

AMS 6300 SIS Overview

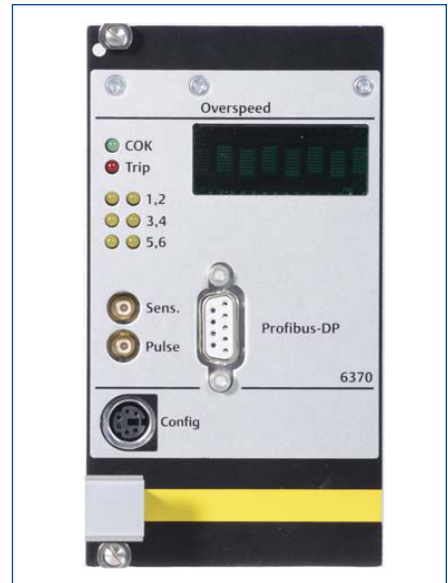
The AMS 6300 SIS Digital Overspeed Protection System is TÜV - certified according to IEC 61508:2010 and provides speed measurement and detection of rotational direction for rotating machines such as turbines, compressors and pumps. The AMS 6300 SIS protects equipment against overspeed conditions and detects incorrect rotation at startup.

The AMS 6300 SIS consists of three protection monitors (A6370) and one backplane (A6371) mounted into a 19" rack. The system is designed for use with eddy current measuring chains (e.g. PR 6423/xxx-xxx plus CON 011/SF).

The three channel design, starting with the signal detection via signal processing up to the evaluation of the measured speed offers maximum safety and availability for the monitored machines. You can be assured of both operational safety and protection of equipment. The AMS 6300 SIS will bring the machine into a safe state if it has reached a critical condition.

The safety outputs of the AMS 6300 SIS are the trip relays located on the backplane. With the backplane types "Trip Voted" and "Trip Not Voted" two different trip logic concepts are available to provide connectivity to most common trip solutions.

The system also includes an extended fault detection functionality. The three sensors are continuously monitored whether they are operating within the permitted limits. Moreover, the channels mutually check and supervise the output signals of each other.



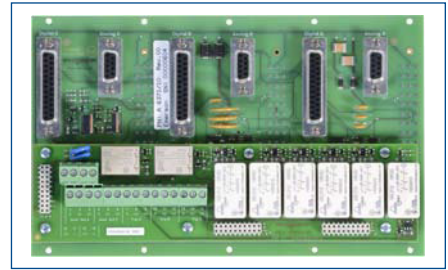
A6370D/DP

- Overspeed protection safety function meets SIL 3 requirements
- Rotational direction detection safety function meets SIL 2 requirements
- SIL certification according to IEC 61508:2010 and relevant parts of EN 62511 and DIN EN 62061
- Micro-controller based 3-channel protection system
- Password protection for configuration software and each monitor
- 6 programmable binary outputs per channel
- 2 galvanically separated current outputs per channel
- 3 pulse outputs per channel
- Measurement of shaft acceleration
- Redundant power supply
- Mutual comparison of pulse and analog output signals between all channels
- Self-test functions for electronic circuits and connected sensors
- Integrated Proof-Test function
- Simplified fault detection by display messages in plain text
- RS 232 configuration interface and RS 485 interface for data exchange
- Hot swap of channels during operation
- PROFIBUS DP interface (optional)

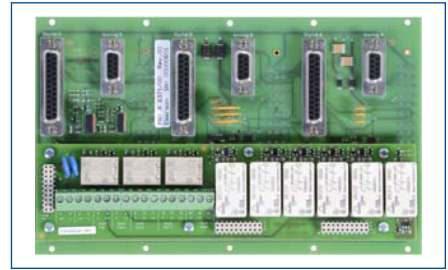


Technical Data

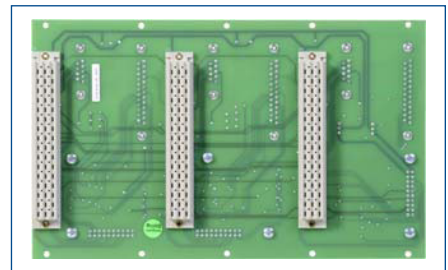
System Supply Voltage	
Nominal	24 V
Range	+19 V - +31.2 V
Max. Power consumption	30 W
Further Information	Two redundant decoupled inputs with common ground
Sensor Voltage Supply	
Voltage	-24.5 V ±1.5 V
Max. Current	35 mA
Further Information	Short-circuit proof, galvanically separated
Sensor Signal Input	
Input Voltage Range	0 - 26 V (+/-)
Limit Range	±48 V
Input Resistance	typical 100 kΩ
Input Frequency Range	0 - 20 kHz
Sensor Type	Eddy current measuring chain (e.g. PR 6423 with converter CON 011 / SF), one measuring chain per channel
Further Information	Protection against reverse polarity
Binary Inputs	
Inputs	4 (Test Value 1, Test Value 2, Enable Test Values, Reset Latch)
Signal Level "Low"	0 - 5 V
Signal Level "High"	13 V - 31 V
Input Resistance	typical 6.8 kΩ
Further Information	Galvanically separated with common ground of all binary inputs
Binary Outputs	
Outputs	7 (Out 1 to Out 6, Channel Ok (COK))
Signal Level "Low"	<100 mV
Signal Level "High"	System Supply Voltage - 2 V
Max. Current	25 mA
Miscellaneous	Short-circuit proof



Rear View Backplane A6371/10



Rear View Backplane A6371/00



Front View Backplane A6371/xx

Pulse Outputs	
Type	Open-Collector-Emitter, Current limited
Max. Voltage	31.2 V
Max. Current	16 mA at 24V
Frequency Range	0 - 20 kHz
Further Information	Galvanically separated

Current Outputs	
Max. Output Current	20 mA
Max. Burden	500 Ω
Accuracy	≤1% of f. s.
Configurable Ranges	0 - 20 mA, 4 - 20 mA, 20 - 0 mA or 20 - 4 mA
Further Information	Two outputs per channel, galvanically separated

TTL Output	
Voltage	0 - 5 V (TTL -Signal)
Frequency Range	0 - 20 kHz
Output Impedance	Typical 10 kΩ
Further Information	Short-circuit proof, Mini-SMB Socked located on front plate

Sens. Output	
Voltage Range	0 - 3.9 V (factor 0.15 ±3%)
Output Impedance	Typical 10 kΩ
Further Information	Short-circuit proof, Mini-SMB Socked located on front plate



AMS 6300 SIS



Configuration Software

Relay Outputs	
Switching Capacity	<ul style="list-style-type: none"> ■ Relays (Out 2, Out 3 and Channel Ok) ■ 48 V AC, 4 A ■ 30 V DC, 4 A ■ Trip Relays: AC1: 48 V / 4 A; AC15: 48 V / 3 A DC1: 24 V / 4 A; DC13: 24 V / 4 A / 0,1 Hz
Backplane A6371/00 Trip Voted	<ul style="list-style-type: none"> ■ 2 Trip Relays in 2oo3 logic ■ 1 Relay Out 2 in 2oo3 logic ■ 1 Relay Out 3 in 2oo3 logic ■ 1 Relay Channel OK in 1oo3 logic
Backplane A6371/10 Trip Not Voted	<ul style="list-style-type: none"> ■ 3 Trip Relays (one per channel Trip A, B, C) ■ 1 Relay Out 2 in 2oo3 logic ■ 1 Relay Out 3 in 2oo3 logic
Communication	
RS 232	Configuration interface, located on front plate, Baud Rate: 38400 Baud
RS 485	<ul style="list-style-type: none"> ■ Max. 32 devices ■ Baud Rate: 38400, 57600, 115200 Baud
Profibus DPV0	<ul style="list-style-type: none"> ■ Max. 31 devices, only at A6370 D/DP ■ Data transmission rate: up to 12 Mbit/s
Tolerances	
Measuring accuracy of speed	±0.03% of f. s.
Reaction Time	
Speed Measurement	< Measuring Time + 8 ms
Detection of rotational direction	< 3 * Period time of input signal + 8 ms
Typical reaction time speed at 3000 min-1	<ul style="list-style-type: none"> ■ Mode "1x per revolution": 35 ms ■ Mode "Automatically": 12.5ms

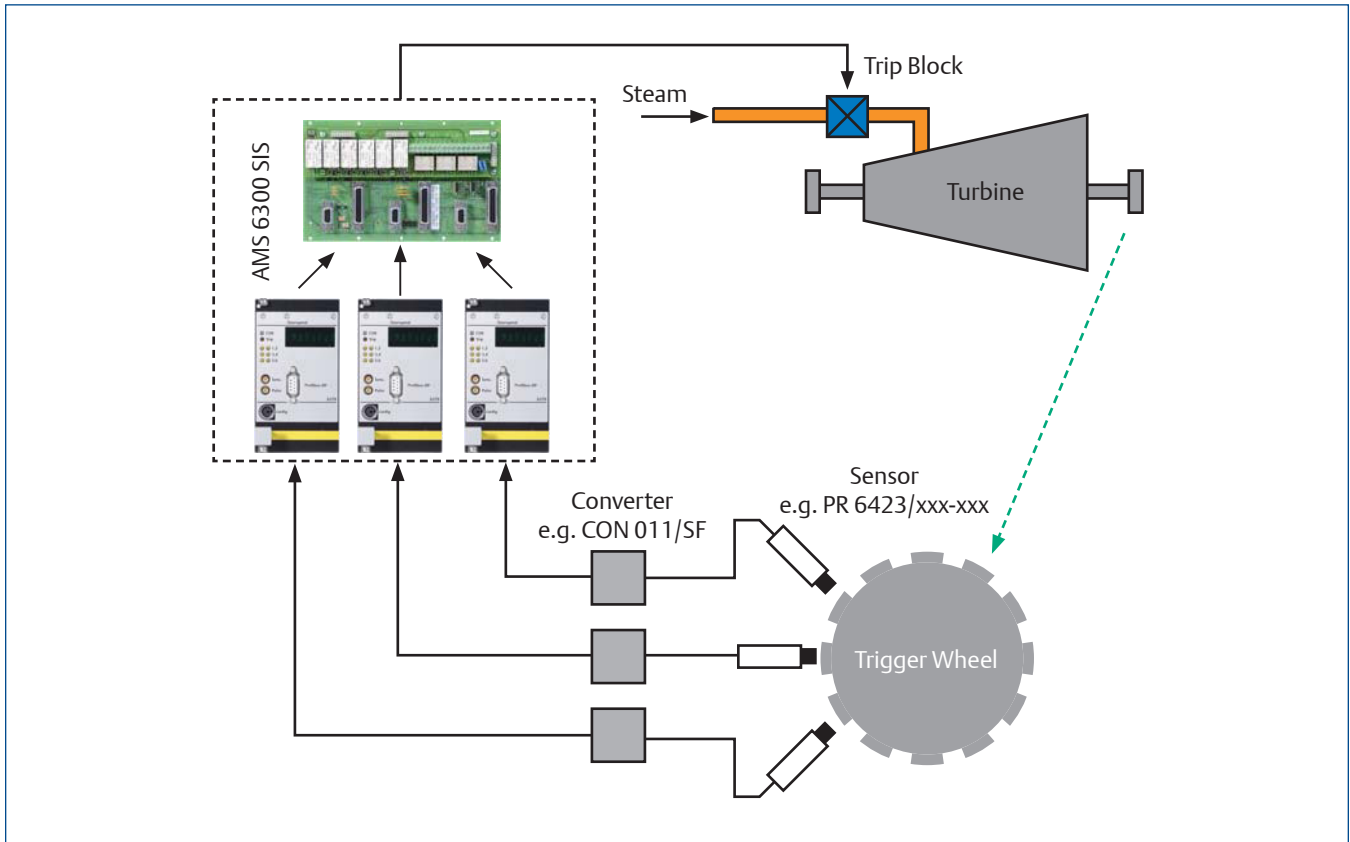
Environmental Conditions	
Temperature Nominal Range	-10 - +55°C
Temperature Limit Range	-20 - +65°C
Temperature Storage / Transport	-40 - +70°C
Humidity	■ 5 - 95% non-condensing
Vibration / Shock	<ul style="list-style-type: none"> ■ Vibration: 0.15 mm (58 - 62 Hz) 20 m/s² (to 150 Hz) ■ Shock: 100 m/s², 6 ms
Degree of Protection	IP 20 if mounted according manual
EMC	<ul style="list-style-type: none"> ■ According to IEC 61326-1, IEC 61326-3-1 ■ Electromagnetic Radiation according to DIN EN 550011 Class A
Operating Altitude	5000 m
Allowed degree of pollution	Category 1 (According to IEC 61010)
Weight	
Backplane A6371/00 and A6371/10	490 g / 1.08 lb (without rack)
Monitor A6370 D	250 g / 0.55 lb
Monitor A6370 D/DP	275 g / 0.61 lb



A6370D

Dimensions	
Monitor A6370 D and A6370 D/DP	<ul style="list-style-type: none"> ■ Width 14 HP (approx. 71 mm / 2.8 in) ■ High 3 RU (approx. 128 mm / 5.04 in) ■ Printed circuit board 100 mm x 160 mm 3.94 in x 6.3 in ■ Connector type F48
Backplane A6371/00	<ul style="list-style-type: none"> ■ W 211 mm x H 130 mm x D 43mm ■ W 8.31 in x H 5.12 in x D 1.70 in
Backplane A6371/10	<ul style="list-style-type: none"> ■ W 211 mm x H 130 mm x D 58mm ■ W 8.31 in x H 5.12 in x D 2.28 in
D-Sub Interface A6380	<ul style="list-style-type: none"> ■ W 34.7 mm x H 65.5 mm x D 45.1 mm ■ W 1.37 in x H 2.58 in x D 1.78 in
D-Sub Interface A6381	<ul style="list-style-type: none"> ■ W 57.4 mm x H 69 mm x D 62 mm ■ W 2.26 in x H 2.72 in x D 2.44 in
19" Rack A6352	<ul style="list-style-type: none"> ■ W 482.6 mm x H 132.5 mm x D 215 mm ■ W 19 in x H 5.22 in x D 8.64 in
Clamps Sub-D Interface A6380, A6381 and Backplane A6371/00, A6371/10	
Conductor cross-section	<ul style="list-style-type: none"> ■ Rigid: max. 4 mm² ■ Flexible: min. 0.2 mm² ■ Flexible: max. 2.5 mm² ■ AWG: min. 24 ■ AWG: max. 12
Dismantle length	8 mm

System Principle



Component	Quantity
A6370 D (Monitor)	3
A6371/00 (Backplane)	1
A6351 (19" Rack)	1
A6380 (9 Pole Connection Block)	3
A6381 (25 Pole Connection Block)	3
A6384 (9 Pole Cable 1m)	3
A6385 (25 Pole Cable 1m)	3
PR 6423/xxx-xxx	3
CON 011/SF	3
ConfigKit Protection	1

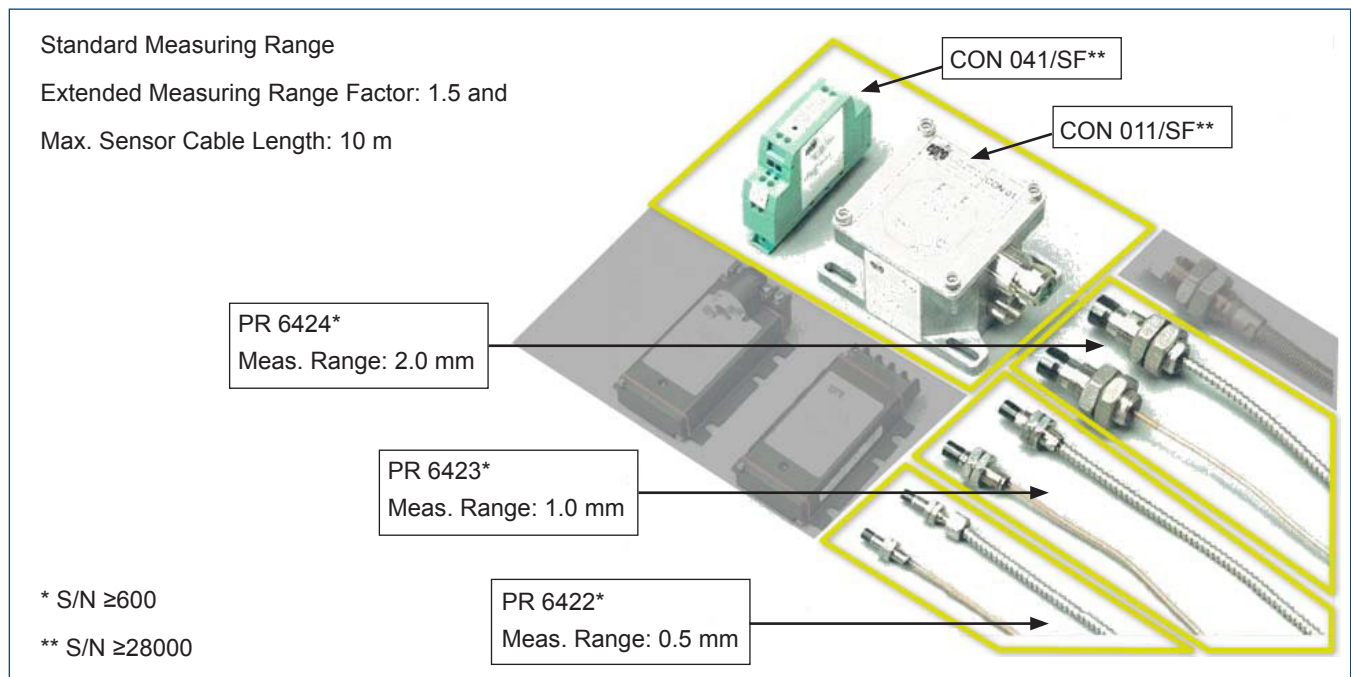
Eddy Current Measuring Chain for SIL-Certified Installation

Eddy current measuring chains consisting of the sensors and converter shown in the table below meets SIL 2 requirements according to IEC 61508:2010 with systematic qualification for SIL 3.

All mechanical variations (sleeve thread, sleeve length, sensor cable length, ...) of the listed sensors are certified. The associated converter are available with standard or with extended measuring ranges. Extended measuring ranges are 1.5 or 2 times of the standard ranges.

Certified Eddy Current Measuring Chain Sensors	Converter
PR 6422/xxx-xxx (serial number ≥ 600)	CON 011/SF (serial number ≥ 28000)
PR 6423/xxx-xxx (serial number ≥ 600)	CON 011/9../SF (serial number ≥ 28000)
PR 6424/xxx-xxx (serial number ≥ 600)	CON 041/SF (serial number ≥ 28000)
	CON 041/9../SF (serial number ≥ 28000)

Diagram of Available SIL-Certified Eddy Current Measuring Chains



Ordering Information

Part Number	Product Description
A6370/D	AMS 6300 SIS - Monitor, 1 CH Speed, Display
A6370/D/DP	AMS 6300 SIS - Monitor, 1 CH Speed, Display, PROFIBUS DP
A6371/00	AMS 6300 SIS - Backplane, Trip Voted
A6371/10	AMS 6300 SIS - Backplane, Trip Not Voted
A6380	AMS 6300 SIS - Connection Block, DIN Rail, Sub-D Connection, 9 Pole
A6381	AMS 6300 SIS - Connection Block, DIN Rail, Sub-D Connection, 25 Pole
A6384	AMS 6300 SIS - Connection Cable, Sub-D Connection, 9 Pole, 1 Meter
A6385	AMS 6300 SIS - Connection Cable, Sub-D Connection, 25 Pole, 1 Meter
A6386	AMS 6300 SIS - Connection Cable, Sub-D Connection, 9 Pole, 3 Meter
A6387	AMS 6300 SIS - Connection Cable, Sub-D Connection, 25 Pole, 3 Meter
A6352	AMS 6300 SIS - Rack, 19 Inch, 3U
A6363	AMS 6300 SIS - Connection Cable, PROFIBUS, Connector/Connector, 4 Meter
9199-00027	ConfigKit Protection includes configuration cable, test cables, software and quick start guide

System Bundles

Bundle	Description	Content	NC
A 6300/P1	AMS 6300 SIS - Trip Voted	<ul style="list-style-type: none"> ■ 19" System Framework ■ Backplane A 6371/00 (Trip Voted) ■ 3x Monitor A 6370 D (Display) ■ Per 3x Connection Block 9 and 25 pole ■ Per 6x Connection Cable 1m and 3m ■ Configuration-Kit for AMS 6300 SIS System 	9199-00105
A 6300/P2	AMS 6300 SIS - Trip Not Voted	<ul style="list-style-type: none"> ■ 19" System Framework ■ Backplane A 6371/10 (Trip Not Voted) ■ 3x Monitor A 6370 D (Display) ■ per 3x Connection Block 9 and 25 pole ■ per 6x Connection Cable 1m and 3m ■ Configuration-Kit for AMS 6300 SIS System 	9199-00106
A 6300/P3	AMS 6300 SIS - Trip Voted & PROFIBUS	<ul style="list-style-type: none"> ■ 19" System Framework ■ Backplane A 6371/00 (Trip Voted) ■ 3x Monitor A 6370 D/DP (Display + ROFIBUS) ■ Per 3x Connection Block 9 and 25 pole ■ Per 6x Connection Cable 1m and 3m ■ Configuration-Kit for AMS 6300 SIS System 	9199-00107
A 6300/P4	AMS 6300 SIS - Trip Not Voted & PROFIBUS	<ul style="list-style-type: none"> ■ 19" System Framework ■ Backplane A 6371/10 (Trip Not Voted) ■ 3x Monitor A 6370 D/DP (Display + ROFIBUS) ■ Per 3x Connection Block 9 and 25 pole ■ Per 6x Connection Cable 1m and 3m ■ Configuration-Kit for AMS 6300 SIS System 	9199-00108

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