Appendix A: Flow Control

The Savant Controller provides Serial Ports 1 and 2 (RTS/CTS) to manage flow control, the rate of data transmission between two devices. For example, the Savant Controller may transmit data at a faster rate than the other device can receive and process the data.

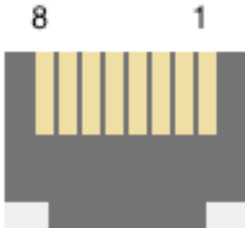
Using the RS-232 protocol control lines RTS (Request To Send) and CTS (Clear To Send) to manage flow control, the Savant Controller sends a Request to Send frame (RTS) to the other device. If the device answers with a Clear To Send frame (CTS), the Savant Controller sends the data. After a successful exchange, the device replies with an acknowledgement frame (ACK).

Appendix B: Matrix Switch Controller Ports and Pinouts

Controller Ports

Function	Connector Type	Number of Ports
Gigabit Ethernet	RJ45	3
Serial RS-232/422/485	RJ45	8 (See pinouts below)
IR	Phoenix Push-In	6 (See pinouts below)
Relays	Phoenix Push-In	4 (See pinouts below)
GPIO	Phoenix Push-In	7 (See pinouts below)
Long-Haul SPDIF	RJ45	1
Firewire	1394A (6-pin)	3
USB-A	USB-A	1
TOSLINK RCV	TOSLINK Optical	1
TOSLINK XMT	TOSLINK Optical	1
FXO	RJ11	1 (Reserved for future use)
FXS	RJ11	1 (Reserved for future use)

RJ45 Plug Pinouts



1 RX+	5 RXD
2 RX-	6 TX-/TXD
3 TX+	7 CTS
4 GND	8 RTS

Note: Pin 6 Jumper Select for RS-232 or RS-422

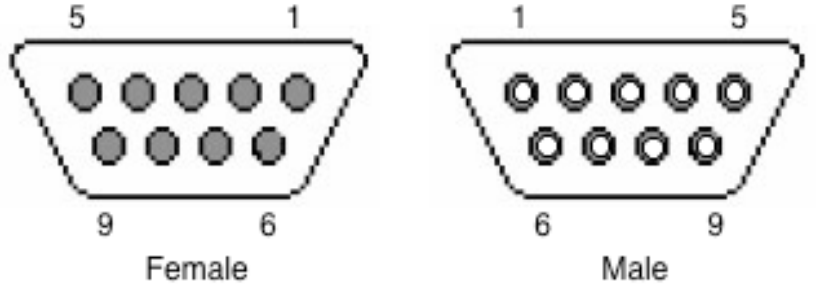
Important RS-232/422/485 Wiring Notes

- If you are using RJ-45 to DB-9 adapters not supplied by Savant be sure not to terminate any wires required for communication/control within the adapter. Cut all unused wires to prevent the wires from shorting against each other.

- Ensure that all wires required for communication/control are not terminated in the connecter. Also, ensure that these unused wires are not shorting to each other, as they are still terminated in the RJ-45 connector on the controller side.

Wiring RS-232 and RS-422 Connector Converters

If installers need to wire RJ45 to DB-9 connector converters that are specific to either RS-232 or RS-422 protocols, but not both in the same connector, review the following:



RJ45 to DB-9 Connector Converter Pinouts (RS-232)

Important: When RS-232 supports Request to Send/Clear to Send (RTS/CTS) signaling, only use the pins that are asterisked * for the pinout configuration. Refer to the table below.

DB9 Pin	Color	Signal Name
1	Orange	No connection
2*	Green	RXD
3*	Yellow	TXD
4	Black	No connection
5*	Red	GND
6	Blue	No connection
7*	White	RTS
8*	Brown	CTS
9	Not used	No connection

RJ45 to DB-9 Connector Converter Pinouts (Null RS-232)

DB9 Pin	Color	Signal Name
1	Orange	No connection
2	Yellow	TXD
3	Green	RXD
4	Black	No connection
5	Red	GND
6	Blue	No connection
7	Brown	CTS
8	White	RTS
9	Not used	No connection

RJ45 to DB-9 Connector Converter Pinouts (RS-422)

DB-9 Pin	Color	Signal Name
1	Orange	RX-
2	Yellow	No connection
3	Not used	No connection
4	Black	TX+
5	Red	GND
6	Blue	RX+
7	Brown	No connection
8	White	No connection
9	Green	TX-

Wiring a Cat5e Cable to a RJ45 Connector

If installers need to wire a Cat5e cable to a RJ45 connector, review the following:

RJ45 to EIA/TIA-568A (Cat5)

RJ45 Pin #	EIA/TIA-568A (Cat5) Wire Color
1	White/Green
2	Green
3	White/Orange
4	Blue
5	White/Blue
6	Orange
7	White/Brown
8	Brown

RJ45 – EIA/TIA-568B (Cat5)

RJ45 Pin #	EIA/TIA-568B (Cat5) Wire Color
1	White/Orange
2	Orange
3	White/Green
4	Blue
5	White/Blue
6	Green
7	White/Brown
8	Brown

RS-232 Cat5 Matrix Switch Controller to DB9 Connections (Straight)

MSC		Cat5 Cable	RJ45 to DB9 Connections				Comments
Pin	Sig	568A	RJ45 Pin	Wire Color		DB9 Pin	
1		White/Green	1	Blue		1	No Connection
2		Green	2	Orange		2	RXD
3		White/Orange	3	Black		3	TXD
4	GND	Blue	4	Red		4	No Connection
5	RXD	White/Blue	5	Green		5	GND
6	TXD	Orange	6	Yellow		6	No Connection
7	CTS	White/Brown	7	Brown		7	RTS
8	RTS	Brown	8	White		8	CTS
						9	No Connection

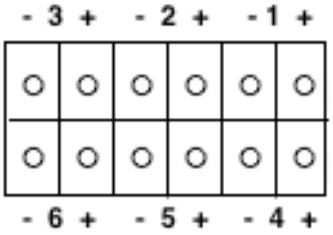
RS-232 Cat5 Matrix Switch Controller to DB9 Connections (Null Modem)

MSC		Cat5 Cable	RJ45 to DB9 Connections				Comments
Pin	Sig	568A	RJ45 Pin	Wire Color		DB9 Pin	
1		White/Green	1	Blue		1	No Connection
2		Green	2	Orange		2	RXD
3		White/Orange	3	Black		3	TXD
4	GND	Blue	4	Red		4	No Connection
5	RXD	White/Blue	5	Green		5	GND
6	TXD	Orange	6	Yellow		6	No Connection
7	CTS	White/Brown	7	Brown		7	RTS
8	RTS	Brown	8	White		8	CTS
						9	No Connection

RS-422/485 Cat5 Matrix Switch Controller to DB9 Connections

MSC		Cat5 Cable	RJ45 to DB9 Connections				Comments
Pin	Sig	568A	RJ45 Pin	Wire Color		DB9 Pin	
1	RX+	White/Green	1	Blue		1	RX-
2	RX-	Green	2	Orange		2	No Connection
3	TX+	White/Orange	3	Black		3	No Connection
4	GND	Blue	4	Red		4	TX+
5		White/Blue	5	Green		5	GND
6	TX-	Orange	6	Yellow		6	RX+
7		White/Brown	7	Brown		7	No Connection
8		Brown	8	White		8	No Connection
						9	TX-

IR Port Layout and Pinouts (2x6 Phoenix Jack)



Top Row	IR Signal	Bottom Row	IR Signal
1	IR1+ IR1-	4	IR4+ IR4-
2	IR2+ IR2-	5	IR5+ IR5-
3	IR3+ IR3-	6	IR6+ IR6-

Relay and GPIO Port Pinouts (2x8 Phoenix Jack)

Pin #/ Top Row	Relay	Pin #/ Bottom Row	GPIO
1	Relay 1-A	1	GPIO1
2	Relay 1-B	2	GPIO2
3	Relay 2-A	3	GPIO3
4	Relay 2-B	4	GPIO4
5	Relay 3-A	5	GPIO5
6	Relay 3-B	6	GPIO6
7	Relay 4-A	7	GPIO7
8	Relay 4-B	8	COM/GND

GPIO and Relay Voltages

GPIO

Input: The maximum GPIO input voltage is 28 VDC.
Output: A single GPIO port outputs a voltage from 3-12 VDC with a maximum current of 10mA when the voltage is at 3V, and 50mA or 150mA (depending on the CPU board) when the voltage is at 12 VDC.

Relay

A single Relay port can output up to a maximum of 30V DC with a maximum current of 1.0 A.

For additional information on GPIO and Relay output voltages and currents, contact: support@savantav.com.