Connectware™

Cable Guide

Including All PortServer and Digi One Products

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Chapter 1 **EIA-232 Asynchronous Interface**

General EIA-232 Cable Information

Use this information to determine the proper EIA-232 cable requirements for your application.

Physical Cable Characteristics

EIA-232 serial interface cables should be shielded, low capacitance cables, designed specifically for serial data transmission.

Grounding Requirements

EIA-232 interface cables should have the shield grounded at both ends of the cable. Digi recommends Chassis Ground, available on the shell of Digi's DB-25 connectors, and pin 4 of a 10-pin RJ-45 connector.

Environmental Requirements

While good shielding provides reasonable protection against "noise" (electromagnetic interference, or EMI), cables should still be routed away from noise sources wherever possible. Avoid laying cables in close proximity to transformers, generators, motors, fluorescent lights, etc.

Data Rate Information

The maximum data rate that can be used for EIA-232 connections is primarily determined by the quality and length of the interconnecting cable. The quality of the cable (for transmission purposes) is generally determined by the capacitance per foot rating of the cable.

The following table gives the recommended maximum cable length for a given data rate. Longer cables may be implemented at your discretion. Note that not all Digi products support all of the data rates listed below.

Data Rate vs. Cable Length

Data Rate (bps)	Maximum Cable Length
57,600 or less	100 feet
115,200	80 feet
230,400	40 feet
460,800	20 feet
921,600	10 feet

Notes:

The maximum length is the amount of cable that is connected to a Digi supplied interconnect device, such as Quad or Octa cables and boxes.

The maximum length is based on a cable rated at:

12.3 pF/foot, conductor to conductor
22.4 pF/foot conductor to shield

In situations where low-capacitance cable is unavailable, or very long cable runs are required, "short-haul" modems can be used to increase the effective range of the EIA-232 interface. Short-haul modems are similar to standard modems, except that they are connected directly to each other via a cable instead of going through a telephone circuit.

Note: Use only externally-powered short-haul modems with Digi products.

Transmission Errors

If transmission errors occur, follow this procedure to determine the cause of the problem:

1. Reduce the baud rate.
2. Reduce the cable length.
3. Use a cable with a lower capacitance per foot rating.

Chapter 2 **EIA-232: DB-25 to DB-25**

Digi DB-25 Connector Pin Assignments

Signal	Description	DTE Use	Pin #
GND	Chassis Ground	N/A	Shell
TxD	Transmitted Data	Output	2
RxD	Received Data	Input	3
RTS	Request to Send	Output	4
CTS	Clear to Send	Input	5
DSR	Data Set Ready	Input	6
SG	Signal Ground	reference	7
DCD	Data Carrier Detect	Input	8
DTR	Data Terminal Ready	Output	20
RI	Ring Indicator	Input	22

DB-25 Software Handshaking (XON/XOFF) Cable

The following three-wire cable is often sufficient for a terminal, printer, or other DTE device configured for software flow control.

Simple Terminal/Printer Cable

DB-25 Female (Digi End)			DB-25 Male (Peripheral)	
Signal	**Pin**		**Pin**	**Signal**
TxD	2	connected to	3	RxD
RxD	3	connected to	2	TxD
SG	7	connected to	7	SG
GND	shell	connected to (via shield)	shell	GND

This cable is a three-wire null modem cable. Transmitted Data on one end of the cable is connected to Received Data at the other end, and vice versa. The male DB-25 end can be plugged directly into most serial terminals and printers without any adapters. The female DB-25 end plugs directly into any Digi DB-25 serial port."

DB-25 4-Wire Hardware Handshaking (DTR) Cable

The following four-wire cable is often sufficient for an older terminal, printer, or other DTE device configured for DTR (hardware) flow control. However, some terminals and printers may use a signal other than DTR for flow control. In addition, some terminals and printers may have other cable requirements. Consult your terminal or printer manual for this information. For more universal compatibility, use a full-wired DB-25 terminal/printer cable.

Terminal/Printer Cable with DTR Handshaking

DB-25 Female (Digi End)			DB-25 Male (Peripheral)	
Signal	**Pin**		**Pin**	**Signal**
TxD	2	connected to	3	RxD
RxD	3	connected to	2	TxD
CTS	5	connected to	20	DTR
SG	7	connected to	7	SG
GND	Shell	connected (via shield) to	Shell	GND
	jumpered	4+5	RTS+CTS	

Important: Some terminal or printer manufacturers may use different methods of flow control. Consult your documentation for specific wiring requirements.

DB-25 Hardware Handshaking (RTS/CTS) Cable

The following cable is often sufficient for a terminal, printer, or other DTE device configured for RTS/CTS (hardware) flow control. However, some terminals and printers may have other cable requirements. Consult your terminal or printer manual for this information. For more universal compatibility, use a fully-wired DB-25 terminal/printer cable.

Terminal/Printer Cable with RTS/CTS Handshaking

DB-25 Female (Digi End)			DB-25 Male (Peripheral)	
Signal	**Pin**		**Pin**	**Signal**
TxD	2	connected to	3	RxD
RxD	3	connected to	2	TxD
RTS	4	connected to	5	CTS
CTS	5	connected to	4	RTS
DSR+DCD	6+8	connected to	20	DTR
SG	7	connected to	7	SG
DTR	20	connected to	6+8	DSR+DCD
GND	Shell	connected (via shield) to	Shell	GND

Important: Some terminal or printer manufacturers may use different methods of flow control. Consult your documentation for specific wiring requirements.

DB-25 Fully-Wired Terminal/Printer Cable

The following cable wiring supports most serial terminals or printers with either software or hardware handshaking. This cable is valid with any Digi DB-25 serial port.

Terminal/Printer Cable for Software (XON/XOFF) or Hardware (DTR) Handshaking

DB-25 (Digi End)			DB-25 Male (Terminal/Printer)	
Signal	**Pin**		**Pin**	**Signal**
RTS	4	connected to	5	CTS
GND	Shell	connected to	Shell	GND
TxD	2	connected to	3	RxD
RxD	3	connected to	2	TxD
SG	7	connected to	7	SG
CTS	5	connected to	20	DTR
DTR	20	connected to	8+6	DCD+DSR
DCD+DSR	8+6	connected to	4	RTS

Important: Some terminal or printer manufacturers may use different methods of flow control. Consult your documentation for specific wiring requirements.

DB-25 Modem Cable

To connect a DB-25 equipped asynchronous adapter to a modem, use a standard "straight-through" cable. A straight-through cable has a DB-25 female connector at the Digi end, and a DB-25 male connector at the modem end. All 25 pins are connected, 1 to 1, 2 to 2, 3 to 3, etc. Use shielded cable, and connect pin 1 of each connector to the cable shield.

Chapter 3 **EIA-232: RJ to DB-25**

Digi RJ-45 Connector Pin Assignments

10-pin RJ-45 plugs may be difficult to obtain in the retail market; therefore, most Digi device driver software incorporates an optional feature called ALTPIN, which swaps the logical functions of DSR (Data Set Ready) with DCD (Data Carrier Detect).

When ALTPIN is enabled, DCD becomes available on pin 1 of an 8-pin RJ-45 connector (equivalent to pin 2 of a 10-pin connector).

Signal	Description	DTE Use	Pin #
RI	Ring Indicator	Input	1
DSR (DCD*)	Data Set Ready (Data Carrier Detect*)	Input	2
RTS	Request to Send	Output	3
GND	Chassis Ground	N/A	4
TxD	Transmitted Data	Output	5
RxD	Received Data	Input	6
SG	Signal Ground	reference	7
CTS	Clear to Send	Input	8
DTR	Data Terminal Ready	Output	9
DCD (DSR*)	Data Carrier Detect (Data Set Ready*)	Input	10

*When ALTPIN is in effect.

RJ Connector Types

The following table shows the relationship of various RJ plugs to the Digi RJ-45 10-pin jack. The Digi 10-pin jack can accept any of the listed plug types. The wiring of each plug type corresponds to support of specific capabilities such as software handshaking, hardware handshaking, and the Digi ALTPIN feature.

Digi 10-Pin Jack	Signal Name	RJ-45 10-Pin Plug	RJ-45 8-Pin Plug	RJ-11 6-Pin Plug	RJ-11 4-Pin Plug
1	RI	1			
2	DSR (DCD*)	2	1		
3	RTS	3	2	1	
4	GND	4	3	2	1
5	TxD	5	4	3	2
6	RxD	6	5	4	3
7	SG	7	6	5	4
8	CTS	8	7	6	
9	DTR	9	8		
10	DCD (DSR*)	10			

*When ALTPIN is in effect.

Digi RJ-45 to DB-25/DB-9 Cable Adapters

RJ-45 to DB-25/DB-9 cable adapters can be purchased from Digi. These adapters consist of a 10-pin RJ-45 plug connected via a two- or four-foot cable to a DB-25 or DB-9 connector. The adapters are fully-wired and provide modem control.

Part numbers for RJ-45 to DB-25 Cable Adapters:

Cable RJ45 to DB25M (Male) DTE 24"	76000129
Cable RJ45 to DB25F (Female) DTE 24"	76000198
Cable RJ45 to DB25M (Male) DTE 48"	76000195
Cable RJ45 to DB25M (Male) DCE 48"	76000238
Cable RJ45 to DB25F (Female) DTE 48"	76000199

Part numbers for RJ-45 to DB-9 Cable Adapters:

Cable RJ45 to DB9M (Male) DTE 24"	76000239
Cable RJ45 to DB9F (Female) DTE 24"	76000200
Cable RJ45 to DB9M (Male) DTE 48"	76000240
Cable RJ45 to DB9M (Male) DCE 48"	76000264
Cable RJ45 to DB9F (Female) DTE 48"	76000201

Digi RJ-45 to RJ-45 Cable Adapters: 8 Pin

RJ-45 to RJ-45 cable adapters can be purchased from Digi. These adapters consist of an 8-pin RJ-45 plug connected to another 8-pin RJ-45 plug with a crossover cable. These cables are used to connect the Digi devices to the serial console port of Cisco and Sun Netra devices. Pinout information and a graphic is included later in this chapter. See "RJ-45 8-Pin Crossover Cable for Cisco and Sun Netra" on page 12 for pinout and graphic information.

Part numbers for RJ-45 to RJ-45 8-Pin Crossover Cable for Cisco and Sun Netra:

Cable RJ45 to RJ45 8-pin (single pack)	76000631
Cable RJ45 to RJ45 8-pin (bulk pack of 8)	76000632
Cable RJ45 to RJ45 8-pin (bulk pack of 16)	76000633

RJ-11 Software Handshaking (XON/XOFF) Cable

The following 3-wire cable is often sufficient for a terminal, printer or other DTE device configured for software flow control.

Simple Software Handshaking Terminal/Printer Cable (RJ-11)

RJ-11 (Digi End)			**DB-25 Male (Peripheral)**	
Signal	**Pin**		**Pin**	**Signal**
TxD	2	connected to	3	RxD
RxD	3	connected to	2	TxD
SG	4	connected to	7	SG
GND	1	connected (via shield) to	1 (or shell)	GND

This cable is a 3-wire null modem cable. Transmitted Data on one end of the cable is connected to Received Data at the other end, and vice versa.

The RJ-11 plug fits into the center of the RJ-45 jack. The male DB-25 end can be plugged directly into most serial terminals and printers without any adapters.

An RJ-45 8-pin connector uses the same wiring with the center pins only-pins 3, 4, 5, and 6. See the section titled RJ Connector Types for a comparison of various RJ connector types that work with the Digi 10-pin RJ-45 jack.

RJ-45 8-Pin Plug Hardware Handshaking (DTR) Cable

Using an 8-pin plug, the following cable wiring is often sufficient for a terminal, printer, or other DTE device configured for DTR (hardware) flow control. However, some terminals and printers may use a signal other than DTR for flow control. In addition, some terminals and printers may have other cable requirements. Consult your terminal or printer manual for this information. For more universal compatibility, use the RJ-45 10-wire terminal/printer cable or a Digi RJ-45 to DB-25 adapter.

Terminal/Printer Cable with DTR Handshaking

RJ-45 (Digi End)			**DB-25 Male (Peripheral)**	
Signal	**Pin**		**Pin**	**Signal**
TxD	4	connected to	3	RxD
RxD	5	connected to	2	TxD
CTS	7	connected to	20	DTR
SG	6	connected to	7	SG
GND	3	connected (via shield) to	1 (or shell)	GND
	jumpered	4+5	RTS+CTS	

Important: Some terminal or printer manufacturers may use different methods of flow control. Consult your documentation for specific wiring requirements.

RJ-45 8-Pin Plug Hardware Handshaking (RTS/CTS) Cable

Using an 8-pin plug, the following cable wiring is often sufficient for a terminal, printer, or other DTE device configured for RTS/CTS (hardware) flow control. However, some terminals and printers may have other cable requirements. Consult your terminal or printer manual for this information. For more universal compatibility, use theRJ-45 10-wire terminal/printer cable or a Digi RJ-45 to DB-25 adapter.

Terminal/Printer Cable with DTR Handshaking

RJ-45 (Digi End)			**DB-25 Male (Peripheral)**	
Signal	**Pin**		**Pin**	**Signal**
DSR	1	connected to	20	DTR
RTS	2	connected to	5	CTS
GND	3	connected (via shield) to	1 (or shell)	GND
TxD	4	connected to	3	RxD
RxD	5	connected to	2	TxD
SG	6	connected to	7	SG
CTS	7	connected to	4	RTS
DTR	8	connected to	8	DCD

Important: Some terminal or printer manufacturers may use different methods of flow control. Consult your documentation for specific wiring requirements.

RJ-45 8-Wire ALTPIN Terminal/Printer Cable

Using an 8-pin RJ-45 plug, the following cable wiring supports most serial terminals or printers with either software or hardware handshaking using the Digi ALTPIN option.

Most terminals and printers use Request to Send/Clear to Send (RTS/CTS) for hardware handshaking. The cable shown supports this method.

ALTPIN Terminal/Printer Cable for Software (XON/XOFF) or Hardware (RTS/CTS) Handshaking

RJ-45 8-pin (Digi End)			**DB-25 Male (Terminal/Printer)**	
Signal	**Pin**		**Pin**	**Signal**
DCD*	1	connected to	20	DTR
RTS	2	connected to	5	CTS
GND	3	connected (via shield) to	Shell	GND
TxD	4	connected to	3	RxD
RxD	5	connected to	2	TxD
SG	6	connected to	7	SG
CTS	7	connected to	4	RTS
DTR	8	connected to	6+8	DSR+ DCD

* ALTPIN must be turned on for pin 1 to be DCD. When ALTPIN is enabled, DCD becomes available on pin 1 of an 8-pin RJ-45 connector (equivalent to pin 2 of a 10-pin connector).

Important: Some terminal or printer manufacturers may use different methods of flow control. Consult your documentation for specific wiring requirements.

RJ-45 Fully-Wired Terminal/Printer Cable

Using a 10-pin RJ-45 plug, the following cable wiring supports most serial terminals or printers with either software or hardware handshaking. This cable is valid with any Digi RJ-45 serial port.

Most terminals and printers use Request to Send/Clear to Send (RTS/CTS) for hardware handshaking. The cable shown supports this method.

Terminal/Printer Cable for Software (XON/XOFF) or Hardware (RTS/CTS) Handshaking

RJ-45 10-pin (Digi End)			DB-25 Male (Terminal/Printer)	
Signal	**Pin**		**Pin**	**Signal**
DSR+DCD*	2+10	connected to	20	DTR
RTS	3	connected to	5	CTS
GND	4	connected (via shield) to	Shell	GND
TxD	5	connected to	3	RxD
RxD	6	connected to	2	TxD
SG	7	connected to	7	SG
CTS	8	connected to	4	RTS
DTR	9	connected to	6+8	DSR+DCD

* ALTPIN must be turned off for DCD to be on pin 10.

Important: Some terminal or printer manufacturers may use different methods of flow control. Consult your documentation for specific wiring requirements.

RJ-45 8-Pin to Modem (ALTPIN option)

The following table shows how to build an 8-wire modem cable using an 8-pin RJ-45 plug. This cable supports the Digi ALTPIN option when plugged into a Digi RJ-45 serial port.

8-Wire Modem Cable Supporting ALTPIN Option

RJ-45 (Digi End)			DB-25 Male (Modem End)	
Signal	**Pin**		**Pin**	**Signal**
DCD	1	connected to	8	DCD
RTS	2	connected to	4	RTS
GND	3	connected (via shield) to	1 (or shell)	GND
RxD	5	connected to	3	RxD
TxD	4	connected to	2	TxD
SG	6	connected to	7	SG
CTS	7	connected to	5	CTS
DTR	8	connected to	20	DTR

When ALTPIN is enabled, DCD becomes available on pin 1 of an 8-pin RJ-45 connector (equivalent to pin 2 of a 10-pin connector).

Note: ALTPIN is not supported for the PortServer product under Windows NT. Use a full 10-wire modem cable in this case.

RJ-45 10-Pin Plug to DB-25 Modem Cable

The simplest way to connect a modem to a Digi RJ-45 jack is to use a Digi RJ-45 to DB-25 Cable Adapter. The following table shows how to apply the adapter wiring scheme to custom modem cables.

RJ-45 to DB-25 Modem Cable (10 Wire)

RJ-45 (Digi End)			DB-25 Male (Modem End)	
Signal	**Pin**		**Pin**	**Signal**
RI	1	connected to	22	RI
DSR	2	connected to	6	DSR
RTS	3	connected to	4	RTS
GND	4	connected (via shield) to	1 (or shell)	GND
TxD	5	connected to	2	TxD
RxD	6	connected to	3	RxD
SG	7	connected to	7	SG
CTS	8	connected to	5	CTS
DTR	9	connected to	20	DTR
DCD	10	connected to	8	DCD

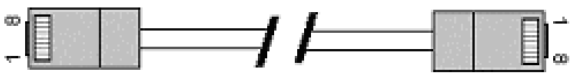
RJ-45 8-Pin Crossover Cable for Cisco and Sun Netra

Below is the pinout information for an RJ-45 8-Pin crossover cable for Cisco and Sun Netra serial console ports. Also included is a graphic detailing pin positions on the RJ-45 plug.

RJ-45 to RJ-45 8-Pin Crossover Cable

from RJ-45 port	Signal		Signal	to Cisco/Sun-Netra RJ-45 port
4	TxD	connected to	RxD	6
5	RxD	connected to	TxD	3
6	GND	connected to	GND	4
8	DTR	connected to	DSR	7
1	DSR	connected to	DTR	2
2	RTS	connected to	CTS	8
7	CTS	connected to	RTS	1

RJ-45 8-Pin Crossover Cable



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Chapter 4 EIA-422 Asynchronous Interface

General EIA-422 Cable Information

This section applies to Digi products equipped with EIA-422 asynchronous interfaces.

Physical Cable Characteristics

EIA-422 interface cables should be shielded twisted-pair cables. Each signal requires two leads (one twisted pair of wires) to complete a balanced voltage digital circuit. The shield should be connected to the Chassis Ground of the devices at *both* ends of the interface cable.

EIA-422 Interface Signaling

The EIA-422 interface provides four signals: Transmitted Data (TxD), Received Data (RxD), Request To Send (RTS) and Clear To Send (CTS). The functions of these signals are identical to their EIA-232 counterparts.

EIA-422 Grounding Requirements

EIA-422 interface cables must provide a ground path between the devices to be connected. This ensures the integrity of data transfers and control signals. This should be connected to the Chassis Ground of each device. Digi recommends using the cable shield for this purpose.

Digi EIA-422 Connector Wiring

A terminal, a serial printer, or a serial port for another computer usually functions as a DTE device. The Digi adapter is also a DTE device. To connect a DTE device to another DTE device a null modem cable or adapter must be used.

Two wires (one twisted pair) are required for each signal, a positive lead ("+"), and a negative lead ("-"). The "+" leads at one end of the cable must be connected to the "+" leads at the other end, and the "-" leads at one end must be connected to the "-" leads at the other end.

Incorrect wiring could result in damage to the connected devices. The following table shows the pin configurations for the EIA-422 versions of Digi DB-9, DB-25, and RJ-45 connectors.

Signal	Description	DB-9 Pin	DB-25 Pin	RJ-45 10 Pin
TxD+	Transmitted Data (+)	3	2	5
TxD-	Transmitted Data (-)	9	14	1
RxD+	Received Data (+)	2	3	6
RxD-	Received Data (-)	6	16	2
RTS+	Request To Send (+)	7	4	3
RTS-	Request To Send (-)	4	19	9
CTS+	Clear To Send (+)	8	5	8
CTS-	Clear To Send (-)	1	13	10
GND	Chassis Ground	Shell	Shell	4
SG	Signal Ground	5	-	7

EIA-422 Software Handshaking (XON/XOFF) Cable

Use the chart below as a guide for EIA-422 wiring. Pin numbers have been omitted because they vary from product to product. For Digi pin numbers, see the section titled Digi EIA-422 Connector Wiring. For peripheral device pin numbers, see the documentation for your peripheral device.

DTE (Digi End)			DTE (Peripheral)	
Signal	**Lead**		**Lead**	**Signal**
TxD	+	Connected to	+	RxD
	-	Connected to	-	
RxD	+	Connected to	+	TxD
	-	Connected to	-	
GND		Connected to		GND
RTS	Jumpered, connect: RTS(+) to CTS(+); RTS(-) to CTS(-)		Jumpered, connect: RTS(+) to CTS(+); RTS(-) to CTS(-)	RTS
CTS				CTS

EIA-422 Hardware Handshaking (Ready/Busy) Cable

Use the following table as a guide for EIA-422 wiring. Pin numbers have been omitted because they vary from product to product. For Digi pin numbers, see the section titled Digi EIA-422 Connector Wiring. For peripheral device pin numbers, see the documentation for your peripheral device.

DTE (Digi End)			**DTE (Peripheral)**	
Signal	**Lead**		**Lead**	**Signal**
TxD	+	Connected to	+	RxD
	-	Connected to	-	
RxD	+	Connected to	+	TxD
	-	Connected to	-	
RTS	+	Connected to	+	CTS
	-	Connected to	-	
CTS	+	Connected to	+	RTS
	-	Connected to	-	
GND		Connected to		GND

EIA-422 DTE to DCE (Modem) Cable

Use the chart below as a guide for EIA-422 modem wiring. Pin numbers have been omitted because they vary from product to product. For Digi pin numbers, see the section titled Digi EIA-422 Connector Wiring. For modem pin numbers, see your modem's documentation.

DTE (Digi End)			**DCE (Modem)**	
Signal	**Lead**		**Lead**	**Signal**
TxD	+	Connected to	+	TxD
	-	Connected to	-	
RxD	+	Connected to	+	RxD
	-	Connected to	-	
RTS	+	Connected to	+	RTS
	-	Connected to	-	
CTS	+	Connected to	+	CTS
	-	Connected to	-	
GND		Connected to		GND

Chapter 5 EIA-485 Asynchronous Interface

General EIA-485 Cable Information

This section applies to Digi products equipped with EIA-485 asynchronous interfaces.

Physical Cable Characteristics

EIA-485 interface cables should be shielded twisted-pair cables with a maximum of 4000 feet in length. Each signal requires two leads (one twisted pair of wires) to complete a balanced voltage digital circuit. The shield should be connected to the Chassis Ground of the devices at *both* ends of the interface cable.

EIA-485 Interface Signaling

The EIA-485 interface provides four signals: Transmitted Data (TxD), Received Data (RxD), Request To Send (RTS) and Clear To Send (CTS). The functions of these signals are identical to their EIA-232 counterparts.

EIA-485 Grounding Requirements

EIA-485 interface cables must provide a ground path between the devices to be connected. This ensures the integrity of data transfers and control signals. This should be connected to the Chassis Ground of each device. Digi recommends using the cable shield for this purpose.

Termination Information

A DIP switch controls the termination of many Digi devices. Most Digi devices use the #4 switch to control termination. When the switch is up, termination is off and there is no termination. To set termination on the device, move the #4 switch to the down position. Termination is recommended in a multi-drop line for the last networked device. Termination also biases the line.

Check your Digi device for its ohm rating, but 100 ohms is the nominal setting in Digi products.

Digi EIA-485 Connector Wiring

Two wires (one twisted pair) are required for each signal, a positive lead ("+"), and a negative lead ("-"). The "+" leads at one end of the cable must be connected to the "+" leads at the other end, and the "-" leads at one end must be connected to the "-" leads at the other end.

Incorrect wiring could result in damage to the connected devices. The following tables show the pin configurations for the EIA-485 versions of Digi DB-9 and RJ-45 10 pin connectors.

RJ-45 Pinouts

RJ-45 Pin	485 Half Duplex	485 Full Duplex	Signal Description
1	TxD-	TxD-	Transmitted Data (-)
2	RxD-	RxD-	Received Data (-)
3	n/a	RTS+	Request To Send (+)
4	GND	GND	Chassis Ground
5	TxD+	TxD+	Transmitted Data (+)
6	RxD+	RxD+	Received Data (+)
7	SG	SG	Signal Ground
8	n/a	CTS+	Clear To Send (+)
9	n/a	RTS-	Request To Send (-)
10	n/a	CTS-	Clear To Send (-)

DB-9 Pinouts

DB-9 Pin	Screw Term	485 Half Duplex	485 Full Duplex	Signal Description
1	9	Not used	CTS-	Clear To Send (-)
2	6	RxD+	RxD+	Received Data (+)
3	3	TxD+	TxD+	Transmitted Data (+)
4	2	Not used	RTS-	Request To Send (-)
5	5	GND	GND	Chassis Ground
6	7	RxD-	RxD-	Received Data (-)
7	1	Not used	RTS+	Request To Send (+)
8	8	Not used	CTS+	Clear To Send (+)
9	4	TxD-	TxD-	Transmitted Data (-)