Serial Expansion Interface Connector

This is a specification of a standardized *serial expansion interface connector* that is included on many boards from Embedded Artists. The purpose is to provide a simple expansion connector for smaller expansion modules. Such modules are typically sensors of different kinds and communication modules, but can also be smaller displays.
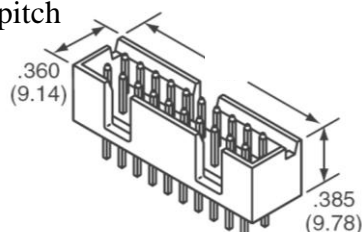
The connector contains 14 pins that support SPI, UART and I2C communication. Four additional pins exist for specific functionality, like module reset, interrupt pins, analog signals and pwm signals. Power (3.3V) is also provided. Maximum current consumption of the external module is 250mA.

Usage of the different signals is specific for each module connected. All signals can be configured as either main function or alternatively as a general purpose input/output signal (GPIO). The signals in the connector are connected directly to pins on the mcu on the board. The application program has the responsibility to program the individual pins to correct state/function. The preferred directions shall be kept as far as possible in order to minimize the risk that two output drivers are connected together. Current limiting series resistors shall preferably be added in case this general rule is broken.

	Main function and direction (3.3V logic signals)	*Alternative function*	*Note*
1	GND		
2	VCC (+3.3V)		Max 250mA
3	SPI-SCK (output)	GPIO (preferred output)	
4	SPI-MOSI (output)	GPIO (preferred output)	
5	SPI-MISO (input)	GPIO (preferred input)	
6	SPI-SSEL (output)	GPIO (preferred output)	
7	UART-RX (input)	GPIO (preferred input)	
8	UART-TX (output)	GPIO (preferred output)	
9	I2C-SCL (output)	GPIO (preferred output)	open-drain I2C driver
10	I2C-SDA (bidirectional)	GPIO (preferred output)	open-drain I2C driver
11	PWM out/CAPTURE in (both)	GPIO (preferred output)	
12	PWM out/CAPTURE in (both)	GPIO (preferred output)	
13	AIN0 (input, 0-3.3V range)	GPIO (preferred input)	
14	AIN1 (input, 0-3.3V range)	GPIO (preferred input)	

Two types of IDC shrouded connector are supported with keying in the middle of the connector, as shown below. Connection is either via flat cable (expansion module then contains an identical connector) or by placing a compatible female connector on the expansion module.

100x100 mil pitch   50x50 mil pitch