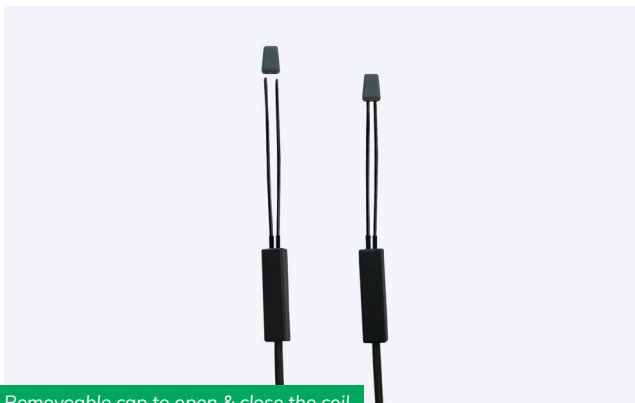


Provisional Available Q2 2025

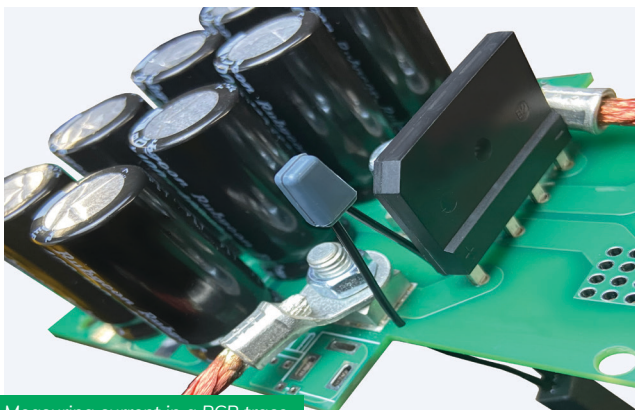
## CWTUM-F CWTUMHF-F

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

The CWTUM-F (1.3mm thickness) and the electrostatically screened version, the CWTUMHF-F (1.7mm thickness), are an extension of the original CWT Ultra-mini range from PENI. The novel mechanical construction can reduce overall Rogowski coil size and thus the probes impact on the circuit under test. This simplifies measurements in densely populated power electronic circuits.



Removeable cap to open & close the coil



Measuring current in a PCB trace



### Key Features

- Novel 'forked' construction with a coil length of 55mm.
- Wide operating temperature  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ .
- Current ratings from 60A pk to 12kA pk.
- Coil insulation 1.2kV pk.
- Peak di/dt capability up to 100kA/ $\mu\text{s}$ .
- Thin version 1.3mm cross section diameter.  
HF (-3dB) 20MHz
- A shielded 'HF' version 1.7mm cross section diameter.  
Excellent voltage immunity  
HF (-3dB) 30MHz



### Applications

- Switching current waveforms in power electronic circuits:
  - MOSFET or IGBT devices as small as TO-220, D<sup>2</sup>PAK and other SMT power devices.
  - 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.

CWTUM-F (1.3mm thickness)

| Model      | Sensitivity<br>(mV/A) | Peak Current<br>(A) | Noise <sup>*1</sup><br>(mVp-p) | Droop<br>(%/ms) | LF (-3dB)<br>(Hz) | Peak di/dt<br>(kA/μs) | HF (-3dB)<br>Bandwidth <sup>*2</sup><br>(MHz) |
|------------|-----------------------|---------------------|--------------------------------|-----------------|-------------------|-----------------------|-----------------------------------------------|
| CWTUM-F/03 | 100                   | 60                  | 20                             | 85              | 150               | 4.0                   | 20                                            |
| CWTUM-F/06 | 50                    | 120                 | 15                             | 78              | 100               | 8.0                   | 20                                            |
| CWTUM-F/1  | 20                    | 300                 | 15                             | 53              | 50                | 20                    | 20                                            |
| CWTUM-F/3  | 10                    | 600                 | 15                             | 19              | 20                | 40                    | 20                                            |
| CWTUM-F/6  | 5.0                   | 1.2k                | 15                             | 9.3             | 10                | 80                    | 20                                            |
| CWTUM-F/15 | 2.0                   | 3.0k                | 12                             | 4.6             | 5.0               | 100                   | 20                                            |
| CWTUM-F/30 | 1.0                   | 6.0k                | 12                             | 2.4             | 2.6               | 100                   | 20                                            |
| CWTUM-F/60 | 0.5                   | 12.0k               | 12                             | 1.2             | 1.2               | 100                   | 20                                            |

CWTUMHF-F (Shielded / High frequency version - 1.7mm thickness)

| Model        | Sensitivity<br>(mV/A) | Peak Current<br>(A) | Noise <sup>*1</sup><br>(mVp-p) | Droop<br>(%/ms) | LF (-3dB)<br>(Hz) | Peak di/dt<br>(kA/μs) | HF (-3dB)<br>Bandwidth <sup>*2</sup><br>(MHz) |
|--------------|-----------------------|---------------------|--------------------------------|-----------------|-------------------|-----------------------|-----------------------------------------------|
| CWTUMHF-F/03 | 100                   | 60                  | 20                             | 85              | 150               | 4.0                   | 30                                            |
| CWTUMHF-F/06 | 50                    | 120                 | 15                             | 78              | 100               | 8.0                   | 30                                            |
| CWTUMHF-F/1  | 20                    | 300                 | 15                             | 53              | 50                | 20                    | 30                                            |
| CWTUMHF-F/3  | 10                    | 600                 | 15                             | 19              | 20                | 40                    | 30                                            |
| CWTUMHF-F/6  | 5.0                   | 1.2k                | 15                             | 9.3             | 10                | 80                    | 30                                            |
| CWTUMHF-F/15 | 2.0                   | 3.0k                | 12                             | 4.6             | 5.0               | 100                   | 30                                            |
| CWTUMHF-F/30 | 1.0                   | 6.0k                | 12                             | 2.4             | 2.6               | 100                   | 30                                            |
| CWTUMHF-F/60 | 0.5                   | 12.0k               | 12                             | 1.2             | 1.2               | 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 55mm 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-F / CWTUMHF-F | 100kA/μs             | 1.0kA/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.

## Accuracy

Calibrated to ±0.2% of reading with conductor central in the 'Ideal conductor position' area.

Conductor positional variation in the 'Ideal conductor position' area (for a 5mm dia. conductor) is typically ±1% of reading.

Linearity (with current magnitude) 0.05% of 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

55mm

Longer coils are available on request.

## Battery Options

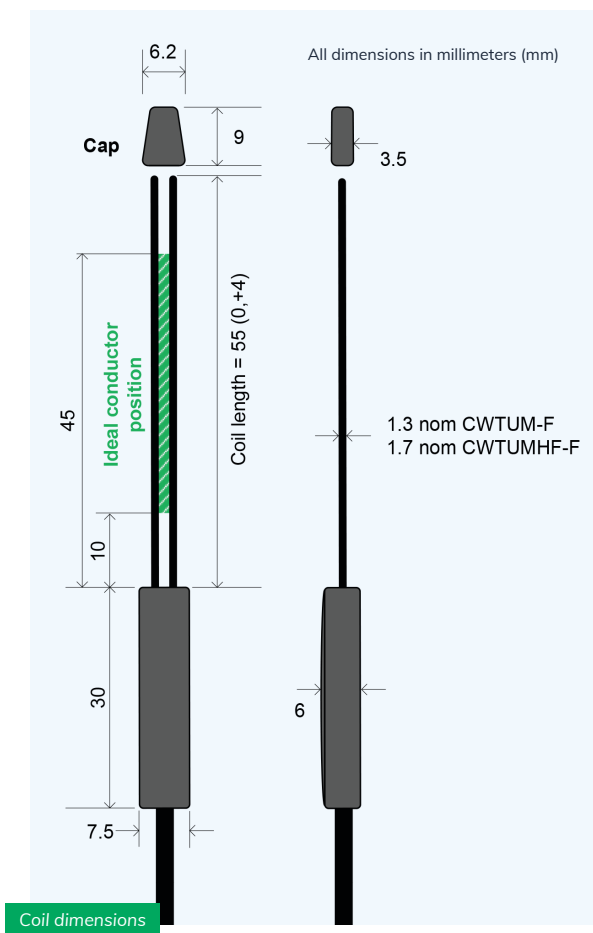
**B** Alkaline Batteries -- 4 x 1.5V AA alkaline batteries, 25 hour life.

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-F / 06 / R / 1 / 55**

### Example part codes

#### CWTUM-F/06/R/1/55

CWT Ultra-mini (F), peak current 120A, Rechargeable batteries, 1m cable, 55mm coil.

#### CWTUM-F/6/B/1/55

CWT Ultra-mini (F), peak current 1200A, Alkaline batteries, 1m cable, 55mm 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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