RS-485/RS-422 YT-309 PhotoelectricIsolation Data Repeater User Manual

I.Summary

Compatible with the Recommended Standards of RS-422and RS-485, YT-309 photoelectricisolation data repeater can extend thecommunicationdistanceof RS-422/RS-485 signal switchboardnetworkandincreasethe number of RS-422/RS-485 network equipments. The built-in photoelectric isolator and DC/DC isolation module can provide anisolation voltage of as high as 250Vrms. Also, there is a rapid transient voltage suppression protector for theprotection of R S-422/RS-485 interface with the advanced TVS(TRANSIENT VOLTAGE SUPPERSSOR) technology adopted. Under normal conditions , the TVS tube i s in the state of high resistance.However,whenboth endsoftheTVStubeare hitbyatransienthighenergy,theimpedanceatbothends canbedepressed by the TVS a t a v ery high speed, and after absorbing a highcurrent, the voltagebetween the two ends is suppressed andkept at a pre-set value, therefore no damage is caused t o the electrical components behindbythetransienthighvoltageimpact. The protector can effectively restrain lightning or ESD(electro static discharge)withaprotectionvoltage of 600W on each line for lightning surge and s urge voltage ortransientovervoltage possibly caused up by various reasons,a n d a t thesametime, a high-speed transmission of R S-422/RS-485 interface is ensured by thetinycapacitancebetween thepoles.ThroughaDB9 female connector, RS-422/RS-485 input interfaces are connected,andfor RS-422andRS-485outputinterfaces, aDB9male connectoris to beusedforconnection. The unique I/O circuit of the internal zero delay auto transceiver contained in the converter controls the data streamdirectionautomaticallywithout anyhandshaking signal (for example RTS, DTR etc). The converter is plug-and-play without any jumper settings needed for modeshiftbetweenfull duplex(RS-422)andhalfduplex (RS-485).

A reliable and stable point-to-point and point-to-multipoint communication c a n be ensured by YT-309 photoelectricisolationinterfaceconverter.Forpoint-to-multipoint communication, as many as 128 interface facilitiesofRS-422orRS-485 standardcanbeconnected toeachconverter, and a high data transmissionr a te of 300-115.2KBPS can be achieved.Powerindicator light anddatatrafficindicatorlight arealso availablewiththe converterformalfunctionindication.

II.Performanceparameters

1 . Interface characteristic: compatibl e with the standards ofRS-485/RS-422issuedbyEIA/TIA.

2.Electricinterface: DB9 f emale connectors forRS-422/RS-485interfaceinputend,DB9 maleconnectorfor RS-422/RS-485interfaceoutputend.

3.ProtectionGrade:Impose a protection of 600Won eachlineofR S-422andRS-485interfaces for lightning surge,+/-15KVESDprotection.

4 . Isolation degree: isolation voltage 2500Vrms 500DCnon-stop.

5 . Operation mode: asynchronous half duplex or asynchronousfullduplex.

6.Signalindication: 3 pilot lamps forPower(PWR), Send(TXD)andReceive(RXD).

7.Transmissionmedia:twistedpaircableorshielded cable.

8.Transmissionrate:300-115.2KBPS.

9.Dimensions:113mm*55mm*25mm.

10.Working Circumstance: -25oC 70oC, relative humidity5%-95%.

11.Transmission distance: 0-5,000meters (115,200bps-9,600bps).

III.Connectorandsignal

RS-485/RS-422 input terminal signal bay-line distribution

Outputsignal	RS-422 full-duplex connection	RS-485 half-duplex connection	
T/R+	Send(A+)	RS-485(A+)	
T/R-	Send(B-)	RS-485(B-)	
RXD+	Receive(A+)	None	
RXD-	Receive(B-)	None	
GND	Undergroundline	Undergroundline	
N/A			
N/A			
N/A			
N/A			

RS-485/RS-422 output terminal signal bay-line distribution.

Outputsignal	RS-422 full-duplex connection	RS-485 half-duplex connection
T/R+	Send(A+)	RS-485(A+)
T/R-	Send(B-)	RS-485(B-)
RXD+	Receive(A+)	None
RXD-	Receive(B-)	None
GND	Undergroundline	Undergroundline
VCC	Powersupply: 10-30VDCinput/ 9VDCoutput	Power supply: 10-30VDCinput/ 9VDCoutput
N/A		
N/A		
N/A		

IV.Hardwareinstallmentandapplication

Readtheuser manual carefullybeforeinstalling the YT-309 photoelectricisolationdatarepeater.Theninsert thepowersupplyconvertertopowersocket.Theproduct adopts theDB-9/DB-9 generalused connectorforinput andoutputinterfacewithout jumpersettingfor RS-485 or RS-422 automatic communication mode. Either twistedpair cableorshieldedcableisapplicableforeasy installation or un-installation. T/R+T/R-represents sending and receiving the A+/B-, RXD+/RXD-represents receiving the A+/B-,VCC represents power input oroutput,GNDrepresentspublicundergroundline. Point-to-point and point-to-multipoint half duplex communication use the two lines of T/R+ and T /R-, point-to-point and point-to-multipoint full duplex communication use thefour lines ofT/R+,T/R-,RXD+ andRXD-.

YT-309 interfaceconvertersupportsthefollowing4 communicationmodes:
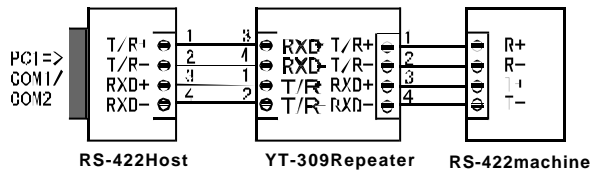
1.Point-to-point4-linefullduplex.

2. Point-to-multipoint 4-line full duplex
3. Point-to-point 2-line half duplex
4. Point-to-multipoint 2-line half duplex

In order to prevent the signal reflection or interference when converter is used in full-duplex or half-duplex mode, a proper matching resistance should be connected at the terminal of the line (120O1/4W).
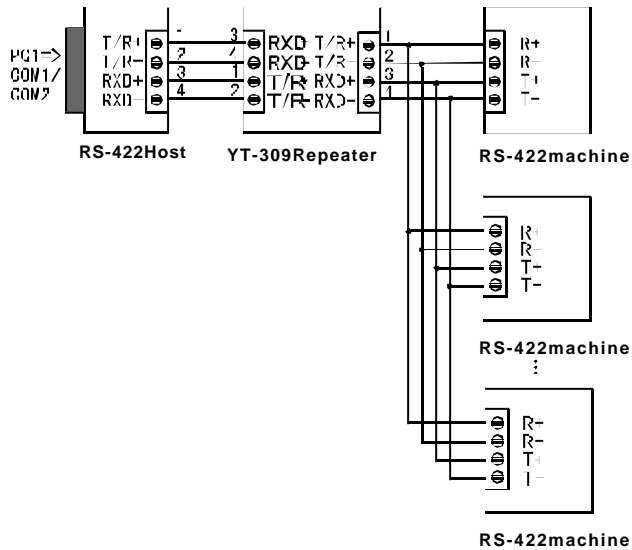
V. Communication connection chart

RS-422 4-line relay conversion

1. RS-422 point-to-point 4-line full duplex relay communication

RS-422Host **YT-309Repeater** **RS-422machine**

2. RS-422 point-to-multipoint 4-line full duplex relay communication

RS-422Host **YT-309Repeater** **RS-422machine**

RS-422machine

RS-422machine

RS-485 2-line relay conversion

1. RS-485 point-to-point 2-line half duplex relay communication

RS-485Host **YT-309Repeater** **RS-485machine**
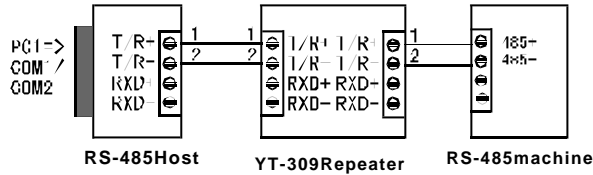
2. RS-485 point-to-multipoint 2-line half duplex relay communication

RS-485Host **YT-309Repeater** **RS-485machine**

RS-485machine

RS-485machine
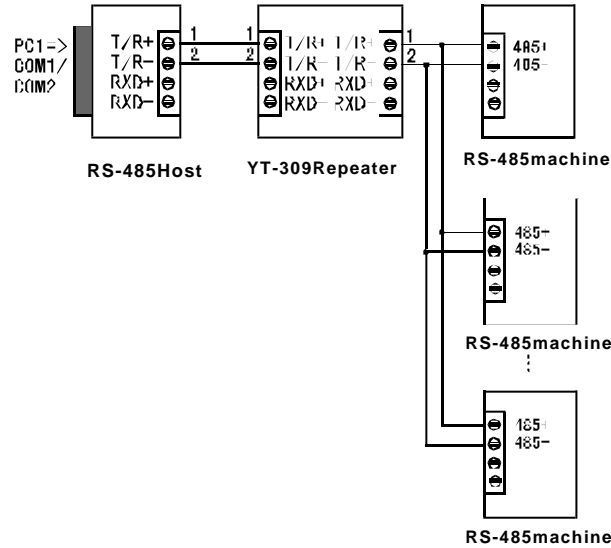
VI. Problems and resolutions

1. Data communication failure
   A. Make sure RS-485/RS-422 input interface connection is correct.
   B. Make sure RS-485/RS-422 output interface connection is correct.
   C. Make sure power supply is OK.
   D. Make sure the wire terminal connection is OK.
   E. Make sure the pilot lamp flashes when receiving.
   F. Make sure the pilot lamp flashes when sending
2. Data missing or incorrect
   A. Check to see whether if the data rate and format at both ends of the communication equipment are