TOS5101 WITHSTANDING VOLTAGE TESTER



*This UL Listed Product is available for Inline voltage of AC 120V only.

AC/DC 10 kV Transformer Capacity: 500 VA

Outline

The Model TOS5101 is a withstanding voltage tester having a high test voltage of 0 to 5 kV or 0 to 10 kV (transformer capacity: 500 VA) that allow both application of AC and DC. The use of a high luminance, large fluorescent display tube for the display enables data including measured values, status and judgement results to be extremely legible in comparison with previous models.

The Pass/fail function employs a window comparator method that enables TOS5101 to make fail judgement of current leakage over the upper reference value and below the lower reference value set on the front panel. Thus, highly reliable testing can be performed including that for test lead disconnection and defective contact. By employing the remote control function for start and stop operations and using this function with the judgement result output function enables greater automation and efficiency of testing.

In addition, in order to prevent erroneous operation and accidents, the TOS5101 is also equipped with a key lock function and interlock function, a high-voltage output terminal having a narrowed insertion port, a large DANGER lamp, and an automatic discharge function (during DC operation) that removes charge from the testpiece. These features give the TOS5101 a high degree of safety and reliability.

Features

- Complies with various safety standards
- AC/DC output (0 to 10 kV)
- Large color display
- Digital voltmeter and ammeter
- Digital timer
- Window comparator type employed for Pass / fail judgement.
- Equipped with remote control function
- Various signal outputs
- Automatic discharge function (during DC operation)
- Provided with zero turn-on switch
- Compact size



A high-luminance, fluorescent display tube is employed for display of settings, status and judgement results.

TOS5101

WITHSTANDING VOLTAGE TESTER

Specifications

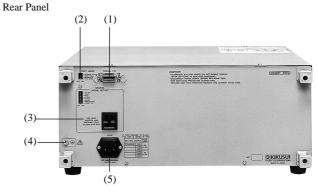
■ Test Voltage	AC and DC
•	
Applied Voltage Maximum Rated	0 to $5/0$ to 10 kV
	AC: 500VA/10 kV, 50 mA (note 1)
Output	DC: 50W/10kV, 5 mA (note 1)
Wattage Rating	500 VA
Waveform	Commercial line waveform
Voltage Regulation	AC: Max. 15% (for max. rated load to no load)
~	DC: Max. 3% (for max. rated load to no load)
Switching	Use of a zero turn-on switch
Ripple (DC)	100 Vp-p typ. at 10 kV, no load
	200 Vp-p typ. at max. rated output
Output Voltmeter	
Scale	Analog: 10 kV full scale, AC/DC
Accuracy	Analog: ±5% of full scale
	Digital: $\pm 1.5\%$ of full scale
AC Indication	Analog: Mean value response/rms value scale
Full Scale	Digital: 5 kV/10 kV full scale
AC Response	Digital: Mean value response/rms value display
Ammeter	
Accuracy	Digital: $\pm(5\% + 20\mu A)$ of upper cutoff current
AC Response	Digital: Mean value response/rms value display
Pass/fail Judgement Func	tion
Type of Judgement	Window comparator type
	•FAIL judgement
	*When current detected above upper cutoff current
	*When current detected below lower cutoff
	current (FAIL signal generated when FAIL
	judgement made)
	•PASS judgement
	*When set time has elapsed and no abnormality
	is detected
Upper Cutoff Current	AC: 0.1 to 55 mA
Setting Range	DC: 0.1 to 5.5 mA
Lower Cutoff Current	AC: 0.1 to 55 mA
Setting Range	DC: 0.1 to 5.5 mA
Judgement Accuracy	
Current Detection	\pm (5% of upper cutoff current + 20µA)
Current Detection	Integration of current absolute value followed
Calibratian	by comparison with reference value
Calibration	With rms value of sine wave using a pure
	resistance load
No-load output voltage	Approx. 970V when set to 50 mA AC
	Approx. 160V when set to 5 mA DC
Test Time Setting Range	0.5 to 999 sec (±10 ms) (timer-off function provided)
Accuracy	±20 ms
Signal Outputs	H.V ON - Open collector
	DANGER - Lamp
	TEST - Open collector, fluorescent display tube
	PASS - Open collector, fluorescent display tube,
	buzzer
	U FAIL - Open collector, fluorescentdisplay
	tube, buzzer
	L FAIL - Open collector, fluorescent display
	tube, buzzer
	READY - Open collector, fluorescent display tube
	PROTECTION - Open collector, fluorescent
	display tube
	STATUS SIGNAL OUTPUT 100V AC(0.3 A Max.)
	Rating of open collector: 4.5 to 30V DC/400
	mA (Max. Total)
Remote Control	Test and reset operations can be remote
	controlled in the following cases:
	When using a separately sold remote control box
	• When using a separately sold
	high-voltage test probe
	• When controlling with a make contact signal
	such as a relay or switch
	• When using low active control by a logic
	evice and so on

• When using low active control by a log device and so on

■ Interlock Function	Testing can no longer be performed when an interlock signal is input (PROTECTION state).				
Line Voltage	100V±10%, 50/60 Hz (note 2)				
Power Requirements	Max. 50 VA under no-load conditions Approx. 610 VA at rated load				
■ EMC (note 3)					
Complied with the following standards					
IEC61362-1: 1997-03/A1:1998-05					
Electrical Equipment for Measurement, Control and Laboratory					
Use - EMC requirements					
Radiated Emissions Class A					
Conducted Emissions Class A					
IEC61000-4-2:1995-01	Electro-static Discharge				
/A1:1998-01					
IEC61000-4-3:1995-02	1 , 1 , 3				
IEC61000-4-4:1995-01	Electrical fast transient / Burst				
IEC61000-4-5:1995-02	8				
IEC61000-4-6:1996-04					
IEC61000-4-11:1994-0	06 Voltage dips, short interruptions and voltage variations				
Under following conditions					
1. Used HV test leadwires TL03-TOS.					
2. No discharge in testing.					
■ Safety (note 3)					
Complied with the following standards					
European Community Requirements (73/23/EEC)					
UL1244					
(The UL-approved products with input voltage of 120V AC satisfy the					
UL1244 standerd.)					
Dimensions (MAX)	$430W \times 177H \times 370D \text{ mm}$				
	$(430W \times 195H \times 450D \text{ mm})$				
 Weight 	Approx. 21 kg (for line voltage of 100V)				
Accessories	High-voltage test lead TL01-TOS (max.				
	allowable voltage: 5 kV/1.5 m)				
	High-voltage test lead TL03-TOS (max.				
allowable voltage: 10 kV/1.5 m					
amphenol plug (assembled)					

Note 1: Continuous output time may be limited depending on current high limit reference value and ambient temperature.

Note 2: Nominal voltages of 110V, 120V, 220V, 230V and 240V available as factory options. Note 3: CE marking are put only on the products sold in Europe.



(1)Signal I/O

Input/output connectors for interlock function input/output signals, start/stop remote control input signals and status output signal.

(2)Test Mode Switch

This is a DIP switch for setting special test modes. Parameter settings such as test start and interruption operations can be changed with this switch.

 (3)Status Signal Output Terminal
 This is a 100V AC output terminal for operating an optional warning lamp unit or buzzer unit. Conditions during AC 100V output (status, judgement results) are set with DIP switches.
 (4)Ground Terminal

(5)Line Input Terminal (integrated with fuse holder)

TOS5051 WITHSTANDING VOLTAGE TESTER



AC/DC 5 kV Transformer capacity: 500 VA

Outline

The Model TOS5051 is a withstanding voltage tester having a transformer capacity of 500 VA and test voltage of 0 to 5 kV that allows both application of AC and DC.

The Pass/fail judgement function employs a window comparator type that enables highly reliable testing including that for test lead disconnection and defective contact.

Moreover, as a result of employing a remote control function for start and stop operations and being equipped with output signals for various judgement results, the TOS5051 is able to contribute to greater automation and efficiency of testing.

Various safety devices, including an automatic discharge function (during DC operation), are provided in full consideration of operator safety. In addition, the use of a large, color display makes the TOS5051 extremely legible, providing strong support for more accurate and safer operation.

Features

- Complies with various safety standards
- AC/DC output (0 to 5 kV)
- Large color display
- Digital voltmeter and ammeter
- Digital timer
- Window comparator type employed for Pass/fail judgement.
- Equipped with remote control function
- Various signal outputs
- Automatic discharge function (during DC operation)
- Provided with zero turn-on switch
- Compact size



A high-luminance, fluorescent display tube is employed for display of settings, status and judgement results.

TOS5051

WITHSTANDING VOLTAGE TESTER

Specifications

Test Voltage	AC and DC	1		
Applied Voltage	0 to 2.5/0 to 5 kV	■ Interlock Function	Testing can no longer be performed when ar	
Maximum Rated	AC: 500VA/5 kV, 100 mA (note 1)		interlock signal is input (PROTECTION state)	
Output	DC: 50W/5 kV, 10 mA (note 1)	■ Line Voltage	100V±10%, 50/60 Hz (note 2)	
Wattage Rating	500 VA	Power Requirements Max. 50 VA under no-load conditions Appro		
Waveform	Commercial line waveform		640 VA at rated load	
Voltage Regulation	AC: Max. 15%	■ EMC (note 3)		
0 0	(for max. rated load to no load)	Complied with the following standards		
	DC: Max. 3%	IEC61362-1: 1997-03/A1:1998-05		
	(for max. rated load to no load)	Electrical Equipment for Measurement, Control and Laboratory		
Switching	Use of a zero turn-on switch	Use - EMC requirements		
Ripple (DC)	50 Vp-p typ. at 5 kV, no load	Radiated Emission	s Class A	
	100 Vp-p typ. at max. rated output	Conducted Emissions Class A		
Output Voltmeters			1 Electro-static Discharge	
Scale	Analog: 5 kV full scale, AC/DC	/A1:1998-01		
Accuracy	Analog: ±5% of full scale	IEC61000-4-3:1995-02		
	Digital: ±1.5% of full scale	IEC61000-4-4:1995-0		
AC Indication	Analog: Mean value response/rms value scale	IEC61000-4-5:1995-02	e	
Full Scale	Digital: 2.5 kV/5 kV full scale	IEC61000-4-6:1996-04		
AC Response	Digital: Mean value response/rms value display	IEC61000-4-11:1994-0	06 Voltage dips, short interruptions and voltage	
Ammeter			variations	
Accuracy	Digital: $\pm(5\% + 20\mu A)$ of upper cutoff current	Under following condition		
AC Response	Digital: Mean value response/rms value display	1. Used HV test leadw		
Pass/fail Judgement Func		2. No discharge in testing.		
Type of Judgement	Window comparator type	■ Safety (note 3)		
	• FAIL judgement	Complied with the following standards		
	* When current detected above upper	European Community Requirements (73/23/EEC)		
	cutoff current	UL1244		
	* When current detected below lower cutoff		oducts with input voltage of 120V AC satisfy the	
	current (FAIL signalgenerated when FAIL	UL1244 standerd.)	22011 12011 2005	
	judgement made)	■ Dimensions (MAX)	$320W \times 132H \times 300D mm$	
	• PASS judgement		$(330W \times 150H \times 365D \text{ mm})$	
	* When set time has elapsed and no abnormality	■ Weight	Approx. 16 kg (for line voltage of 100V)	
	is detected	Accessories	High-voltage test lead TL01-TOS (max	
Upper Cutoff Current	AC: 0.1 to 110 mA		allowable voltage: 5 kV/1.5 m)14-pin ampheno	
Setting Range	DC: 0.1 to 11 mA		plug (assembled)	
Lower Cutoff Current	AC: 0.1 to 110 mA	-	may be limited depending on current high limit reference	
Setting Range	DC: 0.1 to 11 mA	value and ambient temp		
Judgement Accuracy	\pm (5% of upper cutoff current + 20 μ A)	-	V, 120V, 220V, 230V and 240V available as factory option	
Current Detection	Integration of current absolute value	Note 5:CE marking are put only	y on the products sold in Europe.	
G 171	followed by comparison with reference value	Rear Panel		
Calibration	With rms value of sine wave using a pure		(1)	
	resistance load	l í		
No-load Output Voltage	Approx. 460V when set to 100 mA AC			
	Approx. 100V when set to 10 mA DC			
	0.5 to 999 s (± 10 ms) (timer-off function provided)	TEST MODE SI	CAUTION CAUTION	
Accuracy	±20 ms		In the source of to call utility of personale. In the source of the call utility of the call util	
Signal Outputs	H.V ON - Open collector		PERSONAL COLUMITY OF COMPANY AND OPENAL AND OPENAL AND OPENAL	
	DANGER - Lamp			
	TEST - Open collector, fluorescent display tube	(3)	©	
	PASS - Open collector, fluorescent display tube, buzzer	(3) USE ONLY BUZZEN AND WARNING LEGHT AC 100Y 0.3A MAX	FUSE IF THIS COLUMN IS BLANK. THE INST IS INVECTOR IN DOV	
	U FAIL - Open collector, fluorescent display	SIGNAL OUTPUT	1 1 1 0007 0.00 1 1000 0.00 1 1000 0.00	
	tube, buzzer	(4)		
	L FAIL - Open collector, fluorescent display		Uner Solvider Solvider Coner Solvide	
	tube, buzzer		(5)	
	READY - Open collector, fluorescent display tube			
	PROTECTION-Open collector, fluorescent display tube			
	STATUS SIGNAL OUTPUT 100V AC (0.3 A Max.)	(1)Signal I/O		
	Rating of open collector: 4.5 to 30V DC/ 400		erlock function input/output signals, start/stop remote contro	
	mA (Max. Total)	input signals and status output (2)Test Mode Switch	t signai.	
	Test and reset operations can be remote		g special test modes. Parameter settings such as test start an	
	controlled in the following cases:	interruption operations can be		
	• When using a separately sold remote control box	(3)Status Signal Output Terminal		
	• When using a separately sold highvoltage		ninal for operating an optional warning lamp unit or buzze	
	test probe		0V output (status, judgement results) are set with DIP switche	
	• When controlling with a make contact signal	(4)Ground Terminal (5)Line Input Terminal (integrated	d with fuse holder)	
	such as a relay or switch			
	• When using low active control by a logic	I		
	device and so on			

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device and so on

TOS5050 WITHSTANDING VOLTAGE TESTER



AC 5 kV Transformer capacity: 500 VA

Outline

The Model TOS5050 is a withstanding voltage tester for AC use only having a transformer capacity of 500 VA and test voltage of 0 to 5 kV.

Functions include Pass/fail judgement (using a window comparator type), remote control function, memory backup function, interlock function and other features that realize high levels of safety, reliability and ease of operation during use by the operator. In addition, the use of a large color display and a considerable reduction in size make the TOS5050 both more legible and easier to handle.

Features

- Complies with various safety standards
- AC use only (0 to 5 kV)
- Large color display
- Digital voltmeter and ammeter
- Digital timer
- Window comparator type employed for Pass/fail judgement.
- Equipped with remote control function
- Various signal outputs
- Provided with zero turn-on switch
- Compact size



A high-luminance, fluorescent display tube is employed for display of settings, status and judgement results.

*This UL Listed Product is available for Inline voltage of AC 120V only.

TO\$5050

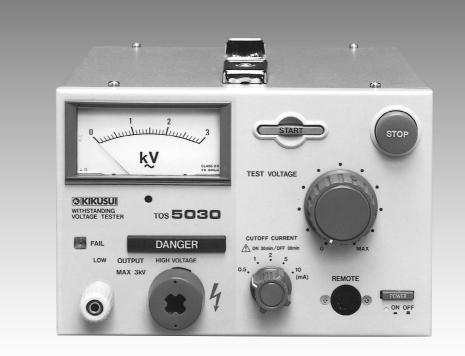
WITHSTANDING VOLTAGE TESTER

Specifications

Specifications				
Test Voltage	AC only	1		
Applied Voltage	0 to 2.5/0 to 5 kV			
	AC: 500VA/5 kV, 100 mA (note 1)	■ Interlock Function	Testing can no longer be performed when an	
Wattage Rating	500 VA		interlock signal is input (PROTECTION state)	
Waveform	Commercial line waveform	■ Line Voltage	$100V\pm10\%$, 50/60 Hz (note 2)	
Voltage Regulation	Max. 15% (for max. rated load to no load)	■ Power Requirements	Max. 25 VA under no-load conditions Approx	
Switching	Use of a zero turn-on switch	1	640 VA at rated load	
Output Voltmeters		■ EMC (note 3)		
Scale	Analog: 5 kV full scale	Complied with the following standards		
Accuracy	Analog: ±5% of full scale	IEC61362-1: 1997-03	/A1:1998-05	
	Digital: ±1.5% of full scale	Electrical Equipment for Measurement, Control and Laboratory		
Indication	Analog: Mean value response/rms value scale	Use - EMC requirements		
Full Scale	Digital: 2.5 kV/5 kV full scale	Radiated Emissions Class A		
Response	Digital: Mean value response/rms value display	Conducted Emissions Class A		
Ammeter		IEC61000-4-2:1995-0	1 Electro-static Discharge	
Accuracy	Digital: $\pm(5\% + 20\mu A)$ of upper cutoff current	/A1:1998-01		
Response	Digital: Mean value response/rms value display	IEC61000-4-3:1995-0		
Pass/fail Judgement Func		IEC61000-4-4:1995-0		
Type of Judgement	Window comparator type • FAIL judgement	IEC61000-4-5:1995-0	6	
	* When current detected above upper cutoff	IEC61000-4-6:1996-0	06 Voltage dips, short interruptions and voltage	
	current	IEC01000-4-11:1994-	voltage dips, short interruptions and voltage variations	
	* When current detected below lower cutoff	Under following conditions		
	current (FAIL signal generated when FAIL	1. Used HV test leadwires TL01-TOS.		
	judgement made)	2. No discharge in testing.		
	•PASS judgement	■ Safety (note 3)		
	* When set time has elapsed and no abnormality	Complied with the following standards		
	is detected	European Community Requirements (73/23/EEC)		
Upper Cutoff Current	0.1 to 110 mA	UL1244		
Setting Range		(The UL-approved p	roducts with input voltage of 120V AC satisfy the	
Lower Cutoff Current	0.1 to 110 mA	UL1244 standerd.)		
Setting Range		Dimensions (MAX)	$320W \times 132H \times 300D \text{ mm}$	
Judgement Accuracy	$\pm(5\% \text{ of upper cutoff current} + 20\mu\text{A})$		$(330W \times 150H \times 365D \text{ mm})$	
Current Detection	Integration of current absolute value	■ Weight	Approx. 15 kg (for line voltage of 100V)	
	followed by comparison with reference value	Accessories	High-voltage test lead TL01-TOS (max	
Calibration	With rms value of sine wave using a pure		allowable voltage: 5 kV/1.5 m) 14-pin amphenol	
	resistance load		plug (assembled)	
No-load Output Voltage	Approx. 460V when set to 100 mA	Note 1: Continuous output time may be limited depending on current high limit reference		
	0.5 to 999 s (timer-off function provided)	value and ambient temp	perature. V, 120V, 220V, 230V and 240V available as factory options	
Accuracy	±20 ms		y on the products sold in Europe.	
Signal Outputs	H.V ON - Open collector DANGER - Lamp		y on the products sold in Europe.	
	TEST - Open collector, fluorescent display tube	Rear Panel		
	PASS - Open collector, fluorescent display tube,	(2)	(1)	
	buzzer U FAIL - Open collector, fluorescent display			
	tube, buzzer		·· 72 62	
	L FAIL - Open collector, fluorescent display		5544140	
	tube, buzzer		-TO PREVAT LECTRIC SHOCK, DO NOT REMOVE COVERS. HISTS SERVICE TO GUILLA HE PREMOVED. -DISCOMPTET FORMS AND AND VERSION AND AND AND TODE.	
	READY- Open collector, fluorescent display tube	3	MALE CALL RELATION OF CONTROL POLICIAL AND CORRENT PAREO FUSE.	
	PROTECTION - Open collector, fluorescent		•	
	display tube	(3)	PUSE IN THIS COLUMN IS NAME.	
	STATUS SIGNAL OUTPUT 100V AC (0.3 A Max.)	ACTOV GLAMMAT		
	•Rating of open collector: 4.5 to 30V/400 mA	(4)		
	(Max. Total)			
Remote Control	Test and reset operations can be remote		(5)	
	controlled in the following cases:		(3)	
	• When using a separately sold remote control	(1)Signal I/O		
	box		terlock function input/output signals, start/stop remote contro	
	• When using a separately sold highvoltage	input signals and status output (2)Test Mode Switch	it signal.	
	test probe		g special test modes. Parameter settings such as test start and	
	• When controlling with a make contact signal	interruption operations can be	e changed with this switch.	
	such as a relay or switch	(3)Status Signal Output Terminal		
	• When using low active control by a logic device and so on		minal for operating an optional warning lamp unit or buzze 0V output (status, judgement results) are set with DIP switches	
	device and so on	(4)Ground Terminal		
		(5)Line Input Terminal (integrate	d with fuse holder)	

(5)Line Input Terminal (integrated with fuse holder)

TOS5030 WITHSTANDING VOLTAGE TESTER



*This UL Listed Product is available for Inline voltage of AC 120V only.

Economy Model AC 3 kV, 10 mA

Outline

The Model TOS5030 is an AC withstanding voltage tester having an AC output of 3 kV and 10 mA. Despite being an economy model, the TOS5030 is equipped with a zero turnon switch, remote control function for start and stop operations and a FAIL signal output function.

In addition, the compact size and light weight enable it to be used easily for intermediate inspections of devices and testing of electronic components on production lines. (Not compatible with various safety standards.)

With respect to safety and reliability as well, the TOS5030 features a safe construction including a start switch structure that prevents erroneous operation and a narrow insertion port for the high-voltage power cable.

Features

- ■AC use only (0 to 3 kV)
- Remote control function for start and stop operations
- FAIL signal output (lamp, buzzer and make contact signals)
- Provided with zero turn-on switch
- Safe high-voltage output terminal
- ■Economy model

TOS5030

WITHSTANDING VOLTAGE TESTER

Specifications

Test Voltage Applied Voltage Wattage Rating

> Waveform Voltage Regulation

Switching Output Voltmeter Type of Meter Scale Accuracy Indication Pass/fail Judgement Function

Type of Judgement

Cutoff Current Setting Values Judgement Accuracy Current Detection

Calibration

No-load Output Voltage ■ Remote Control AC only 0 to 3 kV 30 VA/3 kV, 10 mA (at nominal line voltage) (note 1) Commercial line waveform Max. 15% (for max. rated load to no load) Use of a zero turn-on switch

JIS Class 2.5 3 kV full scale ±5% of full scale Mean value response/rms value scale

- FAIL judgement *When current detected above reference value
- *FAIL signal generated when FAIL judgement made
- 0.5/1/2/5/10 mA ±5% of preset cutoff current Integration of current absolute value followed by comparison with reference value

With rms value of sine wave using a pure resistance load

Approx. 400V when set to 10 mA Test and reset operations can be remote controlled in the following cases:

- When using a separately sold remote control box
- When using a separately sold high-voltage test probe
- When controlling with a make contact signal such as a relay or switch
- When using low active control by alogic device and so on

100V±10%, 50/60 Hz (note 2) Line Voltage Range Power Requirements Max. 10 VA under no-load conditions (READY state) Approx. 45 VA at rated load ■ EMC (note 3) Complied with the following standards IEC61362-1: 1997-03/A1:1998-05 Electrical Equipment for Measurement, Control and Laboratory Use - EMC requirements Radiated Emissions Class A Conducted Emissions Class A IEC61000-4-2:1995-01 Electro-static Discharge /A1:1998-01 IEC61000-4-3:1995-02 Radiated, radio-frequency, electromagnetic field IEC61000-4-4:1995-01 Electrical fast transient / Burst IEC61000-4-5:1995-02 Surge IEC61000-4-6:1996-04 Conducted disturbances IEC61000-4-11:1994-06 Voltage dips, short interruptions and voltage variations Under following conditions 1. Used HV test leadwires TL01-TOS. 2. No discharge in testing. ■ Safety (note 3)

Complied with the following standards

European Community Requirements (73/23/EEC)

FAIL signal in the form of a lamp,

buzzer and make contact signal output

■ Signal Output

UL1244 (The UL-approved products with input voltage of 120V AC satisfy the UL1244 standerd.) Dimensions (MAX) 200W × 132H × 215D mm (210W × 160H × 280D mm) Weight Approx. 4.8 kg (for line voltage of

- Accessories 100V) High-voltage test lead TL01-TOS (max. allowable voltage: 5 kV/1.5 m) 5P DIN plug (assembled)
- Note 1: Continuous output time may be limited depending on current high limit reference value and ambient temperature.

Note 2: Nominal voltages of 110V, 120V, 220V, 230V and 240V available as factory options. Note 3: CE marking are put only on the products sold in Europe.

Rear Panel



(1)FAIL Signal Terminal

A make contact signal is output from this terminal by a FAIL signal. (2)Ground Terminal

(3)Line Input Terminal (integrated with fuse holder)