



# Antenna and Cable Monitor

## ACM Series



The RF Experts

Bird's® Antenna & Cable Monitor is the solution for monitoring your RF transmission systems. Service providers and self maintained end user's can rely on this monitor and alarm to keep their critical sites up and running. Designed to detect antenna and cable faults that transmitter-internal VSWR monitors may not detect, it also provides accurate RF in-line power measurement functionality.

- Models available from 136-225 MHz, 225-520 MHz, 470-960 MHz, 960-2400 MHz Accurately monitors your antenna and cable system VSWR levels.
- Integral coupler with high directivity optimizes measurement accuracy. Measures small changes in antenna VSWR with high feeder and interface losses.
- Provides multiple alarms if an antenna or cable failure should occur.
- Monitors transmitter output power and includes low or high power alarms.
- Measures true average power of signals with high peak-to-average characteristics - works with any modulation!
- Remote access with both monitoring and control via serial and ethernet interfaces.
- Included as standard Push-To-Talk (PTT) input to avoid false alarm triggering when the transmitter (radio) is not keyed.

### APPLICATIONS

3G, Low Power Broadcast, CDMA, CDMA 2000, Edge, GSM, Government, Microwave, Military, Paging, Public Safety, Rail, TDMA, TETRA, TETRAPOL, VHF & UHF, LMR and WLL.

### SPECIFICATION TABLE

|                              |   |
|------------------------------|---|
| <b>Frequency Range</b>       | 136-225 MHz<br>225-520 MHz<br>470-960 MHz<br>960-2400 MHz   |
| <b>Measurement Range</b>     | ACM: 2.5 to 100 W<br>ACM500: 12.5 to 500 W<br>ACMI: 2.5 to 100 W<br>ACMI500: 12.5 to 500 W  |
| <b>Power Accuracy</b>        | 136-225 MHz, ±10%<br>225-520 MHz, ±8%<br>470-960 MHz, ±5%<br>960-2400 MHz, ±5%  |
| <b>Insertion Loss</b>        | 0.1 dB, 136-960 MHz<br>0.15 dB 960-2400 MHz   |
| <b>VSWR</b>                  | 1.07, 136 to 960 MHz<br>1.1, 960 to 2400 MHz, N Connectors<br>1.1, 960 to 2000 MHz, 7/16 Connectors<br>1.2, 2000 to 2400 MHz, 7/16 Connectors |
| <b>Reflected Directivity</b> | 30 dB, 136 to 960 MHz<br>26 dB, 960 to 2400 MHz   |

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### VSWR ALARM CHARACTERISTICS

|                           |  |
|---------------------------|--|
| <b>Alarm Set Point</b>    | 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 2.0, 2.1, 2.2, 2.3, 2.4, 2.5 to 1         |
| <b>Relay Contact Type</b> | Dry, Form C, relay contacts, common, normally open, normally closed          |
| <b>Contact Rating</b>     | 100 VDC @ 0.5A   |
| <b>Visual Alarm</b>       | Red LED will illuminate to indicate alarm                                    |
| <b>Stimulus</b>           | VSWR set point exceeded, response time proportional to overload              |
| <b>Reset</b>              | Local Mechanical reset switch Remote input (Reset if VDC is 0 to +0.8 volts) |
| <b>Push to Talk</b>       | +5/+24 VDC to activate   |

### MONITOR PORTS

|                   |                                       |
|-------------------|---------------------------------------|
| <b>Connectors</b> | Female N, TNC or BNC                  |
| <b>Coupling</b>   | -63 dB approx., Subject to changes in |

### INTERFACE SPECIFICATIONS

|  |  |
|--|--|
| <b>ACM: RS-232 Serial Port</b>                                       | 9600 baud, no parity, 8 data bits, 1 stop bit, no handshake  |
| <b>ACMI: Ethernet Port Network Interface Compatibility Protocols</b> | 10/100-BASE-T (auto-sensing)<br>Ethernet Version 2.0 / IEEE 802.3<br>ARP, UDP/IP, DHCP, BOOTP, Auto IP, HTTP, and SNMP |
| <b>Left LED</b>  | Amber: 10 Mbps. Green: 100 Mbps  |
| <b>Right LED</b>   | Amber: Half-duplex. Green: Full-duplex   |
| <b>Security</b>  | 128-bit encryption   |

### PHYSICAL AND ENVIRONMENTAL SPECIFICATIONS

|   |  |
|---|--|
| <b>General</b>                          | ThruLine® sensor for direct insertion in 50-ohm line   |
| <b>RF Connectors</b>                    | N or 7/16 DIN, see chart below   |
| <b>Maximum Line Section Power</b>       | Dependent on frequency and connector   |
| <b>Alarm/Power Connector</b>            | 15-pin Female "D" connector  |
| <b>Operating Temperature</b>            | 0°C to 50°C  |
| <b>Storage Temperature</b>              | -20°C to 80°C  |
| <b>Humidity</b>                         | 0 to 95% maximum (non-condensing)  |
| <b>Altitude</b>                         | Up to 3000 meters above sea level  |
| <b>Passive Intermodulation Products</b> | Less than -130 dBc   |
| <b>Power Requirements</b>               | ACM +/- 11 to 26 VDC or +/- 36 to 72 VDC<br>ACMI +/- 9 to 18 VDC or +/- 18 to 36 VDC or +/- 36 to 72 VDC                                   |
| <b>Dimensions</b>                       | 4.8" (121mm) wide (7.6" (192mm) with connectors), 7.2" (183mm) high, 1.06" (27mm) deep   |
| <b>Weight</b>                           | Less than 2 lbs. (0.9 kg)  |
| <b>EMC</b>                              | European Standard EN 61326-1:1997 + Addendums A1: 1998 and A2:2001 - Electrical equip. for measurement                                     |
| <b>Safety</b>                           | European Standard EN 61010-1:2001- Safety Requirements - Electrical equip. for measurement, control and laboratory use - ECM Requirements. |

### MONITOR PORTS

|                  |   |
|------------------|---|
| <b>7005A970</b>  | PC software, displays Antenna & Cable Monitor readings and alarms, controls alarms set points (serial only) |
| <b>ACM-RACK</b>  | 19" rack shelf, mounts up to two Antenna & Cable Monitors   |
| <b>ACM-RACKU</b> | 19" rack shelf with universal power supply (100 to 240 VAC, 50 to 60 Hz) mounts up to two +11 to +26 VDC    |

### ACM (SERIAL) PART NUMBER DEFINITION

| MODEL (POWER RANGE)    | FREQ. RANGE (MHz)   | RF INPUT CONN.       | RF OUTPUT CONN.      | MONITOR PORT CONN. | INPUT VOLTAGE          |
|------------------------|---------------------|----------------------|----------------------|--------------------|------------------------|
| ACM (2.5 - 100 W)      | L1 = 136 - 225 MHz  | NM = N Male          | NM = N Male          | N = N Female       | L = +/- (11 to 25) VDC |
| ACM 500 (12.5 - 500 W) | L2 = 225 - 520 MHz  | NF = N Female        | NF = N Female        | T = TNC Female     | H = +/- (36 to 72) VDC |
|                        | M = 470 - 960 MHz   | DM = 7/16 DIN Male   | DM = 7/16 DIN Male   | B = BNC Female     |                        |
|                        | *H = 960 - 2400 MHz | DF = 7/16 DIN Female | DF = 7/16 DIN Female |                    |                        |

\*H Frequency Band Unavailable with 500 W Version.

### ACMI (ETHERNET) PART NUMBER DEFINITION

| MODEL (POWER RANGE)     | FREQ. RANGE (MHz)   | RF INPUT CONN.       | RF OUTPUT CONN.      | MONITOR PORT CONN. | INPUT VOLTAGE          |
|-------------------------|---------------------|----------------------|----------------------|--------------------|------------------------|
| ACMI (2.5 - 100 W)      | L1 = 136 - 225 MHz  | NM = N Male          | NM = N Male          | N = N Female       | L = +/- (8 to 18) VDC  |
| ACMI 500 (12.5 - 500 W) | L2 = 225 - 520 MHz  | NF = N Female        | NF = N Female        | T = TNC Female     | M = +/- (18 to 36) VDC |
|                         | M = 470 - 960 MHz   | DM = 7/16 DIN Male   | DM = 7/16 DIN Male   | B = BNC Female     | H = +/- (36 to 72) VDC |
|                         | *H = 960 - 2400 MHz | DF = 7/16 DIN Female | DF = 7/16 DIN Female |                    |                        |

\*H Frequency Band Unavailable with 500 W Version.

