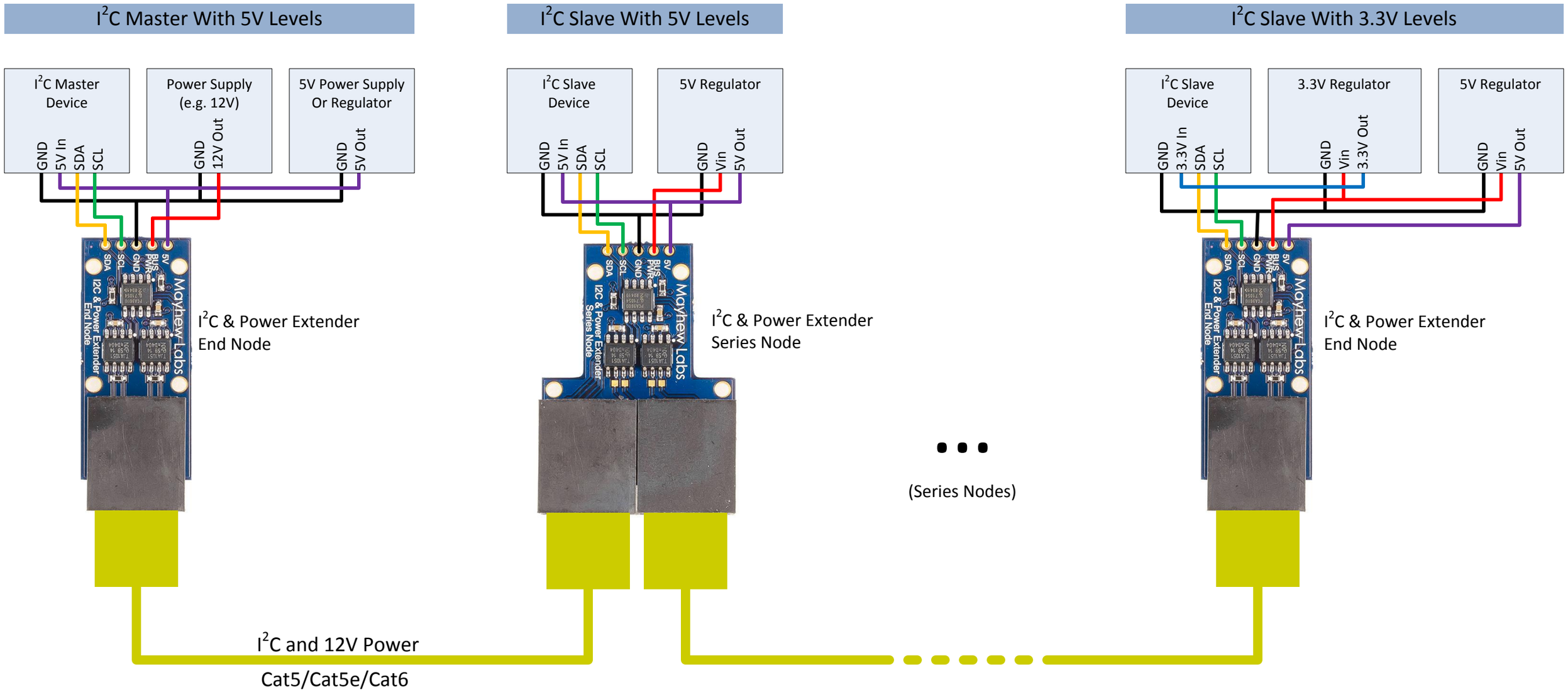
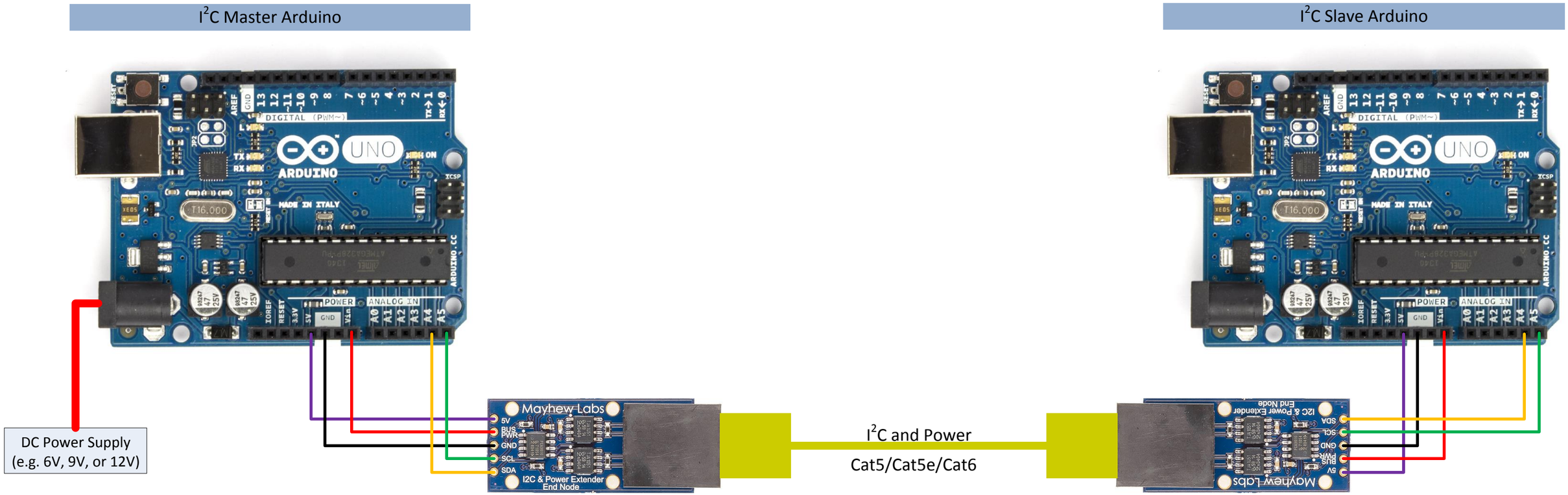
Example 1: I²C Bus with Two End Nodes and One Series Node, 5V and 3.3V Devices



Implementation Notes:

1. Each Extender Node may have several I²C devices attached to its input.
2. Nodes must be powered by 4.5V to 5.5V.
3. SDA and SCL must have pullups at the input of each node. If pullups to 5V are desired, bridge both solder jumpers on the back of the Extender Node PCB.
4. Series Nodes may be used as End Nodes if 100Ω, 0603 size, resistors are placed at the unpopulated positions behind the RJ45 jacks.
5. A single 5V supply may be used to provide both Extender Node power and bus power to other nodes if ethernet cable lengths are short and nodes do not require much current. In this case, the 5V regulator at each node may be eliminated and '5V' should be tied to 'BUS PWR'.
6. For longer ethernet runs, a voltage supply greater than 5V will be required due to the voltage drop of the cable. A calculator like the following may be used to determine the minimum supply required to provide the desired voltage at the nodes: http://blog.fosketts.net/toolbox/power-ethernet-calculator/
7. Maximum ethernet runs will depend on the I²C bus speed, number of nodes, and type of cable used. Lab tests have shown that a bus with two End Nodes and one Series Node can be extended beyond 365 feet at 100kHz and 165 feet at 400kHz using unshielded Cat5e.

Example 2: Extending I²C & Power Between Two Arduinos



Implementation Notes:

1. Power is supplied to the right Arduino by connecting the Vin pin to BUS PWR at both nodes. No external power supply is needed at the right Arduino.
2. Each Arduino's onboard 5V regulator provides the necessary power for the Extender Node.
3. For I²C speeds above 100kHz, the Arduino's 10kΩ internal pullup resistors should be disabled and the Extender Node's onboard pullups should be enabled.