

An Introduction to the Wiard 300 Series Modular

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The Wiard 300 Series Modular system provides a very rich palette for sound design and live performance. These pages provide an introduction to understanding the Wiard 300 Series Modular architecture and to unlock its tremendous potential.

Document Use. The material in this “loose leaf” document set is designed to enable the reader to rapidly become acquainted with the Wiard 300 Series Modular Synthesizer. Content is divided into four document sets:

- Introduction to the Series 300 Modular, in essence this document, which enables the reader to become knowledgeable of the 300 Series design philosophy, sound architecture, and its standards.
- Individual module information, composed of eight documents (one per module) of four pages each, designed as convenient at-a-glance cheat sheets:

Page	Content
1	Functionality of the LEDs/knobs/jacks; Module functionality matrix
2	First and second order unit diagrams
3	Intra-module patching examples, including a <i>Hello World</i> patch to get started
4	Brief module description

- Synthesis archetypes and sound programming, composed of page sets per synthesis archetype, covering archetype implementation through first and second order unit interconnection, archetype performance control, and example patches (availability TBD).
- Appendix sections introduced as necessary to cover specific topics (availability TBD).

Documents have been divided this way to enable the reader to get the required information in the most expedient format.

Document Overview. This document provides, as a fundamental first step, an understanding of the design philosophy behind the 300 Series Modular.

It is followed by a brief discussion of the sound architecture and its organization. These are the “primitive” building blocks available – so-to-speak – for constructing interesting sounds, poly-rhythms and textures.

Lastly, module-specific pages discussing front panel functionality, connections and sound creation are available for each module in the 300 series family.

These pages are not meant to be used as a replacement for a good treatise on electronic music theory, as it assumes that the reader is already familiar with analog modular synthesizers and synthesis theory in general.

Design Philosophy. The Wiard 300 Series Modular was designed to meet the following objectives:

- Programmability. To create a synthesis architecture that through the combination of modules (and their components) is capable of recreating most, if not all, synthesizer architectures deployed today. The result is an architecture with two degrees of programming capability: synthesis archetypes, and sound programming per archetype.
- Unique Voicing. To enable each module to become a stand-alone voice in its own right. Each module can be treated as a mini-synthesizer with its own unique voice and its own unique characteristics.
- Performance. To enable each module to produce usable sounds with little or no patching for live performance. It is feasible to obtain useful sounds from a module without performing extensive patching within or with other companion modules.
- Expansion. To allow individual modules to work as stand-alone synthesizer expanders when added to other manufacturer equipment. Example: a Waveform City complementing an ARP 2600 to enable wave table synthesis. The 300 Series modules complement classic instruments by adding functionality developed after their production. The modules also provide so called “West Coast” functionality to complement traditional “East Coast” instruments (such as Vactrol-based VCAs and filters, enhancing an ARP 2600).
- Integration of Art and Science. To create an instrument that combines color and design with state-of-the-art sound generation analog technology. Thus the color blue and fascia graphics interspersed with the jacks and knobs.

Architecture. The Wiard 300 Series philosophy is reflected in the sound synthesis architecture as follows:

- Module Design Standards. All 300 Series modules follow the same front fascia organization. A module is generally divided into three areas: a (top) LED section, mid control section (knobs and switches), and bottom input/output jack section.

LEDs. There are 8 LEDs organized in a single row at the top of each module, designed to provide visual status of module activity. LED colors are assigned specific meanings:

Color	Meaning
Red	Fixed/stepped activity, overload, stage
Blue	Filter activity
Green	VU metering, wave indicator
Orange	Nominal 0db signal, bank indicator
Yellow	Envelope activity
White	LFO activity

Knobs. The knob section consists of ten Davies 1900-H knobs organized into two rows of five, with two additional multi-function positions for switches, knobs, or jacks.

I/O. The I/O jack section consists of 20 input/output 3.5 mm jacks organized into 5 rows of 4 jacks.

Labels. Jacks are trailed by triangles (">" or "<", output or input respectively) denoting the I/O function of the jack. Neutral jacks such as those found in multiples are not marked with I/O triangles due to their dual I/O nature. Normalized jacks (pre-arranged connections between jacks behind the front panels) are indicated by white lines going to and from the normalized jacks.

Cords. Patch cords are 3.5 mm mono cables.

Calibration. Trim pots for accurate calibration can be found on the circuit boards of selected modules.

- **Module Organization.** A 300 Series module will have one or two identical circuits performing the advertised module function. Each circuit is composed of one or more "logical" units. Examples of units are oscillators, lag processors, attenuators, wave shapers, etc.

Module panel graphics do not show the presence or the organization of these units within a module circuit. While the front panel design has drawn mild criticism for this omission, it represents a functional trade-off between having an informative panel and eliminating excessive label clutter. Once a circuit is understood, the panel labels become quite efficient.

- **Module Voices.** Most 300 Series modules can perform as stand-alone synthesizers/voices, their capabilities determined by circuit's units and their inter-relationships. There are two types of paths enabling a module's voice:

Normalized Paths. Pre-patched paths (behind the panel) between I/O unit jacks. These connections are made within the same module. The normalized path is broken if a 3.5 mm patch cord is inserted in one of the normalized jacks. Normalized paths are marked on the front panel of the module by lines between the linked I/O jacks.

Patched Paths. The linking of units by using 3.5 mm patch cords to connect the I/O unit jacks together.

- **Synthesis Archetypes.** The intra- and inter-module units can be combined to create synthesis archetypes. It is possible to re-create existing synthesis architectures, mutations, or brand new ones using this method. As an example, the Wiard

Series 300 allows the emulation of a Moog Minimooog or a Buchla Music Easel architecture and its sound characteristics. This is the first degree of programming freedom that the 300 Series architecture offers.

- **Sound Programming.** The synthesis archetypes enable the production of sound classes, enabling the creation of patch replicas (if emulating an existing synthesizer) or derivations of new and old sounds. This is the second degree of programming freedom that the 300 Series architecture provides.

Module Physical Specifications. There are 8 different modules in the Wiard 300 Series family:

Model	Name
GR-321	Sequantizer
GR-331	Envelator
GR-341	Classic VCO
GR-342	Waveform City
GR-351	Omni Filter
GR-352	Borg Filters
GR-361	Mixolator
GR-371	Woggle Bug

These modules share a common physical specification:

- Signal inputs are >50K nominal impedance and accept +/-10 volt (+20 dbv) inputs.
- Signal outputs are <1K nominal impedance and supply +/-5V (+10 dbv) audio outputs and 10V control voltage outputs.
- Module Face panel: 2.83"(1/6 of 17") x 10.5"(6U) x 0.100" AL blue anodized with white silkscreen.
- Patch connectors are 3.5mm normally closed mini-jacks arranged as a 4x5 (20) matrix on 5/8" centers.
- The 3.5mm jack unit is a PC sub-assembly with DIP jumpers to the main assembly.
- Modules can be firm-wired together by means of back panel jumpers, lot's of holes..
- Another sub assembly provides a carrier for indicator LED's.
- Uses standard +/- 15 volt linear supplies. Other internal voltages derived from onboard regulators.
- Power is supplied via rear mounted 5 pin DIN connector (uses standard DIN cables) non-MIDI terminal assignments are used.
- This system automatically provides star power and ground distribution, which reduces cross-talk between modules.
- Modules will stand alone on desktop, no exposed main PC board (Jack Board and LED board are exposed).
- Potentiometers are inside of enclosure, reduces problems with contamination.
- Signal to Noise Ratio: 100%