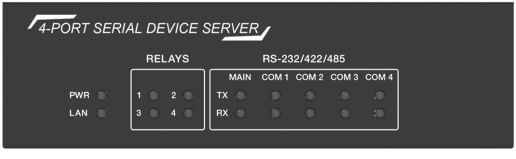
adertech

CTRL-LAN-4SP

Network Serial Port Expander



Manual Version 2.0

Thank you for purchasing this product

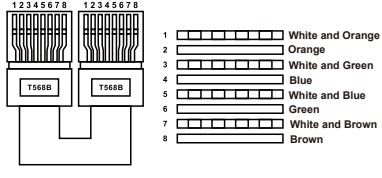
We have done everything possible to ensure that our equipment pleases our consumers. When solving any problems in the operation and connection ADERTECH equipment, it is best to contact authorized companies and specialists who work with our equipment. Our equipment is intended for professional use, so you have professional skills in using such equipment. ADERTECH is a manufacturer of a wide range of multimedia solutions.

Surge protection device recommended

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lighting strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the life of your equipment.

Caution

The product requires the use of UTP connectors. Please connect in direct interconnection method and do not cross connect.



Direct Interconnection Method

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1. Introduction

This Network Serial Port Expander, with 4 extended input and output serial ports, can communicate with the programmable central control system or PC to control multiple devices, and perform protocol conversion between various devices with different communication modes. Built-in various input communication interfaces, the expander can communicate with the programmable central control host or PC through RS-232 and Network communication interface. The front panel of the expander is designed with LED indicators for power supply, main & extended serial ports sending/receiving data, which can conveniently and quickly indicate the progress of data communication and equipment power failure.

2. Features

☆ Main serial port only supports RS-232;
Extended serial port 1 and extended serial port 2 support RS-232, RS-232+ Hardware Flow, RS-422 full duplex, and RS-485 half duplex;
Extended serial port 3 and extended serial port 4 support RS-232 and RS-232+ hardware flow control

☆ All serial ports support baud rate (2400, 4800, 9600, 14400, 19200, 38400, 5600, 57600, 115200)

☆ All serial ports support data bits (7, 8 bits), parity bits (odd, even, none), stop bits (1, 2 bits) settings

☆ Large buffering space for data transmitting and receiving is reserved for each serial port; data queue is supported

☆ Each frame of data can support up to 512 bytes

☆ Device parameters can be configured through the main serial port, TCP and UDP:

a. In TCP mode, the TCP port for device configuration function is: 8005.

b. In UDP mode, the UDP local port for device configuration function is 9005, and the default remote port is 1005.

☆ Extended serial port data can be sent and received over TCP or UDP:
   a. In TCP mode, the TCP ports corresponding to the extended serial ports 1~4 are 8001, 8002, 8003, 8004.
   b. In UDP mode, the UDP local ports corresponding to the extended serial ports 1~4 are 9001, 9002, 9003, 9004. The default remote port is 1001, 1002, 1003, 1004. The remote port can be modified by API commands or on the Web configuration page.
☆ Provide one 100M Ethernet communication port and one RS-232 port, which can be connected to computer or central control system, compatible with all third-party central control systems such as AMX, CRESTRON, RTI, etc.
☆ Support 4 low-voltage relay ports, normally open contacts; each group is independent and isolated, maximum to 1A 24V DC/AC loading
☆ Built-in Web server, which can configure device parameters directly through the browser of various computers, tablets and mobile devices
☆ Support naming or remarking the product name

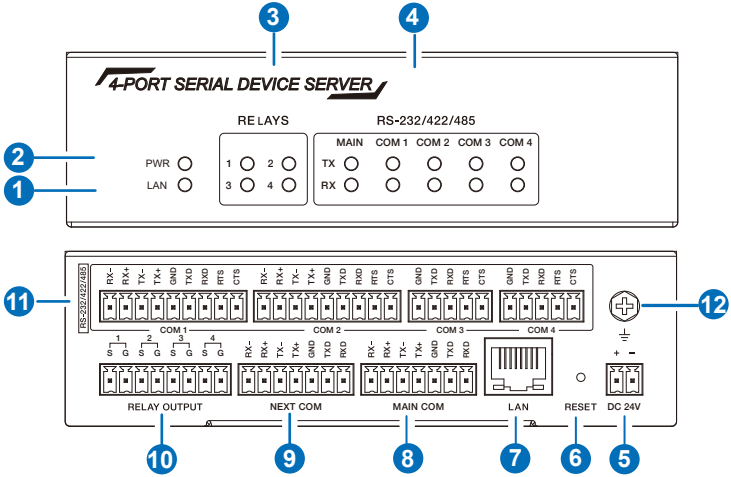
3. Package Contents

① 1 x Network Serial Port Expander
② 2 x 5-pin Phoenix Connector (3.81mm, male)
③ 2 x 7-pin Phoenix Connector (3.81mm, male)
④ 1 x 8-pin Phoenix Connector (3.81mm, male)
⑤ 2 x 9-pin Phoenix Connector (3.81mm, male)
⑥ 4 x Machine Screw
⑦ 2 x Mounting Ear
⑧ 1 x 24V/1A Power Adaptor with 2-pin 3.5mm Phoenix Connector
⑨ 1 x User Manual

4. Specifications

Technical	
RS-232	Support full duplex communication mode, configurable hardware flow control
RS-485	Support half duplex communication mode
RS-422	Support full duplex communication mode
Baud Rate	Support 2400, 4800, 9600, 14400, 19200, 38400, 5600, 57600 and 115200
LAN	10/100 M Ethernet interface
RELAYS	Up to 1A 24VDC/AC loading
Connection	
INPUTS	1 x LAN [RJ45, 8-pin female] 1 x MAIN COM [7-pin phoenix connector] 1 x DC 24V [2-pin phoenix connector]
OUTPUTS	1 x NEXT COM [7-pin phoenix connector] 2 x COM 1/2 [9-pin phoenix connector] 2 x COM 3/4 [5-pin phoenix connector] 1 x RELAY OUTPUT [8-pin phoenix connector]
Mechanical	
Housing	Mental Enclosure
Color	Black
Dimension	147mm(W)×130mm(D)×42mm(H)
Weight	673g
Power Supply	Input: AC100 - 240V 50/60Hz Output: DC 24V/1A
Power Consumption	＜2W
Operating Temperature	0°C ~ 40°C / 32°F ~ 104°F
Storage Temperature	-20°C ~ 60°C / -4°F ~ 140°F
Relative Humidity	20~90% RH (non-condensing)

5. Operation Controls and Functions



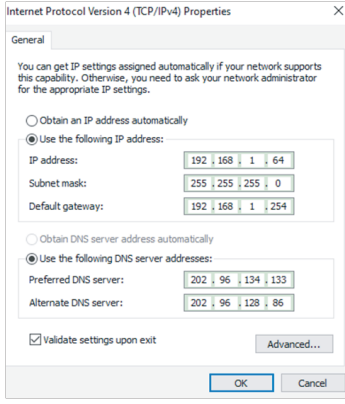
No.	Name	Function Description
1	LAN LED	Network connection indicator. The green light flashes when the network communication is in good state.
2	POWER LED	The green light is on when the device is powered on.
3	RELAYS LED	Relay closing indicator. The green light is always on after the Relay is set to be closing.
4	RS-232/422/485 LED	Uplink and downlink extended serial port indicators, flashing when sending data (red light) and receiving data (yellow light).
5	DC 24V	DC 24V/1A power input port.
6	RESET button	Press and hold the reset button for 5 seconds, then release it, the device will restore to the factory settings. After rebooting, the IP address of the device will restore to 192.168.1.100.

No.	Name	Function Description
7	LAN port	10M/100M Network communication port.
8	MAIN COM	Main communication serial ports, connected to the central control system or computer. It can configure the parameters of device through API commands. **In RS-232 mode**, the pin-outs are PIN5 for GND, PIN6 for TXD, and PIN7 for RXD. **In RS-422 mode**, the pin-outs are PIN1 for RX-, PIN2 for RX+, PIN3 for TX-, PIN4 for TX+ and PIN5 for GND. **In RS-485 mode**, PIN1 (RX-) and PIN3 (TX-) need to be short circuited to B, PIN2 (RX+) and PIN4 (TX+) to A, and PIN5 to GND. Both main serial ports 422 and 485 are reserved ports.
9	NEXT COM	Main serial port cascading output ports. **In RS-232 mode**, the pin-outs are PIN5 for GND, PIN6 for TXD, and PIN7 for RXD. **In RS-422 mode**, the pin-outs are PIN1 for RX-, PIN2 for RX+, PIN3 for TX-, PIN4 for TX+ and PIN5 for GND. **In RS-485 mode**, PIN1 (RX-) and PIN3 (TX-) need to be short circuited to B, PIN2 (RX+) and PIN4 (TX+) to A, and PIN5 to GND. Both cascading output ports 422 and 485 are reserved ports.
10	RELAY OUTPUT	4 low-voltage relay ports, normally open contacts, each group is independent and isolated, maximum to 1A 24V DC/ AC loading.
11	RS-232/ 422 /485	Extended serial ports, COM1 and COM2 support RS-232/ 422/485 protocol; COM3 and COM4 support RS-232 protocol, which enables the extender to have two-way communication with devices. **In RS-232 mode**, the pin-outs are PIN5 for GND, PIN6 for TXD, and PIN7 for RXD. **In RS-232 + Hardware Flow mode**, the pin-outs are PIN5 for GND, PIN6 for TXD, PIN7 for RXD, PIN8 for RTS and PIN9 for CTS. **In RS-422 mode**, the pin-outs are PIN1 for RX-, PIN2 for RX+, PIN3 for TX-, PIN4 for TX+ and PIN5 for GND. **In RS-485 mode**, PIN1 (RX-) and PIN3 (TX-) need to be short circuited to B, PIN2 (RX+) and PIN4 (TX+) to A, and PIN5 to GND.
12	GND	Connect the housing to the ground.

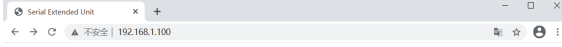
6. Web GUI User Guide

The product supports Web GUI control. You can configure device parameters directly through the browser of various computers, tablets and mobile devices. The operation method is shown as below:

Step 1, Connect the LAN port of the device to PC, and set the PC's IP address to be in the same network segment with the expander. For instance, set the IP address to be 192.168.1.64 and Subnet mask to be 255.255.255.0, as shown in the figure below.

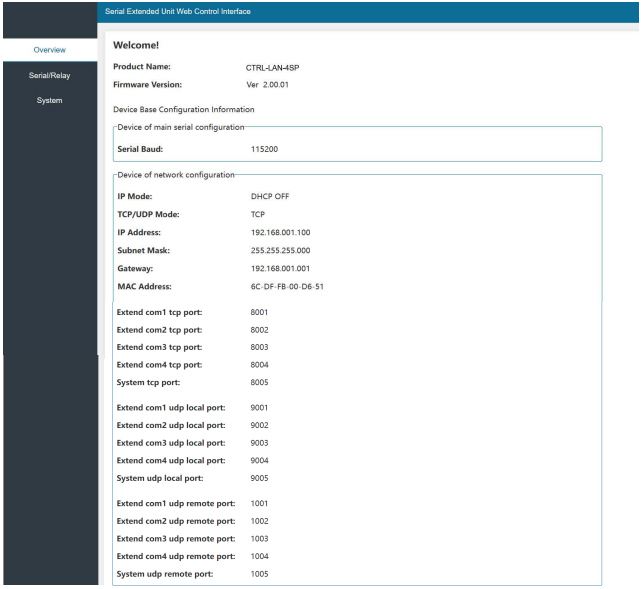


Step 2, Open the browser (Google Chrome is recommended), and input the expander's default IP address 192.168.1.100 to enter the Web GUI page.



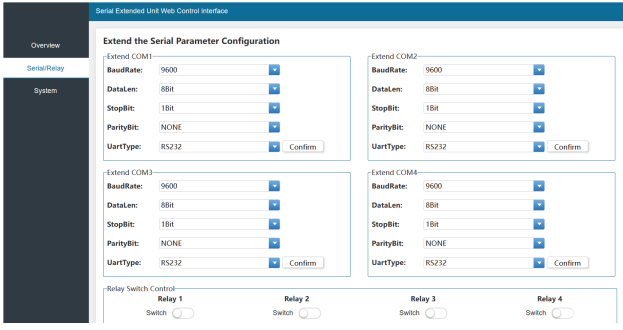
The Web GUI pages are shown as below:

■ Overview Page



The Overview page provides information about the product as following:
① **Product Name:** The product name, which can be renamed on the System page.
② **Firmware Version:** The current firmware version of the product.
③ **Device of main serial configuration:** The baud rate of the main serial port communication.
④ **Device of network configuration:** This part shows the IP configuration (including IP Mode, TCP/UDP Mode, IP Address, Subnet Mask, Gateway and MAC Address), and all the TCP/UDP data transmission ports.
Note: Only when the UDP Mode is selected on the System page, the extend com1~4 udp remote ports parameters will be displayed on the overview page.

■ Serial /Relay Page



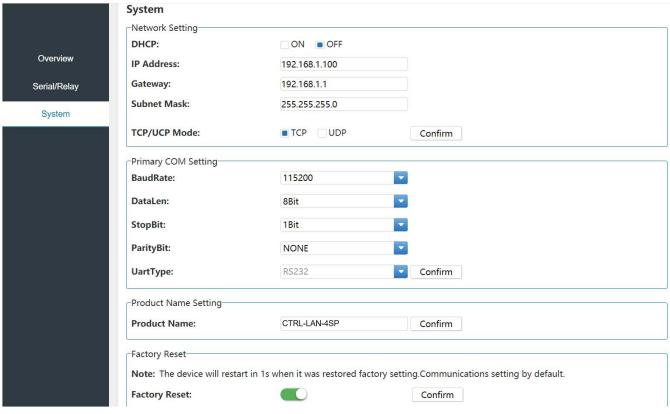
On this page you can do the following operations:

① **Parameter configuration for extended serial ports:** Click the drop-down menu to set the BaudRate, DataLen, StopBit, ParityBit and UartType of 4 extended serial ports respectively.

After setting, please click “Confirm” to save the setting and take effect.

② **Relay switch control:** Click the Switch to turn on/off 4 channels of relays independently.

■ System Page



On this page you can do the following operations:
① **Network Setting:** If DHCP is set to OFF, you can manually set the IP address, gateway and subnet mask as required; If DHCP is set to ON, the system will automatically fill in the IP Address assigned by the router, which is unmodifiable. If TCP/UDP is selected, you can set the data sending and receiving mode of the extended serial port and network port.
After setting, please click “Confirm” to save the setting and take effect.
② **Primary COM Setting:** Click the drop-down menu to set the BaudRate, DataLen, StopBit, ParityBit and UartType for the main serial ports.
After setting, please click “Confirm” to save the setting and take effect.
③ **Product Name Setting:** You can enter a name in the input box to rename the product, and then click “Confirm” to save the setting and take effect.
④ **Factory Reset:** Click the Factory Reset switch to turn it on and “Confirm” to take effect. The device will reboot and restore to the factory default settings.

7. API Commands

The product also supports API commands control. Connect the product to a PC and open a Serial Command tool on PC to send ASCII commands to control the product.

Here is the ASCII command list about Single Machine Instruction.

ASCII Commands				
Main com port protocol: Baud rate: 115200 (default), Data bits: 8, Stop bits: 1, Parity: none, Flow control: none				
Default Network Information: IP->192.168.1.100 Subnet->255.255.255.0 Gateway->192.168.1.1 IP Mode->dhcp off TCP/UDP Mode->tcp				
Extend com1 tcp port: 8001 Extend com2 tcp port: 8002 Extend com3 tcp port: 8003 Extend com4 tcp port: 8004 System tcp port: 8005				
Extend com1 udp local port: 9001 Extend com2 udp local port: 9002 Extend com3 udp local port: 9003 Extend com4 udp local port: 9004 System udp local port: 9005				
Extend com1 udp remote port: 1001 Extend com2 udp remote port: 1002 Extend com3 udp remote port: 1003 Extend com4 udp remote port: 1004 System udp remote port:1005				
x, y, z, XXX are parameters Error Code description: E00 -> unkown command E01 -> parameter out of range E04 -> This feature is not supported				
Version: V2.00.01				
Command Code	**Description**	**Example**	**Feedback**	**Default Setting**
System Settings				
help!	Get the API information supported by the system.	help!	help! cs power x! cr power! cs reboot! cs reset! cr fw version! ……	
cs power x!	x ={0-1}, 1 = power on, 0 = power off Note: In the "power off" state, only "cs power 1!", "cr power!", "cr fw version!", "cr status!", "cs reboot!" and "help!" are valid. Other API commands are not valid.	cs power 1!	power on	power on
cr power!	Get current power state.	cr power!	power on/off	
cs reboot!	Reboot the device.	cs reboot!	reboot… System Initializing... Initialization Finished! boot version:v1.xx.xx app version:v2.xx.xx	

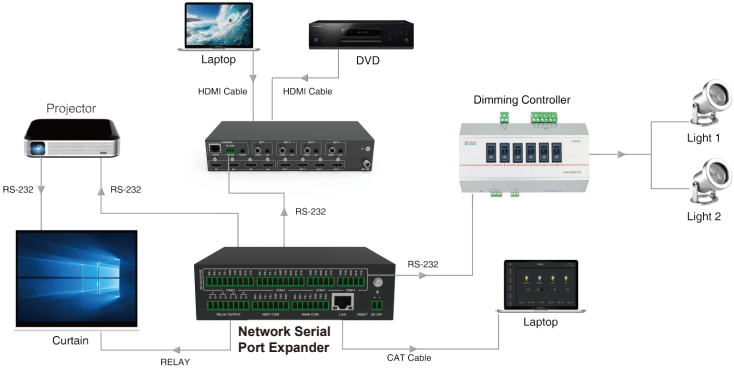
Command Code	Description	Example	Feedback	Default Setting
cs reset!	Reset to factory defaults. Note: Restore factory settings, the network configuration will be restored to default.	cs reset!	reset to factory defaults System Initializing... Initialization Finished! boot version:v1.xx.xx app version:v2.xx.xx	
cr fw version!	Get firmware version.	cr fw version!	boot version:v1.xx.xx app version:v2.xx.xx	
cr status!	Get the product all status: power, version, relay, com and network.	cr status!	product name: CTRL-LAN-4SP boot version:v1.xx.xx app version:v2.xx.xx relay config info: all relays:close ……	
cs product name xxx!	Set the name of the serial port expander. Maximum support for 8 characters.	cs product name CTRL-LAN-4SP!	product name: CTRL-LAN-4SP	product name: CTRL-LAN-4SP
cr product name!	Query the name of the serial port expander.	cr product name!	product name: CTRL-LAN-4SP	
Serial Port Settings				
cs com [x] baudrate [y]!	Serial port baud rate settings x = {0-4}, y = {1-9}, 0->main com, 1->115200, 1->extend com1, 2->57600, 2->extend com2, 3->56000, 3->extend com3, 4->38400, 4->extend com4, 5->19200, 6->14400, 7->9600, 8->4800, 9->2400.	cs com 1 baudrate 1!	set com 1 baudrate is 115200	main com ->115200 expand com 1 ->9600 expand com 2 ->9600 expand com 3 ->9600 expand com 4 ->9600
cs com [x] datalen [y]!	Serial port data length Settings x = {0-4}, y = {1-2}, 0->main com, 1->8bit, 1->extend com1, 2->7bit, 2->extend com2, 3->extend com3, 4->extend com4, Note: When the data bit of the serial port is “7bit”, if the current parity bit is “none”, then the serial port parity bit will be forced to set to "odd" parity. Examples: send: cs com 1 datalen 2! feedback: when setting databits to 7bit, the check digit cannot be set to none, if the check digit is not set, odd check will be set by default! extend com1 datalen:7 bit	cs com 1 datalen 1!	extend com1 datalen:8 bit	main com->8bit extend com1 ->8bit extend com2 ->8bit extend com3 ->8bit extend com4 ->8bit

Command Code	Description	Example	Feedback	Default Setting
cs com [x] stopbit [y]!	Serial port stop bit settings x = {0-4}, y = {1-2}, 0->main com, 1->1bit, 1->extend com1, 2->2bit, 2->extend com2, 3->extend com3, 4->extend com4,	cs com 1 stopbit 1!	extend com1 stopbit:1 bit	main com->1bit extend com1 ->1bit extend com2 ->1bit extend com3 ->1bit extend com4 ->1bit
cs com [x] paritybit [y]!	Serial port data verification Settings x = {0-4}, y = {1-3}, 0->main com, 1->none, 1->expand com1, 2->even, 2->expand com2, 3->odd, 3->expand com3, 4->expand com4, Note: If the serial data bit is "7bit" and the parity bit is not "null", if the parity bit is set to "null", the data bit will be forced to "8bit".	cs com 1 paritybit 1!	extend com 1 paritybit:none	main com ->none extend com1 ->none extend com2 ->none extend com3 ->none extend com4 ->none
cs com [x] output type [y]!	Serial output type settings x = {0-4}, y = {1-4}, 0->main com, 1->rs232, 1->extend com1, 2->rs232 +flow, 2->extend com2, 3->extend com3, 3->rs485, 4->extend com4, 4->rs422 Note: The main serial port only supports rs232 mode; com3 and com4 do not support rs485 and rs422 modes.	cs com 1 output type 1!	extend com1 output:rs232	main com ->rs232 extend com1 ->rs232 extend com2 ->rs232 extend com3 ->rs232 extend com4 ->rs232
cr com config!	Read the serial port configuration information.	cr com config!	main com config info: baud rate:115200 data len:8bit stop bit:1bit parity bit:none output type:rs232 extend com1 config info: baud rate:115200 data len:8bit stop bit:1bit parity bit:none output type:rs232 ……	

Command Code	Description	Example	Feedback	Default Setting
Network Port Settings				
cs ip addr xxx.xxx.xxx.xxx!	Set network ip address, ip range: 1.0.0.1~223.255.255.254 Note: DHCP does not support modifying ip information and the device will reboot.	cs ip addr 192.168.1.2!	ip address: 192.168.1.2	192.168.1.100
cs subnet xxx.xxx.xxx.xxx!	Set network subnet mask, xxx=255|254|252|248|240|224|192|128|0 Note: DHCP does not support modifying subnet information and the device will reboot.	cs subnet 255.255.254.0!	subnet mask: 255.255.254.0	255.255.255.0
cs gateway xxx.xxx.xxx.xxx!	Set network gateway, gateway range: 1.0.0.1~223.255.255.254 Note: DHCP does not support modifying gateway information and the device will reboot.	cs gateway 192.168.1.1!	gateway:192.168.1.1	192.168.1.1
cs ip mode [x]!	Set ip mode, x={0-1} 0=dhcp on 1=dhcp off Note: The device will reboot.	cs ip mode 0!	ip mode:dhcp on	dhcp off
cs tcp/udp mode [x]!	Set serial data transparent way, x={0-1} 0=tcp 1=udp Note: The device will reboot.	cs tcp/udp mode 0!	tcp/udp mode:tcp	tcp
cs udp remote port [x] to [y]!	Set the remote udp port number, x={1-5} 1->extend com1 udp remote port, 2->extend com2 udp remote port, 3->extend com3 udp remote port, 4->extend com4 udp remote port, 5->System udp remote port. y ={1~65535} Note: The device will reboot.	cs udp remote port 1 to 1001!	extend com 1 udp remote:1001	extend com1 udp remote port:1001 extend com2 udp remote port:1002 extend com3 udp remote port:1003 extend com4 udp remote port:1004 system udp remote port:1005

Command Code	Description	Example	Feedback	Default Setting
cr ipconfig!	Query network configuration.	cr ipconfig!	network config info: ip mode:dhcp off tcp/udp mode:tcp ip:192.168.1.100 subnet mask: 255.255.255.0 gateway:192.168.1.1 mac address: xx:xx:xx:xx:xx:xx extend com1 tcp port:8001 extend com2 tcp port:8002 extend com3 tcp port:8003 extend com4 tcp port:8004 System tcp port:8005 ……	
Relay Setting				
cs relay [x] to [y]!	Relay switch x={0-4} y={0-1} 0->all relay port 0->off 1->relay port 1 1->on 2->relay port 2 3->relay port 3 4->relay port 4	cs relay 1 to 0!	relay 1:close	all relays: close
cr relay [x]!	Relay inquiry x={0-4} 0->all relay port 1->relay port 1 2->relay port 2 3->relay port 3 4->relay port 4	cr relay 0!	all relays: close	all relays: close

8. Application Example



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