REV.	DESCRIPTION	DATE	APP.
A	INITIAL RELEASE	09/24/2014	J.F.

DRAWN H. SMITH	9/23/2014	**Trans-Cal Industries, Inc.** Van Nuys, CA 91406			
CHECKED C. HERRERA	9/23/2014				
ENG. M. REMENIH	9/23/2014	TITLE **BASIC TROUBLESHOOTING FLOW CHARTS MODEL SSD120-(XX)N-XXXX**			
QA J. FERRERO	9/23/2014				
MFG. C. HERRERA	9/23/2014	SIZE **A**	DO NOT SCALE DRAWING	DWG NO. **882239**	REV. **A**
APP. J. FERRERO	9/23/2014	SCALE: **NONE**	CAGE CODE: **57323**	MATERIAL: **N/A**	SHEET: 1 OF 6

Troubleshooting Altitude Digitizers

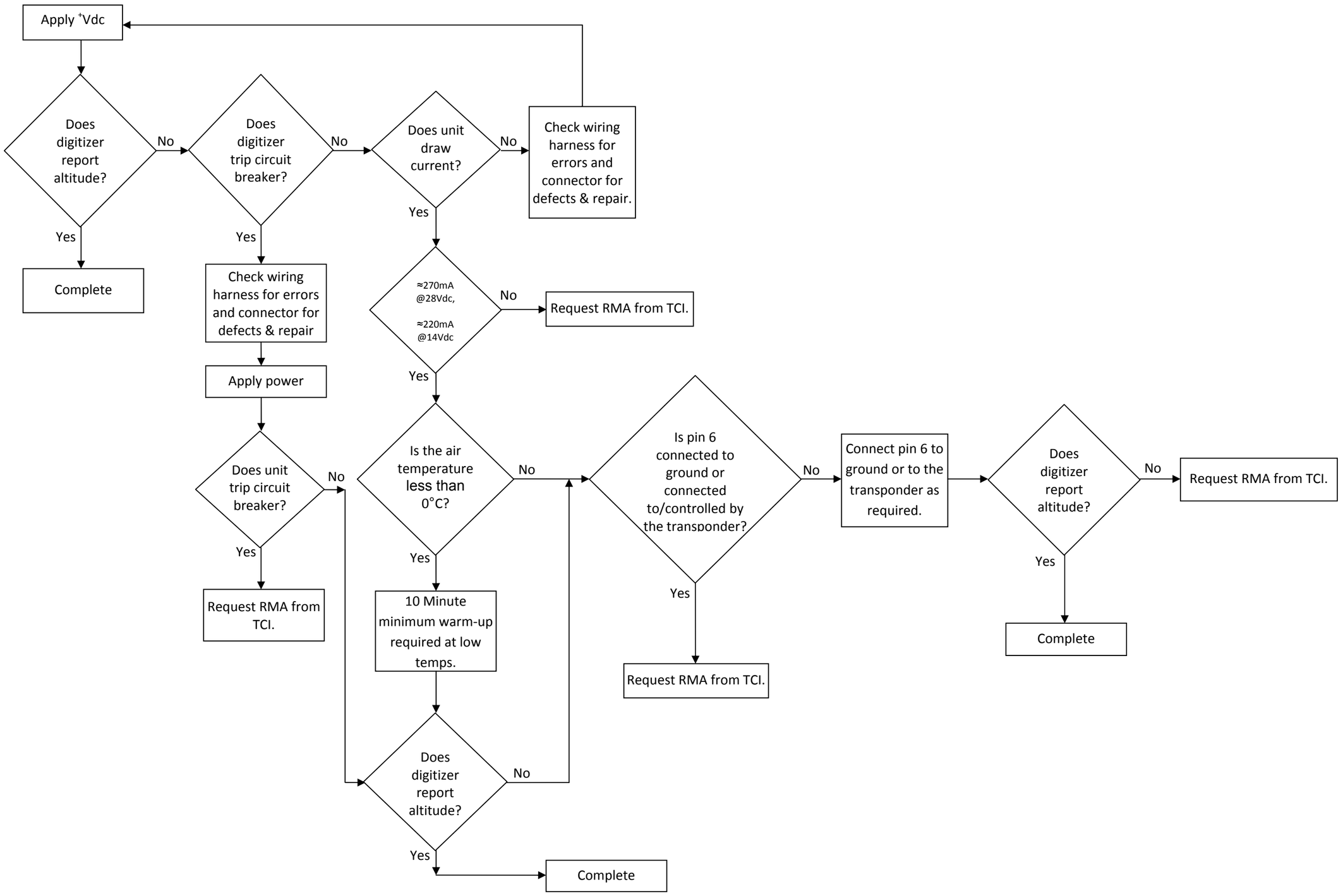
There is no substitute for common sense and experience. The following flow charts assume a basic understanding of electronics and the function of the digitizer within the static and electrical system of an aircraft. Please exercise caution when troubleshooting altitude digitizers. These flow charts are intended to provide a starting point in the localization of problems in the altitude digitizer and equipment connected to it. They are intended for troubleshooting Trans-Cal devices only, and should not be construed as to apply to other manufacturer's devices.

Specialized test equipment and the expertise required to operate it may be required and is so listed below: *(Caution! Improper operation of some test equipment may damage sensitive instrumentation in the aircraft. Test equipment should be operated only by personnel qualified and thoroughly familiar with the test and certification of aircraft systems.)* The equipment listed below may or may not be required depending on the needs of the particular installation.

1. Pitot-Static test set capable of exercising the static system over the operating range of the altitude digitizer.
2. Volt/Ohm Meter
3. Transponder ramp test set
4. ATS-400 Altitude Digitizer Test Set or equal
5. ECP-100 Encoder Calibration Programmer or equal
6. IBM PC with serial data capture software or equal

Additional troubleshooting resources include the FAQ section of the TCI website at http://www.trans-cal.com/techServ/FAQ.html included on this webpage is a "Known Compatibility Issues" section.

Basic Troubleshooting Flow Chart



Parallel Data Non-Sequential Count Troubleshooting Flow Chart

Apply +Vdc and slowly vary input pressure.

Does the digitizer constantly output ≈2300'?

Yes

Usually indicates power connected to pin 8 and ground to 14 or vice versa. Also may indicate power applied to a data bit pin. Opens a trace on the PCB. Request RMA from TCI.

No

Does digitizer consistently skip at the same altitude?

Yes

Determine which data bit is missing. Verify wiring harness and connectors show continuity on the missing data bit & repair.

No

Is the digitizer driving more than one receiving device?

Yes

Are receiving devices diode isolated?

No

Diode isolate all receiving devices.

Yes

Is the pull-up voltage at least +3Vdc?

No

This indicates a receiving device issue

Yes

Does "off" voltage = "pull-up" voltage on the suspect data bit?

No

If the "off" voltage is too low on the data bit, it may indicate an incompatible or defective transponder, a bad harness, or connector. Repair/Replace component.

Yes

Does "on" voltage = +1.6 to .6 Vdc or less?*

No

Does the total current required for each data bit exceed 35mA?*

Yes

Current exceeds component power rating; reduce the current required by reducing the number of receiving devices.

No

Is the digitizer close to any EMF/EMI

Yes

Move or shield the unit and harness from the EMF/EMI sources.

No

Does keying the radio mic cause the unit to miscode?

Yes

Indicates digitizer is too close to antenna cables/fields or leaky RF connectors.

No

Does the digitizer miscount on the bench and in the aircraft?

Yes

Request RMA from TCI. Be sure to describe the problem in detail.

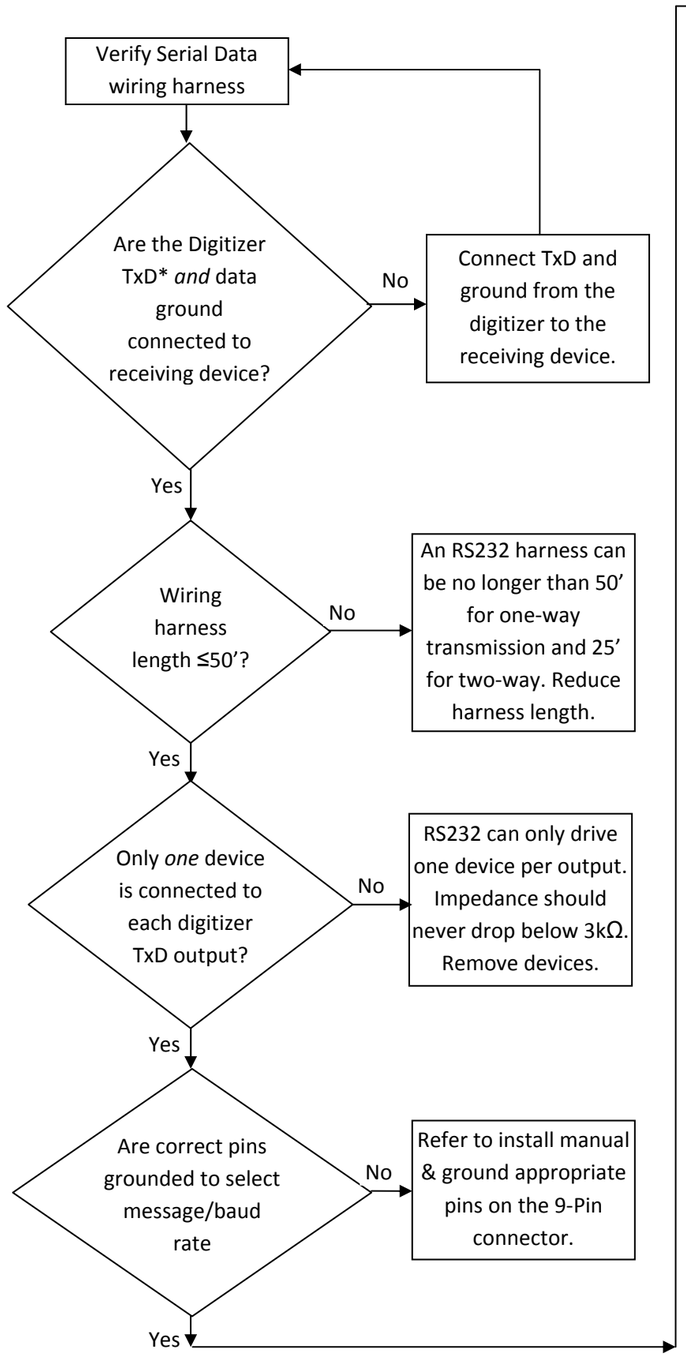
No

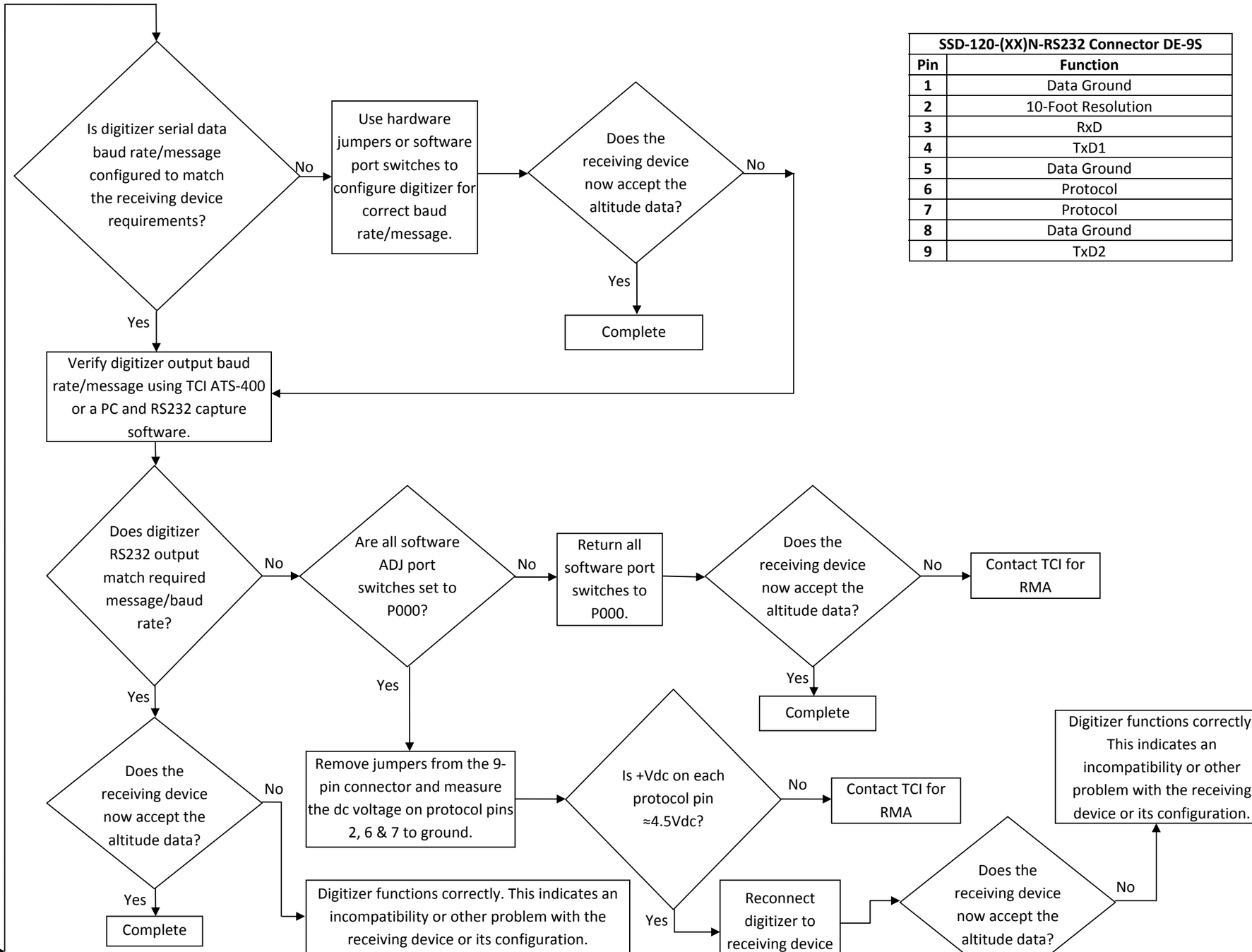
Digitizer appears to operate correctly. Review logic level requirements on receiving devices. Refer to install manual &list of known compatibility issues.

*Note: The digitizer's outputs are the "uncommitted" collectors of discrete Darlington transistors. The collectors must be pulled up to a voltage from +3 to +40Vdc through a current limiting resistor in the receiving device. Pull-up voltages and resistors vary with the manufacturer. Common examples include:
+5Vdc/4.7KΩ
+9Vdc/10KΩ
+15Vdc/15KΩ

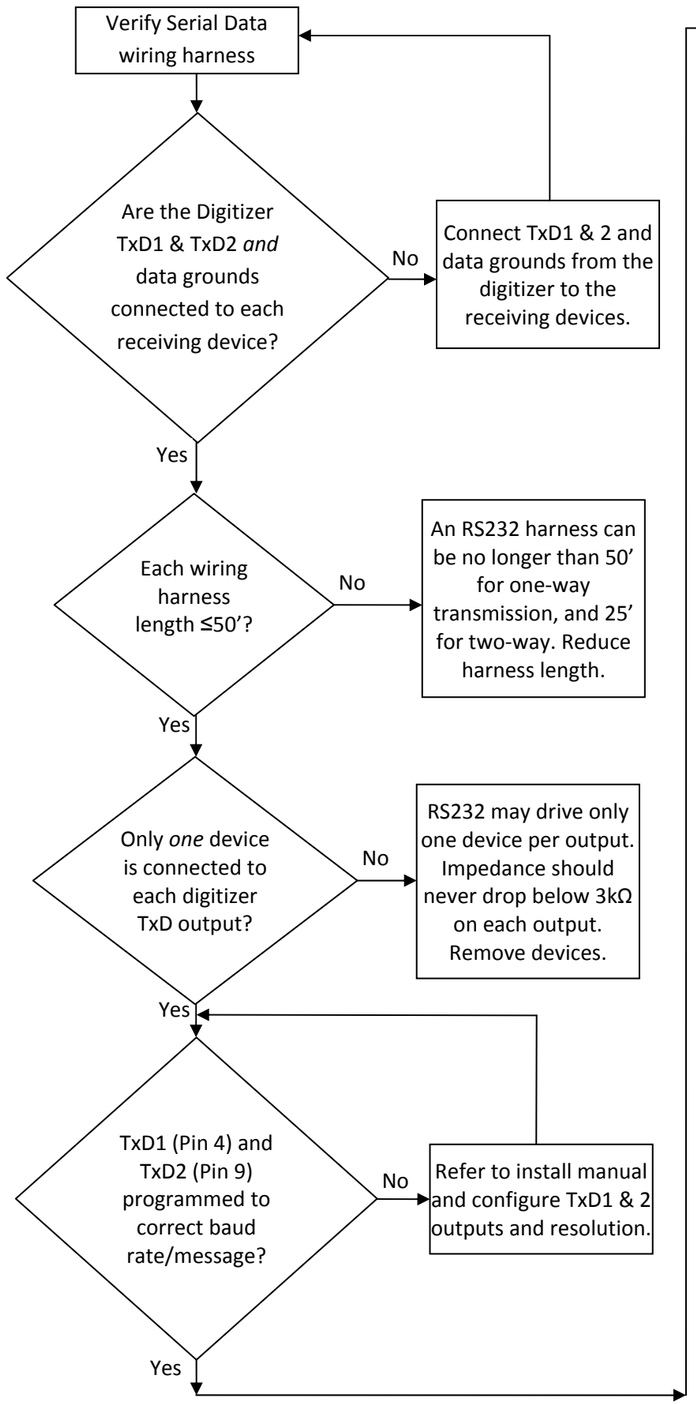
Serial Data Communication Troubleshooting Flow Chart SSD120-(XX)N-RS232 (Configured for TxD1 and TxD2 transmitting the same baud rate/message.)

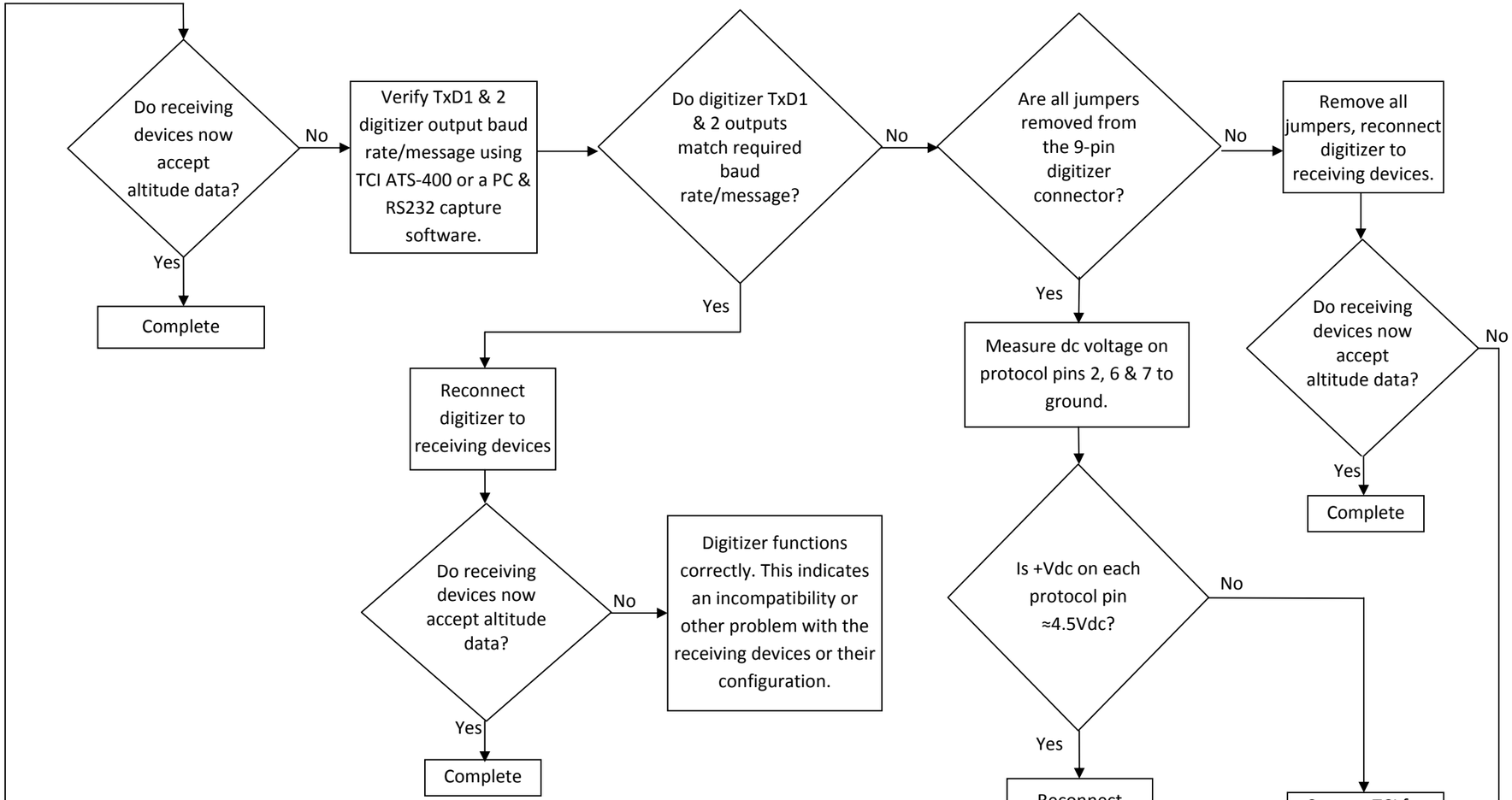
SSD-120-(XX)N-RS232 Connector DE-9S	
Pin	**Function**
1	Data Ground
2	10-Foot Resolution
3	RxD
4	TxD1
5	Data Ground
6	Protocol
7	Protocol
8	Data Ground
9	TxD2





Serial Data Communication Troubleshooting Flow Chart – (Configured to transmit two different baud rates/messages on TxD1 and TxD2.)





SSD-120-(XX)N-RS232 Connector DE-9S	
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2	10-Foot Resolution
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6	Protocol
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