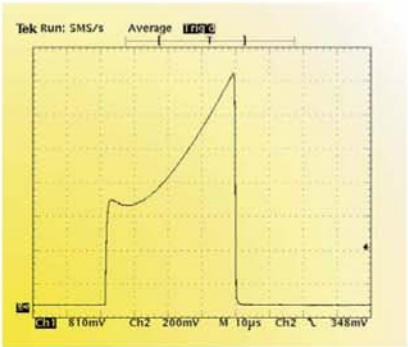
Powertek

CWT SPECIFICATION

The **CWT** from Powertek is a state of the art wide-bandwidth ac current probe.

The CWT is ideal for power electronice development work because it combines an easy to use thin, flexible, clip-around coil with an ability to accurately replicate fast switching current waveforms be they sinusoidal quasi-sinusoidal or pulsed.



A 2700A current pulse with a 6700A/µs falling edge measured by a CWT15 with a 500mm coil and a very high bandwith coaxial shunt - 10µs/div.

Applications

- **Monitoring current waveforms for semiconductor switches**
- **Development and servicing of power electronic equipment**
- **Monitoring high frequency sinusoidal currents**
- **Measuring fault currents or circuit breaker interruption currents**
- **Measuring pulses of current**
- **Measuring ac currents superimposed on large dc currents**
- **Measuring harmonic current components**
- **Measuring signal or earth leakage currents in 3-phase supply systems**

Features

- Measurement range from **300mA to 300,000A**
- Typical bandwidths from **0.1Hz to 16MHz**
- The DC offset is no greater than 2mV over the operating temperature range.
- **Thin and flexible, 'clip-around' coil** in lengths from **300mm to 1000mm** – other lengths available as custom designs
  - Easy to insert probe in confined spaces
  - Robust lockable 'clip-in' mechanism
  - Non-intrusive – loading the circuit under test by only a few pH
- Coil peak voltage isolation capability up to 10kV
- Instantaneous ±6V peak to peak output to plug directly into scope, data acquisition equipment, DVM or power recorders
- CE Marked
- Accuracy of ±1% of reading

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PERFORMANCE CHARACTERISTICS

Type	Sensitivity (mV/A)	Peak current (kA)	Peak di/dt (kA/µS)	Noise max*1 (mV pk-pk)	Droop typ. (%/ ms)	LF (3dB) bandwidth typ. (Hz) f_L	Phase lead at 50Hz typ. (deg)	HF (3dB) bandwidth typ. (MHz) f_H *2	
								Coil Length 300mm	Coil Length 700mm
High Sensitivity Ranges of CWT ... measuring currents from 300mA									
CWT015	200.0	0.03	0.2	6.5	130	150	2.0 @ 6kHz	6	4
CWT03	100.0	0.06	0.4	4.5	90	105	2.0 @ 4kHz	10	6.5
CWT06	50.0	0.12	0.8	3.0	70	80	2.0 @ 3kHz	16	10
CWT1	20.0	0.3	2.0	2.5	40	50	1.9 @ 2kHz	16	10
CWT1N	20.0	0.3	2.0	2.0	20	25	1.9 @ 1kHz	10	5
CWT3	10.0	0.6	4.0	8.0	3.0	3.5	1.0 @ 300Hz	16	10
Standard Ranges of CWT ... measuring currents from 15A									
CWT3N	10.0	0.6	4.0	14.0	0.9	1.0	1.7	10	5
CWT6	5.0	1.2	8.0	14.0	0.9	1.0	1.7	16	10
CWT15	2.0	3.0	20.0	7.0	0.7	0.8	1.3	16	10
CWT30	1.0	6.0	40.0	5.0	0.5	0.6	0.9	16	10
CWT60	0.5	12.0	40.0	3.5	0.35	0.4	0.6	16	10
CWT150	0.2	30.0	40.0	3.0	0.2	0.2	0.3	16	10
CWT300	0.1	60.0	40.0	3.0	0.1	0.1	0.2	16	10
CWT600	0.05	120.0	40.0	3.0	0.06	0.05	0.1	16	10
CWT1500	0.02	300.0	40.0	3.0	0.035	0.03	0.06	16	10

*1. Distributed around the f_L (-3dB) bandwidth.
*2. For 2.5m cable length. Contact PEM for values of f_H for other coil and cable lengths

TYPICAL ACCURACY Traceable calibration to ±0.2% with conductor central in the loop
Variation with conductor position in the coil loop typically ±1%

TYPICAL LINEARITY ±0.05% (Full Scale)

ABSOLUTE MAXIMUM VALUES OF *di / dt* (kA/µs) (value must not be exceeded)				
	CWT 03, 06	**PEAK** 40.0	**RMS** 1.2 @ 70°C	
	CWT 015, 1N, 3N	**PEAK** 20.0	**RMS** 1.0 @ 70°C	
	all other CWT's	**PEAK** 40.0	**RMS** 1.5 @ 70°C	(Further information available on request)

COIL AND CABLE

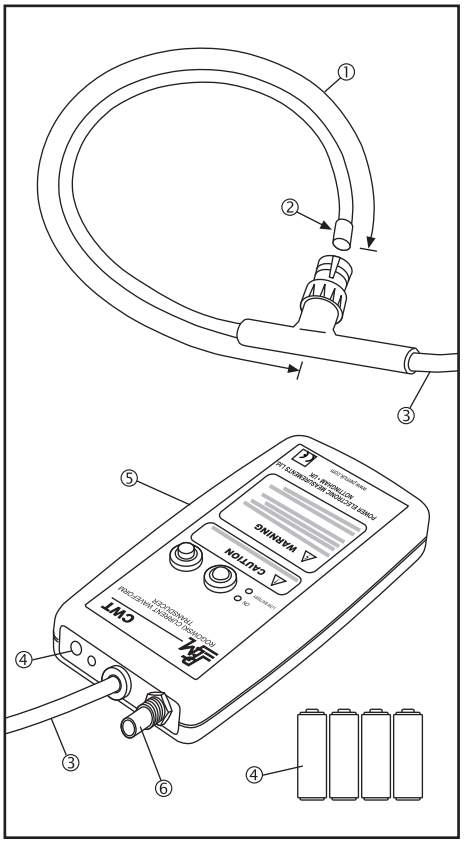
① **COIL CIRCUMFERENCE**	300, 500, 700 or 1000mm
② **COIL CROSS SECTION** (max)	8.5mm - (14 mm with sleeve)
PEAK COIL VOLTAGE ISOLATION	10kV

Safe peak working voltage to earth. The coils are flash tested at 15kVrms for 60 seconds. The coil is supplied with a removable silicone sleeve which provides additional mechanical protection. Information about continuous use of the coils at high voltage can be obtained from PEM.

TEMPERATURE RANGE	-20°C to 100°C

For de-rating due to temperature cycling please consult PEM

③ **CABLE LENGTH** (from box to coil)	2.5m or 4m



INTEGRATOR

④ **POWER SUPPLY**

B Battery 4 x AA (1.5V standard alkali batteries)
-plus-
2.1/2.5mm socket for 12 to 24V (±10%) DC input

Typical life 70hrs
Battery inoperative with DC supply present

R Rechargeable battery 4 x AA (rechargeable NiMH batteries)
-plus-
2.1/2.5mm socket for 12 to 24V (±10%) DC input

Recharge time 40hrs, Typical life 30hrs
Battery is charged whenever DC supply present

⑤ **INTEGRATOR BOX DIMENSIONS**	H = 183mm, W = 93mm, D = 32mm
⑥ **OUTPUT SOCKET**	BNC (output impedance 50Ω - unit supplied with 0.5m BNC - BNC coaxial cable)
MIN. OUTPUT LOADING	100kΩ (for rated accuracy)
TEMPERATURE RANGE	0°C to 40°C

ORDERING

	Type + Power supply	/	Cable Length	/	Coil Circumference
e.g. order code	**CWT30 B**	/	**4**	/	**700**

If you have any queries regarding the **CWT** or require specifications outside our standard ranges please do not hesitate to contact us.