Gill AC Data Sheet

The Gill AC is a high specification automated Potentiostat, Galvanostat and Zero Resistance Ammeter with integral Frequency Response Analyser and Sweep Generator in one neat enclosure. It is fully isolated from mains earth and is supplied with a full range of software that utilises all aspects of the instrument for both automated and manual operation. All of this is backed by a manufacturers 2 year parts and labour warranty. The standard Gill AC is adequate for most users with an auto ranging current output of 10 pA to 0.6 Amps.

Gill AC Standard Features

Capabilities - internal Potentiostat, Zero Resistance Ammeter, Frequency Response Analyser and Galvanostat.

Software - functions with any Standard PC using Windows 2000, XP, Vista, 7 or 8. A complete suite of standard AC and DC techniques is supplied with the popular Sequencer software.

Included Techniques - Current & Voltage Noise, AC Impedance, Cyclic Sweeps, LPR (Sweep / Step), Potentiostatic, Long Term (Potential / Galvanic / LPR), Corrosion Rate LPR. IR Compensation, Harmonic Analysis, Galvanodynamic Sweeps etc. Some techniques included as standard can be removed for cost saving.

Cables - everything needed to 'get you going': five BNC 1.2m in length, terminating in Stainless Steel crocodile clips. Mains cable (UK, Euro, USA or Australian as appropriate). Serial RS232 cable 2m for connection to a standard PC. USB to serial adapter.

Low Noise Susceptibility - optically Isolated from PC, fully shielded, toroidal transformer, mains rejection measurement, filters on mains power supply.

Self Calibration - active self-calibration at the start of each test, to remove thermal induced offsets.

Expandability - 32x Gill ACs can be operated from the same PC, all in parallel, operated from just one sequence page.

Test Box - a dummy cell with 4 circuits for collecting sample data or testing the instruments calibration and functionality.

Manuals - full manual including application notes on CD.

Warranty - 2 years return to base, can be extended to 8 years.

Channels - single channel.

Delivery - to any part of the world typically covered by courier companies.

Options

Channels - The best way is to simply use more Gill ACs. Up to 32 or more Gill ACs can be controlled by the same PC at the same time with all channels operating independently to each other. A second way is to add extra sequential channels a maximum of 6 channels per instrument.

Software - custom elements, especially logging techniques created to your exact specification, call us, we are always glad to oblige. A Gill AC can also be controlled from your own software with our supplied DLLs (dynamic link libraries).

Fast Sweep Generator - enables the user to generate sweeps made from 180 points per second, whilst obtaining data at a rate of 50 to 60 readings per second. This enables Sweep Rates up to 10 Volts per second, although 1 Volt per second is more realistic if good resolution is desired. Gill AC instruments fitted with this option are housed in the same enclosure as the standard Gill AC.

Paint Buffer - Increased impedance measurement by two decades (10 mA to less than 1 pA).

Weld Test - Single channel weld test option, four additional ZRA for segmented, or mixed metals. Both DC and AC type Polarization tests and Galvanic tests can be applied to the couple in the same way as if it were a standard single test electrode.

Extra Inputs - 6 voltage or temperature inputs (such as K-Type thermocouples).

Built-in Computer - we can supply the Gill AC with an internal computer.

Higher Power - 30 Volts and 30 Amps. From 0.5 Amp to 2 Amps within the same enclosure, or if the optional Gill AC High Power is selected, 30 Amps at >30 Volts is available with a controlled voltage of +/- 30V between the Reference and Test Electrode.

Cables - longer, shorter, different probe connections.

Training – On-site or off-site, including installation.

Internet Control - remote operation anywhere in the world.

Guard Ring - typically used to monitor re-bars.

Critical Pitting Temperature - determination of local corrosion critical temperature,

Electrical Resistance - precision measurement of ER probes.

Serial Cards or USB to Serial adapters - for connecting several instruments to the same PC.

Warranty - extendible to 5 years.

Included Accessories

Install CD
(software and manual)

Electrode Cables

Mains Cable

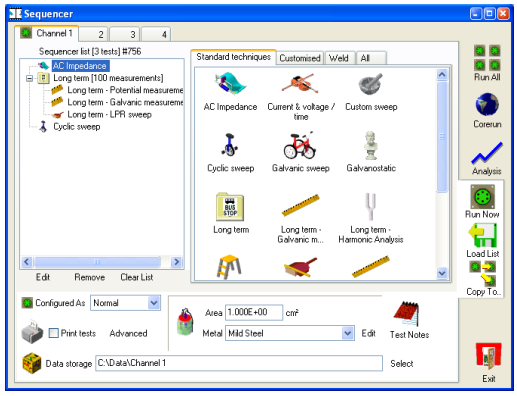
Serial Cable

USB to Serial adapter

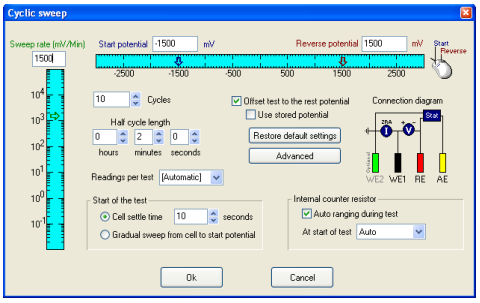
Total Tester Test box

Software Overview

At the heart of an ACM system is a Sequencer and Core Running application, now into Version 5 the emphasis is on reliability. Working in unison, Sequencer sets up a sequence of techniques and Core Running collects data from a sequence of techniques. The Sequencer was designed to be easy to use, with an intuitive interface, one that is common across the range from Data Collection to Analysis; learning effort is kept to a minimum.



Sequencer – available techniques are displayed to the right, they are added to the sequence list on the left. A sequence list can be copied across channels, or channels can be treated individually.

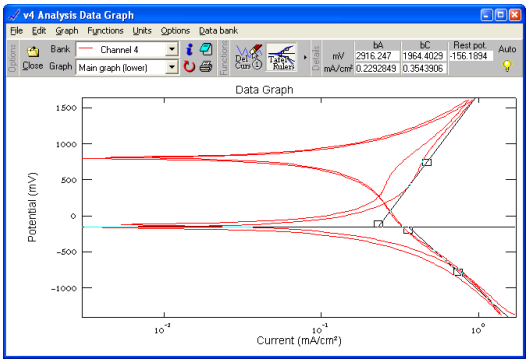


Typical technique set-up page, shown is Cyclic Sweep. Each page smartly remembers last settings, keeping overall set-up time to a minimum. Each page displays a connection diagram, displaying which parts of the instrument are in use and which electrodes should be connected.

Test Notes allows entry of a complete ASTM G107 notebook, hundreds of optional fields can be entered to catalogue your experiment, metals, temperature, environment, etc. Fields are saved in a global database for searching and cross-referencing at a later date.

On to data collection, pressing one button in the sequencer Run All starts data collection:

Core Running – data collection control at your finger tips. View each channel individually, or tile all, instantly display any one of the last 10 collected tests, printing on operator demand.



Analysis – display multiple plots on same graph, smooth, delete points, label, zoom, all catered for. A raft of standard analysis functions is included such as Tafel rulers, AC Nyquist Circle fits, C&V FFT analysis, point to point.

Once in the analysis, data is quick to load, browse and display, test parameters are obtainable, including rest potentials. A quick export to a multitude of packages such as Excel is supported; graphs can be clipped into a word document.

Technical Specifications	
Case Dimensions	34 * 26 * 13 cm
Power Supply	110 / 230 VAC 50-60 Hz
Weight	3.8 kg
Electrode Cable Length	1.2 meters (can be increased)
Noise & Ripple	Less than 3 µV
Potentiostat	
Compliance Voltage	± 15 V (can be increased)
Sweep Range	± 3 V (can be increased)
Sweep Resolution	25 µV
Current Output	± 600 mA
RE Input Impedance	Greater than 10^{12} Ohms
Frequency Response	100 kHz (1 to 100K Ohm load)
Measurement Accuracy	21 Bit A/D (full mains rejection)
Measurement Resolution	1 µV ± 0.0015% non-linearity
Potentiodynamic Sweep Rate	200 mV / Second
Zero Resistance Ammeter	
Current Range	10 pA to 600 mA
Counter Resistors	1, 10, 100, 1 kΩ, 10 kΩ, 100 kΩ, 1 MΩ, 10 MΩ
Input Offset Voltage	Less than 10 mV
Galvanostat	
Current Output	±10 pA to 600 mA
Potential Resolution	1 µV ± 0.0015% non-linearity
Frequency Response Analyser	
Frequency Range	10 µHz to 100 kHz
Amplitude	1 to 232 mV
Impedance Error	< 2% for 1 to 100 kΩ loads
Theta Error	< 1° for 1 to 100 kΩ loads
Averaging	Configurable adaptive averaging
Sample Rate	1 MHz (true continuous sample rate)
ADC	12 bit
DAC	12 bit
Operational Temperature	-5 °C to 72 °C
Calibrated Temperature	25 °C

Requirements

Operating System - Windows XP, Vista, 7 or 8.

Minimum PC Requirements – Any PC capable of running Microsoft Windows with a free USB or RS232 port.

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