ZAHNER ZENNIUM X

General	
Overall bandwidth	DC - 15 MHz
ADC resolution	32 bit
Harmonic reject*	> 60 dB @ ½ full scale
Potentiostat modes	potentiostatic, galvanostatic, pseudo-galvanostatic, rest potential, off
Cell connection	2-, 3-, 4-terminal kelvin
Ground reference	grounded, floating
Extension slots	10
PC interface	USB 2.0
Dimensions	470 x 160 x 376 mm
Weight	13.2 kg
Accessories	cell cable set, USB cable, power cord, manual, Testbox, THALES XT Software Suite
Power supply	100/115/230VAC, 50/60Hz
Ambient temperature	+10 °C to +30 °C
Ambient humidity	< 60% without derating

Frequency generator & analyzer	
Frequency range	10 µHz to 12 MHz
Accuracy*	< 0.0025%
Resolution	0.0025%, 10000 steps/decade

Output potentiostatic		
Controlled voltage	±5 V ±15 V	
Resolution	2.5 nV 7.5 nV	5 V range 15 V range
Accuracy*	±50 µV ± 5 ppm of reading ±200 µV ± 5 ppm of reading	5 V range 15 V range
Integral Nonlinearity*	typ. 1 ppm, max. 2 ppm typ. 3 ppm, max. 8 ppm	5 V range 15 V range
Compliance voltage	±16 V ±32 V	Low compliance voltage mode High compliance voltage mode
AC amplitude	0 to 2 V, 18 bit resolution 0 to 6 V, 18 bit resolution	5 V range 15 V range
Bandwidth	15 MHz @ 33 Ω load	
IR compensation	auto AC impedance technique range 0 to 10 MΩ resolution 0.012%	
Small signal rise time	150 ns to 200 µs in 5 steps	automatic selection
Slew rate*	15 MV/s	
Phase shift*	10° @ 500 kHz	

Output galvanostatic		
Controlled current	±4 A	
Current range	±1 nA to ±4 A in 12 steps	Main
Resolution	32 bit, ±0.2 ppb of FS	
Accuracy*	0.01 % of FS ± 0.025 % of reading 0.05 % of FS ± 0.1 % of reading	≥ 1 µA to 100 mA < 1 µA or > 100 mA

Input		
Maximum input voltage	±5.5 V ±16 V	5 V range 15 V range
Voltage resolution	2.5 nV 7.5 nV	5 V range 15 V range
Voltage accuracy*	±20 µV ± 2 ppm of reading ±50 µV ± 5 ppm of reading	5 V range 15 V range
Current resolution	±5 aA (32 Bit)	Main / HiZ Probe
Current accuracy*	± 0.01% of FS ± 0.1% of FS ± 0.1% of FS ± 0.5% of reading, ± 125 fA	1 µA ... 100 mA 100 mA ... 4 A 10 nA ... 1 µA < |1 nA| HiZ Probe
Input impedance*	> 10 TΩ || ±5 pF (typical) > 1000 TΩ || ±1 pF (typical)	Main HiZ Probe
Input leakage current*	< |± 200 fA| typ. < |± 2 pA| max. |± 10 fA| typ.	 HiZ Probe
Impedance range*	1 mΩ to 10 GΩ / 1% 100 mΩ to 10 MΩ / 0.1% 100 mΩ to 100 GΩ / 2% 10 µΩ to 1 GΩ / 2% 1 mΩ to 10 MΩ / 0.2%	Main HiZ Gal
Common mode rejection*	> 86 dB @ 10 µHz to 100 kHz > 66 dB @ 100 kHz to 12 MHz	
Input channel phase-tracking accuracy*	±0.05 ° @ 10 µHz to 100 kHz ±0.125 ° @ 100 kHz to 12 MHz	
Equivalent effective input noise*	1 µV rms / 100 fA rms @ 1 mHz to 10 Hz 10 µV rms / 15 fA rms @ 1 mHz to 10 Hz	Main HiZ