

# CWT Mini



## CWT MiniHF

- **A novel electrostatic shielded Rogowski coil** providing excellent immunity to interference from fast local  $dV/dt$  transients or large 50/60Hz voltages
- **Extended (-3dB) high frequency bandwidth** 30MHz for a 100mm coil
- **Peak  $di/dt$**  capability up to 100kA/ $\mu$ s
- **Wide operating temperature** from -40°C to +125°C
- **4.5mm thick Rogowski coil with 5kV peak insulation.**

### Rogowski benefits

Both versions offer the advantages of a CWT Rogowski probe, including:

- simple to use and easy to insert into difficult to reach parts of the circuit
- practically zero insertion impedance
- freedom from flying leads
- isolated measurement
- peak-current ratings from 30A to 300kA
- $\pm 6V$  into 1M $\Omega$ , and now with 50 $\Omega$  drive capability



5kV CWT MiniHF coil through the legs of a TO-247 device

## CWT Mini

- **Extended (-3dB) low frequency bandwidth** typically less than 1Hz
- **Extended (-3dB) high frequency bandwidth** up to 20MHz for a 100mm coil
- **Improved peak  $di/dt$**  up to 40kA/ $\mu$ s
- **3.5mm thickness with 2kVpeak, and 4.5mm thickness with 5kVpeak insulation coils**

### Applications

- Semiconductor switching waveforms (device loss)
- Measuring high frequency sinusoidal, pulsed or transient currents from power frequency to rf applications
- Power converter development and diagnostics for example:
  - MOSFET/IGBT devices as small as TO-247 or around the terminals of large power modules
  - 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)
- Measuring current in motor drives and in particular power quality measurements in VSD, UPS or SMPS circuits

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Model	Sensitivity (mV/A)	Peak current* <sup>1</sup> (kA)	Noise max* <sup>2</sup> (mVp-p)	Droop (%/ms)	LF (-3dB) bandwidth (Hz)	Peak di/dt (kA/μs)	HF (-3dB) bandwidth* <sup>3</sup> (MHz)	
							100mm	200mm
CWT MiniHF 015	200	0.03	15	85	150	2.0	30	23
CWT MiniHF 03	100	0.06	11	78	100	4.0	30	23
CWT MiniHF 06	50	0.12	8.0	70	75	8.0	30	23
CWT MiniHF 1	20	0.3	6.0	53	50	20	30	23
CWT Mini 1	20	0.3	12	4.5	4.8	2.5	20	15
CWT MiniHF 3	10	0.6	10	11	12	40	30	23
CWT Mini 3	10	0.6	10	2.0	2.3	5.0	20	15
CWT MiniHF 6	5.0	1.2	10	5.5	6.0	80	30	23
CWT Mini 6	5.0	1.2	10	0.8	0.9	10	20	15
CWT MiniHF 15	2.0	3.0	8.0	2.8	3.0	80	30	23
CWT Mini 15	2.0	3.0	8.0	0.4	0.5	25	20	15
CWT MiniHF 30	1.0	6.0	8.0	1.5	1.5	100	30	23
CWT Mini 30	1.0	6.0	7.0	0.25	0.3	40	20	15
CWT MiniHF 60	0.5	12.0	6.0	1.0	1.0	100	30	23
CWT Mini 60	0.5	12.0	5.0	0.2	0.2	40	20	15
CWT MiniHF 150	0.2	30.0	4.0	1.0	1.0	100	30	23
CWT Mini 150	0.2	30.0	5.0	0.1	0.1	40	20	15

\*1. Higher current ratings are available, CWT300, Peak current 60kA, CWT600 Peak current 120kA, CWT1500 Peak current 300kA etc

\*2. Noise max. is the internally generated integrator noise which is at a maximum at LF(-3dB) bandwidth

\*3. The High Frequency HF(-3dB) is quoted for a 2.5m cable between coil and integrator

<b>Output</b>	±6V peak corresponding to 'Peak Current' into ≥ 100kΩ (e.g. DC1MΩ oscilloscope) ±2V peak, Sensitivity is half the nominal value into = 50Ω
<b>Accuracy</b>	Conductor position in the coil (for a 2mm <sup>2</sup> conductor) typically ±2% reading Linearity (with current magnitude) 0.05% reading
<b>Calibration</b>	Calibrated to ±0.2% reading with conductor central in the coil loop
<b>DC offset</b>	±3mV at 25°C
<b>Temperature</b>	Coil and cable -40°C to +125°C - (CWT MiniHF) Coil and cable -20°C to +100°C - (CWT Mini) Integrator 0°C to 40°C

**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
CWT MiniHF	100kA/μs	1.2kA/μs
CWT Mini	40kA/μs	1.0kA/μs

<b>Coil length</b>	100 or 200mm – longer coils available on request
<b>Insulation</b>	2kV peak (3.5mm thick coil - CWT Mini models ONLY) 5kV peak (4.5mm thick coil)
<b>Cable length</b>	1, 2.5 or 4m – length of cable from coil to electronics, longer cables available on request
<b>Power</b>	<b>Options:</b> <b>B</b> - Standard: 4 x AA 1.5V alkaline batteries. Lifetime 25 hours. External adaptor disconnects batteries and powers unit. <b>R</b> - Rechargeable: 4 x AA 1.2V NiMH batteries. Lifetime 10 hours. External adaptor recharges batteries and powers unit. <b>External power adaptor</b> - US, EURO, UK versions available

**Generating the part code**

Model	Power option	Cable length (m)	Coil length (mm)	Insulation (kV)
See table above	<b>B</b> -Battery <b>R</b> -Rechargeable	<b>1, 2.5 or 4</b> (Custom lengths available)	<b>100 or 200</b> (Custom lengths available)	<b>2</b> (Not for HF) <b>5</b>
<b>CWT MiniHF 06</b>	<b>R</b>	<b>2.5</b>	<b>100</b>	<b>5</b>

i.e. a CWT MiniHF, peak current 120A, Rechargeable battery, 2.5m cable, 100mm circumference coil, 5kV peak coil, 4.5mm thick  
All units are supplied with, factory calibration certificate, hard carry case, 0.5m BNC:BNC output cable

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

www.pemnk.com

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