

SAS RJ-45 Connector Pinouts

A number of recent SAS products use RJ-45 connectors for user connections: Data, Audio and even Power can be carried over standard Cat5 cabling to and from SAS Modules and Devices. Some SAS multi-signal breakout blocks are available with RJ-45 connections, which allow direct RJ-45 to RJ-45 cables to be used. You can also easily create CAT5 cables to XLR or other type of connectors for connection to non-SAS studio equipment from these RJ-45 blocks. You can have assorted lengths pre-made or you can have XLR to cut-offs, which you then cut to length and crimp on RJ-45 connectors to plug into the SAS blocks. Contact SAS for pre-made cables.

GENERAL SIGNAL CONVENTION

The SAS pinout for RJ-45 starts with EIA-568B. This standard defines a four pair cable which is widely used for computer networking. The pinout is reviewed here:

Pin 1	WHT/ORG	Pair 2+
Pin 2	ORG	Pair 2-
Pin 3	WHT/GRN	Pair 3+
Pin 4	BLU	Pair 1-
Pin 5	WHT/BLU	Pair 1+
Pin 6	GRN	Pair 3-
Pin 7	WHT/BRN	Pair 4+
Pin 8	BRN	Pair 4-

SAS utilizes the pairs as follows:

Pin 1	SIG 1+	WHT/ORG	
Pin 2	SIG 1-	ORG	
Pin 3	GND	WHT/GRN	
Pin 4	+12 VDC	BLU	(optional/switchable)
Pin 5	+12 VDC	WHT/BLU	(optional/switchable)
Pin 6	GND	GRN	
Pin 7	SIG 2+	WHT/BRN	(optional)
Pin 8	SIG 2-	BRN	(optional)

The connector can have one or two signal/data pairs plus power and ground. Both power and ground have two pins/wires for extra current capability. Power is applied on pins 4 and 5, the center pins. This protects against power getting onto audio or data pins even if the connector is wired in reverse or if a 'crossover' cable is accidentally applied.

A number of connection blocks and products are available, all using the same wiring standard. Data ports can carry one or two RS-485 pairs. Power is often applied so that Operators Studio Panels can connect with only one cable, carrying both Data and Power. Audio is typically one pair for AES Digital (1,2) and two pairs for Analog (Left on 1,2 and Right on 7,8).

RS-485 CONTROL PORT DATA on RJ-45

RS-485 Control Port Data is connected in two ways:

Standard Connections for Control Panels, and

Console Connections with 4 Data Pairs. SAS RJ45 Breakout Blocks typically supply these special Console Data Ports for direct connection to consoles with standard 4 pair cable.

Standard Control Panel Connection

Pin 1	RS-485+	WHT/ORG	
Pin 2	RS-485-	ORG	
Pin 3	Ground	WHT/GRN	
Pin 4	+12 VDC	BLU	(Optional / may be Switchable on some breakout blocks)
Pin 5	+12 VDC	WHT/BLU	(Optional / may be Switchable on some breakout blocks)
Pin 6	Ground	GRN	
Pin 7	NC (485+)	WHT/BRN	(Optional 2 nd RS-485+ available on some breakout blocks)
Pin 8	NC (485-)	BRN	(Optional 2 nd RS-485- available on some breakout blocks)

Console Data – 4 pairs Data Only – consult block documentation

Pin 1	RS-485 1+	WHT/ORG
Pin 2	RS-485 1-	ORG
Pin 3	RS-485 2+	WHT/GRN
Pin 4	RS-485 3-	BLU
Pin 5	RS-485 3+	WHT/BLU
Pin 6	RS-485 2-	GRN
Pin 7	RS-485 4+	WHT/BRN
Pin 8	RS-485 4-	BRN

AUDIO on RIO RJ-45

Audio modules typically provide one RJ-45 for each L/R audio pair.

Digital signals use Signal 1+/- (AES stereo) and Signal 2 is not connected.

Analog signals use Signal1+/- for Left and Signal 2+/- for Right.

Pin 1	Signal 1+	WHT/ORG	(Left or AES Digital – XLR pin 2)
Pin 2	Signal 1-	ORG	(Left or AES Digital – XLR pin 3)
Pin 3	Ground	WHT/GRN	(Left or AES Digital – XLR pin 1)
Pin 4	+12 VDC	BLU	(Optional / may be Switchable)
Pin 5	+12 VDC	WHT/BLU	(Optional / may be Switchable)
Pin 6	Ground	GRN	(Right – XLR pin 1)
Pin 7	Signal 2+	WHT/BRN	(Right – XLR pin 2)
Pin 8	Signal 2-	BRN	(Right – XLR pin 3)