

trax reader™ | TECHNICAL SPECIFICATIONS

PRODUCT OVERVIEW

The trax™ reader was designed to characterize and commercialize biological electrochemical sensors. It has the circuitry required to produce stable voltages for Gate/Working, Source/Counter and Drain connections, and to reliably read Drain and Gate currents.

ELECTRICAL & SAMPLING SPECIFICATIONS

Gate/WE voltage range	0–3,000 mV
Gate/WE voltage stability (mid-range)	±0.1%
Gate/WE voltage accuracy (mid-range)	±0.2%
Gate/WE response time	~5 µs
Gate/WE output resistance	~2 Ω
Max. Gate/WE current	150 mA (±45 mA); 15 mA (±22.5 mA); 1.5 mA (±3.0 mA); 0.15 mA (±0.3 mA)
Gate/WE current resolution	300 nA; 30 nA; 3 nA; 0.3 nA
Source/CE voltage	0–3,000 mV (Drain relative to Source)
Source/CE voltage stability (mid-range)	±0.1%
Source/CE voltage accuracy (mid-range)	±0.2%
Source/CE response time	~5 µs
Source/CE output resistance	~100 mΩ
Drain voltage	Set in reference to Source/CE electrode
Drain voltage stability (mid-range)	±0.1%
Drain voltage accuracy (mid-range)	±0.2%
Drain response time	~5 µs
Drain output resistance	~2 Ω
Drain current	150 mA; 15 mA; 1.5 mA; 0.15 mA
Drain current resolution	300 nA; 30 nA; 3 nA; 0.3 nA
Reference voltage	0–3,000 mV
Reference input resistance	>50 GΩ
Free-running sampling rates	1, 2, 4, 8 kHz
Triggered / windowed sampling rates	1, 2, 4, 8, 16, 32, 64 kHz
Oversampling	Available; reduces sampling rate by OSR. In free-running mode, permits higher rates when final rate ≤8 kHz.

FEATURES & CAPABILITIES

• User-definable signal pins	• Internal calibration
• Command batching and repetition	• Square wave voltammetry
• Chronoamperometry	• Linear sweep voltammetry
• Chronopotentiometry	• Differential pulse voltammetry
• Electrochemical impedance spectroscopy (in development)	• Rechargeable Li-ion battery
• Bluetooth connectivity	• 30-pin integrated sensor port
• NFC for automatic sensor scanning	• Breakout board for external sensors
• traxInsight™ for data storage and analysis	• biztrax™ on mobile device for field usage