start/Stop (Terminals 4-5)**
  Normally Run and Stop are controlled by the logic input at the terminals 4-5:
  a start is obtained with +24Vdc, and a stop is obtained when you remove the +24Vdc on the terminals, without the start command the output of the STB Soft Starter will return at zero following the down ramp set.

- **Alternative Start/Stop Control**
  Otherwise you can use the Automatic Start Jumper (DIP 4 = ON). On power-up the motor will start automatically.
  With this solution, the deceleration ramp is not used.

DIP4 Off = Normal Start (default)
DIP4 ON = Automatic Start.

### 5 Relay Output

The STB Soft Starter has 1 Relay output with free voltage contact (Max 500mA, 125Vac) – Terminals 1-2-3.

The Relay Output can be energized in two mode by THE DIP Switch **3**
When it’s in **Off** position the Relay is energized when an alarm occurs (ex. main line supply failure, motor connection Failure)
when it’s in **ON** position the Relay is energized when internal bypass is closed.

## 6 Trimmers

The STB Soft Starter has 3 trimmers to set the SOFT STARTER to an optimal system performance according to the characteristics of each system.

- The **RAMP UP [0-15 sec.]** trimmer adjusts the inclination of the acceleration ramp, working on the time used to pass from initial voltage to the full voltage output (rotating the trimmer in clockwise sense, the acceleration time increases).
- The **RAMP DOWN [0-15 sec]** trimmer adjusts the inclination of the deceleration ramp, working on the time used to pass from the full voltage output to the initial voltage (rotating the trimmer in clockwise sense, the deceleration time increases). Rotating it completely in anticlockwise sense, the deceleration can be excluded.
- The **INITIAL TORQUE [0-80%]** trimmer adjusts the initial voltage applied to the motor, and so the starting torque (not linearly). It has to be tuned so that the motor starts running immediately, but pay attention because a too high setting avoids the SOFT effect.

## 7 Led status and Alarms

<table>
<thead>
<tr>
<th>LED</th>
<th>STATUS</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN O</td>
<td>Green ON SlowBlinking</td>
<td>Ready to Start</td>
</tr>
<tr>
<td></td>
<td>Green ON Fast Blinksing</td>
<td>Ramp Active</td>
</tr>
<tr>
<td></td>
<td>Green ON</td>
<td>At Speed (full Voltage)</td>
</tr>
<tr>
<td>ALM O</td>
<td>Red OFF</td>
<td>No Alarm</td>
</tr>
<tr>
<td></td>
<td>Red ON</td>
<td>Critical Alarm active (motor not properly connected or one phase missing)</td>
</tr>
<tr>
<td>PW ON</td>
<td>Green OFF</td>
<td>The power supply is not connected or fault on the electronic board</td>
</tr>
<tr>
<td></td>
<td>Green ON</td>
<td>The power supply on terminals L1 and L3 is OK</td>
</tr>
</tbody>
</table>

## 8 Order Code

<table>
<thead>
<tr>
<th>CURRENT</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
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<td>B</td>
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<td></td>
</tr>
</tbody>
</table>

### OVERLOAD RELAY
- **description**
- **10 code**
- No overload relay

### CONTROL MODE
- **description**
- **11 code**
- Voltage control mode V
- Current control mode I

### OPTION & FUSE
- **description**
- **12 code**
- No Fuses
- External fuse & fuse holder F

### FAN VOLTAGE
- **description**
- **13 code**
- No fan

### APPROVALS
- **description**
- **14 code**
- CE EMC

### MANUAL
- **description**
- **15 code**
- None
- Italian
- English
- German
- French
- Spanish

### VERSION
- **description**
- **16 code**
- Standard version

### MAIN SUPPLY VOLTAGE
- **description**
- **7 code**
- 3x200V +10%:15% 2
- 3x400V +10%:15% 4

### VOLTAGE SUPPLY AUX.
- **description**
- **8 code**
- No auxiliary voltage 0

### INPUT
- **description**
- **9 code**
- Start with power up 1
- Start/stop optoisolated +24V 2

### ELECTRICALalian

STB 6-12 – STB 22-32 FULFILS THE REQUIREMENTS OF THE STANDARD:
- Electrical safety Standard EN60947-1 :2008
- Generic Emission standard EN60947-4-3:2000
- Generic Immunity standard EN60947-4-3:2000

Producers declares that The products above mentioned they are conforming to the directive EMC 2004/108/CEE e alla direttiva Bassa Tensione (low Voltage) 2006/95/CEE

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