INTRODUCTION TO SHOCK RELAY

OVERLOAD PROTECTION

The truth is any machine can break.
The probability of impact damage to a machine is inevitable. Eventually, a machine will jam due to an obstruction, feed jam, foreign object intrusion, mechanical failure, etc. Something will happen, and there’s no telling when.

Unintended load changes on the equipment can have big consequences. As equipment becomes more integrated, a shock or jam in one part of the production line can snowball into a complete system shutdown – resulting in damaged equipment, loss of product, and reduced productivity.

Protect what you value.

It doesn’t have to happen.
Tsubaki’s family of overload protection devices offer a solution to fit every need. Our family of overload protection devices keeps you productive all day, every day without interruption to assure maximum productivity is maintained.

Tsubaki offers the finest power transmission products in the industry and provides protection for those parts and the equipment they belong to. Tsubaki Shock Relay and Shock Monitor products provide inexpensive insurance for expensive equipment.

SHOCK RELAY PRODUCT OVERVIEW

TSBED SERIES
Dimensional Envelope
2.8”H X 2.2”W X 3.1”D

Designed to work with inverters. Product features include: digital display, built-in tamper-proof cover, and built-in test button. Choose between self-holding output relay and automatic reset. UL listed.

TSBSC SERIES
Dimensional Envelope
2.9”H X 2.8”W X 3.3”D

Overload or underload, pre-alarm notification and thermal energy protection. Product features include: communication function (4 to 20 mA) to allow central monitoring, works with 20Hz to 200Hz inverters. Panel mount option.

TSBB SERIES
Dimensional Envelope
2.6”H X 2.2”W X 3.3”D

Provides overload protection. Select manual or automatic reset output. Monitor AC motors up to 600 volts and 300 Amps. Shock Relay power supply can be AC or 24VDC. 35 mm DIN rail or panel mount. Economically priced, OEM style. UL Listed.

TSB150N SERIES
Dimensional Envelope
4.5”H X 4.9”W X 4.3”D

The original Shock Relay with self-holding circuit and analog meter. In many cases, this Shock Relay series is the easiest to set up.

TSB150M SERIES
Dimensional Envelope
4.5”H X 4.9”W X 4.3”D

A variation of the original Shock Relay, the M series, in addition to standard overload protection provides impact protection with a response time of 0.05 seconds.
Pioneered by Tsubaki, the Shock Relay protects your equipment against unexpected shock loads, overloads, and underloads before damage occurs. The Shock Relay protects the mechanical parts of your equipment by monitoring the current draw on your electric drive motor, and shutting it down when the motor works too hard for too long.

Advantages to you:
- Back to work with the press of a button
- No moving parts, CPU design ensures repeatability
- Precise set-points retain accuracy day after day
- Permits problem notification by alarm or warning lights
- Protects equipment that is up to 1000 feet away

The Shock Relay adapts to virtually any kind of equipment that’s driven by an electric motor and is used in applications in a broad variety of industries. Some of the common industries and applications are listed below:

<table>
<thead>
<tr>
<th>Industry</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material handling</td>
<td>Conveyors, tumblers, elevators</td>
</tr>
<tr>
<td>Water treatment</td>
<td>Pumps, scrapers, water screens</td>
</tr>
<tr>
<td>Machinery</td>
<td>Screw and belt conveyors, bucket elevators</td>
</tr>
<tr>
<td>Machine tool</td>
<td>Tapping machines, drill presses</td>
</tr>
<tr>
<td>Chemical</td>
<td>Pumps, agitators, filters</td>
</tr>
</tbody>
</table>

Reacts only when there is a problem
At installation, two set-points are made to the Shock Relay:
- How hard is the equipment allowed to work as measured by motor amperage
- Once the motor starts to work too hard, how soon in seconds must we stop production
Balancing these two settings allows for protection when the unexpected happens, limiting damage and downtime.

Shock Relay selection is simple; it is based on the motor voltage and amperage of your equipment.
Shock Relay has an unlimited life – it does not wear out.
Shock Relay accepts single three-phase motors up to 600 volts.
**TSUBAKI SHOCK RELAY**

**TARGET MARKETS & APPLICATION EXAMPLES**

**Target Markets**
- Material Handling
  - Conveyors, Turntables, Elevators
- Water Treatment Plants
  - Pumps, Scrapers, Water Screens
- Food Machinery
  - Pumps, Agitators, Mixers
- Agriculture
  - Screw and Belt Conveyors, Bucket Elevators
- Machine Tool
  - Tapping Machines, Drill Press
- Chemical Industry
  - Pumps, Agitators, Packagers

**Application Examples**

**Bucket Elevators**
- Protect chains from breaking

**Drag Conveyors**
- Excessive buildup can damage conveyor flights and reducers

**Gear Drives**
- Protect gears from damage

**Conveyor Applications**
- Detect damaging overloads that lead to downtime

**Chain Feeders**
- Protect attachments from damage

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**HOW TO ORDER**

The model code listed below is intended to provide an example of how a given Tsubaki Shock Relay is configured. The most important aspect of ordering a Tsubaki Shock Relay is knowing the electric drive motor horsepower, voltage and amperage rating. As seen below, these three attributes are used to select the correct size range. Selecting a given series is a matter of preference based upon the features and benefits of a given Shock Relay series.

### How to Order Code: Example Model # TSBSB Series Shock Relay

<table>
<thead>
<tr>
<th>Shock Relay</th>
<th>Series</th>
<th>Max Amperage</th>
<th>Amperage Range</th>
<th>230 Volt Motor HP*</th>
<th>460 Volt Motor HP*</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>SB</td>
<td>0.5 - 6A</td>
<td>1/8 to 1 HP</td>
<td>1/4 to 3 HP</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SB</td>
<td>1 - 12A</td>
<td>2 to 3 HP</td>
<td>3 to 5 HP</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>SB</td>
<td>3 - 30A</td>
<td>5 to 7 HP</td>
<td>7 to 15 HP</td>
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</tr>
<tr>
<td>60</td>
<td>SB</td>
<td>5 - 60A</td>
<td>10 to 15 HP</td>
<td>20 to 30 HP</td>
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</tr>
<tr>
<td>100</td>
<td>SB</td>
<td>10 - 100A</td>
<td>20 to 25 HP</td>
<td>40 to 60 HP</td>
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<tr>
<td>200</td>
<td>SB</td>
<td>20 - 200A</td>
<td>30 to 50 HP</td>
<td>70 to 120 HP</td>
<td></td>
</tr>
<tr>
<td>300</td>
<td>SB</td>
<td>30 - 300A</td>
<td>60 to 100 HP</td>
<td>150 to 175 HP</td>
<td></td>
</tr>
</tbody>
</table>

* The motor horsepower ranges are approximate; best option is to select based on actual current readings.

The above example for the TSBSB series Shock Relay is used to illustrate the various models within one Shock Relay series and How to Order a Shock Relay for your application.

**TSB:** There are two families within Tsubaki’s line of electronic protection devices. The Shock Relay series begins with TSB. The Shock Monitor series begins with TSM.

**SB:** The SB-series is one of five types of Shock Relays, each having slightly different features and focusing on different types of applications. While there is overlap between the Shock Relay series, the combinations of features such as ease of set-up, type of display, and communication options will make one Shock Relay series more desirable than another. See the preceding page for a delineation of the various Shock Relay series.

**30:** The numerical sizing of a Shock Relay series. The TSBSB series is available in seven sizes and for this series, the number relates to the max amperage rating for that Shock Relay. While all Shock Relays can be adjusted over a wide range of amperages, here are a few suggestions that will aid with selection:

- **Select the Shock Relay based on actual running amperage**
  - There is a tendency to oversize the electric motor for the application. For example, the motor nameplate may say 6 amps but measurement shows the application only uses 3 amps. Select the Shock Relay based on the 3-amp reading.
Features:
• Output relay is self-holding type
• Contacts open when an overload is detected and remain until the reset button is pushed
• Fail-safe relay de-energizes when over current detected
• Economically priced
• Wide current setting range
• High degree of repeatability with low hysteresis
• Includes TEST and RESET buttons
• All-in-one unit with built-in current transformer
• 35 mm DIN rail mount or panel mount
• Can be used with single-phased motors
• UL listed
• Permits trip notification by alarm or warning lights

How to Order Code: Example Model # for TSBSB Series Shock Relay

<table>
<thead>
<tr>
<th>TSB</th>
<th>SB</th>
<th>30</th>
</tr>
</thead>
</table>

TSBSB - All in one unit

<table>
<thead>
<tr>
<th>Shock Relay Assembly Part Number</th>
<th>Current Transformer Part Number</th>
<th>Shock Relay Assembly Part Number</th>
<th>Current Transformer Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSB2005</td>
<td>Not Applicable</td>
<td>TSB2005</td>
<td>TSB2CT100</td>
</tr>
<tr>
<td>TSB210</td>
<td>Not Applicable</td>
<td>TSB2B100</td>
<td>TSB2005</td>
</tr>
<tr>
<td>TSB230</td>
<td>Not Applicable</td>
<td>TSB2B200</td>
<td>TSB2005</td>
</tr>
<tr>
<td>TSB260</td>
<td>Not Applicable</td>
<td>TSB2B300</td>
<td>TSB2005</td>
</tr>
<tr>
<td>TSB280</td>
<td>Not Applicable</td>
<td>TSB2B60</td>
<td>TSB2CT300</td>
</tr>
</tbody>
</table>

TSBSB - Externally Mounted Current Transformer Type

<table>
<thead>
<tr>
<th>Shock Relay Assembly Part Number</th>
<th>Current Transformer Part Number</th>
<th>Shock Relay Assembly Part Number</th>
<th>Current Transformer Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSB2005</td>
<td>Not Applicable</td>
<td>TSB2B100</td>
<td>TSB2005</td>
</tr>
<tr>
<td>TSB210</td>
<td>Not Applicable</td>
<td>TSB2B200</td>
<td>TSB2005</td>
</tr>
<tr>
<td>TSB230</td>
<td>Not Applicable</td>
<td>TSB2B300</td>
<td>TSB2005</td>
</tr>
<tr>
<td>TSB260</td>
<td>Not Applicable</td>
<td>TSB2B60</td>
<td>TSB2CT300</td>
</tr>
</tbody>
</table>

Control interface

LOAD CURRENT
Load current can be set to stop the motor at the desired level when overload occurs. When the motor current exceeds the preset CURRENT value (at the same time, overload time continues to exceed the preset SHOCK TIME), the Shock Relay activates and stops the motor.

START TIME
When the motor starts there is a possibility that the motor current will exceed the set current value. To prevent the Shock Relay from tripping due to the spike in start current, start time is set a little bit longer than the period of motor start-up to ignore the spike.

TEST Button
Shock Relay operation can be tested stand-alone or during motor operation. (When testing the Shock Relay, continue to press and hold the TEST button longer than the set START TIME or SHOCK TIME, whichever is longer.)

RESET Button
After the Shock Relay activates, the RESET button is used to cancel the self-holding of the output contact.

SHOCK TIME
Shock time is the amount of time set until the Shock Relay will activate when overload occurs. Within the set time, the Shock Relay will not activate, even if it is overloaded.

The following table provides a breakdown of the components provided when ordering a given TSBSB Series Shock Relay. Note that TSBSB Shock Relay sizes with model numbers containing 100, 200, and 300 require additional components when selected. For example, a TSBSB100 Shock Relay will be supplied with a TSB2005 Shock Relay and a TSB2CT100 current transformer.
Notes:

1) Set the transformer (TR) depending on the voltage of the Shock Relay and MC. Set the insulation transformer if there is a high-harmonic noise generator such as an inverter.

2) When it’s running normally, the contact points 95-98 of the TSBSS are “closed” (95-96 are “open”), and when tripping, 95-98 are “open” (95-96 is “closed”). Coil capacity of the electromagnetic contactor MC which output contact opens and closes should be less than 200VA when throwing, and less than 20VA when holding.

3) Pass two wires out of three phases of the motor through the Shock Relay’s CT in the same direction.

Notes:

1) Set the transformer (TR) depending on the voltage of the Shock Relay and MC. Set the insulation transformer if there is a high-harmonic noise generator such as an inverter.

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3) Pass two wires out of three phases of the motor through the Shock Relay’s CT in the same direction.
Tsbed Series Shock Relay

Features:
- Works with inverter 20 to 200 Hz
- User adjustable for manual or automatic reset
- Digital display
- Adjustable Start Time, Shock Time, and Current setting
- Built-in tamper-resistant cover over controls
- Built-in Test Function
- Includes motor locked rotor protection
- DIN rail or panel mount
- Manual or Automatic Reset
- UL listed
- Permits trip notification by alarm or warning lights

How to Order Code: Example Model # Tsbed Series Shock Relay

<table>
<thead>
<tr>
<th>Shock Relay</th>
<th>Model Size</th>
<th>Series</th>
<th>Supply Voltage</th>
<th>230 Volt Motor HP*</th>
<th>460 Volt Motor HP*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tsubaki Shock Relay</td>
<td>020</td>
<td>ED</td>
<td>-1</td>
<td>100 to 120 VAC</td>
<td>0.2 – 2.4A</td>
</tr>
<tr>
<td></td>
<td>075</td>
<td>ED Series: Digital Display</td>
<td>-2: 200 to 240 VAC</td>
<td>1.2 – 5.8A</td>
<td>1/8 to 2 HP</td>
</tr>
<tr>
<td></td>
<td>220</td>
<td></td>
<td></td>
<td>3 – 14 A</td>
<td>1 – 1/2 to 5 HP</td>
</tr>
<tr>
<td></td>
<td>550</td>
<td></td>
<td></td>
<td>6 – 34 A</td>
<td>2 – 1/2 to 10 HP</td>
</tr>
</tbody>
</table>

* The motor horsepower ranges are approximates; best option is to select based on actual current readings. Select the Shock Relay based on the motor amperage or motor horsepower.

Current Setting (CURRENT)
Sets current at the value at which trip occurs.

Start Time Setting (START TIME)
Sets start time (start compensating time). When the motor starts, there is a possibility that the motor current will exceed the set current value, but during the start time period it will not trip.

Shock Time Setting (SHOCK TIME)
Sets shock time (output delay time). When the motor current exceeds the set current value the count begins, and when shock time has elapsed, it will trip.

DIP Switch (selector switch)

- 

TEST Button (TEST)
When the LED displays current value, pressing the TEST button will carry out an operation test.

CHECK/RESET Button (CHECK/RESET)
(During normal operation) By pressing the CHECK/RESET button when the LED displays current value, it switches to the setting screen.
(During trip) When the CHECK/RESET button is pressed, trip is cleared and the display switches to the current value.
(During set-up) When the LED display is at the setting screen, pressing the CHECK/RESET button will switch between the current, start time, and shock time settings, in this order.

LED Display
Current value and set current are displayed when (A) is indicated on the display screen (to the left of the A), (A = ampere)
Start time and shock time set up are displayed when (s) is indicated on the display screen (to the left of the s), (s = second)
**TSBED - OPERATING MODE**

**Operation mode**

![Diagram of TSBED Series Shock Relay operation mode]

*Figure 2: TSBED Series Shock Relay operation mode*

**Start time**: Within a set time, the Shock Relay does not respond to motor starting current.

**Shock time**: The Shock Relay does not respond to excess current if it does not exceed the preset shock time.

**Shock time**: When excess current goes beyond the preset time the Shock Relay responds.

**Motor rotation speed**

**Set current value**

**Overload**

**Time**

**Stoppage**

**Motor load current**

**Short period of current surge**

**Set start time value**

**Steady area**

**Set shock time value**

**Overload area**

**Motor rotation speed**

**Set current value**

**Start-up**

**Operation mode**

This “Start Time” period allows the motor to spool to its steady state operation mode where maximum continuous RPM is achieved, and current draw drops to a normal value that is below the maximum “Current Value” set in the Shock Relay. As depicted, the amperage draw of the motor then momentarily increases (resulting in a drop in RPM due to induced load) above the maximum “Current Value” setting, but quickly falls back to a steady state value. Since the “Shock Time” value was not exceeded, the Shock Relay does not trip, and allows continued operation. However, as time passes by, the Shock Relay senses an increase in motor amperage draw and a drop in RPM that exceeds set current value and “Shock Time.” The overload condition sensed by the Shock Relay causes the unit to trip, resulting in the Shock Relay breaking the motor starter contact – thus, shutting the system down to prevent mechanical damage from occurring.

**TSBED - OUTLINE DIMENSIONS & BASIC WIRING SCHEMATIC**

**Dimensional envelope drawing**

All dimensions in millimeters unless noted.

**TSBED basic wiring schematic**

*Figure 3: TSBED Series Shock Relay basic wiring schematic*
**TSBSC SERIES - SHOCK RELAY**

**How to Order Code:** Example Model # TSBSC Series Shock Relay

<table>
<thead>
<tr>
<th>TSB</th>
<th>SC</th>
<th>B</th>
<th>34</th>
</tr>
</thead>
</table>

- **All-in-one type** (built-in current transformer)
- **Panel type** (external current transformer)

**Features:**
- Communication function allows central monitoring
- The 4 to 20 mA output allows communication to a central control, or as input to controls that operators monitor and adjust to maintain production
- Panel mounting with remote display option
- Both Under current and Over current monitoring
- Inverter compatible from 20 to 200 Hz
- Locked rotor protection
- Phase imbalance protection
- Phase loss protection
- Thermal overload protection
- Can be used with single-phased motors
- Multiple operations can be linked together and monitored from one location.

**How to Order Code: Example Model # TSBSC Series Shock Relay**

<table>
<thead>
<tr>
<th>Shock Relay</th>
<th>Series</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSBSCB300</td>
<td>TSB</td>
<td>B</td>
</tr>
</tbody>
</table>

- **Max Amperage:** 300 A
- **230 Volt Motor HP:** 36 – 300 HP
- **460 Volt Motor HP:** 15 to 125 HP

**Communication.function allows central monitoring**

1. **Remote Control**
   - Display the current of each phase L1, L2 and L3 on the PC screen by reading them from specified Shock Relay address.

2. **Display Current Change**
   - Display the current value of each phase at specified intervals. Data for the last 159 events can be displayed.

3. **Display Accumulated Operation Time**
   - Can be utilized for equipment maintenance such as oil filling, filter cleaning, etc.

**TSBSC - COMMUNICATION FUNCTION**

**4 to 20 mA analog signal**

“What is a 4 to 20 mA analog signal?”

A 4 to 20 mA analog signal is a standard instrumentation signal used around the world.

- **Instrumentation signal:**
  - Voltage signal: DC 0 to 5 V, DC 0 to 10 V, etc.
  - Current signal: DC 4 to 20 mA, DC 0 to 20 mA, etc.

Current signals are less susceptible to influence from electrical noise than voltage signals.

In addition, DC 4 to 20 mA, when compared to DC 0 to 20 mA, is more precise in the event of wire disruption or breaks. Therefore, DC 4 to 20 mA is used frequently, specifically in the case of long transmission distances (several tens of meters) or in answer to requests for reducing noise influence.

**Example of application**

1. **Automatic control of the input and viscosity depending on the load by inputting the current draw to the sequencer of a crusher or mixer.**
   - In the case of TSBSCB60 (Max. 60 A), it is possible to transmit DC 0 to 60 A as a DC 4 to 20 mA signal.
   - In addition, output value correction is available due to the scaling adjustment function of the DC 4 to 20 mA output of the TSBSC Series.
**TSBSC - CONTROL INTERFACE**

**All-in-one type**

1. **ESC Button (reset)**
   - Releases the trip or returns back to the initial setting display.
   - Pushing the reset button after completing parameter settings to return back to initial screen.

2. **UP/DN Button (UP/DOWN)**
   - Switch to parameter mode and change data settings.

3. **SET Button (set)**
   - Confirm and register parameter setting data.

**Panel type**

- **LED display**
  - Displays the electric motor phase (L1(R) ➔ L2(S) ➔ L3(T)) which shows the current, changes every 2 seconds.
  - **Unit display LED**
    - Displays operation current, parameter setting value, cause of trip, etc.
  - **Phase display LED**
    - Confirm and register parameter setting value.
  - **Load ratio display bar graph**
    - Can be utilized as a guide when setting OC (Over current setting value).

**Digital ammeter functions**

1. While in normal operation, it is possible to change the displayed phase, and set it.
   - Release by pushing the ESC button.
2. Trip record (3 most recent) can be viewed by pushing and holding the ESC button 5 sec. or longer.
   - Push the UP/DN buttons to cycle through and confirm current values (cycles L1~L2~L3~L1...). The order of the trip record appears on a bar graph in the order of 100%, 95%, and 90% for easy confirmation.

**Communication function**

- **Communication Specification**
  - **Item**
    - **Transmittance standards**: RS-485
    - **Max. transmittance distance**: 1200m (depends on transmittance speed)
    - **Transmittance system**: Half-duplex system, modbus protocol
    - **Transmittance speed**: 1.5k to 38.4kbps

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**TSBSC - OPERATING MODE**

**Overload operation mode**

- The Shock Relay responds when current degradation continues for longer than the preset shock time.
- The Shock Relay does not respond to short-term current degradation if it does not exceed the preset shock time.
- The Shock Relay does not respond to excess current (spike) if it does not exceed the preset shock time.

**Light load operation (underload detection) mode**

- Once the motor current falls below the preset level, underload is detected and a signal is sent to stop the motor. For underload detection, the output contact is set to alarm output.*
  - However, in case of the underload detection, the output contact becomes choice of either alarm output or no action.

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* www.ustsubaki.com

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www.ustsubaki.com
### TSBSC - OUTLINE DIMENSIONS

<table>
<thead>
<tr>
<th>Dimensional envelope drawing</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSBSCB06/TSBSCB34/TSBSCB60</td>
</tr>
<tr>
<td>All-in-one type main unit</td>
</tr>
<tr>
<td>All dimensions in millimeters unless noted.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>TSBS</th>
<th>Panel type display unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSBSC</td>
<td>All dimensions in millimeters unless noted.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TSBS</th>
<th>Panel type communication cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSBSCC05/TSBSCC10/TSBSCC15/TSBSCC20/TSBSCC30</td>
<td>All dimensions in millimeters unless noted.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cable Part No.</th>
<th>Length (in mm)</th>
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</thead>
<tbody>
<tr>
<td>TSBSCC05</td>
<td>500</td>
</tr>
<tr>
<td>TSBSCC06</td>
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<td>TSBSCC07</td>
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<td>TSBSCC08</td>
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<tr>
<td>TSBSCC09</td>
<td>3,000</td>
</tr>
</tbody>
</table>

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### TSBSC - BASIC WIRING SCHEMATIC

#### Basic wiring schematic

- **CT**: Current transformer
- **CB**: Circuit breaker
- **MC**: Magnetic contactor
- **F**: Fuse
- **TR**: Transformer
- **OCR**: Over current relay
- **PL**: Trip light

#### Notes:

1. If necessary, set the stepdown transformer (TR) depending on the voltage on the Shock Relay and electromagnetic contactor (MC). Install an isolating transformer if there is any harmonic noise generating device, such as an inverter.
2. Output relay; Normal condition: not excited, Trip condition: excited
3. Coil capacity of MC connected to the output relay of the Shock Relay is:
   - Throw = less than 200VA
   - Hold = less than 20VA

In the event that an auxiliary relay is used, have the output relay of the Shock Relay activate the Auxiliary Relay and have the Auxiliary Relay open/close the MC.

#### Connection with signal converter

1. Prepare a signal converter to use the monitoring software (PCON) of TSBSC.
2. Use twisted cables and connect as follows.

**Terminal**

- **V**: GND
- **D1**: Data (B)
- **D0**: Data (A)
- **S**: Shield

**RS485 Terminal**

- **V**: GND
- **D1**: Tx+
- **D0**: Tx-
- **S**: Shield
TSUBAKI OVERLOAD PROTECTION

TSUBAKI OVERLOAD PROTECTION PRODUCTS

Torque Guard
TGB Series
An economical choice for general use. The TGB series can be used with any machine. Offers automatic resetting, easy-to-read torque indicator and no backlash.

Torque Guard
TGM Series
The gasket and O-ring sealed construction in the TGM series is unique. Excels in wet, dusty, and oily applications. Designed for long life, tough environments.

Torque Guard
TGX Series
A high-precision option, the TGX series features no backlash and unsurpassed operation rigidity. Ideal for machines that require accurate positioning.

Torque Guard
TGZ Series
A release-type protection device, the TGZ series offers on-of clutch capability. Its simple and straightforward adjustments make it easy to use.

Torque Limiting
TL Series
A friction system, mechanical device that limits damage to equipment when an unexpected increase in torque occurs because of a jam or overload by slipping and absorbing the brunt of the force, preventing the increased power from damaging your equipment.

Axial Guard
TGA Series
Offers overload protection using ball and grooves that provide a consistent, user-defined trip point for applications where motion is back and forth rather than rotating. When overloads occur, the Axial Guard “trips” and eliminates the overload that can result in damage and downtime.

Torque Keeper
TFK Series
A mechanical device for industrial equipment brake mechanisms has been designed with abrasion resistance, the use of a torque indicator, weight savings and other aspects that make it easy to use.

MINI-KEEPER
MK Series
A super-compact slipping clutch and brake, constructed from fine chemicals and engineering plastic. The MINI-KEEPER has a supreme level of lightness, compactness and accuracy and is ideal for braking, accumulating and dragging applications.

Torque Limiter
Coupling
A flexible coupling that uses a Torque Limiter and special type sprocket and is connected by two rows of roller chains. It acts as an automatic safety device, protecting machinery from damage due to overload.

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