

# FORMAT-A AUDIO SENDERS

## CONTENTS

<b>INTRODUCTION TO RDL® TWISTED PAIR PRODUCTS</b>	<b>1</b>
<b>INTRODUCTION TO RDL <i>FORMAT-A</i></b>	<b>1</b>
<b>AUDIO SENDERS</b>	<b>2</b>
TX-TPS1A Active Single-Pair Sender, TX™ Series	
TX-TPS3A Active Three-Pair Sender, TX Series	
TX-TPS6A Passive Single-Pair Sender, TX Series	
D-TPS1A Active Single-Pair Sender, White Decora®-style	
DS-TPS1A Active Single-Pair Sender, Stainless Steel Decora®-style	
AF-TPS1A Active Single-Pair Sender, APPFLEX™	
EM-TPS1A Active Single-Pair Sender, European Modular 45mm	
D-TPS2A Active Two-Pair Sender, White Decora®-style	
DS-TPS2A Active Two-Pair Sender, Stainless Steel Decora®-style	
AF-TPS2A Active Two-Pair Sender, APPFLEX	
EM-TPS2A Active Two-Pair Sender, European Modular 45mm	
D-TPS3A Active Three-Pair Sender, White Decora®-style	
DS-TPS3A Active Three-Pair Sender, Stainless Steel Decora®-style	
AF-TPS3A Active Three-Pair Sender, APPFLEX	
EM-TPS3A Active Three-Pair Sender, European Modular 45mm	
<b>AUDIO RECEIVERS</b>	<b>3</b>
TX-TPR1A Active Single-Pair Receiver, TX Series	
TX-TPR3A Active Three-Pair Receiver, TX Series	
TX-TPR6A Passive Single-Pair Receiver, TX Series	
D-TPR1A Active Single-Pair Receiver, White Decora®-style	
DS-TPR1A Active Single-Pair Receiver, Stainless Steel Decora®-style	
AF-TPR1A Active Single-Pair Receiver, APPFLEX	
EM-TPR1A Active Single-Pair Receiver, European Modular 45mm	
D-TPR2A Active Two-Pair Receiver, White Decora®-style	
DS-TPR2A Active Two-Pair Receiver, Stainless Steel Decora®-style	
AF-TPR2A Active Two-Pair Receiver, APPFLEX	
EM-TPR2A Active Two-Pair Receiver, European Modular 45mm	
D-TPR3A Active Three-Pair Receiver, White Decora®-style	
DS-TPR3A Active Three-Pair Receiver, Stainless Steel Decora®-style	
AF-TPR3A Active Three-Pair Receiver, APPFLEX	
EM-TPR3A Active Three-Pair Receiver, European Modular 45mm	
<b>AUDIO DISTRIBUTORS</b>	<b>4</b>
RU-TPDA Four Output Distributor with Input from <i>FORMAT-A</i> Senders	
RU-TPS4A Four Output Sender/Distributor with Rear-Panel Audio Inputs	
<b>TWISTED PAIR POWER INSERTERS</b>	<b>4</b>
RU-TP4PW Four Output Power Inserter, RACK-UP® Series	
FP-TP4PW Four Output Power Inserter, FLAT-PAK™ Series	
TX--TP1PW Single Power Inserter, TX Series	
<b><i>FORMAT-A</i> PAIRS AND WIRING</b>	<b>4</b>
<b><i>FORMAT-A</i> POWERING</b>	<b>5</b>
<b><i>FORMAT-A</i> CABLE LENGTH</b>	<b>5</b>

Visit [www.rdlnet.com](http://www.rdlnet.com) for the complete selection of RDL Twisted Pair Products.

**INTRODUCTION TO RDL® TWISTED PAIR PRODUCTS****ABOUT RDL TWISTED PAIR PRODUCTS**

RDL twisted pair products send, receive and distribute a variety of signal types using twisted pair cables (CAT5, CAT6, etc). These products were designed together as a coordinated system of functional modules that are easy to understand. Drawing from decades of design and manufacturing experience as the industry leader in signal interface and distribution, RDL twisted pair modules are engineered to deliver signal integrity equal or superior to installations using traditional shielded cables.

**SIGNAL FORMATS**

Products are organized according to defined RDL signal formats that govern how each pair is used. The use of different format designations for various twisted pair products simplifies system planning and installation. Each module is clearly identified with a format type. Modules of the same format type are all compatible and may be interconnected. They cannot be connected to modules of a different format type. RDL uses industry standard RJ45 pinouts.

**MODULE TYPES**

Each format includes modules that send, receive or distribute signals. These are termed SENDERS, RECEIVERS and DISTRIBUTORS. Each module is offered in the familiar RDL product enclosure series best suited to its installation. Wall or cabinet-mounted modules are available in white Decora®-style, stainless steel Decora®-style, RDL APPFLEX™ and 45 mm European modular standard. General purpose SENDERS and RECEIVERS are available in RDL's TX™ series enclosures for rack mounting or the wide range of other TX mounting possibilities. Distribution amplifiers are offered in MAX RACK-UP® chassis for convenient rack mounting.

**POWERING CONVENIENCE**

System planning and installation is further simplified through the versatility of RDL's standardized powering scheme. All modules operate from 24 Vdc power which provides the headroom necessary to deliver studio-quality low-noise performance for every signal type. Each sending and receiving module may be powered either through the twisted pair cable or by connecting 24 Vdc to the module's power input. Power connected to one module is automatically fed through the twisted pair cable to all other interconnected modules. When it is not convenient to connect power to either the sending or receiving module, power may be inserted at any location along the twisted pair cable. RDL twisted pair universal POWER INSERTERS apply power in any RDL format twisted pair cable. These power modules are available in TX, FLAT-PAK® and RACK-UP series chassis for mounting in the most convenient location.

**SIGNAL DISTRIBUTION**

Distribution amplifiers are available for each format type. Each distributor accepts input signals from rear-panel connections or from a twisted pair SENDER. Signals from senders may be connected to multiple distributors using the LOOP OUT jacks on the distributors' inputs. Each distributor provides power to all connected sender and receiver modules.

**INDICATORS AND PROTECTION**

Every active SENDER and RECEIVER module is equipped with a blue power LED. This provides visual verification that a module is receiving power. All modules that feed locally-connected power to a twisted pair cable include automatic-resetting fusing circuits to protect against shorts. Distributors and universal POWER INSERTERS are intended to provide centralized power distribution to remote modules. Each pair of RJ45 ports on these modules is equipped with a green LED to indicate correct output voltage. The fusing circuits protect the modules from damage while the visual indicators help installers quickly locate wiring faults.

**SUMMARY**

The variety of styles combined with the mounting modularity of Decora®-style and European 45 mm designs make RDL's twisted pair products ideal for any architectural requirements. Segregating the twisted pair cables by format type keeps the design, installation and maintenance simple and straightforward.

**INTRODUCTION TO RDL *FORMAT-A*****FEATURES OF RDL *FORMAT-A* TWISTED PAIR PRODUCTS**

RDL *FORMAT-A* twisted pair products send, receive and distribute audio with studio-quality performance. Modules are available for mounting in walls, cabinets, racks and at other convenient locations. SENDING and RECEIVING modules are equipped with connectors and terminal blocks for standard -10 dBV unbalanced and +4 dBu balanced line levels, and standard microphone levels. *FORMAT-A* uses one pair for power and three pairs for signals. Sending and receiving modules each use one pair, two pairs or all three pairs for audio signals. Single-pair products allow the installer to select which of the three pairs is used to send or receive the signal. Two-pair products are used for stereo audio. Three-pair products send and receive three separate signals which may comprise three mono signals or microphone plus stereo line signals. Modules that do not use all three pairs are equipped with two RJ45 jacks, allowing SENDERS and RECEIVERS to be daisy-chained. For example, a room could have a mic input module in one wall and a line input module in another wall or by a computer. Those two SENDER modules could be connected to each other using twisted pair cable. Only one long run to the receiving location would be required from either SENDER. *FORMAT-A* RECEIVERS bridge the signal pairs allowing multiple receivers to be installed along the cable run. All the modules can be powered at either end of the long run, or at any point along the run. It is often inconvenient to power the modules at one end or the other. The flexibility of the RDL twisted pair products allows power to be applied at the most efficient location in the installation. *FORMAT-A* passive modules do not require power, although they pass power through so they may be intermixed in an installation with powered modules.



**TX-TPS1A Active Single-Pair Sender**

- Single -10 dBV Unbalanced or +4 dBu Balanced Input
- Phono Jack and Detachable Terminal Block Inputs
- Switch Selects which RJ45 Pair (A, B or C) is Fed
- Signal and Power Pair Pass-Through from LOOP IN Jack
- Powered Locally or Remotely through RJ45 Jack
- Fused Local Power Feeds all Modules Connected to RJ45s
- Local Power Input on Terminal Block or dc Power Jack
- Blue LED Indicates Module is Powered
- Daisy-Chain with Single-Pair or Two-Pair *Format-A* Senders
- Studio-Quality Precision Active Balanced Circuitry



**TX-TPS3A Active Three-Pair Sender**

- Three -10 dBV Unbalanced or +4 dBu Balanced Inputs
- Phono Jack and Detachable Terminal Block Inputs
- Audio Inputs to Feed Pairs A, B and C
- Utilizes All Three *Format-A* Pairs
- Powered Locally or Remotely through RJ45 Jack
- Local Power Feeds all Modules Connected to OUTPUT
- Wiring Fault Protection by Automatic Resetting Fuse
- Local Power Input on Terminal Block or dc Power Jack
- Blue LED Indicates Module is Powered
- Studio-Quality Precision Active Balanced Circuitry

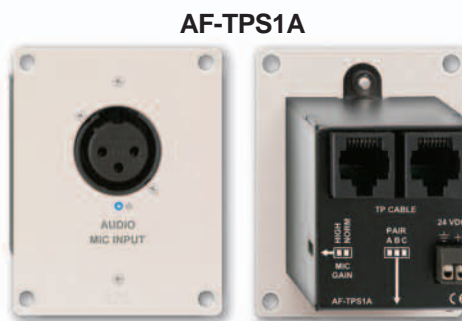


**TX-TPS6A Passive Single-Pair Sender**

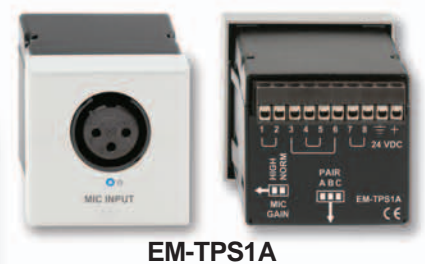
- Single +4 dBu Low-Impedance Balanced Audio Input
- Input on Detachable Terminal Block
- Switch Selects which RJ45 Pair (A, B or C) is Fed
- Signal and Power Pair Pass-Through from LOOP IN Jack
- Passive Circuitry Does Not Require Power
- Galvanic Isolation Through Studio-Quality Transformer
- Daisy-Chain with Single-Pair or Two-Pair *Format-A* Senders



WHITE / GRAY      STAINLESS STEEL



- Balanced Microphone XLR Input with Phantom
- Switch-Selectable Mic Gain on Rear Panel
- Switch Selects which RJ45 Pair (A, B or C) is Fed
- Signal and Power Pair Pass-Through on RJ45 Jacks
- Remote Powering through Twisted Pair Cable



**EM-TPS1A**  
**Active Single-Pair Senders**

- Fused Local Power Feeds all Connected Modules
- Local Power Input on Terminal Block
- Blue LED Indicates Module is Powered
- Daisy-Chain with Single-Pair or Two-Pair Senders
- Studio-Quality Precision Active Balanced Circuitry



WHITE / GRAY      STAINLESS STEEL



- Two Unbalanced -10 dBV Phono Jack Audio Inputs
- Left (L) Input Feeds Pair B; Right (R) Feeds Pair C
- Signal and Power Pair Pass-Through on RJ45 Jacks
- Remote Powering through Twisted Pair Cable
- Fused Local Power Feeds all Connected Modules

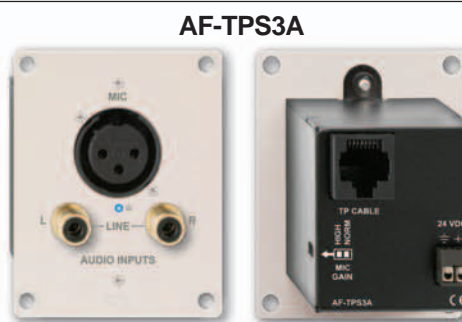


**EM-TPS2A**  
**Active Two-Pair Senders**

- Local Power Input on Terminal Block
- Blue LED Indicates Module is Powered
- Daisy-Chain with a Single-Pair Sender
- Studio-Quality Precision Active Balanced Circuitry



WHITE / GRAY      STAINLESS STEEL



- Balanced Microphone XLR Input with Phantom
- Switch-Selectable Mic Gain on Rear Panel
- Two Unbalanced -10 dBV Phono Jack Line Inputs
- MIC Feeds Pair A; L Feeds Pair B; R Feeds Pair C
- Remote Powering through Twisted Pair Cable



**EM-TPS3A**  
**Active Three-Pair Senders**

- Fused Local Power Feeds all Connected Modules
- Local Power Input on Terminal Block
- Blue LED Indicates Module is Powered
- Utilizes All Three *Format-A* Pairs
- Studio-Quality Precision Active Balanced Circuitry



**TX-TPR6A Passive Single-Pair Receiver**

- Single Unbalanced or Balanced 10 kΩ Audio Output
- Output on Detachable Terminal Block or Phono Jack
- +4 dBu Balanced Output; -10 dBV Unbalanced Output
- Switch Selects which Pair (A, B or C) feeds the Output
- Signal and Power Pair Pass-Through to LOOP OUT Jack
- Passive Circuitry Does Not Require Power
- Galvanic Isolation Provided for Both Outputs
- Daisy-Chain with Additional *Format-A* Receivers



**TX-TPR3A Active Three-Pair Receiver**

- Three -10 dBV Unbalanced or +4 dBu Balanced Outputs
- Phono Jack and Detachable Terminal Block Outputs
- Audio Outputs for All Three Pairs (A, B and C)
- Utilizes All Three *Format-A* Pairs
- Powered Locally or Remotely through RJ45 Jack
- Local Power Feeds all Modules Connected to INPUT
- Wiring Fault Protection by Automatic Resetting Fuse
- Local Power Input on Terminal Block or dc Power Jack
- Blue LED Indicates Module is Powered
- Studio-Quality Precision Active Balanced Circuitry



**TX-TPR1A Active Single-Pair Receiver**

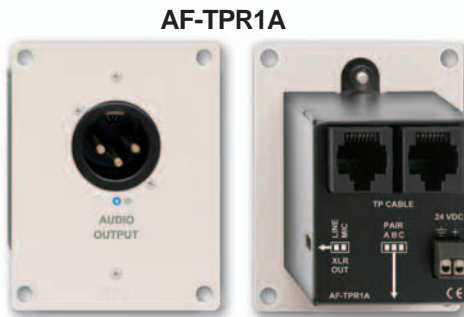
- Single -10 dBV Unbalanced or +4 dBu Balanced Output
- Phono Jack and Detachable Terminal Block Outputs
- Switch Selects which Pair (A, B or C) feeds the Output
- Signal and Power Pair Pass-Through to LOOP OUT Jack
- Powered Locally or Remotely through RJ45 Jack
- Fused Local Power Feeds all Modules Connected to RJ45s
- Local Power Input on Terminal Block or dc Power Jack
- Blue LED Indicates Module is Powered
- Daisy-Chain with Additional *Format-A* Receivers
- Studio-Quality Precision Active Balanced Circuitry



**EM-TPR1A**

**Active Single-Pair Receivers**

- Balanced Mic or Line Level XLR Output
- Switch-Selectable Output Level on Rear Panel
- Switch Selects which Pair (A, B or C) Feeds the Output
- Signal and Power Pair Pass-through on RJ45s
- Remote Powering through Twisted Pair Cable



- Fused Local Power Feeds all Connected Modules
- Local Power Input on Terminal Block
- Blue LED Indicates Module is Powered
- Daisy-Chain with Additional *Format-A* Receivers
- Studio-Quality Precision Active Balanced Circuitry



WHITE / GRAY

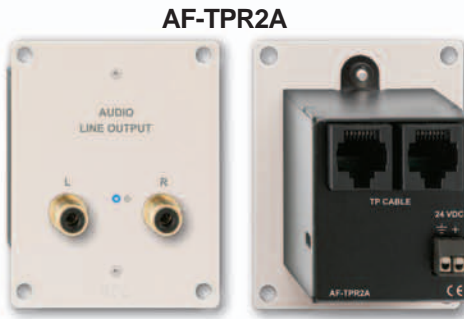
STAINLESS STEEL



**EM-TPR2A**

**Active Two-Pair Receivers**

- Two Unbalanced -10 dBV Phono Jack Audio Outputs
- L (Left) Output From Pair B; R (Right) From Pair C
- Signal and Power Pair Pass-Through on RJ45s
- Remote Powering through Twisted Pair Cable
- Fused Local Power Feeds all Connected Modules



- Local Power Input on Terminal Block
- Blue LED Indicates Module is Powered
- Daisy-Chain with Additional *Format-A* Receivers
- Studio-Quality Precision Active Balanced Circuitry



WHITE / GRAY

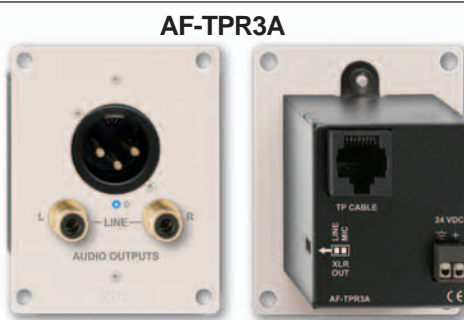
STAINLESS STEEL



**EM-TPR3A**

**Active Three-Pair Receivers**

- Balanced Mic or Line Level XLR Output
- Switch-Selectable Output Level on Rear Panel
- Two Unbalanced -10 dBV Phono Jack Audio Outputs
- XLR From Pair A; L From Pair B; R From Pair C
- Remote Powering through Twisted Pair Cable



- Fused Local Power Feeds all Connected Modules
- Local Power Input on Terminal Block
- Blue LED Indicates Module is Powered
- Utilizes All Three *Format-A* Pairs
- Studio-Quality Precision Active Balanced Circuitry



WHITE / GRAY

STAINLESS STEEL



**RU-TPDA Four Output Distributor with Input from *FORMAT-A* Senders**

- Input Jack Accepts Signals from All *FORMAT-A* Senders
- Output Jacks Drive All *FORMAT-A* Receivers
- Up to Four Three-Pair Receivers may be Driven From Each Distributor
- Expandable by Connecting LOOP OUT Jack to Another Distributor Input
- Power Bus Provides Expansion to Adjacent Rack-Mounted Distributors
- All Connected Senders and Receivers may be Powered from Distributor
- Front-Panel Dual-LED VU Meters Display the Level on Each *FORMAT-A* Pair
- Front-Panel Blue Power LED Shows the Module is Receiving dc Power
- Rear-Panel Green LEDs Indicate Correct dc Output Voltage on RJ45 Jacks
- High-Density Rack Mounting Using RACK-UP® Series Mounting Accessories



**RU-TPS4A Four Output Sender/Distributor with Rear-Panel Audio Inputs**

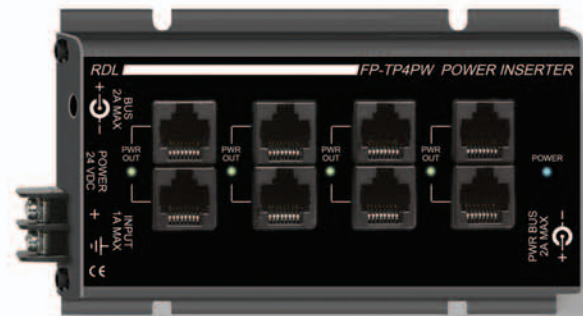
- Input Detachable Terminal Block Accepts Balanced or Unbalanced Line-Level Signals
- Front-Panel Multi-Turn Trimmer Adjusts Audio Level for Each Pair (A, B and C)
- Front-Panel Dual-LED VU Meters Display the Level on Each *FORMAT-A* Pair
- Output Jacks Drive All *FORMAT-A* Receivers
- Up to Four Receivers may be Driven From Each Distributor
- All Receivers Connected To Output Jacks may be Powered from Distributor
- Front-Panel Blue Power LED Shows the Module is Receiving dc Power
- Rear-Panel Green LEDs Indicate Correct dc Output Voltage on RJ45 Jacks
- Power Bus Provides Expansion to Adjacent Rack-Mounted Distributors
- High-Density Rack Mounting Using RACK-UP Series Mounting Accessories

## TWISTED PAIR POWER INSERTERS



**RU-TP4PW Four Output Power Inserter**

- Power Four Sets of Remote Senders and Receivers from Rack
- 24 Vdc Power Input on dc Power Jack or Detachable Terminal Block
- Rear-Panel Blue Power LED Shows Module is Receiving Power
- Rear-Panel Green LEDs Indicate Correct dc Output Voltage on RJ45 Jacks
- Two Associated RJ45 Jacks are Provided for Each Power Output
- Receivers May Be Powered From One Associated RJ45 Power Output Jack
- Senders May Be Powered From the Other Associated RJ45 Power Output Jack
- High-Density Rack Mounting Using RACK-UP Series Mounting Accessories



**FP-TP4PW Four Output Power Inserter**

- Power Four Sets of Remote Senders and Receivers from Convenient Location
- 24 Vdc Power Input on dc Power Jack or Full-Size Terminal Block
- Power Bus Provides Expansion to Adjacent Power Inserters
- Front-Panel Blue Power LED Shows Module is Receiving Power
- Front-Panel Green LEDs Indicate Correct dc Output Voltage on RJ45 Jacks
- Two Associated RJ45 Jacks are Provided for Each Power Output
- Receivers May Be Powered From One Associated RJ45 Power Output Jack
- Senders May Be Powered From the Other Associated RJ45 Power Output Jack



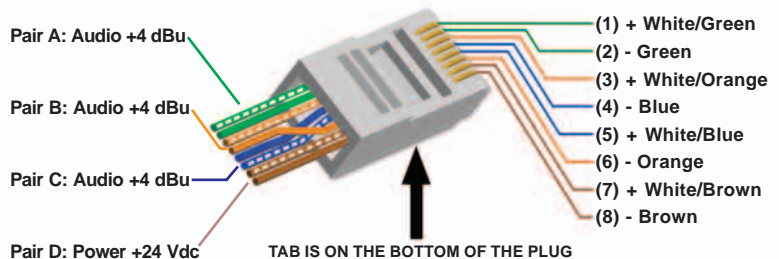
**TX-TP1PW Single Power Inserter**

- Power Remote Senders and Receivers from Any Convenient Location
- 24 Vdc Power Input on dc Power Jack or Detachable Terminal Block
- Front-Panel Blue Power LED Shows Module is Receiving Power
- Front-Panel Green LED Indicates Correct dc Output Voltage on RJ45 Jacks
- Two Associated RJ45 Jacks Provided for the Power Output
- Receiver May Be Powered From One RJ45 Power Output Jack
- Sender May Be Powered From One RJ45 Power Output Jack

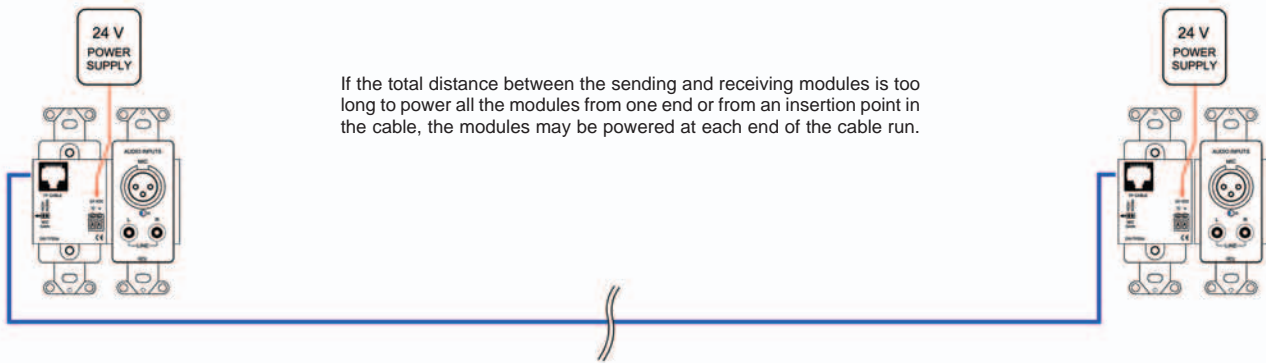
## FORMAT-A PAIRS AND WIRING

### FORMAT-A PAIRS

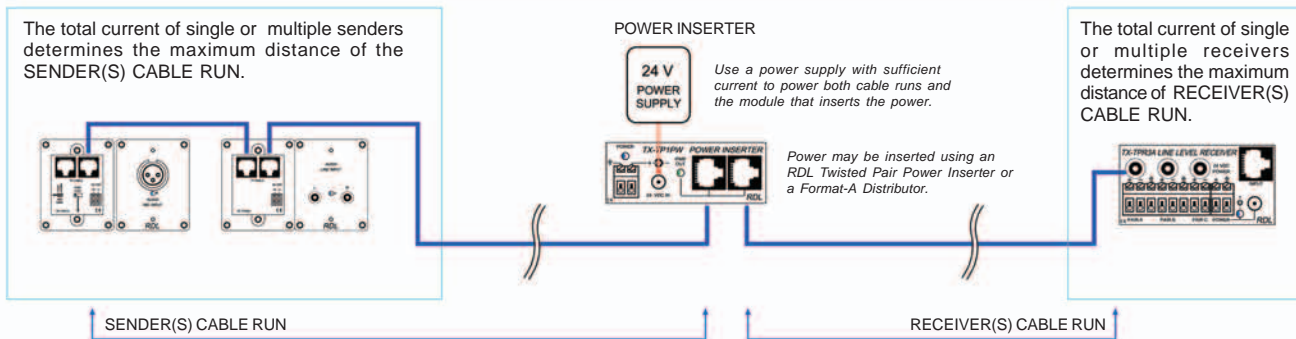
### FORMAT-A WIRE COLORS



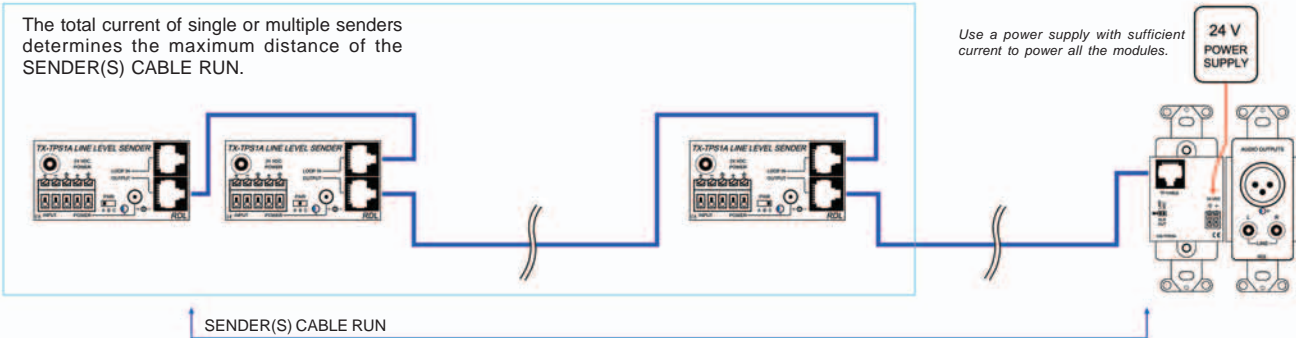
## SENDING AND RECEIVING MODULES MAY BE POWERED SEPARATELY



## SENDING AND RECEIVING MODULES MAY ALL BE POWERED FROM AN INSERTION POINT IN A LONG CABLE RUN

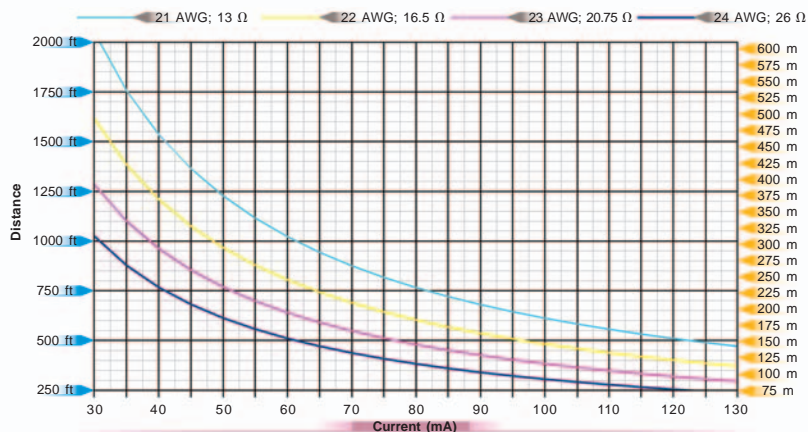


## SENDING AND RECEIVING MODULES MAY ALL BE POWERED FROM ONE END OF A CABLE RUN



# FORMAT-A CABLE LENGTH

## MAXIMUM DISTANCE BETWEEN A POWERED MODULE AND REMOTELY POWERED MODULES BASED ON TOTAL CURRENT CONSUMPTION OF REMOTE MODULES



Determine the maximum cable run distance from the chart. Distances are provided for common wire gauges at various total module currents.

CAT5 cable is normally 22 AWG; CAT6 cables range from 22 to 24 AWG.

Some twisted pair cables have a lower resistance than the typical resistance for a specified wire gauge, and therefore may be used over a longer distance than is shown in the chart. The chart is based on the resistances indicated, which is the resistance of a single conductor over 1000 feet or 300 meters. Resistance measurements on the wire used provides the most accurate distances.