

Introduction

This manual provides information for the final user application developer on how to configure and to use the SPC572L-DISP microcontroller evaluation board.

The discovery board SPC572L-DISP is based on the microcontroller SPC572L64E3, a high performance 32-bit Power Architecture technology CPU, 1568KB flash in an eTQFP100 package.

The several interfaces including GPIO's, peripherals such as DSPI, LIN, UART, ISO CAN-FD make the SPC572L-DISP an excellent starter kit for the customer to quickly evaluate the microcontroller as well as to develop and debug application. An integrated programmer debugger allows debugging and programming the microcontroller without further tools. The same circuit allows enabling a USB to serial communication channel (USB Virtual COM port).

A standard JTAG port allows programming the microcontroller by using different debug/programmer tools.

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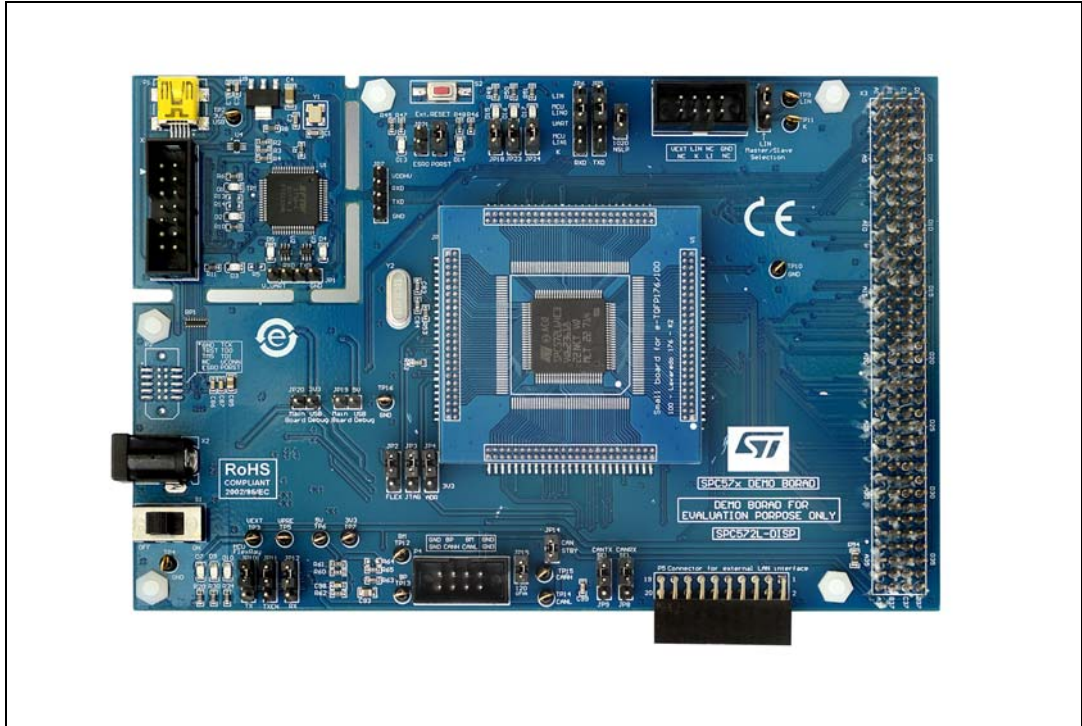
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1 SPC572L-DISP discovery board

Figure 1. SPC572L-DISP board



The SPC572L-DISP evaluation kit consists of:

- SPC572L-DISP Discovery board (see [Figure 1](#)).
- USB type A to mini-B cable.
- 12 V DC power Supply (EU Plug).

All GPIOs and the main signals are accessible by a 4x37 0.1" pin array.

Free ready-to-run application firmware examples are available inside SPC5Studio (www.st.com/spc5studio) to support quick evaluation and development.

The PCB, the components and all the HW parts assembled in this board meet the requirements of the applicable RoHS directives.

1.1 Debug interface

- 14-pin JTAG interface.
- USB integrated programmer debugger.

1.2 I/O interface and connectors

- PSU plug (+12V).
- CAN and LINFlex (Header 2x4 pin).
- K-Line and UART (Header 2x4 pin).

2 Hardware description

2.1 Power supply section

Figure 2. PSU section - DC input



2.1.1 External Power Supply

The external DC supply must be plugged in X2; the switch S1 allows the user to disconnect the external supply source.

The voltage regulators, U15 and U16 are used to generate 5 V and +3.3V respectively. U14 is a pre-regulator and it must be used when the DC voltage supply is higher than 12 V (i.e. when the board is used in an application with a DC input higher than 12 V).

The LEDs D7, D9 and D10 are all ON when the board power supply section works properly and the switch S1 is set to ON position.

Table 1. PSU section-LEDs description

Item	Color	Function
D7	Green	Vext(+12V)
D9	Green	5V
D10	Green	3.3 V

2.1.2 USB connection: 3.3 V

If the integrated programmer/debugger is used, 5V from the USB port supplies the board. U17 and U18 are used to implement an automatic switch.

The VDD_HV_Flex, VDD_HV_JTAG and VDDHV_ADR voltage level is set with the jumper JP2, JP3 and JP4.

Some test pins are present to monitor the supply voltage levels.

Table 2. PSU Section-test points

Test point name	Signal/Voltage
TP2	3.3V_USB
TP3	V_Ext (+12V)
TP4	GND
TP5	VPRE
TP6	+5V
TP7	3.3 V

2.2 Crystal oscillator

The external oscillator is connected to a 20MHz crystal (Y2).

2.3 Reset section

U19 drives the reset signal to low level till the VDD_HV_IO level is lower than a fixed level and it provides a reset pulse when the pushbutton S2 is pressed.

JP21 and JP22 connect the reset signal to the ESR0 and PQRST signal respectively (default connection: JP21 is closed).

2.4 User LEDs

Three LEDs (D15, D16 and D17) are available for user purposes. The jumpers JP18, JP23 and JP24 allow disconnecting the cathode of each LED's and PE[0], PE[1] and PE[2] can be used for a different purpose.

Table 3. User LEDs

LED	Color	µC Pin - Function
D15	Green	PE0
D16	Green	PE1
D17	Green	PE2

2.5 Integrated USB programmer/debugger and JTAG port

The integrated debugger allows the user to program and to debug the software applications. The integrated tool is based on the UDE PLS software and the device FTDI2232H.

The SPC572L-DISP discovery board includes a full-featured, perpetual code-limited PLS software license. The debugger serial number is reported on a label applied on the board.

The integrated debugger SW is accessible via SPC5Studio (www.st.com/spc5studio), a ST's free integrated development environment. To download the debugger software and to activate the license refer to the PLS website.

Some jumpers enable the JTAG port. The board with this setup can be programmed by using an external programmer. By removing RP1, the integrated programmer is disconnected and the JTAG port will be enabled to program the microcontroller.

Note: If the USB cable is not used and the board is supplied by using an external DC source, it is suggested to test the external JTAG programmer before removing the resistor array RP1.

2.6 CAN

U24 is the CAN communication transceiver. Different devices can be assembled: AMIS30663 or MCP2561 and JP14 must be configured properly considering the transceiver assembled.

The jumper JP15 connects the termination resistor for CAN bus (120 Ω) while TP14 and TP15 allow monitoring the output signals CANL and CANH respectively.

The CAN Rx and Tx signals are connected to P4.

2.7 FlexRay

The U23 is the transceiver to manage the FlexRay communication; JP10, JP11 and JP12 allow selection between two channels (FlexRay_0_CA and FlexRay_0_CB). The outputs are connected to P4, pin 3 and 5; TP12 and TP13 allow monitoring the FlexRay output signals.

2.8 LIN and UART

The LINFlex supports LIN Master mode, LIN Slave mode and UART mode. JP5 and JP6 are dedicated to select among LIN_0, LIN_1 and K.

U21 is the transceiver to support the LIN communication, whereas U22 is used to support K-Line.

The output of these two communication channels is connected to the connector P3.

2.9 4x2x25 connector adapter

This is a female pin array used to connect the main board to a small PCB with the microcontroller.

Appendix

The following precautions are recommended when using the SPC572L-DISP:

1. Do not modify or manipulate the board when it is supplied by using the external DC source or the USB cable.
2. Do not supply the board with AC source.
3. The connectors and cables should be plugged and removed when the board is not supplied.
4. Please use antistatic tools.

Revision history

Table 4. Document revision history

Date	Revision	Changes
19-Dec-2018	1	Initial release.

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