CMScore

Part type designation	Part number
CMScore with connector set	00045732-00

Features

- 8 IEPE channels, 2 speed inputs, 2 analog inputs
- 24 V DC power supply
- High sampling rates up to 25.6 kHz
- Dimensions: 300 mm × 200 mm × 80 mm
- Weight: 2.6 kg
- Degree of protection IP54

Why CMScore?

- Cost-effective solution for retrofitting and replacement
- Compact dimensions
- Installation is simple via plug-and-play
- High data and diagnostic quality
- Compatible with existing IEPE sensors when replacing older CMS
- Direct connection to the WebLog Suite for analysis, reporting, and remote monitoring

Contact

Contact us for a personal consultation or an individual offer: *info@bachmann.info* | *www.bachmann.info*

CMScore

Condition Monitoring System

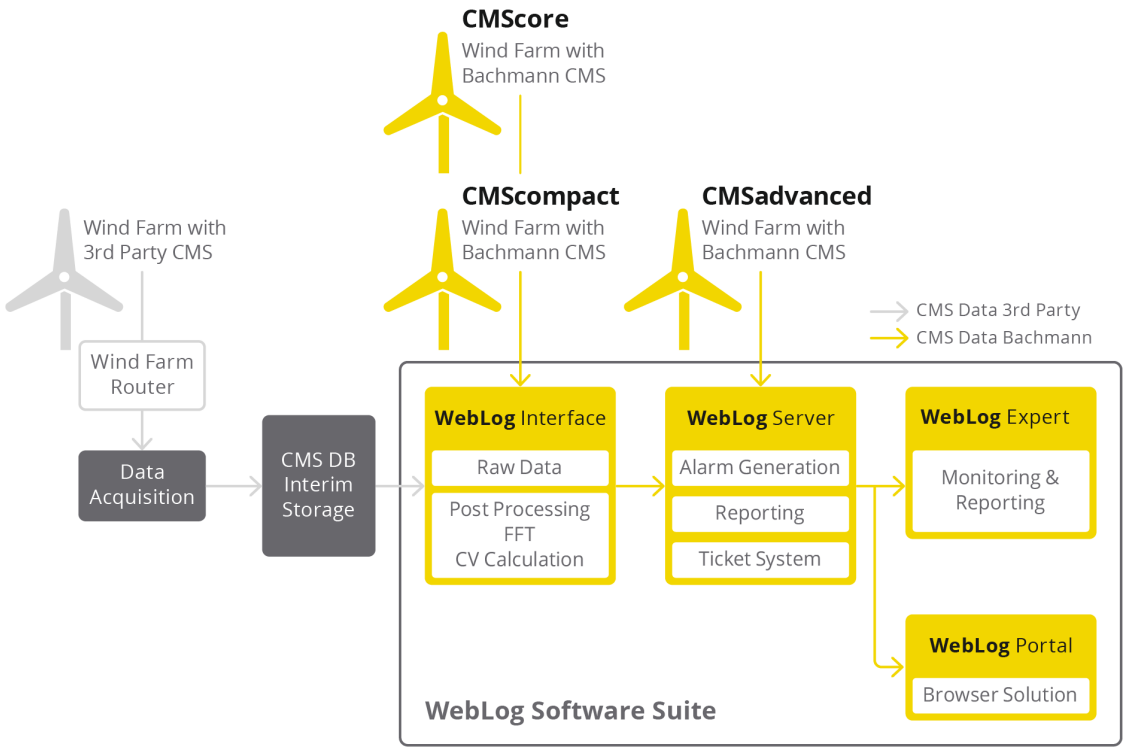
CMScore is an entry-level Condition Monitoring System (CMS) for reliable monitoring of drivetrains. It was specially developed for retrofitting and replacing existing monitoring solutions and offers a cost-optimized solution without compromising data and diagnostic quality. With high sampling rates, the system precisely records the signals from connected IEPE acceleration sensors [1)] and automatically transmits them to a central WebLog Suite server infrastructure for analysis and reporting. The compact design, low weight, and 24 V DC power supply enable easy integration into existing machines. Existing IEPE sensors can continue to be used when replacing legacy systems with CMScore.

8 IEPE channels, 2 speed inputs, and 2 additional analog inputs are available as standard for signal acquisition.

Installation is quick and easy – either by Bachmann or by the customer themselves. The necessary sensors, connection cables and installation materials can be provided by Bachmann.

The CMScore can be combined with all of Bachmann's service levels for condition monitoring. Bachmann's DNV-certified monitoring team can carry out the analysis. Alternatively, the system can be fully integrated into a customer´s own monitoring center, either via the customer's own infrastructure or via a WebLog Suite infrastructure hosted by Bachmann. WebLog Suite offers a standardized platform for monitoring, analysis, and reporting – as well as for other Bachmann CMS variants and 3rd-party systems.

[1)] *CMScore supports the widely used IEPE standard (Integrated Electronics Piezo-Electric), which enables the use of robust piezoelectric sensors and simple cabling.*



Data flow from CMS to WebLog Suite

CMScore

Common properties	
Basic function	Condition Monitoring System
System	CMScore
Analog inputs – IEPE	
Number of analog inputs	8
Sampling rate	25.6 kHz (synchronous, down-sampling up to 100 Hz on the software side)
Measurement range	AC-coupled ±6 V
Resolution (ADC)	16 bit
Accuracy at T_a = +25 °C	±0.3 % FS
Error detection	BIAS voltage
Analog inputs – voltage	
Intended use	Acquisition of quasi-stationary operating parameters
Number of analog inputs	2
Measurement range	±10 V
Resolution (ADC)	10 bit
Accuracy at T_a = +25 °C	±0.5 % FS
Error detection	None
Digital inputs – HTL, counter for speed sensors	
Number of digital inputs	2
Signal standard	HTL (sink)
Voltage category, nominal	24 V DC
Signal supply voltage range	Supply voltage of the system Maximum current: 50 mA per channel
Operating voltage range (high/on)	+15 V DC to +32 V DC
Off-state voltage (low/off)	0 V DC to +5 V DC

Digital inputs – HTL, counter for speed sensors	
Input impedance	4.2 kΩ
Input current, on-state, nominal	5.75 mA
Input current, off-state, max.	0.75 mA
Maximum input frequency	500 Hz
Network/interfaces	
Protocol standard	Ethernet TCP/IP
Protocols	TCP (HTTPS, SSH, SFTP, NTP) ICMP (ping)
Connection technology	1 x RJ45 socket
Data transmission rate	10 Mbit / 100 Mbit / 1 Gbit
Time synchronization	Connection with external SNTP server
Cable specification	100BASE-TX: Cat.5, Cat.5e, Cat.7
Maximum cable length	100 m between stations (Cat.5)
Diagnostics	
Machine readable type plate	Yes (QR code with type information and internet link)
Operational indications	LED bicolor red/green (system status)
Error indications	BIAS voltage via web interface CMSSTD
Energy supply	
Supply voltage, nominal	24 V DC
Supply voltage, range	20 V to 32 V DC
Supply voltage, short-term overload	40 V for 100 ms
Power consumption, continuous, max.	8 W
Input current, continuous, max.	0.235 A
Input current - inrush	1 A
Maximum residual ripple	2.4 V at 50 Hz, 60 Hz, 100 Hz and 120 Hz
Permitted voltage interruptions	PS1 according to IEC 61131-2 PS2 according to IEC 61131-2 in conjunction with a PS2-certified power supply
Reverse polarity protection	Yes, continuously (up to -32 V)
Limitation of supply / fusing	1.1 A polyfuse
Power dissipation, typ./max.	5 W / 8 W
Reverse polarity protection signal supply	Yes, continuously (up to -32 V)
Product safety	
Degree of protection acc. IEC 60529	IP54
Protection class acc. IEC 61010-1, IEC 61010-2-201	III
Overvoltage category acc. IEC 61010-1	I
Material	Painted sheet steel
Environmental conditions	
Temperature, operating	-20 °C to +60 °C
Temperature, transport and storage	-20 °C to +80 °C
Installation altitude, max.	Up to 2000 m without temperature derating 2000 m to 4500 m: reduction of the max. ambient temperature by 0.5 °C per 100 m altitude
Air pressure	106 kPa to 58 kPa (0 m to 4500 m)
Relative humidity, operation	5 % to 95 % noncondensing

Environmental conditions	
Relative humidity, transport and storage	0 % to 95 %, with occasional and temporary condensation (Occasional condensation events are permitted. Before commissioning, it must be ensured that the devices are completely dry and free from contamination.)
Vibration in accordance with IEC 60068-2-6:2007	3 Hz ≤ f < 8.4 Hz: 3.5 mm deflection, constant amplitude 8.4 Hz ≤ f ≤ 500 Hz: 1 g acceleration, constant amplitude
Shock in accordance with IEC 60068-2-27:2008	15 g max.
Approvals/certificates	
Product safety	CE, UKCA
Hazardous substances and waste treatment	RoHS, RoHS China, REACH, WEEE
IT/cybersecurity	ISO 27001
Quality management	ISO 9001 for development and production
Engineering	
Configuration tool	Web interface CMSSTD
Mounting/installation	
Mounting type	Screwing to existing structures (e.g., wall, switch cabinet holder, holding magnets)
Mounting orientation	No restrictions
Ground connection for protection class I	Not required, as protection class III, M4 threaded bolt in the switch cabinet for connection to equipotential bonding available
Cable shield connection	EMC cable glands
Dimensions	
Size unpacked W × H × D	300 mm × 200 mm × 80 mm (without mounting bracket for switch cabinet and cable glands)
Mass unpacked	2.6 kg

Order data

Part type designation	Part number	Description
CMScore with connector set	00045732-00	CMS for server-based basic drivetrain monitoring via WebLog interface, 8 IEPE input channels, 2 analog input channels, 2 digital input channels, integrated in space-saving IP54 switch cabinet with EMC cable glands, 24 V DC power supply, incl. CMScore connector set

Accessories (sensors, sensor cables, spare parts)

Part type designation	Part number	Description
Sensor BAM100-M12 (100mV/g M12)	00020455-00	Acceleration sensor Sensitivity 100 mV/g / M12 connection measuring range 0.5 Hz to 14 kHz
Mounting SF8 (BAMx00 Pad 1/4-28)	00020458-00	Fixture Mounting Pad SF8 for BAM100/BAM500 sensors (BAMx00 Pad 1/4-28)
Sensor Tachometer (RPM IND M12 L)	00026558-00	Inductive sensor used to measure the rotational speed Diameter M12; PNP; NO; Sf 2000 Hz
Sensor BES02H0 (RPM IND M18 L)	00026751-00	Inductive sensor used to measure the rotational speed Diameter: M18; PNP; NO; Sf 700 Hz
3x 0.34 mm² sensoric cable 10 m	00037847-00	3x 0.34 mm² sensoric cable 10 m
3x 0.34 mm² sensoric cable 15 m	00037844-00	3x 0.34 mm² sensoric cable 15 m
Connection cable (2-pin, 0.5 mm², PUR shielded) 5 m	00046197-05	Connection cable 2-pin, 0.5 mm², PUR shielded, for 24 V DC power supply, 5 m
Connection cable (2-pin, 0.5 mm², PUR shielded) 10 m	00046197-10	Connection cable 2-pin, 0.5 mm², PUR shielded, for 24 V DC power supply, 10 m
Connection cable (2-pin, 0.5 mm², PUR shielded) 15 m	00046197-15	Connection cable 2-pin, 0.5 mm², PUR shielded, for 24 V DC power supply, 15 m
Connection cable (2-pin, 0.75 mm², PUR shielded) 20 m	00046200-20	Connection cable 2-pin, 0.5 mm², PUR shielded, for 24 V DC power supply, 20 m
Grounding cable 6 mm² 0.5 m	00046514-00	Grounding cable 6 mm², M4 & M8 ring cable lug, 0.5 m
Grounding cable 6 mm² 2 m	00046515-00	Grounding cable 6 mm², M4 & M8 ring cable lug, 2 m
Grounding cable 6 mm² 5 m	00046516-00	Grounding cable 6 mm², M4 & M8 ring cable lug, 5 m
Ethernet patch cable (ETHG-ETHG 10.0 m GN)	00025709-00	RJ45 IP 20, Kat. 5 (ISO/IEC 11801), PUR, 10 m green
Ethernet patch cable (ETHG-ETHG 15.0 m GN)	00025711-00	RJ45 IP 20, Kat. 5 (ISO/IEC 11801), PUR, 15 m green
Ethernet patch cable (ETHG-ETHG 20 m GN)	00044029-00	RJ45 IP 20, Kat. 5 (ISO/IEC 11801), PUR, 20 m green
Mounting magnet set for switch cabinet Ø 66 mm, M8x15	00046642-00	4x mounting magnets, Ø 66 mm, rubberized, with M8 x 15 mm external thread and 4x stainless steel hex nuts with flange and locking teeth
CMScore	00042346-00	CMS for server-based basic drivetrain monitoring via WebLog interface, 8 IEPE input channels, 2 analog input channels, 2 digital input channels, integrated in space-saving IP54 switch cabinet with EMC cable glands, 24 V DC power supply, without CMScore connector set
CMScore connector set	00045783-00	CMScore connector set consisting of 1x KZ 51/03 cage clamp terminal for power supply, 3x KZ 35/12 cage clamp terminal for input signals, self-adhesive labels for CMScore terminal marking