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Instrument Mainframe 8000C

**CompactPCI chassis for CompactPCI/PXI
CompuScope cards**



Shown with 7x CS1610C digitizers and MXI-3 card.
(Digitizers not included with IMF8000C.)

Instrument mainframe designed for test systems and synthetic instrumentation using CompactPCI/PXI digitizers and digital capture cards from Gage

FEATURES

- 7 slot capability
- Redundant card retainers
- High quality, 550 Watt power supply
- 217 CFM forced air cooling
- 19" rackmount option
- Qualified cPCI backplane
- Seamless extension of PC's PCI bus



INSTRUMENT MAINFRAME 8000C

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POWER SUPPLY

It is no secret that the integrity of any instrument depends heavily on the quality of the power supply built into the instrument. While most CompuScope cards are designed to have a relatively high Power Supply Rejection Ratio (PSRR) for band-limited noise, it is always better not to inject this noise in the first place. A high-quality, low-noise power supply is used to power the Instrument Mainframe 8000C, which allows instruments such as CompuScope cards to deliver a signal to noise ratio in excess of 60 dB.

FORCED AIR COOLING

Electronic circuits are designed to operate within a certain operating temperature range. If the ambient temperature exceeds this range, analog amplifiers can start to exhibit non-linear behavior which can lead to reduced accuracy, higher signal distortion and, in the worst case, malfunction.

In order to provide clean data conversion from analog to digital, most CompuScope cards contain high-power analog amplifiers and data converters which can create a heat pocket within the enclosure unless proper measures are taken to control the temperature.

One of the best known ways of controlling the ambient temperature around an electronic circuit is through forced air convection. Air from outside the chassis is sucked into the chassis, blown over the heat generating components and then exited. With sufficient air convection, ambient temperature can be controlled.

The Instrument Mainframe 8000C features at least 217 Cubic Feet per Minute (CFM) of forced air flow, which is sufficient to dissipate heat from as many as 7 CompuScope cards plugged into the mainframe. These fans also operate at 34 dB or less, making the complete system very quiet.

SEAMLESS EXTENSION OF DESKTOP COMPUTER'S PCI BUS

The Instrument Mainframe 8000C feels and acts in every way as an extension of your PC. Users can expand their existing test, measurement, data acquisition, and automated test systems with additional CompuScope CompactPCI/PXI digitizers in order to conduct their multi-channel experiments.

All CompuScope cards are addressed and operated exactly as if they were in your host PC. This means that you have no extra drivers to install, no extra software to run, and that your Instrument Mainframe capabilities are enhanced with each upgrade of your PC, at no additional cost.

QUALIFIED CPCI BACKPLANE

The Instrument Mainframe 8000C includes a CompactPCI backplane which has already been qualified by Gage engineers for compliance to specifications, compatibility with CompuScope cards, and even for sustained data throughput from PCI card to host memory. Sustained throughput measurements are almost never made by manufacturers of CompactPCI/PXI chassis. The specification most often touted by these vendors is 132 MB/s, which is the data transfer speed for a burst of less than 1 KB. Any PCI bus device which wants to DMA data to or from another device, such as host memory, must:

- ask the bus arbiter for becoming a bus master
- become a bus master
- do the 1 KB transfer
- give up the bus back to the arbiter
- repeat the sequence until DMA is completed

For sustained throughput measurements, the time taken for all these tasks must be taken into account. As such, 132 MB/s is an impossible number for sustained bus transfer speed. Gage provides a measured data throughput specification with each Instrument Mainframe 8000C. Typically, the throughput number exceeds 80 MB/s.

CONNECTION TO HOST PC

The prime use scenario for the Instrument Mainframe 8000C is as an extension of a PC-based test system. At the heart of such a system would be a host bridge card (see the MXI-3 option). Such a configuration uses PCI to CompactPCI/PXI bridging technology and allows the connection of the Instrument Mainframe 8000C to an existing PC, adding more devices than a single PCI bus can support.

In order to provide the most robust system, the Instrument Mainframe 8000C can be equipped with the performance-proven, third party COTS architecture and hardware of choice for such applications: the well-known MXI-3 standard. Users only need to install the host bridge card in the host PC, install the host bridge card driver, and then the relevant drivers of the cPCI/PXI modules. The result is a seamless extension of your PC or PC-based test system to make full use of the powerful Gage CompuScope digitizers.

RUGGEDIZED CHASSIS

The Instrument Mainframe 8000C is a desktop unit featuring a robust card cage. The aluminum, die-cast frame front and rear, combined with depth aluminum extrusions, form a self-supporting frame to which the top and bottom covers are mounted. The sides consist of two aluminum extrusions with central steel panels with plastic shell handles. Covers and rear panel are steel.

TEMPERATURE MONITORING

The Instrument Mainframe 8000C features an innovative sensor to assess operating conditions near the instrument modules. The sensor constantly monitors the temperature inside the chassis and triggers an audible alarm when safe operating conditions are exceeded. The alarm shuts off automatically when the interior temperature drops back below 110°F. This device is designed to warn users of the possible malfunctioning of cooling fans so that actions may be taken before critical components are damaged.

OPERATING SYSTEMS

The Instrument Mainframe 8000C can be used with the most important commercial operating systems: Windows 98, NT, 2000, ME and XP.

PHYSICAL CHASSIS

Height: 11.2 inches
 Width: 20.5 inches
 Depth: 11.8 inches
 Weight: 25 lbs
 Number of Usable Slots: 7
 Rack Mounting: Optional 19-inch
 Cooling: 217 CFM (Cubic Feet per Minute) forced air flow by three fans:
 Bottom, intake, rear exhaust.
 Constant temperature monitoring via Thermistor Standards: Mounting dimensions comply with IEC 60297-2
 Protection degree against penetration of foreign bodies IP 20 (EIC 60529)
 EN 60529/DIN VDE 0470 Part 1

ELECTRICAL CHARACTERISTICS

AC Input Voltage: 110/220V, front access
 AC Frequency: 47 ~ 63 Hz
 Power Switch: On/off (front access)
 Input Power:
 With Select Switch: 95 ~ 132 VAC or 190 ~ 264 AC
 With Active PFC: 88 ~ 264 VAC
 Maximum Power Consumption: 50 W
 Fan Speed Controller: Fan Speed Control Switch for Auto, Middle, and Low. Aux Fans Control for Chassis

BACKPLANE

PICMG 2.0 R2.1
 32-bit PCI Transfer, 5V
 8-slot total width (7 usable slots for instruments/modules)
 Nominal thickness: 5,6mm
 Impedance: 65 Ohms +/- 10%

RELIABILITY

MTBF to MIL-HDBK-217F: minimum 50,000 hours

ENVIRONMENTAL

Safety: UL60950 and CSA C22.2 No. 60950 (pending)
 EMC Immunity: Complies with EN55024
 EMC Emission: Complies with FCC Class A. Part 15, EN55022 Class B

MXI-3 (PCI TO PXI) KIT (OPTIONAL)

MXI-3 Kit from National Instruments, consisting of:
 Host PC card
 cPCI/PXI 3U interface
 3m copper cable
 Drivers

CONTROLLER KIT (OPTIONAL)

Kit Contains: Intel Celeron 850 MHz / Pentium III
 850 MHz CPU module
 Hard drive
 Floppy drive
 CD-ROM
 Operating System: Windows 2000

MATERIALS SUPPLIED

Instrument Mainframe 8000C Chassis
 Technical Note

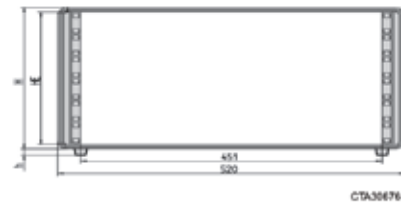
WARRANTY

One-year parts and labor.

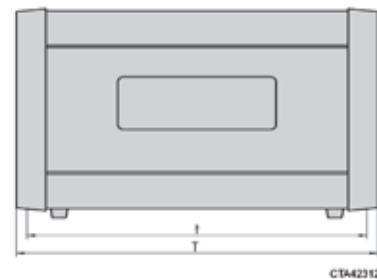
Please note: Mainframe specifications are subject to change without notice.

Dimensions

Front view



Side view



Mounting depth d = D-24

Height	H in mm	h in mm	D in mm
6 U	286	13	300, 400, 500, 600
7 U	331		
9 U	420		



ORDERING INFORMATION

Mainframe 8000C 400-800-101

Options

IM8000C: MXI-3 (PCI to PXI) Kit	400-800-203
IM8000C: Controller Kit	400-800-204
IM8000C: Rackmount Slides	400-800-205

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