MTMi-20

4-Wire Extended Range Modem with Remote Management

FEATURES

- Extends range of data transmission over 4-wire lines
- Selectable data rates: 32, 64 and 128 kbps
- QAM technology for extended range and improved performance
- Variety of digital interfaces:
  - V.24
  - V.35
  - X.21
  - RS-530
  - V.36/RS-449
  - Ethernet (built-in bridge)
  - G.703 codirectional (64 kbps)
- Automatic rate detection in external clock mode for tail-end applications
- Configuration and monitoring of local and remote units from the front panel
- Card versions available for the ASM-MN-214 19" modem rack and LRS-12 19" modem rack with central SNMP management

MTMi-20

4-Wire Extended Range Modem with Remote Management

DESCRIPTION

- MTMi-20 is a synchronous short-range modem, operating in full duplex over 4-wire lines. Data rates are user-selectable between 32 kbps and 128 kbps.
- The modem employs QAM technology to extend the transmission range (see Table 1) and provide efficient transmission, even over poor quality lines.
- The modem uses an out-of-band management channel for controlling and monitoring the remote unit. Both data and management are transmitted over the same wires, simultaneously.
- Menu-driven software, activated from the front panel, allows the user soft-select monitoring and adjusting of local and remote units.

  The following parameters can be monitored and controlled:
  – Baud rate (when set to Internal or Receive mode)
  – Clock source
  – Output transmit level
  – Loop activation
  – Internal BER tester activation
  – LED status of local and remote units
  – Setting both local and remote units to default settings
  – Real-time monitoring of link status
  – Real-time alerts of fault conditions
  – Real-time signal quality monitoring.
- The transmit clock can be derived from three different selectable sources:
  – Internally, from a built-in oscillator
  – Recovered from the received signal
  – From the digital interface (for tail-end applications).
- When set to external mode, MTMi-20 automatically detects the clock rate coming from the digital interface and sets the remote unit to the same rate. When the digital interface rate is changed, both local and remote units follow the new rate and synchronize accordingly.
- MTMi-20 supports a wide range of digital interfaces: V.24/RS-232, V.35, X.21, RS-530, V.36/RS-449 and G.703 codirectional (64 kbps). In addition, an Ethernet/802.3 bridging option enables direct connection of an Ethernet LAN to both sides of the modems link.
- The MTMi-20 system configuration is stored in non-volatile memory, minimizing the system downtime after power is down or when a faulty remote unit is being replaced.
- The out-of-band management channel provides real-time alerts for:
  – Disconnection of the digital data transmission
  – Disconnection of the management channel
  – Remote modem failure
  – Loop activation.

APPLICATION

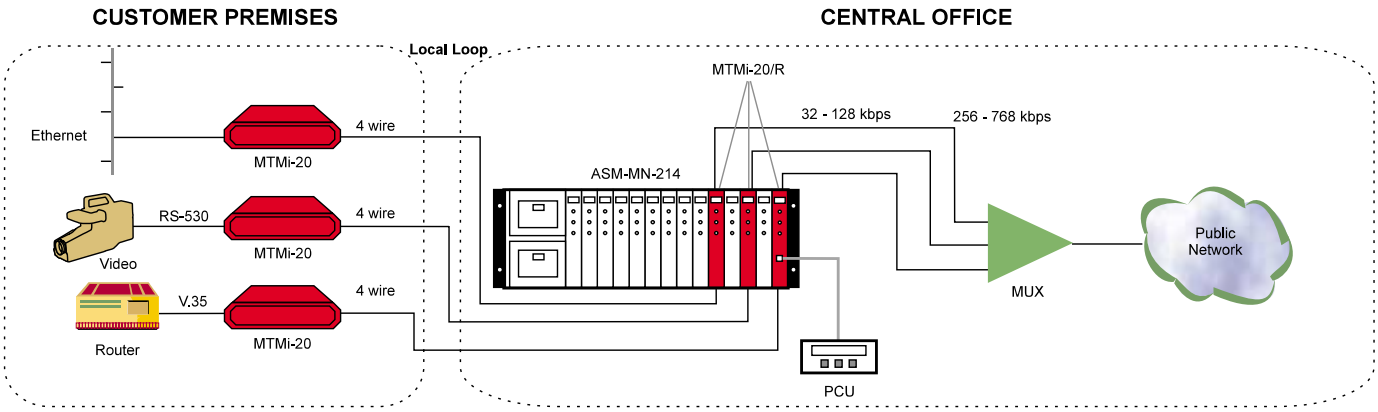

Figure 1. Central Site Application with Basic Management (non-SNMP)

4-Wire Extended Range Modem with Remote Management

- Real-time indication of system status is provided on the front panel LCD for the local and remote modems.
- MTMi-20 is available as a standalone unit in both MTMi-20/M "Master" and MTMi-20/S "Slave" versions. The master version has a front panel LCD and control switches. The slave unit has a blank panel, which prevents unauthorized changes of link parameters. MTMi-20 is also available as a card for central solutions:
  – MTMi-20/R – card for the ASM-MN-214 19" modem rack
  – MTMi-20C – card for the LRS-12 19" modem rack with central SNMP management.
- Management of the local and remote modems for MTMi-20/S and MTMi-20/R versions is carried out via a standalone Portable Control Unit (PCU) through a special 20-pin connector on the modem front panel. The PCU is ordered separately (see *Ordering*).
- The MTMi-20C card for the LRS-12 rack can be managed from an ASCII terminal or from an SNMP UNIX station connected to the rack. RADview, an SNMP application, is available for managing the MTMi-20C cards and other RAD products. RADview enables management of a large number of links, system infrastructure, and presentation of statistical information on link availability. It is a user-friendly system, utilizing a graphical presentation of all network elements.
- Diagnostic features include activation of ITU V.54 loops and an internal BER tester. The loops available are:
  – Local analog loopback
  – Local digital loopback
  – Remote analog loopback.
  – Remote digital loopback
  The loops can be activated from the front panel, PCU (Portable Control Unit) or from the digital interfaces that support loop activation signals.

Table 1. MTMi-20 Maximum Transmission Ranges

Data Rate	19 AWG		22 AWG		24 AWG		26 AWG	
(kbps)	km	miles	km	miles	km	miles	km	miles
32	36	23	24	15	18	11	13.5	8.5
64	28	18	17.5	11	14	8.5	10.5	6.5
128	22	14	14	8.5	10	6	7.5	4.5

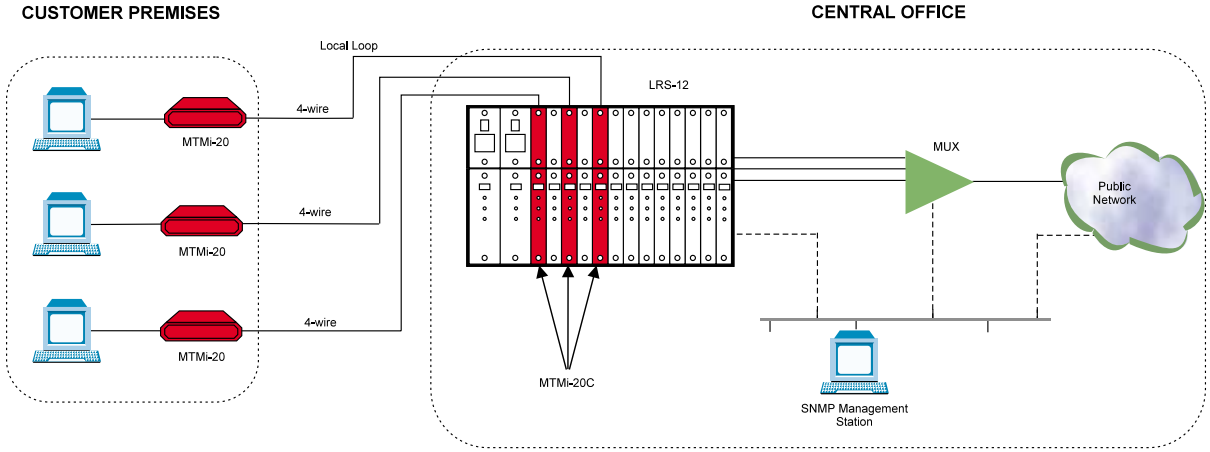

Figure 2. Central Site Application with SNMP Management

MTMi-20

4-Wire Extended Range Modem with Remote Management

SPECIFICATIONS

- **Transmission Line**
  Unconditioned dedicated lines (twisted pair) 19 to 26 AWG
- **Line Coding**
  QAM
- **Range**
  See *Table 1*
- **Level**
  0, -3, -6, -9, -12 dBm
  User-selectable
- **Bandwidth**
  0-11 kHz at 32 and 64 kbps
  0-22 kHz at 128 kbps
- **Equalization**
  Automatically adaptive
- **Synchronization**
  Startup: up to 8 sec
  Resync: up to 3 sec
- **Impedance**
  300Ω
- **Line Connector**
  RJ-45 (RJ-48c) and terminal block
- **Digital Interface**
  V.24: via 25-pin D-type female connector
  V.35: via 34-pin female connector or via 25-pin D-type female connector
  V.36/RS-449: via 37-pin D-type female connector through an adapter cable provided with the product
  X.21: via 15-pin D-type female connector
  RS-530: via 25-pin D-type female connector
  G.703 Codirectional (64 kbps): via terminal block (standalone option only) or via RJ-45 connector
  Ethernet Bridge: via UTP/RJ-45 connector or via BNC connector
  For MTMi-20/R (ASM-MN-214 card version): 25-pin D-type connector for any interface
- **Data Rates**
  32, 64 and 128 kbps
- **Diagnostics**
  – Local analog loopback, local digital loopback, remote digital loopback and remote analog loopback
  – Internal BER tester (for 32 and 64 kbps complies with V.52 511 pattern; for 128 kbps the BER pattern is proprietary)
- **Timing Elements**
  Receive Clock: derived from the received line signal
  Transmit Clock: derived from three alternative sources (user-selectable)
  – Internal oscillator
  – External - derived from the digital interface
  – Receive - derived from the received line signal
- **Physical**
  MTMi-20/M, MTMi-20/S standalone versions:
  Height: 4.4 cm / 1.7 in (1U)
  Width: 21.5 cm / 8.5 in
  Depth: 24.0 cm / 9.6 in
  Weight: 1.4 kg / 3.1 lb
  MTMi-20/R card version for ASM-MN-214:
  Dimensions: fits the ASM-MN-214 modem rack
  Weight: 360g / 0.8 lb
  MTMi-20C card version for LRS-12:
  Dimensions: fits the LRS-12 modem rack
  Weight: 375g / 0.8 lb
- **Power Supply**
  115 or 230 VAC,
  47 to 63 Hz; 10W
  -48 VDC (-36 to -72 VDC)
- **Environment**
  Temperature: 0-50°C / 32-122°F
  Humidity: up to 90%, non-condensing

ORDERING

MTMi-20/M/*/#
Extended Range Modem (Master), standalone unit
MTMi-20/S/*/#
Extended Range Modem (Slave), standalone unit
MTMi-20/R/#
Card for the ASM-MN-214 19" rack
MTMi-20CF/#
Card for the LRS-12 19" rack - ETSI
MTMi-20CB/#
Card for the LRS-12 19" rack - ANSI

* Specify power supply:
115 for 115 VAC
230 for 230 VAC
48 for -48 VDC

Specify digital interface:
V24 for V.24/RS-232
V35 for V.35
V35A for V.35 with DB-25 connector
V36 for V.36/RS-449
530 for RS-530
X21 for X.21
703 for G.703 codirectional with RJ-45 connection (ASM-MN-214 and LRS-12 versions)
703/TB for G.703 codirectional with terminal block (standalone)
703/RJ for G.703 codirectional with RJ-45 connector (standalone)
UTP for built-in Ethernet/802.3 bridge with RJ-45 connector
BNC for built-in Ethernet/802.3 bridge with BNC connector

PCU
Portable Control Unit with protective casing

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