WISPR

Passive Acoustic Monitoring

Connector Specifications

Hardware Version: WISPR V3.0

Embedded Ocean Systems

Manual Version: 1.0
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Contents

1. Specifications

1.1   Mechanical

The Wispr3 system consists of a micro-controller board and a Preamp/ADC board. Layout, hole pattern and connector locations are shown in Figures 1 and 2.

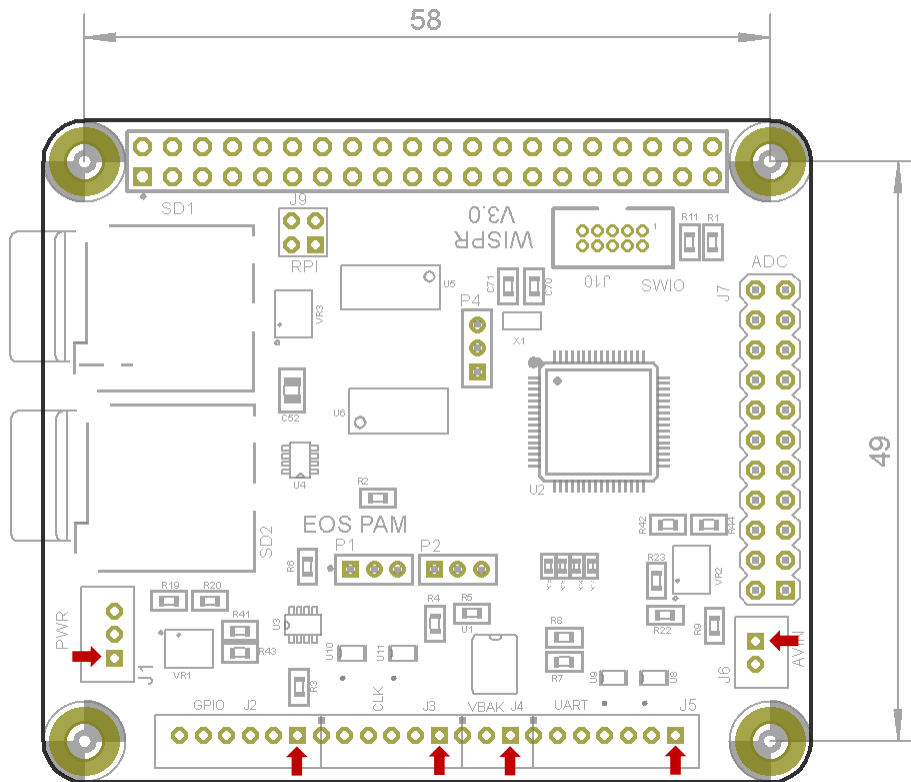Mounting holes are 3MM diameter. The two boards are stacked using 11mm stand-offsets.

Figure 1: Controller board top showing SD card insertion positions (SD1 and SD2). Connector PIN-1 (Square pad) is marked with a red arrow.
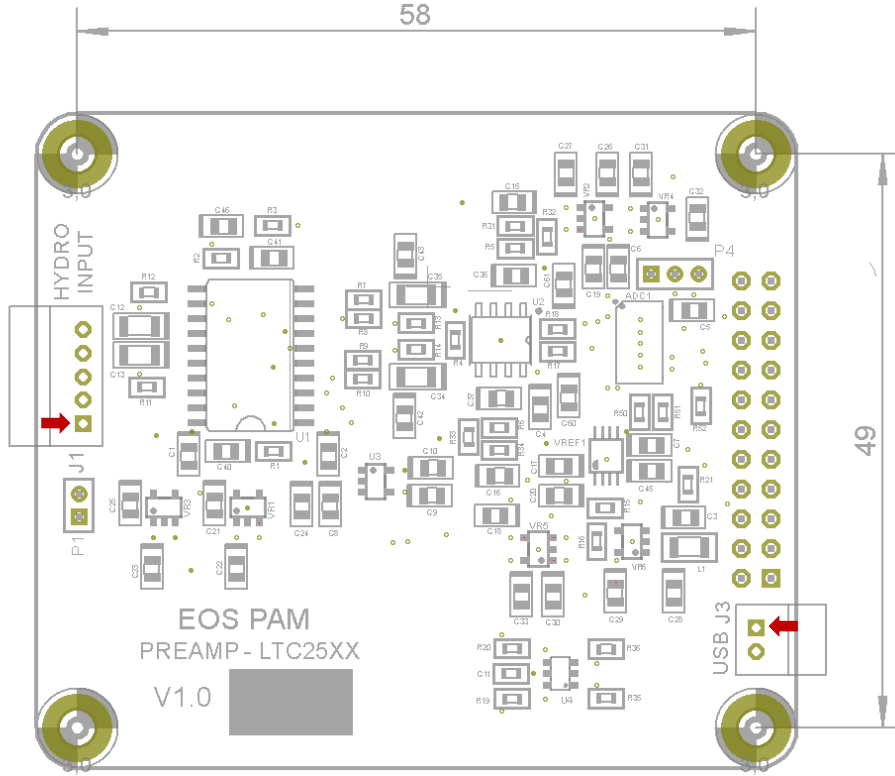
Figure 2: Preamp/ADC board (top) showing connector locations. Connector PIN-1 (square pad) is marked with a red arrow.

1.2   Connectors

Connectors are all 2mm, PH series, crimp style connectors.

Pin 1 is GND on all connectors marked with a red arrow and a *square solder pad* as shown in Figures 1 and 2.

Connectors	Digikey Part Number	Part Number	Description
J3	455-1163-ND	PHR-5	CONN RCPT HSG 5POS 2.00MM
J1	455-1126-ND	PHR-3	CONN RCPT HSG 3POS 2.00MM
J6	455-1165-ND	PHR-2	CONN RCPT HSG 2POS 2.00MM
J2, J5	455-1162-ND	PHR-6	
Cables Assemblies			
	505-CABLE-PH06-ND	CABLE-PH06	CABLE JST PHR-06 AWG 24
	505-CABLE-PH05-ND	CABLE-PH05	CABLE JST PHR-05 AWG 24
	455-3083-ND	ASPHSPH24K305	LEAD SKT-SKT 24AWG BLK

Table 1: Mating connect part numbers

1.2.1 Battery Power Input Connector

Connector J1 provides the input supply voltage for the main 3.3V digital supply switching regulator.

J1	VIN	Type	Level	Symbol
1	Ground	GND	GND	GND
2	Input Supply Voltage	PWR	6 to 20 V	VIN
3	ENABLE	PWR	0 to VIN	EN

Table 2: Main power input connector

The ENABLE pin is tied to the EN pin of the main 3.3V supply regulator (LMZM23600). This is used to turn the system ON/OFF where:
HIGH = ON, LOW = OFF.
To always enable the system, connect this pin to VIN.
DO NOT FLOAT THE ENABLE PIN.

1.2.2 UART Connector

Connector J5 provides CMOS level RX/TX signals for UARTs channel 0 and 1.

J5	UART	TYPE	LEVEL	SYMBOL
1	Ground	GND	GND	GND
2	UART0 Receive	INPUT	CMOS	RX0
3	UART0 Transmit	OUTPUT	CMOS	TX0
2	UART1 Receive	INPUT	CMOS	RX1
3	UART1 Transmit	OUTPUT	CMOS	TX1
6	IO 3.3V	PWR	3.3V	IO_3V3

Table 3: UART Connector

The 3.3V power output from the UART connector can be used to power an RS232 transceiver.

Uart RX and TX lines are buffered using a SN74LVC2G34 device gate designed for 1.65 to 5.5V operation and to prevent current backflow through the device when it is powered down.

If your serial port is RS232, then you will need to use a CMOS/TTL to RS323 converter to safely connect to Wispr J5 UARTs. Figure 3 below shows a schematic for the common MAX3232 transceiver.
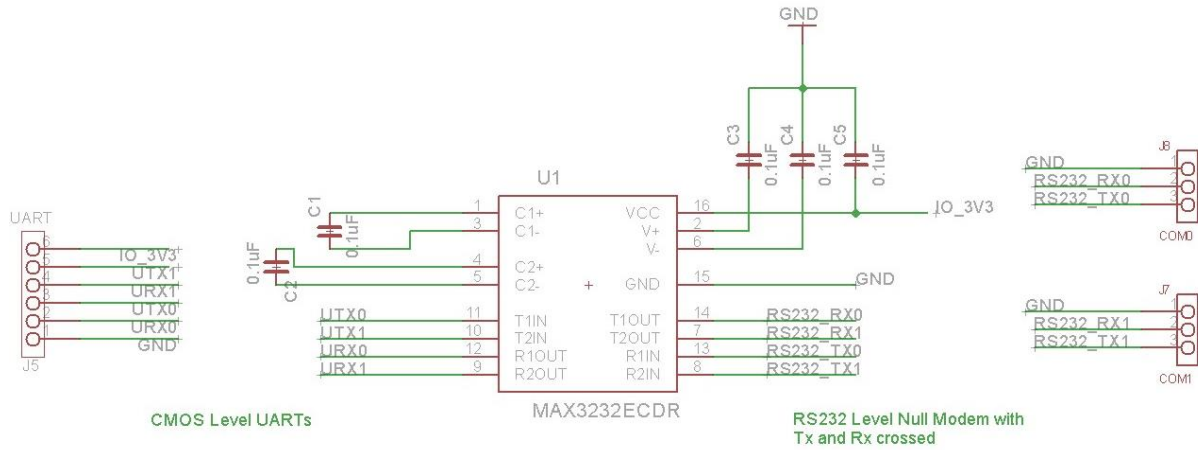

Figure 3: Typical schematic for using a MAX3232 level convertor to connect to J5 UARTs in a null modem configuration.

1.2.3 GPIO Connector

Connector J5 provides CMOS level RX/TX signals for UARTs channel 0 and 1.

J2	GPIO	TYPE	LEVEL	SYMBOL
1	Ground	GND	GND	GND
2	GPIO0	I/O	CMOS	PB15
3	GPIO1	I/O	CMOS	PB14
2	GPIO2	I/O	CMOS	PB13
3	GPIO3	I/O	CMOS	PB12
6	3.3V	PWR	3.3V	IO_3V3

Table 4: GPIO Connector

GPIO lines are unbuffered and require 3.3V CMOS input/output levels.

1.2.4 Clock Input Connector

Connector J3 provides clock inputs for GPS synchronization and precise timing.

J3	CLK	TYPE	LEVEL	SYMBOL
1	Ground	GND	GND	GND
2	32768 Hz Clock	INPUT	CMOS	CLK32K
3	Alarm	INPUT	CMOS	ALARM
4	GPS PPS	INTPUT	CMOS	GPS_PPS
5	GPS TX	INPUT	CMOS	GPS_TX

Table 5: Clock Input Connector

Clock input lines are buffered using a SN74LVC2G34 device gate designed for 1.65 to 5.5V operation and to prevent current backflow through the device when it is powered down.

1.2.5 Hydrophone Input Connector

Connector J1 on the PREAMP-LTC25XX board provides the analog signal from and power to the hydrophone.

J1	HYDRO INPUT	TYPE	LEVEL	SYMBOL
1	Ground	GND	GND	GND
2	Hydrophone Supply	PWR	3.3 V	HYDRO_3V3
3	Case	INPUT	GND	CASE
4	+V Differential signal	INPUT	Analog	AIN+
5	-V Differential signal	INPUT	Analog	AIN-

Table 6: Hydrophone Connector

The CASE is connected to GND using the P1 jumper on the Preamp-ADC board. When in doubt connect CASE to GND by installing a jumper on P1.

1.2.6 Raspberry Pi Bus Connector

A Raspberry Pi can be mounted on to the bottom of the Wispr main board using the Raspberry Pi bus connector. The bus provides an interface between the RPi secondary SD interface and the Wispr SD cards. The bus also provides connections between the Wispr board and the RPi SPI interface and general purpose GPIO lines.

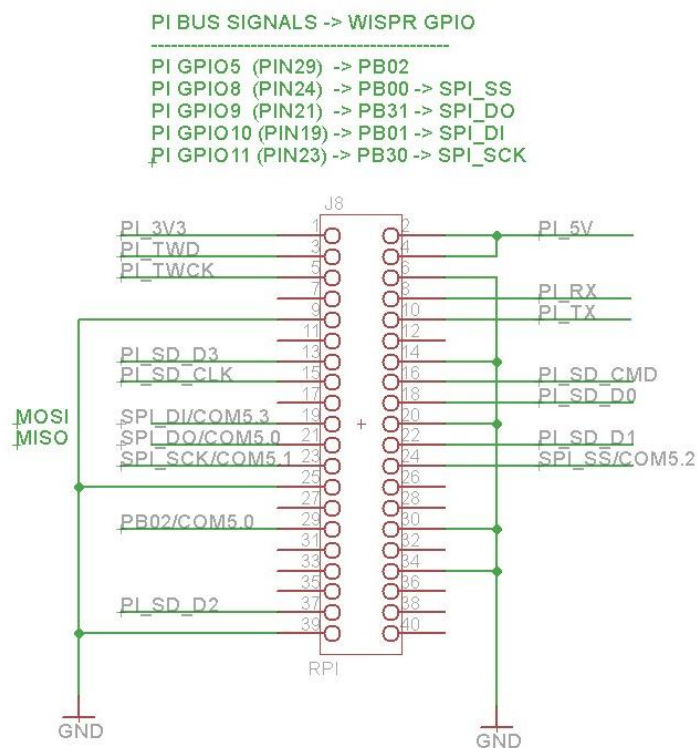The schematic below the mapping of the RPi bus signals and the Wispr signal names. Power to the RPi (PI_5V) is provided on the bus and controlled by the Wispr main board firmaware.

Figure 4: Raspberry Pi Bus Connector