

## CWTLF

A wide-band AC current probe optimised for lower frequency measurements, it has a BNC output to connect to most types of oscilloscope or data acquisition devices.

**The CWTLF is a flexible, clip-around Rogowski probe with an extended low frequency bandwidth.** This makes it ideal for power frequency and harmonic current analysis, measuring long duration pulses, or measuring large magnitude fault currents with frequency components of just a few Hz.



Measuring capacitor discharge



Different coil lengths available



### Key Features

- Predictable phase response from **sub-Hz to > 100kHz**.
- **Low droop** distortion for measuring long current pulses.
- High frequency operation into **MHz**.
- Current ratings from **300A pk to 300kA pk**.
- Standard coil length of **300mm to 1000mm**, but longer coil lengths readily available.
- Coil insulation **10kV pk**.
- **Electrostatic shielded** Rogowski coils to attenuate interference from **50/60Hz** voltage sources and fast voltage transients.



### Applications

- Power frequency 50/60Hz measurements and higher order harmonics.
- Measuring large currents at very low frequency such as motor/generator fault or short circuit currents. There is no de-rating at low frequency compared to current transformers.
- Pulsed currents, and pulsed power measurements with longer duration pulses.
- Measuring small AC currents in the presence of large DC currents (e.g. monitoring capacitor ripple).
- Measuring currents in difficult to reach conductors such as tightly packed bus-bars.

## CWTLF Models

Model	Sensitivity (mV/A)	Peak Current* <sup>1</sup> (A)	Noise* <sup>2</sup> (mVp-p)	Droop (%/ms)	LF (-3dB) (Hz)	Peak di/dt (kA/μs)	HF (-3dB) Bandwidth* <sup>3</sup> (MHz)	
							300mm	700mm
CWTLF/1	20	300	15	0.47	0.5	2.5	1.6	0.75
CWTLF/3	10	600	15	0.24	0.25	5.0	1.6	0.75
CWTLF/6	5.0	1.2k	15	0.19	0.2	10	1.6	0.75
CWTLF/15	2.0	3.0k	15	0.09	0.1	11	1.6	0.75
CWTLF/30	1.0	6.0k	15	0.045	0.05	11	1.6	0.75
CWTLF/60	0.5	12.0k	15	0.018	0.02	11	1.6	0.75
CWTLF/150	0.2	30.0k	15	0.009	0.01	20	3.2	1.5
CWTLF/300	0.1	60.0k	10	0.007	0.008	20	3.2	1.5
CWTLF/600	0.05	120.0k	5.0	0.007	0.008	20	3.2	1.5
CWTLF/1500	0.02	300.0k	4.0	0.007	0.008	20	3.2	1.5

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

Lower Peak current measurements with optimised low frequency performance, see the LFR range.

\*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
CWTLF/1 to CWTLF/60	11kA/μs	0.8kA/μs
CWTLF/150 and above	20kA/μs	0.8kA/μs

## Output

±6V pk corresponding to 'Peak Current' into  $\geq 100\text{k}\Omega$  (recommended e.g. DC1M $\Omega$  oscilloscope).  
The CWTLF is not recommended for driving a 50 $\Omega$  load

## Accuracy

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

## DC offset

$\pm 3\text{mV}$  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.

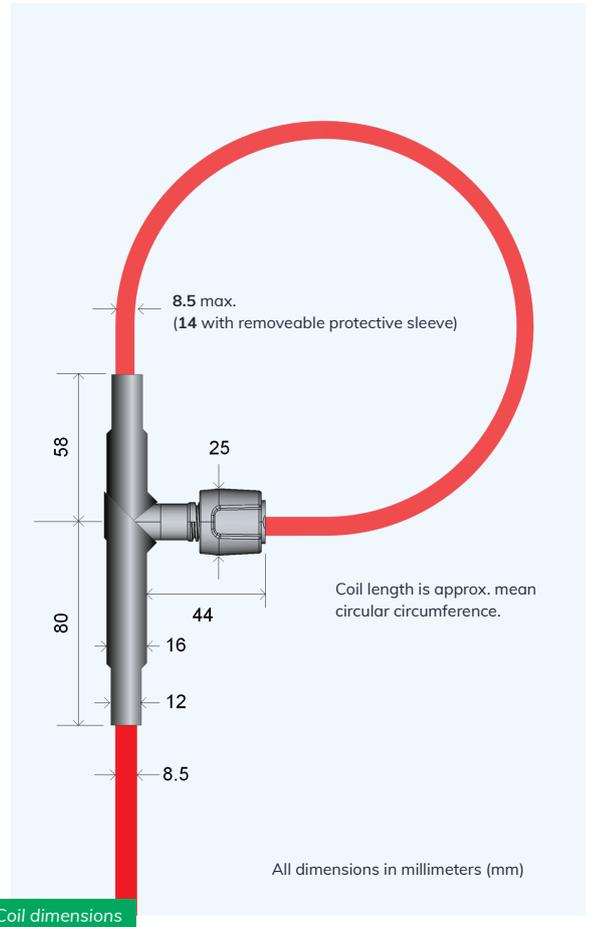
The CWTLF coil includes a removable silicone sleeve which provides additional robust mechanical protection.

## 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.**



## Battery Options

- B Alkaline Batteries** -- 4 x 1.5V AA alkaline batteries (70 hours).  
External power adaptor disconnects batteries and powers unit.
- R Rechargeable Batteries** -- 4 x 1.2V NiMH batteries (30 hours).  
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  
**CWTLF / 6 / R / 2.5 / 700**

### Example part codes

#### **CWTLF/6/R/2.5/700**

CWTLF peak current 1.2kA, Rechargeable batteries, 2.5m cable, 700mm circumference coil, 10kV pk, 8.5mm thick coil.

#### **CWTLF/15/B/1/500**

CWTLF peak current 3.0kA, Alkaline batteries, 1m cable, 500mm circumference coil, 10kV peak, 8.5mm thick 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.

# PENI

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](http://www.pemuk.com)

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