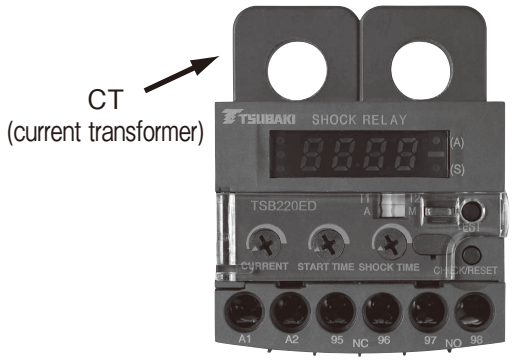
Shock Relay ED Series

Features

- **Digitally displays motor current and set values**
- **Economically priced**
- **CT included in one compact unit**
- **Works with inverter***
  Current can be precisely detected when inverter is operating between 20 to 200 Hz.
- **Choose between self-holding or automatic reset for the output relay**
- **CE marking**
- **UL/cUL certification**
- **CCC certification**

* To prevent unnecessary operation of the Shock Relay due to the increase in current during acceleration/deceleration, accelerate or decelerate slowly or allow a margin in the preset current.

CT all-in-one model



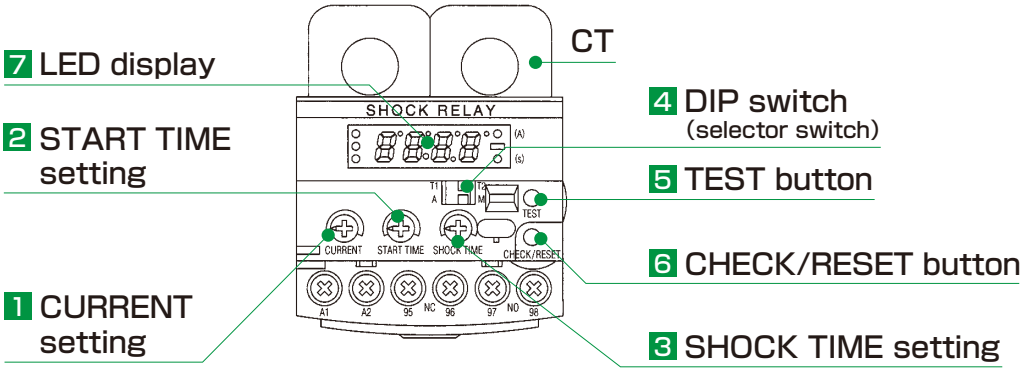
TSB020ED TSB220ED
TSB075ED TSB550ED

Standard specifications

Model no.				TSB020ED	TSB075ED	TSB220ED	TSB550ED
Applicable motors*1	200V class	DIP switch to select no. of wires passing through CT*2	T2	0.1kW	0.4kW	1.5kW	3.7kW
			T1	0.2kW	0.75kW	2.2kW	5.5kW
	400V class	DIP switch to select no. of wires passing through CT*2	T2	0.1, 0.2kW	—	2.2, 3.7kW	7.5kW
			T1	0.4, 0.75kW	1.5kW	5.5kW	11kW
Maximum motor circuit voltage				AC600V 50/60Hz			
Load current setting range*3		DIP switch to select no. of wires passing through CT	T2	0.20 to 1.20A (0.01A increments)	1.20 to 3.20A (0.02A increments)	3.00 to 10.0A (0.1A increments)	6.00 to 26.0A (0.2A increments)
			T1	0.40 to 2.40A (0.02A increments)	1.80 to 5.80A (0.04A increments)	4.00 to 14.0A (0.1A increments)	9.00 to 34.0A (0.25A increments)*4
Start time setting range*3				0.2 to 10.0s			
Shock time setting range*3				0.2 to 5.0s			
Rated operating power supply voltage				24 to 240V AC/DC (non-polar)			
Rated operating power supply frequency				50/60Hz			
Current setting accuracy				±10% (full-scale)			
Current detection system				2-phase CT system			
Output relay		Operation selection		A: Auto reset after tripping M: Self-holding after tripping			
		Contact capacity		1a1b 3A AC250V $\cos\phi = 1$			
		Min. applicable load*5		DC10V, 10mA			
		Life		80,000 activations			
Usage environment		Ambient temperature		−20 to +60°C			
		Ambient humidity		30 to 85% RH; no condensation			
		Ambient vibration		5.9m/s^2 or less			
		Altitude		2000m or less			
		Atmosphere		No dust or corrosive gas			
Withstand voltage		Between circuit–housing		2000V AC, 60Hz, 1 minute (power supply circuit and contact circuit)			
		Between contacts		1000V AC, 60Hz, 1 minute			
		Between circuit		2000V AC, 60Hz, 1 minute (power supply circuit and contact circuit)			
Protective structure				IP20			
Mass				0.2kg max.			
Power consumption				2W max.			

Notes: *1. The applicable motors are just a rough indication for reference. Make your selection based upon actual electrical current value.
Select by electrical current value for single-phase motors as well.
*2. Be sure to make one turn when selecting T1 and two turns when selecting T2.
*3. A ±1 digit error can occur with the current and the set time in the range indicated.
*4. Set values 10A and higher are displayed as follows due to the maximum number of display digits. 10.0A→10.2A→10.5A→10.7A→11.0A
*5. When directly inputting output relay contact into the programmable controller (PLC), be aware that a minute electric current can cause contact failure.
Therefore, before inputting the output relay contact into the PLC, it is recommended that you drive the relay coil for a minute current via the relay signal.

Part names and functions



Note: Use a micro screwdriver when changing each of the settings. Do not use a large screwdriver since it may cause damage.

1 Current setting (CURRENT)

Sets current at the value at which trip occurs.

2 Start time setting (START TIME)

Sets start time (start-up compensation 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.

3 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.

4 DIP switch (selector switch)

Setting	Purpose	■□		□■	
No. of motor wires passing through CT T1 / T2	Current value set range selection	T1	No. of passes through the CT: 1	T2	No. of passes through the CT: 2
Trip reset A / M	Output relay reset selection	A	Automatically returns from the trip state a second after current value returns to below the set current value.	M	Trip state is maintained until the check/reset button is pressed. It then resets.

5 TEST button (TEST)

While the LED is displaying current value, pressing the TEST button will carry out an operation test.

6 CHECK/RESET button (CHECK/RESET)

During normal operation:
By pressing the CHECK/RESET button while the LED is displaying current value, the display 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:
While the LED is showing the setting screen, pressing the CHECK/RESET button will switch the display between current setting, start time setting, shock time settings, and current value, in this order.

7 LED display

The LED to the left of (A) will light up when current value and current set-up are displayed. (A = ampere)

Current value

Current set up

The LED to the left of (s) will light up when start time set-up and shock time set-up are displayed. (s = seconds)

Start time set up

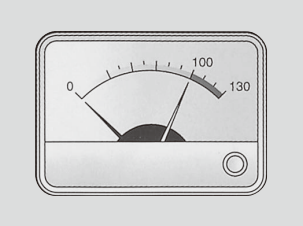
Shock time set up

Comparison with meter relays (analog)

The ED Series is also ideal for applications that use a meter relay (analog).
Here are features not available with meter relays.

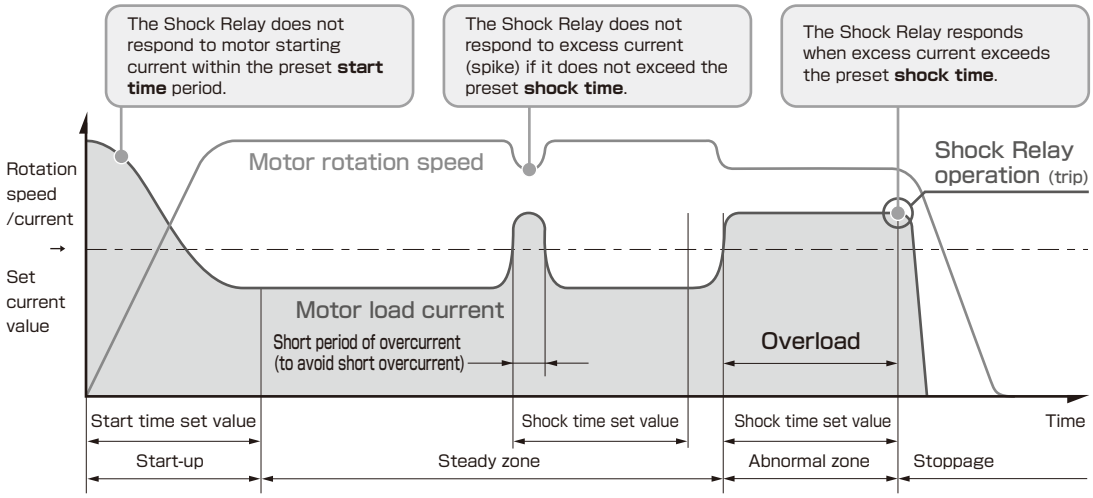
- Start time (start-up compensation) function
- Shock time (output delay) function
- Compact design, includes CT
- Works with inverter driving
- Choose between self-holding or automatic reset for the output relay
- Includes test function
- Detects locked rotor start

ED Series

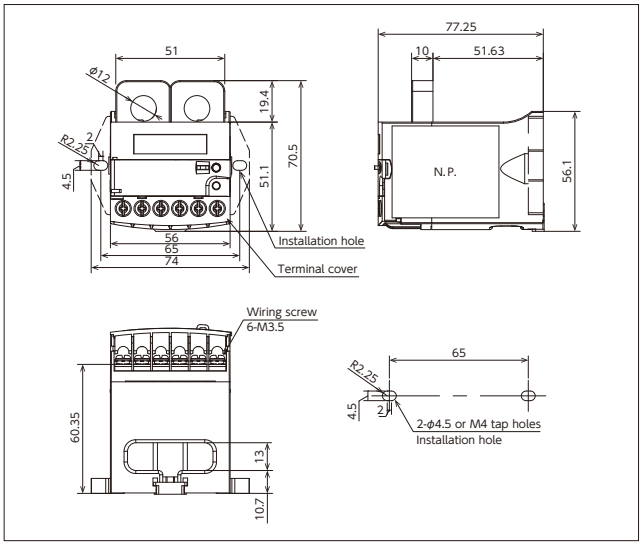


Meter relay (analog type)

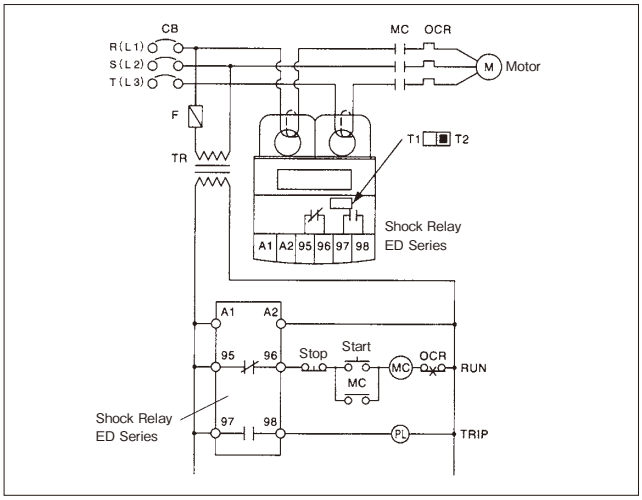
Operating mode



Outline dimensions



Basic connection diagram



Model

TSB020ED

- Shock Relay
- Maximum applicable motor capacity (200V class)
  020···0.2kW 075···0.75kW
  220···2.2kW 550···5.5kW
- ED Series

Innovation in Motion

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