IP LAN Communication Protocol

1. Format of Commands

Definition format: Query syntax :SYST:<X>+ ? + CR(0xA) Settings :SYST:<X>+ SPACE(0x20) + < PARAM> + CR(0xA) Comments: <X>: Secondary subcommands 1). Set up IP address :SYSTem: IPADdress 192.168.1.199 Sets the IP address to 192.168.1.199. Query syntax :SYSTem: IPADdress? 192.168.1.199 2). Set up subnet mask :SYSTem: SMASK 255.255.255.0 Sets the subnet mask to 255.255.255.0 Query syntax :SYSTem: SMASK? 255.255.255.0 3).Set up the gateway :SYSTem: GATEway 192.168.1.1 Sets the Gateway to 192.168.1.1. Query syntax :SYSTem: GATEway? Return 192.168.1.1 4) Set up DHCP :SYSTem:DHCP {0|1|ON|OFF} :SYSTem: DHCP ON Set DHCP enable Query syntax :SYSTem: DHCP? Returns

1 5). Obtaining MAC :SYSTem:MAC? Returns 93-47-df-48-48-48 6). Set up Port Port : 1~65535, The port can not set to 18191 ; :SYSTem: PORT 6325 Sets the port to 6325 Query syntax :SYSTem: PORT? returns 6325 7). Set up BAUDrate Baudrate:9600,19200,38400,57600,115200 :SYSTem:BAUDrate 9600 Query syntax :SYSTem:BAUDrate? Returns 9600 8). Query device information (auxiliary debugging commands) :SYST: DEVINFO? Returns DHCP:0 IP:192.168.1.198 NETMASK:255.255.255.0 GW:192.168.1.1 MAC:93-47-df-48-48-48 PORT:18190 BAUDRATE:115200 9). Restore factory default of the interface :SYST: FACTRESET Factory interface status: DHCP: 0 IP: 192.168.1.198 255.255.255.0 NETMASK: GW: 192.168.1.1 PORT: 18190 BAUDRATE: 115200

2. Connection mode setting

Device default static IP address:

IP:	192.168.1.198
NETMASK:	255.255.255.0
GW :	192.168.1.1

<1> Direct access

1). Plug the device through one end of the network cable, and connect the PC to the other end to make the IP address of the PC and the device address on the same network segment.

Such as: 192.168.1.xx

Networking		9 X
	Internet Protocol Version 4 (TCP/IPv	(4) Properties
Connect using:		
Realtek PCIe GBE Family Controller #2	General	
	You can get ID settings assigned au	tomatically if your petwork supports
Confi	this capability. Otherwise, you need	to ask your network administrator
	for the appropriate IP settings.	
I his connection uses the following items:		
Client for Microsoft Networks	Obtain an IP address automati	ically
🗹 📮 QoS Packet Scheduler	 Ise the following IP address: 	
File and Printer Sharing for Microsoft Networks	Ose the following IP address.	
Internet Protocol Version 6 (TCP/IPv6)	IP address:	192 . 168 . 1 . 191
Internet Protocol Version 4 (TCP/IPv4)	Subnet mask:	255 255 255 0
Link-Layer Topology Discovery Mapper I/O Drive	Subrict mask.	200 . 200 . 200 . 0
Link-Layer Topology Discovery Responder	Default gateway:	192.168.1.1
	Obtain DNS server address au	tomatically
Install Uninstall Prope	Use the following DNS converte	ddronnon
Description	Se the following Divis server a	duresses.
Transmission Control Protocol/Internet Protocol. The de	Preferred DNS server:	
wide area network protocol that provides communicatio	Alternate DNS convert	
across diverse interconnected networks.	Alternate DNS server:	· · · ·
	Validate settings upon exit	Advanced
ОК		
		OK Cancel

2). Connected with a switch or router

There are 2 ways to choose:

<1> Route Allocation Method (DHCP)

<2> Access through a network device (router)

It can be connected in the following 2 ways:

1. DHCP: the route dynamically allocates an address, and the IP address of the device after each boot is allocated.

2. Use this method to enable DHCP ,

Command format ":SYSTem:DHCP 1",

2. Manual setting: manually fixing the IP address, you must set the IP and routing devices on the same network segment, and can't conflict with other network addresses (Routing device network segment can be viewed through the local network, or ask the network administrator).

For example, the current LAN segment IP is as follows:

IP: 1	0.10.1.32		
Subnet MASK:	255.0.0.0		
GW :	1010.1.1		

Then you need to modify the IP 10.10.1.67 range (2~255), the gateway and subnet mask don't need to be modified.

IP:	10.10.1.67 (2~255)
Subnet MASK:	255.0.0.0
GW :	1010.1.1

3. Debugging assistant use

- 1. Click network debug, the local IP address will be displayed, and the device uses the UDP protocol port number 18190.
- 2. "Find device", automatically search for devices in the current LAN, and display the current online device in the list box, Figure 3.1
- 3. To communicate with a device, click the control in the list box.

Serial Debuger	Network Deb	ouger	USB Debuger	GPIB Debuger		Communication Interface Setti
Setting	N	0. D	evice IP	Device Mac	Port	IP Settings
192.168.	1.188	1	92.168.1.198	7a-34-ec-48-4b-42	18190	DHCP Static IP
Local host	port:					IP addres: 192.168.
18190						SNet Mask: 255 . 255 . 2
Scan Dev	ices 🗸				•	GateWay: 192 . 168 .
Data Received	Receive as hex			CmdHex		Start OI
DHCP:0 IP:192.168.1 NETMASK:255 GateWay:192 MAC:7a-34-e	. 198 5. 255. 255. 0 2. 168. 1. 1 c-48-4b-42		 SYST:E SYST:E SYST:E 	DEVINFO? ADDR? BAUD? BAUD?	*	Program Setting VOLTage Setiting:
PORT: 18190 BAUDRATE: 1 115200 115200	15200					VSET CH1 V12.00 Set Voltage Query
						OverVoltage Value Set:



4. Set the DHCP function, check "DHCP", then click "OK" below to set the static IP. Then check "static IP" and press "OK". Finally, you need to restart the

device to make the current network configuration take effect.

- 5. If the setting is wrong, click "Restore Parma" to restore the factory parameters configuration.
- 6. Note: setting a static IP over the LAN interface requires a reboot to take effect.

4. Common troubleshooting

1. If the communication is not normal, first use the command to ping the device IP, as shown below:

```
Administrator: C:\windows\system32\cmd.exe

C: \Users \Administrator >ping 192.168.1.198

Pinging 192.168.1.198 with 32 bytes of data:

Reply from 192.168.1.198: bytes=32 time=1ms TTL=255

Reply from 192.168.1.198: bytes=32 time<1ms TTL=255

Reply from 192.168.1.198: bytes=32 time<1ms TTL=255

Reply from 192.168.1.198: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.1.198:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 1ms, Average = 0ms

C: \Users \Administrator>
```

2. Whether the IP address is different from the current LAN setting.

The curren LAN IP is 192.168.10.133, the network segment is 192.168.10.xx and the device IP is 192.168.5.12.

- 3. Whether the IP conflicts with other IPs in the LAN.
- 4. Whether the port number is set incorrectly.
- 5. The firewall blocked the device port.

5. Programming steps

Connect to the device via a computer network cable (refer to the communication protocol command)

- 1. Select the network protocol type as: UDP
- 2. Local host IP; such as the current computer IP (192.168.1.3)
- 3. Local host port number: 18190
- 4. Device IP: (192.168.1.198)

5. Device port number: 18190

As shown in Figure 5-1 below:

	TCP/UDP Net	Assistant		¥
Settings (1) Protocol UDP (2) Local host addr 192.168.1.3 (3) Local host port 18190 Close Receive Options Receive to file Auto linefeed Show timestamp Receive as hex Pause receive Save Clear Send Options Data from file	TCP/UDP Net Data Receive 115200 DHCP:0 IP:192.168.1.198 NETMASK:255.255.255.0 GateWay:192.168.1.1 MAC:8c=50=ea=48=4d=56 PORT:18190 BAUDRATE:115200	Assistant	₹ PSA	₩ <u>- □ ×</u> <u>VAGE V4.2.</u>
Auto send checksum	P	190	-	Cl
Send as HEX Period 20 ms Load Clear	:SYST: BAUD? :SYST: DEVINFO?			Send
💣 Ready!	·	TX:213	* RX:638	Reset //

Figure 5-1 Network debugging assistant and device communication Precautions:

- 1. The device port number and computer port number must be the same. The device port number is changed to 35876, then the computer configuration port must also be 35876;
- 2. Modify the IP and subnet mask through the network configuration. The gateway will take effect only after the device is restarted. If it is another interface (such as serial port or USB), it will take effect immediately;
- 3. If the parameter configuration is wrong, the network can't communicate, need to reset the parameters, and you can reset through RS232 serial port or USB, or use the restore factory command directly.