

# RS232 TO RS422/485 Converter

Model : CS-428/9, CS-428/9(AT), CS-428/25(AT)

## User's Manual Ver. 2.3



**Internal(External) power selectable / Power LED installed /  
Automatic opening and closing at the output terminal  
/ Surge protector installed.**

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## **1. Introduction**

We appreciate your nice choice for our products. These products have been delivered to the customers after thorough quality control and testing finished. You will take a year free maintenance service from the date of your purchase.

Should you have any difficulties or questions during the use please contact our Technical Supporting Department for the technical consulting service( Tel.82-2-583-9748).

## **2. Function**

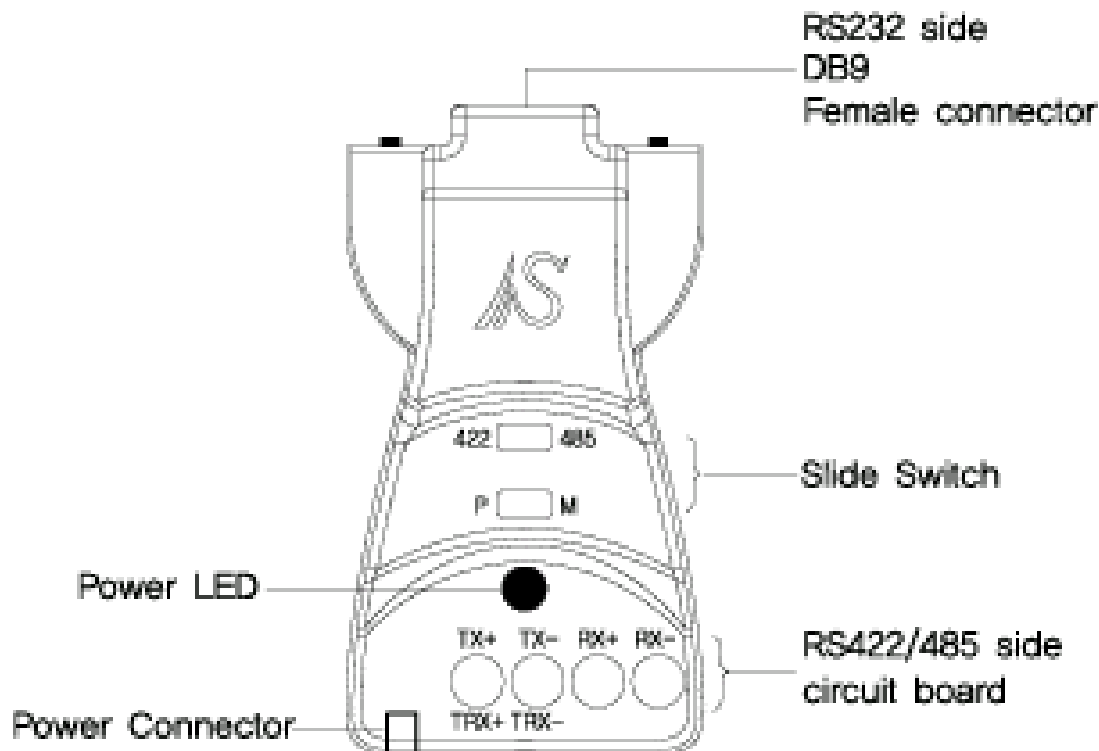
- This is serial communication interface converter which converts RS232 signals to RS422 or RS485 signals and extends the distance up to maximum 1.2Km It also allows to be connected to maximum 32 devices by Multi-drop mode as well as Point to Point mode.(AT model : up to 250m)
- It is designated to be operated without any power supply from outside when connected to PC, or various system of RS232 connector(25 pin/9 pin). But power connector for external power supply is also ready to be used under the environment where extra power supply is required.
- It includes high-effective Surge Protectors to protect itself from the transient voltage(Max. 15,000 volt) coming along the communication line.
- Especially, Model CS-428/AT includes an automatic opening and closing function for the output data so that the opening and closing consent work in the Multi-Drop mode is automatically made by the hardware, which makes you apply easily under any installing environment without any software operation.

### 3. Specifications

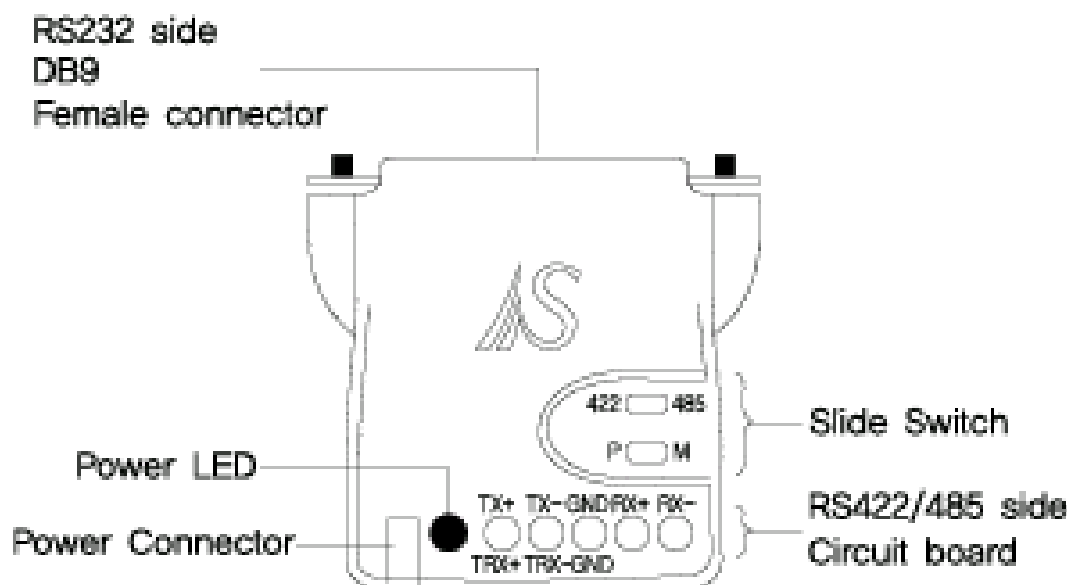
Model	CS-428/9 : DB9 Connector CS-428/9(AT), CS-428/9(AT) : DB9/25 connector, Automatic opening-closing function, terminal register
Communication type	Asynchronous serial communication
Transmission type	Max. 115.2K bps
Distance	CS-428/9 : Maximum 1.2Km CS-428/9(AT), CS-428/25(AT) : Maximum 250m
Connector	RS232 side : DB9 Female/DB25 Female RS422/485 side : Communication line connection terminal
Power	Power off : RS232 DTR signals Power on : External power adapter < DC7V ~ 12 V, In(-) Out(+) >
Internal connection	DTR-DSR-DCD RTS-CTS
Circuit protection	15,000 volt-surge protector included.
Slide switch	422/485 : RS422/RS485 selection P/M : RS422 - Point to Point / Multi-Drop RS485 - Echo / Non-Echo selection

## 4. Product Shape

### ■ CS-428/9, CS-428/9(AT)



### ■ CS-428/25(AT)





## 6. Power supply

It is operated with the power of +12V DTR signal generated from PC or the RS232 port of the equipment when no power is supplied from outside. In case of application program, or when it is not possible to keep the DTR signal connected to Jumper at "ON" status then power should be supplied from outside by using the power source adapter. Can recognize if power has been supplied by checking the LED display attached on the converter.

The power source part of the converter includes a high volumed condenser to supply stable power to the converter circuit by using DTR signal. Therefore it may not work for a very short period (within 0.1 second) until this condenser is filled with enough power. So wait for a second before starting to use converter after turning on the DTR signal when DTR signal is controlled directly in the application program. The LED display is turned on when power is supplied to converter. Just apply external power source when LED display is not turned on.

## 7. Terminal resistor

When a communication error occurs due to noises on the lines, install the terminal resistors to solve the problem.

### ■ Terminal resistor installation

- CS-428/9 : Install the terminal resistors at the terminal.
- cs-428/9(AT), CS-428/25(AT) : Open the case, connect the jumper inside and then install the terminal resistors.

※ Terminal resistor must be installed in one side out of both terminals.

## 8. Installing method

This product was made for the user to select a operating mode in order to be applied for the various installing environments.

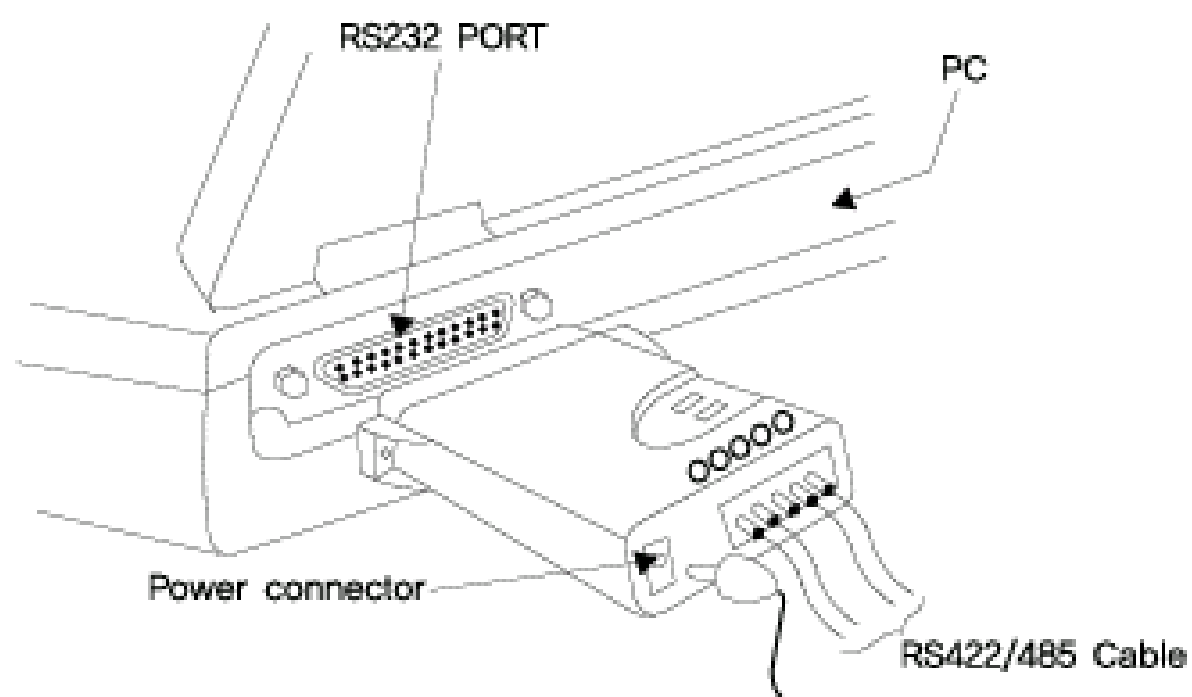
Please set the two slide switches on the converter surface to meet the purpose.

- The upper 422/485 slide switch selects the signal interface type
  - If set 422, it converts RS232 to RS422
  - If set 485, it converts RS232 to RS485
  
- The lower P/M slide switch selects the operating mode.
  - If set P, it is operated as Point to Point mode at RS422  
it is operated as Echo mode at RS485
  - If set M, it is operated as Multi-Drop mode at RS422  
it is operated as Non Echo mode at RS485

If the slide switch is set according to its intended use, insert RS422 circuit ( 4 lines ), or RS485( 2 lines ) into the hole of RS422/485 circuit board of converter and tighten with a screw driver.

Then connect the DB25 connector side to PC or RS232 port of the equipment. It may not be necessary to connect the GND pin depending on the installation.

※ CS-428/9 has no GND pin at RS422/485 side.



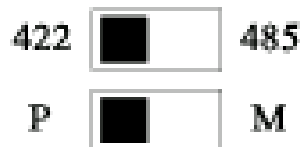
< A RS422-interface installation example of model CS-428/25(AT)>

## 9. The wire connection for RS422 Point to Point mode

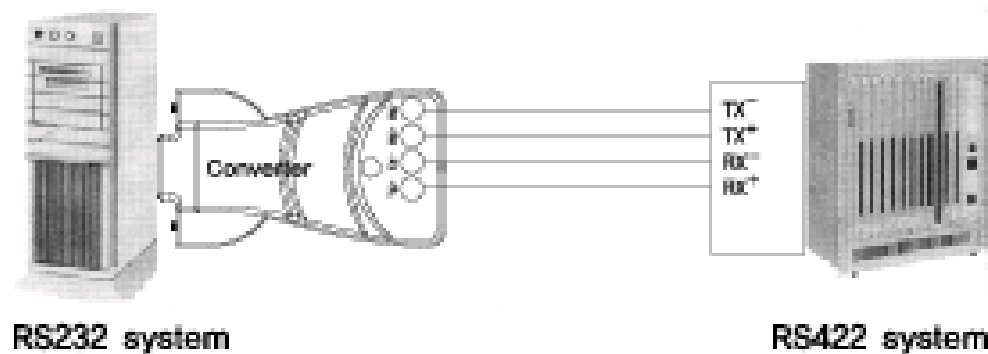
This wire connection is used when trying 1:1 full-duplex communication.

There is no need to open and close at the output terminal in this model.

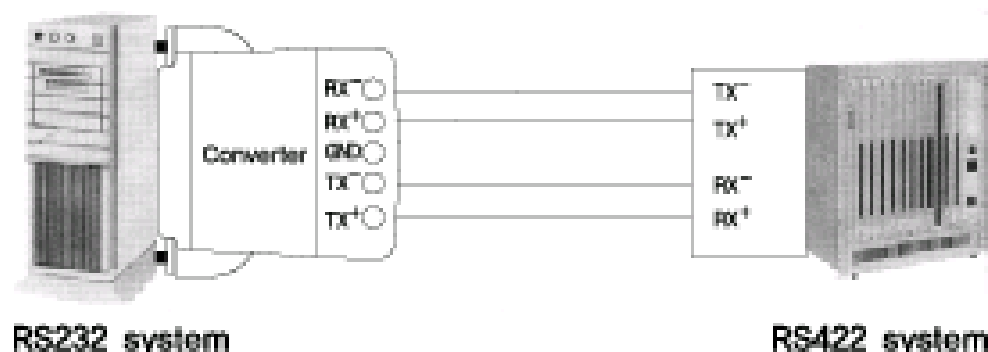
### ■ Slide switch of Host & Terminal side



### ■ The wire of CS-428, CS-428/AT



### ■ The wire of CS-428/25(AT)



- \* The RTS-CTS pin and DTR-DSR-DCD pin are connected to LOOP BACK inside of converter.
- \* DTR signal must be always kept as "ON" when no outside power is supplied.
- \* Check and confirm if power LED is turned on in the operation.

## 10. The wire conneciton for RS422 Multi-Drop mode

This wire connection is used when trying 1: N full-duplex communication (Max.10 units).

The RTS signal line must be kept as "ON" only when it is transmitted from the application program of the terminal side, otherwise it must be kept as "OFF".

### ■ How to open and close the output signal line at Terminal side

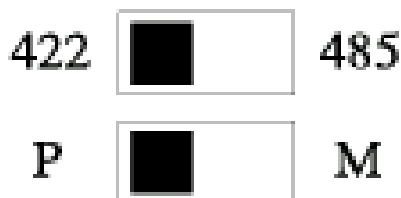
CS-428/9 :

The RTS signal line must be kept as "ON" only when signal was sent from the application porgram at Terminal side, but must be kept as "OFF" otherwise.

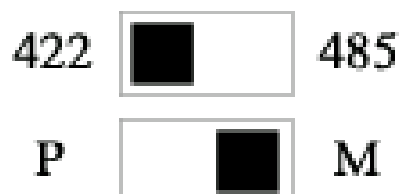
CS-428/9(AT), CS-428/25(AT) :

All operation is controlled by hardware circuit so no operation is required by application program.

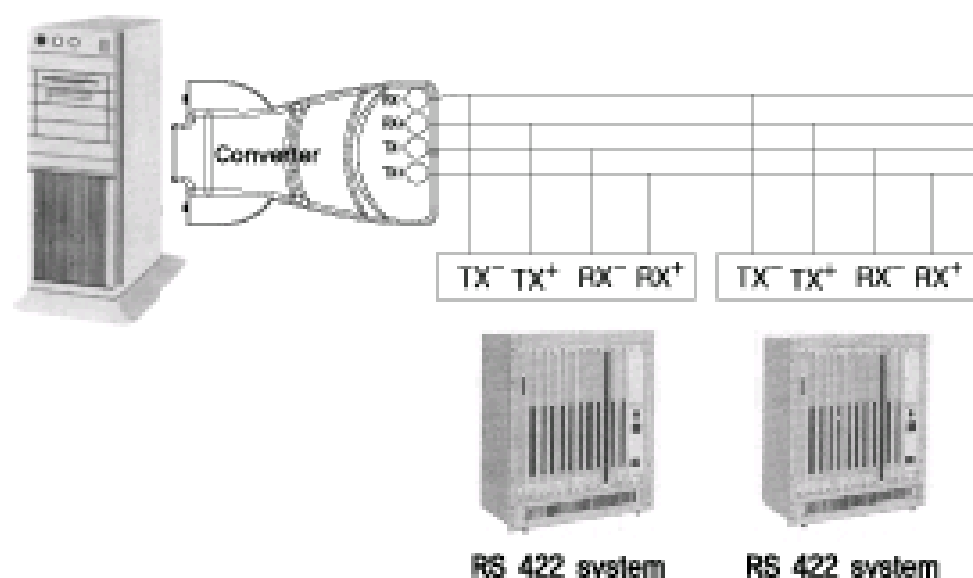
### ■ Slide switch of Host side



### ■ Slide Switch of Terminal side

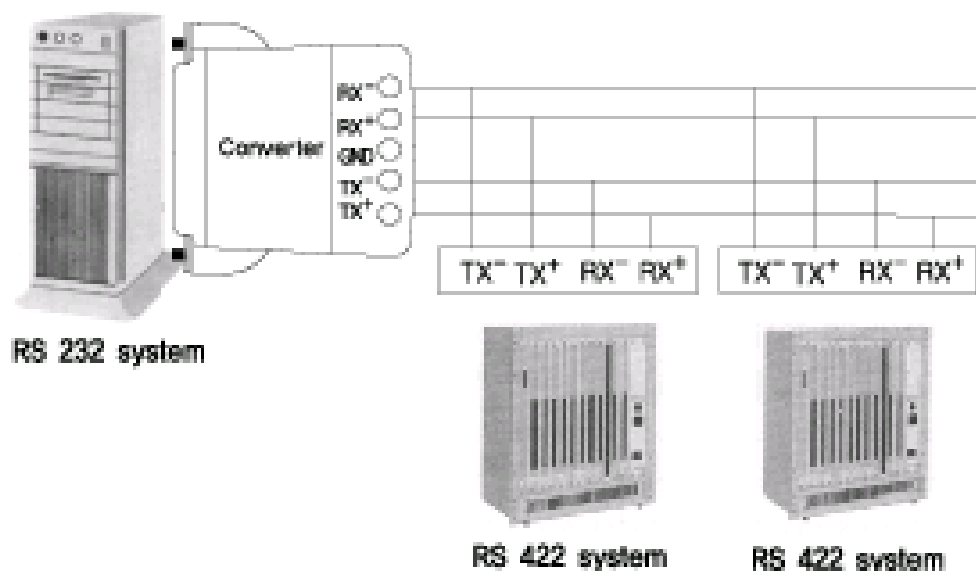


## ■ The wire connection of CS-428/9, CS-428/9(AT)



## ■ The wire connection of CS-428/25(AT)

- Host side  
( Point to Point mode control )
- Terminal side  
( Multi-Drop mode control )



- \* The RTS-CTS pin and DTR-DSR-DCD pin are connected to LOOP BACK inside of converter.
- \* DTR signal must be always kept as "ON" when no outside power is supplied.
- \* Check and confirm if power LED is turned on in the operation.

## 11. The wire connection for RS485 Non Echo mode

This wire connection is used when trying N : N half-duplex communication (Max.32 units).

The signal sent does not come back and is transmitted to every other terminals on the line.

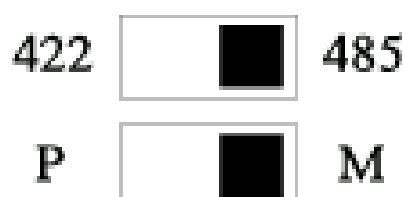
Basically as the RS485 interface type, both the host side and the terminal side is regarded as terminal, but required to open or close the output signal line to send or receive communication.

### ■ How to open and close the output signal line at Terminal side

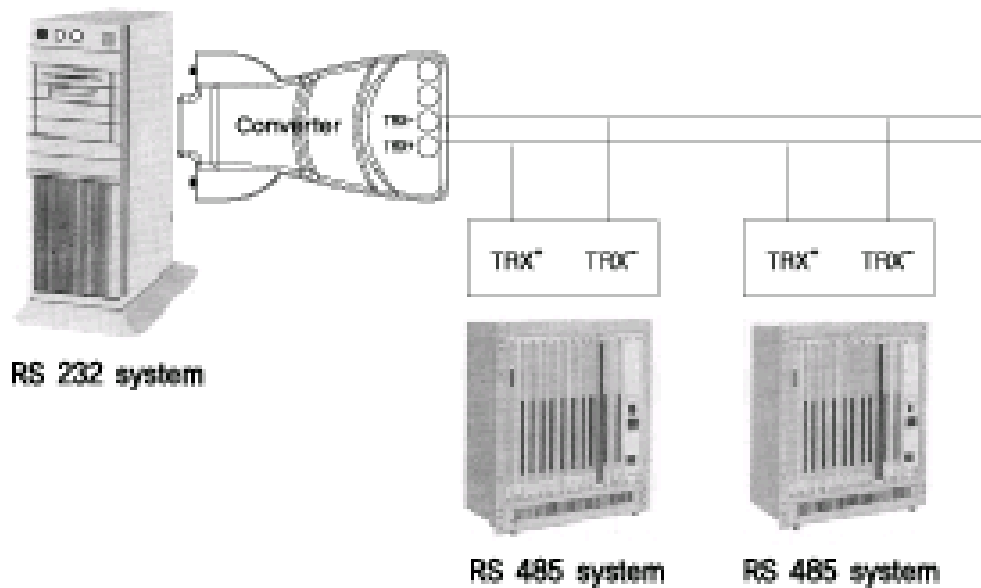
CS-428/9 : The RTS signal line must be kept as "ON" only when signal was sent rom the application program at Terminal side, but must be kept as " OFF" otherwise.

CS-428/9(AT), CS-428/25(AT) : All operation is controlled by hardware circuit so no operation is required by application program.

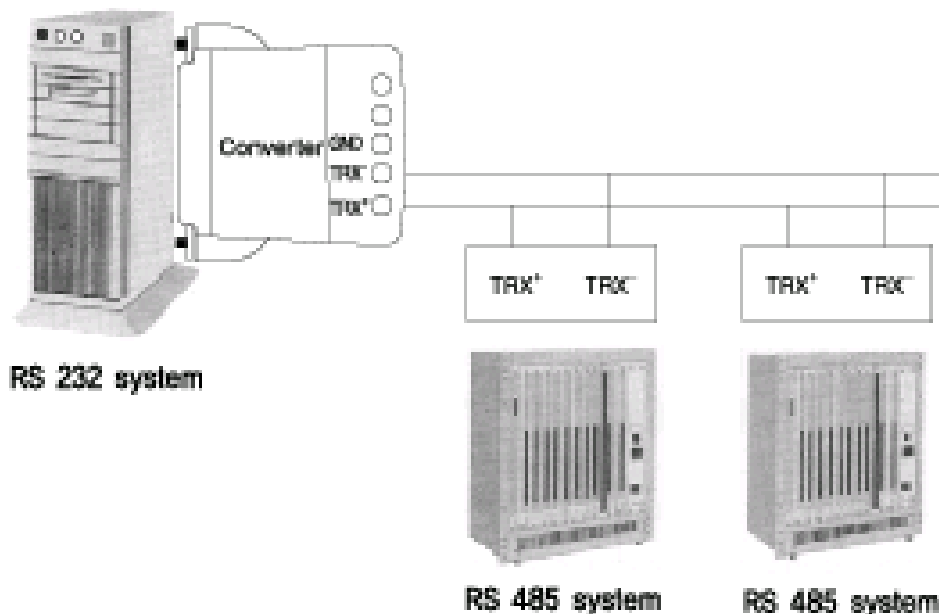
### ■ Slide Switch of Terminal side



## ■ The wire connection of CS-428/9, CS-428/9(AT)



## ■ The wire connection of CS-428/25(AT)



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### ■ How to open and close the output signal line at Terminal side

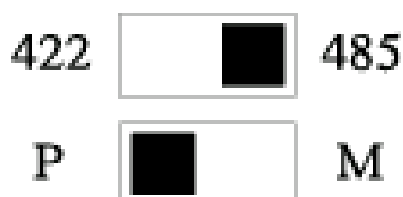
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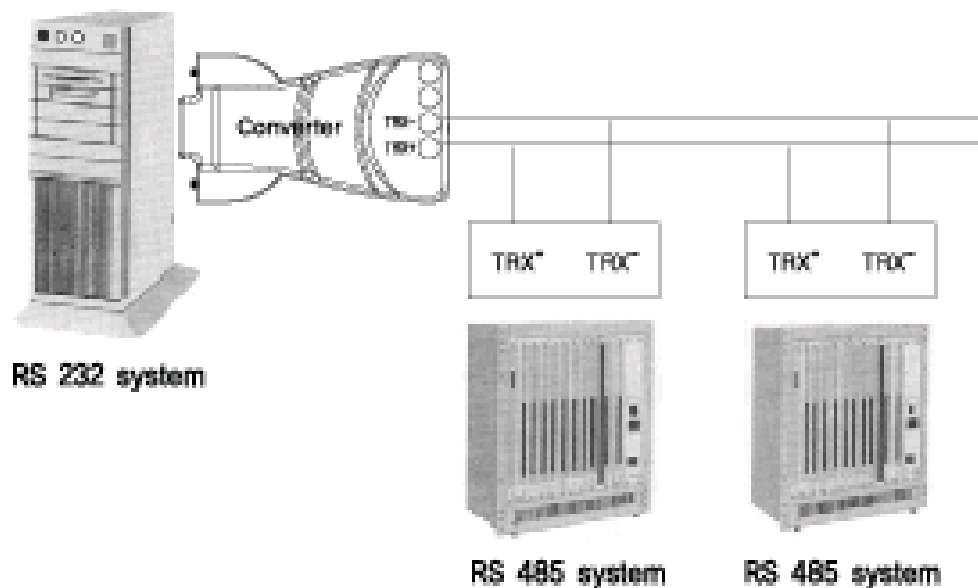
What is different from the method for RS485 Non-Echo mode is that the output signal line by itself is input again to the input signal line. Therefore it is possible to confirm if it was crashed to the data sent by other terminal by reading the display.

This operating mode is scarcely used except some special purpose.

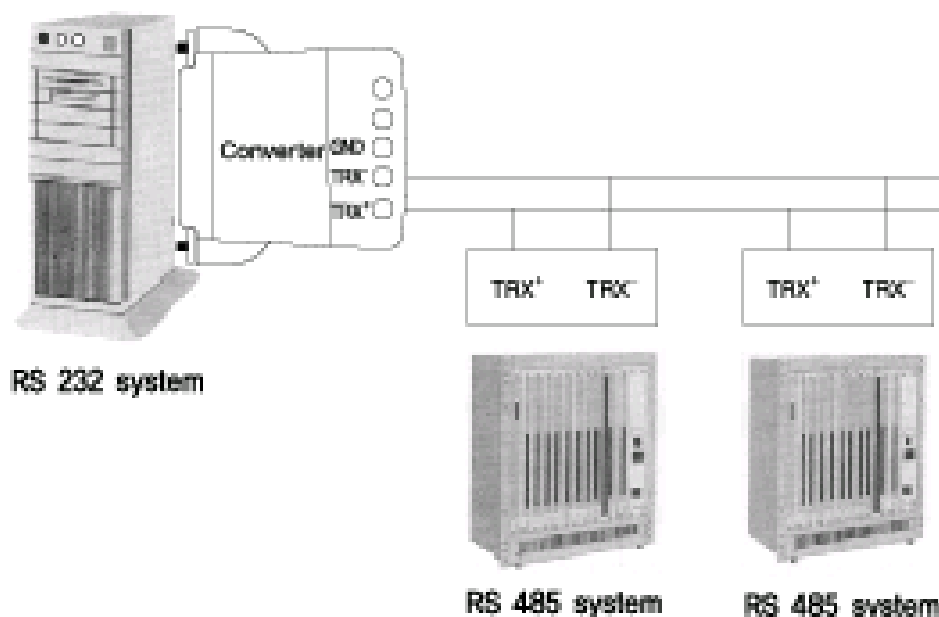
### ■ Slide Switch of Terminal side



## ■ The wire connection of CS-428/9, CS-428/9(AT)



## ■ The wire connection of CS-428/25(AT)



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- \* Check and confirm if power LED is turned on in the operation.



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