CentreCOM Micro Repeaters

IEEE 802.3 compliant, Ethernet Version 1.0 and 2.0 compatible

switch for internal 50 Ω ermination for BNC connections

traight-through or crossed-over onnection switch for UTP RJ45 in-out

utomatic polarity detection and orrection on UTP receive pair

egment partitioning and abber lock-up protection

esktop, wall-mount and 19-inch ack mount (with separate racket) installation

tatus and diagnostic LEDs

ne-year warranty

AT-MR111T
AUI TO RJ45 MICRO REPEATER WITH EXTERNAL POWER SUPPLY

AT-MR112T
BNC TO RJ45 MICRO REPEATER WITH EXTERNAL POWER SUPPLY

AT-MR113
AUI TO AUI MICRO REPEATER WITH EXTERNAL POWER SUPPLY

AT-MR114
AUI TO BNC MICRO REPEATER WITH EXTERNAL POWER SUPPLY

AT-MR115
BNC TO BNC MICRO REPEATER WITH EXTERNAL POWER SUPPLY

IEEE 802.3 COMPLIANT/ETHERNET COMPATIBLE

These CentreCOM Micro Repeaters are two-port media converters/media extenders designed for the coax media and Unshielded Twisted Pair (UTP) markets. These micro repeaters allow connections between differing media including Unshielded Twisted Pair (10Base-T), thinnet (10Base-2) and AUI (10Base-5) in any combination.

Segments on either side of the unit support full length, fully repeated transmission and allow the maximum number of nodes specified by the IEEE. These micro repeaters utilize state-of-the-art technologies, including a custom Application Specific Integrated Circuit (ASIC) and Surface Mount Technology (SMT), which provide enhanced functionality, increased reliability and improved performance.

The CentreCOM Micro Repeaters provide the complete functionality of large repeaters including packet regeneration and network partitioning. The packet regeneration results in a higher performance network by regenerating preamble, retiming the data packets and extending collision fragments to ensure collision enforcement by all nodes.

The use of a proprietary ASIC and an external power supply permit Allied Telesyn to make the CentreCOM Micro Repeaters extremely compact. The small size of the units allows for the repeater function to be brought to the desktop or used in a wall-mount installation.

The AT-MR112T allows a thin (10Base-2) coaxial segment, with one or several workstations, to be connected to a UTP (10Base-T) hub port as an easy way of extending an existing Local Area Network (LAN.) The AT-MR111T allows a UTP (10Base-T) segment to connect to all other Ethernet media. The AT-MR114 allows a thin (10Base-2) coaxial segment to be connected to all other Ethernet media. The AT-MR113 connects differing media through two AUI ports. The AT-MR115 connects two thin (10Base-2) coaxial segments.

Network diagnostic LEDs are provided on the front of the CentreCOM Micro Repeaters to aid in troubleshooting and fault isolation. Both segments have "Transmit," "Receive," "On-Line" and "Collision" indicators. All units are equipped with a "Power" and a "Link Integrity Test" LED for UTP ports.

AT-M

FRONT
Per Port:
On-Line

Collision

Receive

Transmit

UTP Port:
Link

Central:
Power

PACKET
CHARAC
Delay Times
(Any segme

AUI to UTP
AUI to AUI
BNC to UT
UTP to BNC
AUI to BNC
BNC to BN
BNC to AUI
Preamble:
Input
Output

Jam Output:
A pattern of
receive port

Packet Frag
96 bits inclu
extended us

Auto Partitio
Port partitio
collisions or
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Jabber Lock-
For packets
interrupted

AUI INTE
Parameter:
Signaling Ra
DI and CI In
Impedance
DO Output
Impedance
DO Output
DI, CI Thres
Level
AUI Cable L

COAXIAL
Input Imped
Coaxial Tap
Input/Output
Voltage:
DC Offset
AC Offset
Transmit Ris
Fall Time

AT-MR111T, MR112T, MR113, MR114, MR115

FRONT PANEL STATUS INDICATORS

Per Port:

On-Line	Indicates segment is not auto partitioned
Collision	Indicates collision detected on the repeater
Receive	Indicates packet is being received from the segment
Transmit	Indicates packet is being transmitted to the segment

UTP Port:

Link	Indicates a valid link

Central:

Power	Indicates power is on

PACKET TRANSMISSION CHARACTERISTICS

Delay Times:
(Any segment in to other segment out)

	Start of Packet (Maximum)	Collision to Jam (Maximum)
AUI to UTP	800 ns	650 ns
AUI to AUI	1150 ns	1000 ns
BNC to UTP	1200 ns	1350 ns
UTP to BNC	1100 ns	1350 ns
AUI to BNC	975 ns	825 ns
BNC to BNC	1200 ns	1250 ns
BNC to AUI	1275 ns	1425 ns

Preamble:

Input	38 bits Minimum including SFD
Output	64 bits including SFD (last 2 bits are 1,1)

Jam Output:
A pattern of 1,0 is sent to all segments (except receive port) when a collision is detected.

Packet Fragment Extension:
96 bits including preamble. Packet fragments are extended using the 1,0 pattern.

Auto Partitioning/Reconnection:
Port partitioning occurs after 32 consecutive collisions or if collision has a duration of more than 1 ms. Reconnection occurs after 512 bits are received or transmitted on the partitioned port without collision (IEEE standard algorithm) or after data is transmitted without collision for 512 bits (alternate algorithm.)

Jabber Lock-Up Protection:
For packets that exceed 64k bit, packet output is interrupted for 96 bit times.

AUI INTERFACE

Parameter:	Typical	Range
Signaling Rate	10 Mbps	
DI and CI Input Impedance	78 Ω	73 to 83 Ω
DO Output Impedance	78 Ω	73 to 83 Ω
DO Output Voltage	900 mV	450 to 1315 mV
DI, CI Threshold Level		160 to 275 mV
AUI Cable Length		50 m

COAXIAL INTERFACE

Input Impedance	>100K Ω
Coaxial Tap Capacitance	<6 pf

Input/Output Voltage:	Typical	Range
DC Offset	0.1 V	-0.5 to 0 V
AC Offset	1.86 Vp-p	1.2 to 2.4 Vp-p
Transmit Rise/ Fall Time	25 ns	25 ±5 ns

UTP INTERFACE

Transmitter:	Typical	Range
Peak Differential Signal Amplitude	2.5 V	2.2 to 2.8 V
Transmitter Jitter		1 ns
Harmonics Content		>27 dB below fundamental
Common Mode Output Voltage		4 V
Silence Voltage	0	±50 mV
Link Test Pulse	100 ns	75 to 105 ns
Output Impedance	100 Ω	85 to 115 Ω
UTP Length		100 m

Receiver:	Typical	Range
Receiver Threshold	-400 mV	-300 to -585 mV
Differential Noise Rejection	300 mV	

UTP Port:
Straight-through or crossed-over pin-out switch-selectable

THIN (BNC) SEGMENTS

Type:
BNC receptacle with gold center contact for use with BNC type plugs and RG58 Thinnet cable. Each segment is connected to an internal 50 Ω terminator (externally switchable.)

Internal Transceiver:
Complies to the IEEE 802.3 standard.

Segment Length:
0 to 185 meters (RG58), terminated at both ends. Maximum of 29 other transceivers on any one segment. (Minimum spacing 0.5 meters between transceivers.)

POWER CHARACTERISTICS

Supply:

Voltage	
AT-MR111T	+5 V ±5%, +12 V ±5%
AT-MR112T	+5 V ±5%
AT-MR113	+5 V ±5%, +12 V ±5%
AT-MR114	+5 V ±5%, +12 V ±5%
AT-MR115	+5 V ±5%
Current	(Maximum)
AT-MR111T	0.9 A (5 V), 0.5 A (12 V)
AT-MR112T	1.4 A (5 V)
AT-MR113	0.8 A (5 V), 1.0 A (12 V)
AT-MR114	1.3 A (5 V), 0.5 A (12 V)
AT-MR115	1.6 A (5 V)
Power	W (Maximum)
AT-MR111T	10.5
AT-MR112T	7.0
AT-MR113	16.0
AT-MR114	12.5
AT-MR115	8.0
Ripple	1% (Maximum)

PHYSICAL CHARACTERISTICS

Dimensions:	14.0 cm x 11.2 cm x 3.1 cm (5.5 in x 4.4 in x 1.2 in)
Weight:	284 g (10.0 oz)

Temperature:

Operating	0° to 50° C
Storage	-20° to 60° C

Relative Humidity: 5% to 80% noncondensing

Electrical/Mechanical Approvals:

EMI	FCC Class A
Safety	UL, CSA, TUV-GS

ORDERING INFORMATION

| Part Number	Port	Port 2
AT-MR111T-X5	AUI	RJ45
AT-MR112T-X0	BNC	RJ45
AT-MR113-X5	AUI	AUI
AT-MR114-X5	AUI	BNC
AT-MR1115-X0	BNC	BNC

Where X	1 for 100-120 V with U.S. external power supply and without power cord
	2 for 200-240 V with external power supply and without power cord

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CentreCOM Micro Repeaters

- IEEE 802.3 compliant repeater, Ethernet Version 1.0 and 2.0 compatible

- Switch to select either full repeater or half repeater mode

- Switch for internal 50 W termination for BNC connections

- Small size allows desktop or wall-mount installation

- Segment partitioning and jabber lock-up protection

- Status and diagnostic LEDs

- One-year warranty
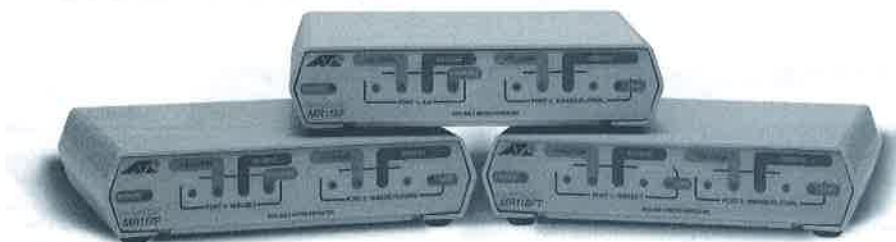
AT-MR116F
AUI TO FL/FOIRL MICRO REPEATER WITH EXTERNAL POWER SUPPLY

AT-MR117F
BNC TO FL/FOIRL MICRO REPEATER WITH EXTERNAL POWER SUPPLY

IEEE 802.3 COMPLIANT/ETHERNET COMPATIBLE

These CentreCOM Micro Repeaters are two-port media converters designed for the Fiber-Optic Inter Repeater Link (FL/FOIRL) to coaxial cable media marketplace. These micro repeaters allow for connection of an FL/FOIRL segment to either a thinnet (10BASE2) coaxial segment with the AT-MR117F, or to an AUI (10BASE5) coaxial segment with the AT-MR116F. Segments on either side of the unit support full-length, fully repeated transmission and allow the maximum number of nodes specified by the IEEE.

These media converters utilize state-of-the-art technologies, including a custom Application Specific Integrated Circuit (ASIC) and Surface Mount Technology (SMT), which provide enhanced functionality, increased reliability and improved performance.

The CentreCOM Micro Repeaters provide the complete functionality of large repeaters, including packet regeneration and network partitioning. Packet regeneration results in a higher performance network by regenerating preamble, retiming the data packets and extending collision fragments to ensure collision enforcement by all nodes.

The use of a proprietary ASIC and an external power supply permits Allied Telesyn to make the CentreCOM Micro Repeaters extremely compact. The units small size allows for the repeater function to be brought to the desktop or used in wall mount installation.

The AT-MR116F (AUI to FL/FOIRL) and AT-MR117F (BNC to FL/FOIRL) have a switch-selection for full repeater or half repeater mode. In the full repeater mode each repeater counts toward the total repeater count specified by IEEE 802.3. In certain situations (i.e. connections between buildings using the FL/FOIRL ports), fully repeated functionality is not needed. The half repeater mode allows a pair of repeaters linking the two networks together to count as one repeater.

Network diagnostic LEDs are provided on the front of the CentreCOM Micro Repeaters to aid in troubleshooting and fault isolation. Both segments have "Transmit," "Receive," "On-Line" and "Collision" indicators. All units come with a "Power" indicator and a "Link Integrity Test" LED is provided for the fiber-optic port.

AT-MR116F, AT-MR117F

FRONT PANEL STATUS INDICATORS

Per Port:

On-Line	Indicates segment is not auto partitioned
Collision	Indicates collision detected on the repeater
Receive	Indicates packet is being received from the segment
Transmit	Indicates packet is being transmitted to the segment

Fiber Optic:

Link	Indicates a valid link

Central:

Power	Indicates power is on

PACKET TRANSMISSION CHARACTERISTICS

Delay Times:
(Any segment in to other segment out)

	Start of Packet (Maximum)	Collision to Jam (Maximum)
AUI to FO	975 ns	1175 ns
FO to AUI	1225 ns	1175 ns
BNC to FO	1100 ns	1250 ns
FO to BNC	1050 ns	1000 ns

Preamble:

Input	38 bits Minimum including SFD
Output	64 bits including SFD (last 2 bits are 1,1)

Jam Output:
A pattern of 1,0 is sent to all segments (except receive port) when a collision is detected.

Packet Fragment Extension:
96 bits including preamble. Packet fragments are extended using the 1,0 pattern.

Auto Partitioning/Reconnection:
Port partitioning occurs after 32 consecutive collisions or if collision has a duration of more than 1 ms. Reconnection occurs after 512 bits are received or transmitted on the partitioned port without collision (IEEE standard algorithm) or after data is transmitted without collision for 512 bits (alternate algorithm.)

Jabber Lock-Up Protection:
For packets that exceed 64k bit, packet output is interrupted for 96 bit times.

FIBER-OPTIC INTERFACE

	Typical	Worst
Optical Wavelength	830 nM	-20 nM
Optical Saturation	170 µW (-7.6 dBm)	150 µW (-8.2 dBm)

Transmitter:

Output Power		
62.5/125 µM	-12.0 dBm	-15.0 dBm
100/140 µM	- 6.5 dBm	-9.5 dBm
50/125 µM	-16.5 dBm	-19.5 dBm

Receiver:

Sensitivity	-33 dBm (0.5 µW)	-30 dBm (1 µW)
Saturation	-13 dBm (50 µW)	-14 dBm (40 µW)
Bit Error Rate	Better than 10-10	

Flux Budget:

Fiber Size	N/A	Typical
62.5/125 µM	0.27	13.5 dBm
100/140 µM	0.30	14.0 dBm
50/125 µM	0.18	9.0 dBm

COAXIAL INTERFACE

Input Impedance	>100K Ω
Coaxial Tap Capacitance	<6 pf

Input/Output

Voltage:	Typical	Range
DC Offset	-0.1 V	-0.5 to 0 V
AC Offset	1.86 Vp-p	1.2 to 2.4 Vp-p
Transmit Rise/ Fall Time	25 ns	25 ±5 ns

AUI INTERFACE

Parameter:	Typical	Range
Signaling Rate	10 Mbps	
DI and CI Input Impedance	78 Ω	73 to 83 Ω
DO Output Impedance	78 Ω	73 to 83 Ω
DO Output Voltage	900 mV	450 to 1315 mV
DI, CI Threshold Level	160 to 275 mV	
AUI Cable Length		50 m

THIN (BNC) SEGMENTS

Type:
BNC receptacle with gold center contact for use with BNC type plugs and RG58 Thinnet cable. Each segment is connected to an internal 50 Ω terminator (externally switchable.)

Internal Transceiver:
Complies to the IEEE 802.3 standard.

Segment Length:
0 to 185 meters (RG58) terminated at both ends. Maximum of 29 other transceivers on any one segment. (Minimum spacing 0.5 meters between transceivers.)

POWER CHARACTERISTICS

Supply:

Voltage	
AT-MR116F	+5 V ±5%, +12 V ±5%
AT-MR117F	+5 V ±5%

Current	
AT-MR116F	1.2 A (5 V), 0.5 A (12 V)
AT-MR117F	1.7 A (5 V)

Power	W
AT-MR116F	12.0
AT-MR117F	8.5
Ripple	1% (Maximum)

PHYSICAL CHARACTERISTICS

Dimensions: 14.0 cm x 11.2 cm x 3.1 cm (5.5 in x 4.4 in x 1.2 in)

Weight: 0.4 kg (10.0 oz)

Temperature:

Operating	0° to 50° C
Storage	-20° to 60° C

Relative Humidity: 5% to 80% noncondensing

Electrical/Mechanical Approvals:

EMI	FCC Class A
Safety	UL, CSA, TUV-GS, IEC 825-1 Class 1

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CentreCOM Micro Repeaters

AT-MR121T
AUI TO RJ45

AT-MR122T
BNC TO RJ45

AT-MR123
AUI TO AUI

AT-MR124
AUI TO BNC

AT-MR125
BNC TO BNC

IEEE 802.3 COMPLIANT/ETHERNET COMPATIBLE

- IEEE 802.3 compliant, Ethernet Version 1.0 and 2.0 compatible

- Switch for internal 50 Ω termination on BNC connections

- Straight-through (MDI) or crossed-over (MDI-X) connection switch for UTP RJ45 pin-out

- Internal power supply

- Automatic polarity detection and correction on UTP ports

- Automatic segment partitioning and jabber lock-up protection

- Desktop, wall mount or 19-inch rack mount (with separate brackets) installation

- Status and diagnostic LEDs

- One-year warranty

The CentreCOM Micro Repeaters are two-port media extenders designed for the coax media and Unshielded Twisted Pair (UTP) markets. These micro repeaters allow connections between differing media, including UTP (10Base-T), thinnet (10Base-2) and thicknet (10Base-5) in any combination of media.

Segments on either side of the unit support full-length, fully repeated transmission and allow the maximum number of nodes specified by the IEEE. These micro repeaters utilize state-of-the-art technologies, including a custom Application Specific Integrated Circuit (ASIC) and Surface Mount Technology (SMT), which provide enhanced functionality, increased reliability and improved performance.

The CentreCOM Micro Repeaters provide the complete functionality of large repeaters, including packet regeneration and network partitioning. The packet regeneration results in a higher performance network by regenerating preamble, retiming the data packets and extending collision fragments to ensure collision enforcement by all nodes.

The use of a custom ASIC as well as an internal power supply make the CentreCOM Micro Repeaters compact and easy to install. The small size of the units allows for the repeater function to be brought to the desktop or used in a wall mount installation.

The AT-MR122T allows a thinnet (10Base-2) coaxial segment, with one or several workstations, to be connected to a UTP (10Base-T) hub port as an easy way of extending an existing Local Area Network (LAN.) The AT-MR121T allows a UTP (10Base-T) segment to connect to all other Ethernet media. The AT-MR124 allows a thinnet (10Base-2) segment to be connected to all other Ethernet media via an external transceiver or AUI port. The AT-MR123 connects differing media through two AUI ports. The AT-MR125 connects two thinnet (10Base-2) segments.

Network diagnostic LEDs are provided on the front of the CentreCOM Micro Repeaters to aid in troubleshooting and fault isolation. Both segments have "Transmit," "Receive," "On-Line" and "Collision" indicators. All units come with a "Power" and a "Link Integrity Test" LED for UTP ports.

AT-MR121T, MR122T, MR123, MR124, MR125

FRONT PANEL STATUS INDICATORS

Per Port:

On-Line	Indicates segment is not auto partitioned
Collision	Indicates collision detected on the repeater
Receive	Indicates packet is being received from the segment
Transmit	Indicates packet is being transmitted to the segment

UTP Port:

Link	Indicates a valid link

Central:

Power	Indicates power is on

PACKET TRANSMISSION CHARACTERISTICS

Delay Times:
(Any segment in to other segment out)

	Start of Packet (Maximum)	Collision to Jam (Maximum)
AUI to UTP	800 ns	650 ns
AUI to AUI	1150 ns	1000 ns
BNC to UTP	1200 ns	1350 ns
UTP to BNC	1100 ns	1350 ns
AUI to BNC	975 ns	825 ns
BNC to BNC	1200 ns	1250 ns
BNC to AUI	1275 ns	1425 ns

Preamble:

Input	38 bits Minimum including SFD
Output	64 bits including SFD (last 2 bits are 1,1)

Jam Output:
A pattern of 1,0 is sent to all segments (except receive port) when a collision is detected.

Packet Fragment Extension:
96 bits including preamble. Packet fragments are extended using the 1,0 pattern.

Auto Partitioning/Reconnection:
Port partitioning occurs after 32 consecutive collisions or if collision has a duration of more than 1 ms. Reconnection occurs after 512 bits are received or transmitted on the partitioned port without collision (IEEE standard algorithm) or after data is transmitted without collision for 512 bits (alternate algorithm.)

Jabber Lock-Up Protection:
For packets that exceed 64k bit, packet output is interrupted for 96 bit times.

COAXIAL INTERFACE

Input Impedance	>100K Ω
Coaxial Tap Capacitance	<6 pf

Input/Output Voltage:

	Typical	Range
DC Offset	-1.03 V	-0.93 to -1.13 V
AC Offset	2.05 Vp-p	1.4 to 2.25 Vp-p
Transmit Rise/ Fall Time	25 ns	25 ±5 ns

AUI INTERFACE

Parameter:	Typical	Range
Signaling Rate	10 Mbps	
DI and CI Input Impedance	78 Ω	73 to 83 Ω
DO Output Impedance	78 Ω	73 to 83 Ω
DO Output Voltage	900 mV	450 to 1315 mV
DI, CI Threshold Level		160 to 275 mV
AUI Cable Length		50 m

UTP INTERFACE

Transmitter:	Typical	Range
Peak Differential Signal Amplitude	2.5 V	2.2 to 2.8 V
Transmitter Jitter		1 ns
Harmonics Content		>27 dB below fundamental
Common Mode Output Voltage		4 V
Silence Voltage	0	±50 mV
Link Test Pulse	100 ns	75 to 105 ns
Output Impedance	100 Ω	85 to 115 Ω
UTP Length		100 m

Receiver:

	Typical	Range
Receiver Threshold	-400 mV	-300 to -585 mV
Differential Noise Rejection	300 mV	

UTP Port:
Straight-through (MDI) or cross-over (MDI-X) pin-out switch-selectable

THIN (BNC) SEGMENTS

Type:
BNC receptacle with gold center contact, for use with BNC type plugs and RG58 Thinnet cable. Each segment is connected to an internal 50 Ω terminator (externally switchable.)

Internal Transceiver:
Complies to the IEEE 802.3 standard.

Segment Length:
0 to 185 meters (RG58) terminated at both ends. Maximum of 29 other transceivers on any one segment. (Minimum spacing 0.5 meters between transceivers.)

POWER CHARACTERISTICS

Input Voltage (Auto Ranging):
100 to 240 VAC, 50/60 Hz, 0.25 A

Power:

Consumption	16 W (Maximum)

PHYSICAL CHARACTERISTICS

Dimensions: 21.0 cm x 11.2 cm x 3.1 cm (8.3 in x 4.4 in x 1.3 in)

Weight: 480 g (1 lb 1 oz)

Temperature:

Operating	0° to 50° C
Storage	-20° to 60° C

Relative Humidity: 5% to 80% noncondensing

Electrical/Mechanical Approvals:

EMI	FCC Class A
Safety	UL, CSA, TUV-GS

ORDERING INFORMATION

Part Number	Port 1	Port 2
AT-MR121T-X5	AUI	RJ45
AT-MR122T-X0	BNC	RJ45
AT-MR123-X6	AUI	AUI
AT-MR124-X5	AUI	BNC
AT-MR125-X0	BNC	BNC

Where X	1 for 100-120 V with U.S. power cord included
	2 for 200-240 V without power cord

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131

CentreCOM Micro Repeaters

AT-MR126F
AUI TO FL/FOIRL

AT-MR127F
BNC TO FL/FOIRL
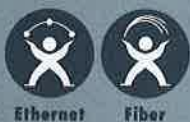
IEEE 802.3 COMPLIANT/ETHERNET COMPATIBLE

- IEEE 802.3 compliant, Ethernet Version 1.0 and 2.0 compatible

- Switch-selectable for full or half repeater mode

- Switch for internal 50 W termination on BNC connections

- Internal power supply

- Automatic segment partitioning and jabber lock-up protection

- Status and diagnostic LEDs

- Optional SMA 906 or ST type of fiber optic connectors

- Desktop, wall-mount or 19-inch rack mount (with separate brackets) installation

- One-year warranty

These CentreCOM Micro Repeaters are two-port media converters designed for the Fiber-optic Inter Repeater Link (FOIRL) to coaxial cable media market place. These micro repeaters allow for connection of a FL/FOIRL segment to either a thin (10Base-2) coaxial segment with the AT-MR127F, or to an AUI (10Base-5) coaxial segment with the AT-MR126F. Segments on either side of the unit support full length, fully repeated transmission and allow the maximum number of nodes specified by the IEEE.

These media converters utilize state-of-the-art technologies, including a custom Application Specific Integrated Circuit (ASIC) and Surface Mount Technology (SMT), which provide enhanced functionality, increased reliability and improved performance.

The CentreCOM Micro Repeaters provide the complete functionality of large repeaters, including packet regeneration and network partitioning. The packet regeneration results in a higher performance network by regenerating preamble, retiming the data packets and extending collision fragments to ensure collision enforcement by all nodes.

The use of a custom ASIC and an internal power supply make the CentreCOM Micro Repeaters compact and easy to install. The units small size allows for the repeater function to be brought to the desktop or used in a wall mount installation.

The AT-MR126F (AUI to FL/FOIRL) and AT-MR127F (BNC to FL/FOIRL) have a selectable switch for full or half repeater mode. In the full repeater mode, each repeater counts toward the total repeater count specified by IEEE 802.3. In certain situations, (i.e. connections between buildings using the FL/FOIRL ports), fully repeated functionality is not needed. The half repeater mode allows a pair of repeaters to count as one repeater linking the two networks together.

Network diagnostic LEDs are provided on the front of the CentreCOM Micro Repeaters to aid in troubleshooting and fault isolation. Both segments have "Transmit," "Receive," "On-Line" and "Collision" indicators. All units come with a "Power" and a "Link Integrity Test" LED for the fiber optic ports.

AT-MR126F, AT-MR127F

FRONT PANEL STATUS INDICATORS

Per Port:

On-Line	Indicates segment is not auto partitioned
Collision	Indicates collision detected on the repeater
Receive	Indicates packet is being received from the segment
Transmit	Indicates packet is being transmitted to the segment

Fiber Optic:

Link	Indicates a valid link

Central:

Power	Indicates power is on

PACKET TRANSMISSION CHARACTERISTICS

Delay Times:
(Any segment in to other segment out)

	Start of Packet (Maximum)	Collision to Jam (Maximum)
AUI to FO	975 ns	1175 ns
FO to AUI	1225 ns	1175 ns
BNC to FO	1100 ns	1250 ns
FO to BNC	1050 ns	1000 ns

Preamble:

Input	38 bits Minimum including SFD
Output	64 bits including SFD (last 2 bits are 1,1)

Jam Output:
A pattern of 1,0 is sent to all segments (except receive port) when a collision is detected.

Packet Fragment Extension:
96 bits including preamble. Packet fragments are extended using the 1,0 pattern.

Auto Partitioning/Reconnection:
Port partitioning occurs after 32 consecutive collisions or if collision has a duration of more than 1 ms. Reconnection occurs after 512 bits are received or transmitted on the partitioned port without collision (IEEE standard algorithm) or after data is transmitted without collision for 512 bits (alternate algorithm.)

Jabber Lock-Up Protection:
For packets that exceed 64k bit, packet output is interrupted for 96 bit times.

COAXIAL INTERFACE

Input Impedance	>100K Ω
Coaxial Tap Capacitance	<6 pf

Input/Output Voltage:

	Typical	Range
DC Offset	-1.03 V	-0.93 to -1.12 V
AC Offset	2.05 Vp-p	1.4 to 2.25 Vp-p
Transmit Rise/ Fall Time	25 n	25 ±5 ns

AUI INTERFACE

Parameter:	Typical	Maximum
Signaling Rate	10 Mbps	
DI and CI Input Impedance	78 Ω	73 to 83 Ω
DO Output Impedance	78 Ω	73 to 83 Ω
DO Output Voltage	900 mV	450 to 1315 mV
DI, CI Threshold Level	160 to 275 mV	
AUI Cable Length		50 m

FIBER-OPTIC INTERFACE

	Typical	Range
Optical Wavelength	830 nm	-20 nm
Optical Saturation	170 µW (-7.6 dBm)	150 µW (-8.2 dBm)

Transmitter:

Output Power		
62.5/125 µM	-12.0 dBm	-15.0 dBm
100/140 µM	-6.5 dBm	-9.5 dBm
50/125 µM	-16.5 dBm	-19.5 dBm

Receiver:

Sensitivity	-33 dBm (0.5 µW)	-30 dBm (1 µW)
Saturation	-13 dBm (50 µW)	-14 dBm (40 µW)
Bit Error Rate	Better than 10-10	

THIN (BNC) SEGMENTS

Type:
BNC receptacle with gold center contact for use with BNC type plugs and RG58 Thinnet cable. Each segment is connected to an internal 50 Ω terminator (externally switchable.)

Internal Transceiver:
Complies to the IEEE 802.3 standard.

Segment Length:
0 to 185 meters (RG58) terminated at both ends. Maximum of 29 other transceivers on any one segment. (Minimum spacing 0.5 meters between transceivers.)

POWER CHARACTERISTICS

Input Voltage (Auto Ranging):
100 to 240 VAC, 50/60Hz, 0.25 A

Power:

Consumption	15 W (Maximum)

PHYSICAL CHARACTERISTICS

Dimensions:	21.0 cm x 11.2 cm x 3.1 cm (8.3 in x 4.4 in x 1.3 in)
Weight:	480 g (1 lb 1 oz)

Temperature:

Operating	0° to 50° C
Storage	-20° to 60° C

Relative Humidity: 5% to 80% noncondensing

Electrical/Mechanical Approvals:

EMI	FCC Class A
Safety	UL, CSA, TUV-GS, IEC 825-1 Class 1

Allied Telesyn

CentreCOM Micro Repeaters

Pictured above are the AT-116F, AT-117F and AT-118FT.

- IEEE 802.3 compliant, Ethernet Version 1.0 and 2.0 compatible

- Switch-selectable for full or half repeater mode

- Straight-through (MDI) or crossed-over (MDI-X) connection switch for UTP RJ45 pin-out

- Internal power supply in MR128FT

- External power supply with the MR118FT

- Automatic segment partitioning and jabber lock-up protection

- Status and diagnostic LEDs

- Optional SMA 906 or ST type of fiber-optic connectors

- Desktop, wall-mount or 19-inch rack mount (with separate brackets) installation

- One-year warranty

AT-MR118FT

UTP TO 10BASE-FL/FOIRL, 2-PORT FIBER OPTIC/TWISTED PAIR MICRO REPEATER WITH EXTERNAL POWER SUPPLY

AT-MR128FT

UTP TO 10BASE-FL/FOIRL, 2-PORT FIBER OPTIC/TWISTED PAIR MICRO REPEATER INCLUDES INTERNAL POWER SUPPLY

IEEE 802.3 COMPLIANT/ ETHERNET COMPATIBLE

These CentreCOM Micro Repeaters are two-port media converters designed for the Fiber Link (FL/FOIRL) to Unshielded Twisted Pair (UTP) media marketplace. They allow for connection of a 10Base-FL/FOIRL segment to a UTP (10Base-T) segment. Segments on either side of the unit support full-length, fully repeated transmission and allow the maximum number of nodes specified by the IEEE.

These media converters utilize state-of-the-art technologies including a custom Application Specific Integrated Circuit (ASIC) and Surface Mount Technology (SMT), which provide enhanced functionality, increased reliability and improved performance.

The CentreCOM Micro Repeaters provide the complete functionality of large repeaters including packet regeneration and network partitioning. The packet regeneration results in a higher performance network by regenerating preamble, retiming the data packets and extending collision fragments to ensure collision enforcement by all nodes.

The use of a custom ASIC and either an internal or external power supply makes the Allied Telesyn Micro Repeaters compact and easy to install. The units' small size allows for the repeater function to be brought to the desktop or used in a wall mount installation.

Both the AT-MR118FT and AT-MR128FT have a selectable switch for full or half repeater mode. In the full repeater mode, each repeater counts toward the total repeater count specified by IEEE 802.3. In certain situations, (i.e. connections between buildings using the FL/FOIRL ports), fully repeated functionality is not needed. The half repeater mode allows a pair of repeaters to count as one repeater linking the two networks together.

Network diagnostic LEDs are provided on the front of the CentreCOM Micro Repeaters to aid in troubleshooting and fault isolation. Both segments have "Transmit," "Receive," "On-Line" and "Collision" indicators, as well as "Link Integrity Test" LEDs. All units also have a "Power" LED.

AT-MR118FT, AT-MR128FT

FRONT PANEL STATUS INDICATORS

Per Port:

On-Line	Indicates segment is not auto partitioned
Collision	Indicates collision detected on the repeater
Receive	Indicates packet is being received from the segment
Transmit	Indicates packet is being transmitted to the segment
Link	Indicates a valid link

Central:

Power	Indicates power is on

PACKET TRANSMISSION CHARACTERISTICS

Delay Times:
(Any segment in to other segment out)

	Start of Packet (Maximum)	Collision to Jam (Maximum)
UTP to FO	1950 ns	2050 ns
FO to UTP	1650 ns	1350 ns

Preamble:

Input	38 bits Minimum including SFD
Output	64 bits including SFD (last 2 bits are 1,1)

Jam Output:
A pattern of 1,0 is sent to all segments (except receive port) when a collision is detected.

Packet Fragment Extension:
96 bits including preamble. Packet fragments are extended using the 1,0 pattern.

Auto Partitioning/Reconnection:
Port partitioning occurs after 32 consecutive collisions or if collision has a duration of more than 1 ms. Reconnection occurs after 512 bits are received or transmitted on the partitioned port without collision (IEEE standard algorithm) or after data is transmitted without collision for 512 bits (alternate algorithm.)

Jabber Lock-Up Protection:
For packets that exceed 64k bit, packet output is interrupted for 96 bit times.

UTP INTERFACE

Transmitter:

	Typical	Range
Peak Differential Signal Amplitude	2.5 V	2.2 to 2.8 V
Transmitter Jitter		±3.5 ns
Harmonics Content		>27 dB below fundamental
Common Mode Output Voltage		4 V
Silence Voltage	0	±50 mV
Link Test Pulse	100 ns	75 to 105 ns
Output Impedance	100 Ω	85 to 115 Ω
UTP Length		100 m

Receiver:

Receiver Threshold	-400 mV	-300 to -585 mV
Differential Noise Rejection	300 mV	

UTP Port:
Straight-through (MDI) or crossed-over (MDI-X) pin-out switch-selectable

FIBER-OPTIC INTERFACE

	Typical	Worst
Optical Wavelength	850 nM	±20 nM
Optical Saturation	170 µW (-7.6 dBm)	150 µW (-8.2 dBm)
Maximum Transmission Length		2000 M

Transmitter:

Output Power

62.5/125 µM	-12.0 dBm	-15.0 dBm
100/140 µM	-6.5 dBm	-9.5 dBm
50/125 µM	-16.5 dBm	-19.5 dBm

Receiver:

Sensitivity		-32.5 dBm (0.5 µW)
Saturation	-13 dBm (50 µW)	-14 dBm (40 µW)
Bit Error Rate	Better than 10-10	

Flux Budget:

Fiber Size	N/A	Typical
62.5/125 µM	0.27	13.5 dBm
100/140 µM	0.30	14.0 dBm
50/125 µM	0.18	9.0 dBm

POWER CHARACTERISTICS

Input Voltage (Auto Ranging):

AT-MR128FT	100 to 240 VAC, 50/60 Hz, 0.25 A

Power:

Consumption	15 W (Maximum)

PHYSICAL CHARACTERISTICS

Dimensions:

AT-MR128FT	21.0 cm x 11.2 cm x 3.1 cm (8.3 in x 4.4 in x 1.2 in)
AT-MR118FT	14.0 cm x 11.2 cm x 3.1 cm (5.5 in x 4.4 in x 1.2 in)

Weight:

AT-MR128FT	480 g (1 lb 1 oz)
AT-MR118FT	284 g (10.0 oz)

Temperature:

Operating	0° to 50° C
Storage	-20° to 60° C

Relative Humidity: 5% to 80% noncondensing

Electrical/Mechanical Approvals:

EMI	FCC Class A
Safety	UL, CSA, TUV-GS, IEC 825-1 Class 1

ORDERING INFORMATION

Part Number	Port 1	Port 2
AT-MR118FT-X1	SMA	RJ45
AT-MR118FT-X3	ST	RJ45
AT-MR128FT-X1	SMA	RJ45
AT-MR128FT-X3	ST	RJ45

Where X	1 for 100-120 V with U.S. power cord included
	2 for 200-240 V without power cord included

AV⊘ Allied Telesyn

135

Micro Repeaters

Allied Telesyn
Simply connecting the world

10Mbps micro repeaters with internal power supply

AT-MR120 Series

TAA

| Int Pwr | LED | Polarity | Jabber |
| Partition | Terminator | 19" | |

Physical specs: 210mm x 112mm x 31mm, 480g 8.3" x 4.4" x 1.2", 1.1lb

AT-MR121T-X5
AUI/F ⟷ T

AT-MR122T-X0
2 ⟷ T

AT-MR123-X5
AUI/F ⟷ AUI/F

AT-MR124-X5
AUI/F ⟷ 2

AT-MR125-X0
2 ⟷ 2

AT-MR126F-X3
FL (ST) ⟷ AUI/F

AT-MR127F-X3
FL (ST) ⟷ 2

AT-MR128FT-X3
FL (ST) ⟷ T

Optional rack mount and bracket assemblies

AT-RKMT-7
19" rackmount kit for AT-MR120 series

AT-BRKT-15
Wall mounting bracket with strain relief for AT-MR120 series

Transceiver taps and other accessories for Allied Telesyn transceivers and fanouts

AT-04
10Base2 BNC connector

AT-06
10Base5 vampire connector

AT-07
10Base2 BNC T-connector

AT-08
10Base5 N-series connector

AT-01220-K
Vampire connector installlation tool kit

AT-RKMT-5
Rackmount kit for AT-810SL

AT-BRKT-0A
Mounting bracket with AUI strain relief and service loop for AT-200

AT-BRKT-0B
Mounting bracket with service loop for AT-200

AT-BRKT-7A
Mounting bracket with AUI strain relief and service loop for AT-270/280/440/470/480

AT-BRKT-7B
Mounting bracket with service loop for AT-270/280/440/470/480