JControl/SmartDisplay Evaluation Board

The *JControl/SmartDisplay Evaluation Board* is a 80*133mm PCB, designed as testing and programming platform for the JControl/SmartDisplay. It comes with a linear voltage regulator for the 12V DC power supply, a level shifter (MAX232) and connector for the Serial RS232-Interface, a buzzer, reset-button, cursor-like keyboard, several I/O-pins and a wrap area for user-specific applications.

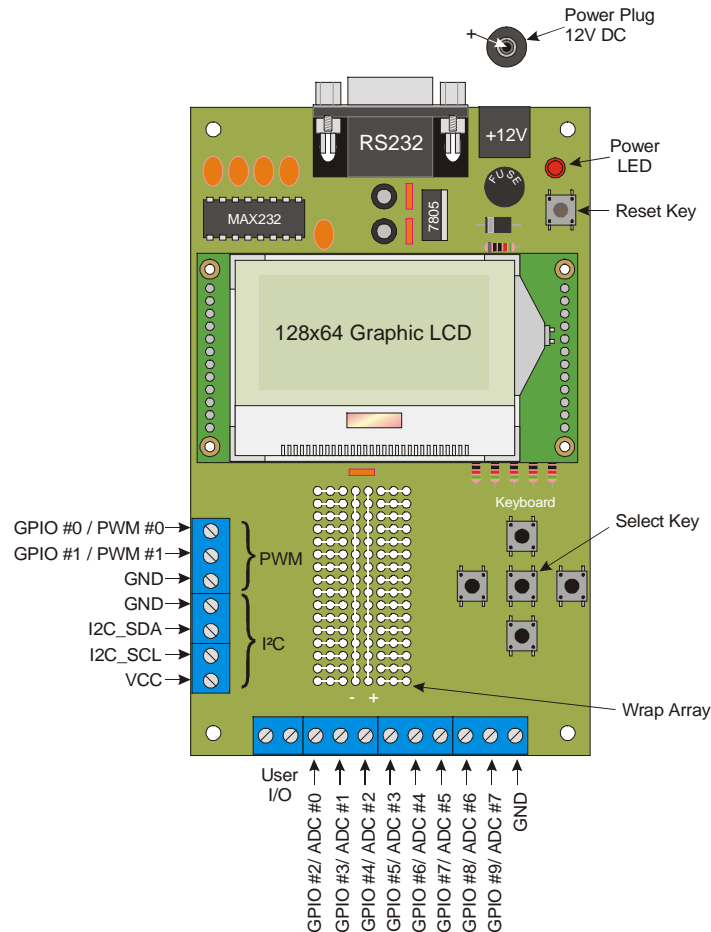The following figure gives an overview on the JControl/SmartDisplay Evaluation Board.

Fig. 1: Overview of the JControl/SmartDisplay Evaluation Board

Setting-up Operation

To start working with the JControl/SmartDisplay Evaluation Board, please connect the wall power supply to the "Power In" connector of the board and connect the serial interface (RS232) to a host PC, running the JControl/DevelopmentSuite.

Entering the System Download Mode

To enter the system download mode, hold the select button in the middle of the keypad and press the reset button. The JControl/SmartDisplay enters the system download mode then and you may upload software from your PC using the serial interface.

Note: The system download mode is entered when Pin 13 (GPIO #9/ ADC #7/ KB_IN) of the JControl/SmartDisplay is pulled to GND during the reset phase. This is done by the select button in the middle of the keypad.

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Serial Interface

The pin assignment of the 9-pin Sub-D connector used for the serial RS232-interface is shown in *Fig. 2*. A simple 1:1 extension cable may be used to connect the JControl/SmartDisplay Evaluation Board to a PC.
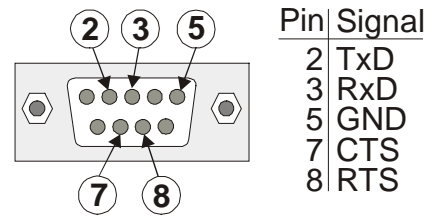
Pin	Signal
2	TxD
3	RxD
5	GND
7	CTS
8	RTS

Fig. 2: Pin Assignment of the RS232 Connector (9-pin female sub-D connector)

Power Supply

A Power Supply Plug with 7..20V DC output voltage may be used to power the Evaluation Board. *Fig. 3* shows the Pinout of the power-supply connector (pin-diameter: 1.3mm).
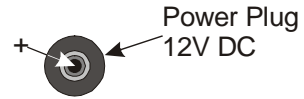
A red LED indicates the internal 5V power supply of the board.

Power Plug
12V DC

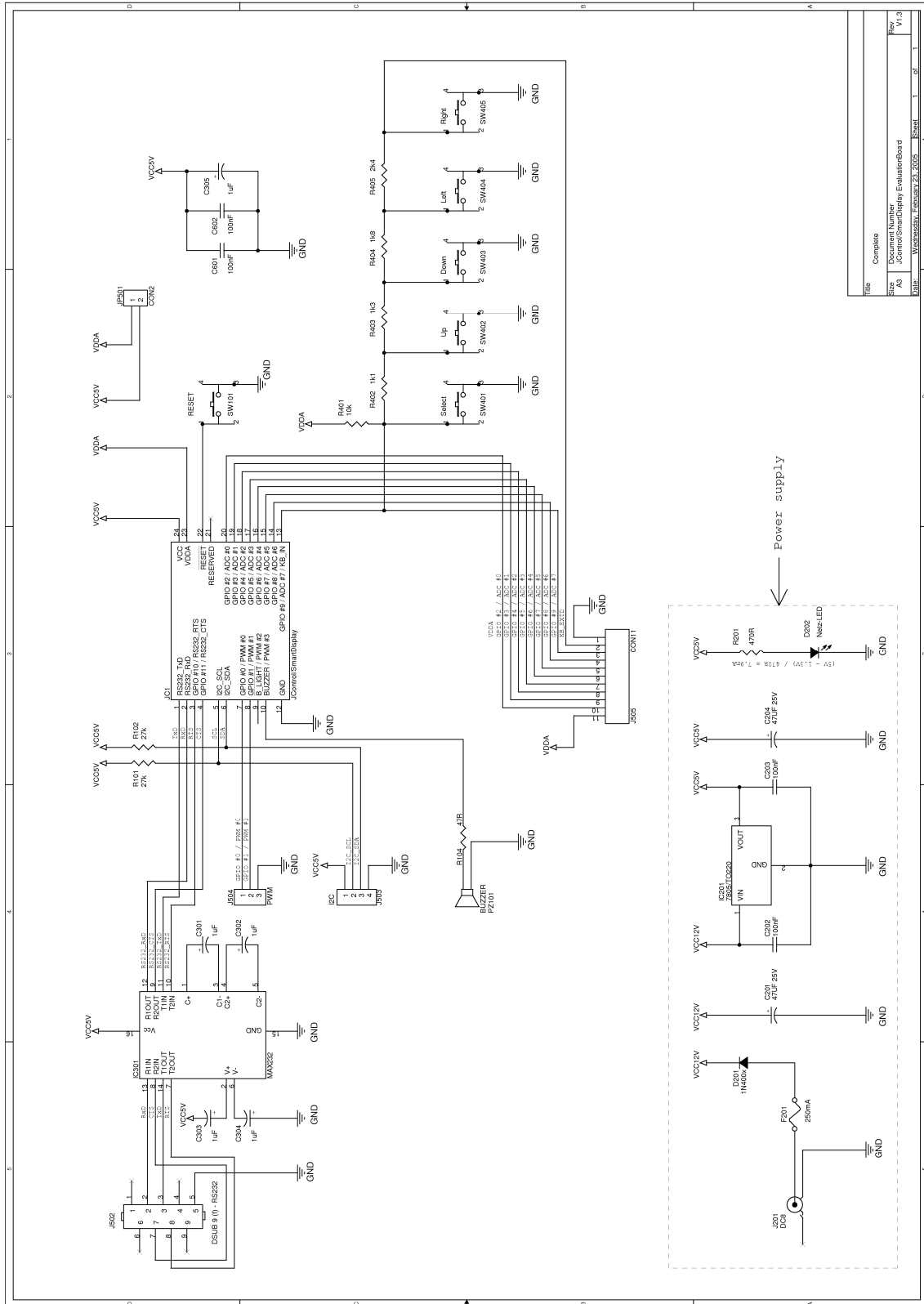**Fig. 3: Pin Assignment of the Power Supply Connector**

Fuse

A fuse protects the board against damages caused by a short circuit. A round type with 200mil pitch is used, e.g. type ELU 166.050, 250mA, slow.

Schematic

The schematic of the JControl/SmartDisplay Evaluation Board is shown in the following pages.

Power supply

JControl/SmartDisplay

VCC5V
VDDA
RESET
RESERVED

RS232_TxD
RS232_RxD
GPIO #10 / RS232_RTS
GPIO #11 / RS232_CTS
I2C_SCL
I2C_SDA
GPIO #0 / PWM #0
GPIO #1 / PWM #1
B_LIGHT / PWM #2
BUZZER / PWM #3

GPIO #2 / ADC #0
GPIO #3 / ADC #1
GPIO #4 / ADC #2
GPIO #5 / ADC #3
GPIO #6 / ADC #4
GPIO #7 / ADC #5
GPIO #8 / ADC #6
GPIO #9 / ADC #7 / KB_IN

IC1

C305 1uF
C602 100nF
C601 100nF

JP501 CON2

VDDA

RESET SW101

GND

R401 10k
VDDA

R405 2k4   Right   SW405   GND
R404 1k8   Left   SW404   GND
R403 1k3   Down   SW403   GND
R402 1k1   Up   SW402   GND
           Select SW401   GND

CON11
J505
VDDA

VDDA
GPIO #2 / ADC #0
GPIO #3 / ADC #1
GPIO #4 / ADC #2
GPIO #5 / ADC #3
GPIO #6 / ADC #4
GPIO #7 / ADC #5
GPIO #8 / ADC #6
KB_IN
GND

R102 27k
R101 27k
VCC5V

J504 PWM
GPIO #0 / PWM #0
GPIO #1 / PWM #1

J503 I2C
I2C_SCL
I2C_SDA

R104 47R
BUZZER PZ101
GND

C301
C302 1uF

IC301 MAX232
R1OUT R1IN
R2OUT R2IN
T1IN T1OUT
T2IN T2OUT
C1+ C1-
C2+ C2-
V+ V-
VCC GND

VCC5V
C303 1uF
C304 1uF
GND

J502 DSUB 9 (I) - RS232

VCC5V
R201 470R
D202 Netz-LED
GND
(5V - 1.3V) / 470R = 7.9mA

VCC5V
C204 47uF 25V
GND

VCC5V
C203 100nF
IC201 7805 TO220
VIN VOUT
GND
C202 100nF
VCC12V

VCC12V
C201 47uF 25V
GND

VCC12V
D201 1N400x
F201 250mA
J201 DC8
GND

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Notes