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DTX RS485 QUICK-START GUIDE

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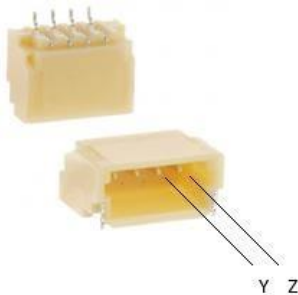
General

EIA/TIA-485, commonly known as the RS-485 standard, specifies the electrical characteristics of transmitters and receivers for use in balanced digital multipoint systems. The protocol allows for simultaneous transmission of multiple devices at once. While there is no set methodology of how the data is packaged and transmitted, this document aims to be a quick-start guide for custom implementations of RS-485 with the DTX product family.

Connection Recommendations

The DTX utilizes a JST style connector. JST connectors are electrical connectors manufactured to the design specifications by the company Japan Solderless Terminal (JST) Manufacturing Company. The specific male connector part number used is: SM04B-SRSS-TB

The datasheet for the JST part can be found at:
<https://www.jst-mfg.com/product/pdf/eng/eSH.pdf>



Header

	BM 02 B - SR S S - - TB
Shape of assembled product:	
BM...SMT Top entry type	
SM...SMT Side entry type	
No. of circuits: Top entry type...2 to 15	
Side entry type...2 to 15, 20	
Part name: Header	
Series name	
Color: S...Natural (Ivory)	
Indication of clinch: S...Straight pin	
Surface finish: None...Copper-undercoated tin-plated (reflow treatment)	
G...Nickel-undercoated gold-plated	
Packaging style: TB...Embossed-taping	
Suction tape: None...Without suction tape, T...With suction cap	

To utilize this port the following female part number is recommended: SHR-04V-S

For example a modified version of A04SR04SR30K51B will fit the SM04B-SRSS-TB.

Custom connectors can be used and created using the female part to connect into the JST-port on the circuit board.

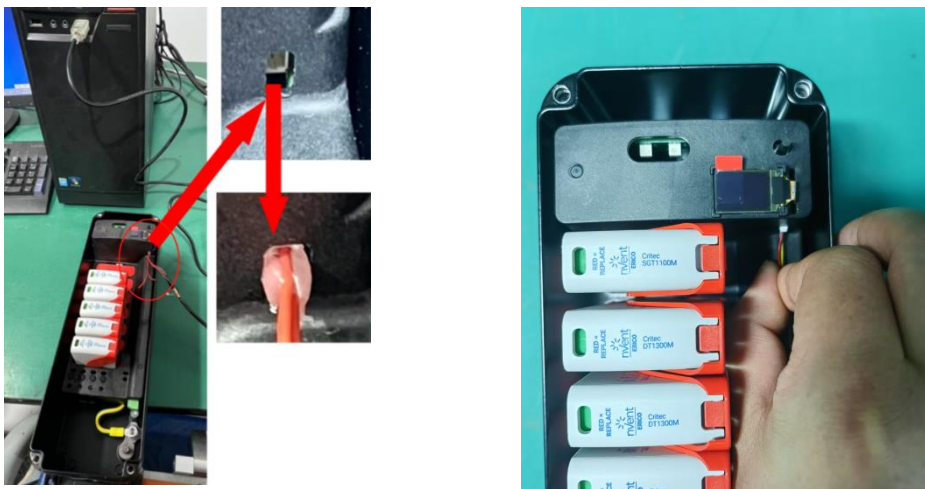
Moreover, you could order our DTXJST cable assembly directly as below, one end is already terminated with JST female connector, another end is unterminated, the length of cable assembly is 1m.

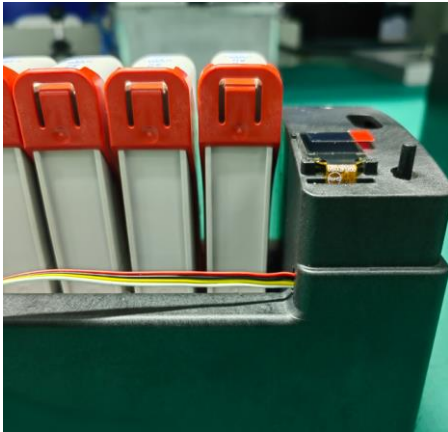


You could use the unterminated cable end to connect varies interface you need, please notice black and red wire is RS485 output, and white and yellow wire is RS485 input.

The RS485 interface location of DTX is inside the enclosure, as shown below. It's near the OLED Display, a small hole with a white JST style connector.

You could insert the cable assembly DTXJST into the JST interface as below.





Datastream

The datastream is a serial data output as follows:

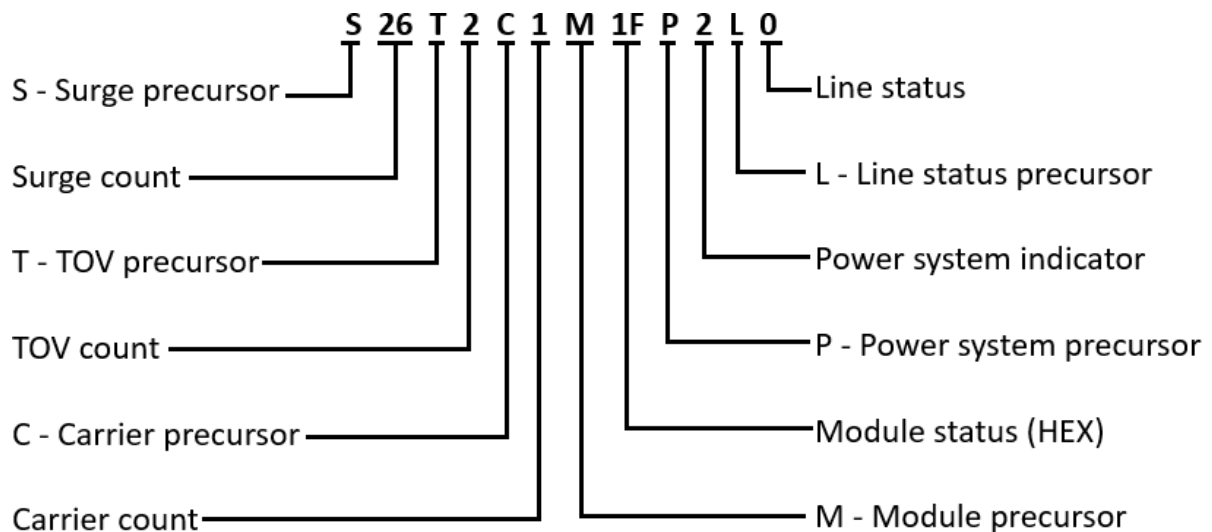
S	T	C	M(1-28)	P	L
0-9999	0-9999	1-4	HEX	1-8	0-1

S	Surge Count
T	TOV Count
C	Carrier Count
M	Module Status
P	Power System
L	Line Status

Value (P)	Power System
1	120/208
2	240SP
3	120/240HD
4	240D
5	277/480
6	230/400TT
7	230/400TTS
8	480D

The character predecessors indicate the following meanings:

A sample datastream may look like this:



Sample datastream (note 9600baud,8,n,1):

Received Data	Interpretation
b'\rS\n'	Surge precursor
b'\r26\n'	26 recorded surges on the device
b'\rT\n'	TOV precursor
b'\r2\n'	2 recorded TOVs on the device
b'\rC\n'	Carrier precursor

b'\r1\n'	1 carrier populated
b'\rM\n'	Module precursor
b'\r1F\n'	1F: 0001 1111 (5 functioning modules)
b'\rP\n'	Power system precursor
b'\r2\n'	2 – 120/240 split phase power system
b'\rL\n'	Line status precursor
b'\r0\n'	0 – indicates no line loss

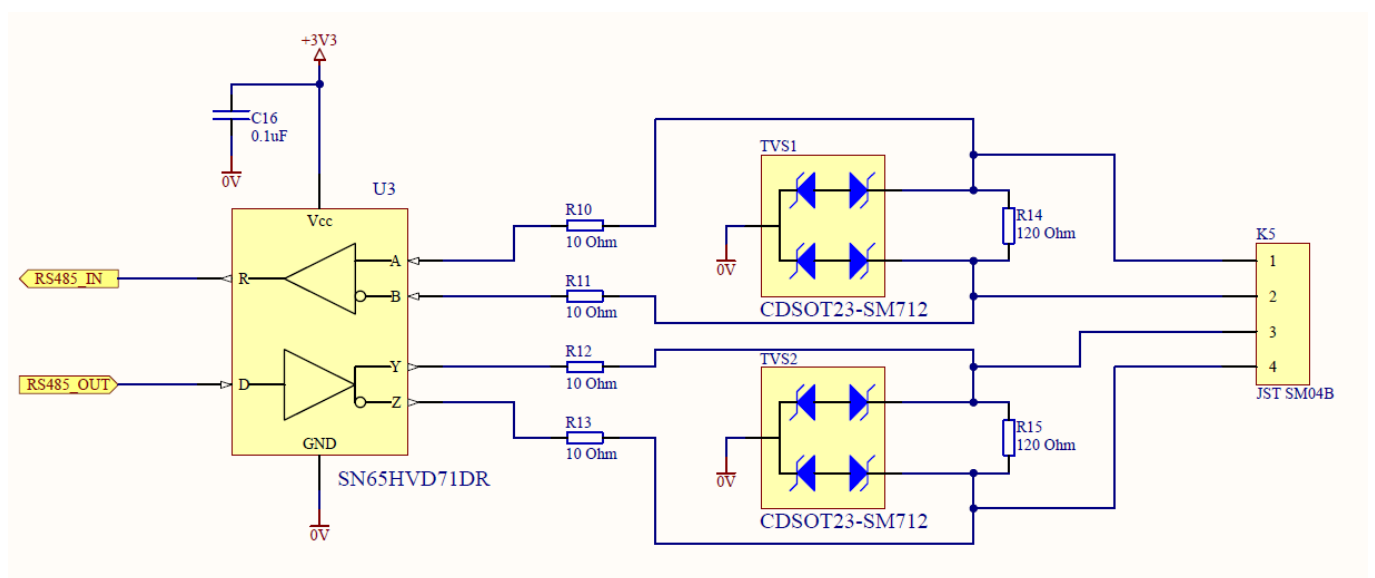
While the RS-485 standard allows for simultaneous transmit and receive data on cables, the DTX product line only produces an output stream and requires no handshake or incoming data.

Modules / Power System / Carrier

The following table indicates how many modules are in a single carrier by power system.

Power System	Module Types			
120/208	DT2150DTXM	7		
240SP	DT2180DTXM	5		
120240HD	DT2180DTXM	2	DT2275DTXM	5
240D	DT2275DTXM	6		
277/480	DT2350M	7		
230/400TT	DT1300M	6	SGT1100M	1
230/400TTS	EDT2300M	6	SGT150M	1
480D	DT2510DTXM	6		

Schematic



Revision History

Rev	Prepared by	Date	Detailed Description of Changes
C	GM	21NOV23	UPDATED MATING CONNECTOR
D	GM	06DEC23	UPDATED DATASTREAM EXAMPLES
E	DX	12JUN25	UPDTAED RS485 CONNECTION DETAILS