



POWERLINE MU
Technical Specifications
January 2008

Motorola Powerline MU is a new broadband solution that combines the Motorola Canopy[®] system with Broadband over Powerline (BPL) technology to deliver broadband services to homes, businesses and buildings that have been previously underserved or served only at high cost by other broadband access technologies.

Powerline MU solution allows service providers to deploy and manage a Broadband over Powerline network for Multi-Dwelling Unit or Multi-Tenant Unit buildings such as apartment buildings, hotels or retail outlets. Complementing and completing the MOTOwi4 portfolio, Powerline MU uses Canopy technology as the network backbone. Powerline MU provides a complete BPL solution from a leading manufacturer.

Please refer to Motorola's ordering instructions to select equipment best suited for the customer's electrical configuration. You can also visit <http://www.canopywireless.com> for more information.



Powerline MU Solution

Powerline Modem

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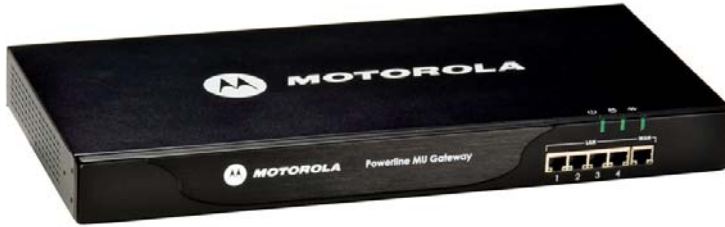


- Plugs into a standard AC power outlet to receive Internet signal
 - Performs Powerline to Ethernet conversion
 - Ethernet output connects to a computer or supplies broadband input to a home network router or gateway
 - Network Address Translation (NAT) for network isolation and protection
 - QoS Support: Maps Ethernet QoS to Powerline QoS using VLAN priority
- Bandwidth management for service class differentiation
 - Subscriber Authentication
 - 6 foot Ethernet cable provided
 - Integrated Modem Repeater function extends signal to difficult-to-reach outlets

Part Number	US Plug: 0171486N01 Australia Plug: 0171486N13 Euro Plug: 0171486N03 UK Plug: 0171486N14
Product Name	Motorola Powerline Modem
Description	Customer Premise Equipment in a Powerline MU solution
Modulation Type:	OFDM, QAM 256/64/16, DQPSK, DBPSK and ROBO mode (FSK)
Power Input:	100 – 240 VAC, 50/60 Hz
Power Consumption	7 Watts
Network Management:	SNMP v2c
Powerline Interface	HomePlug v 1.01 Turbo
Data Interface	Ethernet IEEE 802.3 10/100 Base T
Powerline Encryption	56 bit DES
Network Security	Firewall/NAT
Connectors	RJ45, Input power/PLC, plug Type A-US or C-European available (other plug types available on demand)
LED Status Lights	Power on, Powerline, Ethernet, Authentication
Dimensions	1.6 in. x 2.6 in. x 3.75 in. (4.1 cm x 6.6 cm x 9.5 cm)
Weight	.394 lbs (178.6 g)
Operating temperature:	0°C to 50°C (32°F to 122°F)
Safety	UL/cUL/CE/CB
Industry Canada	ICES-003 Class B
EN	EN55022 CE 0682 Class B
FCC	Part 15 Class B

Powerline MU Gateway

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- Injects the Internet signal into the building's electric distribution
- Performs Ethernet to Powerline conversion
- Ethernet input connects to Canopy Subscriber Module or other broadband source
- Four port Ethernet Switch
- Three Powerline outputs connect to three electrical phases via capacitive coupling cables (3 feet in length)
- QoS Support: Maps Ethernet QoS to Powerline QoS using VLAN priority
- Bandwidth management for service class differentiation
- Using BAM (Bandwidth Authentication Manager) provides authentication for associated Powerline Modems within its network
- Plugs into a standard AC power outlet with 6 foot power cord
- **UK, Australia, Argentina plug types available**

Part Number	US: 0171486N11 Euro: 0171486N04
Product Name	Motorola Powerline MU Gateway
Description	Head End Controller Equipment in a Powerline MU solution
Modulation Type:	OFDM, QAM 256/64/16, DQPSK, DBPSK and ROBO mode (FSK)
Power Input:	100 – 240 VAC, 50/60 Hz
Power Consumption:	7 Watts
Network Management:	SNMP v2c
Powerline Interface	HomePlug v 1.01 Turbo
Data Interface	Ethernet IEEE 802.3 10/100 Base T
Powerline Encryption	56 bit DES
Connectors	5 RJ45, 3 AC coupling connections, Input power (plug Type A-US, C-European, I-Australian, G-UK available)
LED Status Lights	WAN, 4 LAN, Power on, PLC, Collision
Dimensions	1.75 in. x 17.3 in. x 7.98 in. (4.44 cm x 44.0 cm x 20.3 cm)
Weight	5.99 lbs (2715 g)
Operating temperature:	0°C to 50°C (32°F to 122°F)
Safety	UL/cUL/CE
Industry Canada	ICES-003 Class B
EN	EN55022 CE 0682 Class B
FCC	Part 15 Class B

Powerline MU Adapter

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- Used in pairs
 - One Adapter converts data from an Ethernet source to Powerline and transports over telephone wiring to a second Adapter that converts data back to Ethernet to deliver to the Gateway
 - Provides greater flexibility for connecting Powerline MU Gateway(s) to the primary internet access point
- Plugs into a standard AC power outlet (US plug pictured, Euro plug also available)
 - **UK plug type available upon request**

Part Number	US Plug: 0171486N02 Euro Plug: 0171486N08 G-type Plug: 0171486N25
Product Name	Powerline MU Adapter
Description	Optional Powerline MU converter between telephone wiring and Ethernet
Modulation Type:	OFDM, QAM 256/64/16, DQPSK, DBPSK and ROBO mode (FSK)
Power Input:	100 – 240 VAC, 50/60 Hz
Data Interface	Ethernet IEEE 802.3 10/100 Base T
Flow Control	IEEE 802.3x
Twisted Pair	HomePlug v 1.01 Turbo
Connectors	1 RJ45, 1 RJ11, Input power (plug types A-US, C-European and G available)
LED Status Lights	Power on, Powerline, Ethernet
Dimensions	1.8 in. x 2.4 in. x 3.5 in. (4.57 cm x 6.1 cm x 8.89 cm)
Weight	.276 lbs (125 g)
Operating temperature:	0°C to 50°C (32°F to 122°F)
Safety	UL/cUL/CE
Industry Canada	ICES-003 Class B
EN	CE Class B
FCC	Part 15 Class B

Powerline MU Panel Extender

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- Useful in mass-metered buildings such as hotels and corporate facilities which have a large distribution panel that distributes electricity to other smaller breaker panels
- Connect up to three phases from one breaker panel to the Powerline MU Panel Extender and transmit signal to up to three additional breaker panels
- Provides efficiency in signal distribution while mitigating signal loss

Part Number	0171486N07
Part Name	Powerline MU Panel Extender
Description	Optional Powerline MU extender to couple up to four breaker panels together
High Voltage Interface	Up to 277 VAC (phase-neutral), Up to 480 VAC (phase-phase), Accepts up to 14 AWG wires
Input current	1 mA @ 50/60 Hz
Connectors	4 blocks of 4-pin terminals, 1 block per electrical panel
Dimensions	1.8 in. x 7.9 in. x 3.8 in. (4.5 cm x 20 cm x 9.6 cm)
Weight	.85 lbs (385 g)
Operating temperature:	0°C to 50°C (32°F to 122°F)
Safety	CE/ UL authorization (In conjunction with Powerline MU Gateway)

Powerline MU Inductive Coupler



- Useful in individually-metered and multiple transformer buildings such as apartments and condominiums which have one or more meter banks with meters that monitor power consumption to individual residences
- Connect one coupler per phase just before the meter bank in the Termination Cabinet over the insulated portion of the electric cable
- Provides efficiency in signal distribution by injecting on the larger wires just before the meter bank and subsequent branching to individual residences with no contact to the actual metal conductor
- Three coupler sizes to accommodate various wiring gauges

500

Part Number	0171486N21
Part Name	Powerline MU Inductive Coupler 500
Description	Optional Powerline MU coupler to Induce Signal onto in-building cables before the Meter Bank.
High Voltage Interface	Fits up to 500 MCM cable rated 380A
Cable	75 Ohm Coaxial
Connectors	F-Connector (Coaxial)
Center Conductor	600v rated 22-gauge stranded copper THHN wire
Dimensions	2.8 in x 2.3 in x 2.2 in (70.14 mm x 58.3 mm x 55mm)
Inner Diameter of core	1 in (25.4 mm)
Outer Diameter of Core	2.02 in (51.31 mm)
Weight	.90 lbs
Operating temperature	-40°C to 55°C (-40°F to 131°F)
Safety	UL authorization (In conjunction with Powerline MU Gateway)

250

Part Number	0171486N23
Part Name	Powerline MU Inductive Coupler 250
Description	Optional Powerline MU coupler to Induce Signal onto in-building cables before the Meter Bank.
High Voltage Interface	Fits up to 250 MCM cable rated 255A
Cable	75 Ohm Coaxial
Connectors	F-Connector (Coaxial)
Center Conductor	600v rated 22-gauge stranded copper THHN wire
Dimensions	2.8 in x 2.3 in x 2.2 in (70.14 mm x 58.3 mm x 55mm)
Inner Diameter of core	.76 in (19.4 mm)
Outer Diameter of Core	2.02 in (51.31 mm)
Weight	.99 lbs
Operating temperature	-40°C to 55°C (-40°F to 131°F)
Safety	UL authorization (In conjunction with Powerline MU Gateway)

100

Part Number	0171486N22
Part Name	Powerline MU Inductive Coupler 100
Description	Optional Powerline MU coupler to Induce Signal onto in-building cables before the Meter Bank.
High Voltage Interface	Fits up to 2/0 AWG cable rated at 175A
Cable	75 Ohm Coaxial
Connectors	F-Connector (Coaxial)
Center Conductor	600v rated 22-guage stranded copper THHN wire
Dimensions	2.8 in x 2.3 in x 2.2 in (70.14 mm x 58.3 mm x 55mm)
Inner Diameter of core	.55 in (14 mm)
Outer Diameter of Core	2.02 in (51.31 mm)
Weight	1.05 lbs
Operating temperature	-40°C to 55°C (-40°F to 131°F)
Safety	UL authorization (In conjunction with Powerline MU Gateway)

Inductive Coupler Sizes

Column **A** lists the American Wire Gauge sizes, Column **B** lists Metric Wire Gauge sizes, and Column **C** measures the outer diameter of the electric wire installed in the building. Use that information to choose the recommended Powerline MU Inductive Coupler from Column **D**. Column **E** lists the inner diameter (the ferrite core) of the Powerline MU Inductive Coupler.

A Conductor Size (American Wire Gauge)	B Conductor Size (Metric Wire Gauge, mm2)	C Approx Conductor Outer Diameter With Insulation (mm)	D Recommended Powerline MU Inductive Coupler	E Powerline MU Coupler Inner Diameter (mm)
500 MCM	-	24.9	500	25.4
-	240	24.2	500	25.4
400 MCM	-	22	500	25.4
-	185	21.1	500	25.4
350 MCM	-	20.6	500	25.4
300 MCM	150	18.5	500	19.4
250 MCM	-	17.8	250	19.4
-	120	17.5	250	19.4
4/0	-	16	250	19.4
-	95	15.4	250	19.4
3/0	-	14.7	250	19.4
-	70	13.7	100	14
2/0	-	13.5	100	14
1/0	-	12.2	100	14
-	50	12	100	14