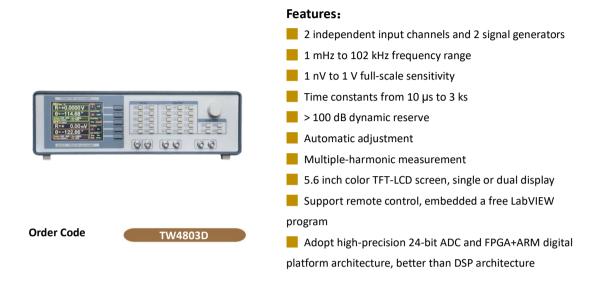


TW4803D DSP Lock-In Amplifier (Dual Channel)



Maxwellon TW4803D Digital Lock-in Amplifier provides an excellent performance within its bandwidth from 1 mHz to 102 kHz. More importantly, TW4803D has dual independent input channels and dual independent high precision signal generators. Each input channel and signal generator can be used independently which means that the TW4803D is equivalent to two traditional lock-in amplifiers. Moreover, due to the twin symmetrical design, the two independent input channels and signal generators have ultra-high synchronicity, which meets the measurement requirements demanding extremely high synchronization.

Specifications

Signal Channel		
Voltage Input Mode	Single-ended or Differential	
Full-scale Sensitivity	1 nV to 1 V in a 1-2-5 sequence	
	1 fA to 1 μA	
Current Input	106 or 108 V/A	
Impedance	$ullet$ Voltage: 10 M Ω // 25 pF, AC or DC coupled	
	• Current: 1 kΩ to virtual ground	
C.M.R.R	> 100 dB to 10 kHz, decreasing by 6 dB/oct	
Dynamic Reserve	> 100 dB	
Gain Accuracy	0.2% typ, 1% max	
Voltage Noise	6 nV/√Hz at 997 Hz	
Current Noise	• 15 fA/√Hz at 97 Hz	
	• 13 fA/√Hz at 997 Hz	
Line Filters	50/60 Hz and 100/120 Hz	



Reference Channel	Gounding	BNC shield can be grounded or floated via 10 $k\Omega$ to ground	
Reference input: TTL or Sine Input impedance: 1 MΩ//25 pF		Reference Channel	
Input impedance: 1 MΩ//25 pF		Frequency range: 1 mHz to 102 kHz	
Phase Phase noise: (Internal ref.) Synthesized, <0.0001°rms at 1 kHz; (100 ms time constant, 12 dB/oct) Phase noise: (Internal ref.) Synthesized, <0.0001°rms at 1 kHz; (100 ms time constant, 12 dB/oct) Phase noise: (Internal ref.) Synthesized, <0.0001°rms at 1 kHz; (100 ms time constant, 12 dB/oct) Phase noise: (Internal ref.) Synthesized, <0.0001°rms at 1 kHz (100 ms time constant, 12 dB/oct) Phase Phase Phase Phase Phase Phase Phase noise: (Internal ref.) Synthesized, <0.0001°rms at 1 kHz (100 ms time constant, 12 dB/oct) Phase noise: (Internal ref.) Synthesized, <0.0001°rms at 1 kHz (100 ms time constant, 12 dB/oct) Phase noise: (Internal ref.) Synthesized, <0.001°rms at 1 kHz (100 ms time constant, 12 dB/oct) Phase noise: (Internal ref.) Synthesized, <0.001°rms at 1 kHz (100 kHz) Phase noise: (Internal ref.) Synthesized, <0.001°rms at 1 kHz (100 kHz) Phase noise: (Internal ref.) Synthesized, <0.001°rms at 1 kHz (100 kHz) Phase noise: (Internal ref.) Synthesized, <0.001°rms at 1 kHz (100 kHz) Phase noise: (Internal ref.) Synthesized, <0.001°rms at 1 kHz (100 ms time constant, 12 dB/oct of all dHz) Phase noise: (Internal ref.) Synthesized, <0.001°rms at 1 kHz (100 ms time constant, 12 dB/oct of all dHz) Phase noise: (Internal ref.) Synthesized, <0.001°rms at 1 kHz (100 ms time constant, 12 dB/oct of all dHz) Phase noise: (Internal ref.) Synthesized, <0.001°rms at 1 kHz (100 ms time constant, 12 dB/oct of all dHz) Phase noise: (Internal ref.) Synthesized, <0.001°rms at 1 kHz (100 ms time constant, 12 dB/oct of all dHz) Phase noise: (Internal ref.) Synthesized, <0.001°rms at 1 kHz (100 ms time constant, 12 dB/oct of all dHz) Phase noise: (Internal ref.) Synthesized, <0.001°rms at 1 kHz (100 ms time constant, 12 dB/oct of all dHz) Phase noise: (Internal ref.) Synthesized, <0.001°rms at 1 kHz (100 ms time con	Input	Reference input: TTL or Sine	
Phase Phase Phase error: < 1° • Relative phase error: < 0.01° • Orthogonality: 90° ± 0.001° • Phase noise: (Internal ref.) Synthesized, < 0.0001°rms at 1 kHz; (External ref.) 0.001°rms at 1 kHz (100 ms time constant, 12 dB/oct) • Drift: < 0.01°/°C below 10 kHz, < 0.1°/°C above 10 kHz Harmonic Detection 2F, 3F,nF to 102 kHz (n<32767) • Internal ref.: instantaneous acquisition • External ref.: (2 cycles + 5 ms) or 40 ms, whichever is larger Demodulator • Digital output: no zero drift on all setting • Display: no zero drift on all setting • Analog output: <5 ppm/°C for all dynamic reserve settings Harmonic Rejection 90 dB • 10 μs to 3 ks (<200 Hz) • 10 μs to 30 s (>200 Hz) • (6, 12, 18, 24 dB/oct rolloff) Synchronous Filters Available below 200 Hz (18, 24 dB/oct rolloff) Internal Oscillator • Range: 1 mHz to 102 kHz • Accuracy: 2 ppm + 10 μHz • Resolution: 1 mHz Distortion • Range: 1 thyz to 102 kHz • Accuracy: 2 ppm + 10 μHz • Resolution: 1 mHz Distortion • So dBc (f < 10 kHz) • -70 dBc (f > 10 kHz)		• Input impedance: 1 MΩ//25 pF	
Phase Phase orice: (Internal ref.) Synthesized, <0.001° rms at 1 kHz; (External ref.) O.001° rms at 1 kHz; (External ref.) 0.001° rms at 1 kHz; (External ref.) 0.001° rms at 1 kHz (100 ms time constant, 12 dB/oct) • Drift: <0.01°/°C below 10 kHz, <0.1°/°C above 10 kHz Harmonic Detection		• Resolution: 0.01°	
Phase Phase a Orthogonality: 90° ± 0.001° Phase noise: (Internal ref.) Synthesized, <0.0001°rms at 1 kHz; (External ref.) 0.001°rms at 1 kHz (100 ms time constant, 12 dB/oct) Prift: <0.01°/°C below 10 kHz, <0.1°/°C above 10 kHz 2F, 3F,nF to 102 kHz (n<32767) Internal ref.: instantaneous acquisition External ref.: (2 cycles + 5 ms) or 40 ms, whichever is larger Pemodulator 1 Digital output: no zero drift on all setting Display: no zero drift on all setting Analog output: <5 ppm/°C for all dynamic reserve settings Harmonic Rejection 1 O µs to 3 ks (<200 Hz) 10 µs to 30 s (>200 Hz) 10 µs to 3		• Absolute phase error: < 1°	
Phase Phase noise: (Internal ref.) Synthesized, <0.0001°rms at 1 kHz; (External ref.) 0.001°rms at 1 kHz; (External ref.) 0.001°rms at 1 kHz (100 ms time constant, 12 dB/oct) Prift: <0.019°C below 10 kHz, <0.1°°C above 10 kHz Harmonic Detection 2, 3,nF to 102 kHz (n<32767) Internal ref.: instantaneous acquisition External ref.: (2 cycles + 5 ms) or 40 ms, whichever is larger Pemodulator **Digital output: no zero drift on all setting Display: no zero drift on all setting Analog output: <5 ppm/°C for all dynamic reserve settings Harmonic Rejection 90 dB 10 µs to 3 ks (<200 Hz) 10 µs to 30 s (>200 Hz) (6, 12, 18, 24 dB/oct rolloff) Synchronous Filters **Nange: 1 mHz to 102 kHz Resolution: 1 mHz Resolution: 1 mHz Resolution: 1 mHz **Resolution: 1 mHz **Resolution: 1 mHz **Resolution: 1 mHz **Resolution: 1 mHz **Stability 50 ppm/°C Output Sine output on rear panel, and TTL sync output on rear panel General Specifications nterface USB2.0 and RS-232 interface **Function: output X, Y, R, \theta Output voltage: ±10 V full scale, 30 mA max output current **Screen 5.6 inch, 640×480 TFT		• Relative phase error: < 0.01°	
• Phase noise: (Internal ref.) Synthesized, <0.0001°rms at 1 kHz; (External ref.) 0.001°rms at 1 kHz; (External ref.) 0.001°rms at 1 kHz (100 ms time constant, 12 dB/oct) • Drift: <0.01°/°C below 10 kHz, <0.1°/°C above 10 kHz Harmonic Detection 2f,nF to 102 kHz (n<32767) • Internal ref.: instantaneous acquisition • External ref.: (2 cycles + 5 ms) or 40 ms, whichever is larger Demodulator • Digital output: no zero drift on all setting • Display: no zero drift on all setting • Analog output: <5 ppm/°C for all dynamic reserve settings Harmonic Rejection -90 dB • 10 µs to 3 ks (<200 Hz) • 10 µs to 3 ks (<200 Hz) • (6, 12, 18, 24 dB/oct rolloff) Synchronous Filters Available below 200 Hz (18, 24 dB/oct rolloff) Internal Oscillator • Range: 1 mHz to 102 kHz • Accuracy: 2 ppm + 10 µHz • Resolution: 1 mHz Distortion -80 dBc (f < 10 kHz) • -70 dBc (f> 10 kHz) Amplitude 0.001 to 5 Vrms Accuracy 1% Stability 50 ppm/°C Output Sine output on rear panel, and TTL sync output on rear panel General Specifications nterface USB2.0 and RS-232 interface • Function: output X, Y, R, θ • Output voltage: ±10 V full scale, 30 mA max output current Screen 5.6 inch, 640×480 TFT		• Orthogonality: 90° ± 0.001°	
dB/oct)	Phase	• Phase noise: (Internal ref.) Synthesized, <0.0001°rms at 1	
## Drift: <0.01°/°C below 10 kHz, <0.1°/°C above 10 kHz ## Harmonic Detection ## Detection		kHz; (External ref.) 0.001°rms at 1 kHz (100 ms time constant, 12	
Harmonic Detection 2F, 3F,nF to 102 kHz (n<32767) • Internal ref.: instantaneous acquisition • External ref.: (2 cycles + 5 ms) or 40 ms, whichever is larger Demodulator • Digital output: no zero drift on all setting • Display: no zero drift on all setting • Analog output: <5 ppm/°C for all dynamic reserve settings Harmonic Rejection -90 dB • 10 µs to 3 ks (<200 Hz) • 10 µs to 30 s (>200 Hz) (6, 12, 18, 24 dB/oct rolloff) Synchronous Filters Available below 200 Hz (18, 24 dB/oct rolloff) Internal Oscillator • Range: 1 mHz to 102 kHz • Accuracy: 2 ppm + 10 µHz • Resolution: 1 mHz • Resolution: 1 mHz • Resolution: 1 mHz • Resolution: 1 mHz Distortion Available one of the kHz) • -70 dBc (f > 10 kHz) • -70 dBc (f > 10 kHz) • -70 dBc (f > 10 kHz) Accuracy 1% Stability 50 ppm/°C Output Sine output on rear panel, and TTL sync output on rear panel General Specifications nterface USB2.0 and RS-232 interface • Function: output X, Y, R, Ø • Output voltage: ±10 V full scale, 30 mA max output current Screen 5.6 inch, 640×480 TFT		dB/oct)	
• Internal ref.: instantaneous acquisition • External ref.: (2 cycles + 5 ms) or 40 ms, whichever is larger Demodulator • Digital output: no zero drift on all setting • Display: no zero drift on all setting • Analog output: <5 ppm/°C for all dynamic reserve settings Harmonic Rejection -90 dB • 10 µs to 3 ks (<200 Hz) • 10 µs to 30 s (>200 Hz) • (6, 12, 18, 24 dB/oct rolloff) Synchronous Filters Available below 200 Hz (18, 24 dB/oct rolloff) Internal Oscillator • Range: 1 mHz to 102 kHz • Accuracy: 2 ppm + 10 µHz • Resolution: 1 mHz • Resolution: 1 mHz • Resolution: 1 mHz Distortion -70 dBc (f < 10 kHz) • -70 dBc (f > 10 kHz) • -70 dBc (f > 10 kHz) Accuracy 1% Stability 50 ppm/°C Output Sine output on rear panel, and TTL sync output on rear panel General Specifications nterface USB2.0 and RS-232 interface • Function: output X, Y, R, Ø • Output voltage: ±10 V full scale, 30 mA max output current Screen 5.6 inch, 640×480 TFT		• Drift: <0.01°/°C below 10 kHz, <0.1°/°C above 10 kHz	
Permodulator • External ref.: (2 cycles + 5 ms) or 40 ms, whichever is larger Demodulator • Digital output: no zero drift on all setting • Display: no zero drift on all setting • Analog output: <5 ppm/°C for all dynamic reserve settings Harmonic Rejection -90 dB • 10 μs to 3 ks (<200 Hz) • 10 μs to 30 s (>200 Hz) • (6, 12, 18, 24 dB/oct rolloff) Synchronous Filters Available below 200 Hz (18, 24 dB/oct rolloff) Frequency • Range: 1 mHz to 102 kHz • Resolution: 1 mHz • Resolution: 1 mHz • Resolution: 1 mHz • -70 dBc (f < 10 kHz) • -70 dBc (f > 10 kHz) • -70 dBc (f > 10 kHz) • Stability 50 ppm/°C Output Sine output on rear panel, and TTL sync output on rear panel General Specifications • Function: output X, Y, R, θ • Output voltage: ±10 V full scale, 30 mA max output current	Harmonic Detection	2F, 3F,nF to 102 kHz (n<32767)	
Demodulator • Digital output: no zero drift on all setting • Display: no zero drift on all setting • Display: no zero drift on all setting • Analog output: <5 ppm/°C for all dynamic reserve settings Harmonic Rejection -90 dB • 10 μs to 3 ks (<200 Hz) • 10 μs to 30 s (>200 Hz) • (6, 12, 18, 24 dB/oct rolloff) Synchronous Filters Available below 200 Hz (18, 24 dB/oct rolloff) Internal Oscillator • Range: 1 mHz to 102 kHz • Accuracy: 2 ppm + 10 μHz • Resolution: 1 mHz Distortion -80 dBc (f < 10 kHz) • -70 dBc (f > 10 kHz) • -70 dBc (f > 10 kHz) Stability 50 ppm/°C Output Sine output on rear panel, and TTL sync output on rear panel General Specifications nterface CH1 and CH2 Outputs Screen 5.6 inch, 640×480 TFT		Internal ref.: instantaneous acquisition	
Stability Digital output: no zero drift on all setting Display: no zero drift on all setting Analog output: <5 ppm/°C for all dynamic reserve settings Harmonic Rejection -90 dB 10 μs to 3 ks (<200 Hz) 10 μs to 30 s (>200 Hz) (6, 12, 18, 24 dB/oct rolloff) Synchronous Filters Available below 200 Hz (18, 24 dB/oct rolloff) Internal Oscillator Range: 1 mHz to 102 kHz Accuracy: 2 ppm + 10 μHz Resolution: 1 mHz -80 dBc (f < 10 kHz) -70 dBc (f > 10 kHz) Armplitude 0.001 to 5 Vrms Accuracy 1% Stability 50 ppm/°C Output Sine output on rear panel, and TTL sync output on rear panel General Specifications nterface USB2.0 and RS-232 interface CH1 and CH2 Outputs 5.6 inch, 640x480 TFT	Acquisition Time	• External ref.: (2 cycles + 5 ms) or 40 ms, whichever is larger	
Stability Display: no zero drift on all setting Analog output: <5 ppm/°C for all dynamic reserve settings Poly dB 10 µs to 3 ks (<200 Hz) 10 µs to 30 s (>200 Hz) 10 µs to 30 ks (<200 Hz) 10 µs to 30 ks (<200 Hz) 10 µs to 30 ks (<200 Hz) 10 µs to 30 ks (>200 Hz) 10 µs to 30 ks (<200 Hz) 10 µs to 30 ks (>200 Hz) 10 µs to 30 ks (<200 Hz) 10 µs to 30 ks (<20 µs to 30 µs		Demodulator	
• Analog output: <5 ppm/°C for all dynamic reserve settings Harmonic Rejection -90 dB • 10 µs to 3 ks (<200 Hz) • 10 µs to 30 s (>200 Hz) (6, 12, 18, 24 dB/oct rolloff) Synchronous Filters Available below 200 Hz (18, 24 dB/oct rolloff) Internal Oscillator • Range: 1 mHz to 102 kHz • Accuracy: 2 ppm + 10 µHz • Resolution: 1 mHz Distortion -70 dBc (f < 10 kHz) • -70 dBc (f > 10 kHz) Amplitude 0.001 to 5 Vrms Accuracy 1% Stability 50 ppm/°C Output Sine output on rear panel, and TTL sync output on rear panel General Specifications nterface USB2.0 and RS-232 interface • Function: output X, Y, R, θ • Output voltage: ±10 V full scale, 30 mA max output current Screen 5.6 inch, 640×480 TFT		Digital output: no zero drift on all setting	
Harmonic Rejection	Stability	Display: no zero drift on all setting	
• 10 μs to 3 ks (<200 Hz) • 10 μs to 30 s (>200 Hz) • 18, 24 dB/oct rolloff) Internal Oscillator • Range: 1 mHz to 102 kHz • Accuracy: 2 ppm + 10 μHz • Resolution: 1 mHz • -80 dBc (f < 10 kHz) • -70 dBc (f > 10 kHz) • -80 dBc (f <		• Analog output: <5 ppm/°C for all dynamic reserve settings	
Time Constant • 10 μs to 30 s (>200 Hz) (6, 12, 18, 24 dB/oct rolloff) Synchronous Filters Available below 200 Hz (18, 24 dB/oct rolloff) Internal Oscillator • Range: 1 mHz to 102 kHz • Accuracy: 2 ppm + 10 μHz • Resolution: 1 mHz • -80 dBc (f < 10 kHz) • -70 dBc (f > 10 kHz) Amplitude 0.001 to 5 Vrms Accuracy 1% Stability 50 ppm/°C Output Sine output on rear panel, and TTL sync output on rear panel General Specifications nterface USB2.0 and RS-232 interface CH1 and CH2 Outputs • Function: output X, Y, R, θ • Output voltage: ±10 V full scale, 30 mA max output current Screen 5.6 inch, 640×480 TFT	Harmonic Rejection	-90 dB	
(6, 12, 18, 24 dB/oct rolloff) Synchronous Filters Available below 200 Hz (18, 24 dB/oct rolloff) Internal Oscillator • Range: 1 mHz to 102 kHz • Accuracy: 2 ppm + 10 μHz • Resolution: 1 mHz • -80 dBc (f < 10 kHz) • -70 dBc (f > 10 kHz) Amplitude 0.001 to 5 Vrms Accuracy 1% Stability 50 ppm/°C Output Sine output on rear panel, and TTL sync output on rear panel General Specifications nterface USB2.0 and RS-232 interface CH1 and CH2 Outputs • Output voltage: ±10 V full scale, 30 mA max output current Screen 5.6 inch, 640×480 TFT	Time Constant	• 10 µs to 3 ks (<200 Hz)	
Synchronous Filters Available below 200 Hz (18, 24 dB/oct rolloff) Internal Oscillator Prequency • Range: 1 mHz to 102 kHz • Accuracy: 2 ppm + 10 μHz • Accuracy: 2 mm + 10 μHz • Resolution: 1 mHz • -80 dBc (f < 10 kHz)		• 10 µs to 30 s (>200 Hz)	
Internal Oscillator • Range: 1 mHz to 102 kHz • Accuracy: 2 ppm + 10 μHz • Resolution: 1 mHz • -80 dBc (f < 10 kHz) • -70 dBc (f > 10 kHz) Amplitude 0.001 to 5 Vrms Accuracy 1% Stability 50 ppm/°C Output Sine output on rear panel, and TTL sync output on rear panel General Specifications nterface USB2.0 and RS-232 interface CH1 and CH2 Outputs • Function: output X, Y, R, θ • Output voltage: ±10 V full scale, 30 mA max output current Screen 5.6 inch, 640×480 TFT		(6, 12, 18, 24 dB/oct rolloff)	
• Range: 1 mHz to 102 kHz • Accuracy: 2 ppm + 10 µHz • Resolution: 1 mHz Distortion • -80 dBc (f < 10 kHz) • -70 dBc (f > 10 kHz) Amplitude 0.001 to 5 Vrms Accuracy 1% Stability 50 ppm/°C Output Sine output on rear panel, and TTL sync output on rear panel General Specifications nterface USB2.0 and RS-232 interface • Function: output X, Y, R, θ • Output voltage: ±10 V full scale, 30 mA max output current Screen • S.6 inch, 640×480 TFT	Synchronous Filters	Available below 200 Hz (18, 24 dB/oct rolloff)	
 Frequency Accuracy: 2 ppm + 10 μHz Resolution: 1 mHz Distortion -80 dBc (f < 10 kHz) -70 dBc (f > 10 kHz) Amplitude 0.001 to 5 Vrms Accuracy 1% Stability 50 ppm/°C Output Sine output on rear panel, and TTL sync output on rear panel General Specifications nterface USB2.0 and RS-232 interface Function: output X, Y, R, θ Output voltage: ±10 V full scale, 30 mA max output current 		Internal Oscillator	
• Resolution: 1 mHz • -80 dBc (f < 10 kHz) • -70 dBc (f > 10 kHz) Amplitude 0.001 to 5 Vrms Accuracy 1% Stability 50 ppm/°C Output Sine output on rear panel, and TTL sync output on rear panel General Specifications nterface USB2.0 and RS-232 interface CH1 and CH2 Outputs • Function: output X, Y, R, θ • Output voltage: ±10 V full scale, 30 mA max output current Screen 5.6 inch, 640×480 TFT		Range: 1 mHz to 102 kHz	
• -80 dBc (f < 10 kHz) • -70 dBc (f > 10 kHz) Amplitude 0.001 to 5 Vrms Accuracy 1% Stability 50 ppm/°C Output Sine output on rear panel, and TTL sync output on rear panel General Specifications nterface USB2.0 and RS-232 interface • Function: output X, Y, R, θ • Output voltage: ±10 V full scale, 30 mA max output current Screen 5.6 inch, 640×480 TFT	Frequency	• Accuracy: 2 ppm + 10 µHz	
o.001 to 5 Vrms Accuracy 1% Stability 50 ppm/°C Output Sine output on rear panel, and TTL sync output on rear panel General Specifications nterface USB2.0 and RS-232 interface ← Function: output X, Y, R, θ Output voltage: ±10 V full scale, 30 mA max output current Screen 5.6 inch, 640×480 TFT		• Resolution: 1 mHz	
• -70 dBc (f > 10 kHz) Amplitude 0.001 to 5 Vrms Accuracy 1% Stability 50 ppm/°C Output Sine output on rear panel, and TTL sync output on rear panel General Specifications nterface USB2.0 and RS-232 interface • Function: output X, Y, R, θ • Output voltage: ±10 V full scale, 30 mA max output current Screen 5.6 inch, 640×480 TFT	Distortion	• -80 dBc (f < 10 kHz)	
Accuracy 1% Stability 50 ppm/°C Output Sine output on rear panel, and TTL sync output on rear panel General Specifications nterface USB2.0 and RS-232 interface CH1 and CH2 Outputs • Function: output X, Y, R, θ • Output voltage: ±10 V full scale, 30 mA max output current Screen 5.6 inch, 640×480 TFT		• -70 dBc (f > 10 kHz)	
Stability 50 ppm/°C Output Sine output on rear panel, and TTL sync output on rear panel General Specifications 1 USB2.0 and RS-232 interface CH1 and CH2 Outputs • Function: output X, Y, R, θ • Output voltage: ±10 V full scale, 30 mA max output current Screen 5.6 inch, 640×480 TFT	Amplitude	0.001 to 5 Vrms	
Output Sine output on rear panel, and TTL sync output on rear panel General Specifications Iterface USB2.0 and RS-232 interface Function: output X, Y, R, 0 Output voltage: ±10 V full scale, 30 mA max output current Screen 5.6 inch, 640×480 TFT	Accuracy	1%	
General Specifications nterface USB2.0 and RS-232 interface CH1 and CH2 Outputs • Function: output X, Y, R, θ • Output voltage: ±10 V full scale, 30 mA max output current Screen 5.6 inch, 640×480 TFT	Stability	50 ppm/°C	
nterface CH1 and CH2 Outputs • Function: output X, Y, R, θ • Output voltage: ±10 V full scale, 30 mA max output current Screen 5.6 inch, 640×480 TFT	Output	Sine output on rear panel, and TTL sync output on rear panel	
 Function: output X, Y, R, θ Output voltage: ±10 V full scale, 30 mA max output current Screen 5.6 inch, 640×480 TFT 	General Specifications		
Output voltage: ±10 V full scale, 30 mA max output current Screen 5.6 inch, 640×480 TFT	nterface	USB2.0 and RS-232 interface	
• Output voltage: ±10 V full scale, 30 mA max output current Screen 5.6 inch, 640×480 TFT	CH1 and CH2 Outputs	• Function: output X, Y, R, θ	
		Output voltage: ±10 V full scale, 30 mA max output current	
Screen Format Single or dual display	Screen	5.6 inch, 640×480 TFT	
The state of the s	Screen Format	Single or dual display	
Display Quantities Each display shows one trace, traces can be defined as X,Y,R,θ	Display Quantities	Each display shows one trace, traces can be defined as X,Y,R,θ	
Display Types Numerical form, bar graph and strip chart	Display Types		



	• Voltage: 220 – 240 VAC, 100 – 120 VAC (optional)	
Power Requirement	• Frequency: 50/60 Hz	
	• Power: 50 W	
Dimension	• 473 (W) × 160 (H) × 490 (D) mm (with feet)	
	• 473 (W) × 147 (H) × 490 (D) mm (without feet)	
Weight	11 kg	

Ordering Information

Part No.	Name	Description
TW4803D	Digital Lock-in Amplifier	1 mHz to 102 kHz, 1 nV to 1 V full-scale sensitivity, dual
		independent input channels and signal generators

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