

Power Regulator



USB Port

Oscillator/16 MHz



Power Jack

ICSP for Atmega2560

Atmega2560

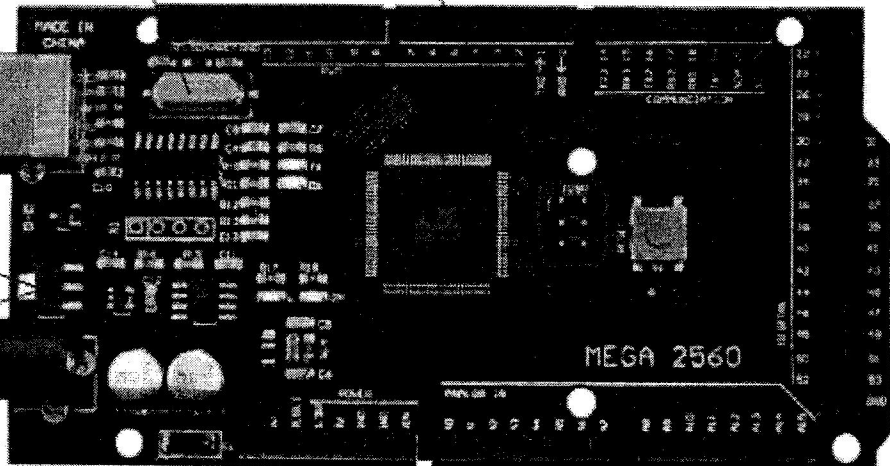
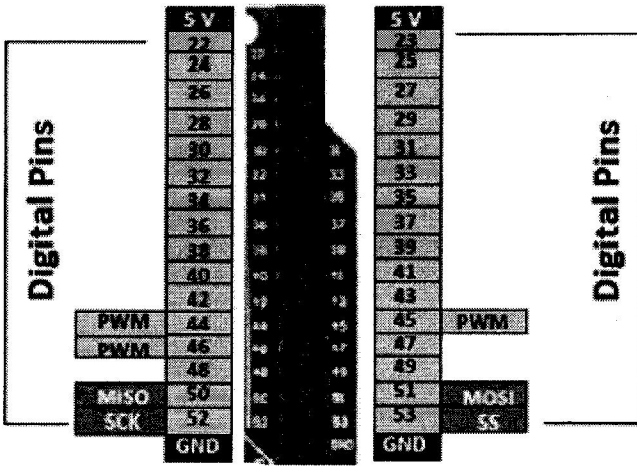
No Connection
IOREF
RST
3.3V
5V
GND
GND
Vin

SCL	Serial Clock
SDA	Serial Data
AREF	LED
GND	

13	PWM
12	PWM
11	PWM
10	PWM
9	PWM
8	PWM

7	PWM
6	PWM
5	PWM
4	PWM
3	PWM
2	PWM
1	PWM
0	Serial Port 0 TX
	Serial Port 0 RX

14	Serial Port 3 TX
15	Serial Port 3 RX
16	Serial Port 2 TX
17	Serial Port 2 RX
18	Serial Port 1 TX
19	Serial Port 1 RX
20	SDA I2C
21	SCL I2C



Analog Pin 0	A0
Analog Pin 1	A1
Analog Pin 2	A2
Analog Pin 3	A3
Analog Pin 4	A4
Analog Pin 5	A5
Analog Pin 6	A6
Analog Pin 7	A7

Analog Pin 8	A8
Analog Pin 9	A9
Analog Pin 10	A10
Analog Pin 11	A11
Analog Pin 12	A12
Analog Pin 13	A13
Analog Pin 14	A14
Analog Pin 15	A15

Arduino Mega 2560 Pinout

```

void setup() {
  // put your setup code here, to run once:
  // This is the code for triple turnout control
  // using digital pins 24-53 (30 total pins)
  // Each triple turnout will take 10 pins

  // Rock Island Rear turnout
  // Inputs pins 24, 25 are active low, default high
  // Output pins 26, 27 are active high for tortoise relay board
  // Output pins 28-33 are set in an alternating High/low pattern to drive
bi-color LED's

  // Rock Island Front turnout
  // Inputs pins 34, 35 are active low, default high
  // Output pins 36, 37 are active high for tortoise relay board
  // Output pins 38-43 are set in an alternating High/low pattern to drive
bi-color LED's

  // San Bernardino Service Lead turnout
  // Inputs pins 44, 45 are active low, default high
  // Output pins 46, 47 are active high for tortoise relay board
  // Output pins 48-53 are set in an alternating High/low pattern to drive
k color LED's

  // define 6 inputs
  //Rock Island Rear triple turnout
pinMode (24, INPUT_PULLUP); //Triple 1 - SW Closed Right - sw1up
pinMode (25, INPUT_PULLUP); //Triple 1 - SW Closed Left - sw1down
  //Rock Island Front triple turnout
pinMode (34, INPUT_PULLUP); //Triple 2 - SW Closed Right - sw2up
pinMode (35, INPUT_PULLUP); //Triple 2 - SW Closed Left - sw2down
  //San Bernardino Service triple turnout
pinMode (44, INPUT_PULLUP); //Triple 3 - SW Closed Right - sw3up
pinMode (45, INPUT_PULLUP); //Triple 3 - SW Closed Left - sw3down

  //define 24 outputs
  //Rock Island Rear triple turnout
pinMode (26, OUTPUT); //Triple 1 - Tortoise 1.1 Front - Relay board
pinMode (27, OUTPUT); //Triple 1 - Tortoise 1.2 Rear - Relay board
pinMode (28, OUTPUT); //Triple 1 - Right LED bi-color
pinMode (29, OUTPUT); //Triple 1 - Right LED bi-color
pinMode (30, OUTPUT); //Triple 1 - Center LED bi-color
pinMode (31, OUTPUT); //Triple 1 - Center LED bi-color
pinMode (32, OUTPUT); //Triple 1 - Left LED bi-color

```

```
pinMode (33, OUTPUT); //Triple 1 - Left LED bi-color
//Rock Island Front triple turnout
pinMode (36, OUTPUT); //Triple 2 - Tortoise 2.1 Front - Relay board
pinMode (37, OUTPUT); //Triple 2 - Tortoise 2.2 Rear - Relay board
pinMode (38, OUTPUT); //Triple 2 - Right LED bi-color
pinMode (39, OUTPUT); //Triple 2 - Right LED bi-color
pinMode (40, OUTPUT); //Triple 2 - Center LED bi-color
pinMode (41, OUTPUT); //Triple 2 - Center LED bi-color
pinMode (42, OUTPUT); //Triple 2 - Left LED bi-color
pinMode (43, OUTPUT); //Triple 2 - Left LED bi-color
//San Bernardino Service triple turnout
pinMode (46, OUTPUT); //Triple 3 - Tortoise 3.1 Front - Relay board
pinMode (47, OUTPUT); //Triple 3 - Tortoise 3.2 Rear - Relay board
pinMode (48, OUTPUT); //Triple 3 - Right LED bi-color
pinMode (49, OUTPUT); //Triple 3 - Right LED bi-color
pinMode (50, OUTPUT); //Triple 3 - Center LED bi-color
pinMode (51, OUTPUT); //Triple 3 - Center LED bi-color
pinMode (52, OUTPUT); //Triple 3 - Left LED bi-color
pinMode (53, OUTPUT); //Triple 3 - Left LED bi-color
```

```
// move tortoise to 'c' and turn lights on Green
```

```
digitalWrite (26, LOW); //Tortoise 1.1c
digitalWrite (27, LOW); //Tortoise 1.2c
digitalWrite (28, LOW); //LED bi-color On
digitalWrite (29, HIGH); //LED bi-color Off
digitalWrite (30, LOW); //LED bi-color On
digitalWrite (31, HIGH); //LED bi-color Off
digitalWrite (32, LOW); //LED bi-color On
digitalWrite (33, HIGH); //LED bi-color Off
```

```
digitalWrite (36, LOW); //Tortoise 2.1c
digitalWrite (37, LOW); //Tortoise 2.2c
digitalWrite (38, LOW); //LED bi-color On
digitalWrite (39, HIGH); //LED bi-color Off
digitalWrite (40, LOW); //LED bi-color On
digitalWrite (41, HIGH); //LED bi-color Off
digitalWrite (42, LOW); //LED bi-color On
digitalWrite (43, HIGH); //LED bi-color Off
```

```
digitalWrite (46, LOW); //Tortoise 3.1c
digitalWrite (47, LOW); //Tortoise 3.2c
digitalWrite (48, LOW); //LED bi-color On
digitalWrite (49, HIGH); //LED bi-color Off
digitalWrite (50, LOW); //LED bi-color On
digitalWrite (51, HIGH); //LED bi-color Off
```

```
digitalWrite (52, LOW); //LED bi-color On
digitalWrite (53, HIGH); //LED bi-color Off
```

```
delay (5000); // Delay 5 second
```

```
// move tortoise to 't' and turn Lights on Red
```

```
digitalWrite (26, HIGH); //Tortoise 1.1t
digitalWrite (27, HIGH); //Tortoise 1.2t
digitalWrite (28, HIGH); //LED bi-color Off
digitalWrite (29, LOW); //LED bi-color On
digitalWrite (30, HIGH); //LED bi-color Off
digitalWrite (31, LOW); //LED bi-color On
digitalWrite (32, HIGH); //LED bi-color Off
digitalWrite (33, LOW); //LED bi-color On
```

```
digitalWrite (36, HIGH); //Tortoise 2.1t
digitalWrite (37, HIGH); //Tortoise 2.2t
digitalWrite (38, HIGH); //LED bi-color Off
digitalWrite (39, LOW); //LED bi-color On
digitalWrite (40, HIGH); //LED bi-color Off
digitalWrite (41, LOW); //LED bi-color On
digitalWrite (42, HIGH); //LED bi-color Off
digitalWrite (43, LOW); //LED bi-color On
```

```
digitalWrite (46, HIGH); //Tortoise 3.1t
digitalWrite (47, HIGH); //Tortoise 3.2t
digitalWrite (48, HIGH); //LED bi-color Off
digitalWrite (49, LOW); //LED bi-color On
digitalWrite (50, HIGH); //LED bi-color Off
digitalWrite (51, LOW); //LED bi-color On
digitalWrite (52, HIGH); //LED bi-color Off
digitalWrite (53, LOW); //LED bi-color On
```

```
delay (5000); // Delay 5 second
```

```
}
```

```
//End Setup code
```

```
void loop() {
```

```
// Put your main code here to run repeatedly:
```

```
// Define toggle Switch variables
```

```
int swlup = HIGH;
```

```
int swldown = HIGH;
```

```
int sw2up = HIGH;
int sw2down = HIGH;
int sw3up = HIGH;
int sw3down = HIGH;
```

```
// Begin Rock Island Rear
// Right code
```

```
swlup=digitalRead (24); //Read Switch 1 being up
if (swlup == LOW) {
  digitalWrite (26, HIGH); //Tortoise 1.1t

  digitalWrite (28, LOW); //Right LED Green
  digitalWrite (29, HIGH); //Right LED Green

  digitalWrite (30, HIGH); //Center LED Red
  digitalWrite (31, LOW); //Center LED Red

  digitalWrite (32, HIGH); //Center LED Red
  digitalWrite (33, LOW); //Center LED Red
}
```

```
// Left code
```

```
swldown=digitalRead (25); //Read Switch 1 being down
if (swldown == LOW) {
  digitalWrite (26, LOW); //Tortoise 1.1c
  digitalWrite (27, HIGH); //Tortoise 1.2t

  digitalWrite (28, HIGH); //Right LED Red
  digitalWrite (29, LOW); //Right LED Red

  digitalWrite (30, HIGH); //Center LED Red
  digitalWrite (31, LOW); //Center LED Red

  digitalWrite (32, LOW); //Left LED Green
  digitalWrite (33, HIGH); //Left LED Green
}
```

```
// Center code
```

```
swlup=digitalRead (24); //Read Switch 1 being up
swldown=digitalRead (25); //Read Switch 1 being down
if ((swlup == HIGH) && (swldown == HIGH)) {
```

```
digitalWrite (26, LOW); //Tortoise 1.1c
digitalWrite (27, LOW); //Tortoise 1.2c
```

```
digitalWrite (28, HIGH); //Right LED Red
digitalWrite (29, LOW); //Right LED Red
```

```
digitalWrite (30, LOW); //Center LED Green
digitalWrite (31, HIGH); //Center LED Green
```

```
digitalWrite (32, HIGH); //Left LED Red
digitalWrite (33, LOW); //Left LED Red
```

```
}
```

```
// End Rock Island Rear
```

```
//-----
```

```
// Begin Rock Island Front
```

```
// Right code
```

```
swlup=digitalRead (34); //Read Switch 1 being up
```

```
if (swlup == LOW) {
```

```
digitalWrite (36, HIGH); //Tortoise 2.1t
```

```
digitalWrite (38, LOW); //Right LED Green
```

```
digitalWrite (39, HIGH); //Right LED Green
```

```
digitalWrite (40, HIGH); //Center LED Red
```

```
digitalWrite (41, LOW); //Center LED Red
```

```
digitalWrite (42, HIGH); //Center LED Red
```

```
digitalWrite (43, LOW); //Center LED Red
```

```
}
```

```
// Left code
```

```
swldown=digitalRead (35); //Read Switch 1 being down
```

```
if (swldown == LOW) {
```

```
digitalWrite (36, LOW); //Tortoise 2.1c
```

```
digitalWrite (37, HIGH); //Tortoise 2.2t
```

```
digitalWrite (38, HIGH); //Right LED Red
```

```
digitalWrite (39, LOW); //Right LED Red
```

```
digitalWrite (40, HIGH); //Center LED Red
```

```
digitalWrite (41, LOW); //Center LED Red
```

```
digitalWrite (42, LOW); //Left LED Green
digitalWrite (43, HIGH); //Left LED Green
```

```
// Center code
```

```
swlup=digitalRead (34); //Read Switch 1 being up
swldown=digitalRead (35); //Read Switch 1 being down
if ((swlup == HIGH) && (swldown == HIGH)) {
  digitalWrite (36, LOW); //Tortoise 2.1c
  digitalWrite (37, LOW); //Tortoise 2.2c
```

```
  digitalWrite (38, HIGH); //Right LED Red
  digitalWrite (39, LOW); //Right LED Red
```

```
  digitalWrite (40, LOW); //Center LED Green
  digitalWrite (41, HIGH); //Center LED Green
```

```
  digitalWrite (42, HIGH); //Left LED Red
  digitalWrite (43, LOW); //Left LED Red
```

```
// End Rock Island Front
```

```
// -----
```

```
// Begin SB Service
```

```
// Right code
```

```
swlup=digitalRead (44); //Read Switch 1 being up
```

```
if (swlup == LOW) {
```

```
  digitalWrite (46, HIGH); //Tortoise 3.1t
```

```
  digitalWrite (48, LOW); //Right LED Green
  digitalWrite (49, HIGH); //Right LED Green
```

```
  digitalWrite (50, HIGH); //Center LED Red
  digitalWrite (51, LOW); //Center LED Red
```

```
  digitalWrite (52, HIGH); //Center LED Red
  digitalWrite (53, LOW); //Center LED Red
```

```
}
```

```
// Left code
```

```
swldown=digitalRead (45); //Read Switch 1 being down
if (swldown == LOW) {
  digitalWrite (46, LOW); //Tortoise 3.1c
  digitalWrite (47, HIGH); //Tortoise 3.2t

  digitalWrite (48, HIGH); //Right LED Red
  digitalWrite (49, LOW); //Right LED Red

  digitalWrite (50, HIGH); //Center LED Red
  digitalWrite (51, LOW); //Center LED Red

  digitalWrite (52, LOW); //Left LED Green
  digitalWrite (53, HIGH); //Left LED Green
}

// Center code

swlup=digitalRead (44); //Read Switch 1 being up
swldown=digitalRead (45); //Read Switch 1 being down
if ((swlup == HIGH) && (swldown == HIGH)) {
  digitalWrite (46, LOW); //Tortoise 3.1c
  digitalWrite (47, LOW); //Tortoise 3.2c

  digitalWrite (48, HIGH); //Right LED Red
  digitalWrite (49, LOW); //Right LED Red

  digitalWrite (50, LOW); //Center LED Green
  digitalWrite (51, HIGH); //Center LED Green

  digitalWrite (52, HIGH); //Left LED Red
  digitalWrite (53, LOW); //Left LED Red
}

// End SB Service

}
```


Fast Tracks Tie Template

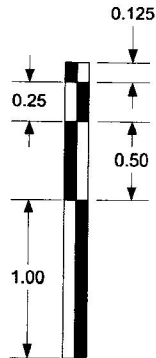
HO Scale No. 6 3-Way

Produced To NMRA Standards

Version 1.01

Printing Instructions

- Select the Print option in the Adobe toolbar.
- Be sure that all page scaling, fitting or cropping options in the Adobe print options box are turned off.
- Setup your printer to print in B&W or Greyscale with the highest possible quality setting.
- Select 8.5 X 14 (Legal) paper.
- Be sure that your printer is set to print full size with no page scaling, fitting or cropping.



Confirm that the template is printed at the correct size by measuring the above scale with a ruler or vernier caliper. If the size of the scale is not correct, then check your printing settings to be sure that all scaling and fitting functions have been turned off.

Shaded ties are PCB ties.

Important Notes

This template has been designed to aid in the placement of ties for your Fast Tracks built trackwork. The location of the rails is purely for aesthetic purposes and is not intended to imply the correct or accurate placement of rail.

This template is only intended to help you place your ties on your layout and should not be considered to be representative of the accuracy of our Fast Tracks assembly fixtures. All Fast Tracks fixtures are precision machined to your exact specifications and selected standard.

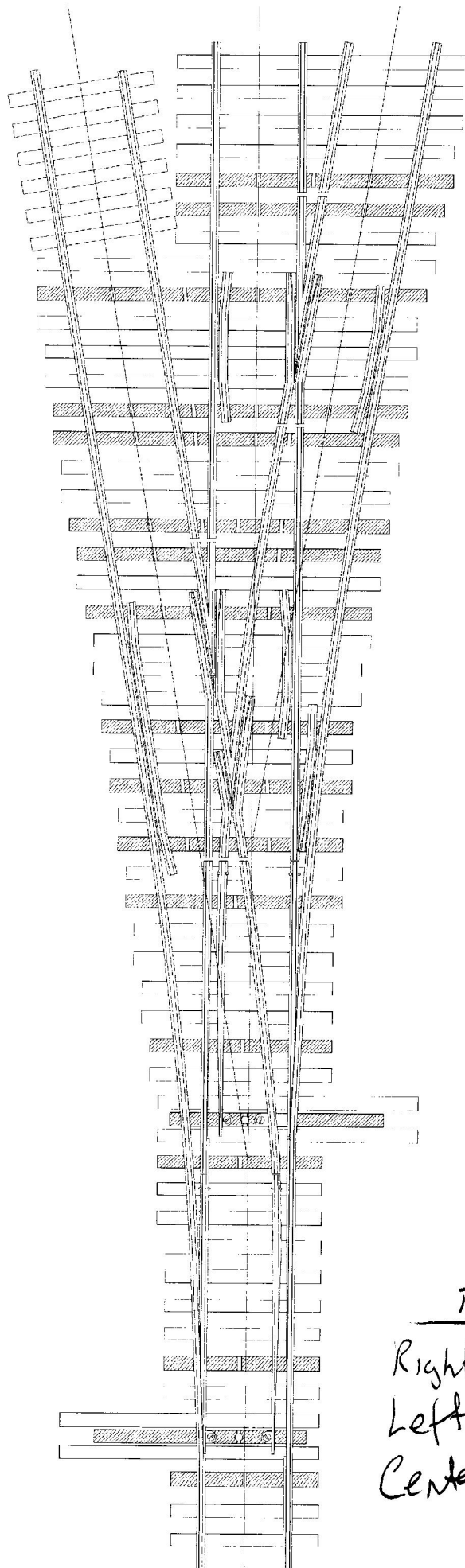
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TT
Right - 1c - 2t
Left - 1t
Center - 1c - 2c