

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 utilizes all aspects of the instrument for both automated and manual operation via a computer mouse. 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 10pA to 0.33 Amps. Indeed, if the standard Gill AC is supplied and within four weeks it is realized that one of the options should have been specified, like High Power, Fast Sweep Generator or additional Sequential Channels, then the Gill AC can be traded in at full value for a higher specification instrument.



Gill AC Standard Features

Capabilities - internal Potentiostat, Zero Resistance Ammeter, Frequency Response Analyser and Galvanostat (extra software required for Galvanostat).

Software - functions with any Standard PC using Windows 95, 98, ME, NT4, 2000 or XP (we recommend XP for improved reliability). A complete suite of standard AC and DC techniques is supplied with the popular Sequencer.

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. Standard included techniques 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, Australian or bare as appropriate). Serial RS-232 cable (2m) and USB adaptor cable for connection to a standard PC.

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 thermally induced offsets.

Expandability - 32x Gill AC's can be operated from the same PC, all in parallel!

Manuals - A full manual is included along with the installation CD.

Warranty - 2 years return to base, can be extended to 5 years.

Channels - Single channel.

Options

Channels - The best way is to simply use more Gill AC's. Up to 32 or more Gill AC's 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 4 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 allows 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.

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

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 - 600 Volts or 1000 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 >45 Volts is available with a controlled voltage of +/- 35V 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 rebars.

Critical Pitting Temperature - determination of local corrosion critical temperature.

Electrical Resistance - precision measurement of ER probes.

Serial Cards - fit inside a standard PC providing 4 or 8 extra ports.

Warranty - extendable to 5 years.

Included Accessories



Install CD



Manual (on CD)



Serial Cable



Electrode Cables



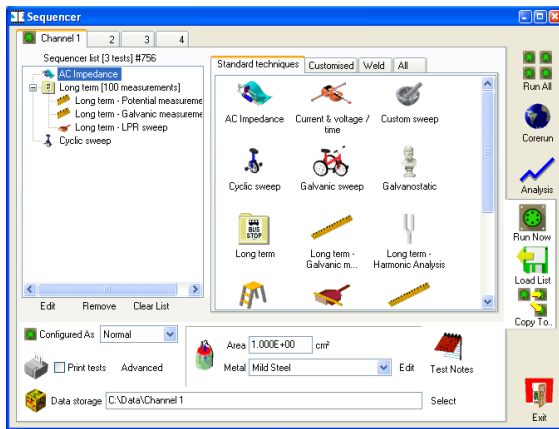
Mains Cable



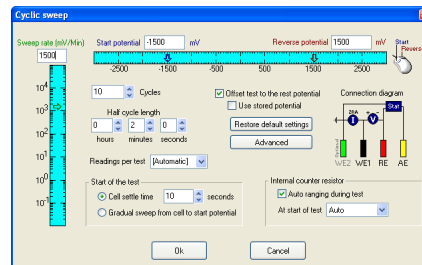
USB Adaptor

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. The Sequencer compiles 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.

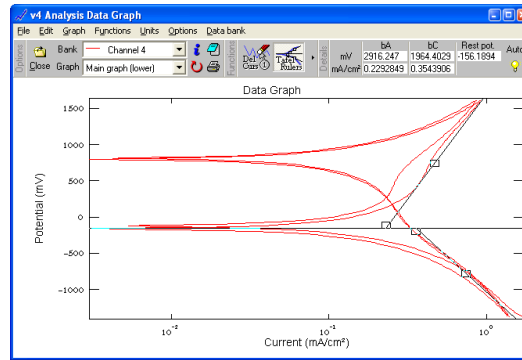


Typical technique setup page, shown is **Cyclic Sweep**. Each page smartly remembers last settings, keeping overall setup time to a minimum. Each page displays a connection diagram, displaying which parts of the instrument are in use, and which electrodes should be connected.

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. Onto 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	340mm x 260mm x 130mm
Power Supply	110 / 230 VAC 50-60Hz
Weight	3.8Kg
Electrode Cable Length	1.2 Meters (can be increased)
Noise & Ripple	Less than 3µV
Potentiostat	
Compliance Voltage	± 15 V
Sweep Range	± 3 V (can be increased)
Sweep Resolution	25 µV
Current Output	± 500 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 μ V \pm 0.0015% non-linearity
Potentiodynamic Sweep Rate	200 mV / Second
Zero Resistance Ammeter	
Current Range	10 pA to 500 mA (Eight Ranges)
Counter Resistors	1, 10, 100, 1K, 10K, 100K, 1M, 10M Ω
Input Offset Voltage	Less than 10 μ V
Galvanostat	
Current Output	\pm 10 pA to 500 mA
Potential Resolution	1 μ V \pm 0.0015% non-linearity
Frequency Response Analyser	
Frequency Range	10 μ Hz to 100 KHz
Amplitude	1 to 232 mV
Impedance Error	< 2% for 1 to 100K Ohm Loads
Theta Error	< 1 $^{\circ}$ for 1 to 100K Ohm Loads
Averaging	Configurable adaptive averaging
Sample Rate	1 MHz (true continuous sample rate)
ADC	12 Bit
DAC	12 Bit
Operational Temperature	
	-5 $^{\circ}$ C to 72 $^{\circ}$ C
Calibrated Temperature	
	25 $^{\circ}$ C

Requirements

Operating System - Windows 95, 98, ME, NT4, 2000 or XP (we recommend XP for improved reliability).

Minimum PC Requirements – Standard PC with free RS-232 or USB port, Pentium 100, 64MB RAM (dependant on operating system), 40MB free disc space, CD-ROM drive



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