The CWT Ultra-mini has an extremely thin, clip-around Rogowski coil of typically 1.6mm cross-section. Such a thin coil enables currents to be measured in the most difficult to reach parts of a power electronic converter with negligible disruption to the circuit under test.

Applications
- Switching current waveforms in power electronic circuits, for example
  - in MOSFET or IGBT devices as small as TO-220 or TO-47
  - in bond wires in power devices
  - to measure power losses in semiconductors
  - monitoring currents in small inductors, capacitors, snubber circuits, etc
- Measuring small AC currents in the presence of large DC currents (e.g. monitoring capacitor ripple)
- Power converter development and diagnostics
- Measuring high frequency sinusoidal, pulsed or transient currents
- Measuring high order harmonics

Key features
- Expanded operating temperature range -40°C to +125°C
- Extended (-3dB) bandwidth from a few Hz to 30MHz
- Current ratings from 30Apk to 6000Apk
- Improved peak di/dt capabilities up to 70kA/µs
- 1.7mm (max) cross section, flexible, clip-around coil
- ±6V into 1MΩ, and 50Ω drive capability
- Loads the circuit under test by only a few pH
- Positional accuracy typically ±2%

This latest release of the CWT Ultra-mini has improved:
- high frequency (-3dB) bandwidth of 30MHz
- operating temperature range of -40°C to +125°C

Pulsed current:
100Apk, 21µs
Ch1-CWT (300A)
Ch2-Co-ax shunt 2GHz
Timebase 4µs/div

Expanded rising edge:
10 to 90% is 42ns
Predictable time delay
Timebase 40ns/div

CWT UM coil through the legs of a TO-220 device

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<table>
<thead>
<tr>
<th>Model</th>
<th>Sensitivity (mV/A)</th>
<th>Peak current (A)</th>
<th>Noise maximum (mV/p-p)</th>
<th>Droop (%/ms)</th>
<th>LF (-3dB) bandwidth (Hz)</th>
<th>Peak di/dt (kA/µs)</th>
<th>HF (-3dB) bandwidth (MHz)</th>
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<td>200</td>
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</table>

**Output**

±6V peak corresponding to ‘Peak Current’ into ≥100kΩ (e.g. DC 1MΩ oscilloscope)
±2V peak, Sensitivity is half the nominal value into 50Ω

**Accuracy**

Variation with conductor position in the coil typically ±2% of reading (for a 2mm² conductor)
Linearity (with current magnitude) 0.05% of reading

**Calibration**

Calibrated to ±0.2% reading with conductor central in the coil loop

**DC offset**

±3mV maximum at 25°C

**Temperature**

Coil and cable -40°C to +125°C. Integrator 0°C to 40°C

**di/dt ratings**

These are ‘Absolute maximum di/dt ratings’ and values must not be exceeded:
Absolute max. peak di/dt: 70kA/µs
Absolute max. rms di/dt: 1.0kA/µs (1.2kA/µs for models CWT1 and above)

**Coil voltage**

1.2kVpeak. Safe peak working voltage to earth. Rating established by a 3kVrms, 50Hz, 60sec flash test

**Key features**

1. Coil length (circumference) 80mm - longer coils available on request.
2. Coil cross-section (thickness) 1.7mm (max).
3. Cable length 1m (connecting cable coil to integrator) - longer cables available on request.
4. Battery options
   B-Standard: 4 x AA 1.5V alkaline batteries. Lifetime typically 25 hours.
   R-Rechargeable: 4 x AA 1.2V NiMH batteries. Lifetime typically 10 hours.
   External adaptor recharges batteries and powers unit.
5. Socket for external power adaptor (adaptor available from PEM as an option)
6. Electronics enclosure. Dimensions: H=183mm, W=93mm, D=32mm.
7. Output BNC socket. Supplied with 0.5m BNC:BNC cable.

More detailed technical notes for this product are available at www.pemuk.com

Generating the part code

E.g. CWT 015 03 80

If you have any queries regarding the CWT or require specifications outside our standard ranges please contact us.

www.pemuk.com

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