TEL : (02) 855-8877
FAX : (02) 851-3120/info@autosys.co.kr
1510, 24 Gasan Digital 2-ro, Geumcheon-gu, Seoul
www.autosys.co.kr

CMS-5000S

CMS-5000S

Vibration Monitoring System

(For Turbine & Rotating Machine)

AUTOSYS

CMS-5000S Overview and Features

- Overview

Based on the experience of commercializing the CMS-3000 in 2003 for nuclear and thermal power plants, the enhanced CMS-5000S was launched in 2023. The CMS-5000S is the industry's first system to consolidate various vibration sensor signals into a single Enhanced Monitor Module (EMM), reducing spare parts and improving maintenance. The System Control Module (SCM) adopts redundancy technology to ensure stable rack system operation.
Each module (PSM, SCM, and EMM) features a graphic OLED display, visually presenting vibration conditions, enabling on-site analysis without manuals for intuitive system monitoring.
Additionally, the CMS-5000S includes a high-performance processor with an integrated GPU to support On-device AI, allowing early and accurate alarm assessments without external servers.

- Features

Compatible with API-670 standards Auto calibration applied to all vibration signal channels (accuracy within 0.1%) Client/Server-based system architecture Stable power supply with a redundant power system Redundancy-enabled uninterrupted data communication via System Control Module Millisecond-level event time marking using GPS signals ransmission of diagnostic information to DCS via data communication Vector data processing through full-channel order tracking Support for various sensor characteristics with variable digital filtering High-speed digital filtering applied to all modules Synchronized acquisition of all vibration signals on the same shaft during abnormal vibrations Self-diagnosis and monitoring during operation Real-time display of steady and transient states Trend analysis of static and waveform data Analysis of Steady, Transient, and Alarm states Wide variety of analysis and display functions On-line vibration monitoring and analysis Rack-based, Multi-rack, and Multi-module configuration Digital signal processing of all vibration data Channel or loop accuracy (Radial shaft, Thrust, Axial) within 0.1%

- Functions

Measurement of relative and absolute vibration, and eccentricity of rotating shafts in power generation facilities
Measurement of velocity and acceleration of vibrations in Bearings, Casings, and Structures
Thrust position measurement
Measurement of differential expansion and case expansion
Monitoring of process data such as RPM, Temperature, Pressure, and Voltage

1510, 24 Gasan Digital 2-ro, Geumcheon-gu, Seoul
FAX : (02) 851-3120/info@autosys.co.kr
TEL : (02) 855-8877

AUTOSYS

CMS-5000S System Configuration

- CMS-5000S RT-Server

• Collects and stores real-time data, supports communication with client PCs

• DB Manager : Stores and manages event data

• Configuration SW : Rack System & Monitor Module Configuration

- CMS-5000S Display

• Real time Plot Analysis

• Data search and Plot Display

• Orbit, Orbit/Time Base, Bode, Polar, Cascade, Waterfall , Multi-Trend , Acceptance Region, Spectrum, Bar Graph

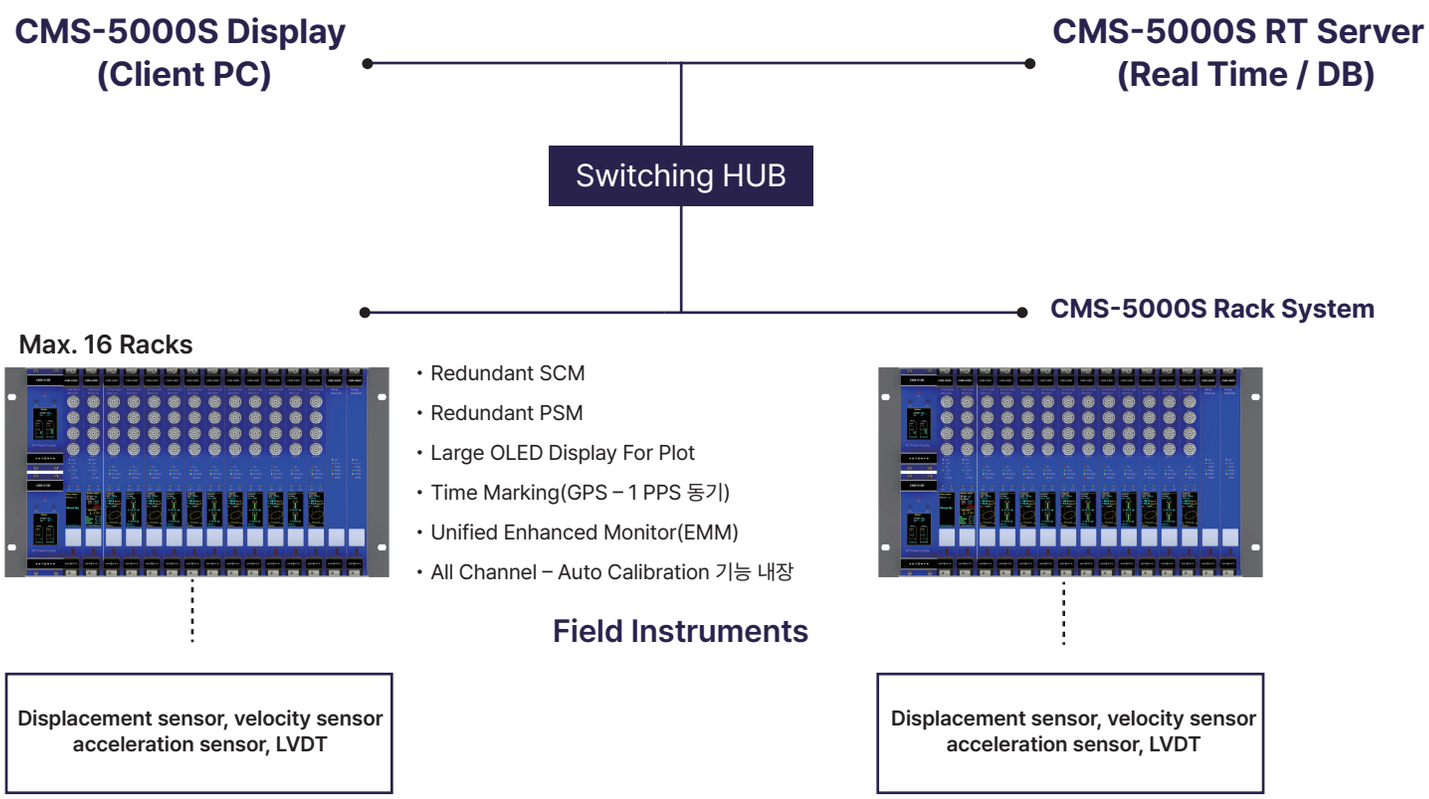
- CMS-5000S Rack System

• CMS-5100 : PSM(Redundant Power Supply Module)

• CMS-5200 : SCM(System Control Module with GPS 1PPS)

• CMS-5300 : EMM(Enhanced Monitor Module)

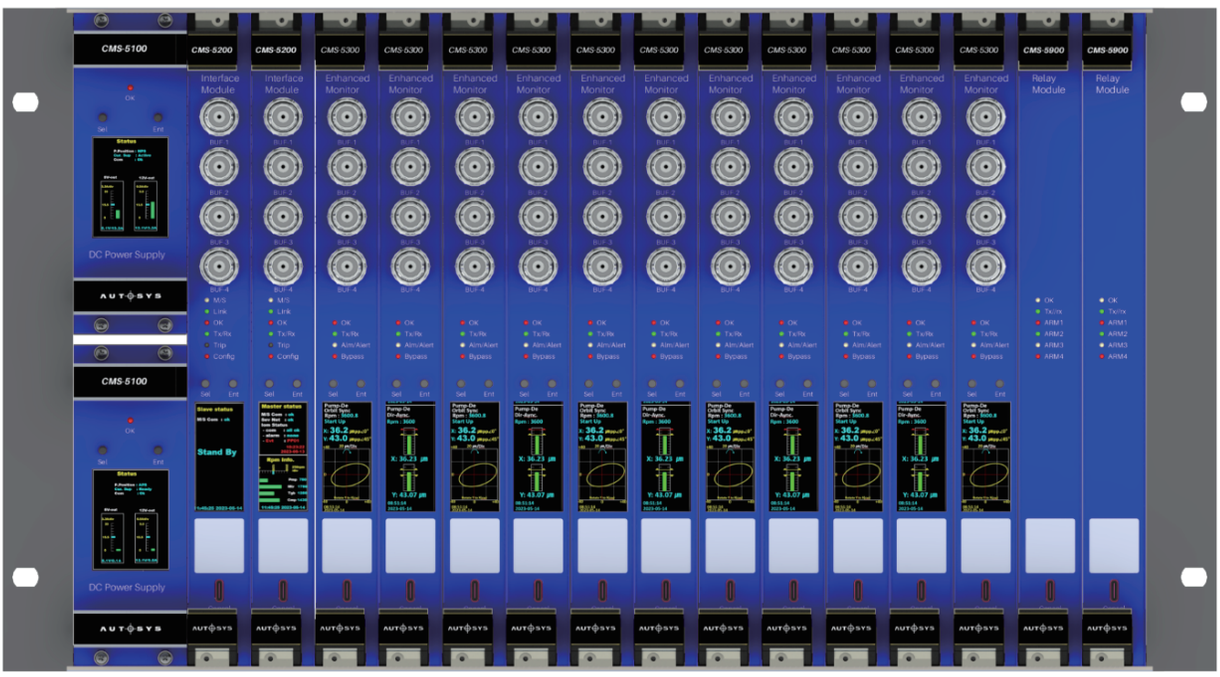
• CMS-5900 : RLM(Relay Module)



1510, 24 Gasan Digital 2-ro, Geumcheon-gu, Seoul
FAX : (02) 851-3120/info@autosys.co.kr
TEL : (02) 855-8877

AUTOSYS

- CMS-5000S Monitor Rack

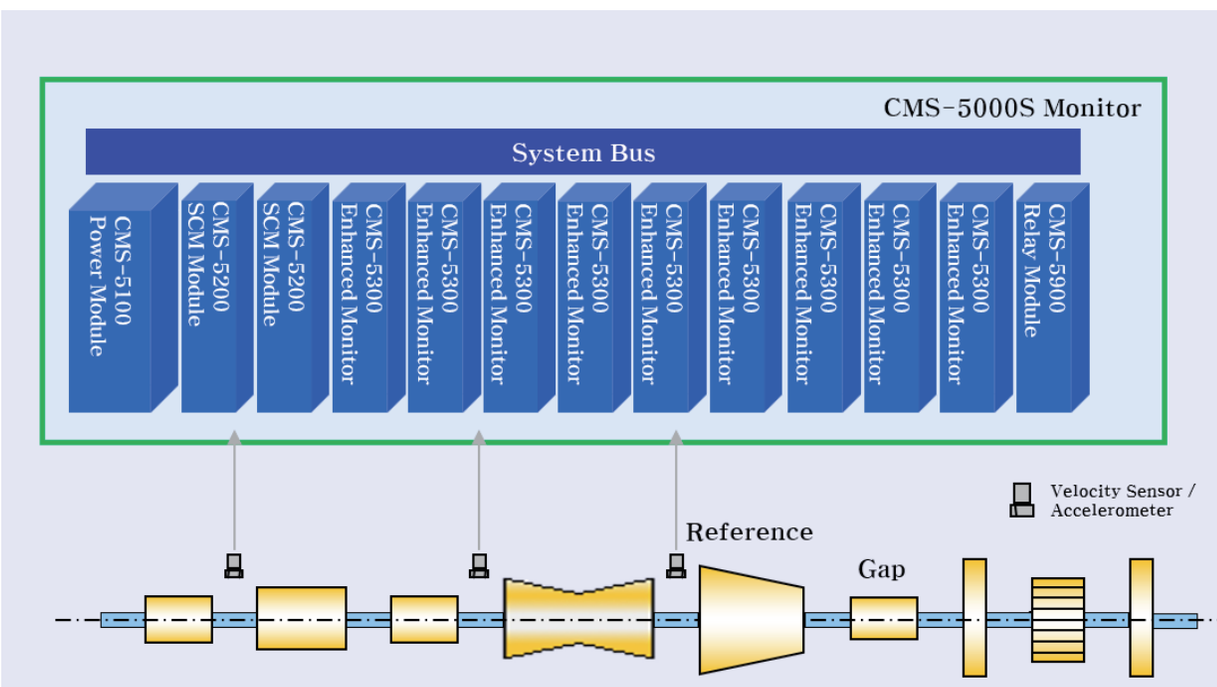


CMS - 5100 PSM(Redundant Power Supply Module)

CMS - 5200 SCM(System Control Module) for Data Communication & Key Phasor with GPS Interface

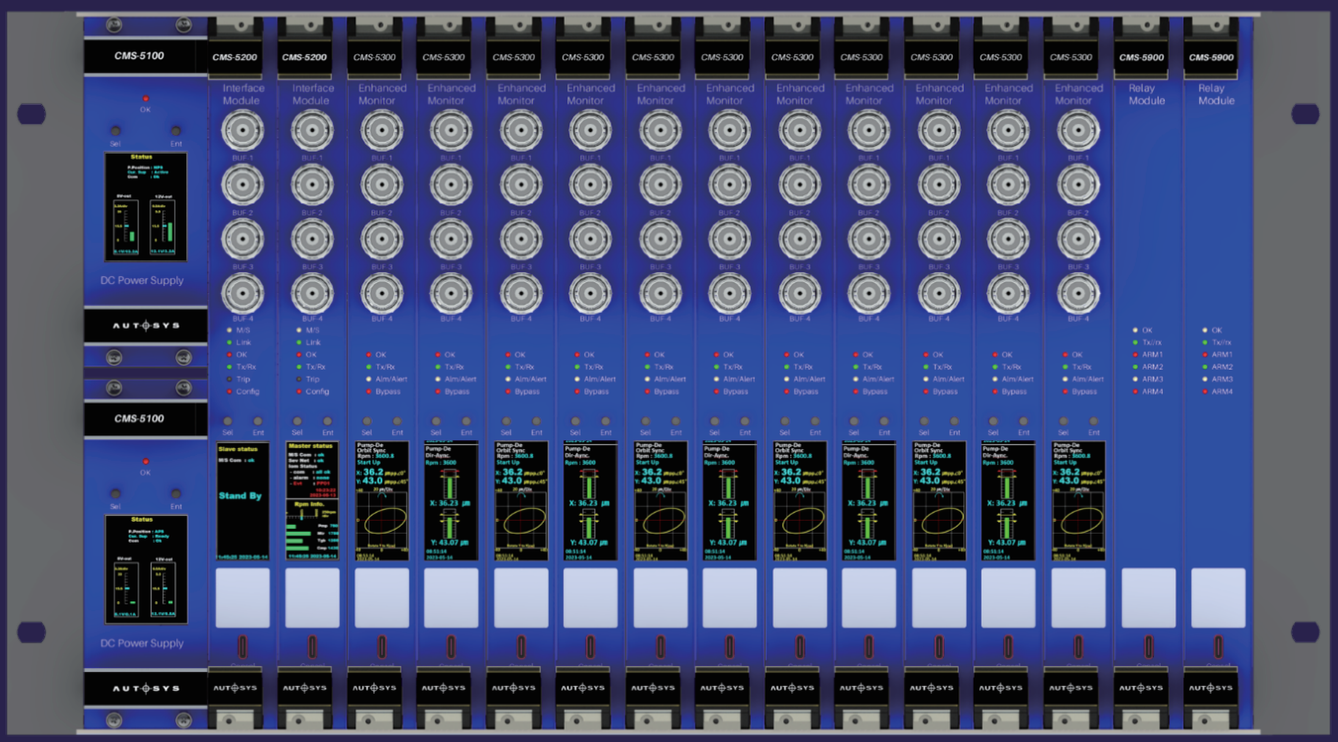
CMS - 5300 EMM(Enhanced Monitor Module) : Relative, Absolute, Acceleration, Velocity, Single Position, Dual Position

CMS - 5900 RLM(Relay Module) for Alert /Alarm Output

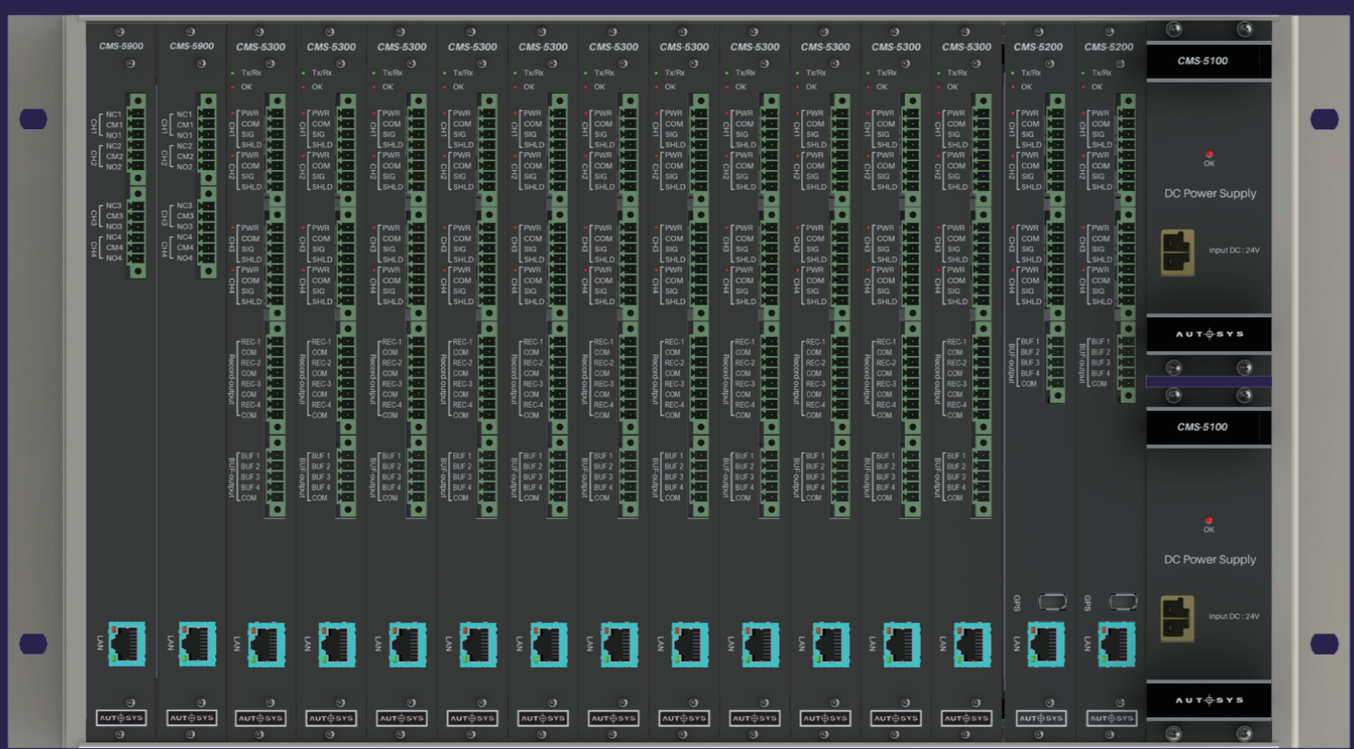


1510, 24 Gasan Digital 2-ro, Geumcheon-gu, Seoul
FAX : (02) 851-3120/info@autosys.co.kr
TEL : (02) 855-8877

Outline Drawing for the Front Monitor Rack



Outline Drawing for the Rear Monitor Rack



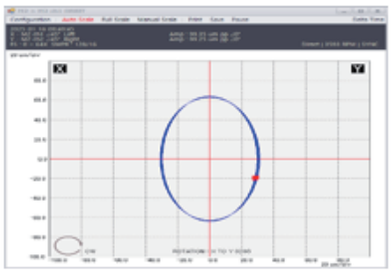
1510, 24 Gasan Digital 2-ro, Geumcheon-gu, Seoul
FAX : (02) 851-3120/info@autosys.co.kr
TEL : (02) 855-8877

AUTOSYS

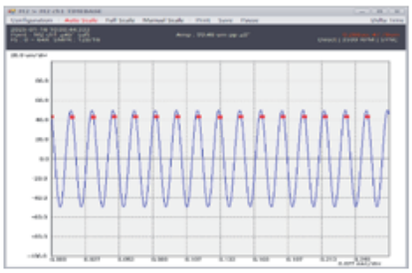
http://autosys.co.kr/default/

CMS-5000S Display Plot

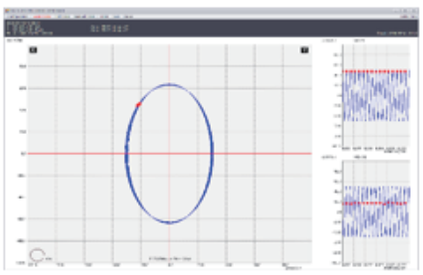
Orbit



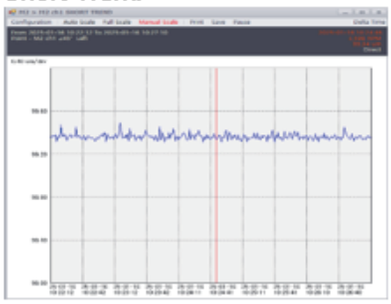
Time Base



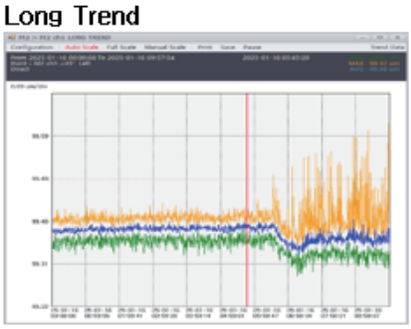
Orbit/Time Base



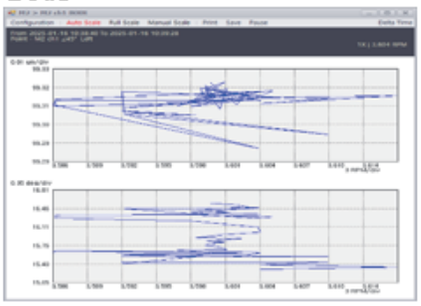
Short Trend



Long Trend

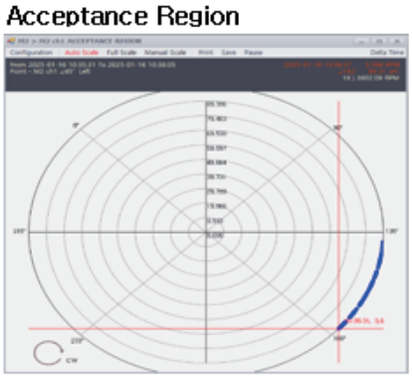


Bode

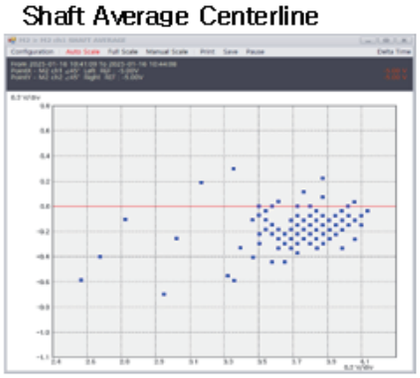


Polar

Acceptance Region

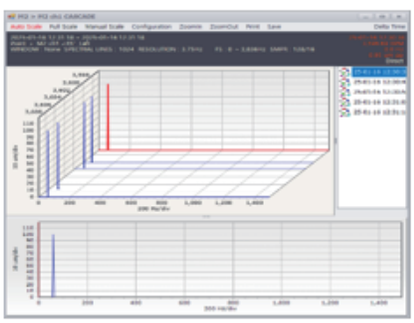


Shaft Average Centerline

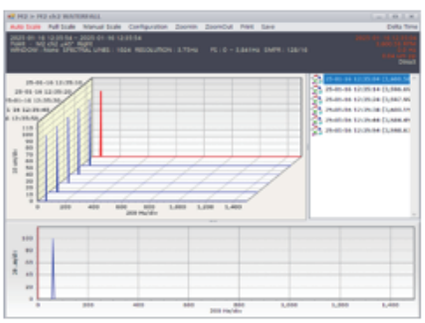


Spectrum

Cascade



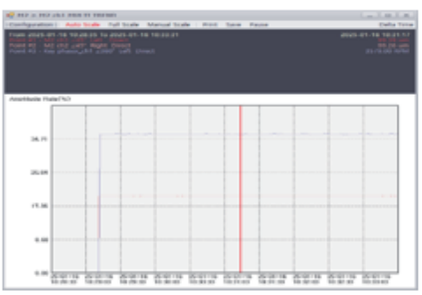
Waterfall



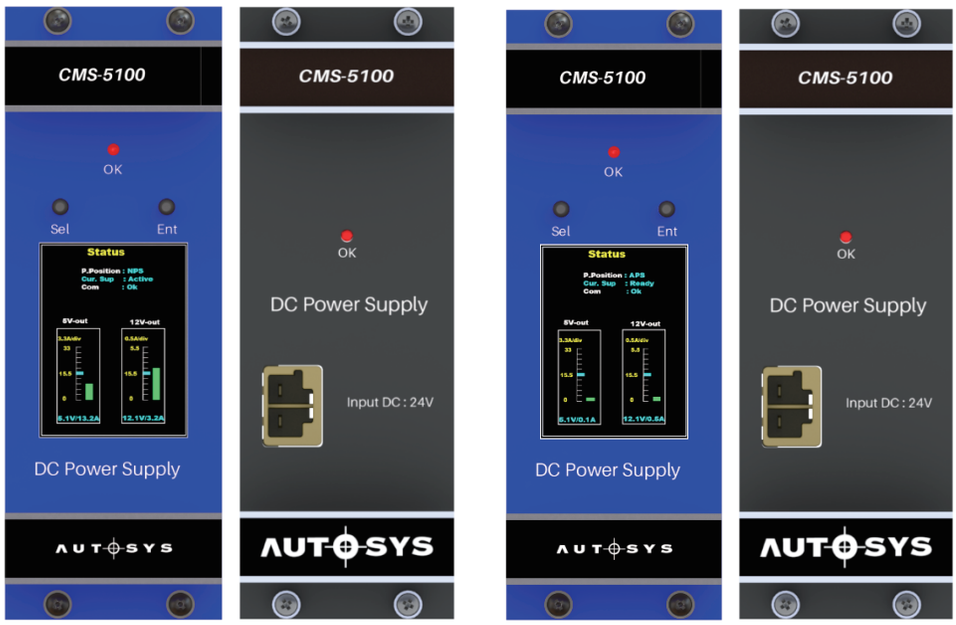
Bar Graph

X-Y Graph

Multi Variable Trend



CMS-5000S System Configuration
CMS-5100 PSM(Redundant Power Supply Module)



NPS Power **APS Power**

- Feature

Dual power supply with automatic switchover (NPS or APS) Real-time status display on the front OLED screen

Input/output voltage and current graphs with high measurement accuracy (instrument-grade precision)

Display of NPS, APS status information and internal temperature Real-time transmission of PSM status information to SCM

No additional manual required for power status verification Selection of displayed status information via front panel switch

- Specifications

Front Module

Output-1: DC 5V, max 30A

Output-2: DC 12V, max 5A

Rear Module

Input : DC 24V 9A

Output : E-Fused DC 24V, 10A (automatic shutdown under overload, resumes normal operation once overload is resolved, no need for physical fuse replacement)

Over Voltage & Over Current Protection

(shuts down at 120% load)

Supports hot swap (no need to operate rack power switch when replacing power modules)

- Functions

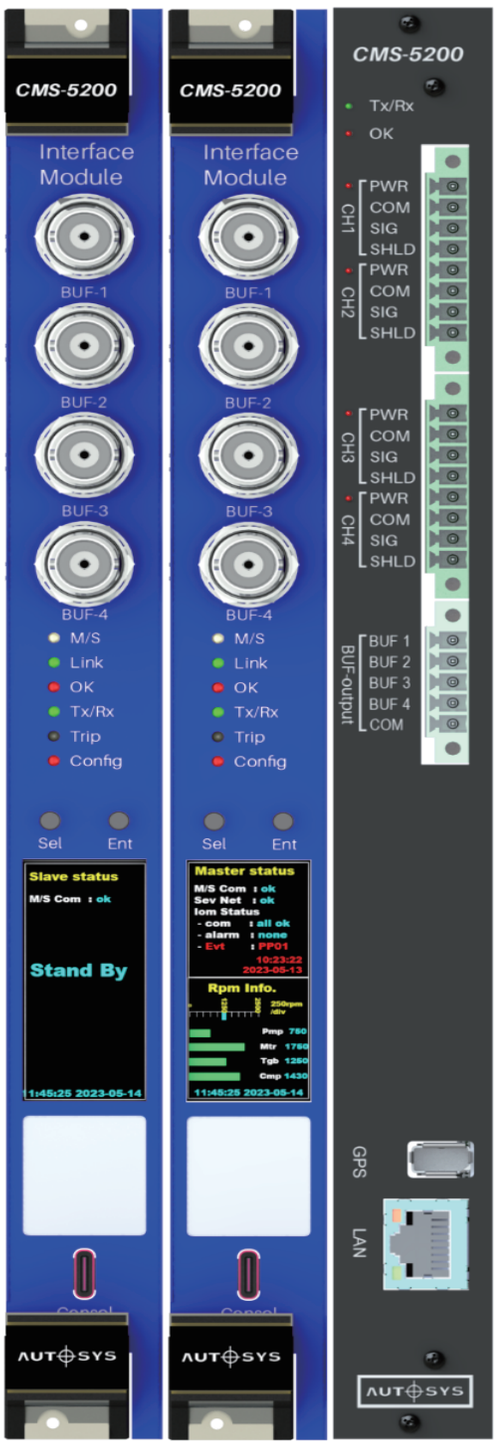
Hot Swap capability

Ground-isolated power supply for the rack system Automatic selection between NPS or APS as the primary power source to ensure stable power supply to the rack system (fault-tolerant power supply)

1510, 24 Gasan Digital 2-ro, Geumcheon-gu, Seoul
FAX : (02) 851-3120/info@autosys.co.kr
TEL : (02) 855-8877

AUTOSYS

- CMS-5000S Monitor Rack



SCM Master | SCM Rear | SCM Rear

- Features

Future On-device AI integration with EMM data

Continuous data analysis with redundant SCM (patented)

Automatic master/slave SCM configuration (fault-tolerant)

GPS-synced precision data acquisition (patented)

Front OLED LCD for plot and status display

Real-time rack status and event monitoring

Selectable status display via front switch

No manual needed for status check

- Functions

Real-time EMM data collection and analysis

Shared rack config between master/slave SCM

RLM control based on events/alarms

External system data communication (Server, Modbus)

Selective RPM signal sharing with EMM

- Specifications

Ethernet: 1Gbps/RJ45

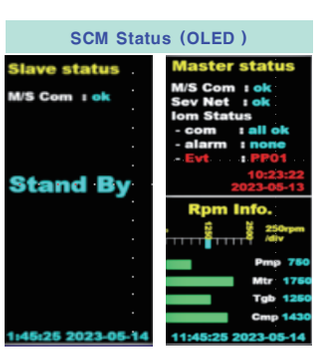
USB: Console

System Bus: Dual 10Mbps

RPM Power: Selectable -24V/+24

RPM Channels: 4 (hysteresis adjustment)

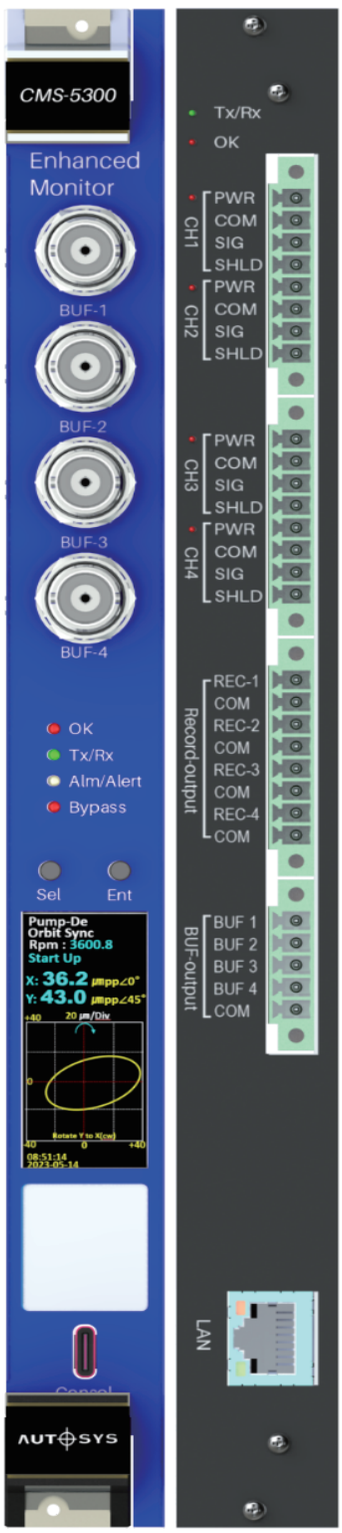
Buffered Out: Ground-isolated (front/rear) for external device connection



1510, 24 Gasan Digital 2-ro, Geumcheon-gu, Seoul
FAX : (02) 851-3120/info@autosys.co.kr
TEL : (02) 855-8877

AUTOSYS

CMS-5000S Module Specifications
CMS-5300 EMM(Enhanced Monitor Module)



EMM Front　　EMM Rear

- Features

Future support for on-device AI with individual EMM data integration

Single module data acquisition and analysis, regardless of sensor type

Simultaneous support for positive and negative power sensors

GPS-synchronized precision data acquisition (patented)

Front OLED LCD for vibration data and plot display

Real-time display of status and event occurrences

Self-diagnosis results display

Selectable status information via front panel switch

No manual required for status verification

- Functions

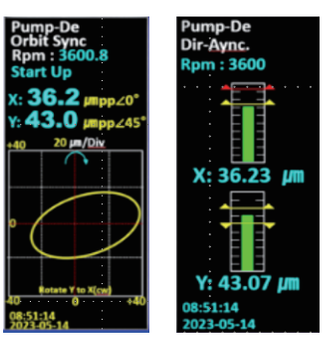
Single module supports for various sensors and measurement modes: Relative, Absolute, Seismic, Single Position, Dual Position, Velocity

Plot display: Orbit Plot, Bar Plot, Waveform, FFT, Short Trend

Static Data: Direct, Gap, Alarm, Trip, RPM, Channel Configuration

Signal processing: Order tracking, Digital filtering, Sensor data calculation for each measurement mode

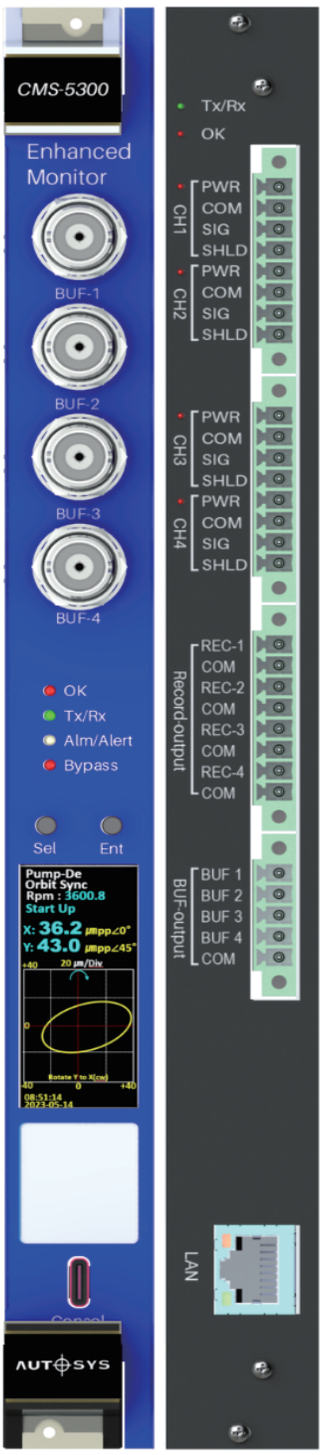
Measurement modes: Absolute, Relative, Eccentricity, Seismic, Single Position, Velocity, Dual Position (Dual Differential Expansion, Dual Case Expansion)



EMM PLOT display (OLED)

1510, 24 Gasan Digital 2-ro, Geumcheon-gu, Seoul
FAX : (02) 851-3120/info@autosys.co.kr
TEL : (02) 855-8877

AUTOSYS



EMM Front **EMM Rear**

- Specifications

Input Channels: 4 channels (vibration sensors, voltage, current signals)

Sensor Power Supply: ±24V max or IEPE

Output Channels: Front & rear isolated buffered output

Record Out: 4~20mA, 1~5V, 0~10V [Option-01]

Sensor Power: Selectable -24V/4mA or dual power supply

Sensor Power Fuse: Electric fuse (no physical replacement required)

Auto shutdown on short circuit, resumes when issue is resolved

Buffered Out: Front & Rear Buffered Output or Ground-isolated Buffered Output [Option-02]

Vibration Signal Processing Speed: Within 100ms

Ethernet: 1Gbps/RJ45

USB: Console

System Bus: Dual *10Mbps

Hot Swap: Supported

1510, 24 Gasan Digital 2-ro, Geumcheon-gu, Seoul
FAX : (02) 851-3120/info@autosys.co.kr
TEL : (02) 855-8877

AUTOSYS

- CMS-5900 RLM(Relay Module)

EMM Front **EMM Rear**

- Functions

Generates contact signals when an Alarm/Trip occurs based on logical combinations of EMM status information.

Relay Drive Logic: OR/AND voting logic for monitor alarms.

Relay Driver: Operates alarm relays.

Terminal: Connects alarm signals externally with NC (Normally Closed) and NO (Normally Open) contacts. Specifications

- Specifications

CMS-5901 : 4-channel relay output

CMS-5902 : 8-channel relay output

CMS-5903 : 16-channel relay output

Relay Contacts : 5A / 250V AC

Insulation Resistance : Min 1000MOhm

Relay : DPDT(Double Pole Double Throw) Type

USB : Console

1510, 24 Gasan Digital 2-ro, Geumcheon-gu, Seoul
FAX : (02) 851-3120/info@autosys.co.kr
TEL : (02) 855-8877

AUTOSYS

CMS-5000S H/W Configuration

- CMS-Net Configuration
  System settings, Serial communication, TCP/IP, and Data server communication Configuration.

- Reference Configuration
  Sensor settings and Reference detection method Configuration.

- Relative Mode Configuration
  Selection of Radial vibration or Eccentricity type and reference usage / channel Configuration.

- Absolute Mode Configuration
  Selection of velocity or acceleration sensor and reference usage / channel Configuration.

- Seismic Mode Configuration
  Selection of velocity or acceleration type and reference usage / channel Configuration.

- Single Position Mode Configuration
  Selection of thrust or differential case expansion type.

- Dual Position Mode Configuration
  Selection of standard ramp DXD, non-standard DXD, dual ramp DXD, or dual case expansion type.

- Relay Configuration
  Configuration of 4 relay channels, Latching or Non-latching mode, Alarm drive logic.

CMS-5000S RT Server

- Real Time Process
  Dynamic/Static Trend Data

- Data Memory Management
  Real-time data management for integration with the display module.

- Event Processing / Alarm Process
  Real-time data management for integration with the display module.
  Sends Event/Alarm notifications to the display module.

- Status Process
  Sends the Status of each channel to the display module.

- Database Management
  Loads data from files generated by Real-time, Event, and Alarm processes and stores them in the database by

CMS-5000S Display

- Various Plots (16 Different Plots)
  Spectrum, Directional Spectrum, Bode, Polar, Orbit, Time Base, Orbit/Time Base, X-Y Graph Short Trend, Long Trend, Multi Variable Trend, Bar Graph, Acceptance Region, Cascade, Waterfall, Shaft Average Line

- Real Time Processing
  Plots each channel's delta time and delta RPM data via real-time communication.

- Stored Plot
  Selects and plots each channel's data from the database.

- Multi Plot
  Supports independent and multiple simultaneous plots.

- Event/Alarm Status Monitoring
  Automatically collects event and alarm status from the RT server and allows Event/Alarm list searches.

- Full Scale/Auto Scale
  Default is full scale, with options for Auto, Manual, and Zoom display modes.

CMS-5000S System Specifications

No. of Racks connected	up to 16 Units
Max. Vibrations Inputs	400 Points
No. of Spectrum Lines	400 Lines
Fast Trend Data Interval	1 second
Trend Data Interval	1/5/10/20min. 1/2 hr.
Waveform Data Interval	Trend Data Interval x (0 to 100)
Trend Data Storage	Depends on HDD
Waveform Data Storage	Depends on HDD

Rack System Operating Conditions

Rack Size: 420*262* 320(w*h*d)
Operating Temperature : -10 to 60°C
Storage Temperature : -20 to 70°C
Humidity : 0 to 90% RH
Power Requirement : DC24V/9A

1510, 24 Gasan Digital 2-ro, Geumcheon-gu, Seoul
FAX : (02) 851-3120/info@autosys.co.kr
TEL : (02) 855-8877

AUTOSYS