New Product

The 2201 Mon

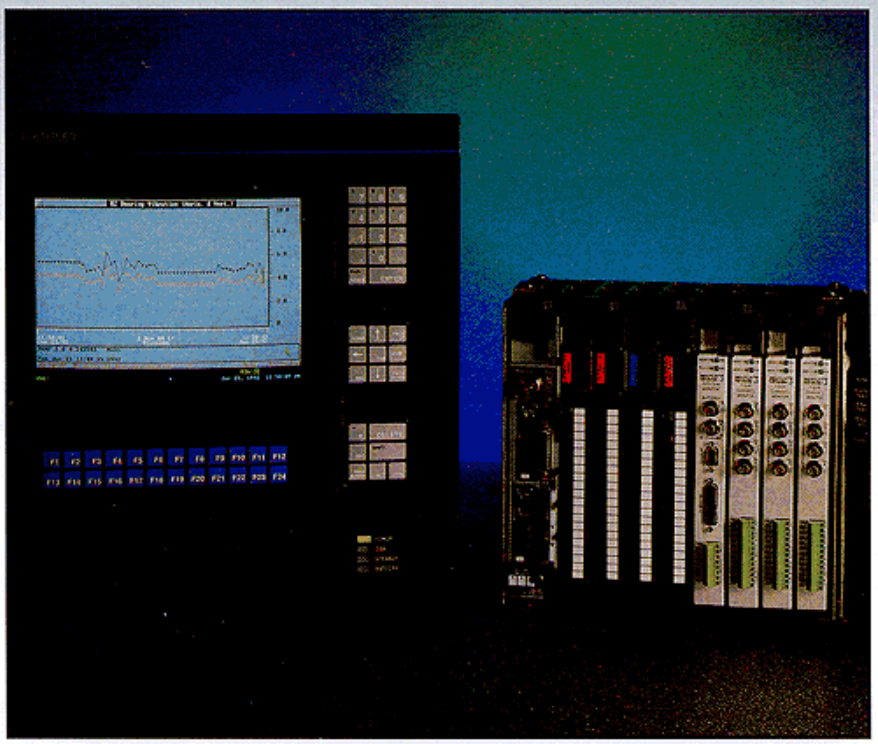
This innovative approach integrat

Bently Nevada, an expert in the design and manufacture of vibration information systems, and Allen-Bradley Company, Inc., a leader in industrial automation controls and systems, and a unit of Rockwell International, have joined forces to bring you a new product.

With more than 120 years of technical excellence between them, they have combined to deliver the Bently Nevada 2201 Monitoring System. This new and innovative approach integrates machinery vibration monitoring information with plant process data through the Allen-Bradley PLC-5™ programmable controller. By using fewer parts which function more efficiently together, the 2201 offers you reduced instrumentation costs, improved reliability, single configuration management and a shared interface with plant supervisory systems.

Development of the 2201 Monitoring System came about as a request from a customer, a major OEM that uses both Bently Nevada and Allen-Bradley equipment. This customer expressed a need for a product to collect vibration data and transfer it directly to a process computer without the use of conventional vibration monitors. To reduce overall system cost and panel space, they integrated vibration and process systems, sharing common resources such as chassis, power supplies and operator interfaces.

In the past, vibration monitoring signals were integrated into a programmable controller by transmitting a 4 to 20 mA output proportional to vibration amplitude. This output became an input to the programmable controller and was treated as another process variable. Major shortcomings of this approch are the time delay and lack of false trip and missed trip protection. The 2201 Monitoring System integrates vibration monitoring signals immediately, while retaining the level of machinery monitoring offered by other Bently Nevada systems, such as the 3300 System.



Typical bearing vibration display Trend plot

The Allen-Bradley PLC-5™ Programmable Controller

The Allen-Bradley PLC-5™ Programmable Controller is a mid-size, single-slot processor that mounts in a standard size 1771 Universal I/O (input/output) chassis. It monitors and controls I/Os both in resident and remote I/O chassis. Specific PLC-5™ controller features include:

- Ladder logic programming with over 80 possible instructions.
- Sequential Function Chart programming.
- Up to 64k words of memory and 3072 I/O points.
- Built in Remote I/O (up to 10,000 feet from the controller) and Data Highway Plus™ communications.
- Program structuring capability allows logical and diagnostic segmentation.

Depending on the model, the PLC-5™ controller can connect to, and communicate with, up to 23 remote I/O racks at the same time. Allen-Bradley's remote I/O data network allows higher level information systems and operations per-

itoring System

es vibration data and process data

Bently Nevada System mounted in an Allen-Bradley PLC-5™ chassis

sonnel to capture relevant data faster. Improved equipment performance, quality and productivity result.

Allen-Bradley furnishes programming software for you to write the application program for the PLC-5™ controller and to customize the information you wish to monitor. This software consists of menu-driven packages for programming, documentation and on-line report generation programs.

By using interface devices such as operator panels, terminals, workstations and displays, machine operators and plant management have access to vibration data and plant operating information concurrently.

The 2201 Monitoring System

The 2201 Monitoring System can be used for continuous vibration monitoring of critical, essential and general-purpose machines. It provides you with machinery vibration and plant process data from a single convenient programmable source. This reduces equipment, installation and operating costs.

The 2201 measures up to 24 channels of vibration and seismic information, and provides for two levels of alarm, Alert and Danger, for each channel.

Many parameters manually configured by jumpers in the 3300 Monitoring System can now be programmed directly by the machine operator from the PLC-5™ controller.

Each 2201 System consists of a System Monitor, up to six Four-channel Monitors and a Monitoring System Backplane.

System Monitor

The System Monitor performs these major functions:

- Interfaces with the 1771 Universal I/O backplane
- Communicates with the PLC® System Processor using block transfer instructions
- Scans each of the 24 channels every 40 milliseconds
- Provides external communication connections for diagnostics
- Generates sensor supply voltage

The System Monitor has two status LEDs to verify communication with the controller. System Status, Individual Monitor Status and Individual Channel Status are communicated from the System Monitor to the controller in a single block transfer.

Four-channel Monitor

This universal monitor contains four generic monitoring channels and accepts signals from up to four Bently Nevada transducers. Each channel can be configured by the PLC-5™ controller to perform any of these monitoring functions:

- Shaft radial vibration (peak-to-peak displacement)
- Shaft radial vibration (gap voltage)
- Thrust position
- Seismic vibration (velocity)
- Seismic vibration (acceleration) ▶

If a problem, such as an Alert or Danger condition, is detected in the vibration system, the PLC-5™ controller is immediately notified. Specific action taken will depend on how you have programmed the PLC-5™ controller for the application.

The Four-channel Monitor contains two status LEDs to verify that monitors are functioning properly and communicating with the System Monitor. External buffered transducer output coaxial connectors are available for test instruments. An unassigned channel may be used for additional Keyphasor® transducers.

Monitoring System Backplane

The 2201 Monitoring System uses a specially-designed backplane that mounts inside the 1771 Universal I/O chassis and in front of, but not connected to, the chassis backplane. It is manufactured in six different configurations, depending on the number of Four-channel Monitors used. The backplane provides the interconnection between the System Monitor and each of the Four-channel Monitors.

External interface for machine diagnostics

The following external connectors are furnished on the front of the System Monitor for machinery diagnostics:

"The 2201 provides monitoring features similar to equivalent 3300 Monitors and offers improved features over earlier systems. It allows for direct combination of data with the machine process control system."

- Two buffered Keyphasor® transducer outputs
- Static Data Interface, (SDIX): an RS-232 9-pin connector for system trouble-shooting
- Dynamic Data Manager® Interface, (DDIX): an RS-232 25-pin connector interfaces to a Bently Nevada DDIX Communications Processor

Summary

The 2201 provides monitoring features similar to equivalent 3300 Monitors and offers improved features over earlier systems. It allows for direct combination of data with the machine process control system. Communications between the 2201 and the Allen-Bradley PLC-5™ Programmable Controller are managed by the controller. Each channel in the 2201 can be programmed independently to perform its individual, distinctive monitoring functions.

The 2201 uses software you write for each specific application, enabling you to customize process and vibration information displays for trending, analysis and protection. Use of the Allen-Bradley PLC-5™ Programmable Controller enhances the flexibility of the primary operator display. You can now monitor the entire process by integrating vibration and process information on a single screen. ■

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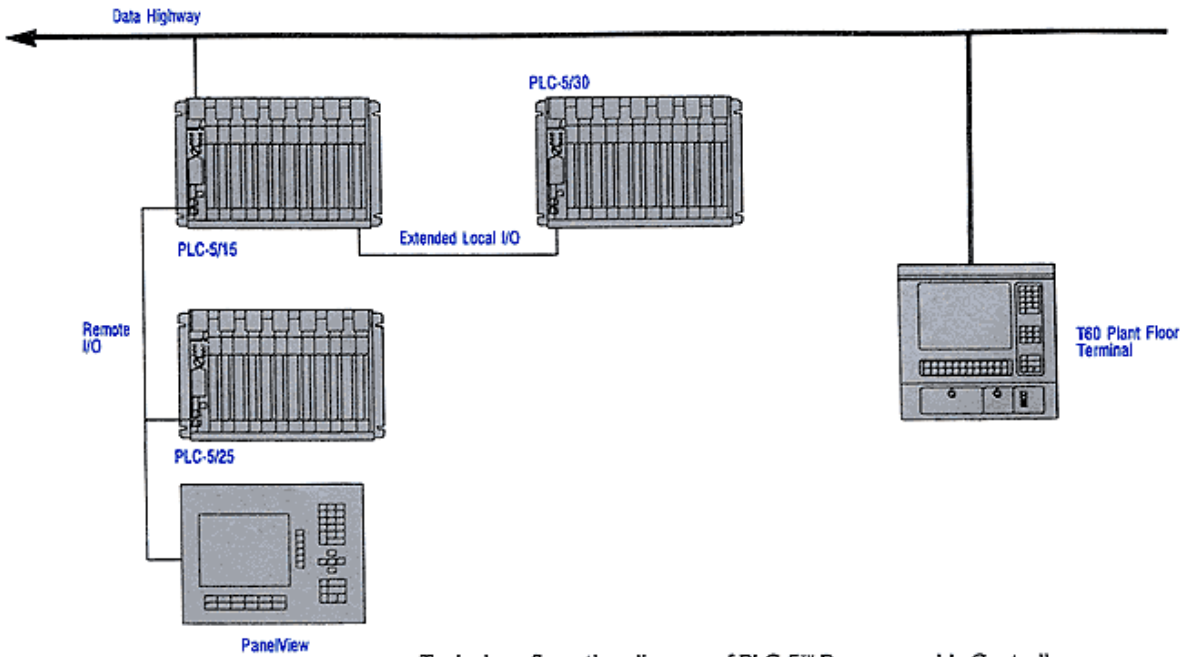
Allen-Bradley is a worldwide leader in the manufacture and sale of industrial automation control systems. It is a unit of Rockwell International, a multi-industry company applying advanced technology to a wide range of products in its electronics, aerospace, automotive and graphics businesses. Allen-Bradley has its headquarters in Milwaukee, Wisconsin, USA.



Typical configuration diagram of PLC-5™ Programmable Controller