

NEW

YOKOGAWA 

High Accuracy & Performance Digital Multimeter

TY700 series Advanced Type **TY720**/Standard Type **TY710**

Most Reliable Handheld DMM

•Highest Precision

- Basic accuracy 0.020%
- True RMS measurement

•New Functions for Electronic and Industrial Use

- Simultaneous measurement and display of DC and AC
 - Switchable RMS/MEAN detection*
 - Low-pass Filter (LPF)*
 - AC50mV range*
 - Lo-Power resistance measurement*
- *TY720 only

•Full Support for Data Management

- A large-capacity logging-mode memory
TY720: 10,000 data
TY710: 1,000 data
- USB communication, application software (Optional DMM communication package)

•Safe Design and Wide Temperature Range for Harsh Use

- Conforms to safety standards EN61010-1
1000V CAT. III, 600V CAT. IV
- Safety shutters for preventing erroneous insertion of test leads into current measurement terminals
- Operating temperature range -20 to +55°C
- Storage temperature range -40 to +70°C

•Closed Case Calibration



Advanced type

TY720

Standard type

TY710

Yokogawa Meters & Instruments Corporation

LF TY700/TY500-E

Model and Specification Code

Name	Model
Digital Multimeter	TY710
	TY720

Optional Accessories

Name	Model	Specification
DMM communication package	92015	USB communication adapter + USB communication cable + Application software
Communication package for printer	97016	Printer adapter + Printer cable
Printer	97010	Thermal printer Paper width 112mm
AC adapter for printer	94005	AC 100V ± 10%
	94006	For Printer, Europe
Thermal printing paper	97080	10 rolls (1 set)
Test leads	98015	1000V CAT III, 600V CAT IV Red/black (1 set)
Test leads with Alligator Clip	99014	1000V CAT III, 600V CAT IV Red/black (1 set)

Name	Model	Specification
Fuse	99015	440 mA/1000V (1 piece/1 unit)
	99016	10 A/1000 V (1 piece/1 unit)
TC-K temperature probe	90050	-50 to 600°C (For liquids)
	90051	-50 to 600°C (For liquids)
	90055	-20 to 250°C (For surfaces)
	90056	-20 to 250°C (For surfaces)
Current clamp probe	96001	For 400A, AC Output: 10mV/A, AC
Carrying case	93029	Hard type (Houses the DMM, the test leads and communication cable)

TY700 General Specifications

Measurement Functions :DC voltage, AC voltage, DCV+ACV, DC current, AC current, DCA+ACA, resistance, frequency, temperature, capacitance, duty cycle, decibel calculation, continuity check, diode test, low-power resistance (TY720 only)
 For AC voltage/current, RMS/MEAN detection can be switched (TY720 only).
 For AC voltage/current, the low-pass filter can be turned on/off (TY720 only).

Additional Functions :Data hold/auto hold/peak hold (TY720 only), range hold, maximum/minimum/average values resistance, capacitance zero, relative and percentage value calculation, manual-mode memory, logging-mode memory, auto power off, backlight (white LED)

Display :5-digit LCD : 7-segment
 Digital display : Main display; [50,000] counts
 Sub-display ; [50,000] counts
 Bar graph display : 51-segment
 Polarity indicator : "-" appears automatically when the polarity is negative
 Overrange indicator : "OL"
 Low-battery indicator : " " appears at or below the minimum operating voltage.

Measuring Rate :6 times/sec (Frequency: 1 time/sec, Capacitance: max. 0.03 times/sec (50mF), Resistance: 4 times/sec)
 Bar graph display: 15 times/sec

Operating Temp. and Humidity :-20 to 55°C; 80% RH or less (no condensation) 40 to 55°C: 70% RH or less
Storage Temp. and Humidity :-40 to 70°C; 70% RH or less (no condensation)

Temperature Coefficient :Add the accuracy 0.05°C to the basic accuracy at a temperature within -20 to 18°C and 28 to 55°C. For continuous measurements, add 1 digit/°C for DC voltage (DCV) and DC current (DCA). (Add 3 digits/°C for 50mV, 5A, and 10A ranges)

Power Supply :Four AA (R6) dry cells

Battery Life :Approx. 120 hours (for continuous DC voltage measurement with alkaline cells)

Withstanding Voltage :6.88kV for 5 seconds (between input terminals and casing)

Dimensions :Approx. 90(W) x 192(H) x 49(D) mm

Weight :Approx. 560g (including batteries)

Compliance with Standards :Safety EN61010-1, EN61010-031, 1000V CAT III, 600V CAT IV, pollution level 2, indoor, 2000m max. above sea level
 EMC: EN61326-1 Class B, EN55011 Class B Group 1

Standard Accessories :AA (R6) dry cells: 4, Test lead set (98015) 1, Fuse (installed) 440mA/1000V and 10A/1000V, Instruction manual: 1

Performance

Test conditions: Temperature and humidity = 23 ± 5°C, 80% RH or less; Accuracy = ± (% rdg + dgt).

Note: A response time is the time required for achieving the accuracy specified for the corresponding range.

DC Voltage Measurement (≐V)

Range	Resolution	Accuracy TY710, TY720	Input Resistance	Maximum Input Voltage
50mV	0.001mV	0.05+10	Approx. 100MΩ	1000V DC
500mV	0.01mV	0.02+2		
2400mV	0.1mV	0.025+5	10MΩ	1000V rms AC
5V	0.0001V	0.025+5		
50V	0.001V	0.025+5		
500V	0.01V	0.025+5		
1000V	0.1V	0.03+2		

NMR: 80dB or greater for 50/60Hz ± 0.1%At 50mV of range, 70dB or greater for 50/60Hz ± 0.1%
 CMRR: 100dB or greater for 50/60Hz(Rs=1kΩ) Response time: 0.3 seconds or less

AC Voltage Measurement [RMS] (-V) AC coupling, RMS detection, crest factor for 1000V of range: 1.5; crest factor for ranges other than 1000V: 3

Range	Resolution	Accuracy (Upper: TY710; Lower: TY720; the display of "—" is not specified)					Input Impedance	Maximum Input Voltage
		10 - 20Hz	20Hz - 1kHz	1k - 10kHz	10k - 20kHz	20k - 50kHz		
50mV	0.001mV	2+80 ⁻²	0.4+40 ⁻²	5+40 ⁻²	5+5+40 ⁻²	15+40 ⁻²	11MΩ<50pF	1000V rms AC 1000V DC
500mV	0.01mV	—	—	—	—	—		
5V	0.0001V	1.5+30 ⁺¹	0.7+30 ⁺¹	2+50 ⁺²	—	—	10MΩ<50pF	1000V rms AC 1000V DC
50V	0.001V	1+30 ⁺¹	0.4+30 ⁺¹	1+40 ⁺¹	2+70 ⁺²	5+200 ⁺²		
500V	0.01V	—	—	—	—	—		
1000V	0.1V	—	—	—	—	—		

*1: At 5 to 100% of range *2: At 10 to 100% of range CMRR: 80dB or greater for DC to 60Hz(Rs= 1kΩ) Response time: 1 second or less

AC Voltage Measurement [MEAN] (-V) AC coupling, Mean-value detection and RMS-value calibration (sinusoidal wave)

Range	Resolution	Accuracy TY720			Input Impedance	Maximum Input Voltage
		10 - 20Hz	20 - 500Hz	500 - 1kHz		
50mV	0.001mV	4+80 ⁻²	1.5+30 ⁻²	5+30 ⁻²	11MΩ<50pF	1000V rms AC 1000V DC
500mV	0.01mV	—	—	—		
5V	0.0001V	2+30 ⁺¹	1+30 ⁺¹	3+30 ⁺¹	10MΩ<50pF	1000V rms AC 1000V DC
50V	0.001V					
500V	0.01V	—	—	—		
1000V	0.1V	—	—	—		

*1: At 5 to 100% of range *2: At 10 to 100% of range CMRR: 80dB or greater for DC to 60Hz (Rs= 1kΩ) Response time: 1 second or less

DCV + ACV (≐+) AC coupling, RMS detection crest factor for 1000V of range: 1.5; crest factor for ranges other than 1000 V: 3

Range	Resolution	Accuracy (Upper: TY710; Lower: TY720; the display of "—" is not specified)					Input Impedance	Maximum Input Voltage
		DC, 10 - 20Hz	DC, 20Hz - 1kHz	DC, 1k - 10kHz	DC, 20k - 50kHz	DC, 50k - 100kHz		
5V	0.0001V	1.5+10 ⁺¹	1+10 ⁺¹	2+10 ⁺²	—	11MΩ<50pF	1000V rms AC 1000V DC	
50V	0.001V							
500V	0.01V	1.5+10 ⁺¹	0.5+10 ⁺¹	1+10 ⁺¹	2+10 ⁺²	5+20 ⁺²		
1000V	0.1V	—	—	—	—			

*1: At 5 to 100% of range *2: At 10 to 100% of range CMRR: 80dB or greater for DC to 60Hz (Rs = 1kΩ) Response time: Approx. 2 seconds

Resistance Measurement (Ω)

Range	Resolution	Accuracy		Maximum Testing Current	Open-circuit Voltage	Input Protection Voltage
		TY710	TY720			
500Ω	0.01Ω	0.1+2 ⁺¹	0.05+2 ⁺¹	<1mA	<2.5V	1000V rms
5kΩ	0.0001kΩ					
50kΩ	0.001kΩ					
500kΩ	0.01kΩ					
5MΩ	0.0001MΩ					
50MΩ	0.001MΩ					
		0.5+2		<1.5μA		
		1+2		<0.13μA		

*1: Accuracy after zero calibration Response time: 1 second or less for 500Ω to 500kΩ, 5 seconds or less for 5MΩ to 50MΩ

Low-power Resistance Measurement (LP-Ω) Maximum effective display: 5000

Range	Resolution	Accuracy		Maximum Testing Current	Open-circuit Voltage	Input Protection Voltage
		TY720				
5kΩ	0.001kΩ	0.2+3		<10μA	<0.7V	1000V rms
50kΩ	0.01kΩ					
500kΩ	0.1kΩ					
5MΩ	0.001MΩ					
50MΩ	0.001MΩ					
		1+3		<0.05μA		

Continuity Check (⚡) Maximum effective display: 5000

Range	Resolution	Continuity Beeper TY710, TY720	Testing Current	Open-circuit Voltage	Input Protection Voltage
500Ω	0.1Ω	Buzzer sounds at 100 ± 50Ω or less.	Approx. 0.5mA	<5V	1000V rms

DC Current Measurement (≐A)

Range	Resolution	Accuracy TY710, TY720		Voltage Drop	Maximum Input Current
500μA	0.01μA	0.2+5		<0.11mV/μA	440mA fuse-protected
5000μA	0.1μA				
50mA	0.001mA			<4mV/mA	10A fuse-protected
500mA ³	0.01mA				
5A	0.0001A			0.6+10	
10A	0.001A			0.6+5	

Response time: 0.3 seconds or less *3: Maximum testing current at 500mA of range is 440mA

AC Current Measurement [RMS] (-A) RMS detection crest factor: 3

Range	Resolution	Accuracy (Upper: TY710; Lower: TY720; the display of "—" is not specified)			Voltage Drop	Maximum Input Current	
		10 - 20Hz	20Hz - 1kHz	1k - 5kHz			
500μA	0.01μA	1.5+20	1+20	—	<0.11mV/μA	440mA fuse-protected	
5000μA	0.1μA						
50mA	0.001mA			0.75+20	1+30	<4mV/mA	10A fuse-protected
500mA ⁴	0.01mA						
5A	0.0001A			1.5+20	1+20		
10A	0.001A			1.5+20	1+20	2+30	

Shown above is the accuracy at 5 to 100% of range (10 to 100% for 10A range). Response time: 1 second or less

*3: Maximum testing current at 500mA of range is 440mA.

AC Voltage Measurement [MEAN] (-A) Mean-value detection and RMS-value calibration (sinusoidal wave)

Range	Resolution	Accuracy TY720			Voltage Drop	Maximum Input Current	
		10 - 20Hz	20 - 500Hz	500Hz - 1kHz			
500μA	0.01μA	2+20	1.5+20	—	<0.11mV/μA	440mA fuse-protected	
5000μA	0.1μA						
50mA	0.001mA			1+10	1+10	<4mV/mA	10A fuse-protected
500mA ⁴	0.01mA						
5A	0.0001A			3+20	2+20	4+30	
10A	0.001A			3+20	2+20	4+30	

Shown above is the accuracy at 5 to 100% of range (10 to 100% for 10A range). Response time: Approx. second or less

*3: Maximum testing current at 500mA of range is 440mA.

DCA + ACA (≐+) Maximum effective display: 50,000, crest factor: 3

Range	Resolution	Accuracy (Upper: TY710; Lower: TY720; the display of "—" is not specified)			Voltage Drop	Maximum Input Current	
		DC, 10 - 20Hz	DC, 20Hz - 1kHz	DC, 1k - 5kHz			
500μA	0.01μA	1.5+10	1+10	—	<0.11mV/μA	440mA fuse-protected	
5000μA	0.1μA						
50mA	0.001mA			1.5+10	1+10	<4mV/mA	10A fuse-protected
500mA ⁴	0.01mA						
5A	0.0001A			2+10	1.5+10	3+10	
10A	0.001A			2+10	1.5+10	3+10	

Shown above is the accuracy at 5 to 100% of range (10 to 100% for 10A range). Response time: Approx. 2 seconds *3: Maximum testing current for 500mA of range is 440mA.

Diode Test (⚡)

Range	Resolution	Accuracy TY710, TY720	Testing Current (Vf = 0.6 V)	Open-circuit Voltage	Input Protection Voltage
2.4V	0.0001V	1 + 2	Approx. 0.5mA	<5V	1000V rms

Temperature Measurement (TEMP)

Range	Resolution	Accuracy TY710, TY720	Input Protection Voltage
-200 - 1372°C	0.1°C	1+1.5°C	1000V rms

Temperature probe: Type K thermocouple sensor (optional)

Capacitance (+H) Maximum effective display: 5000

Range	Resolution	Accuracy TY710, TY720	Input Protection Voltage
5nF	0.001nF	1+5 ⁺¹	1000V rms
50nF	0.01nF		
500nF	0.1nF		
5μF	0.001μF		
50μF	0.01μF		
500μF	0.1μF		
5mF	0.001mF	2+5	
50mF	0.01mF	3+5	

*1: Accuracy after zero calibration

Frequency Measurement (Hz) AC coupling, Maximum effective display: 9999

Range (auto-ranging)	Resolution	Accuracy TY710, TY720
2.000 - 9.999Hz	0.001Hz	0.02+1 ⁺¹
9.99 - 99.99Hz	0.01Hz	
90.0 - 999.9Hz	0.1Hz	
0.900 - 9.999kHz	0.001kHz	
9.99 - 99.99kHz	0.01kHz	

*1: At 10 to 100% of input voltage or current range

*2: At 40 to 100% of input voltage or current range

Duty Cycle (%)

Range	Resolution	Accuracy TY710, TY720
10 - 90%	1%	± 1% ⁺¹

*1: For input of a square wave with a frequency within 10.00 to 500.0Hz At 40 to 100% of input voltage or current range

Peak Hold Function (PH) TY720 only Maximum effective display: 5000

Range	Accuracy TY720	Response Time
DCV, DCA	± 100 digit	>250μs



Thank you for reading this data sheet.

For pricing or for further information, please contact us at our UK Office, using the details below.



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Please note - Product designs and specifications are subject to change without notice. The user is responsible for determining the suitability of this product.