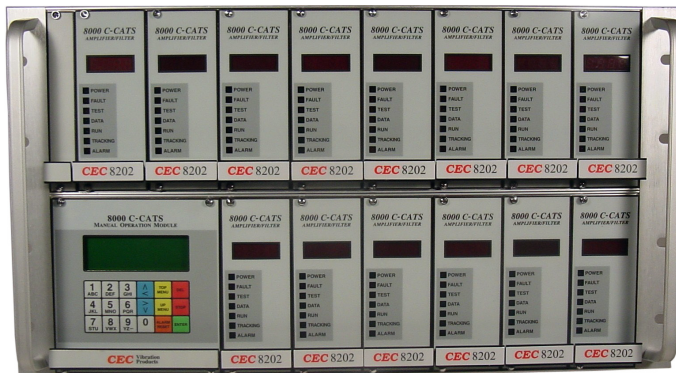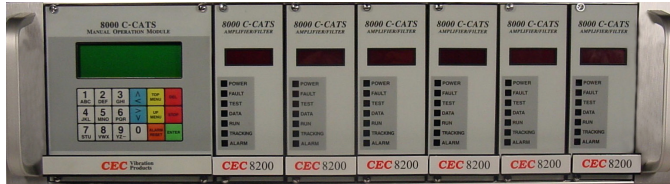# C-CATS 8000

Computer-Controlled Amplifier Tracking System

Applications

- **Engine test cell monitoring**
- **Testing of generators, pumps, compressors, turbo-expanders and other rotating equipment**
- **R&D lab analysis and testing**
- **Continuous on-line monitoring of rotating equipment**

Features

- **Programmable filtering, including tracking, sweep and *balance mode operations**
- **Up to 14 independent input channels**
- **Up to 4 tachometer inputs available to all channels**
- **Shared sensor routing**

  ***Optional**

Description

The modular programmable CEC 8000 Computer-Controlled Amplifier/ Tracking System (C-CATS) offers more power and greater flexibility than ever. It provides continuous online vibration monitoring of rotating equipment for industrial manufacturing engine test cells and other environments requiring precision machine monitoring.

The CEC 8000 is the only system of its type to offer an optional Manual Operation Module (M.O.M.), which allows the user to set up, perform and store specific tests for immediate recall, without the aid of a PC.

Each 8000 amplifier module combines fully selectable transducer, tachometer and filter settings with a complete range of AC, DC and proportional outputs for unparalleled accuracy and resolution. An 8000 system contains 1 to 14 independent signal amplifiers installed in a 3U or 6U 19-inch chassis mount enclosure. Each amplifier offers two fully programmable alarms using independent SPST relays.

The 8000 C-CATS extends CEC's 60-year tradition of excellence to a new generation of vibration monitoring instrumentation incorporating the latest proven modular technology for today's most advanced analysis and testing installations.

C-CATS 8000 Computer Controlled Amplifier Tracking System

Performance Specifications

Inputs

Transducers

A transducer type is selected through the computer interface. The standard C-CATS provides the following transducer input selections.

Accelerometers:	Differential or single-ended for sensitivities of 1 to 110 pC/g.
Velocity Coil:	Differential input for sensitivities of 6 to 1100 mV/ips. Input resistance 10 k ohms. Max peak input 10 V peak.
ICP (constant current):	Single-ended input for sensitivities of 6 to 1100 mV. Constant current 6.0 mA @ 24 VDC provided. Input Resistance 100 k ohms min. Max input 10 V peak.
Millivolt:	Single-ended input for sensitivities of 6 to 1100 mV; input resistance 100 k ohms min. Max input 10 V peak. 20-24 VDC @ 50 mA provided to power remote charge converters.

Calibration

Single-ended sinusoidal. Input resistance 100 k ohms min. Max input 10 V peak.

Tachometers (Optional)

Four tachometer inputs per system max. 1 V peak min, (0.5 V, pk optional) 100 V peak max. Frequency from 10 Hz to 25 kHz. Input impedance 100 k ohms min. Tachometer ratios are user-programmable from 0.01 to 999.9999.

Filters

Fixed

High-pass cutoff 5 Hz to 25 kHz, Low-pass cutoff 50 Hz to 25 kHz, user-selectable. Select 1 each low-pass and high-pass cutoff within the same table (32 kHz sampling rate or 192 kHz sampling rate) to form a band pass filter. Pass band ripple less than 0.2 dB. 8th order inverse Chebyshev response. Attentuation greater than 60 dB/octave.

Variable

Variable frequency digital FIR multi-rate band pass filter. Center frequency operation from 5 Hz to 5 kHz. Bandwidths from 2 Hz to 100 Hz, 1 Hz increments. 32 kHz sampling rate. Pass band ripple less than 0.2 dB. Attentuation greater than 60 dB/octave. Four possible modes: Variable, Tracking, Sweep and optional Balance.

General

Electrical

AC Voltage Range	85 - 265 VAC universal input
AC Freq. Range	47- 63 Hz
Power	
3U Chassis	100 Watts Max.
6U Chassis	150 Watts Max.

Environmental

Temperature	
Operating:	+35°F to +158°F (0°C to +70°C)
Storage:	-67°F to +302°F (-55°C to +150°C)
Humidity:	0 to 95% RH non-condensing
Vibration and Shock:	Normal levels encountered in transporting and handling bench-type laboratory equipment

Outputs

Amplifiers / Filters

Broadband:	Output is normalized to 50 mV/g or ips. Max output voltage 10 V peak. Max load 10 k ohms. Frequency response ±5% 2 Hz to 50 kHz.
Filtered AC:	Can be scaled from 1-10 V in 0.1 V increments. Full scale programmable from 0.1 to 200 units (g, ips or mils). Max output voltage 10 V peak. Max load 10 k ohms. Error less than 0.5 dB 5 Hz - 5 kHz (32 kHz sample rate). Error less than 0.5 dB 25 Hz - 5 kHz (192 kHz sample rate).
Filtered DC:	TRUE RMS conversion of AC output. Can be scaled from 1-10 VDC in 0.1 VDC increments. Max output voltage 10 VDC. Max load 10 K ohms.

Accuracy *

Acceleration in, Acceleration out:	±1% 5 Hz - 25 kHz (Scaled Output) ±1.5% 5 Hz - 25 kHz (AC/DC Filter-Out)
Velocity in, Velocity out:	±1% 5 Hz - 25 kHz (Scaled Out) ±1.5% 5 Hz - 25 kHz (AC/DC Filter-Out)
Acceleration in, Velocity out:	±1.5% 10 Hz - 25 kHz (Scaled Out) ±2% 10 Hz - 25 kHz (AC/DC Filter-Out)
Velocity or Acceleration in, Displacement out:	±2.0% 20 Hz - 1.5 kHz (Scaled Out) ±2.5% 20 Hz - 1.5 kHz (AC/DC Filter-Out)

Actual Frequency DC

0-10 VDC proportional to actual frequency in tracking, sweep and optional balance modes. Max load 10 k ohms.

Peak Frequency DC

0-10 VDC proportional to peak frequency in sweep and optional balance mode. Max load 10 k ohms.

Peak Vibration DC

0-10 VDC proportional to peak frequency in sweep and optional balance mode. Max load 10 k ohms.

Phase DC

0-10 VDC proportional to phase of the peak vibration in optional balance mode. Max load 10 k ohms.

Alarms

SPST 200 V @ 250 mA, AC/DC solid state. Trip point, 0 to full scale, ascending or descending. Delay programmable, 0-10 seconds in 1 second increments. Hysteresis programmable, 0 to full scale.

Manual Operation Module (M.O.M. Option)

Fully configures the C-CATS system without a PC. Easy to use menu driven program. Stores for instant recall: 25 sensor types, 50 program configurations. Analyzes inputs for 2 alarm conditions per channel. Supports up to 14 amplifier modules. Color-coded keypad for ease of use. Back-lit LCD display. Plugs into chassis without wasting valuable amplifier space. No additional wiring required.

* Filters can add ±0.2 db to the reading within the pass band