

**BruControl Interface Wiring Map: Arduino MEGA 2560 (Firmware v45)**

| Connection ->      |                   | TCP (Network)       |            | Serial     | <- Connection   |
|--------------------|-------------------|---------------------|------------|------------|---|
| Wiring Map ->      |                   | Default             | Wi-Fi      | Default    | <- Wiring Map   |
| Firmware Prefix -> |                   | BruControl.45.MEGA. |            |            | <- Firmware Prefix  |
| Firmware Suffix -> |                   |                     |            |            | <- Firmware Suffix  |
| Interface pin #    | BruControl port # | E                   | W          | S          | User Description<br>(record device type and device connected) |
| 0                  | N/A               | N/C                 | N/C        | N/C        |   |
| 1                  | N/A               | N/C                 | N/C        | N/C        |   |
| 2                  | 2                 | D, C, P, R          | D, C, P, R | D, C, P, R |   |
| 3                  | 3                 | D, C, P, R          | D, C, P, R | D, C, P, R |   |
| 4                  | 4                 | D, P, R             | D, P, R    | D, P, R    |   |
| 5                  | 5                 | D, P, O, R          | N/C        | D, P, O, R |   |
| 6                  | 6                 | D, P, R             | D, P, O, R | D, P, R    |   |
| 7                  | 7                 | D, P, R             | N/C        | D, P, R    |   |
| 8                  | 8                 | D, P, R             | D, P, R    | D, P, R    |   |
| 9                  | 9                 | D, P, R             | D, P, R    | D, P, R    |   |
| 10                 | 10                | N/C                 | N/C        | D, P, R    |   |
| 11                 | 11                | D, P, R             | D, P, R    | D, P, R    |   |
| 12                 | 12                | D, P, R             | D, P, R    | D, P, R    |   |
| 13                 | 13                | D*, P, L            | D*, P, L   | D*, P, L   |   |
| 14                 | 14                | D, R                | D, R       | D, R       |   |
| 15                 | 15                | D, R                | D, R       | D, R       |   |
| 16                 | 16                | D, R                | D, R       | D, R       |   |
| 17                 | 17                | D, R                | D, R       | D, R       |   |
| 18                 | 18                | D, C, R             | D, C, R    | D, C, R    |   |
| 19                 | 19                | D, C, R             | D, C, R    | D, C, R    |   |
| 20                 | N/A               | N/C                 | N/C        | N/C        |   |
| 21                 | N/A               | N/C                 | N/C        | N/C        |   |
| 22                 | 22                | D, R                | D, R       | D, R       |   |
| 23                 | 23                | D, R                | D, R       | D, R       |   |
| 24                 | 24                | D, R                | D, R       | D, R       |   |
| 25                 | 25                | D, R                | D, R       | D, R       |   |
| 26                 | 26                | D, R                | D, R       | D, R       |   |
| 27                 | 27                | D, R                | D, R       | D, R       |   |
| 28                 | 28                | D, R                | D, R       | D, R       |   |
| 29                 | 29                | D, R                | D, R       | D, R       |   |

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| Firmware Suffix -> |                   |                     |         |         | <- Firmware Suffix  |
| Interface pin #    | BruControl port # | E                   | W       | S       | User Description<br>(record device type and device connected) |
| 30                 | 30                | D, R                | D, R    | D, R    |   |
| 31                 | 31                | D, R                | D, R    | D, R    |   |
| 32                 | 32                | D, R                | D, R    | D, R    |   |
| 33                 | 33                | D, R                | D, R    | D, R    |   |
| 34                 | 34                | D, R                | D, R    | D, R    |   |
| 35                 | 35                | D, R                | D, R    | D, R    |   |
| 36                 | 36                | D, R                | D, R    | D, R    |   |
| 37                 | 37                | D, R                | D, R    | D, R    |   |
| 38                 | 38                | D, R                | D, R    | D, R    |   |
| 39                 | 39                | D, R                | D, R    | D, R    |   |
| 40                 | 40                | D, R                | D, R    | D, R    |   |
| 41                 | 41                | D, R                | D, R    | D, R    |   |
| 42                 | 42                | D, R                | D, R    | D, R    |   |
| 43                 | 43                | D, R                | D, R    | D, R    |   |
| 44                 | 44                | D, P, R             | D, P, R | D, P, R |   |
| 45                 | 45                | D, P, R             | D, P, R | D, P, R |   |
| 46                 | 46                | D, P, R             | D, P, R | D, P, R |   |
| 47                 | 47                | D, R                | D, R    | D, R    |   |
| 48                 | 48                | D, R                | D, R    | D, R    |   |
| 49                 | 49                | D, R                | D, R    | D, R    |   |
| 50                 | 50                | N/C                 | N/C     | N/C     |   |
| 51                 | 51                | N/C                 | N/C     | N/C     |   |
| 52                 | 52                | N/C                 | N/C     | N/C     |   |
| 53                 | 53                | N/C                 | N/C     | N/C     |   |
| A0                 | 100               | A                   | A       | A       |   |
| A1                 | 101               | A                   | A       | A       |   |
| A2                 | 102               | A                   | A       | A       |   |
| A3                 | 103               | A                   | A       | A       |   |
| A4                 | 104               | A                   | A       | A       |   |
| A5                 | 105               | A                   | A       | A       |   |

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| Firmware Suffix -> |                   |                     |       |         | <- Firmware Suffix  |
| Interface pin #    | BruControl port # | E                   | W     | S       | User Description<br>(record device type and device connected) |
| A6                 | 106               | A                   | A     | A       |   |
| A7                 | 107               | A                   | A     | A       |   |
| A8                 | 108               | A                   | A     | A       |   |
| A9                 | 109               | A                   | A     | A       |   |
| A10                | 110               | A                   | A     | A       |   |
| A11                | 111               | A                   | A     | A       |   |
| A12                | 112               | A                   | A     | A       |   |
| A13                | 113               | A                   | A     | A       |   |
| A14                | 114               | A                   | A     | A       |   |
| A15                | 115               | A                   | A     | A       |   |

**Notes / Key**

Instructions: Select the column for firmware used. Wire each interface pin per possible input/outputs. Select device's corresponding port in BruControl. Default Ethernet (E) shield/boards must be Wiznet 5100 or 5500 based. Wi-Fi (W) shields/boards must be Atmel WINC1500 based.

Interface Wiring Map Codes:

D = Digital Input or Digital Output (Note: Input can be 5V active high or low, output is 5V). \* indicates Digital Output only.  
 P = PWM Output (Note: Output is 5V peak. Frequency is ~500 or ~1000 Hz. Create Analog Output using RC filter or Analog Amplifier Board).  
 C = Counter Input (Note: trigger is falling edge. Sensor must pull up/down 5V, otherwise an external resistor is needed).  
 A = Analog Input (Note: range is compared to AREF, which is tied to 5V... also 5V is maximum allowable input).  
 O = 1-Wire Input (Note: all 1-wire data pins must be tied to pin 5 or 6 per above only but are addressed by virtual ports 200 - 209 in BruControl).  
 R = RTD Input (via SPI board). Wire CS pin from each individual boards to these pins only. Other board pins wired in parallel - see RTD schematic.  
 L = Onboard LED (Note: connecting to "Active Low" or "Low Trigger" relay board may light LED when device is disabled in BruControl).

Duty Cycle and Hysteresis devices use a Digital Output (D).  
 PID and Deadband devices on pins with both Digital (D) and PWM Output (P) will use PWM Output.  
 For binary switches (e.g. SSR), select pin without PWM Output (P).  
 Analog Reference pin (AREF) should be tied to +5V or less to measure analog voltage inputs.  
 Maximum current (sink or source) per pin is 15mA. Recommend to keep each equal or less than 5mA .