A6500-UM Universal Measurement Card

The A6500-UM Universal Measurement Card is a component of the AMS 6500 ATG machinery protection system. The card is equipped with 2 sensor input channels (independent or combined, as per chosen measurement mode) working with most common sensors as eddy-current, piezoelectric (accelerometer or velometer), seismic (electro dynamic), LF (low frequency bearing vibration), Hall-effect and LVDT (in combination with A6500-LC) sensors. Besides this, the card contains 5 digital inputs and 6 digital outputs. The measured signals are transmitted through the internal RS 485 bus to the A6500-CC Com Card and converted to Modbus RTU and Modbus TCP/IP protocols for further transmission to host computers or analysis systems. In addition, the Com Card provides the communication through the USB socket at the face plate for the connection to PC/ laptop for the configuration of cards and for visualization of measuring results. Apart from that, the measuring results can be output through analog outputs 0/4 - 20 mA. These outputs have a common ground and are electrically isolated from system supply. The operation of the A6500-UM Universal Measurement Card is performed in the A6500-SR System Rack, which also provides connection of supply voltages and signals. The A6500-UM Universal Measurement Card provides the following functions:

- Shaft Absolute Vibration
- Shaft Relative Vibration
- Shaft Eccentricity
- Case Piezoelectric Vibration
- Thrust and Rod Position, Differential and Case Expansion, Valve Position
- Speed and Key

- Two-channel, 3U size, 1-slot plug-in module decreases cabinet space requirements in half from traditional four-channel 6U size cards.
- API 670 compliant, hot swappable module.
- Remote selectable limit multiply and trip bypass.
- Front and rear buffered and proportional outputs, 0/4 – 20mA output.
- Self-checking facilities include monitoring hardware, power input, hardware temperature, sensor, and cable.

Signal Input, Eddy current		
Input Signal and Raw Signal Voltage Range	-1 V to -22 V	
Frequency Range	0 to 18750 Hz	attenuation <0.1 db
Supply Voltage	-23.25 V / -26.0 V DC	selectable short circuit proof
Maximum Supply Load	35 mA	
Supply Accuracy	±1%	
Supply Load Variation	±1%	for loads 0 to 100%
Supply Temperature Drift	±1%	within operating temperature range of -20°C to +70°C

Signal Input, Piezoelectric		
Input Signal and Raw Signal Voltage Range	+1 V to +23 V	
Frequency Range	0 to 18750 Hz	attenuation <0.1 db
Supply Constant Current	0 to 8 mA	adjustable selectable as 2-wire or 4-wire connection
Supply Gain Accuracy	±3.5%	
Supply Offset Accuracy	+100 µA / -0 µA	
Supply Voltage Reserve	+ 25 V	
Supply Temperature Drift	±50 µA	within operating temperature range of -20°C to +70°C
Signal Input, Seismic (electro dynamic)		
Input Signal and Raw Signal Voltage Range	-10 V to +15 V	
Frequency Range	0 to 2000 Hz	attenuation <0.1 db
Supply Lifting Current	0 to 8 mA	adjustable selectable as 2-wire or 4-wire connection
Supply Gain Accuracy	±3.5%	
Supply Offset Accuracy	+100 µA / -0 µA	
Supply Voltage Reserve	+ 12 V	
Supply Temperature Drift	±50 µA	within operating temperature range of -20°C to +70°C
Signal Input, LF (low frequency bearing vibration)		
Input Signal and Raw Signal Voltage Range	-11 V to +11 V	
Frequency Range	0 to 1000 Hz	attenuation <0.1 db
Supply Voltage	±15 V DC	short circuit proof
Maximum Supply Load	35 mA	
Supply Accuracy	-5%	
Supply Load Variation	-12%	for loads 0 to 100%
Supply Temperature Drift	±3%	within operating temperature range of -20°C to +70°C

Signal Input, Hall-effect / A6500-LC		
Input Signal and Raw Signal Voltage Range	+1 V to +22 V	
Extended Input Range	0 V to +30 V	only valid for speed measurement, sensor raw signal will clip.
Frequency Range	0 to 18750 Hz	attenuation <0.1 db
Supply Voltage	+30 V	short circuit proof
Maximum Supply Load	35 mA	
Supply Accuracy	-10%	
Supply Load Variation	-12%	for loads 0 to 100%
Supply Temperature Drift	±3%	within operating temperature range of -20°C to +70°C
Digital Input		
Number Of Inputs	5	
Logic Low Level	0 V to 3 V	active
Logic High Level	13 V to 32 V, open	not active
Load	<1 mA	
Rated Current	1 mA	
Rated Power	24 mW	for loads 0 to 100%
Inputs For Key-Signals	2	two of the five inputs can be used for key-signal inputs, either DI 1 or DI 2
Key-Signal Frequency Range	0 to 2000 Hz	at duty cycle 20 to 80%
Current Output		
Number Of Outputs	2	
Range	0/4 to 20 mA	
Accuracy	±1% of full scale	
Maximum Load	<500 Ω	
Rated Voltage	10 V	
Rated Power	0.2 W	
Temperature Drift	±1% of full scale	within operating temperature range of -20°C to +70°C

Digital Output		
Number Of Outputs	6	solid state relay
Type	normally open	equivalent to SPST protected against polarity reversal
Voltage Capability	19 V to 32 V DC	
Maximum Load	100 mA	
Rated Current	100 mA	
Rated Power	2.4 W	
Turn-On / Turn-Off Time	<5 ms	At 20 kΩ load (without alarm detection time as configured delays, filter settings, and so on)
Pulse Output		
Number Of Outputs	2	
Type	normally open	Opto-decoupled collector-emitter output
		Protected against polarity reversal
Voltage Capability	19 V to 32 V DC	
Maximum Load	30 mA	
Frequency Range	0 to 2000 Hz	at 50% duty cycle
Additional Pull-Up Voltage	19 V to 32 V DC	Short circuit proof
Fan-Out	21	Key-signal inputs of A6500-UM at pull-up voltage of 24 V DC
Raw Signal Output		
One Output Per Sensor Input, Nonreactive And Short Circuit Proof		
Voltage		according to sensor signal
Rated Current	2 mA	
Rated Power	60 mW	
Accuracy	±1% of full scale	For connected devices with input impedance > 100 kΩ
Phase Shift	<5°	frequencies up to 2000 Hz
	<15°	frequencies up to 18750 Hz
		Key-signal inputs of A6500-UM at pull-up voltage of 24 V DC
Temperature Drift	±1% of full scale	within operating temperature range of -20°C to +70°C
Frequency Range	0 to 18750 Hz	attenuation <1 db

Environmental, General	
Protection Class	IP20, IEC 60529
Operating Temperature	-20°C to +70°C (-4°F to 158°F)
Storage Temperature	-40°C to +85°C (-40°F to 185°F)
Relative Humidity	5 to 95%, non-condensing
Vibration	IEC 60068-2-6 0.15mm, 10 – 55Hz 20m/s², 55 – 150Hz
Shock	150 m/s2 4000 shocks per axis
EMR Resistance	EN50081-1 / EN50082-2
Power Consumption	Max. 6W
Configuration	Password protected
Rack Slot	3RU/6HP
Board Dimensions	PCB/EURO card format according to DIN 41494, 100 x 160mm (3.937 x 6.300in)
Weight	app 200g exclusive packaging

Compliance and Certifications	
CE	EMC – EN61326-1
	2014/30/EU
	2014/34/EU
	2011/65/EU
ATEX	EN 60079-0:2012
	EN 60079-15:2010
IEC-Ex	IEC 60079-0:2011; Edition: 6.0
	IEC 60079-15:2010; Edition: 4
CSA	CAN/CSA-C22.2 NO. 0-10
	CAN/CSA-C22.2 NO. 61010-1-12
	CAN/CSA-C22.2 NO. 60079-0:15
	CAN/CSA-C22.2 NO. 60079-15:12
	IEC 60529:2013 + COR2:2015
	UL 61010-1:12
	UL 60079-0:13
	UL 60079-15:13
Marine	DNV GL rules for classification – Ships and offshore units

Hazardous Area Approvals

Non-sparking nA in combination with nC	
ATEX	II 3G – Ex nA nC IIC Gc, -20°C ≤ Ts ≤ 70°C (with Ts ≤ 70°C the requirements for temperature class T4 are met)
IEC-Ex	II 3G – Ex nA nC IIC Gc, -20°C ≤ Ts ≤ 70°C (with Ts ≤ 70°C the requirements for temperature class T4 are met)
CSA	Class I Division 2, Groups A, B, C, D, T4 Class 1, Zone 2 Ex / AEx nA nC IIC T4 Gc (the ambient temperature within the end use enclosure shall not exceed 55°C)

Ordering Information

Model Number	Product Description
A6500-UM	A6500-UM - UNIVERSAL MEASUREMENT CARD

Product Accessories

Model Number	Product Description
A6500-LC	A6500-LC - LVDT CONVERTER, DIN-RAIL

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