AVR core and power
200v1.S01

Power supply, reset circuit, reference voltage and power indicator.

Port A
200v1.S02

Analogue and digital inputs with options for FET outputs

Port B
200v1.S03

Digital inputs with optional FET outputs (PB0 to PB3) and programming connector.
SPI and select lines.

Port C
200v1.S04

FET outputs with the option of digital inputs.

Port D
200v1.S05

Serial communications. 3 inputs. 3 FET outputs.

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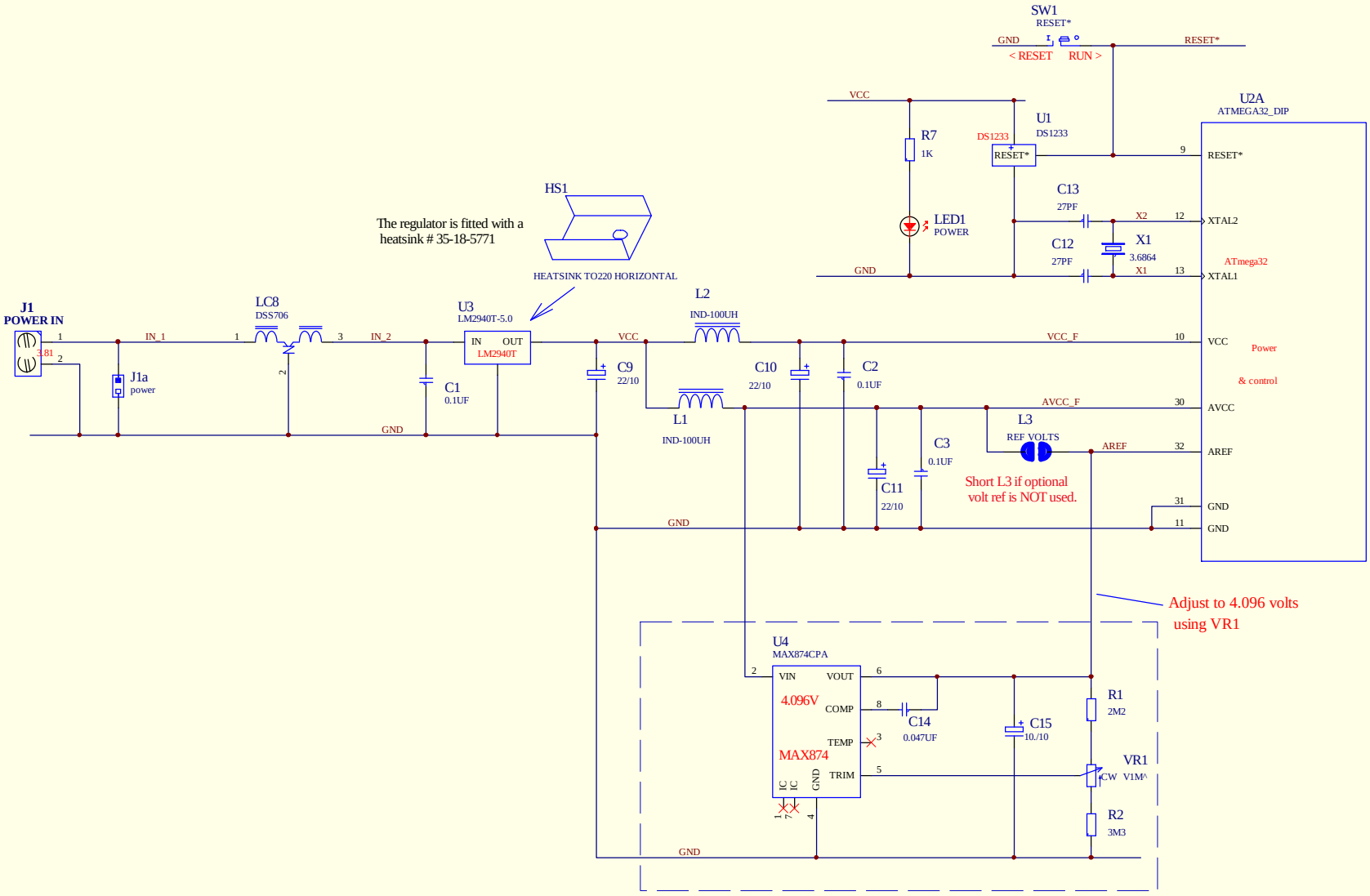
TITLE Title page

PROJECT NUMBER 200v1.Sch

VERSION 1	DATE 20-May-2005	SHEET 1 OF 6



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TITLE	AVR & POWER
PROJECT NUMBER	200v1.S01
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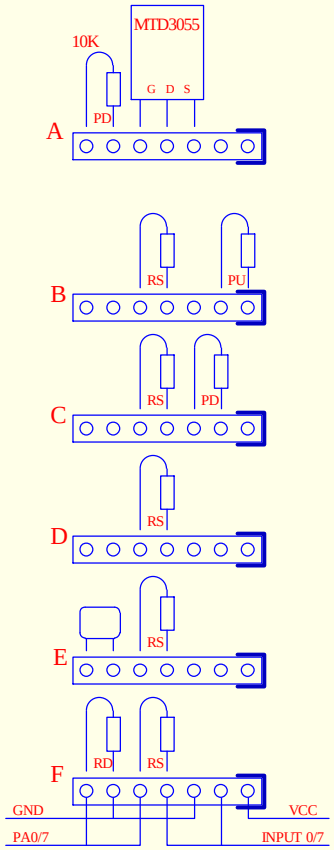
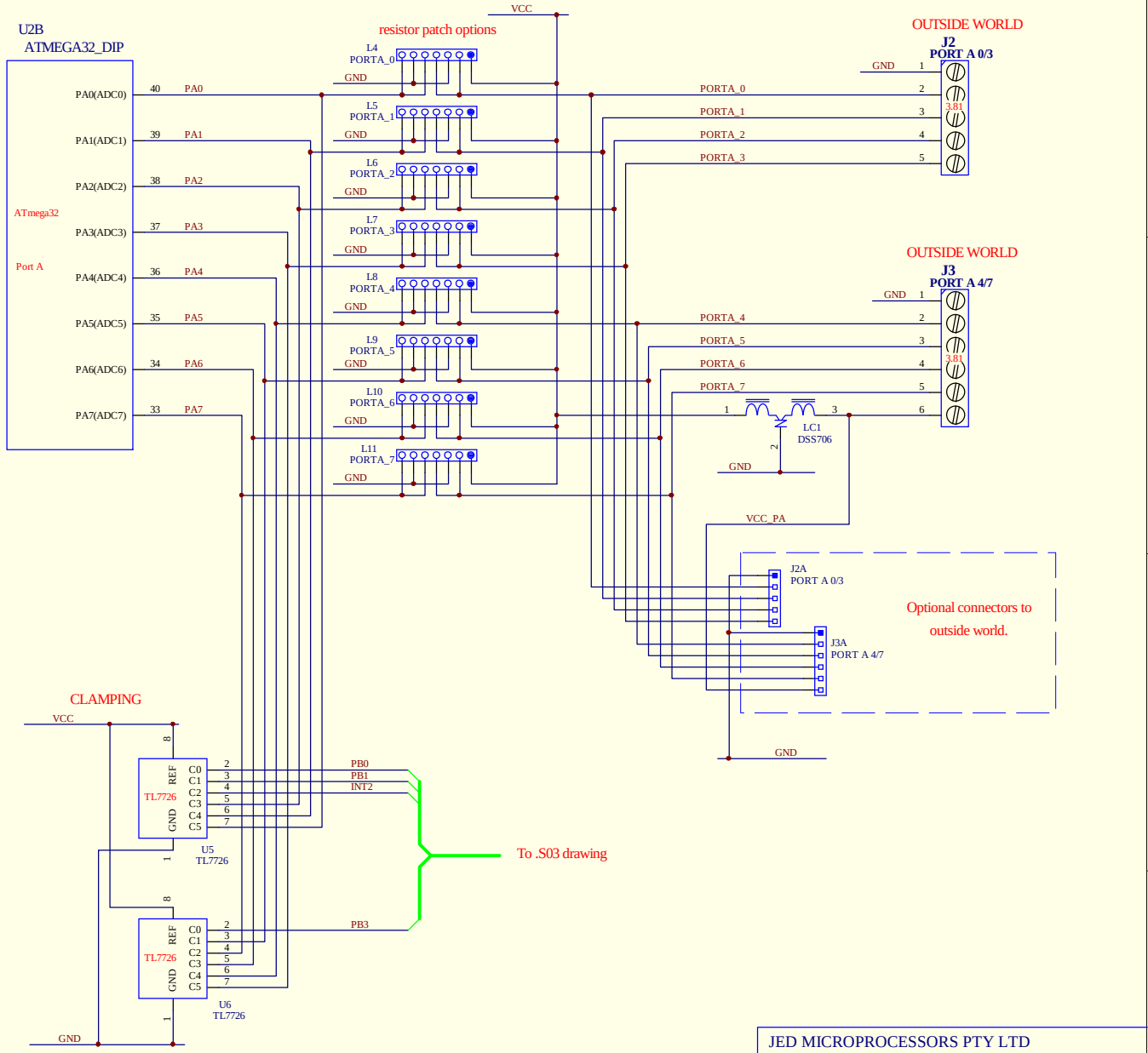


Analogue and digital inputs.

A = FET output (resistor PD ensures that FET is off during reset)
B = An active low digital input (eg switch) or for resistive transducer to ground.
C = An active high digital input or analogue termination resistor to ground (eg 200R for 4 to 20mA loop)
D = A high impedance analogue input 0 to 5 volts
E = input filter
F = A voltage divider analogue input.
Voltage to AVR = RD x Vinput/(RS+RD)

Notes
RS is the input protection series protection typically 4k7 or 10k
PU is a pull up resistor
PD is a pull down resistor



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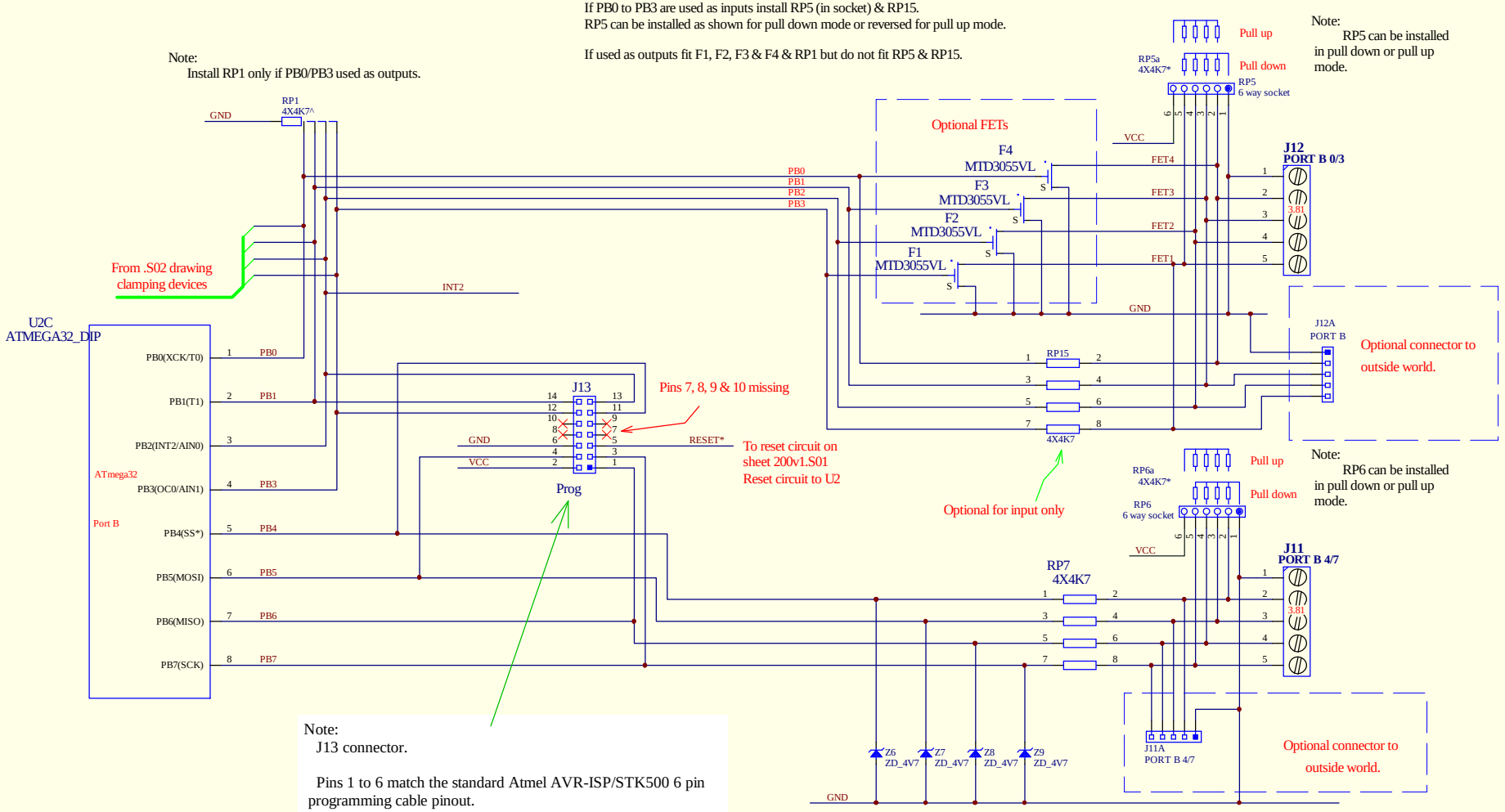
Note:
If PB0 to PB3 are used as inputs install RP5 (in socket) & RP15.
RP5 can be installed as shown for pull down mode or reversed for pull up mode.

If used as outputs fit F1, F2, F3 & F4 & RP1 but do not fit RP5 & RP15.

Note:
Install RP1 only if PB0/PB3 used as outputs.

Note:
RP5 can be installed in pull down or pull up mode.

Note:
RP6 can be installed in pull down or pull up mode.



Note:
J13 connector.

Pins 1 to 6 match the standard Atmel AVR-ISP/STK500 6 pin programming cable pinout.

Use all of J13 for upstairs SPI expandable I/O.
(pins 11 to 14, PB0 to PB3 can be used as chip selects)

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TITLE PORT B

PROJECT NUMBER 200v1.S03

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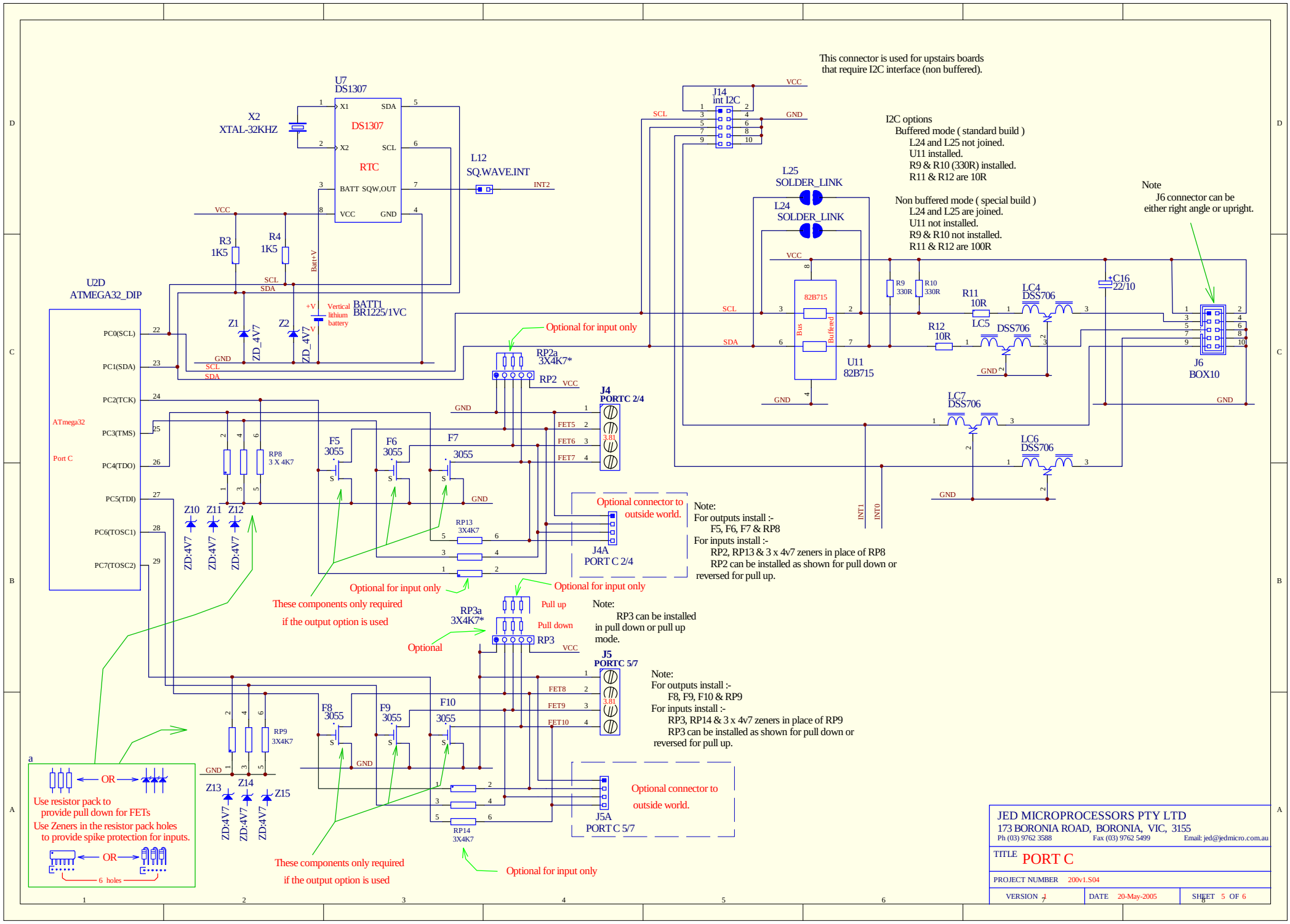

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TITLE PORT C		
PROJECT NUMBER 200v1.S04		
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Cautionary note:
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This schmatic shows the wiring as on the 200v1 PCB.
The 200v0 PCBs have the pins 13 and 14 of U9 (74HC157) crossed over.
This will not allow the RS458 to work unless wire links are installed to correct this error.
This does not affect the operation of the RS232 in any way.

RS232 connector set up

L13 DTE / DCE — Rd/Wr lines

L14 DTE / DCE — handshake

no handshake

OR

Use resistor pack to provide pull down for FETs
Use Zeners in the resistor pack holes to provide spike protection for inputs.

OR

6 holes

Note:
RP4 can be installed in pull down or pull up mode.

Pull up
Pull down
RP4a 3X4K7*
RP4
VCC
Optional for input only
Optional connector to outside world.
J10A PORT D 457

J10 PORT D 4, 5 & 7
7
5
4
GND

F11 MTD3055VL
F12 MTD3055VL
F13 MTD3055VL
FET11
FET12
FET13

RP10 3X4K7
RP16 3X4K7
Optional for input only

Z16 Z17 Z18 ZD4V7
Z3 Z4 Z5 ZD_4V7

U2E
ATMEGA32_DIP
ATmega32
Port D
PD0(RXD)
PD1(TXD)
PD2(INT0)
PD3(INT1)
PD4(OC1B)
PD5(OC1A)
PD6(ICP)
PD7(OC2)

U8 MAX202E
C4 0.1UF
C5 0.1UF
C6 0.1UF
C7 0.1UF
C8 0.1UF
5V
232
TX_5
RX_5
RTS_5
CTS_5

J8
DB9F.
J8A
GND
RX
TX
CTS
RTS
SERIAL U/S

L13
L14
RP11 3X4K7
RP12 3X4K7
L15
L16
L17
L18
INT1
INT0

J9 PORT D 2, 3 & 6
6
3
2
GND
J9A PORT D 236
Optional connector to outside world.

U9A 74HC157.
U9C 74HC157. transmit line
U9E 74HC157. receive line
U9D 74HC157.
U9B 74HC157.
L19 232/485 select
L20
L21
L22
R5 4K7

U10 MAX3082ECPA
R6 4K7
LC3 DSS706
LC2 DSS706
J7 RS485
J7a RS485
J7B TTL/Radio Serial comms

Note that all components within this area are only used if a RS485 option kit (485) is installed. Otherwise they are omitted and all communication is via the RS232 port.

Note:-
L19 jumper options
Jumper pins 1 & 2 gives control of 232 or 485 to PD4
(low = RS485 high = RS232)
The next 2 options release PD4 for use as either an input or output.
Jumper pins 2 & 3 selects RS485 only.
Leave open selects RS232 only.
If only RS232 is required link L20 & L21 and omit U9 and U10.

J7a is an internal connection for a TTL level internal serial communication.
Can only be used if the RS485 transceiver (U10) is not installed.
Pin #1 Ground
Pin #2 Tx
Pin #3 Tx control
Pin #4 Rx

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TITLE PORT D
PROJECT NUMBER 200v1.S05
VERSION 1.7 DATE 20-May-2005 SHEET 6 OF 6