P1

MCLR 1 2
+3V3 3 4
PGD2 5 6
PGC2
0V
ICSP

R1 10k +3V3

U1

MCLR/VPP/RA5 — VDD
AN0/VREF+/RA0 — VSS
AN1/VREF-/RA1 — SS/CN11/RB15
AN2/PGD1/U2TX/RB0 — AN10/RTCC/INT1/RB14
AN3/PGC1/U2RX/RB1 — AN11/SDO1/RB13
AN4/U1RX/RB2 — AN12/CN14/RB12
AN5/CN7/RB3 — SCK1/CN15/RB11
VSS — SDI1/CN16/RB10
OSCI/CLKI/RA2 — INT2/RA6
OSCO/CLKO/RA3 — IC1/CN9/RA7
SOSCI/U2RTS/RB4 — U1RTS/SDA1/RB9
SOSCO/U2CTS/RA4 — U1CTS/SCL1/RB8
VDD — U1TX/RB7
SDA1/RB5 — SCL1/RB6

PIC24F16KA102-I/SPSOIC

MCLR 1
AN0 2
AN1 3
AN2 4
AN3 5
UART_RX 6
AN5 7
0V 8
BUS_INT1
LED_1 11
LED_2 12
+3V3 13
VDD 14

28 VDD
27 0V
26 RB15
25 AN10
24 AN11
23 AN12
22 PGC2
21 PGD2
20 OC1
19 IC1
18 UART_RTS
17 UART_TX
16 UART_TX
15 SCL
SDA

Analogue/Digital IO
ICSP
PWM Out/Freq. Meas.

JP1
Primary Oscillator OSCO
C3 C1
0V
+3V3

TP1J

0V

C4 C6
+3V3
0V

P2
AN10 1 2 RB15
AN11 3 4 0V
AN12 5 6 +3V3
ANALOG IN 2

P3
IC1 1
OC1 2
0V 3
+3V3 4
COMP

I2C1
+3V3
0V
P4

R3 +3V3
SCL

IC1
SCL 6
WP 7
A2 3
A1 2
A0 1

EEPROM Array
VCC 8 +3V3
SDA 5 R4 SDA
GND 4
24AA01SN
0V

C9 +3V3
0V

CONN1
INTR PS1
PS2
PS3
DBPS4
DAPS5
PS6
PS7
PS8
+5V
0V
MHRJJ88NFRA

CONN2
INTR PS1
PS2
PS3
DBPS4
DAPS5
PS6
PS7
PS8
+5V
0V
MHRJJ88NFRA

VDD VDD SDA SDA
GND GND SCLK SCL
ALERT ALERT
0V
MCP9800
SJ1
QC1.1

LED_1 LED_2 +3V3
R9 390 R5 390 R6 390
LED2 AMBER LED1 RED LED8 GREEN
0V 0V 0V

+5V
D2
P6SMB12CA
DA
D1
P6SMB12CA
DB
D3
P6SMB12CA
0V

RS485 Wiring on Cat5 UTP

Pin 4 - DB
Pin 5 - DA
Pin 7 - 5V
Pin 8 - GND
Pin 2 - 3.3V
Pin 1 - GND

ANALOG IN
6 0V
5 AN5
4 AN3
3 AN2
2 AN1
1 AN0
P6

Level Conversion

3.3V Domain → 5V Domain
+5V
R7 4.7k
UART_RTS 1 IC3A 2 UART_RTS_5V
TP8 7407D TP1
R8 4.7k
UART_TX 3 IC3B 4 UART_TX_5V
TP7 7407D TP2

3.3V Domain → Open Drain

BUS_INT1 9 IC3D 8 INTR
7407D TP3

11 IC3E 10
7407D
0V

13 IC3F 12
7407D

+3V3
C2 14 VCC
IC3P
7 GND
0V

5V Domain → 3.3V Domain
+3V3
R2 2.7K
UART_RX_5V 5 IC3C 6 UART_RX
TP5 7407D TP4

The 74LVC is capable of handling 5V Inputs
independant of Vcc. Due to voltage thresholds
supply chip with 3.3V.

+5V

TP12

+3V3

TP16+3V3

C13
10uF

IN   OUT
ADJ

C12
100uF

IC7
TLV1117

0V

0V   0V

+5V   +3V3

P5

1
2
3
4

PWR

baseboard

not saved!

Sheet: 2/3

UART_TX_5V

UART_RTS_5V

UART_RX_5V

IC4

DE

D

RE

R

VCC

A

B

GND

+5V

C11

0.1uF

TP10

DA

DB

TP9

0V

SP483E

baseboard

not saved!

Sheet: 3/3