ELECTRONICS SOP

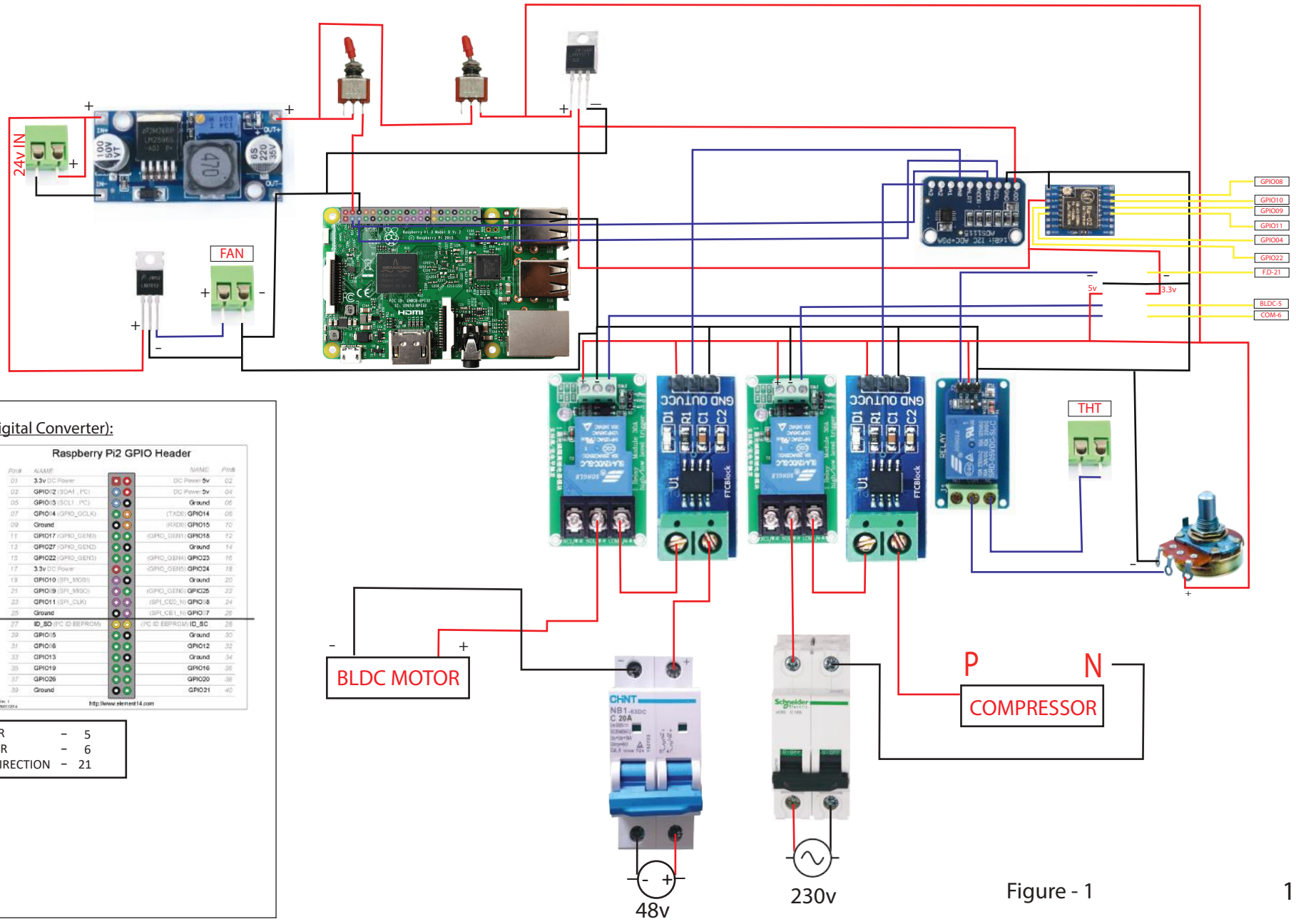
1. VEROBOARD SOLDERING SOP
2. PCB FABRICATION SOP
3. CONTROL PANEL SOP
4. PILOTING SOP

Prepared By

Checked By

Approved By

SINGLE AERATION SYSTEM 3 PHASE BLDC MOTOR



ADS1115 (Analog to Digital Converter):

SCL – GPIO03
SDA – GPIO02
A0 – CS1(OUT)
A3 – CS2(OUT)
VDD – LM1117T

LoRa Module:

NSS	– GPIO08
MISO	– GPIO09
MOSI	– GPIO10
SCK	– GPIO11
RST	– GPIO22
DIO0	– GPIO04
3.3V	– LM1117T

L.L.S - in -

BLDC MOTOR	–	5
COMPRESSOR	–	6
FORWARD DIRECTION	–	21

Colour Codes:

- VCC
- Ground
- Signal

Figure - 1

Some general steps for a standard PCB board soldering SOP (Standard Operating Procedure):

* Where you will be working ensure that you have all the necessary tools and materials, such as a soldering iron, solder wire, flux, solder wick, and any other necessary components.

* Check the board for any defects or abnormalities that may affect the soldering process. Make sure that all the components are in their correct places and there are no loose or damaged connections.

* Flux is a substance used to clean and prepare the surfaces for soldering. Apply a small amount of flux to the areas of the PCB where you will be soldering the components.

* **Heat the soldering iron:** Turn on the soldering iron and allow it to heat up to the appropriate temperature for your particular soldering job.

* Hold the soldering iron against the component and the PCB pad at the same time, allowing both to heat up.Once the solder begins to melt, apply it to the joint until it forms a smooth, shiny surface.

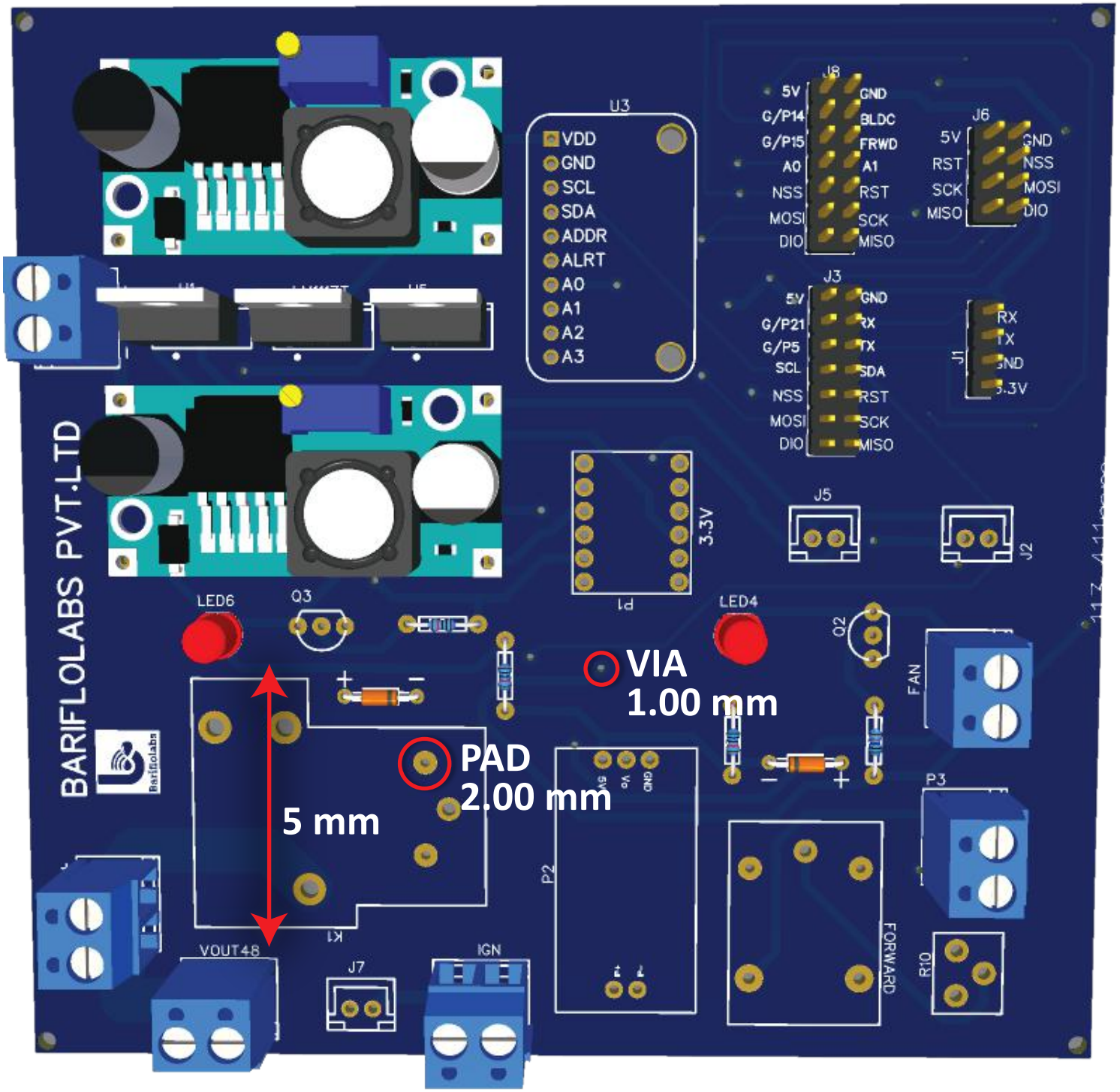
* After placing the component check all the vcc or vdd ,ground ,& signal track is properly soldered or not as well as continuity test .

* **Test the PCB:** Once all the components are soldered in place, test the PCB to ensure that everything is working correctly with the help of multimeter .

* After each solder joint, use solder wick or a desoldering pump to remove any excess solder or debris that may have accumulated on the joint.

* Then set the voltage with the help of Buck as per component required then turn on the board.

AFTER FABRICATION SOP



When a PCB (Printed Circuit Board) is being fabricated, several important checks need :

1. Design Verification: Verify that the PCB design files are accurate and match the desired specifications. Check for proper component placement, trace routing, and signal integrity considerations.

2. Materials Inspection: Verify that the materials used for the PCB, such as copper-clad laminates, solder mask, and silkscreen, are of the correct type, thickness, and quality.

3. Drill Accuracy: Check the accuracy of the drilled holes, including hole size, position, and alignment with the PCB design. Verify that all required holes are present and properly aligned.

4. Copper Traces: Inspect the copper traces for any defects, such as shorts, opens, or discontinuities. Ensure that the trace widths, clearances, and spacing meet the design requirements.

5. Solder Mask Alignment: Verify that the solder mask layer is accurately aligned with the copper traces, ensuring that the mask covers the correct areas and exposes the necessary pads for soldering.

6. Silkscreen Accuracy: Check the silkscreen layer for accuracy in component labeling, polarity markings, reference designators, and other printed information. Ensure that the silkscreen does not obstruct any critical areas or create unintended short circuits.

7. Solderability: Inspect the solderability of the PCB pads, particularly for surface mount components. Verify that the pads are properly tinned and free from oxidation or contamination that may hinder soldering.

10. Electrical Continuity: Conduct electrical continuity tests to ensure that all required connections are present and functioning correctly. Use methods like a continuity tester or automated testing equipment to check for shorts or open circuits.

11. Quality Control: Perform a thorough visual inspection of the PCB for any cosmetic defects, such as scratches, stains, or delamination. Additionally, conduct quality control checks at various stages of the fabrication process

3 PHASE BLDC MOTOR CONTROL PANEL SOP

Clear wire instructions for ease of use

MOTOR DIVER

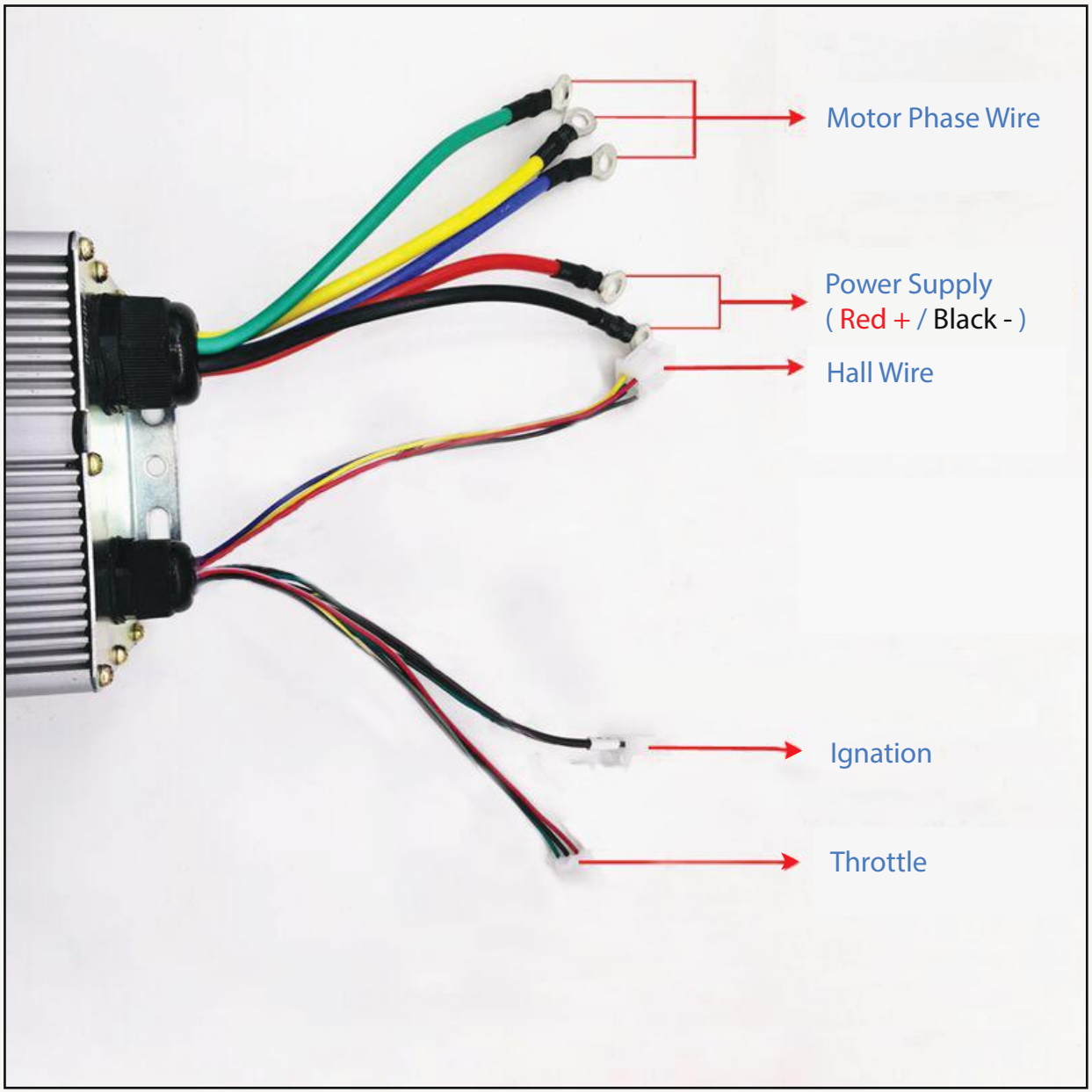


Figure - 1

MOTOR WITH DRIVER CONNECTION

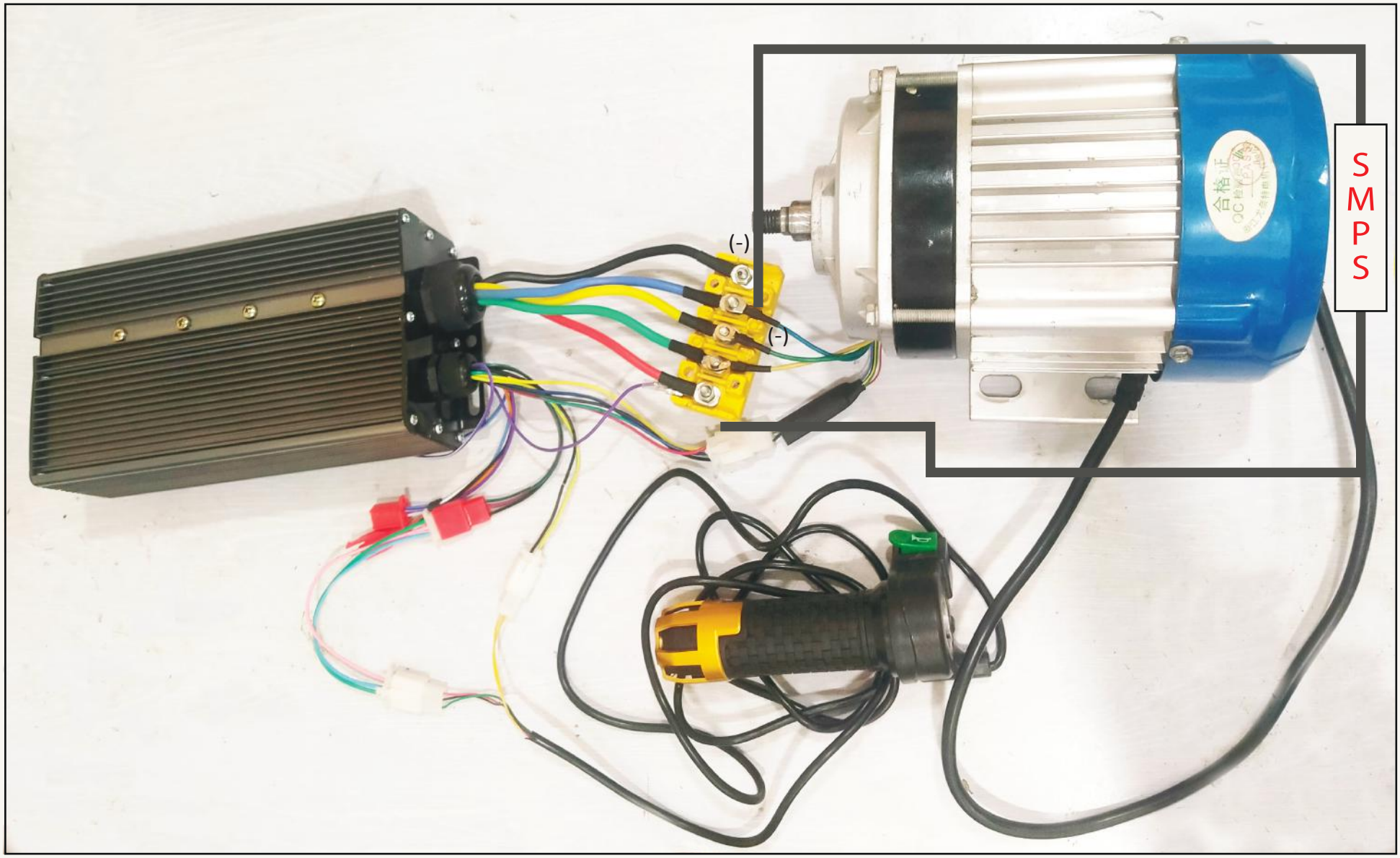


Figure - 2

CONTROL PANEL FLOWCHART

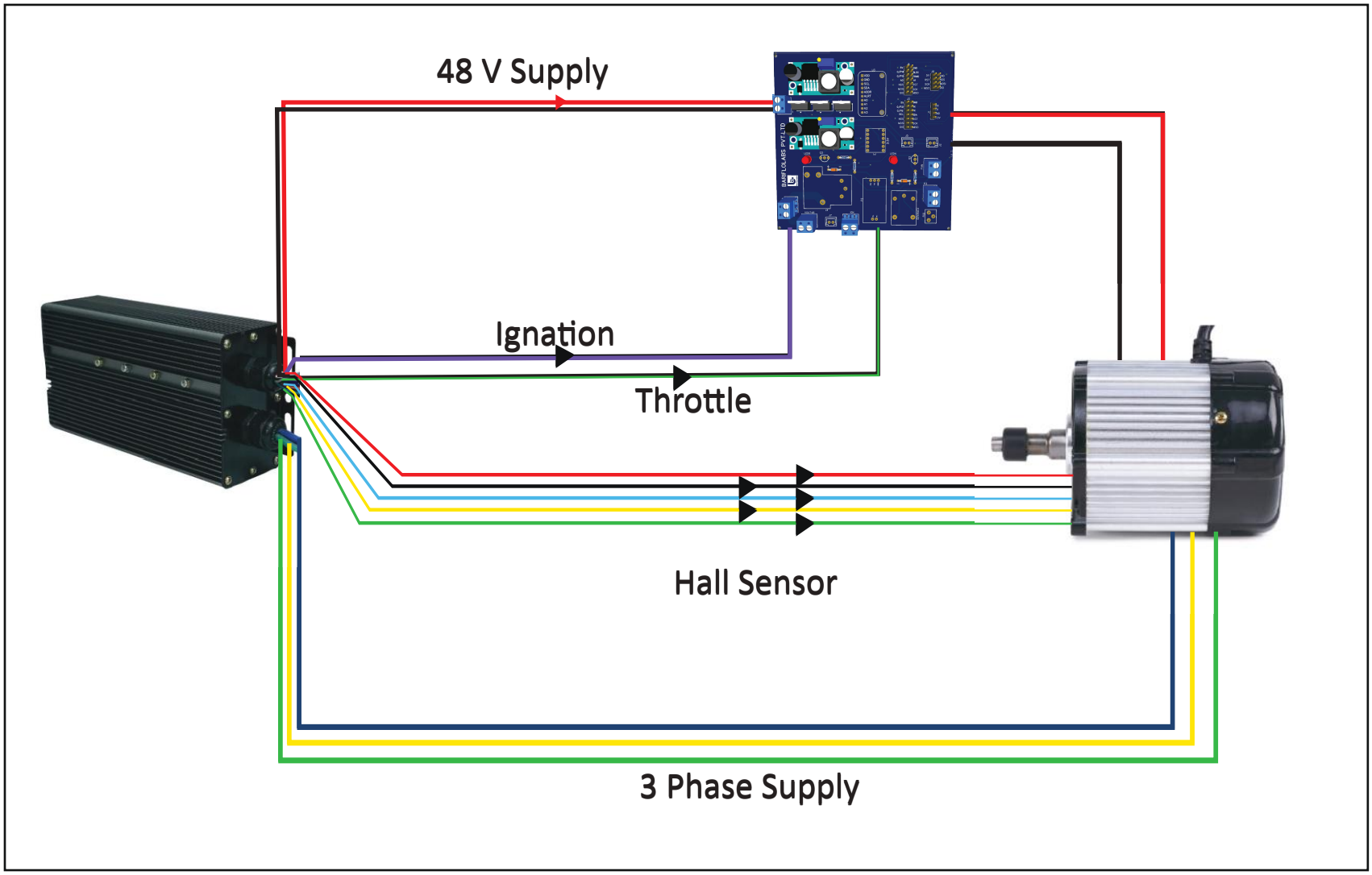


Figure - 3

CONTROL PANEL FLOWCHART

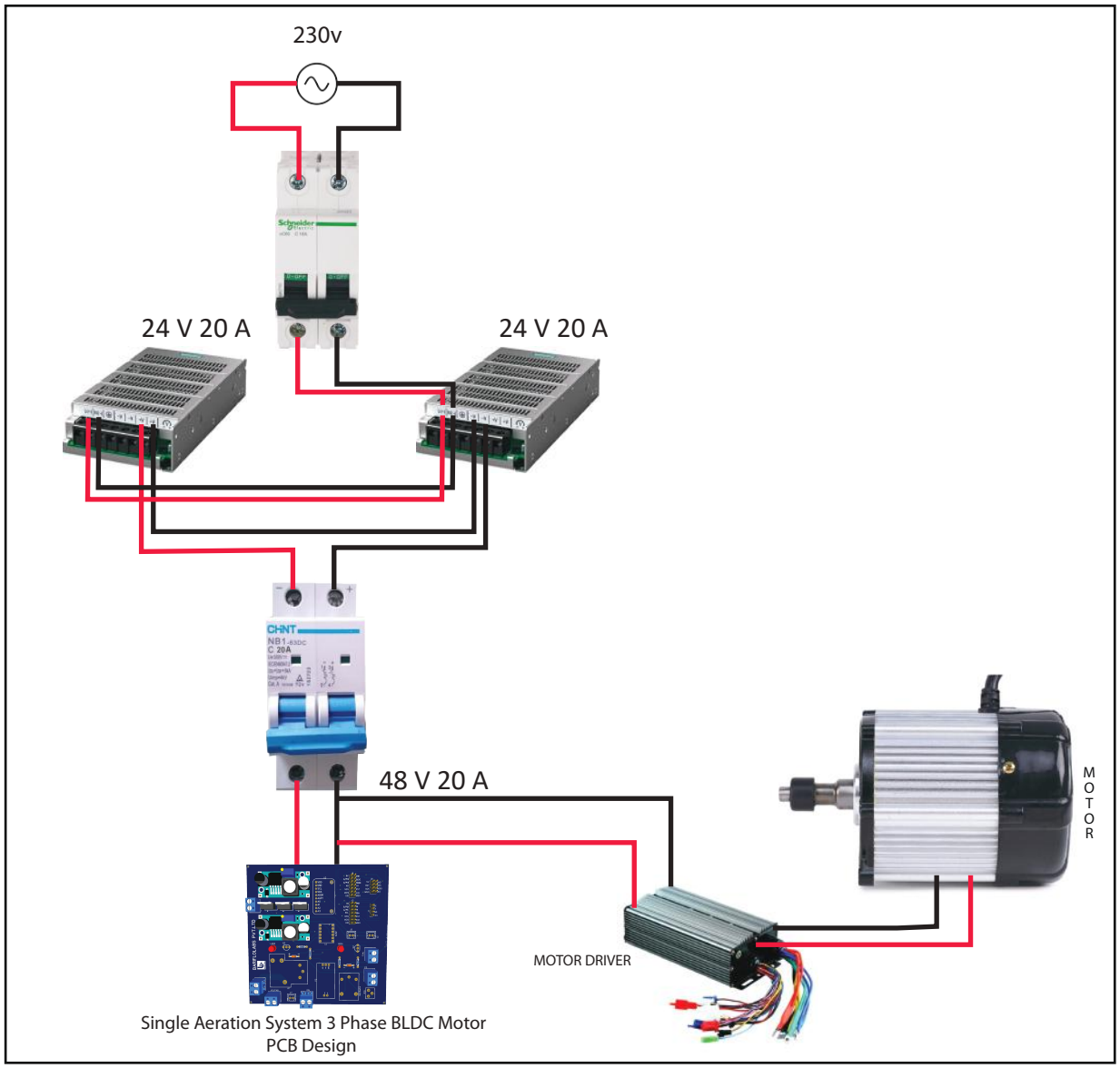


Figure - 4

When building a control panel, it is important to follow a systematic approach to ensure a successful and reliable outcome. Here are the general steps to be followed while building a control panel with safety precautions .

1. Design and Layout: Create a detailed design and layout for the control panel. Consider the dimensions, component placement, wiring requirements, and safety considerations.

2. Select Components: Identify and procure the necessary components for the control panel assembly. This includes selecting relays, motor drivers, circuit breakers, terminal blocks, PCB, switches, indicators, and other electrical and electronic components. Ensure that the chosen components meet the required specifications and standards.

3. Mount Components: Install the selected components onto the panel enclosure. Follow the design and layout to position the components correctly. Use proper fasteners, brackets, or rails to securely mount the components in their designated locations.

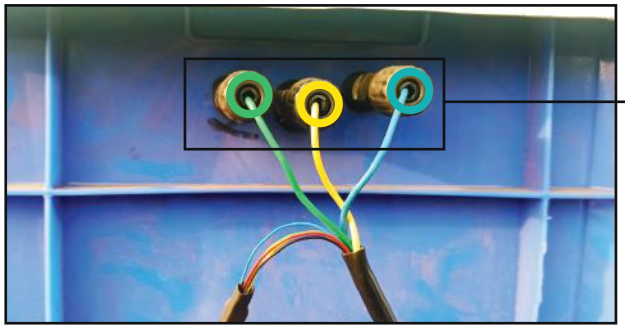
4. Wiring: Connect the components using proper wiring techniques. Follow the wiring diagram created during the design phase. Use appropriate wire gauges, colors, and labeling practices. Ensure that the wiring is neat, organized, and properly routed to avoid interference and confusion.

5. Terminal Connections: Make electrical connections between the components and terminal blocks. Use appropriate methods such as crimping, soldering, or screw terminals. Ensure that the connections are tight, secure, and properly insulated.

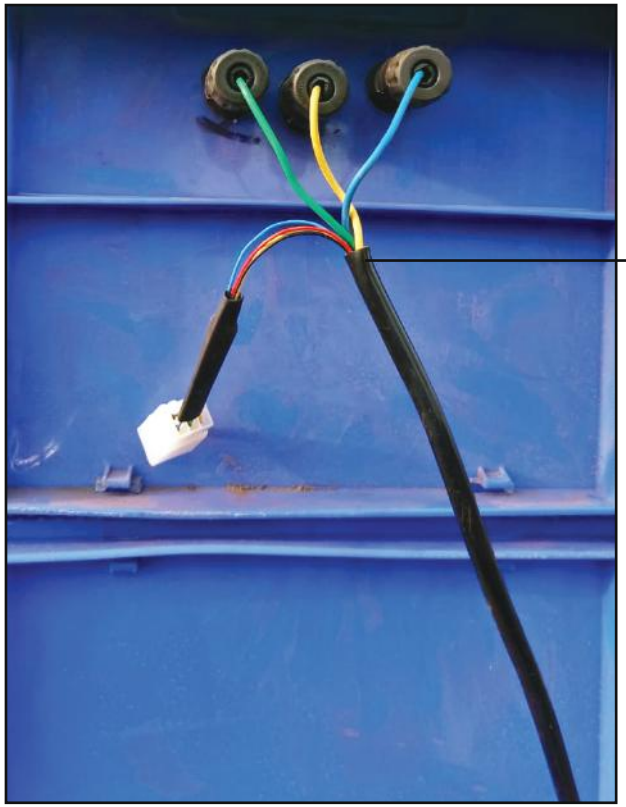
6. Grounding: Implement proper grounding techniques as per safety standards and regulations. Connect the grounding conductors to appropriate grounding points within the panel. Ensure effective electrical grounding to prevent electrical hazards.

7. Safety Measures: Install any required safety devices such as fuses, circuit breakers, surge protectors, or protective covers. Ensure that overcurrent and short circuit protection is in place. Follow safety guidelines to protect against electrical shock and other hazards.

PILOTING SOP



Connect as per
the colour codes



Hall Sensor if required

Here are the steps to verify whether the device is working or not:

1. Check that 3Ø connection with the help of a Multimeter (Resistance or Continuty method).

2. Throttle Testing : Check whether 5V of throttle signal is coming or not .

3. 48 Volt supply : Check the 48 Volt +ve and -ve supply.

4. Ignation : Check the 48 Volt Ignation supply.

Prepared By Checked By Approved By