

Online Prediction, Protection and Process Monitor

Emerson's AMS Asset Monitor is a field-mountable device to collect data from driven and non-driven assets by using different types of sensors such as Piezoelectric and Eddy Current Vibration Sensors. The monitor analyzes the data to determine machine health and provide alarms where appropriate, and based on the machine state. The AMS Asset Monitor is designed to carry a combination of up to 12 CHARMs – VI Piezo CHARMs, VI Tach CHARMs, VI Voltage CHARMs, and compatible DeltaV™ CHARMs – to connect input and output signals.

AMS Asset Monitor can be used as a standalone prediction device with basic protection functions, or can be integrated into a network of multiple AMS Asset Monitors with connections to complementary systems such as Emerson's Plantweb™ Optics platform. The installation of additional software on PC or laptop is not necessary. Web browsers can be used to configure and control AMS Asset Monitor.

The input signals measured by sensors mounted on the equipment are connected through sensor-specific CHARMs to the signal processing of the AMS Asset Monitor. The preprocessed sensor signals are forwarded to the prediction unit for analysis based on predefined rules with configurable parameters. The prediction results are output based on selectable logics through output CHARMs or forwarded to other connected systems through the Ethernet interface. The input sensor signals are also forwarded to the unit for basic protection. The typical reaction time of the basic protection is <1 second. Detected alarms are issued via output CHARMs.

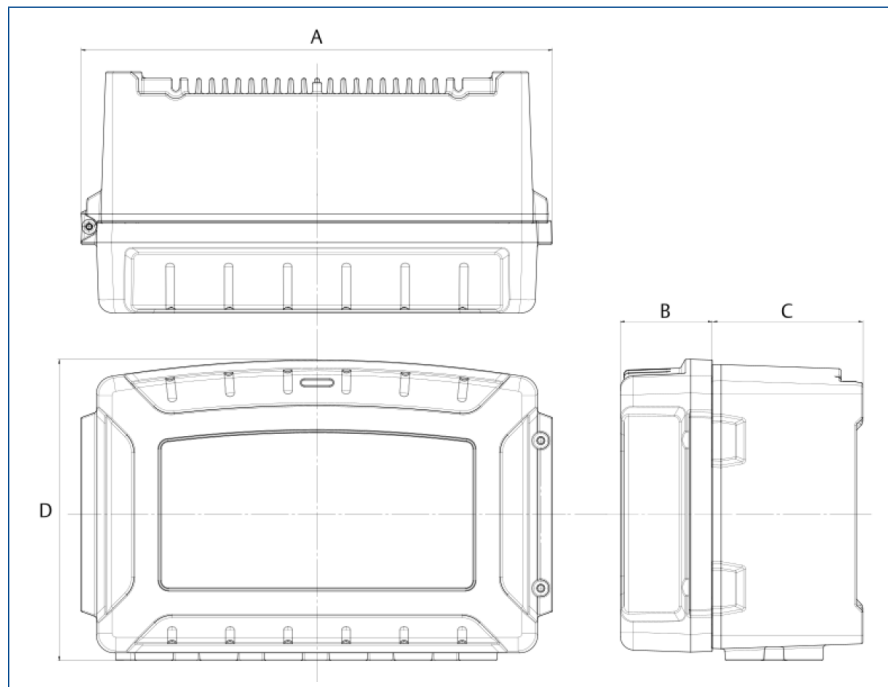
Emerson's AMS Asset Monitor manages pervasive sensing while providing edge analytic results. It's designed to mount at the asset, reducing cabling requirements and other installation costs. For larger systems, multiple units can be daisy-chained together to extend asset coverage.

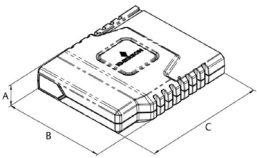


Connections		
Power Connector	Conductor cross section stranded minimum 0.2 mm ²	
	Conductor cross section stranded maximum 2.5 mm ²	
	Conductor cross section AWG minimum 24	
	Conductor cross section AWG maximum 12	
Shield Connection	M6	Outside of the enclosure
	Conductor cross section stranded minimum 0.32 mm ²	13 internal terminals for cable shield connections
	Conductor cross section stranded maximum 2.5 mm ²	
	Conductor cross section AWG minimum 22	
	Conductor cross section AWG maximum 14	
Interfaces		
Ethernet LAN2.1 and LAN2.2 Socket	2 x RJ45 shielded	
Ethernet LAN2.1 and LAN2.2 Data Rate	10/100 Mbit/s Base TX	Half and full duplex, with auto-negotiation and auto-MDI-X
Ethernet LAN2.1 and LAN2.2 Cable Length	up to 100 meter	Shielded cable
Ethernet EEE	Supported	
Ethernet LAN1 Socket	RJ45 shielded	
Ethernet LAN1 Data Rate	10/100 Mbps / 1 Gbps Base-T	Half and full duplex, with auto-negotiation and auto-MDI-X
Ethernet LAN1 Cable Length	up to 100 meters	Shielded cable
SD Card	microSD card holder	For future use
Communication Protocols	OPC UA	Server, R/W
	Modbus TCP/IP	Slave/Server, R/W

Indications and Buttons		
Indications		
Reset/Recovery Indication Light	LED Blue/Green	Assigned to the Reset/Recovery button
Front Indication Light	LED Red/Green	
Buttons		
Reset/Recovery Button	Hidden tact switch	
Slots		
Internal Power Module		AM 5730
Number of CHARM Slots	12	
Supported CHARM Terminal Blocks	Standard Terminal Block	KL4502X1-BA1
	Thermocouple Terminal Block	KL4502X1-NA1
	Relay Output Terminal Block	KL4502X1-MA1
	Address Plug Terminal Block	KL4502X1-DA1
Compatible CHARMS	RTD Input	KL3031X1-BA1
	Thermocouple/mV Input	KL3032X1-BA1
	AI 4-20 mA HART (HART not supported)	KL3021X1-BA1
	DI 24 VDC Low-Side sense (dry contact)	KL3003X1-BA1
	DO 24 VDC High Side	KL3002X1-BA1
	VI Piezo	AM 5125
	VI Voltage	AM 5620
	VI Tach	AM 5312
Address Plug	Plug #1	KL4501X1-BA1

Dimensions and Electrical Data AMS Asset Monitor		
Electrical Data		
Power Dissipation	< 15W	Exclusive feed through power
Overvoltage Category	1	According to IEC 60947-1
Mechanical Data		
Dimensions	A = 384 mm (15.1 in) B = 75 mm (3.0 in) C = 123 mm (4.8 in) D = 241 mm (9.5 in)	
Weight	< 7 kg (15.4 lb)	7.3kg (16.3 lb) with CHARMS
Enclosure Minimum Wall Thickness	3.2 mm (0.13 in)	
Enclosure Painting	Polane HS Plus Grey RAL7012	



Dimensions and Electrical Data +24VDC Internal Power Module		
Electrical Data		
Input Voltage	+24 VDC	± 10%
Reverse Polarity Protection	Continuous	
Overvoltage Shutdown Threshold	+34.3 VDC	± 1.8 V, self-recovering after 9s
Power Requirement	0.88 A @ +21.6 VDC	Maximum for a fully equipped AMS Asset Monitor
Pass Through Capacity	1.2 A	Maximum for additional 12 x 100 mA per CHARM
Fuse Protection	Internal	Non-replaceable fuse
Mechanical Data		
Dimensions	A = 25 mm (0.98 in) B = 95 mm (3.74 in) C = 113 mm (4.45 in)	
Weight	< 150 g (0.33 lb)	Without packaging
Status Indication	Green power LED Red error LED	

Environmental Conditions and Mechanical Design AMS Asset Monitor		
Environmental Conditions		
Operating Temperature	-40 to +55°C	Ambient air
Storage Temperature	-40 to +85°C	
Humidity	5 to 95%	Relative humidity without condensation, suitable for indoor and outdoor use
Protection Class	IP66 and NEMA-4X	IP66 and NEMA-4X According to IEC 60529 and NEMA-250
Shock	150 m/s ²	According to IEC 60068-2-27, 4000 shocks per axis
Vibration	0.15 mm	10 to 58.1 Hz
	20 m/s ²	58.1 to 150 Hz
	Floating sinus, 20 cycles, three axes	According to IEC 60068-2-6
Operating Altitude	< 2,000 m	Above sea level
Allowed Degree of Pollution	2	
Environmental Conditions and Mechanical Design +24VDC Internal Power Module		
Environmental Conditions		
Operating Temperature	-40 to +70°C	Ambient air
Storage Temperature	-40 to +85°C	
Humidity	5 to 95%	Relative humidity without condensation
IP Protection Class	IP20	According to IEC 60529
Airborne Contaminates	Fuji 602MCF, thickness 1.8 – 2.2 mils, 46 – 56 um	Conformal coating
Shock	150 m/s ²	According to IEC 60068-2-27, 4000 shocks per axis
Vibration	0.15 mm	10 to 58.1 Hz
	20 m/s ²	58.1 to 150 Hz
	Floating sinus, 20 cycles, three axes	According to IEC 60068-2-6
Operating Altitude	< 2,000 m	Above sea level

Reliability		
MTBF	> 61 years	
Compliance and Certifications		
CE	2014/30/EU (EN 61326-1) 2014/34/EU (EN 60079-0, EN 60079-7, EN 60079-11, EN 60079-15, EN 60079-31) 2011/65/EU (EN IEC 63000)	
UKCA	S.I. 2016 No. 1091 (EN 61326-1) S.I. 2016 No. 1107 (EN 60079-0, EN 60079-7, EN 60079-11, EN 60079-15, EN 60079-31) S.I. 2016 No.3032 (EN IEC 63000)	
CSA	CSA C22.2 No. 94.2:15 (2nd Edition) CAN/CSA C22.2 No.61010-1-12, UPD1:2015, UPD2:2016 UL 50E (2nd Edition) UL 61010-1 (3rd Edition)	
Marine	DNV GL rules for classification – Ships, offshore units, and high speed and light craft	
RoHS, REACH, GB/T 26572		
Explosion Protection		
IECEx/ATEX/CSA		
Type of Protection	Increased safety ec in combination with nC and [ic], depending on the installed CHARMs	
Identification	IECEx/ATEX	II 3G Ex ec nC [ic Gc] IIC T4 Gc II 2D Ex tb [ic Dc] IIIC T75°C Db
	CSA	Ex ec nC [ic Gc] IIC T4 Gc Ex tb [ic Dc] IIIC T75°C Db Class I, Zone 2, AEx ec nC [ic Gc] IIC T4 Gc Zone 21, AEx tb [ic Dc] IIIC T75°C Db Class I, Division 2, Groups A, B, C, D T4 Class II, Division 2, Groups F, G T75°C; Class III
Temperature Range	-40°C < T amb < 55°C	

Explosion Protection		
IECEX/ATEX/CSA		
Standards	ATEX / IECEX	EN IEC / IEC 60079-0 EN / IEC 60079-7 EN / IEC 60079-11 EN / IEC 60079-15 EN / IEC 60079-31
	CSA	CAN/CSA-C22.2 No. 0-10 CAN/CSA-C22.2 No. 60529 CAN/CSA C22.2 No. 94.2-15 CAN/CSA-C22.2 No. 61010-1 CAN/CSA C22.2 No. 213-17 CAN/CSA-C22.2 No. 60079-0 CAN/CSA-C22.2 No. 60079-7 CAN/CSA-C22.2 No. 60079-11 CAN/CSA-22.2 No. 60079-15 CAN/CSA-22.2 No. 60079-31 NEMA ANSI/IEC 60529 ANSI/UL 50E ANSI/UL 61010-1 ANSI/UL 121201 ANSI/UL 60079-0 ANSI/UL 60079-7 ANSI/UL 60079-11 ANSI/UL 60079-15 ANSI/UL 60079-31
IECEX Approval Number		IECEX BVS 20.0001X
ATEX Approval Number		BVS 20 ATEX E 001 X
CSA Approval Number		CSA19CA80042287X

Ordering Information

AMS Asset Monitor Packages Model Numbers	Product Description
SE8701-PKG1	AMS Asset Monitor package, including: SE8701T01-IM Base with 1/2-NPT Cable Gland Threading, (1) SE8701T02-IP Internal Power Supply, (12) SE4501 Std Terminal Blocks, (1) KL4501X1-BA1 Address Plug #1 (1) KL4502X1-DA1 Address Plug Terminal Block
SE8701-PKG2	AMS Asset Monitor package, including: SE8701T01-IM2 Base with 1/2-NPT Cable Gland Threading, with Offshore/Near Shore Marine Paint, (1) SE8701T02-IP Internal Power Supply, (12) SE4501 Std Terminal Blocks, (1) KL4501X1-BA1 Address Plug #1 (1) KL4502X1-DA1 Address Plug Terminal Block
Accessory Model Numbers	Product Description
SE8701UMB	Universal Mounting Bracket
SE8701-10-GLANDS-PKG	½-NPT Hazardous Rated Cable Glands, 10 pcs
SE8701-10-PLUGS-PKG	½-NPT Cable Gland Plugs, 10 pcs
SE8701-SOLA-PWR-PKG	External 24V Power Supply IP67, 3.8A @ 24V with 10 meter input and output cables, not hazardous rated
SE8701-TRACO-PWR-PKG	External 24V Power Supply IP67, 5.0A @ 24V with 6 meter input and output cables; ATEX Zone 2
A02101WLAN	External Wireless Router for North America CSA Class 1 Div 2
A02100WLAN	External Wireless Router for outside of North America, no hazardous ratings
SE8701-SHADE	Protection from the sun, includes canopy and pipe mounting bracket
SE8701-ANTI-TAMPER-PKG	Tamper-proof screws for the AMS Asset Monitor housing, 2 pcs

Vibration CHARMs Model Numbers	Product Description
SE8701V01-PZ	VI Piezo CHARM (2-wire accelerometers and Piezo Velocity ICP® Sensors)
SE8701V02-VT	VI Voltage CHARM (Dynamic voltage input signals in a range of ±24 V, including externally powered Eddy Current Sensors and Seismic Probes)
SE8701V03-TH	VI Tach CHARM (Externally powered Eddy Current Sensors, Passive Magnetic Sensors and Hall-effect Sensors)
DeltaV™ Process CHARMs Model Numbers	Product Description
SE4303T03	RTD Input CHARM
SE4303T02	Thermocouple/mV Input CHARM
SE4303T01	Analog Input 4-20 mA HART CHARM
SE4301T02	Discrete Input 24VDC Low-Side sense (dry contact) CHARM
SE4302T01	Discrete Output 24VDC High-Side CHARM
CHARM Terminal Blocks Model Numbers	Product Description
SE4501	Standard Terminal Block
SE4503	Relay Output Terminal Block
SE4504	Thermocouple/mV Input Terminal Block
Spare Parts Model Numbers	
SE8701T01-IM	AMS Asset Monitor Base with Core Electronics, enclosure with 1/2-NPT Cable Gland Threading
SE8701T01-IM2	AMS Asset Monitor Base with Core Electronics, enclosure with 1/2-NPT Cable Gland Threading with Offshore / Near Shore Marine Paint
SE8701T02-IP	Internal Power Supply
KL4502X1-DA1	Address Plug Terminal Block
KL4501X1-BA1	Address Plugs #1
SE4606T04	Horizontal Channel Identifier Label/Wiring Cover, 8 pcs.

Start Strong with Guardian

Get off to a strong start with Guardian. Guardian is Emerson's digital platform for addressing the end-to-end lifecycle needs of control software and assets. The Guardian digital experience enables users to quickly connect to product support and interact with additional software and services that propel performance.

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