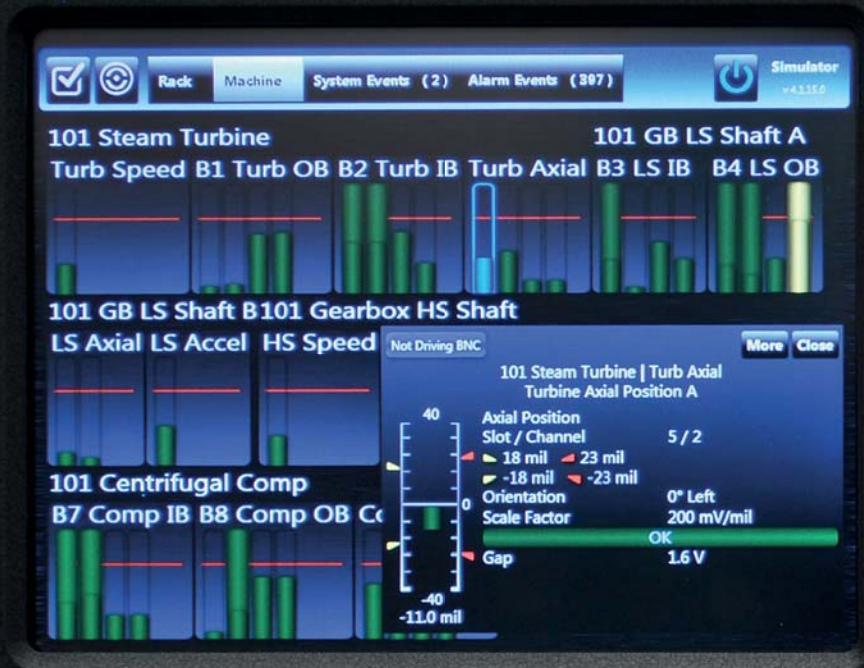


# SETPOINT™

MACHINERY PROTECTION SYSTEM



BUFFERED OUTPUTS



Brüel & Kjær Vibro

# Welcome to the world's most advanced monitoring system.

**1**

4-channel Universal Monitoring Module (UMM) – 40 different programmable channel types including speed, phase, vibration, position, hydro, acoustic, pressure, recip, turbine supervisory, process variable, discrete input, and more.

**2**

6-channel Temperature Monitoring Module (TMM) – a comprehensive suite of programmable channel types for RTDs, thermocouples, and process variables.

**3**

System Access Module (SAM) for all system communications. Redundant SAMs can be supplied in slots 2 and 3 for communications with DCS, PLC, SCADA, turbine control, and other automation systems.

**4**

Rack Connection Module (RCM) accepts 24Vdc external power from two independent sources. Power supplies are outside the rack enclosure, removing heat and allowing flexibility in choice of power supply providers.

**5**

Embedded “flight recorder” feature stores a complete history of all static and dynamic (waveform) data for 1+ month on 32GB removable SD Card or 8+ months on 256 GB embedded solid-state hard drive.

**6**

Modbus TCP (Ethernet) and RTU (serial) communications with DCS, PLC, SCADA, and other automation platforms. Fully programmable Modbus map makes retrofits easy by reusing existing mapping – no gateway reprogramming needed.

**7**

The world's first system to stream everything – both static and waveform data – into an OS/soft® PI System server. The same data is also streamed to the rack's SD Card and optional embedded hard drive for in-the-box backup.

**8**

4-20 mA analog outputs from all channels for integration with older DCS, PLC, and other automation systems that do not support digital (Modbus) communications.

**9**

Four (4) fully programmable relays on each monitoring module. No separate relay cards required. Relays are fully programmable for voting logical conditions across modules. Up to 56 relays in a single 19” rack.

**10**

USB port for programming all modules. Configuration software available as a free download from our website and supports copy & paste functionality with spreadsheets, word processors, and other programs.

**11**

Transducer inputs provide power for all sensors, including proximity probes, accelerometers, velocity sensors, magnetic pickups, 4-20mA process variable transmitters, pressure transducers, and more.

**12**

Display connector supports integral 8.4” touchscreen display on front of rack or any external monitor with DVI connection and USB pointing device.

**13**

Innovative use of RJ45 connector style provides 4 channels of analog buffered output signals from all vibration transducers using our special RJ45 to BNC “breakout” adapter cable. Easily extend the length using standard CAT5 cable.

**14**

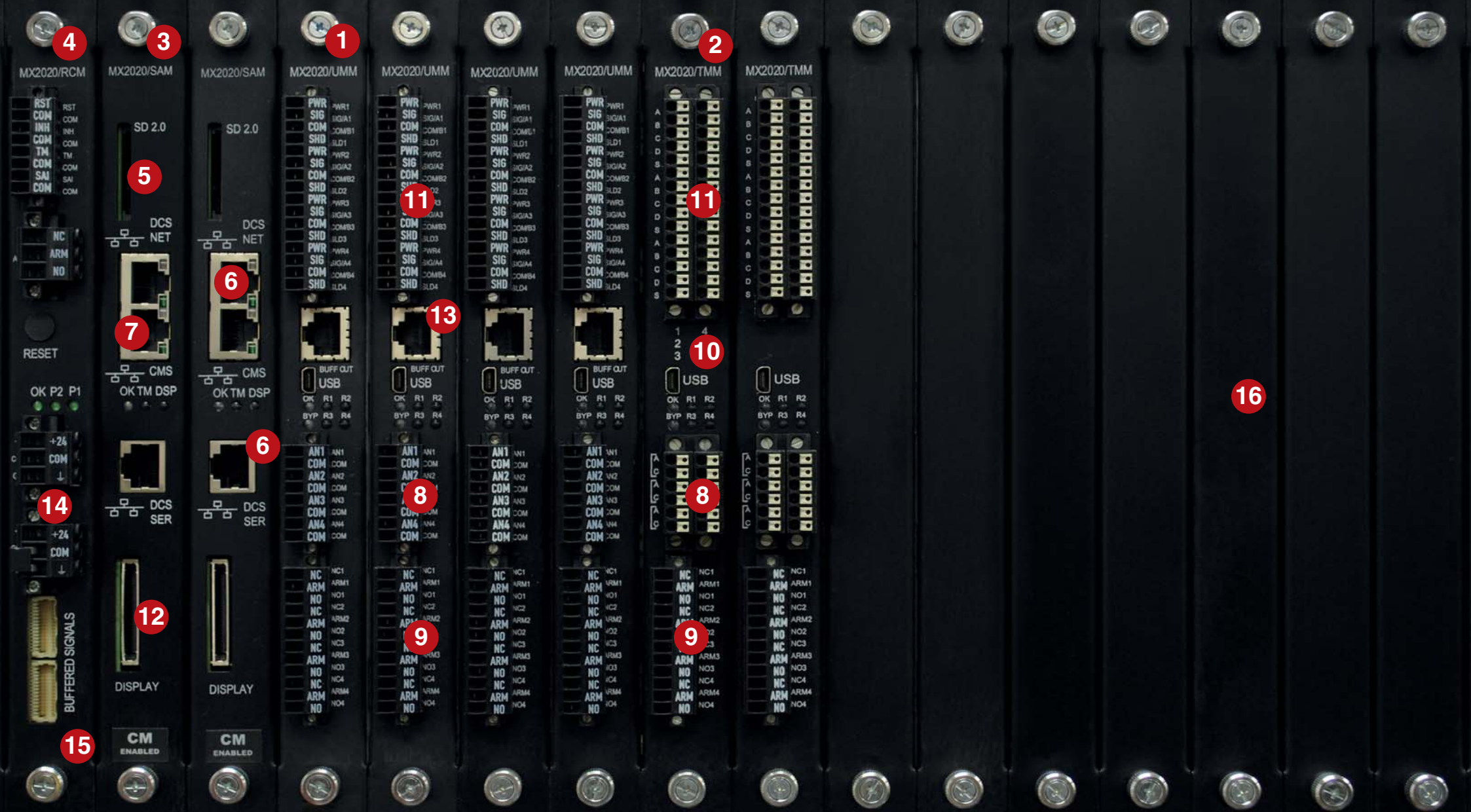
Fully redundant power connections ensures a single power source failure will not affect rack operation. A second power connection module can be placed in slots 2-16 to allow the RCM to be serviced without losing rack power.

**15**

56-channel buffered output connector set for use with permanent patch panels or third-party data acquisition hardware.

**16**

16-slot rack holds up to 56 vibration channels or 84 temperature channels, in any combination. Rack also available in 8-slot and 4-slot sizes. Can be mounted using panel cutout, 19” EIA rails, or bulkhead style.



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# Global. Like you.

## Global approvals

No matter where your company operates, SETPOINT™ has the hazardous area approvals you need. Our certifications are easily accessed on our website with all our other product information and documentation.

## Global support

With the combined coverage of Brüel & Kjær Vibro's long established service network and the vastly experienced SETPOINT™ service team we are everywhere you are. Supporting you with factory-trained professionals on every continent, in your time zone, and speaking your language.



## Global service

Whether you are installing a SETPOINT™ system to replace an existing monitoring system, you are instrumenting a machine without any existing vibration sensors or protection, or even protecting a whole new green field development, we are perfectly qualified to assist. Our field service professionals have conducted thousands of projects, including full turnkey work, design of machine modifications, to mounting transducers, routing cables, and interfacing to the rest of your plant infrastructure, such as your DCS and process historian. As projects increasingly involve complex IT-related issues, we're qualified to help you there as well with people that understand networking, cybersecurity, firewalls, data replication, and a host of other issues. Our capabilities do not stop with the instrumentation, either. We also provide machinery diagnostic expertise through an experienced team of people that can collect and interpret vibration data to troubleshoot problems, baseline a machine's performance, and even help balance and align your critical equipment.

## Global experience

Increasingly experienced resources in the industry are harder to find and our customers are expected to do more with fewer people. They rely more heavily than ever on service – not just technology – to ensure their machinery protection and condition monitoring systems are installed properly, working correctly, and delivering the maximum possible value. We understand how important it is not just to provide globally available service, but experienced service that gets it right the first time.

**Service and Diagnostic Expertise Globally.**



# Condition monitoring the way you want it.

## Integration the way you want it.

You no longer need to accept proprietary data infrastructure for vibration monitoring – you can now choose to not be tied to suppliers' servers, software and protocols.

SETPOINT™ approaches things differently by using the OSIsoft® PI System™ – a state-of-the-art software package you are probably already using as your process historian. OSIsoft® PI is incredibly powerful. And fast. And secure. And already used on 19,000+ sites globally.

By using the PI System™, integration of vibration and process data has never been easier. The PI System™ features more than 400 different, supported interfaces to virtually any commercially available process control system, historian, or automation platform. Remote access to data is easy, too, because the PI System™ delivers 21st century cybersecurity.

## Visualization the way you want it.

Navigating complex vibration data to find what you're looking for has never been easier, thanks to our "timeline" at the bottom of the display. Simply set your

window to the desired duration – a minute, an hour, a day, a week, or anything in between – and slide the window along your continuum of data.

All the plot types you need as a vibration professional are at your fingertips, including:

- Filtered and unfiltered timebase
- Filtered and unfiltered orbit
- Full- and Half-Spectrum
- Shaft Centerline
- Polar
- Bodé
- Spectrum Waterfall
- Spectrum Cascade
- Single- and Multi-Variable Trends
- Tabular Values
- Machine Train Diagrams (using PI tools)
- Custom Displays (using PI tools)
- Rod Drop / Rod Position (recip)
- Cylinder Pressure-Volume (recip)
- Rod Load / Rod Reversal (recip)
- Compressor Map (using data from a 3rd party server)
- Overlay capabilities to compare data from two time ranges in any plot format

Building fully customized screens is exceptionally easy using PI ProcessBook, PI Coresight, and other OSIsoft® visualization tools – linking seamlessly with CMS Display.

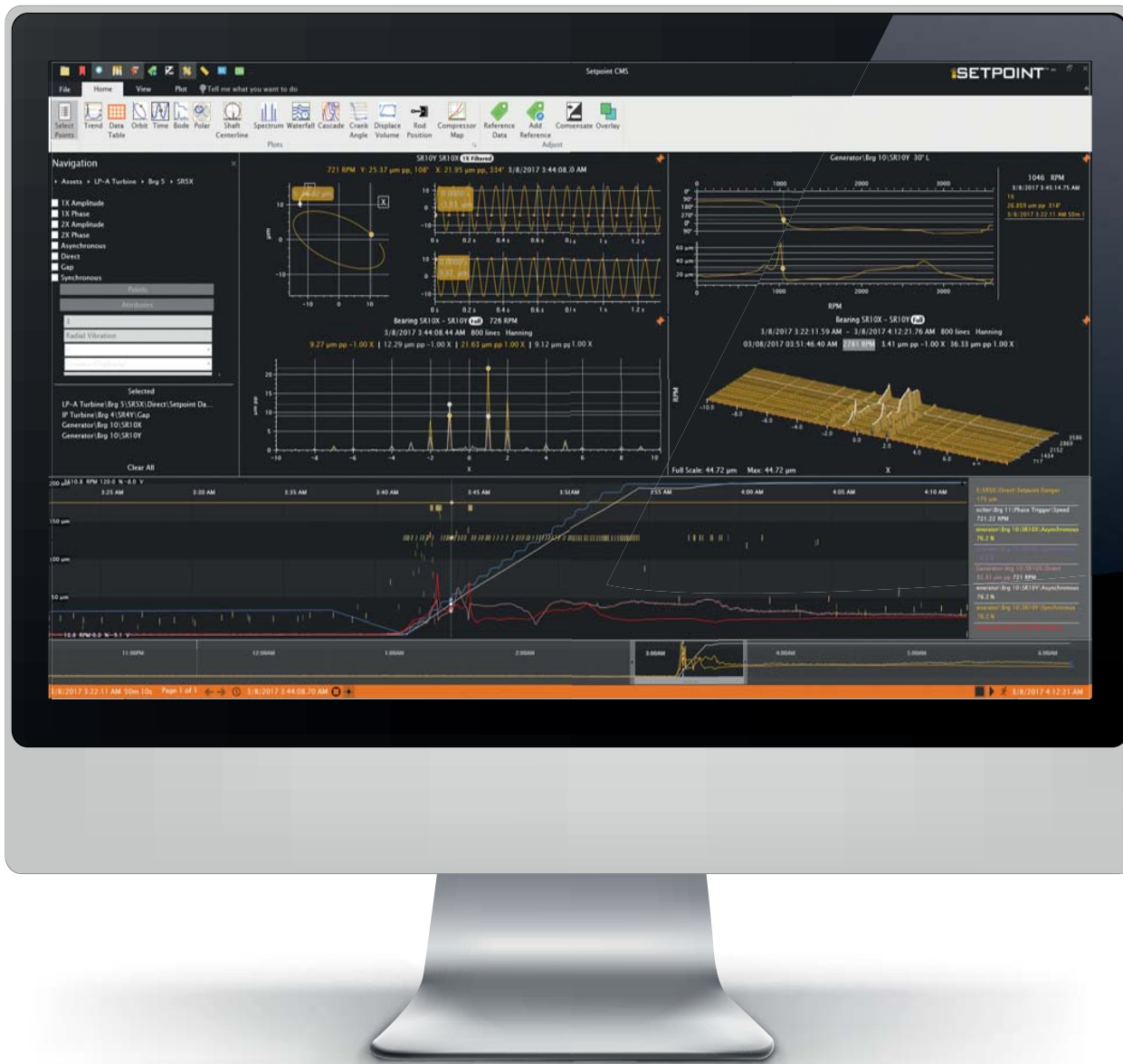
## Advanced analytics the way you want it.

CMS data, whether stored in your PI System™ or in our .cms format files, is "open" – allowing you to export it to spreadsheets and use it with other software. The OSIsoft® ecosystem features more than 400 partners with expertise in everything from gas turbine efficiency calculations to compressor anti-surge calculations, to pattern recognition AI (artificial intelligence), to maintenance and reliability tracking and optimization.

## Sharing and storage flexibility the way you want it.

SETPOINT™ CMS software is designed to be just like Adobe® Reader® so that you can view, save and open your data anytime, anywhere, and with anyone. SETPOINT™ CMS does not care where you store the data – in your PI Server, on the rack's SD Card, or in the rack's

embedded hard drive all of it can be viewed using our CMS Display software. The OSIsoft® PI System™ can easily replicate data across firewalls, "data diode" security appliances, and remote links where bandwidth is limited. Data is backed up in the SETPOINT™ rack so that when your PI Server connection is restored, no data has been lost. Or you can use your SETPOINT™ racks as self-contained "flight data recorders" without a PI System™ – watching your data 24/7/365 and never missing a beat via our patented **i-factor technology** that observes each and every waveform from each and every channel, but saves data only when it changes to conserve storage space. You can even use SETPOINT™ with your existing machinery protection system to collect data and/or stream it into a PI System™.



## Data Sources



← PI Server external to rack



← Removable 32GB SD card in rack



← 256GB embedded solid-state hard drive in rack

*You can view, save and open your data anytime, anywhere, and with anyone. SETPOINT™ CMS does not care where you store the data.*



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