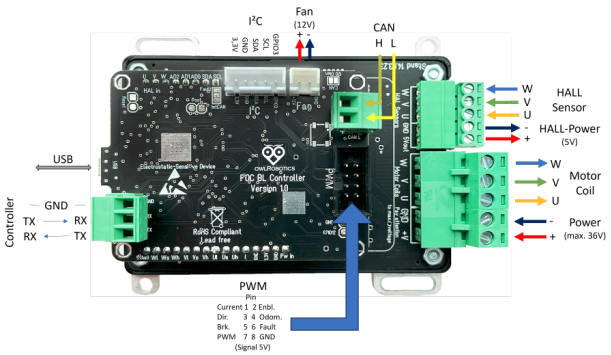
owlDrive and Husqvarna motor wiring and settings
7.1.2024

linix 35zwn18-6-b

owlDrive black

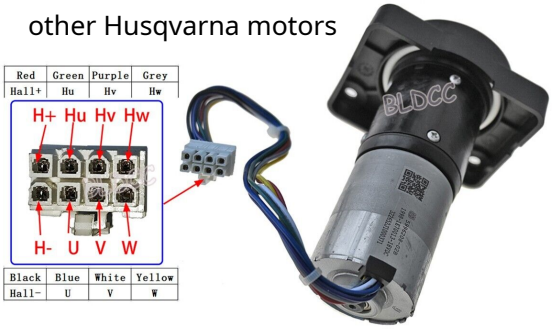


blue - motor W
green - motor V
white - motor U
black - hall power -

white - hall W
green - hall V
blue - hall U
red - hall power +

24V power supply

other Husqvarna motors



To change settings, attach USB cable to owlDrive and start a serial monitor. Send '0' to enter menu.

```
owlDrive main menu (firmware ver 33, database ver 23, CanNode 2, broadcast 63)
0. Exit menu
1. Selected profile (preset): Default (motor=Linix 35zwn18-6-b (Hall) pcb=owlRobotics_black_edition_Board)
2. Selected motor (preset): Linix 35zwn18-6-b (Hall)
3. Selected PCB: owlRobotics black edition Board
4. Profile menu   (align=0 invertDir=0 enableIn=1 pwmIn=0 fanDuty=0.50 serialMonOut=1 endSwIn=0 endSwActLow=1 endSwPosDirTg=1 endSwNegDirTg=1 c
5. PCB menu   (shuntR=7.41 opAmpGain=-1.00 opAmpOfs=1.65 overCurr=0.04 A overVolt=1 underVolt=12.00 emfProtect=0 temp=1)
6. Motor menu   (Usup=24V sen=Hall kv=183 rpm=4000 R=0.9000 ohm  L=0.00070 H pp=2 alignV=5.00 zeroOfs=5.2360 senDir=CCW pwm=30000Hz dz=0.0200)
7. Motion Control mode menu   (torque torqueCtl=voltage usePhR=0 useKV=0 usePhL=1 limits U=+/-15.00 I=+/-2.00)
8. FOC Modulation type: SinePWM
9. Phase tester
10. CAN menu   (canSpeed=1000kbps canMsgId=300 canNodeId=2 canNodeIdBroadcast=63 broadcastMask=0 followId=0 followVal=1)
11. Save to EEPROM and exit (required to make changes persistent)
12. Save to EEPROM and reboot (required if changed motor/pcb/sensor)
```

Note: 'zeroOfs' and 'senDir' settings have been found out using performing motor sensor align (auto-align) via the motor menu.

To test motor send: M5, M12 etc. (with the desired output phase voltage/torque)

```
/dev/ttyACM0
M5
canNode 2  sec 31  lps 25288  focps 5470  tg(torque->voltage) 0.00  v 0.0(0rpm)  Usup 26.58  BEMF
Target: 0.000
canNode 2  sec 32  lps 25269  focps 10765  tg(torque->voltage) 0.00  v 0.0(0rpm)  Usup 26.83  BEMF
canNode 2  sec 33  lps 25280  focps 5468  tg(torque->voltage) 0.00  v 0.0(0rpm)  Usup 26.77  BEMF
Target: 5.000
canNode 2  sec 34  lps 24852  focps 13950  tg(torque->voltage) 5.00  v 178.2(1702rpm)  Usup 26.83
canNode 2  sec 35  lps 24705  focps 5431  tg(torque->voltage) 5.00  v 200.4(1913rpm)  Usup 26.47
canNode 2  sec 36  lps 24683  focps 5425  tg(torque->voltage) 5.00  v 200.4(1913rpm)  Usup 26.50
```

Sunray settings:
#define TICKS_PER_REVOLUTION 1080 # ACX 260 platform (Dunkermotoren BG40X25)
#define MOTOR_PID_KP 0.5
#define MOTOR_PID_KI 0.01
#define MOTOR_PID_KD 0.01