

## SECTION 2 SPECIFICATIONS

### 2-1. Electrical Performance

#### Frequency measurement (FREQ. A)

Range : 10 Hz to 120 MHz  
Gate time : 10 ms, 0.1 s, 1 s, or 10 s  
Unit display : Hz, kHz, or MHz  
Accuracy :  $\pm 1$  count  $\pm$  time base accuracy

#### Frequency measurement (FREQ. B)

Range : 1 mHz to 50 MHz  
Gate time : 10 ms (9 ms to 0.1 s), or 1 period time of input frequency below 10 Hz. Five display digits.  
0.1 s (90 ms to 1 s), or 1 period time of input frequency below 1 Hz. Six display digits.  
1 s (0.9 s to 10 s), or 1 period time of input frequency below 0.1 Hz. Seven display digits.  
10 s (9 s to 100 s), or 1 period time of input frequency below 10 mHz. Eight display digits.  
Unit display : mHz, Hz, kHz, or MHz  
Accuracy :  $\pm$  (Trigger error/ $10^m$ )  $\pm 1$  count  $\pm$  time base accuracy  
Where  $10^m$  is the number of periods. See 5-3-2.

Note: When the rapid switching of input frequency happen, the timing of switched frequency may cause, the measurement time to get longer.

#### Frequency measurement (FREQ. C) (TR5823)

Range : 100 MHz to 1300 MHz (1/20 prescaled)  
Gate time : 20 ms, 0.2 s, 2 s, or 20 s  
Unit display : Hz, kHz, MHz, or GHz  
Accuracy :  $\pm 1$  count  $\pm$  time base accuracy

#### Period measurement (PERIOD B)

Measurement range: 20 ns to 999.99999 s (including when averaged)  
Multiplier ( $10^n$ ):  $10^0$ ,  $10^1$ ,  $10^2$ , or  $10^3$   
Time unit : 100 ns  
Unit display : ns,  $\mu$ s, ms, or s  
Accuracy :  $\pm$  (Trigger error/ $10^n$ )  $\pm 1$  count  $\pm$  time base accuracy

### Time interval measurement (T.I. A → B)

Range : 200 ns to 999.99999 s  
Multiplier ( $10^n$ ) :  $10^0$ ,  $10^1$ ,  $10^2$ , or  $10^3$   
Time unit : 100 ns  
Unit display : ns,  $\mu$ s, ms, or s  
Accuracy :  $\pm$  (Trigger error/ $\sqrt{10^n}$ )  $\pm$  1 count  $\pm$  time base accuracy  
Dead time : 50 ns

### Frequency ratio measurement (RATIO A/B)

Range : DC to 50 MHz  
Multiplier ( $10^n$ ) :  $10^0$ ,  $10^1$ ,  $10^2$ , or  $10^3$   
Unit display : m, k, or M  
Accuracy :  $\pm$  (Input B trigger error/ $10^n$ )  $\pm$  1 count  $\pm$  Input A accuracy

### Totalize (TOT. A)

Range : DC to 50 MHz, 0 to 99999999

### Input Specifications

#### INPUT A/B

Input sensitivity : 25 mVrms, DC to 100 MHz  
55 mVrms, 100 MHz to 120 MHz  
Sensitivity switching : x1, x10, and x100  
Input voltage range : 25 mVrms to 500 mVrms (at x1)  
Damaging input level : DC to 100 kHz: 100 Vrms (x1), 150 Vrms (x10 or x100)  
100 kHz to 120 MHz: 5 Vrms (x1), 50 Vrms (x10 or x100)  
Input coupling mode : DC or AC coupled, or AUTO (AC coupled)  
Input impedance : Approx. 1 M $\Omega$ //30 pF, COM. A approx. 500 k $\Omega$   
Pulse resolution : 10 ns  
Trigger level : Approximately -1 V to +1 V continuously variable.  
In the **AUTO** mode, the trigger level is automatically set to the half-amplitude of the peak value of the signal to be measured.  
Trigger slope : +/– switchable  
Common/Separate : **COM.** handles inputs A and B as common input.  
**SEP.** handles inputs A and B separately.  
Masking : Approx. 0.1 ms to 0.1 s. The masking time can be monitored at CHECK mode.  
Noise rejection : 100 kHz low-pass filter

### INPUT C (TR5823 only)

- Input sensitivity : 20 mVrms, 100 MHz to 1300 MHz  
Sensitivity switching : x1 and x10  
Input voltage range : 20 mVrms to 500 mVrms (at x1)  
Damaging input level : 5 Vrms (with protection fuse)  
Input coupling mode : AC coupled  
Input impedance : 50  $\Omega$   
Burst mode : **BURST** switch operation enables burst signal measurement.  
Noise rejection : Automatically suppressed by ANS (Automatic Noise Suppressor) (ON-OFF switching)

### Time Base

- Internal reference frequency : 10 MHz  
Frequency stability : Aging rate:  $\pm 5 \times 10^{-7}$ /month  
Temperature stability:  $\pm 5 \times 10^{-6}$  ( $0^{\circ}\text{C}$  to  $\pm 40^{\circ}\text{C}$ )  
Line voltage:  $\pm 2.5 \times 10^{-7}$  (100 V  $\pm$  10%)  
Internal reference output: Frequency: 10 MHz  
Output voltage: 1 V<sub>p-p</sub> to 2 V<sub>p-p</sub>  
Output impedance: approx. 500  $\Omega$   
External reference input: Frequency: 10 MHz  
Input voltage: 1 V<sub>p-p</sub> to 10 V<sub>p-p</sub>  
Input impedance: approx. 500  $\Omega$

## 2-2. General Specifications

- Display : 8 decimal digits  
Green, 7-segment LED, display storage method  
Sample rate : 50 ms or hold  
Self-check : Counting operation check by internal reference signals  
Operating environment : Temperature:  $0^{\circ}\text{C}$  to  $+40^{\circ}\text{C}$   
Relative humidity: 85% or less  
Storage temperature :  $-20^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$   
Power requirements : 90–110 V, 108–132 V, 198–242 V, 216–250 V  
50 Hz to 400 Hz,  
Power consumption: 40 VA or less (TR5821/22/23)  
Dimensions : (W)240 x (H)88 x (D)280 mm approx.  
Mass : 3.5 kg or less (TR5821)  
4 kg or less (TR5822/5823)

## 2-3. Options

### GPIB data output & remote control

Standard : IEEE STD. 488-1978  
Interface functions : Source and acceptor handshake  
                          Talker/listener  
                          Service request  
                          Device clear  
Code used : ASCII code  
Remote-programmable functions : Function  
  Gate time/Multiplier  
  Hold

### BCD data output

Data : Digit parallel  
Output digits: Mantissa 7 digits, exponent 1 digit  
Output level : TTL, positive logic

### D/A converter (requires TR1644)

Output voltage : 0.999 V full-scale  
Conversion digits : Any 3 consecutive digits  
Output terminal : Binding post  
Output impedance : Approx. 1 k $\Omega$

DA output is not done at the function of TOT.

### High-stability reference oscillator

Stability : Aging rate:  $5 \times 10^{-8}$  /day  
                          Temperature characteristics:  $\pm 1 \times 10^{-7}$ , 0°C to +40°C

The internal reference output and external reference input specifications are the same as the standard time base.

### TR1644 Calculation Unit

Math mode :  $\pm$  (addition, subtraction),  $\times$  (multiplication),  $\div$  (division),  
                          DAC (D/A converter mode), comparison, delta, Max., Min.,  
                          %, scaling, arithmetic operation between set values by using  
                          = key ( $\pm$ ,  $\times$ ,  $\div$ )  
Digit : Setting: Mantissa 8 digits, exponent 1 digit  
                          Display: 8 digits

## Option combinations

Only one kind of interface can be attached to all products except for TR5821.  
(Options to be installed in ADVANTEST side)

Name of type	Product code	Built-in interface
TR5822	5822-GP 5822-BCD 5822-DA	Equipped with GPIB Equipped with BCD output Equipped with D/A converter (TR1644 must be prepared separately)
TR5823	5823 5823-GP 5823-BCD 5823-DA	Equipped with GPIB Equipped with BCD output Equipped with D/A converter (TR1644 must be prepared separately)
TR5823H	5823H 5823H-GP 5823H-BCD 5823H-DA	Equipped with GPIB Equipped with BCD output Equipped with D/A converter (TR1644 must be prepared separately)

## 2-4. Accessories Supplied

(1) Power cable *1 .....	1
(2) Input cable (A01036-1500) .....	1
(3) Input cable (MI-03) .....	1
(4) Slow-blow fuse (T0.4A) (AC100/120 V ac)*2 .....	2
(5) High-frequency fuse (TR5823/5823H only) .....	2
(6) Instruction Manual .....	1
(7) Carrying Case (TR16202) (To be purchased separately) .....	1

\*1: ADVANTEST provides the power cables for each country.

\*2: T0.2A for 220, 240 V ac