

THM500 Series Specifications

The characteristics listed in this section apply under the following conditions:

- The instrument operates within the environmental conditions specified in Table 4 on page 8, unless otherwise noted.
- The instrument warms up for at least 5 minutes.

NOTE. All specifications are warranted unless marked “typical.” Typical characteristics are not guaranteed but are provided for the convenience of the user.

The specifications listed for the THM565 also apply to the THM57x series except as noted in Table 1.

Table 1: How THM565 and THM57x series products differ

	57x	565
Modes		
Line Test		•
Motor Test		•
Automotive preconfigured test setups	•	
Vertical		
Mathematics capability		•
Invert capability		•
Measurements		
Voltage Measurement		•
Timing Measurement		•
Power Measurement		•
THDF Measurement		•
Automotive Measurements (preconfigured test setups)	•	

Table 2: DMM specifications

		550	560	565
General				
Resolution	3¾ digit (4000 count) full-scale reading except as noted	•	•	•
Input Impedance (Typical)	VDC or VAC: 10 MΩ (<10 pF; <70 pF at 400 mV range)	•	•	•

Table 2: DMM specifications (cont.)

550 560 565

General					
Additional Readouts	MIN: Minimum voltage or resistance MAX: Maximum voltage or resistance MAX-MIN: Difference between MAX and MIN HOLD: Value of the main reading when the HOLD button is pressed ΔHOLD: Difference between HOLD reading and active reading		•	•	•
DC voltage					
Range and Resolution	Range 400 mV 4 V 40 V 400 V 850 V Autorange available; selects from all ranges except 400 mV.	Resolution 0.1 mV 1 mV 10 mV 100 mV 1 V	•	•	•
Accuracy	±(0.5% of reading + 5 counts)		•	•	•
Normal Mode Rejection	>60 dB typical at user selectable 50 or 60 Hz		•	•	•
Common Mode Rejection	>100 dB typical at user selectable 50 or 60 Hz		•	•	•
AC voltage					
Range and Resolution (True RMS)	Range 400 mV 4 V 40 V 400 V 600 V Autorange not available on 400.0 mV range	Resolution 0.1 mV 1 mV 10 mV 100 mV 1 V	•	•	•
Accuracy	±(2% of reading + 5 counts) for 50 or 60 Hz sine wave. Add 2% of reading plus 5 counts for nonsinusoidal signal with crest factor <3.		•	•	•
Ω/resistance					
Range and Resolution	Range 400 Ω 4 kΩ 40 kΩ 400 kΩ 4 MΩ 40 MΩ Autorange available	Resolution 0.1 Ω 1 Ω 10 Ω 100 Ω 1 kΩ 10 kΩ	•	•	•
Accuracy	±(0.5% of reading + 2 counts). 40 MΩ range is ±(2% of reading +5 counts) at ≤60% relative humidity. Derate 4 MΩ range to ±(1% of reading + 2 counts) from 60% to 90% relative humidity.		•	•	•

Table 2: DMM specifications (cont.)

550 | 560 | 565

Diode test		550	560	565
Range	0 to 2 V. Red input connector is positive.	•	•	•
Continuity check		550	560	565
Indication	Audible tone and graphic of a closed switch displayed when resistance is <50 Ω (typical). Indicators optionally disabled.	•	•	•

Table 3: Scope specifications

550 | 560 | 565

Modes		550	560	565
Autorange (Typical)	Autorange mode positions and sets the vertical and horizontal scales to between 30% and 60% of full screen. After 500 ms, the process repeats if the signal amplitude or period changes. The lower limits of Autorange are 50 mV/div and 100 ms/div. Autorange is the default mode.	•	•	•
Manual	The scope switches to manual operation when any control alters the waveform display.	•	•	•
Line Test	<ul style="list-style-type: none"> ■ Will monitor a 45 to 65 Hz power waveform on CH 1 and check for variations in amplitude and frequency. Abnormal events, such as spikes, drop-outs, and substantial frequency variations, will be captured and counted. ■ Automatic print of failures ■ Automatic screen save on failures ■ Time and date stamp on failure 		• 1	• 8
Motor Test	Will stabilize (trigger) on pulse-width modulated signals generated by variable-speed AC motor drives.			•
Vertical		550	560	565
Channels	Each channel is identical.	1	2	2
Probe Interface	Shrouded banana jack. Accepts 4 mm caged-spring safety style banana plug. Use probes incorporating 9 leaf-spring contacts only.	•	•	•
Digitizers	8 bits, 25 Msamples/s	1	2	2
Volts/Division Range	5 mV/div to 500 V/div in a 1-2-5 sequence	•	•	•
Modes	Normal and Invert	•	•	•
Coupling	DC, AC, COM (COM simulated)	•	•	•
Input Impedance	DC Coupled ≤ 10 pF: ≥ 975 k Ω	•	•	•
Analog Bandwidth	5 mV/div: DC to 1 MHz 10 mV/div to 2 V/div: DC to 5 MHz 5 to 500 V/div: DC to 1 MHz	•	•	•
Maximum Input Voltage	600 V _{RMS}	•	•	•
DC Accuracy (ΔV)	$\pm(3.5\% + 2 \text{ pixels})$ 19° to 27° C; derate by 0.25% per °C outside the range. Derate additional 0.5% at 5 mV/div. Linear range is ± 8 divisions from COM (common).	•	•	•
Crosstalk Between Channels	$\geq 100:1$ at 5 MHz, with other channel connected to COM (common)		•	•

Table 3: Scope specifications (cont.)

		550	560	565
Vertical				
Mathematics	Subtract: (CH 1 – CH 2) Add: (CH 1 + CH 2)		•	•
Acquisition				
Modes	Sample (Normal), Spike Detect, Roll, Run/Hold, Smooth, Dynamic DSP	•	•	•
Acquisition Rate	All modes except Dynamic DSP: Up to five waveforms per second Dynamic DSP Mode: Up to 750 waveforms per second (redisplayed at a slower rate.)	•	•	•
Horizontal				
Time/Division Range	60 s/div to 200 ns/div in a 1-2-5 sequence	•	•	•
Time Base Accuracy	±(0.1% + 1 pixel)	•	•	•
Record Length	256 points	•	•	•
Spike Detect	Captures spikes down to 40 ns at all sweep speeds	•	•	•
Single Shot	Single shot on two channels simultaneously	•	•	•
Roll	200 ms/div to 60 s/div	•	•	•
Measurements				
Cursors	Voltage difference between cursors (ΔV) Time difference between cursors (ΔT) Reciprocal of ΔT in Hertz ($1/\Delta T$)	•	•	•
Voltage and Amperes	For voltage or current probes: Maximum (MAX), Minimum (MIN), Peak-Peak (P-P)	•	•	•
Timing	Frequency (FREQ), Period (PER)	•	•	•
Power	Calculates true RMS current, voltage, true power, and power factor from CH 1 current (using current probe) and CH 2 voltage.		•	•
THDF	(Transformer Harmonic Derating Factor) calculated as [(RMS Current \times 1.41414) \div Peak Current], read from a current probe on CH 1.		•	•
Trigger				
Source	CH 1 (Default)	•	•	•
	CH 2		•	•
Modes	Auto-Level: Default when in AutoRange mode Auto: Default in manual operation Normal: User selectable Single-Shot: User selectable	•	•	•
Slope	Positive or Negative slope	•	•	•
Sensitivity, Edge-type DC Coupled	0.5 division: 200 to 500 V/div 1 division: 10 to 100 mV/div 2 divisions: 5 mV/div	•	•	•

Table 3: Scope specifications (cont.)

		550	560	565
Waveform display				
Display Update Rate	Dynamic Display Digital Signal Processing maps up to 750 waveforms/s on screen, simulating an analog-like display.	•	•	•
Memories				
Setups	Each setup memory stores the complete state of the instrument, including the multimeter state.	4	4	8
Waveforms	Each waveform memory stores all waveform points and the scale of the selected waveform.	4	4	8
Screens	Each screen memory stores the exact information displayed on screen (snapshot).	1	1	8

Table 4: General specifications

		550	560	565
Clock				
Real Time	Provides date and time stamp capability for line test events and saved waveforms.	•	•	•
Display system				
Display Type	Super Twisted Liquid Crystal Display	•	•	•
Size	Width: 120 mm (4.72 inch) Height: 60 mm (2.36 inch)	•	•	•
Display Resolution	256 pixels horizontal × 128 pixels vertical	•	•	•
Contrast	User adjustable	•	•	•
Backlight	Electroluminescent			•
Waveform Graticule	8 divisions vertical × 10 divisions horizontal Default = crosshair, grid, or none 1 vertical division = 15 pixels 1 horizontal division = 25 pixels	•	•	•
Power source				
Batteries	Six AA cells (9 V nominal)	•	•	•
Battery Life (Typical)	4.5 hours continuous operation with alkaline cells (backlight off). Tested using RAYOVAC® Alkaline MAXIMUM™ batteries. Battery life extended when used intermittently.	•	•	•
Battery Saver	User adjusted battery saver feature turns the instrument off after five minutes and the backlight off after one minute.	•	•	•
Memory Retention Time	Memory hold-up time following battery removal: eight minutes minimum, three hours typical. Memory retention extended (weeks or months) if discharged batteries remain installed.	•	•	•

Table 4: General specifications (cont.)

		550	560	565
Environmental				
Temperature	Operating: 0° to 50° C (32° to 122° F) Storage: -20° to +70° C (-4° to 158° F)	•	•	•
Humidity, Operating	0° to 40° C (32° to 104° F): Up to 90% relative humidity noncondensing (60% for 4 and 40 MΩ measurements) 41° to 50° C (106° to 122° F): 60% relative humidity noncondensing.	•	•	•
Altitude	Operating:: 2,200 m (7,221 ft) Storage:: 12,192 m (40,000 ft)	•	•	•
Random Vibration	5 to 500 Hz, 10 min/axis, operating: 2.66 g _{RMS} 5 to 500 Hz, 10 min/axis, nonoperating: 3.48 g _{RMS}	•	•	•
Sine Vibration	Operating: 0.06 inch displacement from 5 to 15 Hz 0.04 inch displacement from 15 to 25 Hz 0.02 inch displacement from 25 to 55 Hz Test Duration: 10 minutes at the peak resonance condition (33 Hz if no resonance found). Test performed on each of three axes.	•	•	•
Half-sine Shock	Operating: 30 g with pulse duration of 11 ms. Three shocks per axis. Test Duration: 10 minutes at the peak resonance condition (33 Hz if no resonance found). Test performed on each of three axes.	•	•	•
EMC				
Emissions	EN 55011 radiated, class A	•	•	•
Immunity	IEC 801-2 electrostatic discharge: Up to 8 kV IEC 801-3 radiated immunity: 3 V/meter, 27 to 500 MHz	•	•	•
Mechanical				
Size	140 mm (5.5 inch) high × 210 mm (8.3 inch) wide × 43 mm (1.7 inch) deep	•	•	•
Weight	1 kg (2.2 lb) with Alkaline batteries installed	•	•	•
Tripod Socket	0.25 inch × 20 thread × 6.3 mm (0.25 inch) deep	•	•	•
Safety				
Certifications	Listed UL 3111-1 for 600 V CAT II measurements; CSA-C22.2 No 1010.1-92	•	•	•
Surge Protection	Withstands incidental line surges up to 6 kV (comprised of a minimum rise time of 1.2 μs and a maximum 50 μs duration, minimum of 2 minutes between pulses). Maximum volt-hertz product: 50 V·MHz.	•	•	•
Fuse	The instrument has no user-replaceable fuses	•	•	•
General	Safety Class 2	•	•	•