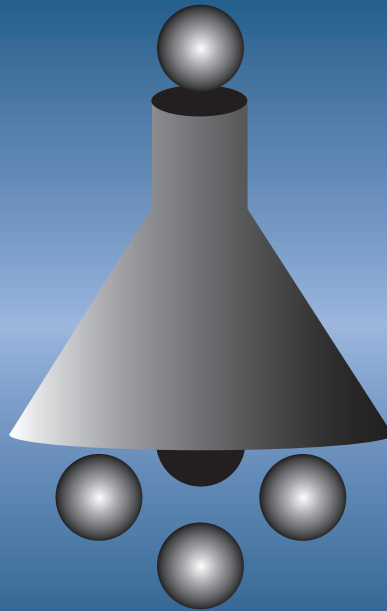


Genesys



The Standard Bearer
In Format Design Tools.



FORMAT DESIGN

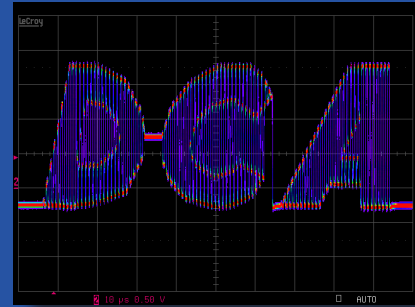
Representing an entirely new concept for signal processors, Genesys is the recognized leader in research and development for signals of magnetic and optical disc formats.

Genesys 1

The original Genesys system has been used in the development of DVD, HD DVD, HD recordables, BD recordables, HD VMD and UDO formats, among many others.

Formats can be easily laid out using the **Design File Sequencer**, an application for the ordering of Image File Sets for the Genesys Signal Generator. Sequencer does not have actual knowledge of any particular format being created, but instead serves the vital role of sequencing and monitoring all the various tasks that you, as the format designer, have deemed important. The output from Sequencer is an Image File Set, which is the only input accepted by the Genesys Signal Generator. DCA also includes sample templates with Sequencer. These sample templates consist of the basic elements required for ATIP (CD-R) and DVD. Sequencer provides the necessary framework to bring your new technology to the marketplace and serves as a valuable addition to the Genesys platform.

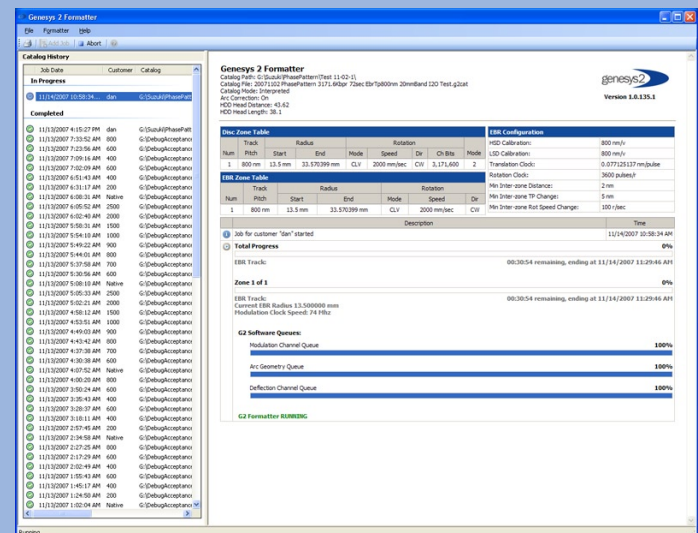
The **Genesys Signal Generator** can be integrated with either single or dual beam Laser Beam Recorders as well as advanced E-Beam Recorders. The hardware platform can be configured to support up to four channels between two beams, with industry leading signal quality.



Actual signal produced from Genesys 1

Genesys 1 B1A Hardware Capabilities:

Channels	Up to 4 channels
Beams Available	Up to 4 channels
Beam Modulation	Low: -1.5V to 1.5V in approximately 3mV steps High: 0v to 4.0V in approximately 5mV steps. Trise and Tfall <1ns per volt (rise or fall)
Beam Deflection	0 to 1.5V pp without modulation 0 to 3.0V pp with modulation
LBR Motor Tachometer Outputs	Can drive LBRs with the following Pulse Per Rotation: 250, 360, 525, 1024, 1600, 2000, 2048, 3200, 4000, 4096.
LBR Motor Tachometer Voltage	Standard TTL output
Pulse Per Rotation Voltage from LBR	Standard TTL Levels (Low < 0.8V; High > 2.0V)
Modulation Frequency	Up to 100 MHz
Rotation Speed	From 2.5 rps to 80 rps
5Mhz Carrier Amplitude	0 to 1.5Vpp (maximum limited to 1x Deflection Vpp)



G2 Formatter Interface

Genesys 2

Genesys 2 was developed as the next step in research and development signal formatters for magnetic, holographic and optical disc formats. It was designed to be able to drive traditional Laser Beam Recorders and newer systems such as Phase Transition Recorders and Electron Beam Recorders with four main components:

- DDL File – contains a language to describe the image, pattern or format to be created.
- G2 Designer – used to create the DDL file and export it to a Binary file set
- Binary File Set – contains the synchronized patterns for the formatter
- G2 Formatter – reads the Binary file set and sends the appropriate signals to the recorder.

Genesys 2 was conceived based on a programmable design language, known as **Disc Description Language (DDL)**. The language uses a building block approach where basic modulation patterns can be defined and then more complex patterns can be defined based on the basic patterns. The design philosophy behind DDL allows for sectors to be built from complex pattern definitions, rotations to be built from sectors, tracks to be built from rotations and zones to be built from tracks.

DDL may be used in two operating environments:

1. Interpreted Mode – In this case, the DDL file is converted to an intermediate catalog file, which can be immediately cut with the G2 Formatter. However, cutting speed may be limited depending upon the complexity of the DDL file.

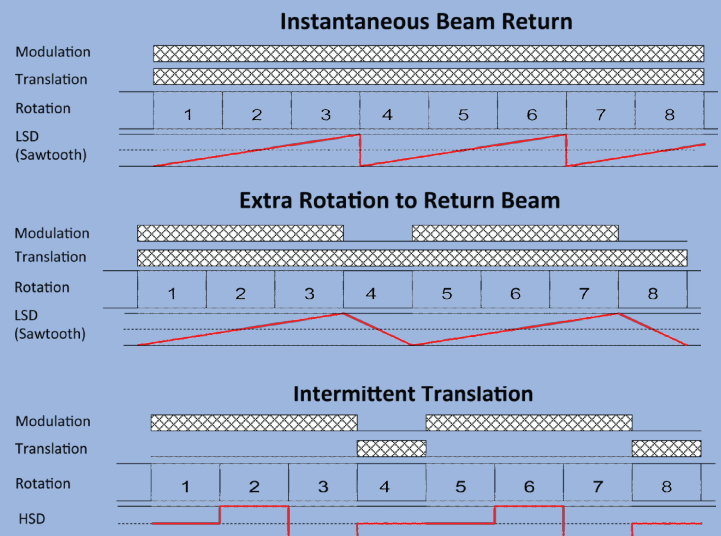
2. Compiled Mode – With this mode, the DDL is compiled into a binary file set. While the binary file set consumes a large amount of disc space and takes time to compile, this mode does allow the recording to move as fast as possible.

The **G2 Designer** software provides a simple to use platform for creation and modification of the DDL files. From Designer, the user can choose to prepare the DDL for mastering in either interpreted or compiled mode.

The **G2 Formatter** application and Raptor hardware allow for several features, including:

- Modulation
- High Speed Deflection
- Rotation and Translation control
- Sawtooth Deflection
- Arc Correction
- Complex Track Formation

Genesys 2 capabilities include complex track formation including building a format track using multiple passes with each pass containing either the same or different modulation/deflection content. It also includes the ability to overexpose rotations to create complex exposures on the media.



G2 Raptor hardware includes the following outputs:

Signal	Frequency	Jitter	Voltage
Beam Modulation	1-125 MHz	<100 ps	LVDS SE 0-1V, 50 ohm
Modulation Clock	1-125 MHz	< 100 ps	LVDS
Rotation Clock	600 Hz-45.26 MHz	<100 ps	LVDS
Translation Clock	16 Hz-13 KHz	<1 ns	LVDS
Sawtooth Deflection	4096 Samples per rotation		2V pp, 50 ohm
High Speed Deflection	1-125 MHz		0-1V, 50 ohm
Start			TTL
End			TTL, 10 Kohm
Angle Origin	1 pulse per rotation		LVDS
Angle Sector	Configurable during rotation		TTL, 10 Kohm

This is it. The ultimate format research tool. A completely customizable reference signal processor with easy to use design applications and available format expertise. Work through all your 'What If?' scenarios without all the 'Why Wait?' time.

Traditional signal processors are restricted to generating signals for mastering of defined formats or patterns for a set recording machine. Development for new or future formats has thereby been limited by the traditional signal processor's shortcomings:

1. lack of flexibility and capability to generate the signals required to test and prove new formats, and
2. inability to drive recording on machines other than the original intended recorder.

Genesys is available in two configurations, with the original Genesys being developed specifically around optical media, while Genesys 2 was designed with magnetic, holographic and optical media in mind. Each system includes formatter hardware as well as design tools for control of behavior of the Genesys system.

Since its' inception in 1999, the **Genesys** reference signal processor system has been designed to assist format creators, designer and engineers in answering important questions such as:

- How do I increase the density or change the properties of an optical disc format?
- How can I keep a new high density formatter up to the latest revision while the specifications are still being finalized?
- What parameters affect my optical disc manufacturing process margins and how do I control them?
- How can I create complex patterns in a very small feature size without sacrificing development of the final feature?
- Can I increase stability of my recorder by changing the way patterns are recorded?

Getting Started with Format Design

Reference Templates - including all necessary elements for Genesys to produce a format, may be purchased from DCA. Buying a reference template means you can avoid having to write code for every step of a format, allowing you to work on only the relevant aspects of the design.

Training - DCA can also train your engineers to write or tweak their own templates. Our in-house expertise on format creation, design and adaptation can prepare your engineers to move quickly from pattern ideas to design to implementation.

Custom Programming - Of course, DCA can provide custom programming for Sequencer and Designer based on your own specification.



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