

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/ μ 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 50Ω 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/ μ 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* ¹ (kA) | Noise max* ² (mVp-p) | Droop (%/ms) | LF (-3dB) bandwidth (Hz) | Peak di/dt (kA/μs) | HF (-3dB) bandwidth* ³ (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

| | |
|--------------------|---|
| Output | ±6V peak corresponding to 'Peak Current' into ≥ 100kΩ (e.g. DC1MΩ oscilloscope) ±2V peak, Sensitivity is half the nominal value into = 50Ω |
| Accuracy | Conductor position in the coil (for a 2mm ² conductor) typically ±2% reading Linearity (with current magnitude) 0.05% reading |
| Calibration | Calibrated to ±0.2% reading with conductor central in the coil loop |
| DC offset | ±3mV at 25°C |
| Temperature | 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 |

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

Generating the part code

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

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.

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