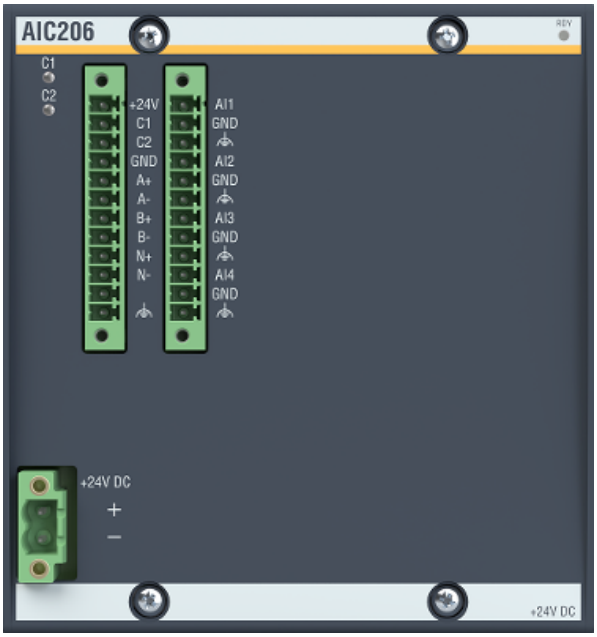


Part type designation	Part number
AIC206	00031353-00

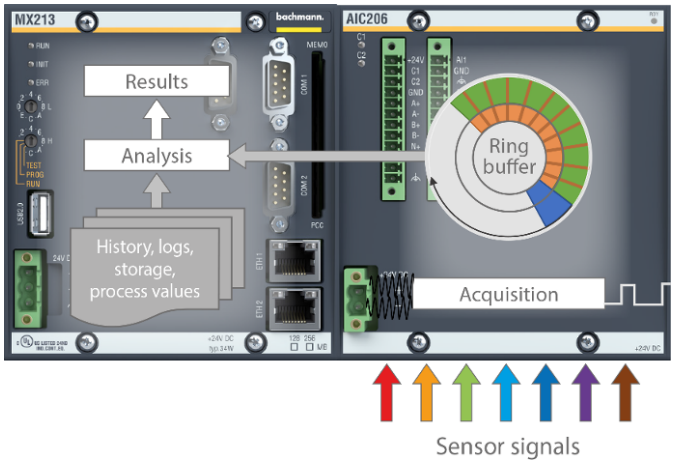
AIC206
Vibration Sensor Input Module

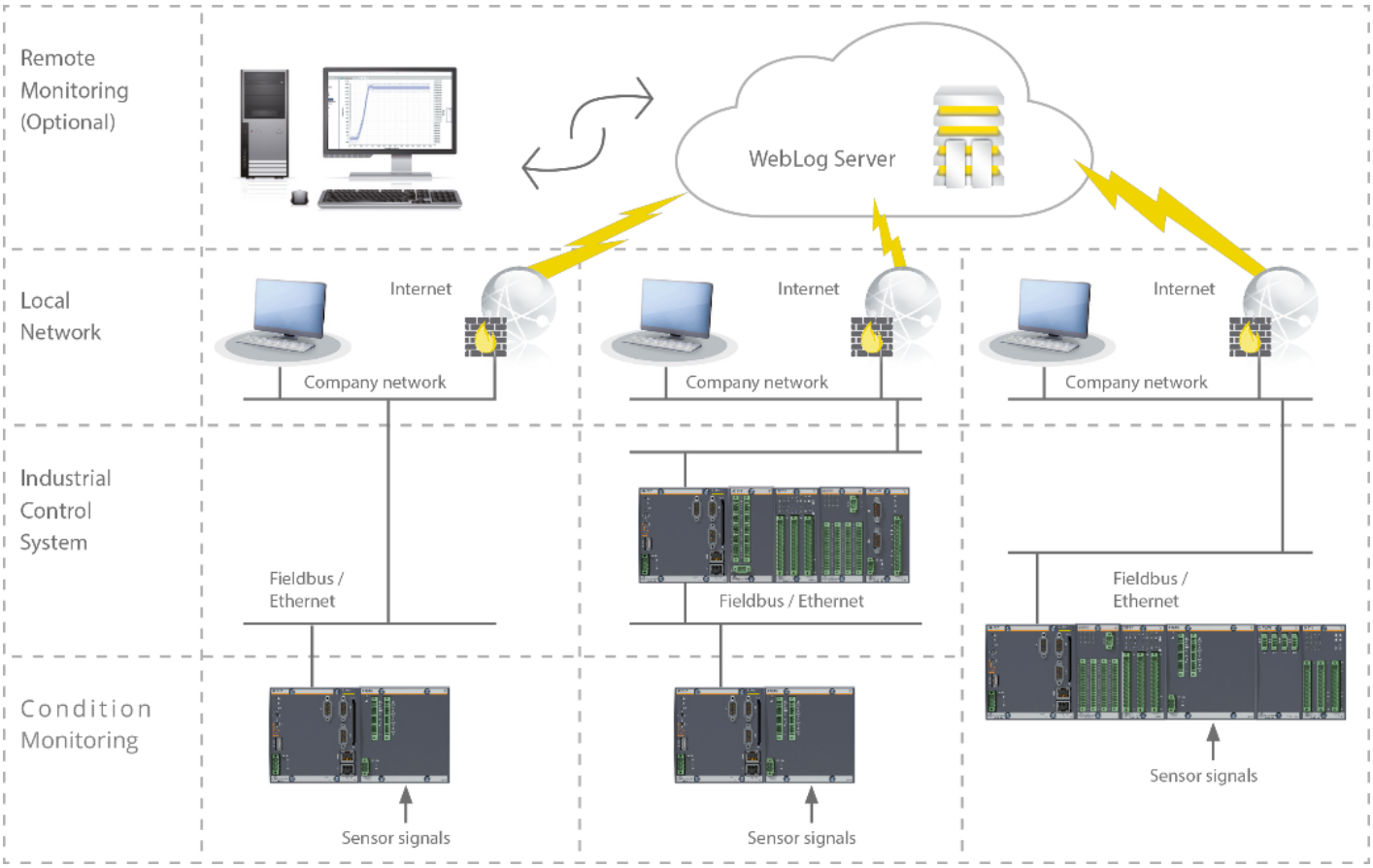
The AIC206 module of the Bachmann automation system offers a vibration monitoring solution that can be fully integrated with the control system. The AIC206 can provide up to 4 channels of ICP®/IEPE enabled vibration inputs for high esolution, simultaneous monitoring. 2 counter channels are provided for speed inputs, or alternatively as a single differential encoder, giving speed, position, direction of rotation and phase within a single measurement.

Independent signal sampling and processing of each channel ensures that sampling at up to 51.2 kHz is maintained. The upgrade from the AIC212 gives a greater dynamic range and introduces variable gains to accommodate the low signal levels from slow-moving parts. Each channel contains a ring buffer so that continuous values for bandpass filtered overall vibration (as acceleration or velocity) are available, each configurable with up to 3 alarm levels. Rotational speed is also stored directly in this buffer, which is timestamped. Routine monitoring data is obtained by copying this buffer under defined operating conditions, and/or on an alarm firing.

Integration with the M200 system means that values are available from any signal in the control system, or via field bus (e.g. Profibus; Modbus). Similarly, vibration values are available as variables within the cycles of the controller programs. The system is expandable simply by adding modules, either for further vibration channels or other input types. The module is also fully compatible with the 12 channel AIC214.

As an M200 standard module, the AIC206 can be implemented either as a “stand-alone” condition monitoring system or incorporated into the various remote or distributed configurations possible with the Bachmann automation system.





The use of M200 CPUs allows this CMS to benefit from pre-existing communication and service interfaces, which reduces the start-up and maintenance costs.

The AIC206 system concept allows a free design of the condition monitoring software to the requirements of a specific application.

4 analog inputs with IEPE interface for piezo vibration sensors:

- Analog inputs individually configurable for sensitivity
- 24 bit A-D Resolution with a dynamic range ≥ 96 dB
- Adjustable sampling rate up to 51.2 kHz
- Adjustable analog and digital filtering
- Full evaluation of frequency band RMS amplitudes as acceleration and velocity values available, e.g. as per ISO 10816-21
- High-speed ring buffer directly on the module
- Configurable threshold levels can be used to generate alarm signals
- Events due to alarm triggering send interrupts to the processor with a 1 µs response

2 counter channels:

- Position detection (incremental encoder input)
- Rotary encoder signal sampled synchronously
- Suitable for embedding in M200 plant management system or as an autonomous CMS
- Up to 4 AIC206 or AIC214 modules can be used in sync per control system
- Any signals from other modules or calculated variables can be used to trigger data storage via the M200 controller
- Analyses can be designed to individual requirements
- Broad range of implementation tools (C, C++) on the realtime operating system VxWorks®
- Synergy by using fieldbus and service communication
- Local storage in CPU Module Memory Card

AIC206

Analog inputs	IEPE	
Channels	AI1 – AI14	
Input voltage	IEPE standard (0 V to 24 V)	
A-D conversion; dynamic range	24 bit; ≥ 96 dB	
Ring buffer	512 MB -> 67 million samples	
Measurement range	AC-coupled ±6 V	
Input impedance	10 kΩ	
Current source for IEPE inputs	< 5 mA / channel	
Sample rate / bandwidth	51.2 kHz / 0.1 Hz to 21.8 kHz (-3 dB) 25.6 kHz / 0.1 Hz to 11.1 kHz (-3 dB) 12.8 kHz / 0.1 Hz to 5.53 kHz (-3 dB) 6.4 kHz / 0.1 Hz to 2.76 kHz (-3 dB) 3.2 kHz / 0.1 Hz to 1.38 kHz (-3 dB) 1.6 kHz / 0.1 Hz to 690 Hz (-3 dB) 0.8 kHz / 0.1 Hz to 345 Hz (-3 dB) 0.4 kHz / 0.1 Hz to 173 Hz (-3 dB) 0.2 kHz / 0.1 Hz to 86 Hz (-3 dB) 0.1 kHz / 0.1 Hz to 43 Hz (-3 dB)	
Full scale error at +25 °C	±0.1 %	
Error detection	IEPE: Bias voltage outside expected range; open channel (cable break)	
Overvoltage protection	-15 V to +36 V	
Incremental encoder input / counter inputs		
Interface	Optional: Either 2 counter inputs or one encoder	
	24 V initiator / proximity switch	Incremental Encoder
Number of channels	2	1
Input signals	CNT1, CNT2	A-, A+, B-, B+, N-, N+
Evaluation	For positive edge at the counter input	1-/2-/4-fold edge evaluation or pulse direction mode
Count direction	Switchable via digital input or software	A/B sequence or pulse direction
Indication	Yes, green LED per channel	No
Count frequency	5 kHz	100 kHz ≤ 400 kHz at quadruple evaluation
Minimum pulse duration	≥ 100 µs	–
Filter frequency	On/Off and adjustable 287 Hz to 73 kHz	–
Error detection	Noise pulse	Phase error
Measurement resolution	32 bit	
Input level	HTL (24 V) / 10 mA sink	

Power supply	External	Internal
Reverse polarity protection	Yes	–
Input voltage	Power supply 24 V (18 V to 34 V)	Via BS2xx backplane
Current consumption	180 mA (at +24 V DC) incl. ∑ current consumption of sensors (4.1 mA per sensor)	280 mA

Environmental conditions	
Operating temperature	-30 °C to +60 °C
Relative humidity, operation	5 % to 95 % noncondensing
Storage temperature	-40 °C to +85 °C
Relative humidity, storage	5 % to 95 % with condensation
Approvals/Certificates	
General	CE, UKCA, cULus
Maritime	ABS, BV, DNV, KR, LR, NK, RINA

Order data

Part type designation	Part number	Description
AIC206	00031353-00	Analog measuring module for Condition Monitoring; 4x Input IEPE; 24 bit; 0.1 %; ≥ 96 dB dynamic range; 20 µs sample time; 1x INC HTL; 400 kHz; A,A/B/N; 512 MB measured data ring buffer; real-time continuous output of values

Accessories

Part type designation	Part number	Description
KZ-AIC206 B+C	00031409-00	Terminal set Phoenix cage clamp (1x KZ 51/02; 2x KZ 35/12; 1x KZ 35/15) with labelling strips and keying elements