

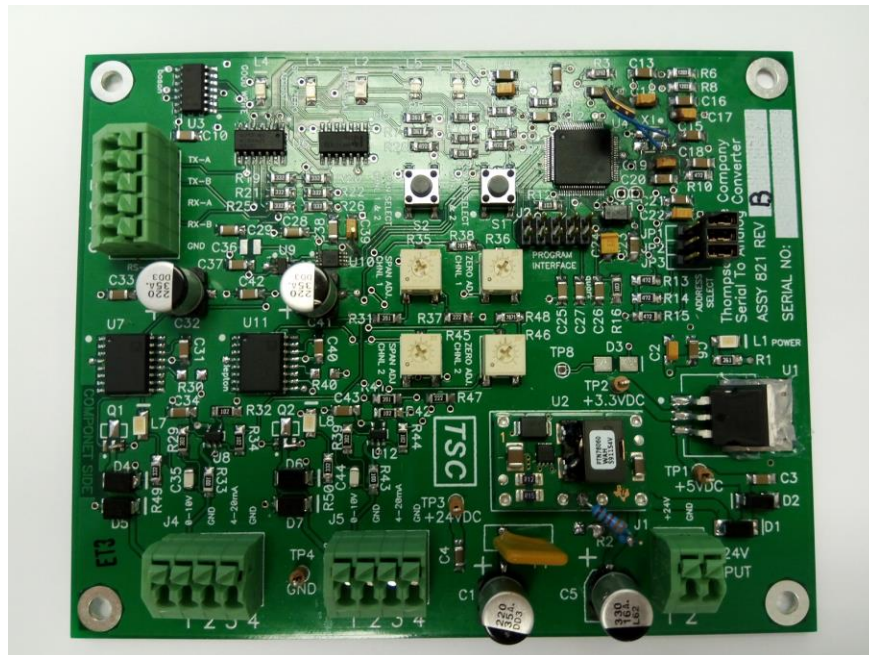
Thompson Scale Company

821 Serial to Analog Converter

User's Manual

Version 1.0

December 2017



Thompson Scale Company

WEIGHING SYSTEMS & PACKAGING MACHINERY CONTROLS

9000 Jameel Rd. #190 • Houston, Texas 77040 • Phone: 713/932-9071 • Fax: 713/932-9379 • www.thompsonscale.com

Thompson Scale Company
821 Serial to Analog Converter User's Manual
Version 1.0

Table of Contents

1. Overview	3
2. 821 Serial to Analog Converter Serial Data.....	3
A. 821 Converter Data Format	3
B. 821 Converter Address Settings.....	3
3. 821 Serial to Analog Converter Connections	4
A. Serial RS-422 Connections	4
B. 4-20MA Load Connections.....	5
C. 0-10VDC Load Connections.....	5
Appendix A. 5511/6611 Universal Controller Baud Rate Settings.....	6
Appendix B. 821 Serial to Analog Converter Board Layout	7
Appendix C. 5511/6611 Universal Controller Board Layout.....	8

Thompson Scale Company
821 Serial to Analog Converter User's Manual
Version 1.0

1. Overview

The TSC 821 Serial to Analog Converter User's Manual provides information on how to connect and the address the 821 Serial to Analog Converter. See the TSC 821 Serial to Analog Converter Calibration and Test Guide for details on calibration adjustments to the 821 Serial to Analog Converter board.

2. 821 Serial to Analog Converter Serial Data

The 821 Serial to Analog Converter consists of two serial to analog data channels A and B. Multiple 821 Serial to Analog Converter boards can be staked on the RS-422 serial bus to provide up to eight 821 Serial to Analog Converters with two channels each providing a total of 16 serial to analog data channels. Note: The 5511/6611 Universal Controllers currently supports up to 2 channels only.

A. 821 Converter Data Format

The 821 Serial to Analog Converter serial data format is made up of two consecutive bytes. The first byte specifies the board address and the channel number and the second byte is the data. A consecutive two byte format can be streamed to the 821 Serial to Analog converter for controlled analog output.

First Byte Details:

The first byte consists of two digits. The most significant digit of the first byte the 821 board address must be a numeric number from 0 through 7. This value specifies the address of one of the eight 821 Serial to Analog Converters that can be added. The least significant digit of the first byte must be either the letter 'A' or 'B' which specifies the channel the data is sent to the 821 Serial to Analog Converter.

Second Byte Details:

The second byte is the data which represents the analog output range from 0 to FF a hexadecimal value which is 0 to 255 decimal. As an example of the two byte data format, if the data format consists of a value of "2A7D," the 2 specifies the converter board address and the 'A' specifies channel A on the board. The data being the hexadecimal value '7D' which is 125 decimal.

B. 821 Converter Address Settings

Each 821 Serial to Analog Converter to be addressed on the RS-422 serial bus must be set to one of the eight possible board addresses 0 to 7. The 821 Serial to Analog Converter has 3 Jumpers labeled as JP1 to JP3 with three removable shunts to select the board address. See the following table for setting the jumpers on the 821 Serial to Analog Converter board.

821 CONVERTER BOARD ADDRESS	821 CONVERTER JUMPERS			
	JP1	JP2	JP3	
0A	OFF	OFF	OFF	
0B	OFF	OFF	OFF	
1A	OFF	OFF	ON	
1B	OFF	OFF	ON	
2A	OFF	ON	OFF	(Supported with the 5511/6611 Universal Controllers)
2B	OFF	ON	OFF	(Supported with the 5511/6611 Universal Controllers)
3A	OFF	ON	ON	
3B	OFF	ON	ON	

Thompson Scale Company
821 Serial to Analog Converter User's Manual
Version 1.0

4A	ON	OFF	OFF
4B	ON	OFF	OFF
5A	ON	OFF	ON
5B	ON	OFF	ON
6A	ON	ON	OFF
6B	ON	ON	OFF
7A	ON	ON	ON
7B	ON	ON	ON

3. 821 Serial to Analog Converter Connections

The 821 Serial to Analog Converter must be connected to a controller that supports an RS-422 communication protocol as well as the 821 Converter Data Format. See the following to connect the 821 Serial to Analog Converter to the 5511 or 6611 Universal Controller.

A. Serial RS-422 Connections

1. Attach a 5 wire cable connection from 821 Serial to Analog Converter connector J3 to the Port 1 connector on the 5511 Universal Controller or port 3 on the 6611 Universal Controller. See Table 1 below for the cable connection pin-out between the 821 Serial to Analog Converter to the 5511 or 6611 Universal Controllers. For port connector locations see Appendix A. 821 Serial to Analog Converter PC Board Layout and Appendix B. 5511/6611 Universal Controller Board Layout.

Table 1.

5511/6611 Universal Controller & 821 Serial to Analog Converter Cable Pin-out

5511 Controller Port 1	6611 Controller Port 3	821 Connector J3
PIN 1 (RX-422A).....	PIN 1 (TX-422A)	
PIN 2 (RX-422B).....	PIN 2 (TX-422B)	
PIN 3 (TX-422A).....	PIN 3 (RX-422A)	
PIN 4 (TX-422B).....	PIN 4 (RX-422B)	
PIN 5 NO CONNECTION		
PIN 6 NO CONNECTION		
PIN 7 (+5VDC NO CONNECTION)		
PIN 8 (0VDC RETURN).....	PIN 5 (0VDC RETURN)	

2. Set the 5511/6611 Universal Controller baud rate jumper setting for 9600 Baud. See Appendix A. 5511/6611 Universal Controller Baud Rate Setting and Appendix C. 5511/6611 Universal Controller Board Layout.
3. Power on the 5511/6611 Universal Controller.
4. Step through the 5511/6611 Universal Controller Menus described below to set the baud rate to 9600 baud on the 5511 or 6611 Universal Controller. The default baud rate for the 821 Serial to Analog Converter is 9600 Baud. Also, select the Port Mode. Be sure to power off then back on the 5511/6611 Universal Controller for the baud rate change to take effect.

Thompson Scale Company
821 Serial to Analog Converter User's Manual
Version 1.0

5511/6611 Universal Controller Settings:

5511 Universal Controller:

Menus: Tools -> Data Settings -> Set Serial Port 1 Mode -> Set Port 1 Mode Baud Rate

Menus: Tools -> Data Settings -> Set Serial Port 1 Mode -> Port 1 Mode = 4-20MA

6611 Universal Controller:

Menus: Tools -> Data Settings -> Set Serial Port 3 Mode -> Set Port 3 Mode Baud Rate

Menus: Tools -> Data Settings -> Set Serial Port 3 Mode -> Port 3 Mode = 4-20MA

B. 4-20MA Load Connections

To set the 821 Serial to Analog Converter for 4-20M load see the following instructions.

1. For Channel A selection place the 4-20MA load to connector J4 pin 3 and pin 4 on the 821 Serial to Analog Converter.
2. For Channel B selection place the 4-20MA load to connector J5 pin 3 and pin 4 on the 821 Serial to Analog Converter.

C. 0-10VDC Load Connections

To set the 821 Serial to Analog Converter for 0-10VDC load see the following instructions.

1. For Channel A selection place the 0-10VDC load to connector J4 pin 1 and pin 2 on the 821 Serial to Analog Converter.
2. For Channel B selection place the 0-10VDC load to connector J5 pin 1 and pin 2 on the 821 Serial to Analog Converter.

Thompson Scale Company
821 Serial to Analog Converter User's Manual
Version 1.0

Appendix A. 5511/6611 Universal Controller Baud Rate Settings

5511/6611 Universal Controller Baud Rate Settings

The 5511/6611 Universal Controller baud rate must match the baud rate jumper setting on the 821 Serial to Analog Converter. The baud rate supported on the 821 Serial to Analog Converter is fixed at 9600 baud. The communication default serial protocol is 9600 baud, no parity, 8 data bits, and 1 stop bit. See Appendix C. 5511/6611 Universal Controller Board layout for the baud rate jumper locations. Note: The 5511/6611 Universal Controller power must be powered off and then back on for the baud rate change to take effect.

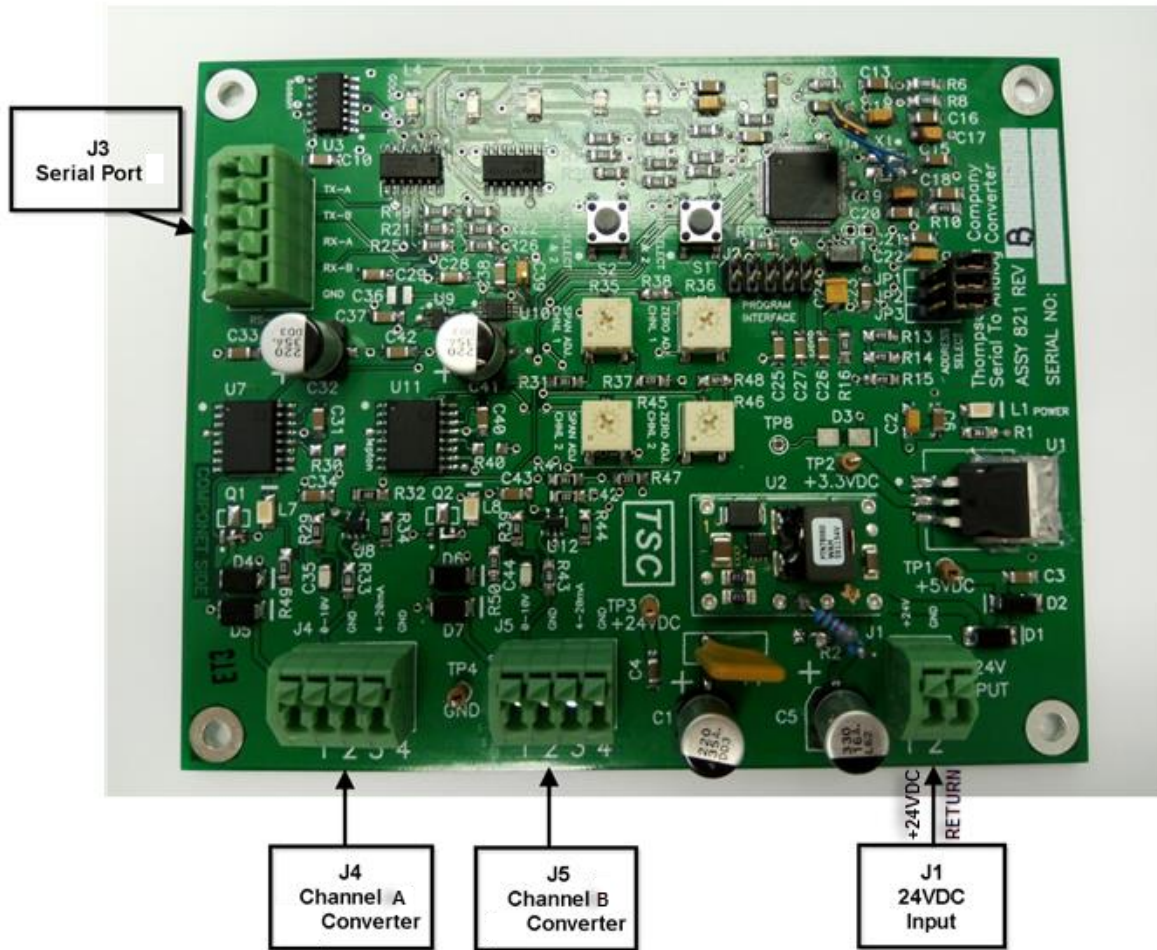
5511/6611 Universal Controller Serial Communication Jumper Position

For RS-422 Serial Communication between the 5511/6611 Universal Controller and the 821 Serial to Analog Converter, the Jumpers on the 5511/6611 Universal Controller should be moved from position J3 to position J4 for RS-422 setting (for later 5511/6611 Universal Controller boards these jumpers have been removed).

Thompson Scale Company
821 Serial to Analog Converter User's Manual
Version 1.0

Appendix B. 821 Serial to Analog Converter Board Layout

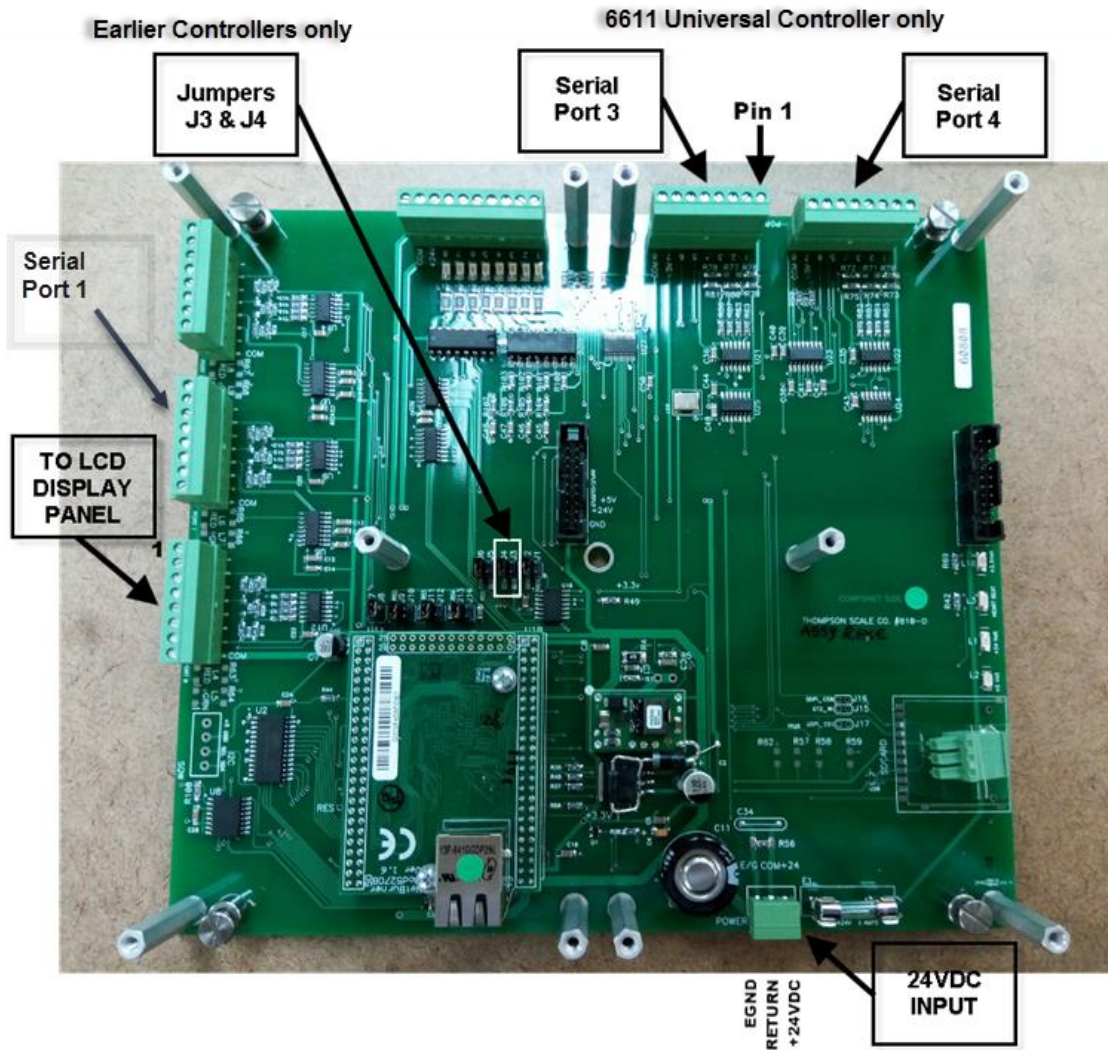
821 Serial to Analog Converter Board Layout



Thompson Scale Company
821 Serial to Analog Converter User's Manual
Version 1.0

Appendix C. 5511/6611 Universal Controller Board Layout

5511/6611 Controller Board Layout



Note: The 5511 Universal Controller Jumpers are located in the same location as on the 6611 Universal Controller (for later 5511/6611 Universal Controller boards these jumpers have been removed).