# 210 W BLDC
# HIGH SPEED HUB MOTOR
# SPECIFICATIONS

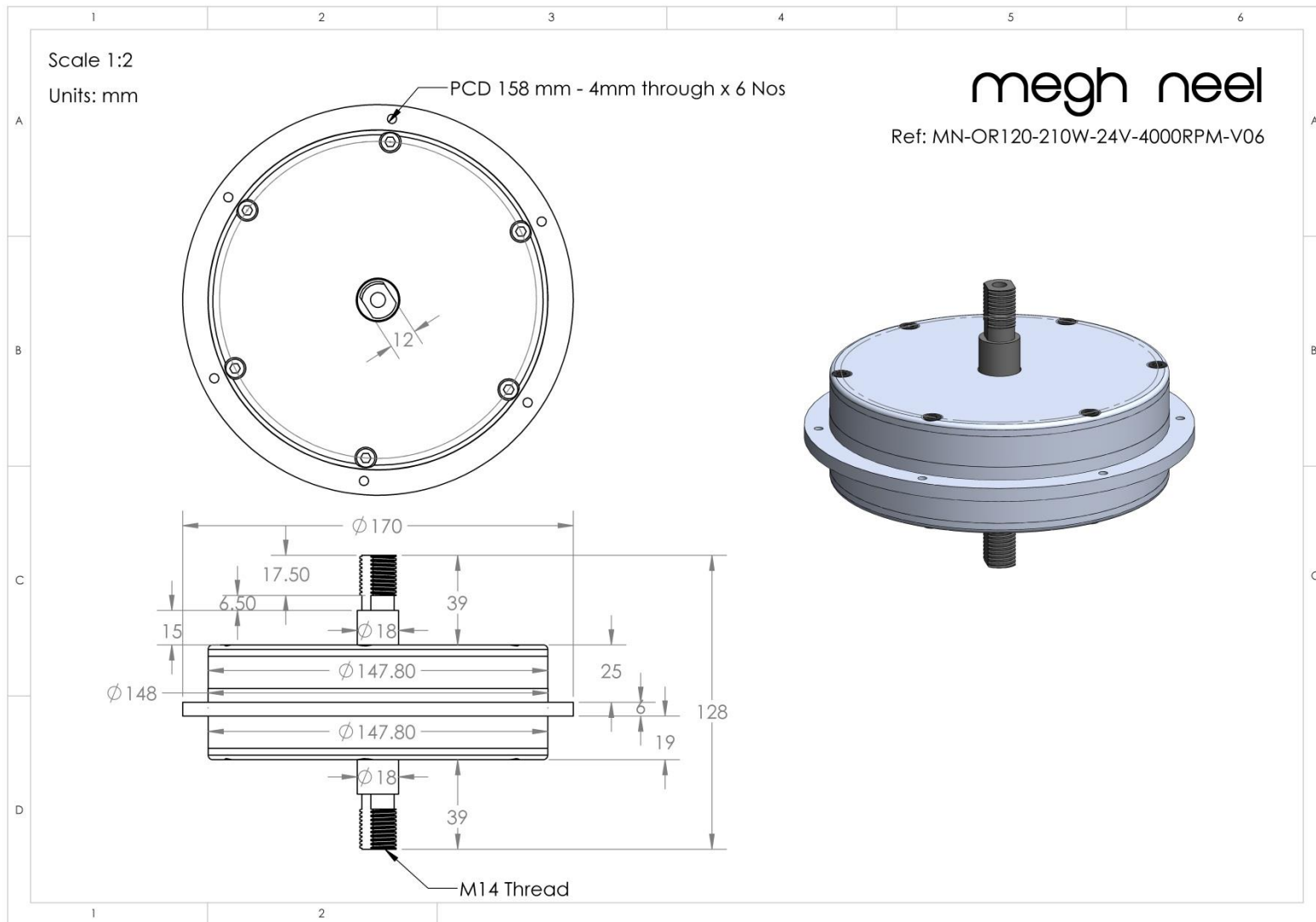# OR120–210W-4000 RPM

## Highlights

- ✓ 24VDC, 210Watts (Input), 4000 RPM Brushless DC Motor specifically designed for ball throwing applications
- ✓ Out-runner with fixed shaft
- ✓ Operating temperature up to 80°C
- ✓ External Control with Sensor-less commutation
- ✓ Made in Coimbatore, India

## Specifications

| Parameter | Value |
|---|---|
| Rated Voltage | 24VDC |
| Rated Current | 8.75 A |
| Rated Power (Input) | 210 Watts |
| Rated Speed (RPM) | 4000 RPM |
| Rated Torque (Nm) | 0.4 Nm |
| No Load Current (A) | < 3.0 A |
| No Load RPM | 4500 RPM @ 25.8V |
|  | 4000+ RPM @ 24V |
| Current Density (A/square mm) | 8.75 A/square mm |
| Variable Speed Range | 0-4000 RPM |
| Motor Mounting | Double Side Shaft  (Default) |
| Motor Dimensions | 170 mm diameter x 128 mm width |
| Shaft Diameter | 18 mm diameter with M14 thread |
| Shaft Length | 39 mm length |
| Finish | Aluminium Finish |

# Dimensions



Scale 1:2
Units: mm

PCD 158 mm - 4mm through x 6 Nos

megh neel

Ref: MN-OR120-210W-24V-4000RPM-V06

12

Ø 170
17.50
6.50
Ø 18
39
15
Ø 147.80
25
Ø 148
6
Ø 147.80
128
19
Ø 18
39
M14 Thread

## Controller Specifications

| Parameter | Value |
|---|---|
| Rated Voltage | 24VDC |
| Motor Rated Current | 12 A |
| Motor Current Limit | 9.96A (83% of Rated Current) |
| Rated Speed (RPM) | 4000 RPM |
| Minimum Running Speed | 400 RPM |
| Catch Spin | Enabled & set for 1 Second |
| Initial Parking Time | 3 Seconds |
| Variable Speed | 3 Pin Plug with analog voltage input from 0 to 5VDC<br>5VDC – Maximum Speed<br>0.8VDC – Start Motor<br>0VDC – Stop Motor |
| Reverse Option | 2 Pin Plug (Short the pins to enable reverse) |
| RPM Output | Digital Pulse Output 12 Pulses Per Rotation |
| Fault Conditions | Over Voltage, Under Voltage, Over Temperature, Rotor Lock, Phase Loss |
| Auto Restart Count (After Fault Condition) | 10 with 1 Second delay between restarts |
| Controller Dimensions | 140 mm length x 80 mm width x 40 mm height |
| Place of Origin | India |

**Note:**

Parking: For improved starting reliability, controller aligns the rotor to a known starting position, before trying to start the motor. The controller tries to align the rotor within the specified parking time.

Catch Spin: While starting the motor, if the motor is already spinning, the controller will try to catch the rotation and try to continue spinning from that point. The controller tries to achieve this within the specified "Catch Spin Time". If the controller fails to continue rotation, wait till the motor comes to complete stop before starting the motor.

Initial Start: The controller will check if the motor is already spinning and if not, it will try to park the rotor to a known starting position. The delay in initial start is dependent on the "Catch Spin Time" and "Parking Time".

## Connection Sequence

**Supply:** Connect the 24V Positive Supply to the Controller Red Wire via a key switch. Connect the 24V Ground to the Controller Black Wire.

**Motor Direction:**

Connect the Controller Phase Wires to the respective wires from the motor as given below

**Default Direction – Anti-Clockwise (From the Wire Side)**

| Motor Phase Connection | Yellow | Blue | White | | |
|---|---|---|---|---|---|
| Controller Phase Connection | Yellow | Blue | White | | |

**Reverse**

From the BLDC Motor Controller, short the 2 pin connector (Black & Black) to achieve reverse direction.

**Throttle / Accelerator**

Connect the 3 pin female connector (Red, Black, Green) to the throttle/accelerator plug. Ensure that the color codes match while connecting.
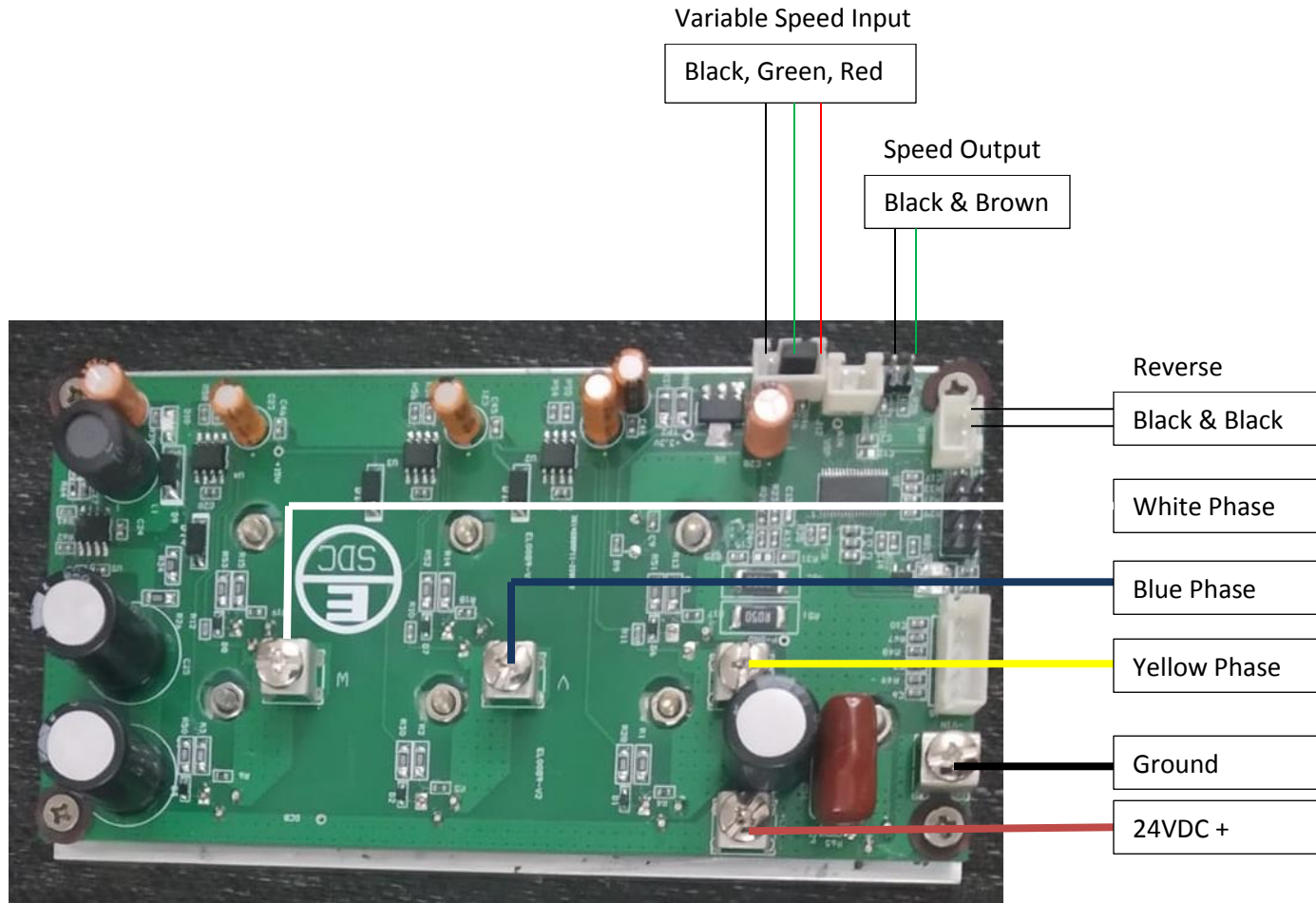
Red: +5 VDC, Black: Ground, Green: 0-5 VDC

**Speed Output**

From the BLDC Motor Controller, use the 2 pin connector (Black, Brown) to read the digital pulse output. The controller provides 12 pulses per rotation. Read the number of pulses per second and multiply by 5 to get the current RPM.

# Connection Diagram



Variable Speed Input

Black, Green, Red

Speed Output

Black & Brown

Reverse

Black & Black

White Phase

Blue Phase

Yellow Phase

Ground

24VDC +

## Contact Information

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