PLANAR®

21by9™ Series LCD

81 / 94 / 105
81T / 94T / 105T

Serial Manual

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RoHS Compliance Statement
The Planar 21by9 Series is fully RoHS compliant.

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Table of Contents

Serial Communication 4
1. Applicable Models 4
2. RS232 Setup 4
3. Connecting the RS232 Cable 5
4. Serial Command Operation Limitations 6
5. Serial Command Protocol 7
   - 5.1 Command Structure 7
   - 5.2 Protocol Encoding 8
   - 5.3 Examples 8
6. Serial Command Codes 10
   - 6.1 Key 22
7. Sending Serial Commands over the Network 24
   - 7.1 Sending Serial Commands Via SSH 25

Serial Communication

Serial commands are not necessary for operation but are a convenient way to control Planar® 21by9™ Series displays from a computer at a distance. Most things you can do with the remote, you can do with serial commands. Plus, you can send inquiries to the displays and find out the current settings and values. RS232 connections are made with standard straight-through cables.

Note: Serial communication can occur over RS232 or LAN.

1. Applicable Models

This serial commands manual applies to the following Planar 21by9 Series models:

- 21by9 81
- 21by9 81T
- 21by9 94
- 21by9 94T
- 21by9 105
- 21by9 105T

Serial commands manuals for other products can be found at www.planar.com/support/.

2. RS232 Setup

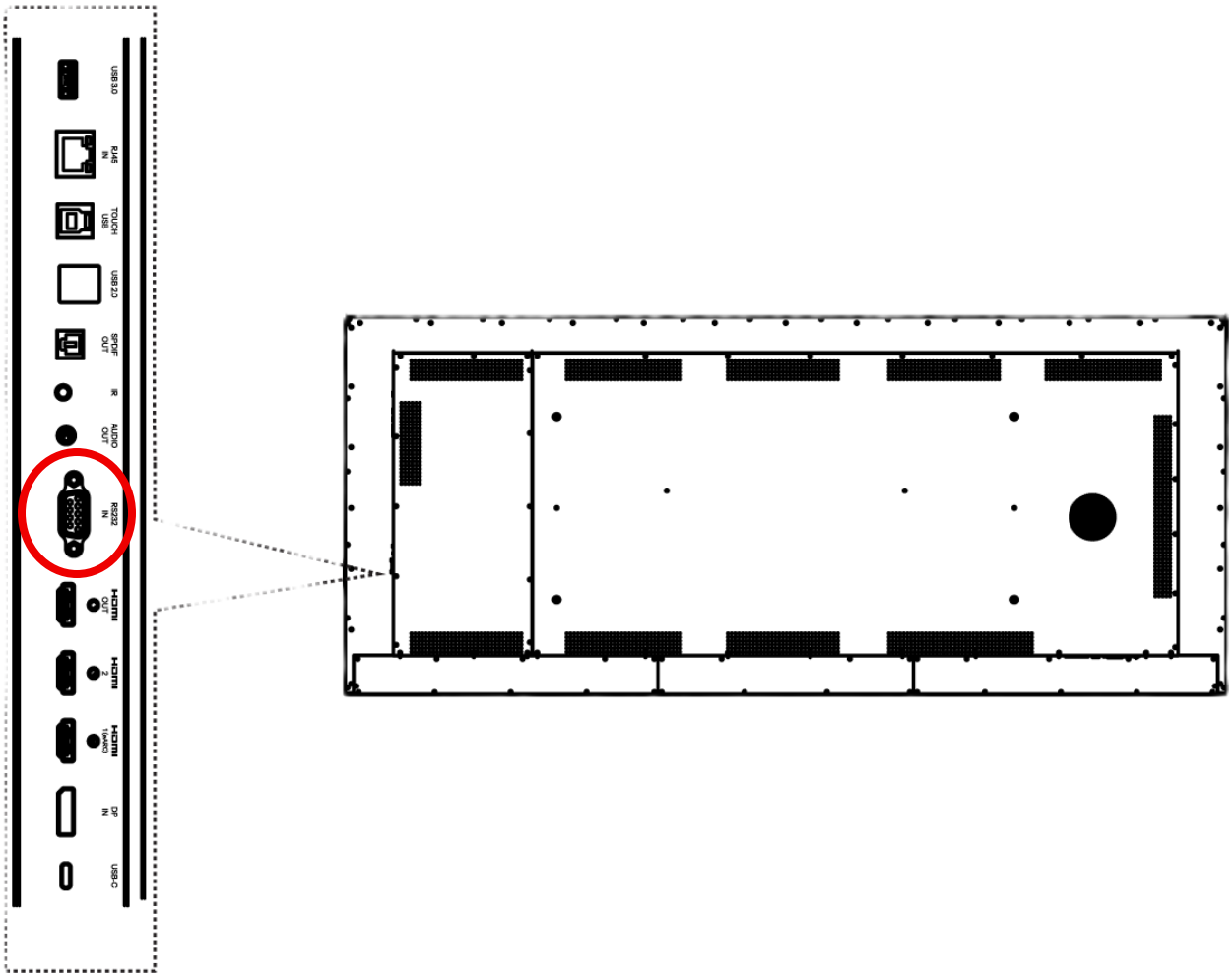
The use of RS232 requires the display's **Power Down Mode** to be in **Fast Startup**. See the "Power Down Mode" section of the *Planar 21by9 Series User Manual*.

The RS232 connection must use the following settings:

- 115200 baud rate
- 8 data bits
- 1 stop bit
- No parity bit
- No HW (RTS/CTS) or SW (XON/XOFF) flow control

3. Connecting the RS232 Cable

The Female DB9 connector is wired as a Straight Through serial connection.



Pin #	Signal
1	NC
2	Receive Data (RD)
3	Transmit Data (TD)
4	NC
5	Ground
6	NC
7	NC
8	NC
9	NC

4. Serial Command Operation Limitations

Sending commands faster than the display can process may hinder normal operation of the display and some operations may cause unresponsiveness to commands.

The following are guidelines for using serial commands with this display model:

Guideline	Value
Minimum delay between commands	500 milliseconds
Minimum delay from powering on from low power state	40 seconds
Serial commands that cause significant gaps in response	RESET(FACTORY1) SYSTEM.REBOOT

5. Serial Command Protocol

5.1 Command Structure

```
[OPCODE](MODIFIERS)[OPERATOR][OPERANDS][TERM]
```

- OPCODE is the command code (e.g. “GAIN”). This can be written either using the named command code (see the “Command Code” column in the table) or the numeric command code (see the “Numeric Command Code” column in the table).
- MODIFIERS are modifier values [e.g. “(ZONE.1, ALL)”]. There are zero or more modifiers for each command. The modifiers can be written either with their named value or their numeric value (see "Examples" on page 8). See the “Modifiers” column in the table.
- OPERATOR is the action to be performed. See the “Operators” column in the table.
  - ‘=’ writes the setting value.
  - ‘?’ reads the setting value in name form (see "Examples" on page 8).
  - ‘#’ reads the setting value in numeric form (see "Examples" on page 8).
  - ‘+’ increments the setting value.
  - ‘-‘ decrements the setting value.
  - ‘:’ indicates that the message is a response to one of the following operators: =?#+-
  - ‘!ERR’ indicates that the message is a failure response. An error code will be listed after the “ERR”, with a space before it. Error codes are as follows:
    - ERR 1: Invalid syntax
    - ERR 2: [Reserved for future use]
    - ERR 3: Command not recognized
    - ERR 4: Invalid modifier
    - ERR 5: Invalid operands
    - ERR 6: Invalid operator
  - ‘@ACK’ indicates that the message is an acknowledgment (ACK) to a command that has no operator.
  - ‘^NAK’ indicates that the message is a negative acknowledgment (NAK) to a command. This indicates that the command was received but cannot be processed at this time.
  - [No operator] denotes an action. In this case, there’s no operator and no operand.
- OPERAND indicates the data to be sent with the message. In some cases, there can be multiple operands. See the “Operands” column in the table.
  - Enumerated operands can be written either with their named value or their numeric value (see "Examples" on page 8).
  - String operands are written with quotation marks at the beginning and end. Example: “this is a string operand”. Special characters, [CR], [LF], “ and \ can be included in a string by escaping them with the \ character (see "Examples" on page 8).
  - Integer (or signed integer / unsigned integer) are always numeric values.
  - Fixed point operands are numeric values with fractional parts. They use decimal point notation.
  - Note that enumerated and integer values can be written either in decimal or hexadecimal. For example, a decimal value of ‘50’ can be written in hexadecimal as ‘0x32’.

- TERM is the termination character for the command. This can either be the ASCII carriage return character (0x0D), the ASCII line feed character (0x0A) or a semicolon. The response will use the same termination character.

5.2 Protocol Encoding

- All parts of the command structure are case insensitive (e.g. “BRIGHTNESS”, “brightness” and BrIgHtNeSs” are all the same). Responses will always be in capital letters.
- Excessive white space is allowed (e.g. “BRIGHTNESS=50”, “BRIGHTNESS = 50” and “BRIGHTNESS = 50” are all the same).
- Modifiers and operands can be separated by commas, spaces or both (e.g. “GAIN=100,100,100”, “GAIN=100 100 100” and “GAIN=100, 100, 100” are all the same). Responses will always separate with one space between modifiers and operands).

5.3 Examples

Note: [CR] is the ASCII carriage return character (0x0D).

Command	Response	Notes
brightness = 100 [CR]	BRIGHTNESS:100 [CR]	Sets the Brightness value to 100
brightness = 100;	BRIGHTNESS:100;	Also sets the Brightness value to 100, but uses the ‘;’ termination character instead of [CR]. The response uses the same termination character.
200=100 [CR]	200:100 [CR]	“200” is the numeric command code for “BRIGHTNESS”
brightness+ [CR]	BRIGHTNESS:101 [CR]	Increments the current Brightness value
brightness- [CR]	BRIGHTNESS:100 [CR]	Decrements the current Brightness value
gain = 101 102 103 [CR]	GAIN:101 102 103 [CR]	Example command with multiple operators (sets Red Gain to 101, Green Gain to 102 and Blue Gain to 103, on the current zone)
gain(current red)+	GAIN(CURRENT RED):102	Increments the Red Gain on the current zone
gain(zone.1, all) = 104,105,106	GAIN(ZONE.1 ALL):104 105 106	Example command with multiple modifiers, multiple operators and different separators between the modifiers and operators (sets Red Gain to 104, Green Gain to 105 and Blue Gain to 106, on Zone 1)
ipv4.address(static)=”10.15.0.220” [CR]	IPV4.ADDRESS(STATIC)=”10.15.0.220” [CR]	Example command with a string operator

Command	Response	Notes
reset(user) [CR]	RESET(USER)@ACK [CR]	Example action command (no operator or operand)
reset(user) [CR]	RESET(USER)^NAK [CR]	Example action command that cannot be processed at this time
aspect? [CR]	ASPECT:AUTO [CR]	The name for the Aspect Ratio setting value is returned
aspect# [CR]	ASPECT:0 [CR]	The number for the Aspect Ratio setting value is returned
aspect=fill [CR]	ASPECT:FILL [CR]	Sets the Aspect Ratio to Fill
aspect=3 [CR]	ASPECT:3 [CR]	Also sets the Aspect Ratio to Fill
brightness @@ [CR]	BRIGHTNESS!ERR 1 [CR]	Example of an invalid syntax (“@@” isn’t a valid operator)
fake.command = 1 [CR]	FAKE.COMMAND:ERR 3 [CR]	Example of an invalid opcode (“FAKE.COMMAND” doesn’t exist)
brightness(zone.999) = 100 [CR]	BRIGHTNESS(ZONE.999)!ERR 4 [CR]	Example of an invalid modifier (“ZONE.999” isn’t a valid modifier for “BRIGHTNESS”)
brightness=”new value” [CR]	BRIGHTNESS!ERR 5 [CR]	Example of an invalid operand (the Brightness command doesn’t accept a string operand)
model.id = 1 [CR]	MODEL.ID!ERR 6 [CR]	Example of an invalid operator (cannot write to this command)
display.name = “Name containing \” and \\”	DISPLAY.NAME:”Name containing \” and \\”	The name will appear on the remote monitor as Name containing “ and \
power.on.delay = .1	POWER.ON.DELAY:0.1	Example of a fixed point operand. Sets the Power On Delay to 0.1 seconds.

6. Serial Command Codes

Notes:

- The examples are written with the command first and the response in italics. Example:
  - Command: ASPECT(ZONE.1)=AUTO
  - Response: *ASPECT(ZONE.1):AUTO*
- In many instances, a modifier may be omitted and the display will replace it with a default value. For example, the default modifier for the ASPECT command is CURRENT, so the following two commands are identical:
  - ASPECT(CURRENT)=AUTO
  - ASPECT=AUTO
- '!' in the Operators column indicates that the command accepts the execute operator, which uses no operator symbol. The '!' symbol is not included in the command.

Setting	Command Code	Numeric Command	Operators	Modifiers	Operands	Available in Standby	Example	Notes
Allow Pop Up Messages	OSD.ALLOW. POPUP	1300	=?+-		0 = NO 1 = YES	No	OSD.ALLOW.POPUP=YES *OSD.ALLOW.POPUP:YES*	See Main -> OSD -> Allow Pop Up Messages
Aspect Ratio	ASPECT	500	=?+-		0 = AUTO 1 = 16X9 2 = 4X3 3 = FILL 4 = NATIVE 5 = LETTERBOX	No	ASPECT=FILL *ASPECT:FILL*	See Main -> Image-> Aspect Ratio
Audio Input	AUDIO.INPUT	1003	?		Source 1 = HDMI.1 2 = HDMI.2 5 = DP 15 = USBC	No	AUDIO.INPUT? AUDIO.INPUT:HDMI.1	Returns the input that is currently playing audio
Auto Power On	AUTO.ON	1407	=?+-		0 = OFF 1 = ON 2 = PREVIOUS.STATE	No	AUTO.ON=ON *AUTO.ON:ON*	See Main -> Power -> Auto Power On
Auto Scan Sources	SOURCE.SCAN	105	=?+-		0 = OFF 1 = ON 2 = FAILOVER	No	SOURCE.SCAN=OFF *SOURCE.SCAN:OFF*	See Main -> Source -> Auto Scan Sources
Backlight Intensity	BACKLIGHT. INTENSITY	1400	=?+-		1-100	No	BACKLIGHT.INTENSITY=75 *BACKLIGHT.INTENSITY:75*	See Main -> Backlight -> Backlight Intensity
Balance	AUDIO.BALANCE	1000	=?+-		0-100	No	AUDIO.BALANCE=50 *AUDIO.BALANCE:50*	See Main -> Audio -> Balance
Bass	AUDIO.BASS	1001	=?+-		0-100	No	AUDIO.BASS=50 *AUDIO.BASS:50*	See Main -> Audio -> Bass
Blank Screen Color	BLANK.COLOR	1306	=?+-		0 = RED 1 = GREEN 2 = BLUE 3 = CYAN 4 = MAGENTA 5 = YELLOW 6 = WHITE 7 = BLACK	No	BLANK.COLOR=BLUE *BLANK.COLOR:BLUE*	See Main -> OSD -> Blank Screen Color

Setting	Command Code	Numeric Command	Operators	Modifiers	Operands	Available in Standby	Example	Notes
Boot Source Input	BOOT.SOURCE.INPUT	5013	=?		Source 1 = HDMI.1 2 = HDMI.2 5 = DP 8 = MEDIA.PLAYER 11 = ANDROID 15 = USBC	No	BOOT.SOURCE.INPUT=HDMI.1 *BOOT.SOURCE.INPUT:HDMI.1*	See Main -> Source -> Boot On Source
Boot Source Last Input	BOOT.SOURCE.LAST	5012	=?		0 = OFF 1 = ON	No	BOOT.SOURCE.LAST=OFF *BOOT.SOURCE.LAST:OFF*	See Main -> Source -> Boot On Source -> Last Input
Boot Source Playlist	BOOT.SOURCE.PLAYLIST	5014	=?+-		0-6	No	BOOT.SOURCE.PLAYLIST=2 *BOOT.SOURCE.PLAYLIST:2*	See Main -> Source -> Playlist
Brightness	BRIGHTNESS	200	=?+-		0-100	No	BRIGHTNESS=55 *BRIGHTNESS:55*	See Main -> Image -> Brightness
Color Temperature	COLOR.TEMPERATURE	208	=?+-		0 = 3200K 1 = 5500K 2 = 6500K 3 = 7500K 4 = 9300K 5 = NATIVE	No	COLOR.TEMPERATURE=NATIVE *COLOR.TEMPERATURE:NATIVE*	See Main -> Image -> Color Temperature
Contrast	CONTRAST	201	=?+-		0-100	No	CONTRAST=55 *CONTRAST:55*	See Main -> Image -> Contrast
Default Gateway	IPV4.GATEWAY	1206	=?	0 = STATIC [None = Current (for reads only)] [None = STATIC (for writes only)]	String	No	[Read the current default gateway value] IPV4.GATEWAY? *IPV4.GATEWAY:"10.15.0.1"* [Write the default gateway for static IP] IPV4.GATEWAY(STATIC)="192.168.12.1" *IPV4.GATEWAY(STATIC):"192.168.12.1"*	See Main -> System -> Network Settings -> Default Gateway
DHCP	NETWORK.DHCP	1207	=?		0 = OFF 1 = ON	No	NETWORK.DHCP=ON *NETWORK.DHCP:ON*	See Main -> System -> Network Settings -> DHCP
Display Power	DISPLAY.POWER	1408	=?		0 = OFF 1 = ON	Yes	DISPLAY.POWER=ON *DISPLAY.POWER:ON*	See the IR remote control keys ON and OFF

Setting	Command Code	Numeric Command	Operators	Modifiers	Operands	Available in Standby	Example	Notes
DNS Server 1	NETWORK.DNS1	1212	=?	0 = STATIC [None = Current (for reads only)] [None = STATIC (for writes only)]	String	No	[Read the current DNS server 1 value] NETWORK.DNS1? *NETWORK.DNS1:"172.16.0.140"* [Write the DNS server 1 for static IP] NETWORK.DNS1(STATIC)="8.8.8.8" *NETWORK.DNS1(STATIC):"8.8.8.8"*	See Main -> System -> Network Settings -> DNS Server
DNS Server 2	NETWORK.DNS2	1213	=?	0 = STATIC [None = Current (for reads only)] [None = STATIC (for writes only)]	String	No	[Read the current DNS server 2 value] NETWORK.DNS2? *NETWORK.DNS2:"172.16.0.191"* [Write the DNS server 2 for static IP] NETWORK.DNS2(STATIC)="8.8.4.4" *NETWORK.DNS2(STATIC):"8.8.4.4"*	Selects a secondary DNS server
Enable Status LED	LED.ENABLE	1902	=?		0 = DISABLE 1 = ENABLE	No	LED.ENABLE=ENABLE *LED.ENABLE:ENABLE*	See Main -> System -> Enable Status LED
Factory Reset	RESET	2400	!	1 = FACTORY1		No	RESET(FACTORY1) *RESET(FACTORY1)@ACK*	See Main -> System -> Factory Reset Restores all settings to default-shipped state and starts up the Initial Configuration. **Note:** a power cycle is required to complete the reset process.
Gain	GAIN	209	=?+-	Color 0 = RED 1 = GREEN 2 = BLUE 255 = ALL [None = ALL]	For RED, GREEN and BLUE modifiers, one operand: 0-255 For ALL operand, three operands: Red Gain: 0-200 Green Gain: 0-200 Blue Gain: 0-200	No	[For red gain only] GAIN(RED)=100 *GAIN(RED):100* [For all three gains: Red Gain = 101, Green Gain = 102, Blue Gain = 103] GAIN=101 102 103 *GAIN=101 102 103*	See Main -> Image -> Color Control -> Red/Green/Blue Gain ALL modifier adjusts all three gains at the same time. The first modifier can only be missing if both modifiers are missing.

Setting	Command Code	Numeric Command	Operators	Modifiers	Operands	Available in Standby	Example	Notes
Gamma	GAMMA	1504	=?+-		6 = 1.8 8 = 1.9 10 = 2.0 12 = 2.1 14 = 2.2 16 = 2.3 18 = 2.4 20 = 2.5 22 = 2.6	No	GAMMA=2.5 *GAMMA:2.5*	See Main -> Image -> Gamma
HDMI CEC	CEC.ENABLE	2407	=?		0 = OFF 1 = ON	No	CEC.ENABLE=OFF *CEC.ENABLE:OFF*	See Main -> System -> Control Settings -> CEC Enable
HDMI CEC Power Off	CEC.STANDBY	5018	=?		0 = OFF 1 = ON	No	CEC.STANDBY=OFF *CEC.STANDBY:OFF*	See Main -> System -> Control Settings -> CEC Standby
Hide Sources	INPUT.ENABLE	112	=?	Mode 1: Source 1 = HDMI.1 2 = HDMI.2 5 = DP 8 = MEDIA.PLAYER 11 = ANDROID 15 = USBC	0 = NO 0 = FALSE 0 = DISABLE 0 = OFF 1 = YES 1 = TRUE 1 = ENABLE 1 = ON	No	\\ Hide Android Home input Send: INPUT.ENABLE(ANDROID)=OFF Receive: INPUT.ENABLE(ANDROID):OFF \\ Hide HDMI 1 input Send: INPUT.ENABLE(1)=DISABLE Receive: INPUT.ENABLE(1):DISABLE \\Show USB-C input Send: INPUT.ENABLE(USBC)=1 Receive: INPUT.ENABLE(USBC):1	See Main -> Source -> Hide Sources

Setting	Command Code	Numeric Command	Operators	Modifiers	Operands	Available in Standby	Example	Notes
Image Information	SIGNAL.INFO	300	?	Mod 1: Zone 0 = ZONE.1 1 = ZONE.2 2 = ZONE.3 3 = ZONE.4 255 = CURRENT [None = CURRENT] Mod 2: Parameter 0 = HACTIVE 1 = VACTIVE 2 = PCLK 3 = HTOTAL 4 = VTOTAL 5 = VREFRESH 6 = HREFRESH 7 = INTERLACE 8 = VFIELDRATE 9 = VREFRESH.X.100 10 = COLORDEPTH 11 = TMDS [None = ALL]	Unsigned Integer	No	SIGNAL.INFO(CURRENT, HACTIVE)? *SIGNAL.INFO(CURRENT, HACTIVE):1920*	See Main -> Information -> Image Information
IP Address	IPV4.ADDRESS	1204	=?	0 = STATIC [None = Current (for reads only)] [None = STATIC (for writes only)]	String	No	[Read the current IP address value] IPV4.ADDRESS? IPV4.ADDRESS:*"10.15.0.60"* [Write the IP address for static IP] IPV4.ADDRESS(STATIC)="192.168.12.12" *IPV4.ADDRESS(STATIC):"192.168.12.12"*	See Main -> System -> Network Settings -> IP Address
IR Remote Lock	IR.LOCK	1202	=?		0 = DISABLE 1 = ENABLE	No	IR.LOCK=ENABLE *IR.LOCK:ENABLE*	See Menu -> System -> Control Settings -> IR Remote Lock
Key	KEY	1200	=		[See separate table]	No	[To send the MENU key] KEY=MENU *KEY:MENU*	See separate table for key codes

Setting	Command Code	Numeric Command	Operators	Modifiers	Operands	Available in Standby	Example	Notes
Keypad Lock	KEY.LOCK	1201	=?		0 = DISABLE 1 = ENABLE	No	KEY.LOCK=ENABLE *KEY.LOCK:ENABLE*	See Menu -> System -> Control Settings -> Keypad Lock
LAN Lock	LAN.LOCK	5023	=?		0 = DISABLE 1 = ENABLE	No	LAN.LOCK=ENABLE *LAN.LOCK:ENABLE*	See Menu -> System -> Network Settings > Ethernet Toggle
Language	LANGUAGE	5020	=?		0 = ENGLISH 1 = FRENCH 2 = GERMAN 3 = SPANISH 4 = ITALIAN 5 = CHINESE. SIMPLIFIED 6 = CHINESE. TRADITIONAL 7 = PORTUGUESE 8 = JAPANESE	No	LANGUAGE=ENGLISH *LANGUAGE:ENGLISH*	See Main -> OSD -> Language
MAC Address	NETWORK.MAC	1203	?		String	No	NETWORK.MAC? *NETWORK.MAC="12:34:56:AB:CD:EF"*	See Main -> System -> Network Settings -> MAC Address
Model ID	MODEL.ID	2306	?		String	No	MODEL.ID? *MODEL.ID="21by9 81T"*	See Main -> Information -> System Information -> Model
Model Series	MODEL.SERIES	2316	?		String	No	MODEL.SERIES? *MODEL.SERIES:"21by9"*	Always returns "21by9" for this product. Other products using this protocol will have a different response for this command.
Mute	AUDIO.MUTE	1002	=?		0 = OFF 1 = ON	No	AUDIO.MUTE=ON *AUDIO.MUTE:ON*	See Main -> Audio -> Mute
Network Ping	NETWORK.PING	1211	=		String	No	NETWORK.PING="www.google.com" NETWORK.PING:"SUCCESS"	Attempts to ping the selected network address. Response string will either be "SUCCESS" or "FAILED".

Setting	Command Code	Numeric Command	Operators	Modifiers	Operands	Available in Standby	Example	Notes
NTP Server	NETWORK. NTPSERVER	1214	=?		String	No	NETWORK.NTPSERVER="pool.ntp.org" *NETWORK.NTPSERVER:"pool.ntp.org"*	Selects the NTP server to be used with the Auto Sync (Use Network Time) setting. Default = "0.pool.ntp.org"
Offset	OFFSET	210	=?+-	Color 0 = RED 1 = GREEN 2 = BLUE 255 = ALL [None = ALL]	For RED, GREEN and BLUE modifiers, one operand: 0-100 For ALL operand, three operands: Red Offset: 0-100 Green Offset: 0-100 Blue Offset: 0-100	No	[For red offset on the currrent input] OFFSET(RED)=50 *OFFSET(RED):50* [For all three offsets on the current input: Red Gain = 51, Green Gain = 52, Blue Gain = 53] OFFSET=51 52 53 *OFFSET=51 52 53*	See Main -> Image -> Red/Green/Blue Offset. ALL modifier adjusts all three offsets at the same time. The first modifier can only be missing if both modifiers are missing.
Operation Hours	UPTIME	1430	?		String: ##HRS##MINS	No	[For operation time of 9 minutes] UPTIME? *UPTIME:0HRS9MINS*	Returns the time display has been operating since the last reboot.
OSD Timeout	OSD.TIMEOUT	1304	=?+-		0 = OFF 10 = 10.SECONDS 30 = 30.SECONDS 60 = 60.SECONDS 120 = 120.SECONDS 240 = 240.SECONDS	No	OSD.TIMEOUT=60 *OSD.TIMEOUT:60*	See Main -> OSD -> OSD Timeout. Numeric value is in seconds and can be used to program any delay value.
OSD Transparency	OSD. TRANSPARENCY	1303	=?+-		0-4	No	OSD.TRANSPARENCY=4 *OSD.TRANSPARENCY:4*	See Main -> OSD -> OSD Transparency
Pixel Orbit	PIXEL.ORBIT	1906	=?		0 = OFF 1 = ON	No	PIXEL.ORBIT=ON *PIXEL.ORBIT:ON*	See Main -> System -> Pixel Orbit
Power Down Mode	POWER.DOWN. MODE	1422	=?		0 = STANDBY.MODE 1 = NETWORKED. STANDBY.MODE 2 = FAST.START	No	POWER.DOWN.MODE=STANDBY. MODE *POWER.DOWN.MODE:STANDBY. MODE*	See Main -> Power -> Power Down Mode

Setting	Command Code	Numeric Command	Operators	Modifiers	Operands	Available in Standby	Example	Notes
Power Saving Delay	POWER.SAVE.DELAY	1406	=?+-		60 = 1.MINUTE 300 = 5.MINUTES 900 = 15.MINUTES 1800 = 30.MINUTES 3600 = 60.MINUTES	No	POWER.SAVE.DELAY=5.MINUTES *POWER.SAVE.DELAY:5.MINUTES*	See Main -> Power -> Power Saving Delay.
Power Saving Mode	POWER.SAVE.MODE	1405	=?		0 = DISABLE 1 = POWER.DOWN 2 = WAKE.ON.SIGNAL	No	POWER.SAVE.MODE=DISABLE *POWER.SAVE.MODE:DISABLE*	See Main -> Power -> Power Saving Mode
Preset Count	PRESET.COUNT	2006	?		Unsigned Integer	No	PRESET.COUNT? *PRESET.COUNT:6*	Displays the number of presets that are not empty
Preset Delete	PRESET.DELETE	2000	!	Preset Number 1-10		No	[Save to Preset 4] PRESET.DELETE(4) *PRESET.DELETE(4)@ACK*	See Main -> Presets -> Delete
Preset Full	PRESET.FULL	2004	?	Preset Number 1-10	0 = NO 1 = YES	No	PRESET.FULL(4)? *PRESET.FULL(4)=YES*	Indicates whether data has been saved in the selected preset
Preset List	PRESET.LIST	2008	?		A list of unsigned integers	No	PRESET.LIST? *PRESET.LIST:1 2 3 5 7*	Provides a list of all filled presets.
Preset Max	PRESET.MAX	2007	?		Unsigned Integer	No	PRESET.MAX? *PRESET.MAX:34*	Displays the number of the highest saved preset
Preset Recall	PRESET.RECALL	2001	!	Preset Number 1-10		No	[Save to Preset 4] PRESET.RECALL(4) *PRESET.RECALL(4)@ACK*	See Main -> Presets -> Recall
Preset Save	PRESET.SAVE	2002	!	Preset Number 1-10		No	[Save to Preset 4] PRESET.SAVE(4) *PRESET.SAVE(4)@ACK*	See Main -> Presets -> Save
Reboot	SYSTEM.REBOOT	2402	!			No	SYSTEM.REBOOT *SYSTEM.REBOOT@ACK*	Forces the system to restart
Revert Image Settings	REVERT.IMAGE.SETTINGS	215	!			No	REVERT.IMAGE.SETTINGS *REVERT.IMAGE.SETTINGS@ACK*	See Main -> Image -> Image Settings Reset
RS232 Lock	RS232.LOCK	5022	=?		0 = DISABLE 1 = ENABLE	No	RS232.LOCK=ENABLE *RS232.LOCK:ENABLE*	See Menu -> System -> Control Settigns -> RS232 Lock

Setting	Command Code	Numeric Command	Operators	Modifiers	Operands	Available in Standby	Example	Notes
Serial Number	SERIAL.NUMBER	2303	?		String	No	SERIAL.NUMBER? SERIAL.NUMBER="ABCD1234"	See Main -> Information -> System Information -> Serial Number
Sharpness	SHARPNESS	204	=?+-		0-4	No	SHARPNESS=4 *SHARPNESS:4*	See Main -> Image -> Sharpness
Source Message	SOURCE. MESSAGE	111	?		String	No	[When locked to 4K/60Hz] SOURCE.MESSAGE? *SOURCE.MESSAGE:"3840x2160 @ 60Hz"* [When no signal is present] SOURCE.MESSAGE? *SOURCE.MESSAGE:"No Signal"*	Returns a string with the input resolution and frame rate for the current input. If no signal is detected in that zone, the string will read "Searching" or "No Signal".
Source Select	SOURCE.SELECT	101	=?+-		Source 1 = HDMI.1 2 = HDMI.2 5 = DP 8 = MEDIA.PLAYER 11 = ANDROID 15 = USBC	No	SOURCE.SELECT=HDMI.2 *SOURCE.SELECT:HDMI.2*	See Main -> Source -> Input List
Subnet Mask	IPV4.NETMASK	1205	=?	0 = STATIC [None = Current (for reads only)] [None = STATIC (for writes only)]	String	No	[Read the current subnet mask value] IPV4.NETMASK? *IPV4.NETMASK:"255.255.254.0"* [Write the subnet mask for static IP] IPV4.NETMASK(STATIC)="255.255.255.0" *IPV4.NETMASK(STATIC):"255.255.255.0"*	See Main -> System -> Network Settings -> Subnet Mask

Setting	Command Code	Numeric Command	Operators	Modifiers	Operands	Available in Standby	Example	Notes
System State	SYSTEM.STATE	2310	?		0 = STANDBY 2 = ON 4 = BACKLIGHT.OFF	No	SYSTEM.STATE? *SYSTEM.STATE:STANDBY*	Indicates the current state of the system: - STANDBY: The system is in its lowest power mode. Not all functions are available. - ON: The system is on with the backlight on. - BACKLIGHT.OFF: The system is on with the backlight off.
Test Pattern	PATTERN	1307	!	Pattern 0 = NONE 1 = BLACK 2 = WHITE 3 = GRAY 4 = RED 5 = GREEN 6 = BLUE 7 = CYAN 8 = MAGENTA 9 = YELLOW 11 = GRAYBAR 12 = REDBAR 13 = GREENBAR 14 = BLUEBAR		No	PATTERN(GRAYBAR) *PATTERN(GRAYBAR)@ACK*	See Main -> System -> Test Pattern
Time	TIME	1100	=?	0 = YEAR 1 = MONTH 2 = DATE 3 = HOUR 4 = MINUTE [None = ALL]	Unsigned int	No	[Set the month to March] TIME(MONTH)=3 *TIME(MONTH):3*	See Main -> System -> Date and Time
Time - Day	TIME.DAY	1101	?		0 = MON 1 = TUE 2 = WED 3 = THU 4 = FRI 5 = SAT 6 = SUN	No	TIME.DAY? *TIME.DAY:TUE*	See Main -> System -> Date and Time

Setting	Command Code	Numeric Command	Operators	Modifiers	Operands	Available in Standby	Example	Notes
Time - Month	TIME.MONTH	1102	=?		1 = JANUARY 2 = FEBRUARY 3 = MARCH 4 = APRIL 5 = MAY 6 = JUNE 7 = JULY 8 = AUGUST 9 = SEPTEMBER 10 = OCTOBER 11 = NOVEMBER 12 = DECEMBER	No	TIME.MONTH=MARCH *TIME.MONTH:MARCH*	See Main -> System -> Date and Time
Time - String	TIME.STRING	1103	?		String	No	TIME.STRING? *TIME.STRING:"2015-09-01 13:21"*	See Main -> System -> Date and Time
Tint	TINT	203	=?+-		0-100	No	TINT=55 *TINT:55*	See Main -> Image -> Tint
Treble	AUDIO.TREBLE	1005	=?+-		-4-4	No	AUDIO.TREBLE=50 *AUDIO.TREBLE:50*	See Main -> Audio -> Treble
USB-A Lock	USBA.LOCK	5024	=?		0 = DISABLE 1 = ENABLE	No	USBA.LOCK=ENABLE *USBA.LOCK:ENABLE*	See Menu -> System -> USB Settings -> USB-A Lock
Use Network Time	NETWORK.NTP	1209	=?		0 = OFF 1 = ON	No	NETWORK.NTP=ON *NETWORK.NTP:ON*	See Main -> System -> Date and Time -> Automatic date and time
Version Info	BUILD.INFO	2302	?		String	No	BUILD.INFO? *BUILD.INFO:"1.0.600"*	See Main -> Information -> System Information
Volume	AUDIO.VOLUME	1006	=?+-		0-100	No	AUDIO.VOLUME=50 *AUDIO.VOLUME:50*	See Main -> Audio -> Volume

6.1 Key

Value	Name	Equivalent Remote Control Button	Description
0	UP	UP	Navigate up
1	DOWN	DOWN	Navigate down
2	MENU	MENU	Opens the menu
3	SOURCE	SOURCE	Toggles the source on the current zone
5	VOLUME.PLUS	VOL +	Volume increase
6	VOLUME.MINUS	VOL -	Volume decrease
9	EXIT	[None]	Exits the menu
12	LEFT	LEFT	Navigate left
13	ENTER	ENTER	Selects the current menu item
14	PREV	PREV	Returns to the previous menu
15	RIGHT	RIGHT	Navigate right
17	KEY.1	[None]	Number button 1
18	KEY.2	[None]	Number button 2
19	KEY.3	[None]	Number button 3
20	KEY.4	[None]	Number button 4
21	KEY.5	[None]	Number button 5
22	KEY.6	[None]	Number button 6
23	KEY.7	[None]	Number button 7
24	KEY.8	[None]	Number button 8
25	KEY.9	[None]	Number button 9
26	MUTE	MUTE	Audio mute
32	KEY.0	[None]	Number button 0
253	ANDROID	Android Home	Selects Android Home input
254	USBC	[None]	Selects the USB-C input
259	MENU.PREV	[None]	Returns to the previous menu
260	TOP	[None]	Not used
261	PRESETS	[None]	Opens the Presets menu
262	PRESET1	[None]	Applies Preset 1
263	PRESET2	[None]	Applies Preset 2
264	PRESET3	[None]	Applies Preset 3
265	PRESET4	[None]	Applies Preset 4

Value	Name	Equivalent Remote Control Button	Description
272	HDMI1	[None]	Selects the HDMI 1 input
273	HDMI2	[None]	Selects the HDMI 2 input
276	DISPLAY.PORT	[None]	Selects the DP input
278	VGA	[None]	Selects the USB-C input
282	MISC	[None]	Opens the Image Information menu

7. Sending Serial Commands over the Network

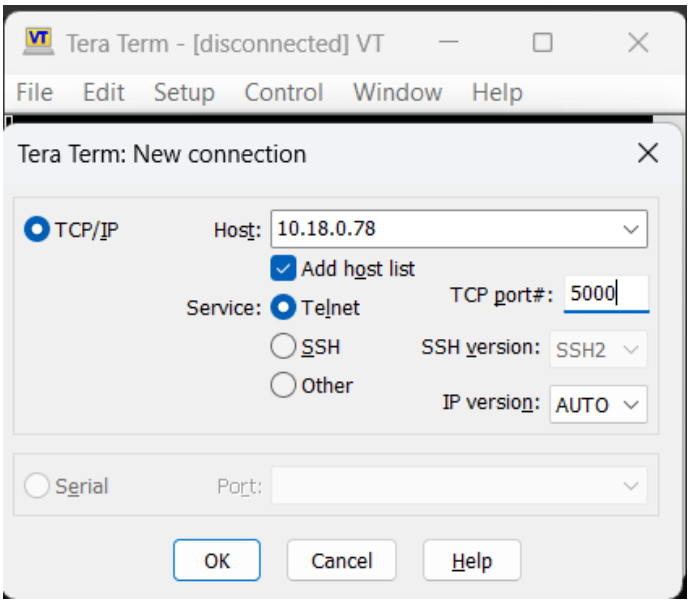
The same serial command set used on the RS232 serial connection can be used over the network. It is convenient for IP control applications and can be tested with a TCP terminal program such as Tera Term. IP control is disabled by default but can be enabled by opening the OSD and navigating to Settings > System > Control Settings.

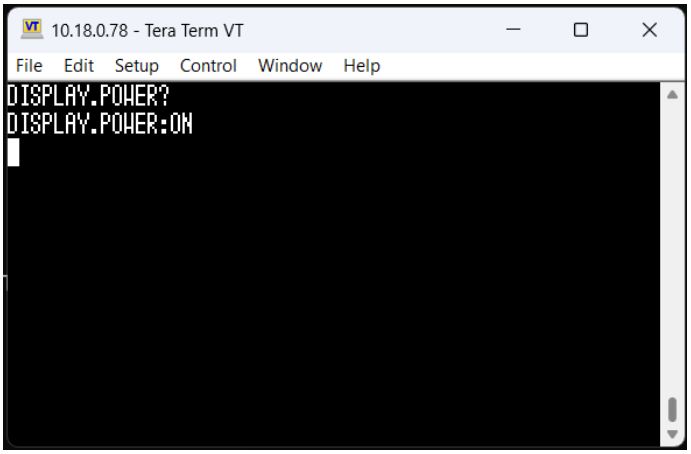
The following connections are available once enabled:

- TCP port 5000
- SSH port 2222

Notice the following in the TCP example below using Tera Term:

- IP address is 10.18.0.78
- Port is 5000
- Service is set to “Other” to indicate that TCP is being used without Telnet or SSH





7.1 Sending Serial Commands Via SSH

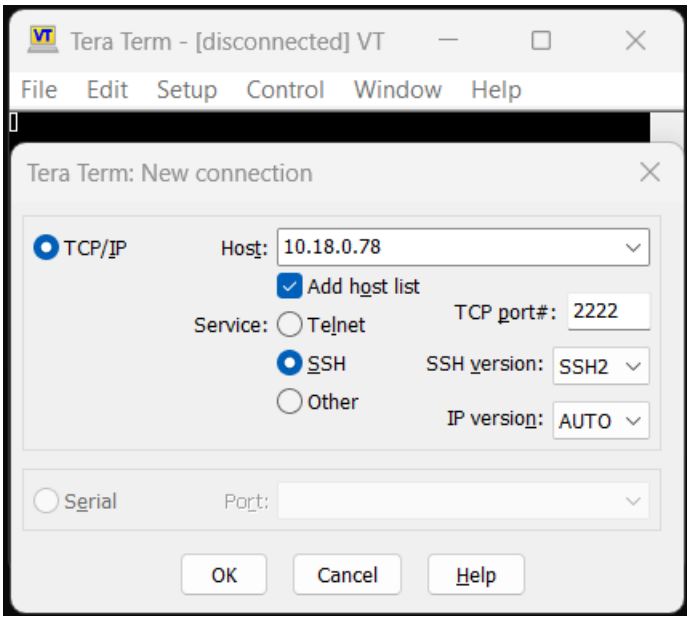
To use serial commands over SSH, a username and password must be set before SSH service can be enabled. On the display, open the OSD and navigate to Settings > System > Control Settings > SSH.

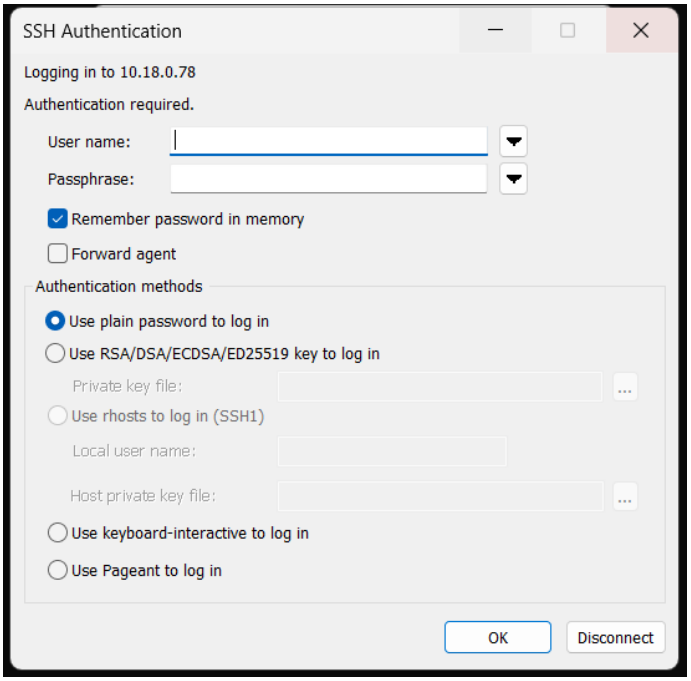
Note: Factory Reset will erase the SSH key. A new SSH key will be generated when starting SSH services.

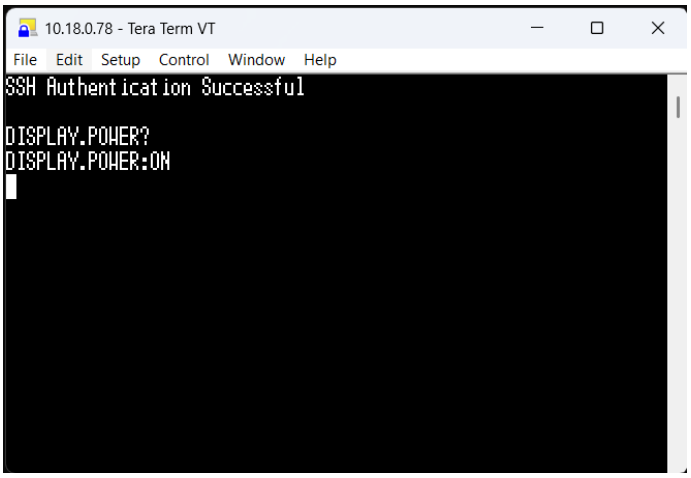
Notice the following in the SSH example below using Tera Term:

- IP address is 10.18.0.78
- Port is 2222
- Service is set to SSH
- SSH version is set to SSH2

If credentials are entered correctly, the terminal will give a notification that SSH authentication was successful.




SSH Authentication
Logging in to 10.18.0.78
Authentication required.
User name:
Passphrase:
Remember password in memory
Forward agent
Authentication methods
Use plain password to log in
Use RSA/DSA/ECDSA/ED25519 key to log in
Private key file:
Use rhosts to log in (SSH1)
Local user name:
Host private key file:
Use keyboard-interactive to log in
Use Pageant to log in
OK
Disconnect


10.18.0.78 - Tera Term VT
File Edit Setup Control Window Help
SSH Authentication Successful
DISPLAY.POWER?
DISPLAY.POWER:ON