ASM-20

Sync/Async Short Range Modem

RAD

FEATURES

- Full or half duplex operation
- Synchronous or Asynchronous
- Selectable data rates from 19.2 to 256 kbps
- Range up to 23 km / 14 miles

- Carrier control option
- V.54 diagnostic loops available
- Internal test pattern generator and error LED

- Modular, field changeable digital interfaces available are: V.24, V.35, X.21, RS-530, V.36, G.703 Codirectional and built-in Ethernet bridge
- Line protection circuit

ASM-20

Sync/Async Short Range Modem

■ DESCRIPTION

- The ASM-20 Short Range Modem operates synchronously or asynchronously (strap-selectable) at full or half duplex over unconditioned lines. It has a range of up to 23 km (14 miles) and operates at data rates from 19.2 kbps up to 256 kbps.

- The use of conditioned diphase modulation (EUROCOM Std. D1) provides immunity to background noise, eliminates normal line distortion and enables efficient transmission and reception of serial data over twisted pair cable. Transmit timing is provided internally, or is derived externally from the data terminal or receive signal. Receive timing is regenerated from the data.

- When set to async mode, ASM-20 performs async to sync conversion in compliance with ITU V.14 standard. *Table 1* details the rates relevant for sync and async. Rates higher than 115.2 kbps are supported in sync mode only.

Table 1. Approximate Maximum Range

Baud Rate	19 AWG (0.8 mm)		22 AWG (0.6 mm)		24 AWG (0.5 mm)		26 AWG (0.4 mm)	
kbps	km	miles	km	miles	km	miles	km	miles
256	3.75	2.3	2.85	1.75	2.25	1.4	1.9	1.2
192	6.0	3.7	4.5	2.8	3.5	2.2	2.7	1.7
144	10.6	6.6	6.75	4.2	4.5	2.8	3.4	2.1
128	12.4	7.7	7.3	4.5	5.0	3.1	3.6	2.2
115.2*	12.8	7.8	7.65	4.75	5.25	3.3	3.8	2.5
112	12.8	8.0	8.0	5.0	5.5	3.4	4.0	2.5
96	13.0	8.1	8.3	5.15	6.0	3.7	4.15	2.6
72	15.0	9.3	9.4	5.8	6.25	3.9	4.3	2.65
64	17.6	11.0	11.0	6.8	7.5	4.6	5.3	3.3
57.6*	18.8	11.7	11.75	7.3	8.0	5.0	5.6	3.5
56	18.8	11.7	11.75	7.3	8.0	5.0	5.6	3.5
48	19.4	12.0	12.2	7.6	8.25	5.2	5.8	3.6
38.4*	20	12.5	12.5	7.8	8.5	5.3	6.0	3.7
32	20.5	12.75	12.85	8.0	8.75	5.4	6.2	3.85
28.8*	20.5	12.75	12.85	8.0	8.75	5.4	6.2	3.85
19.2**	23.0	14.0	14.0	8.7	9.75	6.0	7.0	4.3

*   Asynchronous baud rates
** Sync/Async

■ APPLICATION

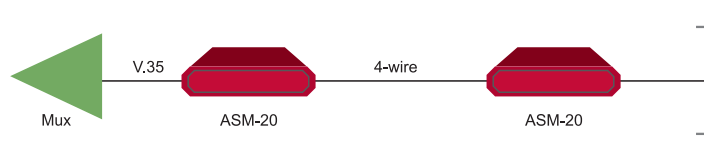**Figure 1. Tail-end for Digital Network Application**

- ASM-20 features V.54 diagnostic capabilities to perform local analog loopback, and local and remote digital loopback. The loops can be manually activated from the front panel or via control signals from the interface connector. In addition, ASM-20 incorporates a built-in Bit Error Rate Tester (BERT) to enable complete testing of both modems and the line. A front panel switch generates a pseudo-random test pattern (511 bits) according to ITU V.52, for testing end-to-end connectivity. An ERROR LED flashes when a bit error is detected.

- ASM-20 is available as a desktop unit or as a card for the ASM-MN-214 modem rack. The rack can carry up to 14 ASM-20 cards and is supplied with 25-pin D-type connectors.

- Optional hardware is available for mounting one or two standalone units in a 19" rack.

SPECIFICATIONS

- **Transmission Line**
  Type: Unloaded twisted pair 19 to 26 AWG
  Range: See *Table 1*
  Level: Strap-selectable 0 dBm or -6 dBm
  Impedance: 150Ω or low
  Return loss: Greater than 15 dB
  Carrier: Controlled by RTS or constantly On
  Modulation: Conditioned diphase European Std. D1

- **Digital Interface**
  – **V.24/RS-232** via 25-pin D-type, (up to 64 kbps only) female connector
  – **V.35** via 34-pin, female connector
  – **X.21** via 15-pin D-type, female connector
  – **RS-530** (RS-422) via 25-pin D-type, female connector
  – **V.36** (RS-449) via 37-pin, female connector using mechanical cable adapter provided with the product
  – **G.703 Codirectional** (64 kbps) via terminal block or RJ-45 (see *Ordering*)
  – **Built in Ethernet bridge** via RJ-45 connector or BNC

- **Data Rates – selectable**
  Sync:
     19.2, 32, 48, 56, 64, 72, 96, 112, 128, 144, 192, 256 kbps
  Async:
     19.2, 28.8, 38.4, 57.6, 115.2 kbps

- **Diagnostics**
  Comply with V.54 standard
  Digital loopback:
  – Local (DIG), activated by manual switch
  – Remote (REM), activated by manual switch or by control signal from the DTE interface connector
  Analog loopback:
     Local (ANA), activated by manual switch or by control signal from the DTE interface connector
  Pattern:
     Test pattern activated by manual switch

- **Timing Elements**
  Receive clock:
     Derived from the receive signal
  Transmit clock:
     Derived from 3 alternative sources:
     – Internal oscillator
     – External from the DTE
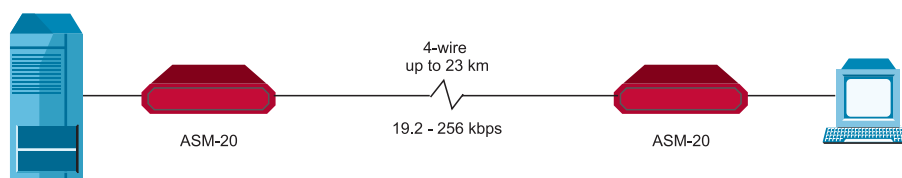   – Loop clock derived from the receive signal

4-wire
up to 23 km

ASM-20

19.2 - 256 kbps

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Figure 2. Point-to-point Application

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Sync/Async Short Range Modem

- **Indicators**
  PWR (green):   Power
  RTS   (yellow): Request to Send
  TD   (yellow): Transmit Data
  RD   (yellow): Receive Data
  DCD (yellow): Data Carrier Detect
  TEST (red):   Test
  ERR (yellow): Bit Errors

- **Power Supply**
  115 or 230V ($\pm$10%)
  47 to 63 Hz; 5W
  -48 VDC or 24 VDC

- **Physical**

  ASM-20 Modem:
  Height: 44   mm / 1.7   in
  Width: 215 mm / 8.5   in
  Depth: 243 mm / 9.6   in
  Weight: 1.4   kg / 3.1   lb

  ASM-20-R Card:
  Dimensions:
  Fits ASM-MN-214 modem rack
  Weight: 360g / 10.1 oz

- **Environment**
  Temperature: 0-50°C / 32-122°F
  Humidity: up to 90%,
                 non-condensing

▮ ORDERING

ASM-20-2/*/+/#
Short range modem, stand alone unit

ASM-20-2R/+
Short range modem card for the ASM-MN-214 19" rack

* Specify power supply
  115 for 115 VAC
  230 for 230 VAC
  48 for -48 VDC
  24 for 24 VDC

+ Specify interface
  V24 for V.24/RS-232
     (up to 64 kbps)
  V35 for V.35
  530 for RS-530
  X21 for X.21
  V36 for V.36/RS-449
  703 for G.703 Codirectional
     (64 kbps)
  UTP for built-in Ethernet bridge,
     10BaseT with RJ-45
  BNC for built-in Ethernet bridge,
      10BaseT with BNC connector

Note: When using V.35 or X.21 interfaces for ASM-20-2R, the CIA adapter is required.

Specify G.703 Codirectional connector
  TB for terminal block connector
  RJ for RJ-45 connector

RM-17
Hardware for mounting one or two standalone units in a 19" rack

CIA/&
Connector Interface Adapter for the ASM-MN-214 19" rack

& Specify CIA connector option:
  V35/1 for adapting one modem
     card's 25-pin connector into
       one V.35, 34-pin connector
  X21 for adapting two adjacent
     modem cards' 25-pin
     connectors to two X.21, 15-
  pin   connectors