Next Generation Intelligent LCD Panels

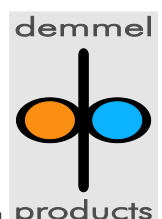DPA-PCBRS232-2x Specification

Version 1.1
Document Date: March 22, 2013

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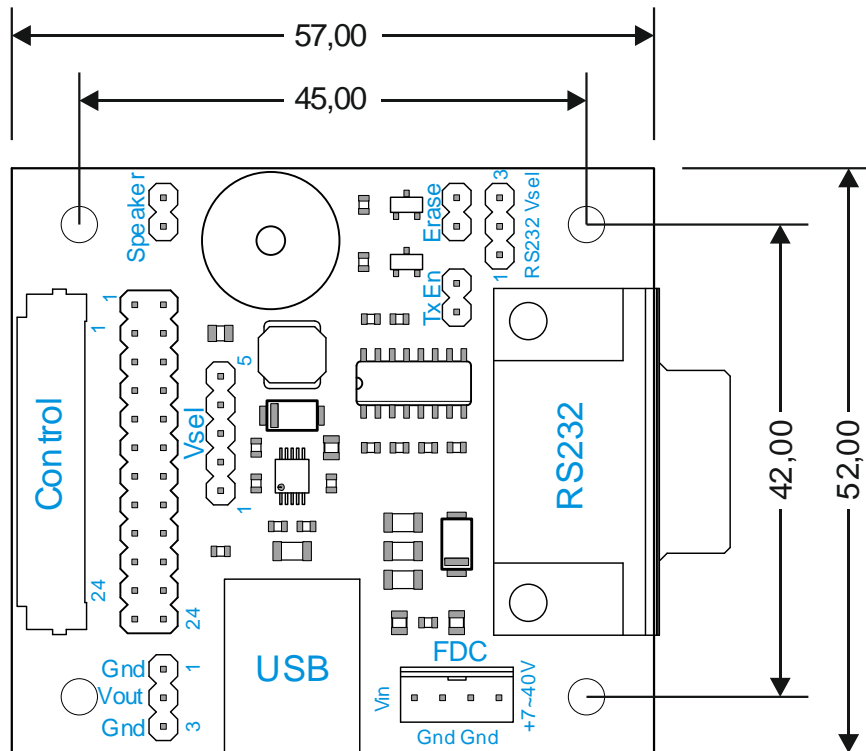
General Description

DPA-PCBRS232-2x is an interface board for connecting a color iLCD panel with 20/24-pin FFC cable to the USB port or RS232 port. Input voltage can be 5V or 7 – 40V with an integrated switcher. A mini-speaker for signalling is included.

Connectors and Jumpers

Control Connector (Control)

The DPA-PCBRS232-2x is connected with the iLCD panel via the corresponding FFC cable. Please note, that the 20/24-pin FFC cable enclosed with the DPA-PCBRS232-2x must be inserted with the contact surface upwards as the FFC connector is a top-contact model. The same is true for the FFC connector on the iLCD panel itself. As the board is intended to be used with the parts showing upwards when it is connected with the iLCD panel (display surface showing upwards as well), the FFC cable has the contact surface on the opposite sides on the two ends to accomplish a correct connection between DPA-PCBRS232-2x board and iLCD panel.

The **DPA-PCBRS232-20** has a 20pin connector and is used for the following displays: DPP-CTS2432, DPP-CTS2440, DPP-CxP3224-2, DPP-CxP3224A, DPP-Cx4827, DPP-Cx3224-2, DPP-Cx6448

The **DPA-PCBRS232-24** has a 24pin connector and is used for the following displays: DPP-Cx8048, DPP-Cx1060, DPP-Cx1060A

Speaker-On Jumper (Speaker)

When a jumper is connected to this connector, the Relay 0 output is connected to the DPA-PCBRS232-2x board's speaker via a resistor.

Transmit Enable Jumper (TxEn)

When a jumper is connected to this connector, the RS232 transmission to the iLCD panel is enabled.

Erase Jumper (Erase)

When a jumper is connected to this connector, the iLCD panel erases all user data from the Flash memory at boot time. A corresponding message is shown on the LCD. Please remove the jumper after startup to avoid consecutive erasing of Flash contents at the next startup.

Serial Port Connector (RS232)

This 9-pin Sub-D female connector allows the driving application or PC to send and receive data from and to the iLCD module via standard RS232 signals. The pinning matches the standard layout of a PC's serial port except of the optional to use "RS232 Power In" / Pin 1. The pins are connected with the iLCD's serial port 1.

Pin On Sub-D	Direction	Description
1	-	RS232 Power In
6	-	Not connected
2	Out	RX - data sent from the iLCD module to the controlling application / PC
7	In	RTS – not in use, but connected to the iLCD's RS232 driver
3	In	TX – data sent from the controlling application / PC to the iLCD module
8 [1]	Out	CTS – iLCD's output for hardware flow control
4	-	Not connected
9	-	Not connected
5	-	Signal ground

Note:
1. See iLCD's command description about why you should connect this pin and when it is not necessary to use hardware flow control.

USB Connector (USB)

This connector enables you to connect iLCD's USB port to a USB port on a PC via a standard USB cable.

Pin	Direction	Description
1	-	Vcc +5V
2	In/Out	USB-
3	In/Out	USB+
4	-	Ground

Power Supply Configuration Connector (Vsel)

Only one jumper is allowed to be set to select the power source for the iLCD module as follows:

Jumper Location		Description
Pin	Pin	
1	2	Enables the power supply connector's pin "Vin" and enables "RS232 Power In" (pin 1 of RS232 connector) if "RS232 Vsel" jumper location is pin 2 and 3
2	3	Enables supplying the iLCD module via the USB port
3	4	Enables supplying the iLCD module via the USB port
4	5	Enables supplying the iLCD module via the switcher

Please note, that the DPP-Cx8048, DPP-Cx1060 and DPP-Cx1060A iLCD panels can not be supplied via the USB port, as the USB port allows to draw a maximum of 500 mA only, which is exceeded by the DPP-Cx8048, DPP-Cx1060 and DPP-Cx1060 iLCD panels. **Trying to draw more than 500 mA from a USB port can damage your PC under worst circumstances!**

When the Jumper is set to 4 and 5 the iLCD is powered with the onboard switcher. The output of the switcher is 5V. **Using it with an iLCD panel with 3/3.3V will damage the iLCD panel!**

RS232 Power Configuration Connector (RS232 Vsel)

Only one jumper is allowed to be set to select the power source for the iLCD module as follows:

Jumper Location		Description
Pin	Pin	
1	2	Enables supplying the iLCD module via the switcher with RS232 Power In
2	3	Enables supplying the iLCD module directly with the RS232 Power In, if Vsel is set to 1 and 2

Power Supply Connector (FDC)

This connector applies the power supply to the iLCD module if it is not supplied via USB or via the RS232 port ("Power In"). The connector used for this connection is the same as the power supply connector for a 3 ½" floppy disk drive, and has the same pinning.

Please note, that all iLCD panels mentioned in this document are available in a 3/3.3V variant optionally as well. If you connect an iLCD panel with 3/3.3V supply to the DPA-PCBRS232-2x, you **must** use 3/3.3V instead of the 5V supply, otherwise the iLCD panel would be damaged! Supplying the board plus the iLCD panel via USB port is not possible in this case!

| Pin	Description
+7~40V	Connected to the switcher, can be +7 ~ +40V
GND	Ground
GND	Ground
Vin	V_{CC} (+5V / +3/3.3V)

Power Out Connector (Vout)

Can power the iLCDs DPP-Cx6448 (V2 and newer), DPP-Cx8048, DPP-Cx1060 and DPP-Cx1060A with the 3 pin Power connector.

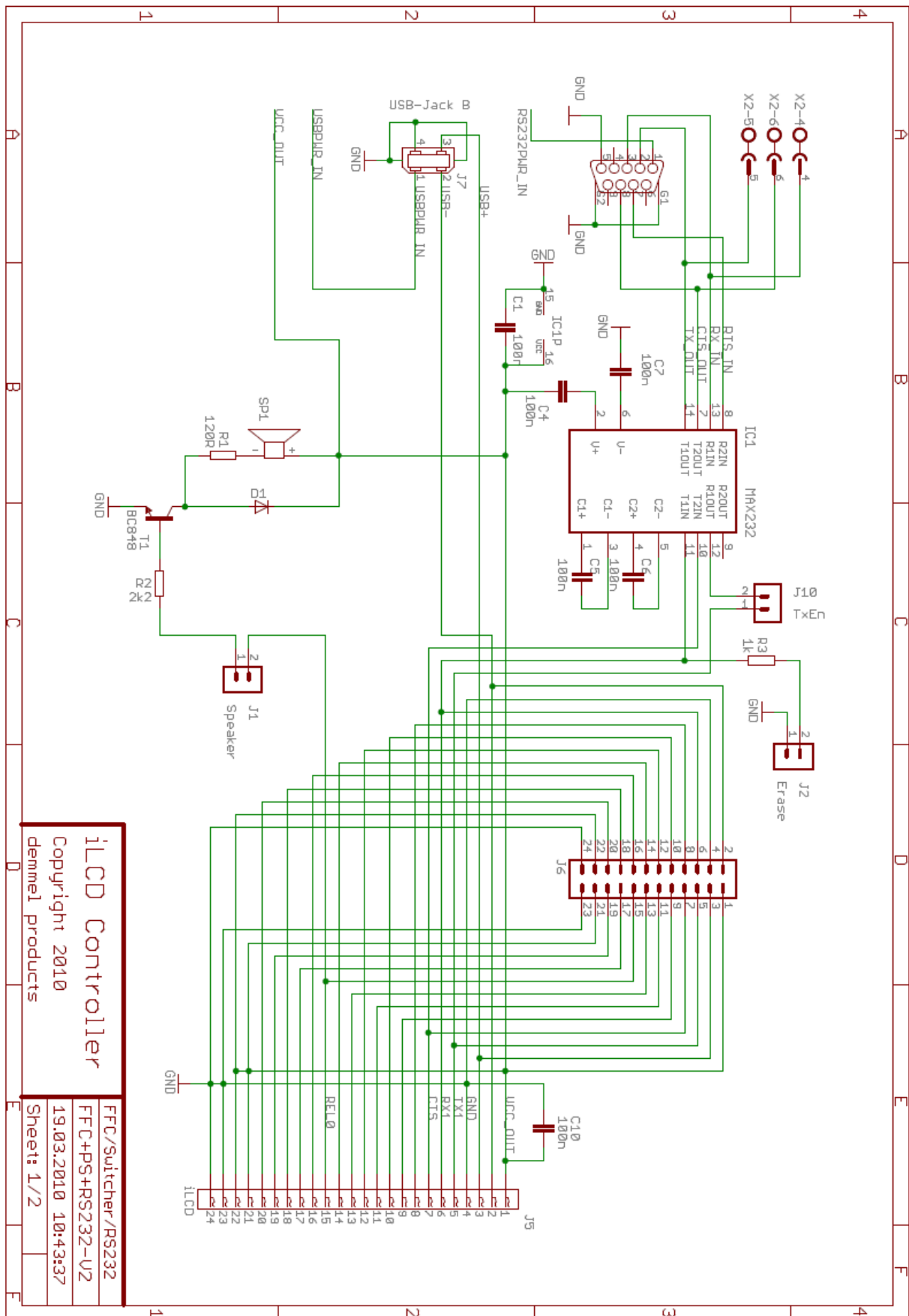| Pin #	Pin Name	Direction	Primary Function Description
1	GND	-	Ground pin
2	VCC	-	V_{out} (+5V / +3/3.3V)
3	GND	-	Ground pin

Power Supply

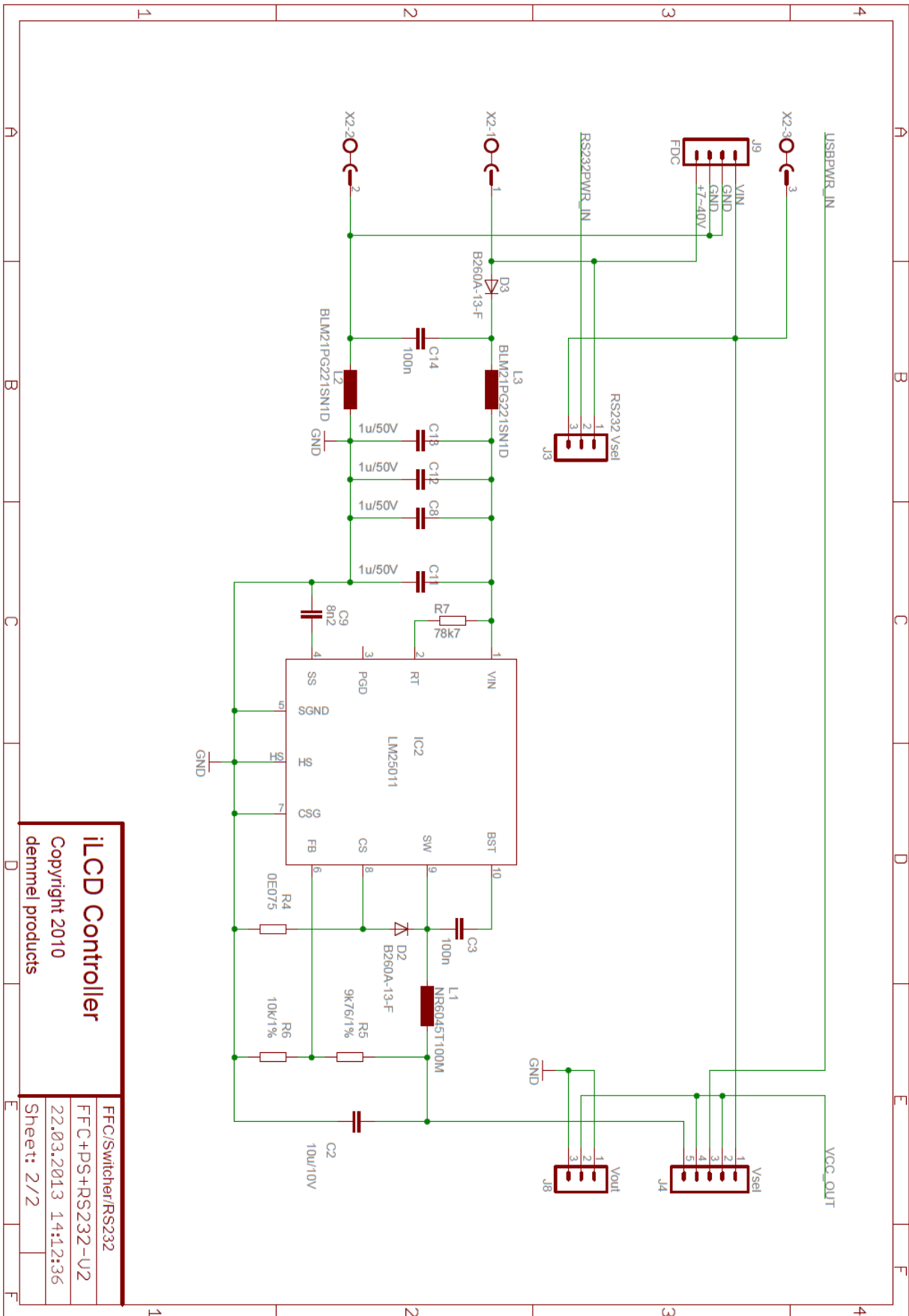In the following block diagram shows the different ways how you can supply the display.
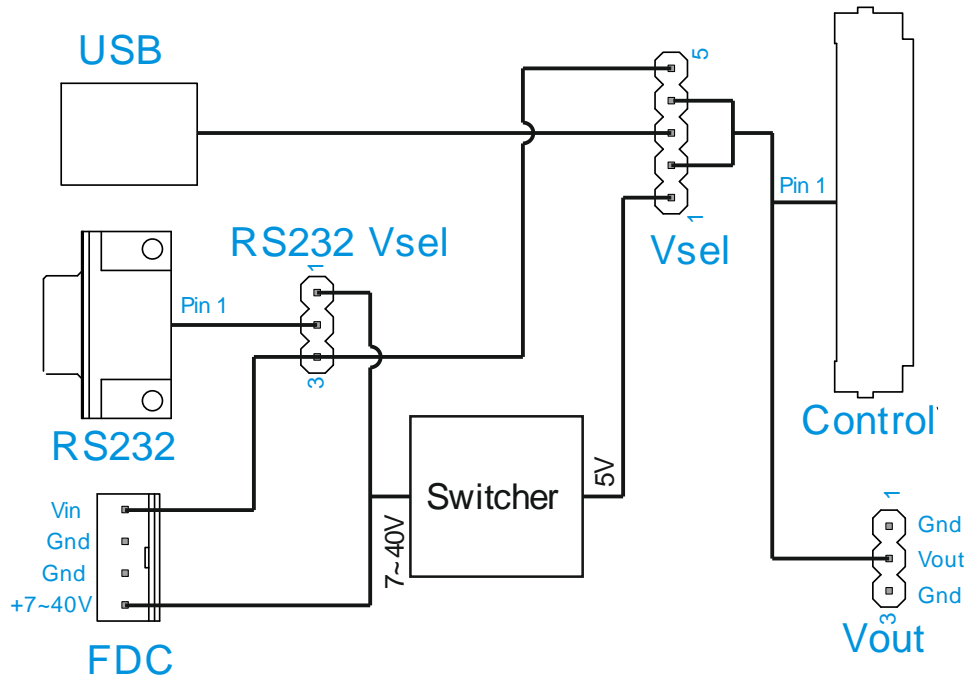
Supply via	Voltage Input	RS232 Vsel position	Vsel position	Voltage output (Control/Vout)
USB	5V	-	2-3 or 3-4	5V
RS232 Power In	3/3.3V	2-3	4-5	3/3.3V [1]
RS232 Power In	5V	2-3	4-5	5V
RS232 Power In	7~40V	1-2	1-2	5V
FDC Vin	3/3.3V	-	4-5	3/3.3V [1]
FDC Vin	5V	-	4-5	5V
FDC +7~40V	7~40V	-	1-2	5V

[1] Only for displays with operation voltage of 3/3.3V

Schematic

iLCD Controller

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FFC/Switcher/RS232

FFC+PS+RS232-V2

22.03.2013 14:12:36

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Revision History

Date	Rev. #	Revision Details
January 28, 2013	1.0	First Issue
March 22, 2013	1.1	Description of FDC connector corrected

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