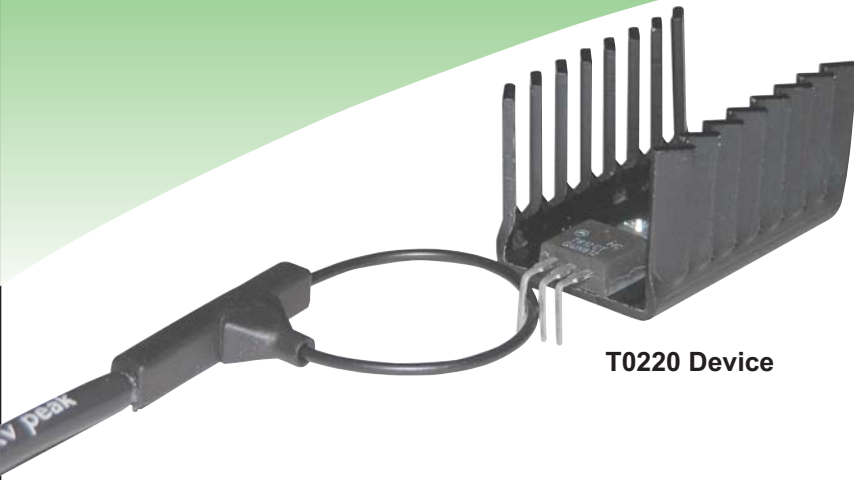




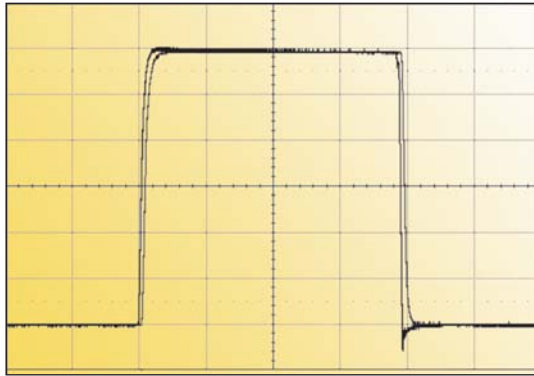
# CWT ULTRA Miniature SPECIFICATION



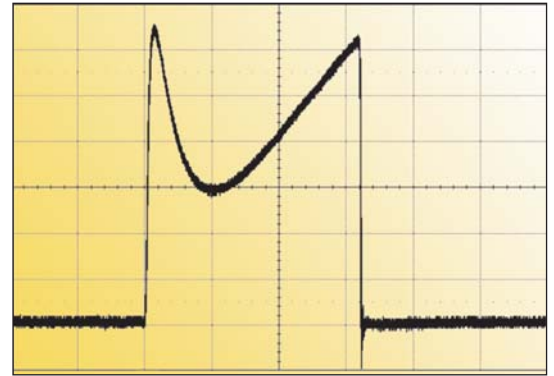
T0220 Device

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, sinusoids and pulsed currents of between 1 and 1200A in power electronic applications.



5.5A peak / 2.0µs pulse / Rise-time 40ns / Fall-time 12ns  
CWT015 with a 3dB of 20MHz  
vs. Coaxial shunt 800MHz



210A peak / 17.0µs pulse / di/dt of falling edge 3.5kA / µs  
CWT1 with a 3dB of 20MHz  
vs. Current transformer 70MHz

## 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



**POWER ELECTRONIC MEASUREMENTS Ltd.,**  
Nottingham, U.K.

Tel: +44 (0) 115 946 9657 Fax: +44 (0) 115 946 8515  
Email: info@pemuk.com Website: www.pemuk.com



## PERFORMANCE CHARACTERISTICS

Type	Sensitivity (mV/A)	Peak current (A)	Peak di/dt (kA/ $\mu$ s)	Noise max (mV <sub>pk-pk</sub> )	Droop typ. (%/ $\mu$ s)	LF (-3dB) bandwidth f <sub>L</sub> typ. (Hz)	Gain @ 50 Hz typ. (dB's)	Frequency for -1% gain typ. (Hz)	HF (3dB) bandwidth f <sub>H</sub> 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**  $\pm 6V$  corresponding to 'peak current', ( $\pm 2V$  into  $50\Omega$  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  $\pm 0.2\%$  with conductor central in the loop and supplied with traceable certification  
Variation with conductor position in the coil loop typically  $\pm 2\%$

**LINEARITY**  $\pm 0.05\%$  (typical value full scale)

**DC OFFSET @ 25°C**  $\pm 3.0mV$  (maximum value)

**ABSOLUTE MAXIMUM VALUES of di / dt (kA /  $\mu$ s)**  
(values must not be exceeded)

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

FOR FURTHER DETAILS OF THE CWT ULTRA MINI PERFORMANCE CHARACTERISTICS PLEASE SEE THE FULL TECHNICAL DATASHEET AVAILABLE FROM [www.pemuk.com](http://www.pemuk.com).

## 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** -10°C to 70°C

For operation at high temperature please consult PEM

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 ( $\pm 10\%$ ) DC input

*Typical life 30hrs (output into 1M $\Omega$  load)  
Battery inoperative with DC supply present*

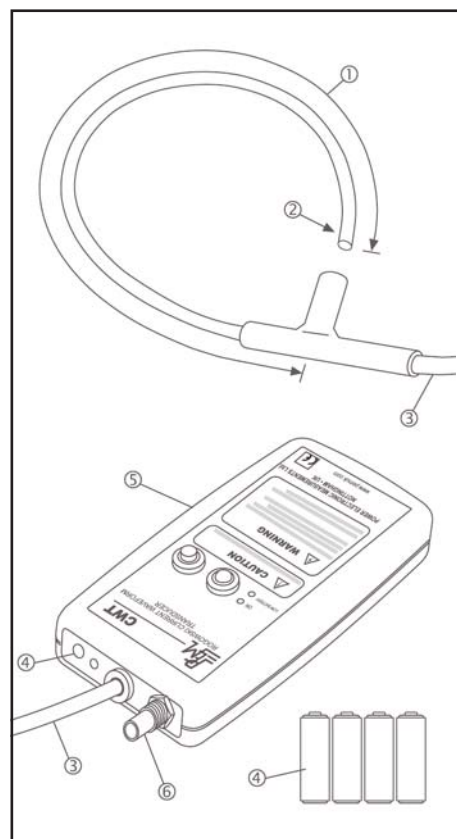
⑤ INTEGRATOR BOX DIMENSIONS H = 183mm, W = 93mm, D = 32mm

⑥ OUTPUT SOCKET BNC (output impedance 50 $\Omega$  - unit supplied with 0.5m BNC - BNC coaxial cable)

**MIN. OUTPUT LOADING**  $\geq 100k\Omega$  (for rated accuracy - recommended DC 1Mohm scope input)

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

**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.