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GEN Series Mainframes and Options

Specifications

GEN SERIES MAINFRAMES AND OPTIONS

Introduction

The GEN series Data Acquisition System is one of the most sophisticated and powerful systems in the marketplace and demonstrates the quality HBM has to offer. The GEN series is "future-proof", modular and easily extendable. Depending on your type of application and requirements you can select between two mainframe models:

- The 7-slot "Tower" mainframe, best suited for smaller channel-count applications and easy to be transported.
- The 16-slot "Rack" mainframe, an excellent choise for higher channel-count test systems. Designed for rack mounting and stand-alone operation as well.

Using the GEN series Master/Slave option, multiple mainframes can be interconnected to provide a synchronized multi-mainframe test system with hundreds of channels.

All technical specifications except mechanics, power requirements and number of module slots are identical for both mainframe models.



The GEN series mainframes provide global functionality for high speed, high accuracy and versatile data acquisition modules.

Physical/Environmental

Dimensions (WxDxH)

Tower	250 x 430 x 490 mm (9.8" x 16.9" x 19.3")
Rack	483 x 501 x 412 mm (19.0" x 19.7 x 16.2") Depth including handles of size 43 mm (1.7")

Weight

Tower	10 - 18 kg (22 - 40 lb)
Rack	20 - 36 kg (44 - 79 lb)

Power

Tower	85 - 264 Vac, 450 VA max.
Rack	100 - 240 Vac, 1200 VA max.

Operating temperature

Tower	5 to 35 °C (41 to 75 °F)
Rack	0 to 40 °C (32 to 104 °F)

Shock and Vibration

Vibration	according to IEC 68-2-6
Operational	3-axis, sine sweep 5-500 Hz, 0.15 mm p-p or 1 g, 10 ct/min, >1 h test time
Non-Operational	3-axis, sine sweep 5-500 Hz, 0.30 mm p-p or 2 g, 10 ct/min, >2 h test time
Shock	according to IEC 68-2-27
Operational	3-axis (+/-), 10 g half sine, 11 ms, 1000 bumps each direction
Non-Operational	3-axis (+/-), 25 g half sine, 6 ms, 3 bumps in each direction

Functionality

Capacity

Tower	7 slots for acquisition modules + 1 slot for master/slave option
Rack	16 slots for acquisition modules or master/ slave option

Expansion

Slots	1 slot for either IRIG, IRIG/ GPS or SCSI interface.

Communication and control

Interface	1 Gigabit/s Ethernet, Cat 5e UTP
Transfer speed	6.4 MegaSample/s typical (12.8 MB/s) direct-to-PC transfer speed for streaming mode acquisitions; High speed streaming option available



The Master / Slave board enables true sample synchronization between up to nine mainframes.

I/O

Alarm out	TTL, level active
Trigger in	TTL, 50 ns resolution, minimum pulse width of 500 ns
Trigger out	TTL, edge active, pulse width of 10 µs or recording duration
Timebase in	TTL

Timebase

The GEN series mainframes provide a central timebase for all acquisition modules.

Accuracy	< 30 ppm (for internal sources)
Base	Binary, Decimal or External
External	up to 500 kS/s or 1 MS/s pending from input modules (5 MS/s as special); programmable divider per module

Synchronization

Trigger	Internal trigger bus for AND/OR combinations of trigger sources
Mainframes	With optional master/slave boards synchronization between multiple mainframes

Local control

Display	2 lines of 20 characters for information and status
Control	Network and system setup
Status	Timebase synch source
Warnings	Ethernet/Disk/Software version conflicts

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SCSI Interface board

The SCSI option provides expansion and flexibility allowing customers to add a wide range of external SCSI hard drives for local storage of recordings.

Typical applications include:

- Automatic backup during critical tests.
- Improvement of aggregate acquisition speed in multi-mainframe configurations.

SCSI Interface

Type	16-bit Ultra320 SCSI
Connector	68-pin VHDCI
Speed	pending from SCSI drive: 8 to 10 MS/s typical to single drive (16 to 20 MB/s); 25 to 30 MS/s typical to SCSI RAID (50 to 60 MB/s)



Scalability	using multiple mainframes with a SCSI interface each, upscaling of throughput is possible up to 180 MB/s total with single SCSI drives or up to 540 MB/s total with SCSI RAID

IRIG and IRIG/GPS boards

The IRIG boards provide precise time and frequency reference to the GEN series data acquisition system. Time is acquired from either the GPS satellites using an antenna/ receiver (IRIG/GPS model only) or from time code signals, typical IRIG B.

Time Code translation

Formats	IRIG A, IRIG B, AM modulated or DC Level Shift (DCLS)
Accuracy	‹ 5 µs (modulated) ‹ 1 µs (DCLS)
Compliance	to IEEE 1344 when bits are present

Functions

Event capture	Start of recording
Oscillator	GEN series sample rate is locked to the disciplined oscillator
Stability	5.0 E-8 short term 'tracking' 5.0 E-7 per day long term 'flywheeling'

Connector types

GPS	9-pin micro DP
Time Code In	SMB socket
Time Code Out	SMB socket (IRIG B)
Module I/O	15-pin micro 'DP' - not for external use

GPS Subsystem (IRIG/GPS model only)

Accuracy	‹ 1 µs
Synch time	Pending from number of satellites visible and weather conditions; up to 45 minutes



High Speed Ethernet option

The GEN series high speed Ethernet option provides additional transfer speed for streaming mode acquisitions through the Ethernet connection to your PC. In typical situations transfer will be twice as fast compared to the standard transfer rate.

This option requires no slot and can be combined with one of the other options.

High Speed Ethernet transfer rate

Typical	15 MegaSample per second (30 MB/s) through a 1 Gb Ethernet with dedicated PC and *Perception* software.
Maximum	25 MegaSample per second (50 MB/s) through a 1 Gb Ethernet with dedicated PC and *Perception* software (no meters, no displays, no windows swap file).

Master / Slave board

The Master/Slave interface board offers synchronization of up to eight slaves to one master. Absolute timing, Trigger, and Start /Stop of the recording are automatically distributed between up to nine mainframes using fiber optic cables to avoid grounding problems or noise/RFI issues.

Master Slave interface

Location	Uses dedicated slot in “Tower”, or leftmost of 16 standard slots in “Rack”mainframe
Number of mainframes	One master, one to eight slaves; a Master/Slave board is required in the Master and every Slave
Connection type	Fiber optical digital link to avoid ground problems and to eliminate noise or RFI issues
Connection cable	Multimode 50/125, LC connectors on both sides; 3 m cable supplied with each board
Distance	up to 300 m between Master and each Slave (“star” connection); automatic cable length compensation
Accuracy	‹ 100 ns
Functionality	Synchronized sampling; Synchronized start/ stop recording; Synchronized trigger

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