COUNTY WIRELESS

ARCS-2000 System

County Wireless ARCS enables FDNY personnel to communicate using 2-way radios in high-rise buildings

County Wireless NY, Inc. 100 Beard Street, Brooklyn, NY 11231

Wi-Fi, DAS, Cell Tower, DC Power Systems, and Cellular Optimization for the Tri-State Area

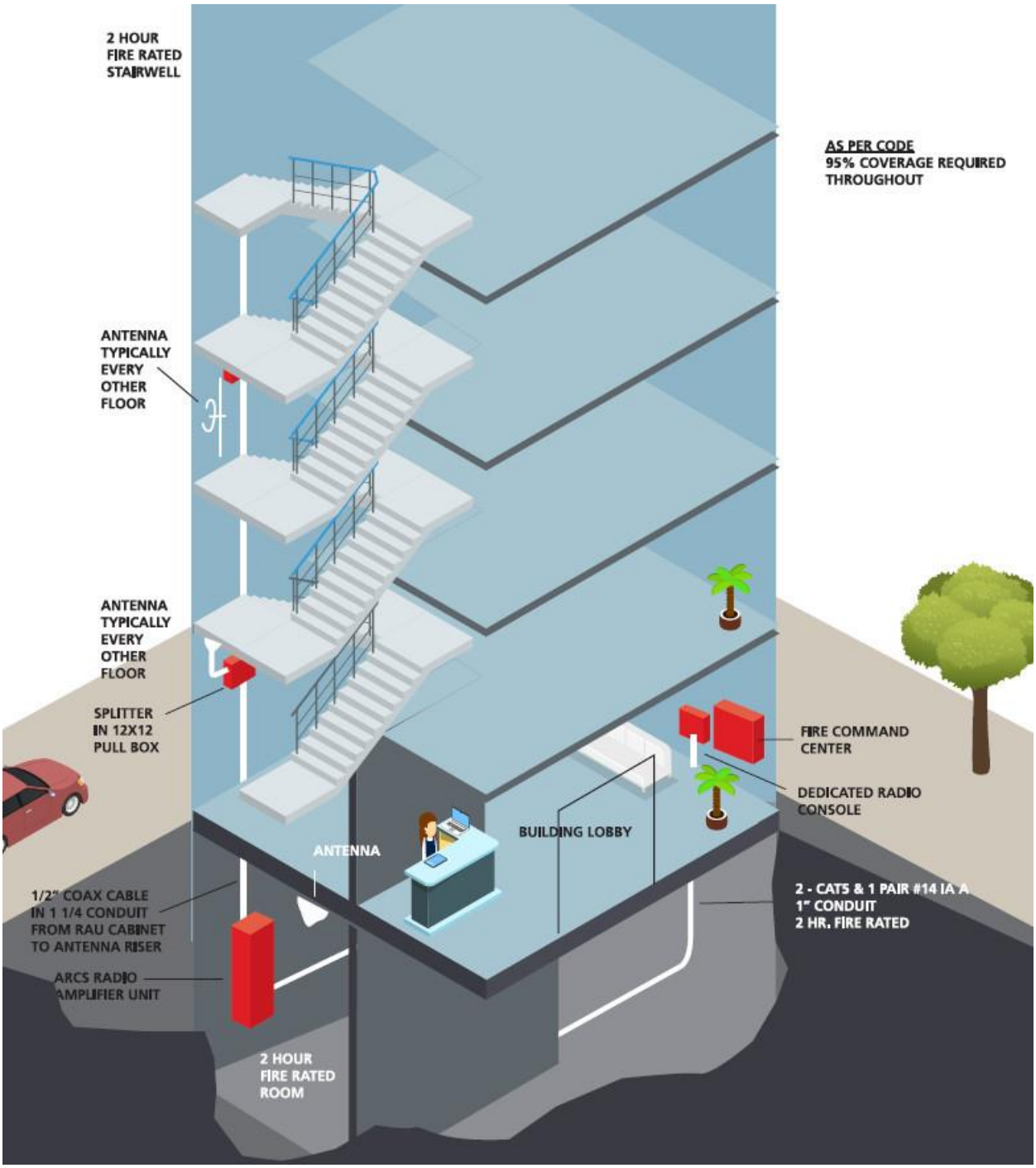
ARCS-2000 System

The ARCS-2000 System consists of three major components:

- A Radio Amplifications Unit (RAU) that houses all the communication equipment. It is typically located in the cellar, in a two-hour fire rated room.
- A Dedicated Radio Console (DRC), located in the lobby of the building and side-by-side with the Fire Command Center. The DRC serves two functions;
  - Provides a direct connection to the FDNY radio system, via a handset or a panel-mounted speaker/microphone.
  - An alarm panel that monitors the overall function of the system.
- A passive antenna system, that propagates the radio signal throughout the building, consists of cable and antennas installed in a two-hour fire rated assembly.

The system is designed to enhance coverage for radio use throughout the premises by using a distributed antenna system that is custom designed to ensure even and powerful signal strength in all critical and general areas of a building. The availability of two operational channels allows the individual, or simultaneous management of separate response teams, to select a channel different from the one used at an event at a neighboring building.

ARCS-2000 System



ARCS-2000 System

County Wireless Repeater Cabinet

The County Wireless ARCS-2000 System provides amplification and distribution the radio frequency communication channels used by the FDNY portable radios. The Repeater Cabinet (RAU) is a NEMA-4 rated enclosure and NEMA-4 rated system

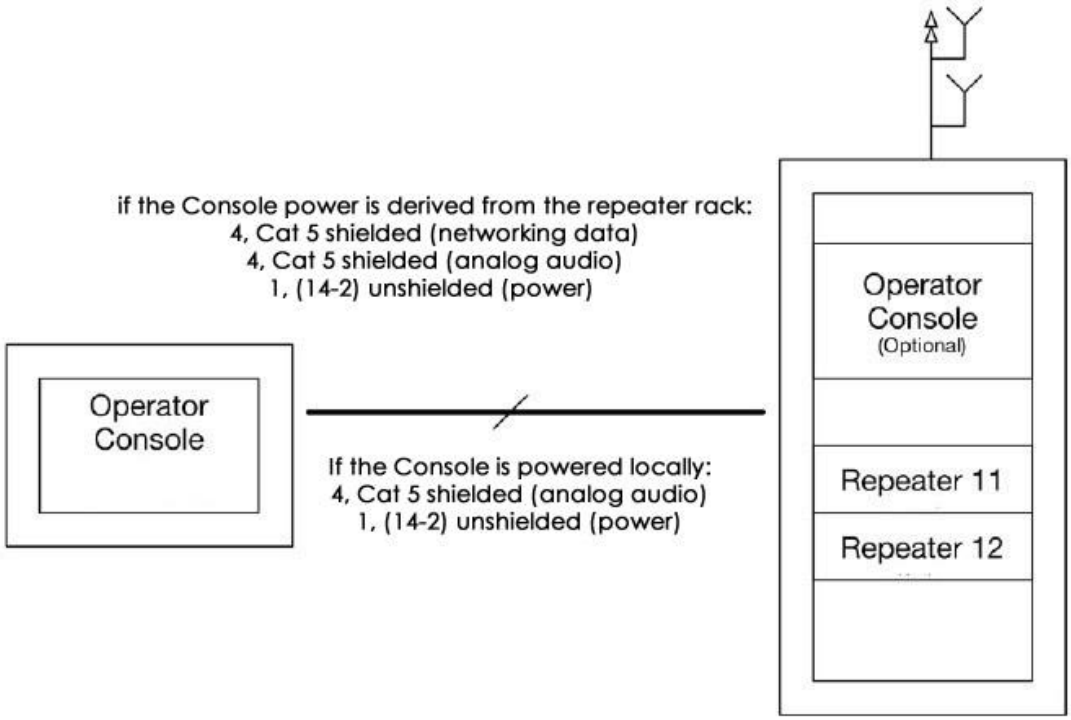
Features

- Receives & transmits FDNY handheld two-way radios within a building
- NEMA-4 enclosure
- NEMA-4 cooling fan
- FDNY 3 RCNY 511-01 compliant (in-building auxiliary radio communication system)
- Supports the use of FDNY channels 11 and 12
- Supervision of antenna and antenna cabling faults
- Remote monitoring capable of providing automatic notifications of all faults.
- Building management system interface-capable

Repeater Cabinet Description

The Repeater Cabinet contains radio frequency amplifiers, AC/DC power supply, battery backup, data acquisition system for monitoring system health, and the repeater cabinet panel that facilitate the receipt and transmission of the FDNY Tactical Channel 11 and Channel 12 radio frequencies. The RC-118N is specifically designed to power and communicate to the ARCS-2000 Auxiliary Radio Communication Console.

Typical Single Console, Single Repeater Cabinet



The Cabinet also contains equipment that supervises the RF systems as well as all related system interconnections. When supplied with an Internet connection, the RC-118N is remote-monitoring capable from any Internet connected device.

The RC-118N is typically installed in a centrally located electrical equipment room or dedicated ARCS room.

Specifications

Power	115 VAC: 2.4 A standby; 9.0 A Tx/Rx
Main body	24 VDC: 1.23 Ah standby
Material	Height 78.23”, Width 25.5”, Depth 25”
Doors	Non-ferrous, with red powder coat ▪ 2 doors secured by three-point locking system, ▪ Locks via customer supplied padlocks, ▪ Sealed with 0.875” aluminum-filled gaskets
Rating	NEMA-4 (vented) or NEMA-4 (closed loop A/C)
Door clearance	Closed: Height 74”, Width 19.5”;
Weight	~175 lbs with equipment installed, ~300 lbs with batteries

ARCS-2000 System

Cooling Unit

Features

- A/C cooling unit
- Earth-friendly refrigerants
- 115VAC
- 4000 BTU/hr nominal capacity
- Thermostat controlled

ARCS-2000 System

Repeater Unit

Features

- 2X TB9100 repeater with P25 capability
- Dual-mode operation
- Smart AC/DC operation
- 5 watt transmit power

Description

The Repeater Unit is a combination of a radio receiver and a transmitter and allows two-way radio personnel to communicate via the repeater. The repeater detects a radio signal, boosts its power, and retransmits it on another frequency, enabling simultaneous talk-and-listen (duplex) radio conversations.

Electrical Specifications

Channel 11	
Tx frequency	483.0125 MHz
RX frequency	486.0125 MHz
Channel 12	
Tx frequency	484.7625 MHz
RX frequency	487.7625 MHz
Power consumption	115V AC, 9A; 24V DC 7.4A

ARCS-2000 System

Data Acquisition Unit (DAU)

Features

- Constantly monitors all system parameters.
- Collect data collection for future download
- Internet capable for remote monitoring
- Building management capable for easy integration into an existing system

DAU Description

The DAU monitors a large number of conditions and allows displaying the current status of alarms and a log of recent alarms. Most alarms indicate a fault condition, but some may be generated by events external to the system, for example, a power failure.

OC-1 Radio Console

The OC-1 Radio Console contains all the displays and controls required to manage, maintain, and operate the ARCS-2000 System. Duplicate sets of microphones, speakers, and handsets provide the means to operate both of the tactical channels simultaneously, if necessary.

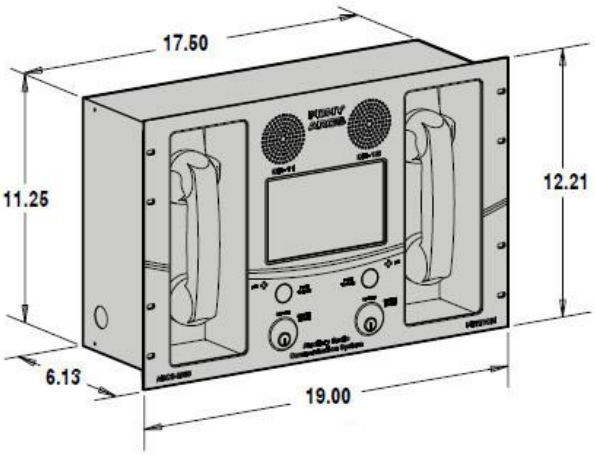
Up to eight OC-1 Radio Consoles can be installed within the building. Typical locations for the Radio Consoles are in the lobby of the building, in a loading dock, or in a Security Operations Center.

The Radio Console is built to meet and exceed the latest FDNY tech bulletins.

Features

- Increases effectiveness of FDNY handheld two-way radios within a building
- System operation via FDNY two-way radios, panel mounted microphone/speaker, or telephone handset
- NYFD 3 RCNY 511-01 compliant (in-building auxiliary radio communication system)
- Supports use of FDNY tactical high-rise duplex channels 11 and 12
- Up to eight OC-1 Radio Consoles can be installed in a system
- Supports one or two RPT-1 Repeater Cabinets
- Provides digital recordings of all communications between response team members for the entire event.

ARCS-2000 System



- Supervised for wiring or component faults.
- Remotely monitored by Firecom Remote Monitoring Service to provide automated notifications
- Optional gateway to Firecom LSN-2000 Life Safety Net System for status

OC-1 Description

An audible alarm (with an option to silence) signals errors or malfunctions. The Console is powered by 24 VDC supplied by the RAU (Repeater) cabinet.

The Radio Console has a touch screen interface that displays the following:

- AC power
- DC power
- Battery Health
- Door Tamper
- System temperature
- Antenna system status

In addition, a sub-screen displays the actual numerical readings of:

- AC voltage
- DC voltage
- Battery voltage
- Temperature
- Tamper switch state
- VSWR
- RSSI

Cat 5 cables transmit audio and network signals.

The enclosure is 16 gage steel with a black powder-coated back box and fits easily into a 3-1/2” stud wall. The panel door is FD red or textured black. A tinted polycarbonate window allows easy viewing of display icons and any errors, while protecting the components.

Red handsets made of break-resistant and fire-retardant ABS plastic have an integral hook-switch. When a handset is in the cradle, a lighted push-to-talk button indicates whether the panel speaker and microphone are in enabled.

Two FDNY keyed switches, one for each channel, can activate single or dual channel use.

The large volume control knobs are easy to adjust with gloved hands.

Electrical Specifications

Operating Voltage/Current	120VAC @ 24A (OC-1 Radio Console and RPT-1 Repeater Cabinet)
Battery Backup	24V DC at 3.7 A from repeater cabinet 100AH
Operating Temperature	0°C to 49°C
Operating Relative Humidity Range	0% to 93% @ 32° C

DR-UPS40

The DR-UPS40 is an AC-DC industrial DIN rail uninterruptable power supply with an output of 24VDC at 40 amps.

Features

- Suitable for 24V system up to 40A
- Built-in battery test function
- Battery polarity protection
- Relay contact signal output and LED indicator for DC OK, Battery Fail, and Battery Discharge
- Cooling by free air convection
- Three-year warranty

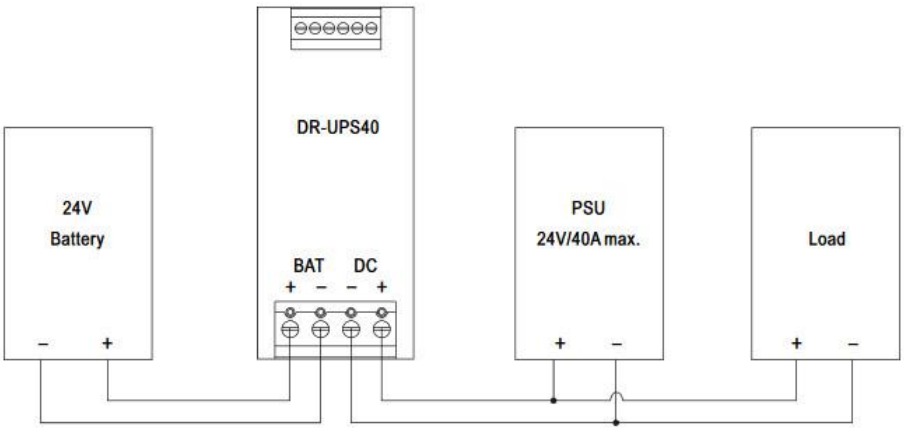
DR-UPS40 Description

The DR-UPS40 provides power backup in the case of a power failure. The diagrams below illustrate wiring options for two scenarios.

The UPS provides status conditions through LED lights on its front panel.
LED (green) DC BUS OK. DC BUS fail (dark)
LED (red) Battery over-discharge warning or battery broken. Battery OK (dark)
LED (yellow) Battery discharging. Battery not discharging (dark)

Dimensions, 55.5mm w x 125.5mm wide x 100mm deep.

UPS connection for AC interruption



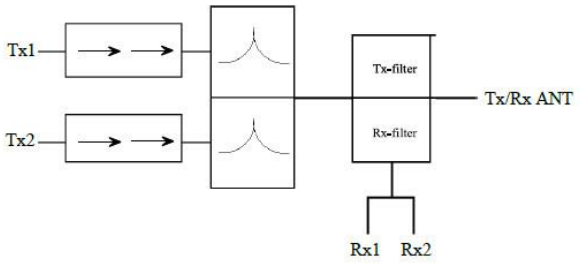
Every component within the ARCS-2000 system supports full battery backup, allowing full compliance with NYC guidelines of 12 hours reserve power.

Electrical Specifications

AC Input Voltage	115V
DC Input Voltage	24 – 29V
Rated Current	40A
Battery Backup	24V 100AH
Operating Temperature	-20°C to 70°C
Operating Relative Humidity Range	0% to 90%

ARCS Combiner/Duplexer

The combiner/duplexer includes a cavity combiner and band pass duplexer. RF combiners are devices that combine or sum a number of RF input signals to a common output, while maintaining the characteristic impedance of the inputs. Duplexers allows a transmitter operating on one frequency and a receiver operating on a different frequency to share one common antenna with a minimum of interaction and degradation of the different RF signals.



Features

- 5 W output
- Compact design
- Cavity combiner
- Bandpass duplexer
- Tx frequency
  483.0125 MHz; 484.7625 MHz
- Rx frequency
  486.0125 MHz; 487.7625 MHz

Electrical Specifications

Input power	2V@25W
Insertion loss, Tx	4 dB
Insertion loss, Rx	5 dB
Rejection Tx to Rx	>70 dB
Rejection Rx to Tx	>70 dB
Tx-Tx isolation	>60 dB
Rx-Rx isolation	>20 dB
Operating Temperature	-10°C to 60°C

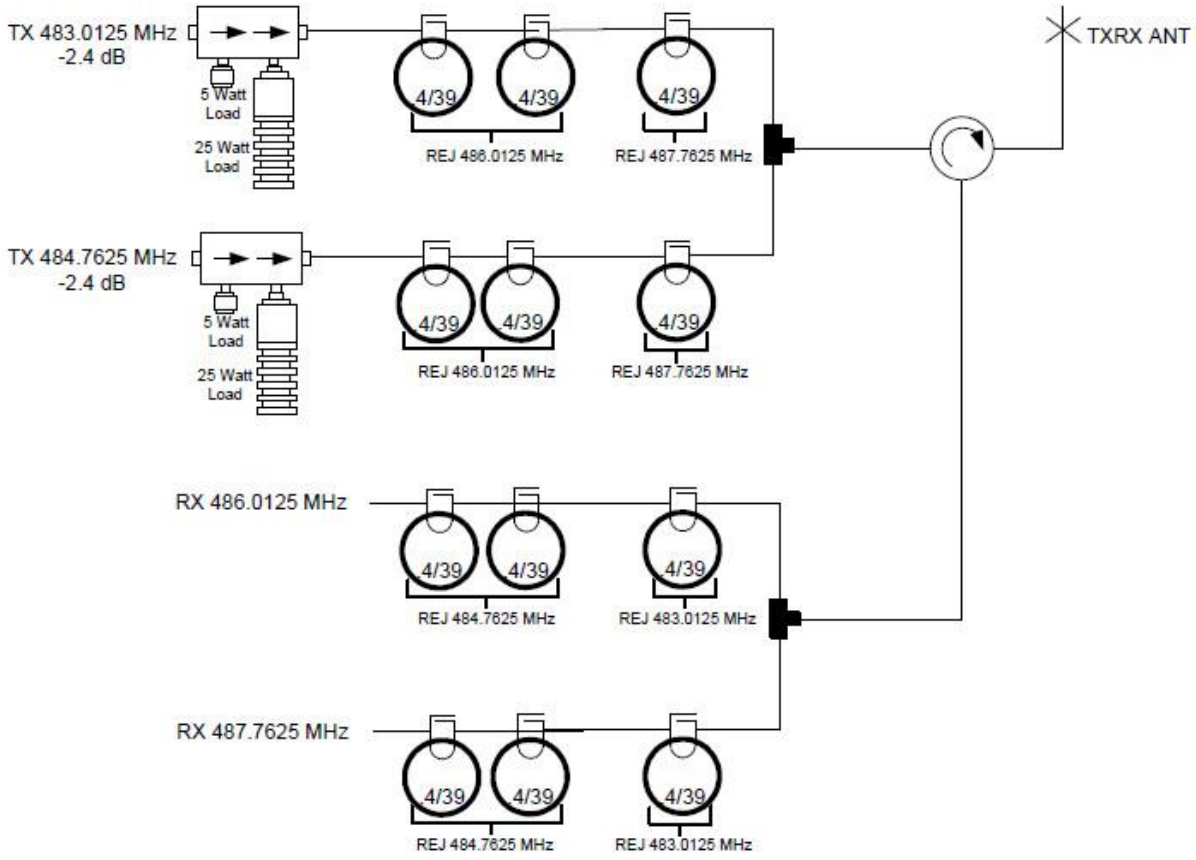
Custom UHF Tx/Rx Duplexer

The UHF Tx/Rx Duplexer includes a cavity combiner and band pass duplexer. RF combiners are devices that combine or sum a number of RF input signals to a common output, while maintaining the characteristic impedance of the inputs. Duplexers allows a transmitter operating on one frequency and a receiver operating on a different frequency to share one common antenna with a minimum of interaction and degradation of the different RF signals.

Features

- Compact design
- Cavity duplexer
- Rack mountable
- Tx frequency
  483.0125 MHz; 484.7625 MHz:
- 50 W output
- Rx frequency
  486.0125 MHz; 487.7625 MHz
- Tx combiner output, input, and Rx antenna connectors are N-type female. Rx output.

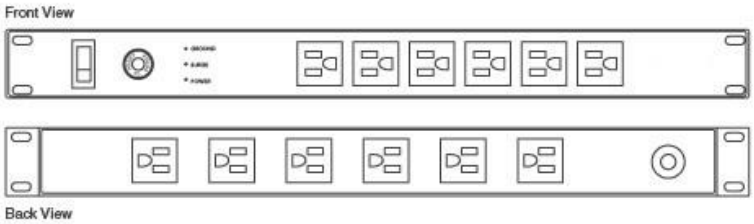
ARCS-2000 System



ARCS-2000 System

Power Distribution Unit

The power distribution unit (PDU)/surge protection acts to protect the electrical components of the ARCS-2000 from damage due to over-current conditions and electrical power surges. It features an aluminum frame, steel enclosure, and easy power connection.



Features

- 15A resettable circuit breaker protected
- 1800 joule surge suppressor
- Active monitoring for ground, surge, and power
- Rack mounted

Specifications

Relative humidity	0 %to 90 %
Operating Temperature	-4° F to 140° F

ARCS-2000 System

Antenna and Cable Monitors

Antenna and Cable Monitors solve the problem of monitoring RF transmission systems. They are designed to detect antenna and cable faults by providing monitor and alarm functions to keep critical sites up and running. It also provides accurate RF in-line power measurement functionality.

Features

- 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 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.
- Included as standard Push-To-Talk (PTT) input to avoid false alarm triggering when the transmitter (radio) is not keyed.
- Multiple data interfaces
- 128-bit encryption

Electrical Specifications

Power requirements	CM: +11 to +26VDC or ±36 to ±72VDC ACMI: ±9 to 18VDC or ±18 to 36VDC or ±36 to 72VDC
Electrical interfaces	RS-232, Serial Port, Ethernet Port, Network Interface 10/100 Base-T
Status indicators	Left LED: amber 10 MBPS; green 100 Mbps Right LED: amber half-duplex; green full-duplex
Relative humidity	0 %to 95 % (non-condensing)
Operating Temperature	0° C to 50° C

Antennas

These 4-element dipole array antennas have a precision phasing harness for optimum performance. The antenna horizontal pattern is field adjustable for any current or future coverage requirements.

Features

- Dipole Antenna
- Pattern: Adjustable, Offset Circular, Cardiod, Bi-Directional
- Effective Gain: 1-2.5 dBd
- Frequency Range: 406-512 MHz
- Power Rating: 500 watts
- Impedance: 50 Ohms
- Vertical Beamwidth: 71 Degrees
- VSWR: 1.5:1 or less
- Dimensionn: 13 x 12 in.

Tappers

The innovative asymmetric design ensures an excellent input VSWR and coupling flatness across the specified bands, even down to a 2:1 split. Designed with only a few solder joints and an air dielectric, loss is minimized and reliability enhanced.

Features

- Multi-band splitter
- Meets ENS50111:2001 (Class T3)
- 500 W average power rating
- Minimal RF insertion loss
- Impedance 50 Ohm nominal
- N-Type Female
- RoHS compliant
- Passive aluminum housing

ARCS-2000 System

Connectors

Features

- Average power 0.6 kW @ 900 Mhz
- Peak power, maximum 10 kW
- Impedance 50 Ohm nominal
- VSWR 1.02
- N-Type Male
- N-type Female
- RoHS compliant

ARCS-2000 System

Cabling

Features

- Low density foam coaxial cable
- Corrugated copper sleeve
- ½ in black polyethylene jacket
- Impedance 50 Ohm nominal
- Peak power 40 kW
- N-Type Female
- RoHS compliant

It is our intention to keep the product information up to date and accurate. We cannot cover all specific applications or anticipate all requirements. All specifications are subject to change without notice. For more information contact: County Wireless, Inc.

HireATechWriter.com