RS-232 Control Guide for Digital View LCD Controller Boards

1. Scope and Purpose

Digital View LCD controller boards include an RS-232 control interface enabling external systems to configure and control key operational parameters such as power, backlight, input source, picture settings, and status reporting.

This guide focuses on practical usage and implementation patterns. It does not repeat model-specific command tables; those are always defined in the corresponding controller manual. For additional information please contact us directly.

2. RS-232 Interface Overview

2.1 Physical Interface

Digital View controllers typically expose RS-232 on a low-voltage header. Common pins:

- TXD – controller transmit
- RXD – controller receive
- GND – ground
- VCC – auxiliary +5 V (usage depends on model)

Refer to each controller manual for pin-out details.

2.2 Electrical and Signaling

- Host-side: standard RS-232 levels.
- Board-side: logic-level interface via onboard level shifters.
- Do not connect TTL-level UART directly without following the reference design.

2.3 Serial Settings

Serial parameters vary by model; always use the values specified in the relevant controller manual.

3. Getting Connected

3.1 Typical PC Connection

Required:

- Controller board with RS-232 enabled
- RS-232 cable (JST XHP-6/Molex 51021-0600 to DB9)
- PC and/or USB–RS232 adapter

Steps:

1. Power off before connecting cables.
2. Connect between the RS-232 connector on the controller and PC via an RS-232 cable.
3. Power on the controller.
4. Open a RS-232 program and set the baud rate/format per the manual.
5. Test with a simple query command (e.g ‘0xf7’ to open the OSD menu displayed on screen).

3.2 Embedded System Connection

- Use MCU UART + RS-232 level shifter.
- Match serial settings exactly.
- Implement send/receive routines with timeout and retry.

4. Command Format

Digital View RS-232 commands generally follow:

- Command byte (e.g., 0x81 brightness control, 0xE1 backlight on/off control, 0xC8 soft power on/off)
- Parameters encoded as ASCII hex or characters (‘0’, ‘1’, ‘+’, ‘-’, ‘?’)

4.1 Common Command Patterns

Examples (patterns only; values model-specific):

- Brightness control: 0x81 + value, +, -, or ?
- Backlight on/off control: 0xE1 '1' or '0'
- Power: 0xC8 '1' or '0'
- Input select: 0x98 + input source command

4.2 Acknowledge Handling

Most commands return success/failure or data. Software should:

- Read reply
- Validate format
- Retry or log on error

4.3 Command Length Constraints

Typical limits:

- RS-232 port: up to ~380 bytes (~261 bytes) per command
- Ethernet port: ~50 bytes

5. RS-232 via Ethernet

Certain controllers expose RS-232 commands over TCP/IP.

Process:

1. Enable network communication.
2. Configure IP (DHCP or static).
3. Connect over TCP to specified port.
4. Send the same byte sequences as over RS-232.

6. Practical Use-Cases

6.1 System-Controlled Power and Backlight

Example boot sequence:

1. Soft power on
2. Backlight on
3. Set backlight/brightness

Shutdown:

1. Dim
2. Backlight off
3. Soft power off

6.2 Automated Input Switching

- Map inputs to codes from model manual
- Switch using 0x98
- Optional: query input status to implement fallbacks

6.3 Central Brightness Management

- Set brightness directly, or use min/max constraints
- Combine with + / - relative adjustments
- Use ambient sensor input if supported

6.4 Monitoring and Diagnostics

Useful query commands (model-specific):

- Resolution
- Sync frequencies
- BIOS version
- Runtime counters (e.g., backlight hours)

6.5 Remote Control over LAN

- Enable communication over Ethernet
- Discover IP via network tools
- Use TCP connection to send RS-232 commands

6.6 AI Ready

- RS-232 commands can be used with AI systems, see references to AI Ready on the Digital View website.

7. Software Implementation Patterns

7.1 PC Application Pattern

- Open COM port once
- Send command → read acknowledge
- Implement retries and logging

7.2 Microcontroller State Machine

States:

1. Idle
2. Send command
3. Wait for acknowledge
4. Error handling

8. Best Practices

- Controller manual is authoritative
- Use short, atomic command sequences
- Handle local OSD interaction gracefully or lock OSD if needed
- Test manually before automating
- Maintain logs for field deployments

9. Locating Model-Specific RS-232 Details

The RS-232 appendix of each controller manual includes:

- Pin-out and electrical specifications
- Baud rate and serial format
- Full command table and parameters
- Acknowledge formats

10. Contacting Digital View

For the most up to date and local contact information please visit our website at:

www.digitalview.com