Starting a test

Interlock feature

The first time that you turn the POWER switch on after you purchase the TOS5200, the tester will be in PROTECTION mode through the interlock feature. You cannot release PROTECTION mode by pressing the STOP switch or applying a stop signal.

You can use the included SIGNAL I/O plug to release the PROTECTION mode. Only use this plug to easily release the PROTECTION mode.

When you are actually performing tests, use the interlock feature to ensure safety.

Starting a test

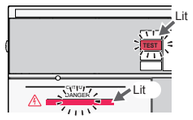
⚠ WARNING

Risk of electric shock. During a test, do not touch the test leads or the DUT.

1. Check that the TOS5200 is correctly connected to the DUT.

2. When the READY LED lights in white, press START.

The test starts, and the TEST (red) and DANGER LEDs light.



The rise time counter is incremented while the voltage is rising. If TIMER is set to ON, the display counts down the test time. If it is set to OFF, the display counts up the test time.

To change the voltage setting during a test

1. Press SET when the TEST (red) LED is lit.

2. Turn the rotary knob to change the voltage.

The voltage is changed immediately. The voltage value on the display shows the measured value. After the test finishes, when the TOS5200 returns to the READY state, the new voltage value is shown on the display.

What to do if you cannot start a test

In the following conditions, you will not be able to start a test. The READY LED will not light either.

Condition	What to do to start a test
The memory number is not fixed while panel settings are being recalled from or saved to memory.	• Wait for the panel memory recall to finish. • Confirm the memory number you want to save to.
STOP is being pressed (or a STOP signal is being applied to the SIGNAL I/O connector).	• Do not press STOP. • Open the STOP signal terminal of the SIGNAL I/O connector, or set the input signal level to high.
“mA” is blinking.	• The lower or upper limit is turned on, and the upper limit has been set lower than the lower limit. Specify a valid value.
“kV” and “mA” are blinking simultaneously.	• The product of the test voltage and the upper limit exceeds 550 VA. Specify a valid value.
“PASS” or “FAIL” is lit.	• You cannot start a test while a judgment result is displayed. Press STOP to switch the TOS5200 to the READY state.
“PROTECTION” is lit.	• The PROTECTION mode is on. Resolve the issues causing the PROTECTION mode to be on.
The double action feature has been turned on.	• Turn off the double action feature, or press STOP and then press START within 0.5 seconds.

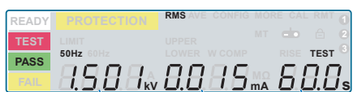
Finishing a test

To stop a test, press STOP.

A test will stop under one of the following conditions.

- a: When the test time elapses (when TIMER is set to ON).
- b: If a current greater than or equal to the upper limit (U-FAIL) or less than or equal to the lower limit (L-FAIL) is measured.
- c: If you press STOP.

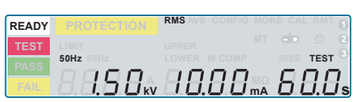
After a test finishes, the DANGER LED turns off, and the high voltage output is turned off. If a test finishes under condition a or b given above, the judgment result is displayed on the screen.



Measured voltage Measured current Test time

If the test time has been set

After the test time elapses, the PASS LED lights in green, and the test finishes. The PASS LED remains lit in green for the length of time specified by Pass Hold. The READY LED then lights in light white, and the TOS5200 switches to the READY state.



Judgment

The TOS5200 judges whether a test results in PASS, L-FAIL, or U-FAIL on the basis of the limits that are set in advance.

Type	PASS	U-FAIL	L-FAIL
Behavior based on judgment	When the test time elapses (TIMER is 0 seconds), if the condition “lower limit < measured value < upper limit” is true, a PASS judgment is made, and the test ends.	If the condition “upper limit ≤ measured value” is true, an UPPER FAIL judgment is made, and the test is immediately stopped.	If the condition “lower limit ≥ measured value” is true, a LOWER FAIL judgment is made, and the test is immediately stopped.
Display	The PASS LED lights in green. Measured value remains displayed for the length of time specified by Pass Hold.	FAIL LED and “UPPER” lights.	FAIL LED and “LOWER” lights.
Buzzer	Sounds for 50 ms.	Sounds until STOP is pressed.	
SIGNAL I/O connector	The PASS signal is generated for the length of time specified by the Pass Hold setting.	The U-FAIL signal is generated until the FAIL judgment is cleared.	The L-FAIL signal is generated until the FAIL judgment is cleared.

Clearing the judgment result

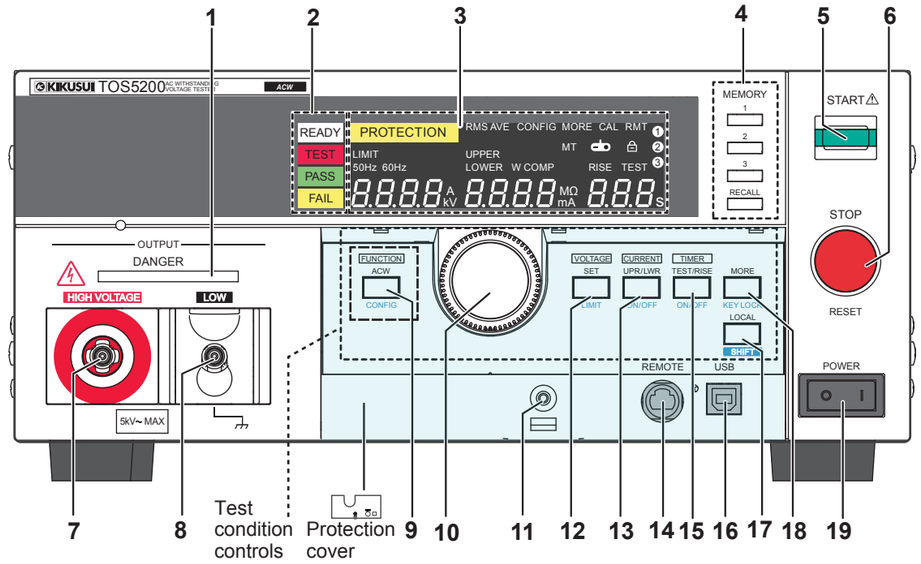
Press STOP to switch the TOS5200 to the READY state (the READY LED lights).

KIKUSUI Z1-006-152, IB027992 Jul. 2016

TOS5200

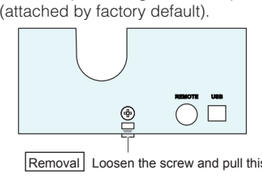
Quick Reference

The newest version of the operation manual can be downloaded from Kikusui website.
http://www.kikusui.co.jp/en



No.	Name	Function
1	DANGER LED	Lights in red when testing is being performed.
2	Status display	READY: Lights in light white when the TOS5200 is ready to perform a test.
		TEST: Lights in red when testing is being performed.
		PASS: Lights in green when a test passes.
		FAIL: Lights in yellow when a test fails.
3	Display	Displays the settings, measured values, and other information.
4	MEMORY keys	Display the settings that are saved to memory. When test conditions or configuration items are being set, these keys correspond to the menus displayed on the screen.
	MEMORY 1	Displays the settings saved to MEMORY 1.
	MEMORY 2	Displays the settings saved to MEMORY 2.
	MEMORY 3	Displays the settings saved to MEMORY 3.
	RECALL	Recalls settings from panel memory. + SHIFT key 1: Saves the current settings to panel memory.
5	START switch	Starts testing.
6	STOP switch	Stops testing and clears the current status.
7	HIGH VOLTAGE terminal	This terminal is for the high-voltage line of the tester output.
8	LOW VOLTAGE terminal	This terminal is for the low-voltage line of the tester output (with cable lock).
9	FUNCTION keys	--
	CONFIG key 1	Displays the CONFIG setup screen.
10	Rotary knob	Changes settings.

No.	Name	Function
11	Screw hole	Fasten a screw to this hole to fix the protection cover in place.
12	SET key	Selects the voltage setting.
	LIMIT key 1	Selects the voltage limit setting.
13	UPR/ LWR key	Press to select the upper and lower current limits.
	ON/ OFF key 1	Turns the current’s lower limit judgment feature on and off.
14	REMOTE connector	Specialized connector for connecting the optional remote control box, RC01-TOS/RC02-TOS, or the high voltage test probe, HP01A-TOS/HP02A-TOS.
15	TEST/ RISE key	Press to select the test time (Test Time) and voltage rise time (Rise Time).
	ON/ OFF key 1	Turns the test time (Test Time) on and off.
16	USB port	USB interface.
17	LOCAL key	Switches between local mode and remote mode.
	SHIFT key	Press to access the features that are written in blue.
18	MORE key	Press to select additional test condition settings.
	KEY LOCK key 1	Locks panel key operations (settings and changes).
19	POWER switch	Turns the power on [|] and off [O].
Protection cover		Cover for preventing incorrect operation (attached by factory default).

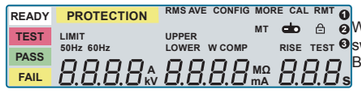


Loosen the screw and pull this part towards you.

1. Indicates an operation that requires you to press a key while holding down SHIFT key.

Switching screens

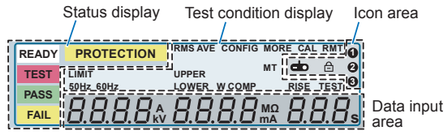
Change the setup screen depending on the item you want to set.



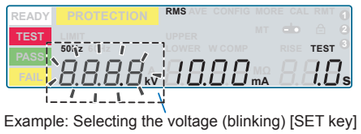
When the POWER switch on
Basic setup screen

- To display the CONFIG setup screen, press CONFIG (SHIFT+-FUNCTION). To display other test item screens, press MORE.
- To return to the basic setup screen, press STOP.

Selecting items



- To select an item, use the SET, UPR/ LWR, or TEST key. The corresponding area that you select blinks.



Example: Selecting the voltage (blinking) [SET key]

- If the item that you want to select is not displayed, press LIMIT (SHIFT+SET), ON/OFF (SHIFT+UPR/LWR), ON/OFF (SHIFT+TEST), or press MORE key.

Example: Selecting the limit voltage (blinking) [LIMIT (SHIFT+SET) key]

Example: Selecting the frequency (blinking) [MORE key]

- You can set the value of the blinking item by turning the rotary knob.

Locking keys (key lock)

The key lock feature locks the panel. It can be used to prevent unintentional changes to the test conditions.

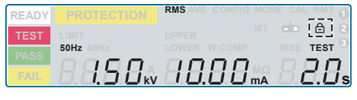
Applying the key lock

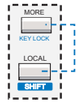
Press KEY LOCK (SHIFT+MORE).

- When keys are locked, the key lock icon appears on the screen.
- In this state, only the START and STOP switches are enabled.

Releasing the key lock

To release the key lock, hold down KEY LOCK (SHIFT+MORE) until the key lock icon disappears.





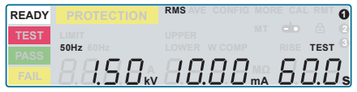
Saving test conditions (panel memory)

1. Display the basic setup screen, and then set the test conditions.

2. Press MEMORY 1, MEMORY 2, or MEMORY 3 to select the memory number (1 to 3) in which you want to save the current test conditions.

The selected memory number blinks.

3. Press SHIFT+RECALL to save the conditions in the selected memory number.



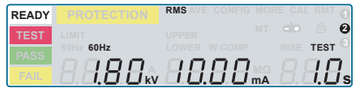
After the test conditions have been saved, the basic setup screen is displayed.

Conditions that can be saved	Value	Default value
Test voltage	0.00 kV to 5.50 kV	0.00 kV
Output frequency	50 Hz/ 60 Hz	50 Hz
Upper limit	0.01 mA to 110 mA	0.02 mA
Lower limit	OFF/ 0.01 mA to 110 mA	OFF
Test time	OFF/ 0.1 s to 999 s	0.1 s
Voltage rise time	0.1 s to 10.0 s	0.1 s
Voltage fall time	OFF/ 0.1 s	OFF
Start voltage	OFF/ 50 %	OFF

Recalling test conditions (panel memory)

1. Press MEMORY 1, MEMORY 2, or MEMORY 3 to specify the memory number (1 to 3) from which you want to recall test conditions.

The test conditions that are saved in the memory number (1 to 3) that you specify are displayed.



2. Press RECALL to recall the test conditions that are saved in the specified memory number.

The basic setup screen is displayed, and the icon corresponding to the memory number is displayed in the icon area. The TOS5200 is now set to the recalled test conditions.

If you change the recalled test conditions, the memory number disappears. Even if you set the test conditions back to the values that are stored in memory, the memory number will not reappear.

The accompanying CD-ROM also contains the following information.

User's Manual

General Description
Installation and Preparation
Safety Precautions during Testing
Panel Operation Basics
Withstanding Voltage Test
External Control
Maintenance
Specifications
Appendix

Communication Interface Manual

Remote Control

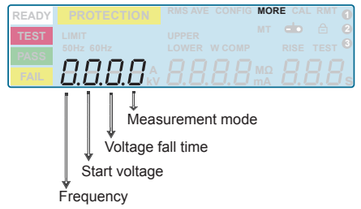
Test conditions setup

Basic item		Values	Description	Item selection key (use the rotary knob to enter values)
Voltage	Test voltage	0.00 kV to 5.50 kV	You cannot specify a voltage that is greater than or equal to the limit voltage.	SET
Limit Voltage	Limit Voltage	0.00 kV to 5.50 kV	Prevents an unnecessarily high voltage from being applied to the DUT because of incorrect operations of the TOS5200.	LIMIT (SHIFT+SET)
UPPER	Upper limit	0.01 mA to 110 mA	If a current that is greater than or equal to the upper limit is measured, a U-FAIL judgment occurs.	UPR/ LWR
LOWER	Lower limit	0.01 mA to 110 mA	While LOWER is on, if a current that is less than or equal to the lower limit is measured, an L-FAIL judgment occurs.	UPR/ LWR
		OFF	The lower limit is not used in judgments.	ON/ OFF (SHIFT+UPR/ LWR)
TEST	Test time	0.1 s to 999 s	The test time begins when the voltage rise time elapses. The test ends when the specified time elapses.	TEST
		OFF	The set test time is ignored. PASS judgments are not performed. Press STOP to stop testing.	ON/ OFF (SHIFT+ TEST)
Rise	Voltage rise time	0.1 s to 10.0 s	Voltage rise time.	MORE

Other Test Conditions

1. Press MORE to display test condition items not displayed on the panel.

2. Press MEMORY 2 or MEMORY 3 to move to the item that you want to set, and then use the rotary knob to set the value.



Other items		Values	Description
Measurement	Measurement mode	0: RMS/ 1: AVE	True rms response/ mean-value response.
Fall Time	Voltage fall time	0: OFF	The output voltage is shut off immediately after a test ends with a PASS judgment.
		1: 0.1 s	Voltage fall time (used only when a PASS judgment occurs). The output voltage falls in approximately 0.1 seconds after a test ends with a PASS judgment.
Start Voltage	—	0: OFF	The start voltage is not set.
		1: 50 %	The start voltage is set to 50 % of the test voltage.
Frequency	—	0: 50 Hz/ 1: 60 Hz	Test voltage frequency.

CONFIG settings

1. Press CONFIG (SHIFT+FUNCTION) to display the CONFIG item setup screen.

2. Press MEMORY 2 or MEMORY 3 to move to the CONFIG item that you want to set, and then use the rotary knob to set the value.

To exit from the CONFIG item setup screen and return to the basic setup screen, press STOP.