

Solution

Radio and television broadcasters worldwide rely on their systems to deliver content to listeners and viewers. But though the infrastructure may be robust, it isn't invulnerable. The insulation of cables and dipole antennas can become brittle and crack from long-term exposure to UV radiation. Feeder cables can be damaged by strong winds, ice, or corrosion. Problems can also arise from improper installation, RF overloads, or lightning strikes.

Over the long term, there is a risk of RF component degradation or even fire, thus completely disabling the broadcast system. Operators therefore need a way to reliably sense and pinpoint problems with cables, splitters, or antennas at an early stage before they lead to more serious damage. The SPINNER Antenna Monitoring System (AMS) does all this and more.

The AMS is engineered to detect arcing and water ingress at an early stage in broadcast transmission systems and alert you to the problem before the 555000damage is done. It helps you to stay on the air day in, day out.

This SPINNER solution monitors the entire antenna system, including patch panels, feeder cables, and dipoles. Recently patented measurement equipment detects even the slightest signs of moisture penetration, triggering an alarm both locally on warning lamps and remotely via an SNMP interface. All events are permanently recorded and can be reviewed from anywhere via a user-friendly web interface.



Features

- early detection for arcing and water ingress¹
- continuously monitoring the whole system
- local signalization via LEDs and Status Relays
- remote signalization via SNMP and Web
- protection by integrating into interlock loop
- no signal distortion
- compact design
- fast and easy installation
- all components indoor
- no invasive changes to the system
- suitable for pressurized lines
- detection no matter the antenna height

¹ water ingress detection only available for open circuit antennas

Control Unit

Collects and analyzes the data from the AMS Detectors (U-Links or Line Sections) and alarms via relay contacts and SNMP and hosts a webserver for convenient configuration of the AMS System.



Mechanical Data

BN	555000C0001
Material and Surface	aluminum alloy
Dimensions (L x W x H)	158 mm x 483 mm x 44 mm (19", 1RU)
Weight	1.6 kg
IP protection level	IP 40 per EN 60529
MTBF	220000 h (40°C ambient temperature)

Electrical Data

Supply Voltage	24 VDC +-10%
Supply current, max.	0.85 A
Supply voltage interface	2.1 mm Barrel Plug
Mains adaptor voltage	80 VAC to 264 VAC, 47 to 63 Hz, 113 VDC to 370 VDC
Mains adaptor interface	IEC320-C8 (power plug)
Power consumption, max	40 W
Applicable Standards	ANSI/AAMI ES60601-1 / ES60601-1-11, TUV EN60601-1 / 60601-1-11 approved, Primary-Secondary: 2xMOPP, EN55011(CISPR11) class B, EN61000-3-2,3, FCC PART 15 class B,CAN ICES-3(B)/NMB-3(B), Compliance to EN61000-4-2,3,4,5,6,8,11, EN55024, EN60601-1-2, EN61204-3 medical level, criteria A

Interfaces

Interlock	D-SUB 25 plug 10 potential-free relay contacts, open active, max. 42.4 VACpk / 60 V DC, 0.5 A, SELV
Signaling	D-SUB 9 plug 3 potential-free relay contacts, closed active, max. 42.4 VACpk / 60 V DC, 0.5 A, SELV
U-Link	2 x D-SUB 15 plug
SNMP (LAN1)	RJ-45 (LAN1 or LAN2 can be patched to front panel) SNMPv2c, based on IRT recommendations
Web interface (LAN2)	RJ-45 (LAN1 or LAN2 can be patched to front panel) IE 9 or higher, Firefox
Local signalization	LEDs on front panel and U-Link
Size of non-volatile memory, min.	250000 entries for resistance values, warnings, alarms (10 yrs. of hourly logging equals 175000 entries)

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AMS Line Section

AMS Detector, to be mounted in any rigid line run.



General Information

Material and Surface	aluminum alloy, painted
IP Protection Level	IP 50 per EN 60529
Interface	D-SUB 15 socket

BAND II (87.5 to 108 MHz)

BN	555210	555225	555240	555250	555265	555255	555260
Size	1 5/8" EIA	3 1/8" EIA	4 1/2" EIA	6 1/8" EIA	7 3/16" EIA ²	8 3/16" EIA ²	9 3/16" EIA ²
Impedance	50 Ω	50 Ω	50 Ω	50 Ω	75 Ω	75 Ω	50 Ω
Proof voltage	10 kV	16 kV	18 kV	22 kV	22 kV	24 kV	24 kV
Avg. Power (at 108 MHz)	20 kW	67 kW	127 kW	140 kW	202 kW	256 kW	360 kW
VSWR	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Dimension L x W x H mm	310 x 120 x 300	355 x 130 x 215	380 x 160 x 255	480 x 210 x 305	535 x 245 x 415	565 x 280 x 435	555 x 310 x 390
Weight	6.5 kg	5 kg	6 kg	11.5 kg	17.5 kg	19 kg	26 kg

BAND III (170 to 254 MHz)

BN	555325	555340	555350	555365	555355
Size	3 1/8" EIA	4 1/2" EIA	6 1/8" EIA	7 3/16" EIA ²	8 3/16" EIA ²
Impedance	50 Ω	50 Ω	50 Ω	75 Ω	75 Ω
Proof voltage	14 kV	18 kV	22 kV	34 kV	38 kV
Avg. Power (at 254 MHz)	44 kW	64 kW	100 kW	132 kW	167 kW
VSWR	1.06	1.06	1.06	1.06	1.06
Dimension L x W x H mm	354 x 130 x 235	380 x 160 x 235	480 x 210 x 270	535 x 245 x 325	565 x 280 x 345
Weight	5 kg	5 kg	11.5 kg	18 kg	19 kg

BAND IV/V (470 to 800 MHz)

BN	555410	555425	555440	555450	555475	555455
Size	1 5/8" EIA	3 1/8" EIA	4 1/2" EIA	6 1/8" EIA	7 3/16" EIA ²	8 3/16" EIA ²
Impedance	50 Ω	50 Ω	50 Ω	50 Ω	75 Ω	75 Ω
Proof voltage	10 kV	16 kV	22 kV	22 kV	30 kV	34 kV
Avg. Power (at 800 MHz)	7 kW	20 kW	40 kW	65 kW	77 kW (at 746 MHz)	101 kW (at 698 MHz)
VSWR	1.06	1.06	1.06	1.06	1.06	1.06
Dimension L x W x H mm	310 x 120 x 300	355 x 130 x 195	380 x 160 x 250	480 x 210 x 290	535 x 245 x 355	565 x 280 x 370
Weight	6.5 kg	5.5 kg	7 kg	12 kg	18,5kg	20 kg

² Can be pressurized up to 0.35 bar (5 psig)

AMS U-Link

AMS Detector, to be mounted on SPINNER Patch Panels



General Information

Interlock types	interlock 1 , interlock 2
Versions	USL-D, USL
Material and Surface	aluminum alloy
IP Protection Level	IP 50 per EN 60529
Interface	D-SUB 15 socket

BAND II (87.5 to 108 MHz)

BN	Interlock 1 Interlock 2	555200 555205	555215 555220	555230 555235
Size		1 5/8"	29.5 -68	43-98
Impedance		50 Ω	50 Ω	50 Ω
Proof voltage		10 kV	13,5 kV	8 kV
Avg. Power (at 108 MHz)		20 kW	51 kW	98 kW
VSWR		1.06	1.06	1.06
Dimension L x W x H mm		295 x 102 x 205	295 x 105 x 205	395 x 140 x 270
Weight		2.5 kg	2.6 kg	5.5 kg

BAND III (170 to 254 MHz)

BN	Interlock 1 Interlock 2	- 555305	- 555320
Size		1 5/8"	29.5 -68
Impedance		50 Ω	50 Ω
Proof voltage		5.5 kV	5.5 kV
Avg. Power (at 254 MHz)		12.8 kW	33 kW
VSWR		1.06 ³	1.06 ³
Dimension L x W x H mm		292 x 102 x 220	292 x 102 x 225
Weight		2.5 kg	2.6 kg

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³ 1.09 from 240 MHz to 254 MHz

BAND IV/V (470 to 800 MHz)

BN	Interlock 1 Interlock 2	555400 555405	555415 555420	555430 555435	555465 555445
Size		1 5/8"	29.5 -68	43-98	52-120
Impedance		50 Ω	50 Ω	50 Ω	50 Ω
Proof voltage		10 kV	13 kV	19 kV	25 kV
Avg. Power (at 800 MHz)		7kW	17.5 kW	35 kW	60 kW
VSWR		1.06	1.06	1.06	1.06
Dimension L x W x H mm		295 x 105 x 190	295 x 105 x 195	395 x 140 x 260	565 x 180 x 310
Weight		2.5 kg	2.5 kg	5.5 kg	11.5 kg

Scope of Delivery

Control unit, mains adaptor, power cord (EU and USA), AMS Detector(s), D-SUB 15 connection cable (length 5 m)

Spare Parts and accessories

BN 555010	AMS Tester for testing the AMS functionality
BN A75695	Cable from control unit to AMS Detector (length: 5 meters)
BN A76192	Cable from control unit to AMS Detector (length: 20 meters)
BN A76170	Mains Adaptor
BN A76167	Power cord Europe
BN A76169	Power cord North America



AMS Tester

Environmental Conditions

Operational conditions	ETSI EN 300 019-4-3 V2.3.2 (2009-1) class 3.1 N
Ambient temperature range	-10 to +45°C
Relative humidity, max.	95% (non-condensing)
Derating of RF- power and voltage with increasing altitude	See "Environmental Conditions for Broadcast Products" TD-00060
Transport conditions	ETSI EN 300 019-1-2 V2.1.4 (2009-1) class 2.2
Ambient temperature range	-25°C to +70°C
Rain, condensation, icing	not allowed
Storage conditions	ETSI EN 300 019-1-1 V2.1.4 (2009-1) class 1.2

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Ambient temperature range	-10 to +45°C
Rain, condensation, icing	not allowed
Safety	EN 60125 (1994) / IEC 215 (1993)

Applicable Documents

Product Manual AMS	M36476
Product Manual AMS Tester	M36374

Part Number

The AMS can be only ordered as a Kit, consisting of Control Unit and 1 or 2 AMS Detector(s)

Basic Number		Frequency Range			C	AMS Detector				
						Size	Type	Quantity	Version	
5	5	5	X	X	X	C	X	X	X	X
AMS Kit for BAND II		0	2	0						
AMS Kit for BAND III		0	3	0						
AMS Kit for BAND IV/V		0	4	0						
AMS Line Section		AMS U-Link								
1 5/8" EIA (50 Ohms)		1 5/8"					1			
3 1/8" EIA (50 Ohms)		29.5 - 68					3			
4 1/2" EIA (50 Ohms)		43 - 98					4			
6 1/8" EIA (50 Ohms)		52 -120					5			
(reserved for internal use)							6			
7 3/16" EIA (75 Ohms)							7			
8 3/16" EIA (75 Ohms)							8			
9 3/16" EIA (50 Ohms)							9			
AMS U-Link - Interlock 1										1
AMS U-Link - Interlock 2										2
AMS Line Section - 50 Ohms										3
AMS Line Section - 75 Ohms										4
No of AMS Detectors (AMS Line Sections or AMS U-Links)										
To be completed by Spinner										

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