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CWT (Original) CWTHF



Since pioneering the wide-band Rogowski current probe over 30 years ago PEM Ltd have continued to develop the CWT, and now the shielded CWTHF, to provide state of the art, wide-bandwidth AC current measurement.

The CWT and CWTHF combine an easy to use thin, flexible, clip-around Rogowski coil with an ability to accurately replicate fast switching current waveforms be they, sinusoidal, quasi-sinusoidal, PWM or pulsed.

Key Features

- **A patented electrostatic shielded coil** providing excellent immunity to **50/60Hz** voltage fields and fast voltage transients.
- Models cover a range of **0.03Hz** to **30MHz**.
- Current ratings from **30A pk** to **300kA pk**.
- Peak di/dt capability up to **120kA/µs**.
- Coil insulation **10kV pk**.
- **8.5mm** (max) coil cross section diameter.
- Loads the circuit under test by only a **few pH**.
- Standard coil length of **300mm** to **1000mm**, but longer coil lengths readily available.



CWT wideband probe connected to an oscilloscope



Different coil lengths available

Applications

- Current transient measurement in power electronic switching circuits.
- Lightning strike measurements.
- Power converter development and diagnostics.
- High frequency (hf) sinusoidal currents e.g. induction heating.
- Measuring small AC currents in the presence of large DC currents (e.g. monitoring capacitor ripple).
- EMC measurements, in traction, motor drives and power networks.
- Measuring fault currents, or currents in pulsed power applications.

CWT - Original Models

Model	Sensitivity (mV/A)	Peak Current*1 (A)	Noise*2 (mVp-p)	Droop (%/ms)	LF (-3dB) (Hz)	Peak di/dt (kA/µs)	HF (-3dB) Bandwidth*3 (MHz)	
							300mm	700mm
CWT/3N	20	600	14	0.9	1.0	2.0	10	5
CWT/6	5.0	1.2k	12	0.9	1.0	8.0	16	10
CWT/15	2.0	3.0k	7.0	0.7	0.8	20	16	10
CWT/30	1.0	6.0k	3.5	0.5	0.6	40	16	10
CWT/60	0.5	12k	3.0	0.35	0.4	40	16	10
CWT/150	0.2	30k	3.0	0.2	0.2	40	16	10
CWT/300	0.1	60k	3.0	0.1	0.1	40	16	10

CWTHF - Shielded / High Frequency Models

Model	Sensitivity (mV/A)	Peak Current*1 (A)	Noise*2 (mVp-p)	Droop (%/ms)	LF (-3dB) (Hz)	Peak di/dt (kA/µs)	HF (-3dB) Bandwidth*3 (MHz)	
							300mm	700mm
CWTHF/015	200	30	15	85	150	2.0	20	8
CWTHF/03	100	60	11	78	105	4.0	20	8
CWTHF/06	50	120	8.0	70	80	8.0	20	10
CWTHF/1	20	300	6.0	50	50	20	20	10
CWTHF/3	10	600	12	11	12	40	30	15
CWTHF/6	5.0	1.2k	12	5.5	6.0	80	30	15
CWTHF/15	2.0	3.0k	10	3.0	3.0	80	30	15
CWTHF/30	1.0	6.0k	10	1.5	1.5	120	30	15
CWTHF/60	0.5	12k	8.0	1.0	1.0	120	30	15
CWTHF/150	0.2	30k	5.0	0.8	0.8	120	30	15
CWTHF/300	0.1	60k	5.0	0.2	0.2	120	30	15
CWTHF/600	0.05	120k	5.0	0.06	0.05	120	30	15
CWTHF/1500	0.02	300k	5.0	0.035	0.03	120	30	15

*1 Higher Peak current than 300kA pk available on request.

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

*3 The HF(-3dB) is quoted for a 2.5m cable.

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 (all models)	40kA/µs	1.5kA/µs
CWTHF/015 to CWTHF/1	70kA/µs	1.5kA/µs
CWTHF/3 to CWTHF/1500	120kA/µs	1.5kA/µs

Output
±6V pk corresponding to 'Peak Current' into ≥ 100kΩ (recommended e.g. DC1MΩ oscilloscope).
±2V pk, Sensitivity is half the nominal value into = 50Ω (CWTHF models only 015HF to 150HF).

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

DC offset
±3mV max. at 25°C

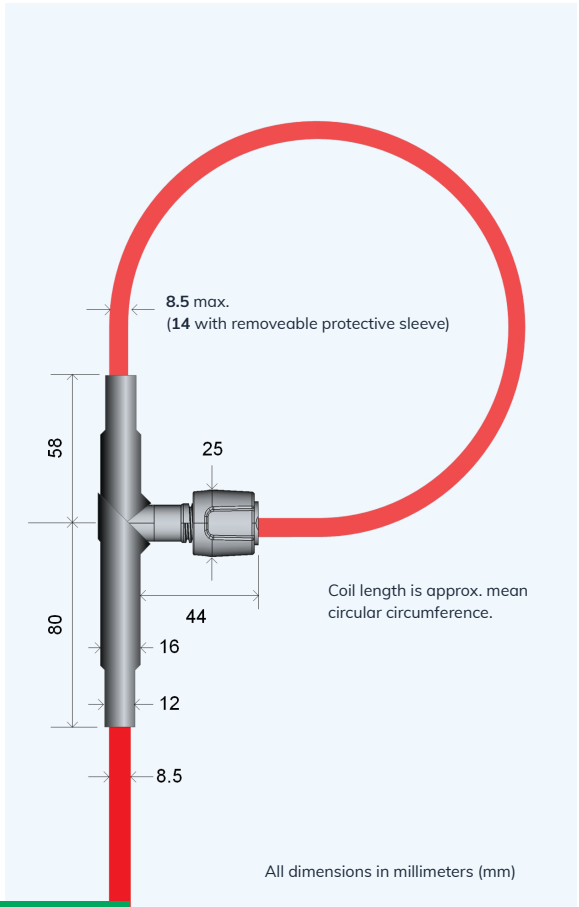
Temperature
Coil and cable -20°C to +100°C
Integrator electronics 0°C to +40°C

Coil voltage
10kV pk -- Safe peak working voltage to earth.
Rating established by a 15kV rms, 50Hz, 60sec voltage withstand test.

The CWT and CWTHF coil include a removable silicone sleeve which provides additional robust mechanical protection.

Cable length
1m, 2.5m or 4m *(length of cable from coil to electronics).*
Longer cables are available on request.

Coil length
300mm, 500mm, 700mm or 1000mm.
Longer coils are available on request.



Coil dimensions

Battery Options

B **Alkaline Batteries --** 4 x 1.5V AA alkaline batteries, 25 hour life (70 hours CWT).
External power adaptor disconnects batteries and powers unit.

R **Rechargable Batteries --** 4 x 1.2V NiMH batteries, 10 hour life (30 hours CWT).
External power adaptor trickle charges batteries and powers unit.

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

1 CWTHF / 2 06 / 3 R / 4 2.5 / 5 700

Generating the part code

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

Example part codes

CWTHF/06/R/2.5/700
CWTHF peak current 120A, Rechargable batteries, 2.5m cable, 700mm circumference coil, 10kV pk, 8.5mm thick coil.

CWT/15/B/1/500
CWT peak current 3.0kA, Alkaline batteries, 1m cable, 500mm circumference coil, 10kV peak, 8.5mm thick coil.





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.

PEM
Power Electronic Measurements

+44 (0)115 946 9657
info@pemuk.com

Power Electronic Measurements Ltd
Gloucester House
162 Wellington Street
Long Eaton
Nottingham
NG10 4HS
United Kingdom

www.pemuk.com

Beratung und Vertrieb:
ADMESS

ADMESS Elektronik GmbH
Ernst-Kiefer-Str. 9
67292 Kirchheimbolanden

Tel.: 06352-78998-0
info@admess.de
www.admess.de

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