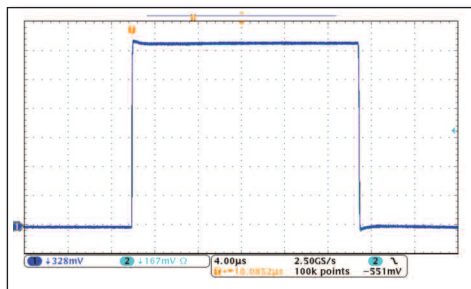


# CWT Ultra-mini



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.



**Pulsed current:**  
100Apk, 21µs

**Ch1-CWT (300A)**

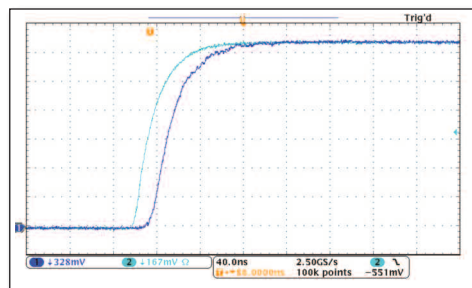
**Ch2-Co-ax shunt 2GHz**

Timebase 4µs/div

**Expanded rising edge:**  
10 to 90% is 42ns

Predictable time delay

Timebase 40ns/div



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



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

## 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%

**PENI**  
Power Electronic Measurements

Gloucester House, 162 Wellington Street,  
Long Eaton, Nottingham NG10 4HS  
United Kingdom  
T +44 (0) 115 946 9657  
F +44 (0) 115 946 8515  
E info@pemuk.com  
W www.pemuk.com



Model	Sensitivity (mV/A)	Peak current (A)	Noise maximum (mVp-p)	Droop (%/ms)	LF (-3dB) bandwidth (Hz)	Peak di/dt (kA/μs)	HF (-3dB) bandwidth (MHz)
CWT015	200	30	20	80	116	2.0	30
CWT03	100	60	20	65	67	4.0	30
CWT06	50	120	15	35	34	8.0	30
CWT1	20	300	15	9.0	9.2	20	30
CWT3	10	600	10	6.0	6.2	40	30
CWT6	5.0	1200	10	3.0	3.2	70	30
CWT15	2.0	3000	5.0	2.0	2.0	70	30
CWT30	1.0	6000	5.0	2.0	2.0	70	30

## 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 2mm<sup>2</sup> 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

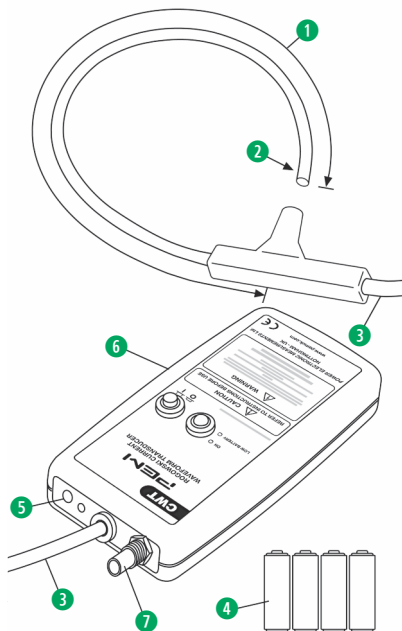
Coil and cable -40°C to +125°C. Integrator 0°C to 40°C

## 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

- Coil length (circumference) 80mm - longer coils available on request.
- Coil cross-section (thickness) 1.7mm (max).
- Cable length 1m (connecting cable coil to integrator) - longer cables available on request.
- 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.
- Socket for external power adaptor (adaptor available from PEM as an option)
- Electronics enclosure. Dimensions H=183mm, W=93mm, D=32mm.
- Output BNC socket. Supplied with 0.5m BNC:BNC cable.

More detailed technical notes for this product are available at [www.pemuk.com](http://www.pemuk.com)



## Generating the part code

E.g. CWT

Range		Model		Power option		Cable length (m)		Coil length (mm)
UM	/	015	/	R	/	1	/	80

CWT Ultra-mini, peak current 30A, rechargeable battery, 1m cable, 80mm coil.

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

[www.pemuk.com](http://www.pemuk.com)

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Power Electronic Measurements