The CWT ULTRA Mini range from Power Electronic Measurements Ltd features a Rogowski coil thin enough (typical cross section 1.6mm) to fit between the legs of a T0220 semiconductor device.

The CWT ULTRA Mini is ideal for measuring switching transients, sinuoids and pulsed currents of between 1 and 1200A in power electronic applications.

Applications include measuring...
- semiconductor switching waveforms in difficult to reach parts of power electronic circuits
- high frequency sinusoidal, pulsed and transient currents
- ac currents superimposed on large dc currents
- harmonic current components

Benefits and features
- thin, flexible, clip-around coil easy to insert in confined spaces
- loads the circuit under test by only a few pH’s
- wide-bandwidth probe from a few Hz to 20MHz
- current ranges from 30A peak to 1.2kA peak, higher ratings available on request
- output is ±6V peak to peak to plug directly into oscilloscopes, data acquisition equipment, DVM or power recorders.
- accuracy typically ±2%

Improvements to mechanical design
- a tough, new, abrasion resistant coil insulation material
- a robust new coil clip together mechanism
- rated peak voltage insulation of 1.2kV
- maximum coil thickness of 1.7mm

Improvements to high frequency performance
- high frequency -3dB bandwidth of 20MHz across the range
- improved peak di/dt capability across the range
- capability of loading into 50Ω to drive long output cables
PERFORMANCE CHARACTERISTICS

| Type | Sensitivity (mV/A) | Peak current (A) | Peak di/dt (kA/μS) | Noise max (mV|μp|) | Droop typ. (%/μs) | LF (-3dB) bandwidth ft | Gain @ 50 Hz (dBs) | Frequency for -1% gain typ. (Hz) | HF (3dB) bandwidth ft typ. (MHz) |
|------|-------------------|-----------------|-------------------|----------------|----------------|-------------------|---------------------|-------------------|---------------------|---------------------|
| CWT015 | 200.0 | 30.0 | 1.0 | 20.0 | 0.100 | 116.0 | -14.9 | 287.0 | 20.0 |
| CWT03 | 100.0 | 60.0 | 2.0 | 15.0 | 0.060 | 66.5 | -6.2 | 167.0 | 20.0 |
| CWT06 | 50.0 | 120.0 | 4.0 | 12.0 | 0.030 | 32.0 | -0.5 | 70.0 | 20.0 |
| CWT1 | 20.0 | 300.0 | 10.0 | 10.0 | 0.009 | 9.0 | 0.0 | 24.0 | 20.0 |
| CWT3 | 10.0 | 600.0 | 20.0 | 10.0 | 0.006 | 6.2 | 0.0 | 13.0 | 20.0 |
| CWT6 | 5.0 | 1200.0 | 40.0 | 10.0 | 0.004 | 3.2 | 0.0 | 7.9 | 20.0 |

Higher current ranges available on request

OUTPUT
± 6V corresponding to ‘peak current’, (±2V into 50Ω load at half the sensitivity)

RISE TIME AND DELAY
See full technical datasheet for a description of rise time and delay

CALIBRATION AND POSITION ACCURACY
Calibrated to ±0.2% with conductor central in the loop and supplied with UKAS traceable certification
Variation with conductor position in the coil loop typically ±2%

LINEARITY
±0.05% (typical value full scale)

DC OFFSET @ 25°C
±3.0mV (maximum value)

ABSOLUTE MAXIMUM
CWT 015, 03 PEAK 25.0 RMS 1.0 @ 70°C
CWT 06, 1 PEAK 25.0 RMS 2.0 @ 70°C
CWT3, 6 PEAK 40.0 RMS 2.2 @ 70°C

VALUES of di / dt (kA / μs)
(values must not be exceeded)


COIL AND CABLE

1. COIL CIRCUMFERENCE 80mm
2. COIL CROSS SECTION (max) 1.7mm

PEAK COIL VOLTAGE ISOLATION 1.2kV
Safe peak working voltage to earth.

The coils are flash tested at 3kVRms / 50Hz for 60 seconds

TEMPERATURE RANGE
For operation at high temperature please consult PEM
-10°C to 70°C

3. CABLE LENGTH (from box to coil) 1m

INTEGRATOR

4. POWER SUPPLY
Battery 4 x AA (1.5V standard alkali batteries)
- plus-
2 1/2.5mm socket for 12V (±10%) DC input

Typical life 30hrs (output into 1MΩ load)
Battery inoperative with DC supply present

5. INTEGRATOR BOX DIMENSIONS
H = 183mm, W = 93mm, D = 32mm

6. OUTPUT SOCKET
BNC (output impedance 50Ω - unit supplied with 0.5m BNC - BNC coaxial cable)

MIN. OUTPUT LOADING
≥ 100kΩ (for rated accuracy - recommended DC 1MΩm scope input)

= 50Ω (for driving long cables > 10m)
A load of 50Ω will reduce the CWT sensitivity to half it’s normal value. It will also reduce the peak output to ±2V

TEMPERATURE RANGE
0°C to 40°C

ORDERING

Type + Power supply / Cable Length / Coil Circumference

E.g. order code

CWT015 B / 1 / 80 UM

If you have any queries regarding the CWT or require specifications outside our standard ranges please do not hesitate to contact us.

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