

CWT Ultra-mini

A wide-band AC current probe with BNC output to connect to most types of oscilloscope or data acquisition devices.

The **CWT Ultra-mini (CWTUM)** has an **extremely thin, clip-around coil of typically 1.6mm cross section**. With such a thin coil it is possible to access even the most difficult to reach parts of a power electronic converter with negligible disruption to the circuit under test.



Coil on legs of TO-220



Different coil lengths available



Key Features

- Wide operating temperature **-40°C to +125°C**.
- (-3dB) bandwidth from a **few Hz to 30MHz**.
- Loads the circuit under test by only a **few pF**.
- Coil insulation **1.2kV pk**.
- Standard coil length (circumference) of **80mm**.
Longer coil lengths readily available.
- **1.7mm** (max) cross section diameter.
- Peak di/dt capabilities up to **100kA/μs**.
- Current ratings from **30A pk to 30kA pk**.



Applications

- Switching current waveforms in power electronic circuits:
 - MOSFET or IGBT devices as small as TO-220 or TO-247.
 - Measuring power losses in semiconductor bond wires in power devices.
 - 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 in power frequency to rf applications.

Model	Sensitivity (mV/A)	Peak Current (A)	Noise ^{*1} (mVp-p)	Droop (%/ms)	LF (-3dB) (Hz)	Peak di/dt (kA/μs)	HF (-3dB) Bandwidth ^{*2} (MHz)
CWTUM/015	200	30	20	80	116	2.0	30
CWTUM/03	100	60	20	65	67	4.0	30
CWTUM/06	50	120	15	35	34	8.0	30
CWTUM/1	20	300	15	9.0	9.2	20	30
CWTUM/3	10	600	10	6.0	6.2	40	30
CWTUM/6	5.0	1.2k	10	3.0	3.2	70	30
CWTUM/15	2.0	3.0k	5.0	2.0	2.0	70	30
CWTUM/30	1.0	6.0k	5.0	1.5	1.5	70	30
CWTUM/60	0.5	12.0k	5.0	1.0	1.0	100	30
CWTUM/150	0.2	30.0k	5.0	1.0	1.0	100	30

*1 'Noise' is the internally generated integrator noise, this is predominantly the same frequency as the LF (-3dB) bandwidth.

*2 The HF(-3dB) is specified for a 1m cable and 80mm coil, we can supply longer coils and cables on request.

di/dt ratings

These are 'Absolute maximum di/dt ratings' and values must not be exceeded.

Type	Abs. Max. peak di/dt	Abs. Max. rms di/dt
CWTUM 015 03 06	70kA/μs	1.0kA/μs
CWTUM 1 3 6 15 30	70kA/μs	1.2kA/μs
CWTUM 60 150	100kA/μs	1.2kA/μs

Output

±6V pk corresponding to 'Peak Current' into $\geq 100\text{k}\Omega$ (recommended e.g. DC1M Ω oscilloscope).
±2V pk, Sensitivity is half the nominal value into 50 Ω .

Accuracy

Calibrated to $\pm 0.2\%$ reading with conductor central in the Rogowski coil loop.
Conductor position in the coil (for a 2mm dia. conductor) typically $\pm 2\%$ reading.
Conductor position in the coil (for a 10mm dia. conductor) typically $\pm 1\%$ reading.
Linearity (with current magnitude) 0.05% reading.

DC offset

±3mV max. at 25°C

Temperature

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

Coil voltage

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

Cable length

1m (length of cable from coil to electronics).
Longer cables are available on request.

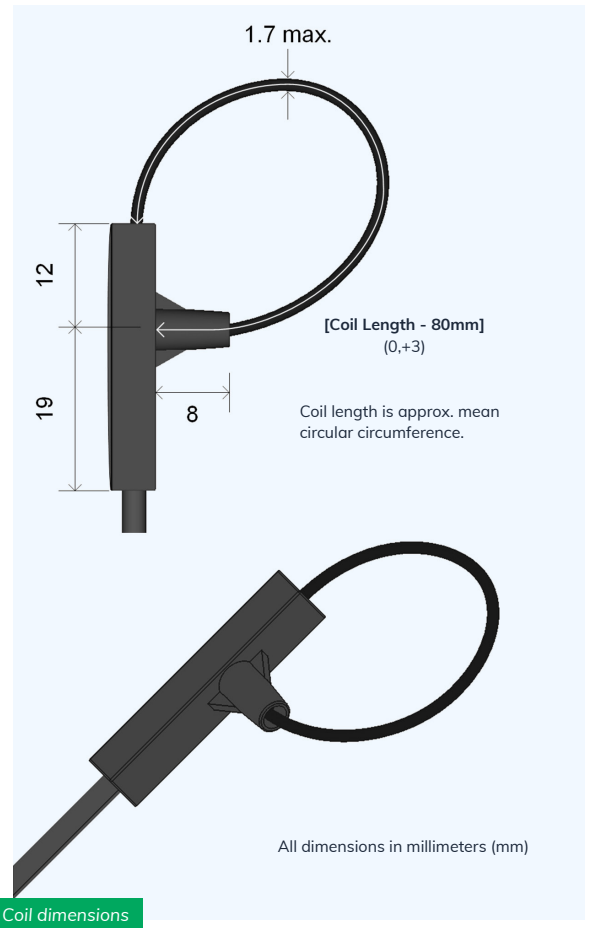
Coil length

80mm
Longer coils are available on request.

Battery Options

- B Alkaline Batteries** -- 4 x 1.5V AA alkaline batteries, 25 hour life.
External power adaptor disconnects batteries and powers unit.
- R Rechargeable Batteries** -- 4 x 1.2V NiMH batteries, 10 hour life.
External power adaptor trickle charges batteries and powers unit

External power adaptor available in **US, EURO, UK & AUS** versions as an optional extra.



1 2 3 4 5
CWTUM / 015 / R / 1 / 80

Example part codes

CWTUM/015/R/1/80

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

Enquire about a custom coil / cable length

CWTUM/6/B/2/300

CWT Ultra-mini peak current 1200A, Alkaline batteries, 2m cable, 300mm coil.

Generating the part code

- 1 **Model**
- 2 **Range**
- 3 **Battery Option**
- 4 **Cable Length (m)**
- 5 **Coil Length (mm)**

Included as standard

- ✓ Carry Case
- ✓ Unit Model
- ✓ Batteries (B or R)
- ✓ 0.5m BNC Output Cable
- ✓ Calibration Certificate

Optional Extras

- + Longer Cable
- + Longer Coil
- + Power Adaptor (UK, EU, US, AU)



More detailed technical notes, dimensioned drawings, CAD files and quotation request for this product are available online.

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