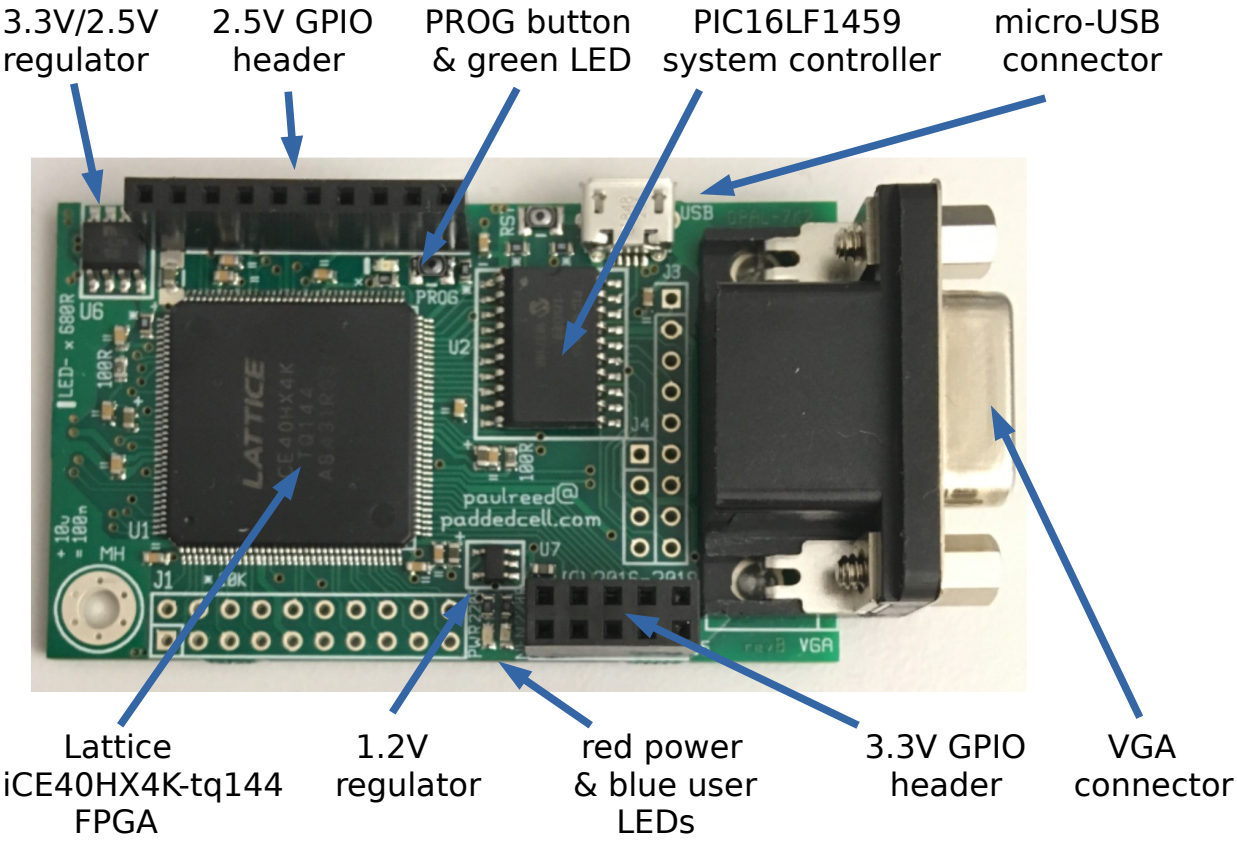
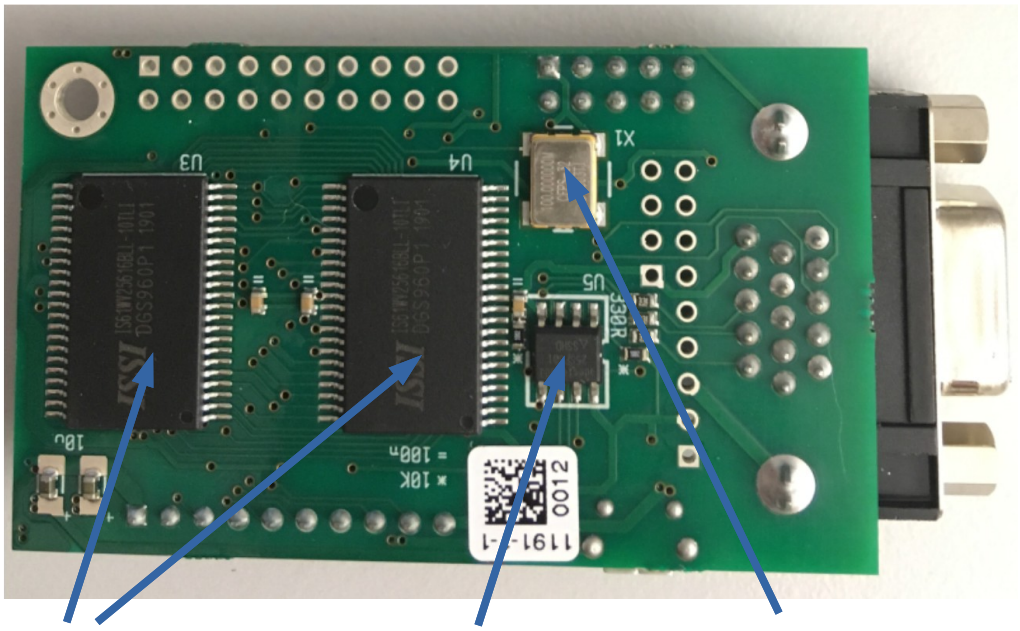
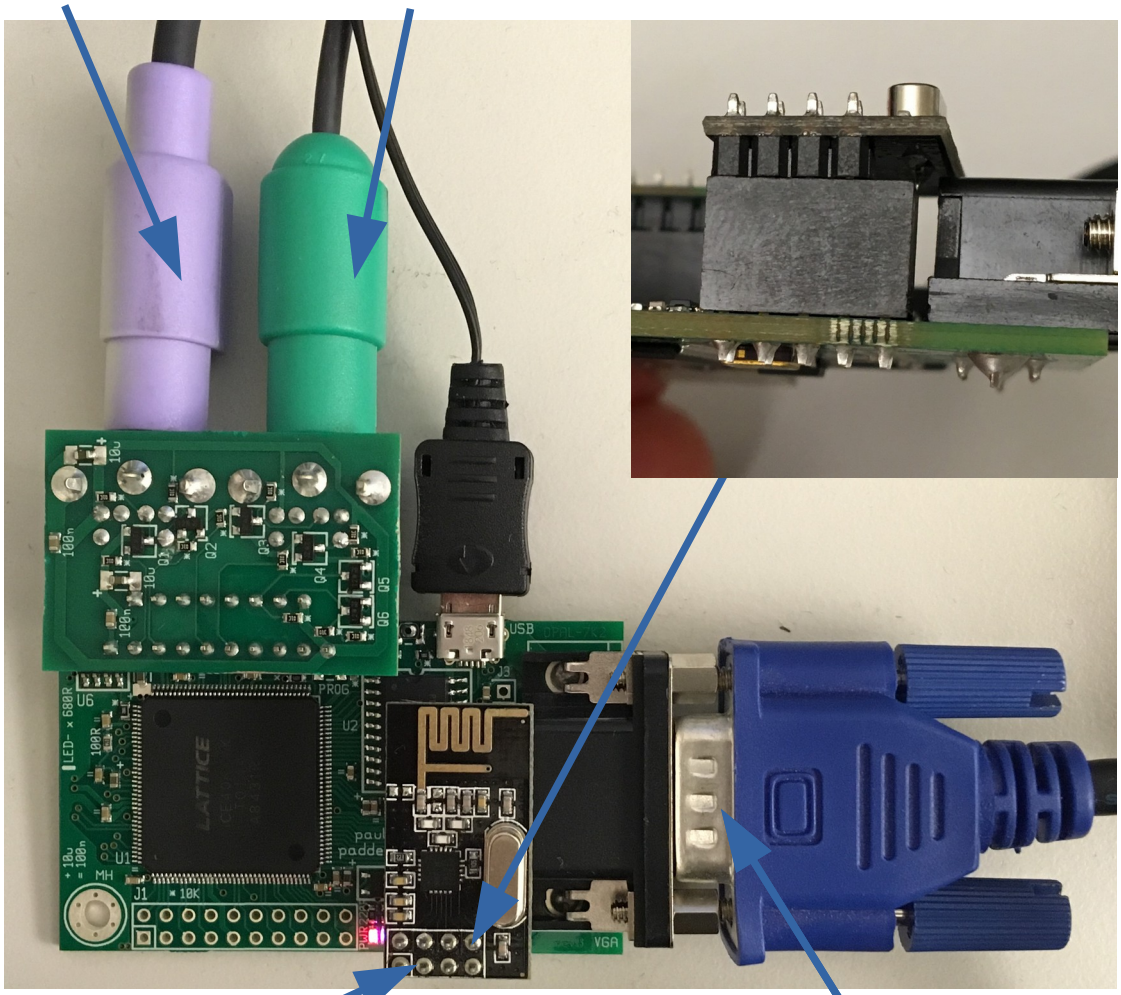
System Construction FPGA Board
PDR 26.11.2019 rev B





System Construction FPGA Board - Connections
PDR 27.11.19

PS/2 Keyboard PS/2 Mouse



Nordic 2.4GHz nRF24L01+ module (fitted in leftmost 8 holes in 3.3v header - rightmost 2 holes unused)

VGA connection to 1024x768 monitor

See overleaf for programming notes

Nordic nRF24L01+ 2.4GHz Wireless Networking Module

(values in hex)

SCC Packet Format: seqno dadr sadr typ len:4 [payload...]

e.g. TIM time server response: 01 FF 00 47 04 00 00 00 57 AC F0 3E

01	non-zero = valid packet
FF	broadcast destination adr
00	server source address
47	TIM time response packet type
04 00 00 00	payload length 4
57 AC F0 3E	payload: 001111 1011 11000 01010 110001 010111 (15/11/24 10:49:23)

nRF24L01+ Initialisation Example for SCC Broadcast Receive

reg	*val*	*comment*
00	7F	CONFIG: mask ints, CRC16, power up, receiver
01	00	EN_AA: disable auto-acknowledgement
04	00	SETUP_RETR: disable auto-retransmit
05	chan	set RF channel (2400 + chan MHz)
06	07	RF_SETUP: 1Mb/s, 0dBm
07	70	STATUS: clear flags
11	20	RX_PW_P0: rx pipe 0 payload width 32 bytes

Common nRF24L01+ SPI Commands

cmd byte	*data bytes*	*comment*
000r rrrr	1 to 5	R_REGISTER: read status and register rrrrr (00-1F)
001r rrrr	1 to 5	W_REGISTER: read status, write value
0110 0001	1 to 32	R_RX_PAYLOAD: read status and payload
1010 0000	1 to 32	W_TX_PAYLOAD: read status, write payload
1110 0001	0	FLUSH_TX: flush tx FIFO
1110 0010	0	FLUSH_RX: flush rx FIFO

(cmd values in binary)