Proculus UnicView AD LCMs Connection Guide 1.3

Proculus Technologies Limited

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PATENT PENDING

Contents

1 Introduction

This section contains important information on how to read this document.

1.1 Document Overview

This document provides a general overview of the hardware connections on UnicView AD family of Proculus Technologies LCMs.

1.2 Conventions Used on this Document

This section presents the textual conventions and notations used in this document. Knowing these conventions will make it easier to read this document.

1.2.1 Glossary

LCM	Liquid Crystal Module
FFC	Flexible Flat Cable
SMD	Surface Mount Device
UART	Universal Asynchronous Receiver/Transmitter
USB	Universal Serial Bus
PC	Personal Computer
MCU	Microcontroller Unit
RTC	Real-Time Clock

1.2.2 Information, Caution and Warning Statements

This document may contain Information, Caution and Warning statements.

	Info	This is an Information statement. It draws attention to certain key aspects about the current topic.

	Caution	This is a Caution statement. It describes a situation that could potentially damage your software, equipment or cause data loss.

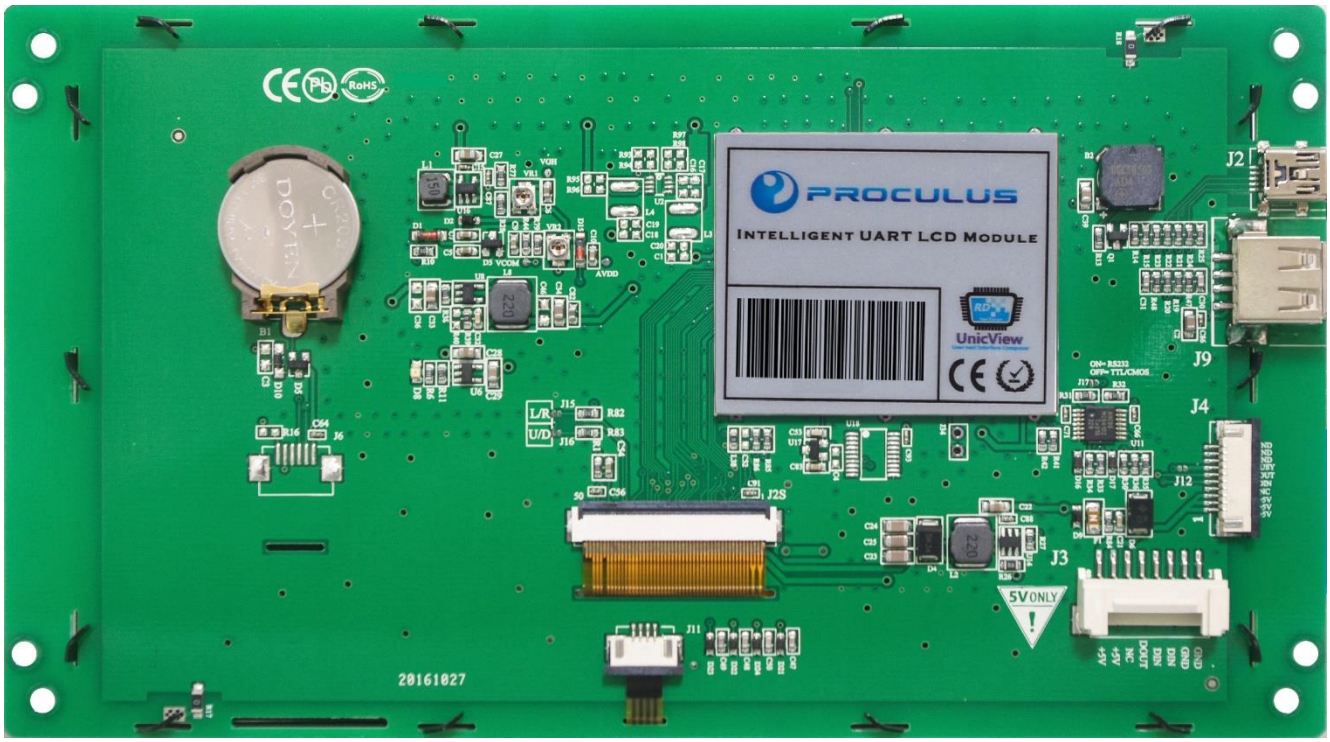
	Warning	This is a Warning statement. It describes a situation that could potentially cause harm or injury to you.

The information in Caution and Warning statements is provided for your protection. Read each Caution and Warning statement carefully.

2 LCM Board Overview

While components on the LCM's control board vary between models, the typical UnicView AD LCM has, at least:

- Coin Cell Battery Holder.
- One or two Serial port connectors.
- Two USB ports (or composite connector to Adaptor Board).
- Internal RTC.
- Touch panel connector.



The Serial and USB ports are the interface used to configure and communicate with the LCM's processing core.

3 USB Ports

There are two **USB ports** on a typical Proculus UnicView AD LCM. USB ports are commonly used in **interface development** and **production line** environments.

⚠	Caution	Use only standard USB cables and voltage levels (**5 volts**).

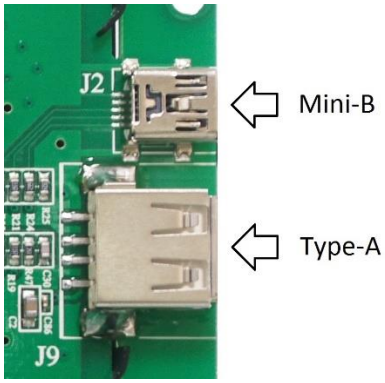
3.1 Connector Types

USB Mini-B

- Project download via USB cable connected to a host PC running UnicView AD software.
- Doesn't supply power to the LCM.

USB Type-A

- Firmware upgrading and project download via USB Flash drives.
- Doesn't supply power to the LCM.



ℹ	Info	When using **USB Mini-B** for project download, **you must provide power supply** to the LCM from one of the **Serial port connectors**.

ℹ	Info	When using **USB Type-A** for project download or firmware upgrade, **you must provide power supply** to the LCM from one of the **Serial port connectors**.

⚠	Caution	Some **lower-quality USB cables** present non-standard high electrical resistance, which may prevent them from functioning correctly. If the USB cable connection isn't working, consider replacing the cable with a **higher-quality** one.

Composite USB Connector

Instead of the two USB connectors, the board may have a single connector that combines USB Type-A and USB Mini-B. This connector is used in conjunction with the Composite USB Adaptor Board.

4 Serial Ports

The **Serial port connectors** provide power supply to the LCM and serial communication to an external MCU or PC. There's always at least one Serial connector present. Most LCM models have **two connectors**, which are connected in **parallel** to each other.

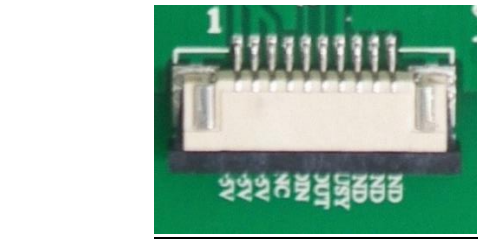
Serial ports are commonly used in **software development** and **final product** environments.

⚠	Caution	Always double-check the LCM's **supply voltage range** before turning it on.

4.1 Connector and Cable Types

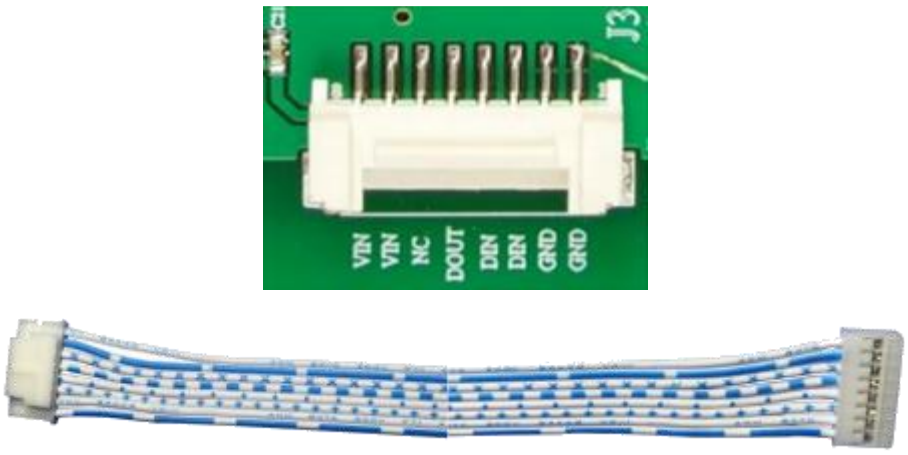
FFC Cable / Connector

- 5 volts LCMs only.
- TTL/CMOS or RS232 (selectable by jumper).



Ribbon Cable / Connector

- All supply voltage ranges.
- TTL/CMOS or RS232 (selectable by jumper).



⚠	Caution	Only one Serial port connector should be used at any given time.

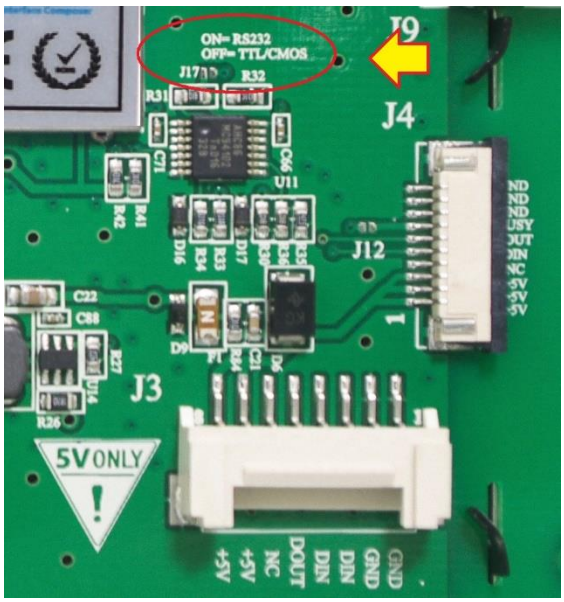
⚠	Caution	All information provided in this guide are for **reference only**, and cover the typical LCM models. **Always verify** your exact model's **specifications** before making electrical connections.

4.2 Serial Communication Voltage Levels

Usually, the Serial communication voltage level is fixed at TTL/CMOS level. Certain LCM models offer selectable Serial communication voltage levels:

- TTL/CMOS (from 0-3.3V to 0-5V).
- RS232.

If a specific model offers selectable Serial communication levels, this selection is made by shorting the appropriate solder jumpers on the LCM board.



5 Adaptor Boards

Adaptor boards provide serial communication capabilities between the LCM and a computer, using one of the available Serial port connectors. They may also provide additional features and/or connectivity abilities.

5.1 Adaptor Board Types

FFC Adaptor Board

- Connected to the PC via USB Mini-B cable.
- Powered by the USB cable.
- 5 volts LCMs only.
- TTL/CMOS only.

DLB06

Ribbon Adaptor Board

- Connected to the PC via USB Mini-B cable.
- Powered by J4 Power Jack (5-24 volts) or USB Mini-B cable (5 volts) (selectable by jumper).
- All supply voltage ranges.
- TTL/CMOS or RS232 (selectable by jumper).

DLB07

Composite USB Adaptor Board

- Should be used the same as the USB ports described in section 3.1.

DLB08

6 Troubleshooting

If you experience issues that may be related to connection problems, please refer to the following table for possible solutions.

Issue	Possible Causes	Fixes
LCM won't turn on.	Insufficient supply voltage or current.	Verify if your power supply meets the LCM's voltage and current nominal ratings. When using USB cables and adaptor boards, make sure the cable's series resistance is low enough (use high-quality cables). When powering from on-board power circuits that use linear voltage regulators, the regulator may shut-down due to overheating. Provide adequate heat-sinking or use a higher-rated regulator.
	Blown reverse-polarity protection diode or overcurrent fuse, due to incorrect power supply or power surges. Overvoltage may permanently damage the LCM.	A blown diode overheats quickly. A blown fuse causes no current to be drawn by the LCM. In both cases, contact our technical support for further investigation.
	Poor connector or cable contact.	Visually inspect and/or gently shake the supply connector and cable, to detect possible broken solder joints or wires. If a broken solder joint is detected, contact our technical support. If broken cable is detected, replace the cable.
LCM keeps resetting (blinking or flickering).	Insufficient supply voltage or current.	Verify if your power supply meets the LCM's voltage and current nominal ratings. When using USB cables and adaptor boards, make sure the cable's series resistance is low enough (use high-quality cables). When powering from on-board power circuits that use linear voltage regulators, the regulator may shut-down due to overheating. Provide adequate heat-sinking or use a higher-rated regulator.
	Poor connector or cable contact.	Visually inspect and/or gently shake the supply connector and cable, to detect possible broken solder joints or wires. If a broken solder joint is detected, contact our technical support. If broken cable is detected, replace the cable.
Serial Port communication completely failing.	Rx and Tx signals reversed.	Verify your connections and make sure the Rx and Tx (also called DIN and DOUT) are correctly connected. These are the proper connections: LCM Tx -> MCU Rx LCM Rx <- MCU Tx
	Ground (GND) signal not connected.	Verify your connections and make sure that the LCM's GND signal is connected to the LCM's GND signal.
Touch-panel not responding.	Touch-panel cable not connected or ruptured.	Verify that the touch-panel's cable is in good conditions and properly connected to the board.
RTC time/date settings resetting after power-down.	Dead or unconnected battery.	Verify that the battery used is in good conditions and charged. Also, make sure the battery is properly connected to the battery holder.