Description of Equipment

PRODUCT DESCRIPTION

The equipment that is being submitted to the FCC due to a change in identification is known as the Series II Network Radio, Models 20036 (120 VAC), 20054 (120 VAC, "N" Connector Antenna Mount), 20039 (240 VAC), & 20055 (240 VAC, "N" Connector Antenna Mount). The following information was provided by Schlumberger Resource Management Services (RMS), Inc.

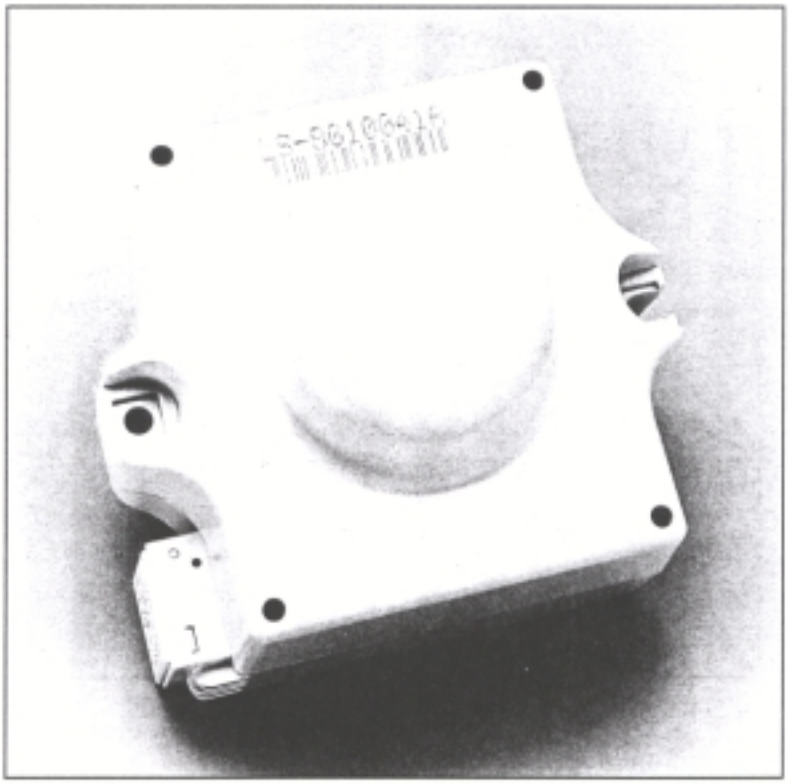
Series II Network Radio

The Metricom Series II Network Radio communicates over the power line to end devices which have implemented Metricom's Reliable Power Line Carrier (RPLC) technology and UtiliNet LAN Packet Protocol (ULPP). It comes in a molded plastic enclosure suitable for outdoor mounting.

Series II Network radios come in a 120 VAC and 240 VAC version. The power supply between the two versions is different; therefore, they cannot be switched from one to the other without changing the power supply.

The standard version comes with an antenna built into the radio within the dome enclosure. An "N" connector version is also available for connection to an external antenna.

There is no RS-232 port on this radio and thus configuration must be done using a MetriModem (see CAT# 50001) or through another RPLC radio remotely.

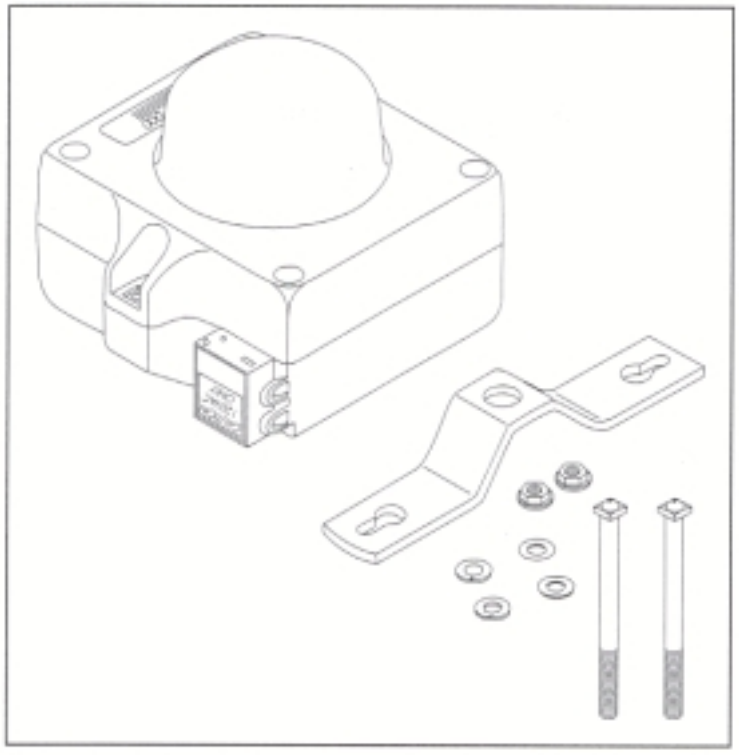


CAT# 20036 SERIES II NETWORK RADIO (120 VAC)

This is the 120 VAC and internal integrated antenna version of the Series II Network radio. The power connector consists of two captured screw terminals that will accept solid or stranded wire ranging from #8 AWG to #12 AWG. Users select their own copper or aluminum wire for the installation.

Included are the following:

- Series II Network Radio (120 VAC)
- Mounting bracket
- Two flat washers
- Two split lock washers
- Two square head bolts
- Two hex flange nuts
- Reference mounting drawing



Drawing applies to all versions of Network Radios.

CAT# 20054 SERIES II NETWORK RADIO (120 VAC, "N" CONNECTOR ANTENNA MOUNT)

This is the 120 VAC version of the Series II Network radio with an N-Female antenna connector for an external antenna. The power connector consists of two captured screw terminals that will accept solid or stranded wire ranging from #8 AWG to #12 AWG. Users select their own copper or aluminum wire for the installation.

Included are the following:

- Series II Network Radio (120 VAC, "N" connector antenna mount)
- Mounting bracket
- Two flat washers
- Two split lock washers
- Two square head bolts
- Two hex flange nuts
- Reference mounting drawing

CAT# 20039 SERIES II NETWORK RADIO (240 VAC)

This is the 240 VAC and internal integrated antenna version of the Series II Network radio.The power connector consists of two captured screw terminals that will accept solid or stranded wire ranging from #8 AWG to #12 AWG. Users select their own copper or aluminum wire for the installation.

Included are the following:

- Series II Network Radio (240 VAC)
- Mounting bracket
- Two flat washers
- Two split lock washers
- Two square head bolts
- Two hex flange nuts
- Reference mounting drawing

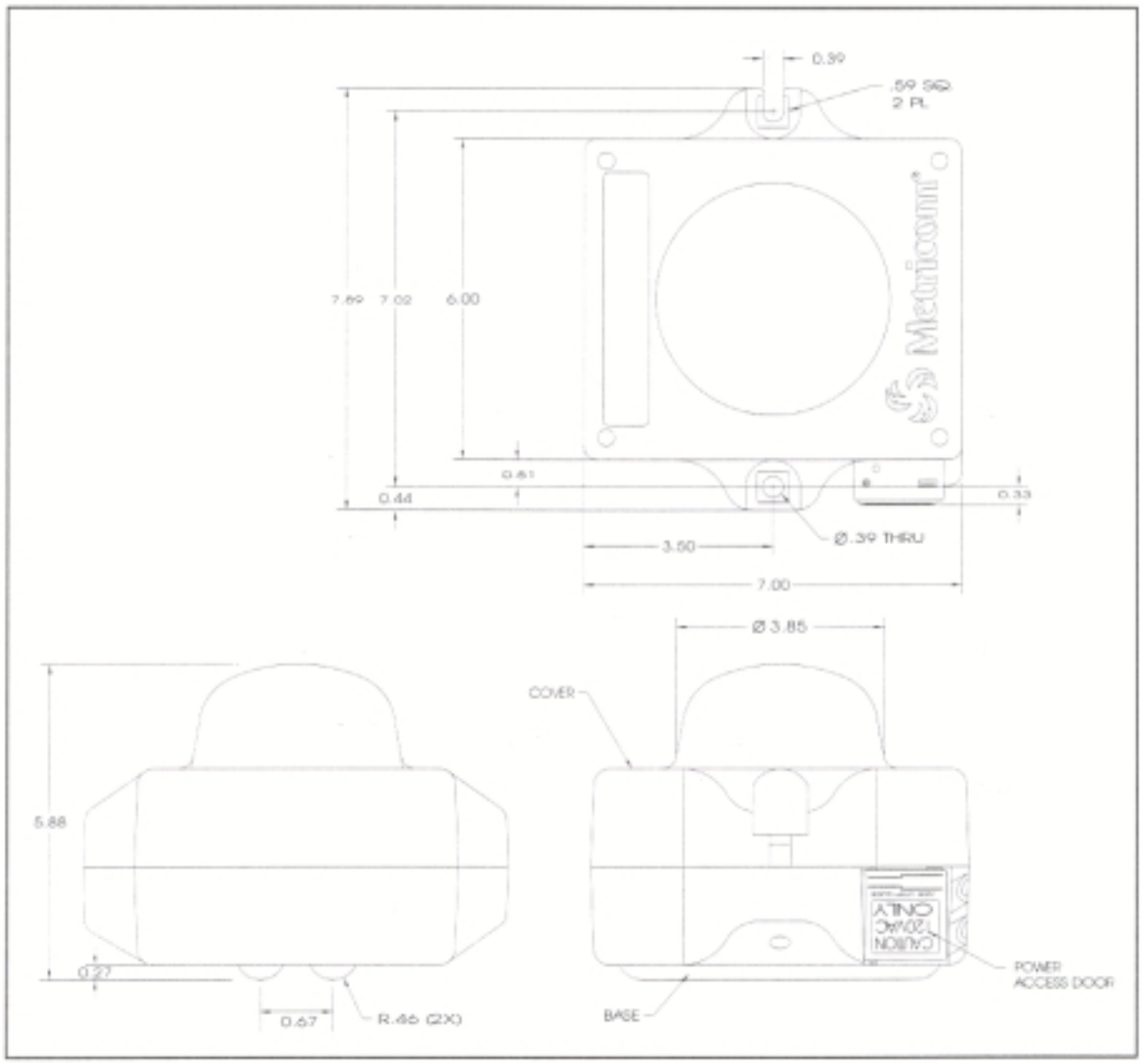
CAT# 20055 SERIES II NETWORK RADIO (240 VAC, "N" CONNECTOR ANTENNA MOUNT)

This is the 240 VAC version of the Series II Network radio with an N-Female antenna connector for an external antenna. The power connector consists of two captured screw terminals that will accept solid or stranded wire ranging from #8 AWG to #12 AWG. Users select their own copper or aluminum wire for the installation.

Included are the following:

- Series II Network Radio (240 VAC, "N" connector antenna mount)
- Mounting bracket
- Two flat washers
- Two split lock washers
- Two square head bolts
- Two hex flange nuts
- Reference mounting drawing

UTILINET SERIES II NETWORK RADIO



UtiliNet Series II Network Radio Specifications

Data Port/Formats

Reliable Power Line Carrier (RPLC)	
Frequency	230 kHz
Modulation	FSK
Data Rate	1200 bps (N, 8, 1, HDX)
Protocol	UtiliNet LAN Packet Protocol

Power

120 VAC Operation	
Input Voltage range	96 - 144 VAC
Input Current (receive avg)	34 mA
Input Current (RF transmit max)*	68 mA
240 VAC Operation	
Input Voltage range	192 - 288VAC
Input Current (receive avg)	17 mA
Input Current (RF transmit max)*	34 mA

Agency Approvals

FCC	Certified Part 15.247

Mechanical

Interface Connections	
Power and RPLC	#10 hex slotted screws suitable for wire sizes #8 through #12.
Enclosure (outdoor)	Lexan 503
Weight	3 lbs. 1 oz.
Size	7.89"W x 7.00"D x 5.88"H

Environmental (additional)

Rain Tightness	4"/hour Rainfall at 70 MPH per Mil Std. 810E, Method 506.3, Procedure I, Blowing Rain
Salt Spray	Per ASTM B117-85, 5 Days

* Maximum transmit duty cycle is estimated to be 15%

UTILINET SERIES II RADIO GENERAL SPECIFICATIONS

General

Frequency Range	902 - 928 MHz
Channels	240, 25 kHz wide
Channel Spacing	100 kHz
Raw RF Data Rate	9600 bps
Spreading Technique	Frequency Hopping
Hopping Technique	Pseudo Random, Asynchronous
Hopping Patterns	65,536 (Unique per Network)
Network Address	Latitude/Longitude Coordinates

Receiver

Type	Double Conversion Superheterodyne; 1st IF 45 MHz, 2nd IF 455 kHz
Dynamic Range	-104 to -20 dBm
Packet Error Rate	$1x10^{-2}$ ($1x10^{-6}$ BER)
IF Selectivity	6 dB down @ 30 kHz
45 MHz IF Rejection	< 90 dB
Frequency Stability	2.5 ppm (0.00025%) @ -30 to +75 degrees C 5 ppm (0.0005%) @ -40 to +85 degrees C

Transmitter

RF Output Min (at antenna connection)	+17 dBm (50 mW)
RF Output Typical	+20 dBm (100 mW)
Out-of-Band Spurious Radiation	< -55 dBc (1 kHz bandwidth)
Deviation	±5.5 kHz ± 10%
Modulation Bandwidth	25 kHz
Modulation	Standard FSK
Output Impedence	50 Ohms
Frequency Stability	2.5 ppm (0.00025%) @ -30 to +75 degrees C 5 ppm (0.0005%) @ -40 to +85 degrees C

Processing

CPU	NEC V25
Clock Speed	8 MHz
Memory	
ROM	256 KBytes
DRAM	128 KBytes
EEPROM	512 Bytes
FLASH RAM	512 KBytes
Programming Language	Metricom Device Control Word (MDCW)

Environmental

Operating Temperature Range	-40 to +60 degrees Celcius
Storage Temperature Range	-40 to +85 degrees Celcius
Operating Vibration	FCC Part 68D, Paragraph 302 Modified
Operating Shock	20 g, 11 ms, Half Sine per Mil Std. 802
Humidity	Mil Std. 202F, Method 106 Modified,10 Days

EMI & Power/Control Susceptibility

Electromagnetic Radiation	FCC Class B, Part 15.247
Electromagnetic Susceptibility	ANSI C37.90.2 Modified
Surge Withstanding Capability	ANSI C37.90.1 and ANSI C62.41
Electrostatic Discharge	MIL Handbook 263 and IEC 801.2