

HighTek HK-5102

Passive Industrial Grade RS-232 to RS-422 Converter

User Manual

I. Summary

In order to carry through remote data communication between computer and peripheral equipment or intelligent instrument with various standards of serial interfaces, it must make interconversion between standard serial interfaces. Compatible with RS-232C/RS-422 standards, it is able to convert mono-end RS-232 signal to balance difference RS-422 signal and extend the communication distance to 1.2km. No external power but adopts a particular RS-232 charge pump to drive the system, and gains electricity without initializing the RS-232 series interface. An internal zero delay auto transceiver and particular I/O circuit automatically control the data Stream direction instead of any handshake signal (for example RTS, DTR etc.). There by in guarantees the function under RS-422 without changing the program compiled under RS-232 half-duplex mode and assures the adaptation to current operation software and interface hardware. The transmission rate of 300-115.2kbps is capable of applying between host computers, host computer and is extensions or external equipment and forms dot to dot, dot to dots remote and multi-communication network, It implements multi-machine response communication and commonly used in industry automation control system, all-one-card, access control system, consumption system, time and attendance system, parking system, self-service banking system, bus charging system, highway toll station system and so on.

II. Capabilities parameter

1. Interface feature: RS-232C, RS-422 standard interface compatible with EIA, TIA
2. Electric interface: RS-232 end DB9 hole female connector, RS-422 end DB9 needle male connector with connection terminal
3. Passive, with lightning protection
4. Working mode: asynchronism Full-duplex difference transmission
5. Transmission media: twisted -pair or STP
6. Transmission rate: 300-115.2KBPS
7. External discharge dimension: 63mm X33mmX17mm
8. Working circumstance : - 25 to 70 degree C, relative humidity 5%to 95%
9. Transmission distance: 1,200m (RS-422 end), 5m(RS-232 end)

III. Connector and signal

RS-232C pin distribution

DB9 Female (PIN)	RS-232C Interface Signal
1	Earth Protective
2	Receive data SIN(RXD)
3	Sent data SOUT (TXD)
4	Data terminal ready DTR
5	GND
6	Data setting ready DSR
7	Request Send RTS
8	Clear send CTS
9	Ring Indication RI

RS-422 data output & connector and pin distribution

DB9 Male (PIN)	Output Signal	RS-422 Full-Duplex
1	T/R+	Send(A+)
2	T/R-	Send(B-)
3	RXD+	Receive(A+)
4	RXD-	Receive(B-)
5	GND	Underground line
6	VCC	+5V standby power input

IV. Hardware installation & application

The product appearance adopts DB9M/DB9F general transit plugs, output plug carries ordinary terminal, you can use UTP or shielded wire, easy connection and disassembly.

“T/R+”, “T/R-” stands for “A+, B-”, “RXD+”, “RXD-” stands for “A+, B-”, “VCC” stands for standby power input, “GND” stands for public ground wire; point-to-point, point-to-multipoint full-duplex communication connects 4 wires (T/R+, T/R-, RXD+, RXD-). Wiring principle: “TXD+” connect opposite “RXD+”, “TXD-” connect opposite “RXD-”, “RXD+” connect opposite “TRD+”, “RXD-” connect opposite “TXD-”; RS-422 full-duplex mode: “T/R+” connect opposite “RXD+”, “T/R-” connect opposite “RXD-”, “RXD+” connect opposite “TXD+”, “RXD-” connect opposite “TXD-”.

HK-5102 interface converter supports the following 2 communication modes:

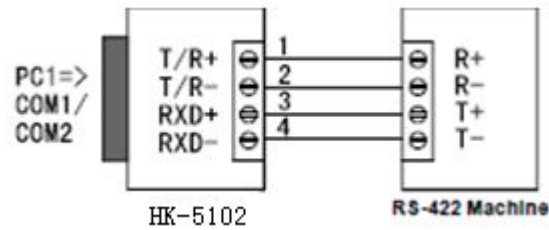
1. Point-to-point 4-line full duplex
2. Point-to-multipoint 4-line full duplex

When converter works under Full-duplex connection .it needs to install a matching resistance (data 120 ohm1/4W) for preventing signal reflection and interference.

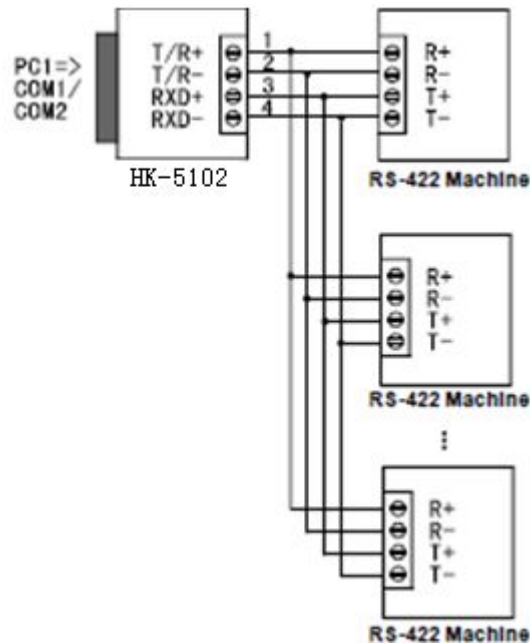
V. Communication connection chart

RS-232 to RS-422 conversion

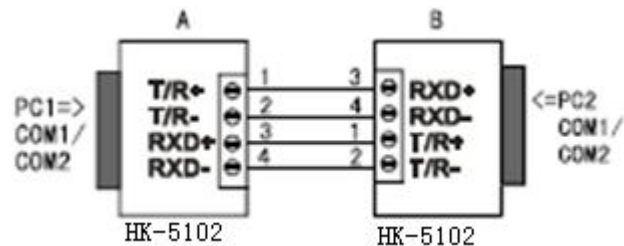
1. RS-422 point-to-point 4 wires full-duplex



2. RS-422 point-to-multipoint 4 wires full-duplex



3. HK-5102 full-duplex communication connect between interface converter



VI. Problems and resolutions

1. Data communication failure

- Check if RS-232 interface connection is correct
- Check if RS-422 output connection is correct
- Check if connection ends are well connected

2. Data loss or mistake

- Check if data rate and format is consistent on both communication ends