

# FRAME-TO-STATION WIRING AND CONNECTION

## Four-Pair Analog or Single-Pair/Coax Digital Transmission

A unique aspect of the Matrix Plus digital intercom system is that frame-to-station wiring may be accomplished in three different ways: four-pair CAT-3 cable, single-twisted-pair wiring, or coaxial cable. When the MTX-A8 analog-transmission card is used in a slot of the matrix frame, wiring from that frame to stations and interfaces is done with 4-pair CAT-3 cable and RJ-45 connectors. When the MTX-D8 digital-transmission card is used, frame-to-station wiring can be either single-twisted-pair or coaxial cable, using RJ-45 and/or coax connectors.

### COMBINE DIGITAL- AND ANALOG-TRANSMISSION CARDS

Any desired combination of MTX-A8 and MTX-D8 matrix cards may be used in the System 200, Compact 72, or MicroMatrix digital intercom frames. Therefore, in the same system one can have secure digital links to some stations, analog links to others, and analog signals to interfaces, audio devices, and control devices – all communicating together in the same matrix.

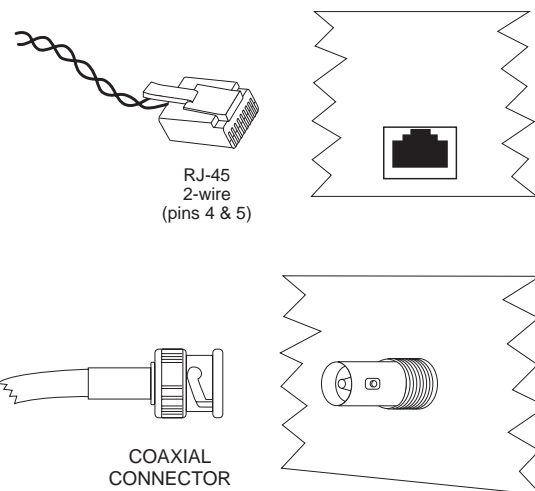
### PROCESSING AND ROUTING IN THE DIGITAL DOMAIN

*Within* the matrix frame, no matter what combination of analog-transmission and digital-transmission cards is used, all processing and routing of communications is done in the digital domain. To the user, this system and combination of card types is transparent. Any of the cards fit into any of the slots in the card frames, and each card features eight full-duplex audio/data ports.

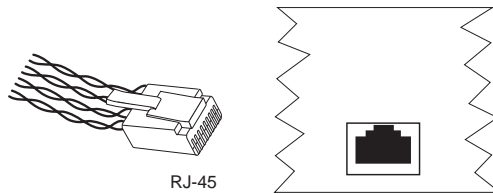
### CONNECTIONS AT THE INTERCOM STATIONS

At the station, one of two different communications (COM) modules is installed – one for four-pair cable and the other for digital single-pair and coax. This installation is typically done at the factory when the system is ordered. The module used with the MTX-D8 digital-transmission card is designated the COM-20, and features both a coaxial connector and a female RJ-45 connector. The module used with the MTX-A8 analog-transmission card is designated the COM-1A (and the COM-10 for the ICS-2003 and ICS-2110 stations), and features a female RJ-45 connector. This card is also the one used with existing Matrix Plus II and Matrix Plus 3 stations containing the COM-1 module.

SINGLE-PAIR/COAX DIGITAL WITH MTX-D8 CARD



FOUR-PAIR ANALOG WITH MTX-A8 CARD



*Matrix Plus*  
DIGITAL INTERCOM

by Clear-Com

## WHEN TO CHOOSE ANALOG OR DIGITAL

The MTX-D8 card is preferred when communications between stations in the system must be secure. This card and wiring scheme is also desirable when existing cable runs of coax are available, or when a spare pair of wires is already in place in the facility. Because it is a digital stream with encoded audio and system data intermixed, one cannot take an audio feed off the line. The digital transmission also makes the signal less vulnerable to noise induced into the intercom line in its travels throughout a facility. In portable applications, such as mobile television OB vans, digital stations can be remotely connected to the Matrix using standard shielded pair microphone cable and 3-pin XLR cable adapters.

The MTX-A8 card is preferred when the connection requires analog audio signals or separate data send and receive pairs. For example, if a fiber-optic link is used the analog signals are necessary. Analog transmission is also required whenever the user desires to drive devices, such as a mixing-console input, a party-line or camera intercom, a telephone hybrid, or an IFB system directly with the line-level analog audio signals from the matrix frame. Separate data send and receive lines need to be used if the system data is to be transmitted over a modem to a station or system in a remote location.

The MTX-A8 analog matrix card will support 4-pair analog stations, 4-pair analog interfaces, and direct 2-pair/4-wire audio circuits. The MTX-D8 digital matrix card only supports connection to digital stations.

## SPECIFICATIONS

### MTX-A8 ANALOG MATRIX CARD

**Number of Ports:** 8

**Wire Type & Length:**

4-pair CAT-3 cable, 10,000 ft. (3km)

**Serial Communication with Stations:**

RS-422, 9.6 or 19.2 KB selectable

**Program Memory:** 256 KB Flash ROM

**RAM Memory:** 256 KB Static CMOS

**Frequency Response:** 20 Hz - 15 kHz, +/-1 dB

**Total Harmonic Distortion (THD):**

< 0.09%, 20 Hz - 15 kHz

**Signal-to-Noise Ratio (SNR):**

> 80 dB below +18dB

**Crosstalk:** -75 dB

**Audio Output,**

**Level:** 0 dBv nominal

**Adjustment Range:** -24 dB to +14dB, +18dB max.

**Impedance:** 100 Ohms, electronically balanced

**Audio Input,**

**Level:** 0 dBv nominal

**Adjustment Range:** -12 dB to +11dB

**Impedance:** 600 Ohms, electronically balanced

### MTX-D8 DIGITAL MATRIX CARD

**Number of Ports:** 8

**Wire Type & Length:**

Single-twisted-pair, 24 - 26 AWG, 10,000 ft. (3km)

or 75-Ohm Coax, RG-59 typical, 10,000 ft. (3km)

**Isolation, Twisted Pair:** Both ends transformer isolated

**Isolation, Coax:** Common grounded shield

**Transmission Type:** U-type loop

**Data Rate:** 160 KB/second, full duplex

**Audio Coding:**

8-bit companded at 16K samples/second

**Program Memory:** 256 KB Flash ROM

**RAM Memory:** 256 KB Static CMOS

**Frequency Response:**

30 Hz - 7.5 kHz, +/-1.5 dB (transmission system only)

**Signal-to-Noise Ratio (SNR):** > 70 dB, 30Hz - 7.5 kHz

### DIMENSIONS, MTX-A8 AND MTX-D8

**Form Factor:** 6U "Euro" Style PC Board

**Connectors:** (2) 96-pin "Euro" Style

**Dimensions:** 9.2" x 12.5" L (233 x 320 mm)

**Weight:** 0.6 lb (0.27 Kg)

*All specifications are subject to change without notice*