Rp x 4

5v

All 1k0
(Rx)

0v
C4
5v 100n

5v
C5
0v 100n

J3
Serial interface

1 0v
2
3 in
4 out

Both 1k0
(Rx)

J2

1 5v
2 0v
3 Quad 4
4 Quad 5
5 Quad 6
6 Quad 7
7 Int 4
8 Int 5
9 Int 6
10 Int 7

J2 3 to 10 to have 100nF
capacitors to ground
(Cx)

Rp x 4

All 1k0
(Rx)

5v

5v
C3
100n
0v

Pin	Signal
100	AVCC
99	GND
98	AREF
97	PF0 (ADC0)
96	PF1 (ADC1)
95	PF2 (ADC2)
94	PF3 (ADC3)
93	PF4 (ADC4/TCK)
92	PF5 (ADC5/TMS)
91	PF6 (ADC6/TDO)
90	PF7 (ADC7/TDI)
89	PK0 (ADC8/PCINT16)
88	PK1 (ADC9/PCINT17)
87	PK2 (ADC10/PCINT18)
86	PK3 (ADC11/PCINT19)
85	PK4 (ADC12/PCINT20)
84	PK5 (ADC13/PCINT21)
83	PK6 (ADC14/PCINT22)
82	PK7 (ADC15/PCINT23)
81	GND
80	VCC
79	PJ7
78	PA0 (AD0)
77	PA1 (AD1)
76	PA2 (AD2)

IC1

ATmega2560

Pin	Signal
1	PG5 (OC0B)
2	PE0 (RXD0/PCINT8)
3	PE1 (TXD0)
4	PE2 (XCK0/AIN0)
5	PE3 (OC3A/AIN1)
6	PE4 (OC3B/INT4)
7	PE5 (OC3C/INT5)
8	PE6 (T3/INT6)
9	PE7 (CLK0/ICP3/INT7)
10	VCC
11	GND
12	PH0 (RXD2)
13	PH1 (TXD2)
14	PH2 (XCK2)
15	PH3 (OC4A)
16	PH4 (OC4B)
17	PH5 (OC4C)
18	PH6 (OC2B)
19	PB0 (SS/PCINT0)
20	PB1 (SCK/PCINT1)
21	PB2 (MOSI/PCINT2)
22	PB3 (MISO/PCINT3)
23	PB4 (OC2A/PCINT4)
24	PB5 (OC1A/PCINT5)
25	PB6 (OC1B/PCINT6)

Pin	Signal
75	PA3 (AD3)
74	PA4 (AD4)
73	PA5 (AD5)
72	PA6 (AD6)
71	PA7 (AD7)
70	PG2 (ALE)
69	PJ6 (PCINT15)
68	PJ5 (PCINT14)
67	PJ4 (PCINT13)
66	PJ3 (PCINT12)
65	PJ2 (XCK3/PCINT11)
64	PJ1 (TXD3/PCINT10)
63	PJ0 (RXD3/PCINT9)
62	GND
61	VCC
60	PC7 (A15)
59	PC6 (A14)
58	PC5 (A13)
57	PC4 (A12)
56	PC3 (A11)
55	PC2 (A10)
54	PC1 (A9)
53	PC0 (A8)
52	PG1 (RD)
51	PG0 (WR)

0v
C6
100n 5v

SCK
MISO
RESET

J4
5 3 1
6 4 2
Programming
Interface
0v
+5V
MOSI

View from Connector side

+5V
R1
6k8

C12
4.7uF
10v

26	PB7 (OC0A/OC1C/PCINT7)
27	PH7 (T4)
28	PG3 (TOSC2)
29	PG4 (TOSC1)
30	RESET
31	VCC
32	GND
33	XTAL2
34	XTAL1
35	PL0 (ICP4)
36	PL1 (ICP5)
37	PL2 (T5)
38	PL3 (OC5A)
39	PL4 (OC5B)
40	PL5 (OC5C)
41	PL6
42	PL7
43	PD0 (SCL/INT0)
44	PD1 (SDA/INT1)
45	PD2 (RXD1/INT2)
46	PD3 (TXD1/INT3)
47	PD4 (ICP1)
48	PD5 (XCK1)
49	PD6 (T1)
50	PD7 (T0)

+12v
IC25
7805
+5v +5v
C7
100n
C8
22uF
C9
22uF
C1
100n
0v

POWER INPUT
+12v J5
0v

+5v
C2
100n
0v

+5v
R2
2k2

SMD LED

C10 18pF
X1
16Mhz
C11 18pF
0v

Rp x 8 5v

All 1k0

J1
5v
0v
Int 0
Int 1
Int 2
Int 3
Quad 0
Quad 1
Quad 2
Quad 3

J1 3 to 10 to have 100nF
capacitors to ground (Cx)

1 2 3 4 5 6 7 8 9 10

Note: Rp are optional pullup resistors.
They are probably not needed as the
internal 20k-50k pullups are enabled in
the software.
Important: - my encoders have maximum
current of 1mA. If yours are the same then
do not install pullups of less than 6k8.

Interface board for eight rotary encoders

Ian Sumner G3VPX 9.7.2008