

# MTS-1010 CONDENSED SPECIFICATIONS

## Power Supply

- 120 VAC/60 Hz version: Input range 100-130 VAC at 50-70 Hz
- 240 VAC/50/60 Hz version: Input range 220-260 VAC at 47-70Hz
- With option 04A:12VDC

## Frequency Measurement

- Resolution:** 0.001 Hz for 8.000-9.999 Hz input  
0.01 Hz for 10.00-99.99 Hz input  
±0.1 Hz for 100.0-500.0 Hz input
- Accuracy:** ±0.01 Hz (low scale), ±0.1 Hz (high scale)
- Range:** 8.00 - 99.99 Hz (low scale)  
8.0 - 500.0 Hz (high scale)
- Speed:** Measurement speed is dependent on input frequency
- For 60 Hz inputs:**  
2 readings/sec in normal mode  
7.5 readings/sec in high speed mode
- For 50 Hz inputs:**  
1.6 readings/sec in normal mode  
6.3 readings/sec in high speed mode

## Time Measurement

### Time (Seconds) Measurement

- Resolution:** 0.1 milliseconds
- Accuracy:** ±0.5 milliseconds (0-9.999 seconds)  
±0.01% ± 1LSD (10-9999 seconds)
- Range:** 0.0 ms - 9999sec, autoranging at the end of each decade

### Time (Cycles) Measurement

- Resolution:** 0.1 cycles (lowest scale) of channel A input
- Accuracy:** ± 0.1 cycles (lowest scale) of channel A input
- Range:** 0.0 - 9999 cycles, autoranging at 999.9 cycles

## Phase Measurement

- Resolution:** 0.01 degree for readings from -9.99° to 10.00°,  
0.1 degree otherwise
- Accuracy:** ±0.5 deg down to 2V / 200 mA, reduced accuracy readings available to below 1V / 100 mA. 24 db/octave digital input filters maintain harmonic rated accuracy for signals with high content
- Range:** 0.0 to 360.0 degrees or ±180.0
- Speed:** Measurement speed is dependent on input frequency
- For 60 Hz inputs:**  
2 readings/sec in normal mode  
7.5 readings/sec in high speed mode
- For 50 Hz inputs:**  
1.6 readings/sec in normal mode  
6.3 readings/sec in high speed mode

## Current Measurement

Available on Channel A and/or B. True RMS, AC coupled via low-burden current transformers.

- Accuracy:** ±0.5% of reading ±0.2% of scale
- Range:** 0 - 2/20/200A, auto-ranging at 1.999, 19.99A
- Resolution:** 0.001/0.01/0.1A
- Max. Input:** 35 amps sustained, 125 amps for 5 seconds
- Speed:** 3 readings/sec, 30 readings/sec in high speed mode

## Voltage Measurement

Available on channel A and/or B. True RMS, DC coupled.

- Accuracy:** ±0.5% of reading ±0.2% of scale
- Range:** 0-20/200/2000V, autoranging at 19.99, 199.9V
- Resolution:** 0.01/0.1/1V
- Max. input:** 600 VAC sustained input
- Input impedance:** 2 megohms
- Speed:** 3 readings/sec, 30 readings/sec in high speed mode

## Power Measurement

Power measurements are calculated by the internal microprocessor from the current, voltage and phase angle measurements.

### Kilowatts

- Resolution:** up to 0.001 kWatt
- Accuracy:** ±1.5% at P.F. = 1
- Range:** -63.0 to +63.0 kW

### Kilovars

- Resolution:** up to 0.001 kVAR
- Accuracy:** ±1.5% at P.F. = 0
- Range:** -63.0 to +63.00 kVAR

### Kilovoltamperes

- Resolution:** up to 0.001 kVA
- Accuracy:** ±1.0%
- Range:** 0.0 - 63.00 kVA

### Power Factor

- Resolution:** 0.001
- Accuracy:** ±0.004 for sinusoidal inputs
- Range:** -1.000 to 1.000

## External Trigger

- Floating three terminal inputs for START and STOP triggers
- Change of state detection for contact or AC/DC voltage (30-300V).
- Contact inputs protected to 300V AC/DC
- Input impedance 60 kOhm minimum
- Selectable audio tone for continuity indication of stop trigger
- START trigger operation starts timer, increases update frequency of V, I, phase, and frequency readings
- STOP trigger stops timer, freezes all measurement readings

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## RS-232C Serial Communications Port

**Connector:** Standard 25-pin female DB-25, DCE configuration  
**Data Format:** 8 bits, no parity, 1 start bit, 1 stop bit  
**Speed:** Standard rates from 110 to 9600 baud

- ✓ Facilitates communication with printers, terminals, computers, and other RS-232C devices
- ✓ Permits automated output and recording of all measurements
- ✓ Permits control of all meter functions for fully automated or semi-automated testing

## Physical Characteristics

- ✓ Aluminum case and frame
- ✓ Moulded ABS plastic front/rear covers
- ✓ Integrated carry handle/tilt stand
- ✓ Large rear feet allow vertical operation
- ✓ Size: 10" W x 6" H x 10.5" D (254 mm W x 152 mm H x 267 mm D)
- ✓ Weight: 12 lbs (5.5 kg)

## Options

- Option 01\*** Cordura carry case  
Padded case with shoulder strap and pockets for leads and manuals.
- Option 02** Snap-on lead case  
Attractive, Cordura case snaps onto the top of the meter to carry leads, cords and accessories.
- Option 03** Impedance measurement  
Direct display of impedance, based on  $Z=V+I$ ,  $Z=V+2I$ , or  $Z=V+\sqrt{3}I$  Replaces kVAR, kVA and P.F. display.
- Option 04A** DC operation  
special power supply allows operation from 120VAC (or 240VAC if ordered with option 19) or 12VDC, includes cigarette lighter style power plug for automotive applications.
- Option 04B** Battery pack  
Used in conjunction with 04A above, gives 7.5 hours operation independent of AC power. Includes built-in recharger.
- Option 06** IEEE-488 interface.
- Option 05\*** High current measurement version  
High current binding posts for applications requiring greater than 20 AMPS.
- Option 08** W, VAR, VA display  
Replaces kW, kVAR, kVA display with W, VAR, VA readings. Only display resolution is improved, not accuracy.
- Option 09** Ratio measurement  
Replaces kVAR display with Channel 1/Channel 2 ratio measurement. This allows

admittance

## Options continued

measurement of impedance (V/I),

(I/V), voltage ratio (V/V) and current ratio (I/I). The V/V and I/I measurements are useful for measuring turns ratio and gain.

- Option 10** Slip frequency measurement  
Measures the difference in frequency between the Channel 1 & 2 inputs with up to 0.001Hz resolution. Useful for synchrocheck relay applications.
- Option 11** Analog outputs  
Provides up to 2 low level analog outputs proportional to any measured quantity (eg. voltage, current, frequency, phase, power).
- Option 14\*** Synchrocheck  
Provides an extra high speed phase measurement mode for checking when testing synchrocheck and relays. The maximum reading speed reading per cycle, for 20 - 60 Hz
- phase angle synchronizing is one inputs.
- Option 15** Wh measurement  
Replaces kVA display with Wh measurement for testing watt-hour meters.
- Option 17** Signal processing  
Adds three measurement capabilities;  
1) Low pass filter for Channel 1, inserts 5th order low pass filter in signal path to attenuate signals above 60 Hz at 30 db/octave. Eliminates all higher order harmonics from signal.  
2) Average response AC measurement on Channel A. Useful alternative to True RMS response, for such tests as second harmonic restraint and current transformer excitation.  
3) Peak hold and peak responding measurement for Channels 1 and 2. Captures and holds positive or negative peak signal with 1 millisecond response time. Can be calibrated for peak value or RMS equivalent. Extremely fast response useful for transient tests such as inrush measurement.
- Option 18** Extended low level phase measurement  
Extends 0.5 degree measurement accuracy for phase angle down to 4.5% of scale (0.9V or 0.09A minimum).
- Option 20** Hard-shell shipping case.
- Option 21** 10V Triggers  
Reduced trigger voltage threshold to 10V (Standard is 30V).
- Option 23** 240V, 50Hz Input.
- Option 24** Extra Manual.
- Option 25** 1 Year Extended Warranty  
Additional year for a total of 2 years.