NFP-GM25-BL2418

25mm brushless DC planetary gear motor with speed control wiring

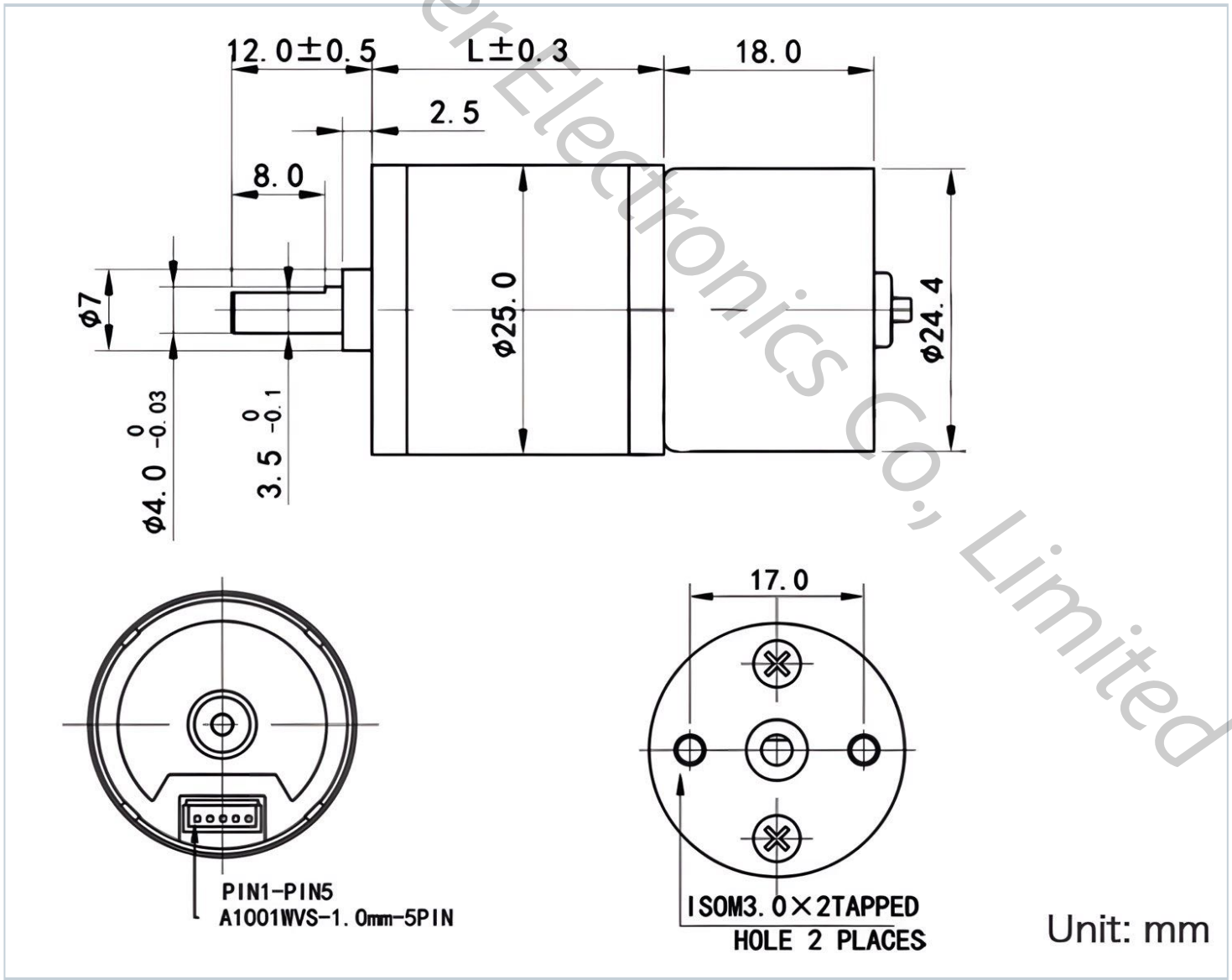
1. Brushless design: The motor has no carbon brush. Therefore, it can offer longer service life than many brushed motors.
2. Speed control: Users can adjust motor speed with PWM control. As a result, the motor fits many drive tasks.
3. Forward and reverse rotation: The motor supports CW and CCW control. In addition, this helps users build two-way motion systems.
4. Metal planetary gears: The gearbox uses metal gears. Therefore, it can provide strong torque output.
5. Compact structure: The motor body saves space. Moreover, it fits small machines, robots, and compact tools.

6V / 12V / 24V	9.5 rpm-2000 rpm	4.4:1-478:1	$20.50
PUBLISHED VERSIONS	NO-LOAD SPEED RANGE	PERFORMANCE RATIOS	WEB PRICE

PUBLISHED PERFORMANCE RATIOS

Ratios In Tables	4.4:1 / 9.3:1 / 20:1 / 34:1 / 45:1 / 75:1 / 100:1 / 125:1 / 217:1 / 478:1
No-load Speed Tolerance	Note: all reduced no-load speeds have a tolerance of ±15%.
Source	https://nfpshop.com/product/25mm-brushless-dc-gear-motor-model-nfp-gm25-bl2418

BRUSHLESS GEAR MOTOR OUTLINE DRAWING



Performance Data

Published values from the NFPshop technical table

6V DC PERFORMANCE DATA

NFP-GM25-BL2418, 6V DC / all reduced no-load speeds have a tolerance of ±15%.

Item	4.4:1	9.3:1	20:1	34:1	45:1	75:1	100:1	125:1	217:1	478:1
No-load Current	≤170 mA	≤170 mA	≤170 mA	≤170 mA	≤170 mA	≤170 mA	≤170 mA	≤170 mA	≤170 mA	≤170 mA
No-load Speed	1360 rpm	645 rpm	300 rpm	175 rpm	133 rpm	80 rpm	60 rpm	48 rpm	27 rpm	12.5 rpm
Rated Torque	0.07 kg.cm	0.15 kg.cm	0.32 kg.cm	0.55 kg.cm	0.75 kg.cm	1.25 kg.cm	1.60 kg.cm	2.00 kg.cm	3.00 kg.cm	8.00 kg.cm
Rated Speed	840 rpm	400 rpm	185 rpm	108 rpm	82 rpm	50 rpm	37 rpm	30 rpm	17 rpm	7.7 rpm
Rated Current	≤0.45 A	≤0.45 A	≤0.45 A	≤0.45 A	≤0.45 A	≤0.45 A	≤0.45 A	≤0.45 A	≤0.45 A	≤0.45 A
Stall Torque	≥0.2 kg.cm	≥0.5 kg.cm	≥1.1 kg.cm	≥1.7 kg.cm	≥2.5 kg.cm	≥3.5 kg.cm	≥5.0 kg.cm	≥6.0 kg.cm	≥10.0 kg.cm	≥10.0 kg.cm
Stall Current	≤0.8 A. In addition, do not stall the motor or restart it repeatedly.									
Gearbox Length	19 mm	19 mm	19 mm	21 mm	21 mm	23 mm	25 mm	25 mm	27 mm	27 mm

12V DC PERFORMANCE DATA

NFP-GM25-BL2418, 12V DC / all reduced no-load speeds have a tolerance of ±15%.

Item	4.4:1	9.3:1	20:1	34:1	45:1	75:1	100:1	125:1	217:1	478:1
No-load Current	≤50 mA	≤50 mA	≤50 mA	≤50 mA	≤50 mA	≤50 mA	≤50 mA	≤50 mA	≤50 mA	≤50 mA
No-load Speed	1000 rpm	470 rpm	225 rpm	130 rpm	100 rpm	60 rpm	45 rpm	35 rpm	20 rpm	9.5 rpm
Rated Torque	0.07 kg.cm	0.15 kg.cm	0.32 kg.cm	0.55 kg.cm	0.75 kg.cm	1.25 kg.cm	1.60 kg.cm	2.00 kg.cm	3.00 kg.cm	8.00 kg.cm
Rated Speed	700 rpm	335 rpm	150 rpm	90 rpm	70 rpm	40 rpm	30 rpm	25 rpm	15 rpm	6 rpm
Rated Current	≤0.13 A	≤0.13 A	≤0.13 A	≤0.13 A	≤0.13 A	≤0.13 A	≤0.13 A	≤0.13 A	≤0.13 A	≤0.13 A
Stall Torque	≥0.2 kg.cm	≥0.5 kg.cm	≥1.1 kg.cm	≥1.7 kg.cm	≥2.5 kg.cm	≥3.5 kg.cm	≥5.0 kg.cm	≥6.0 kg.cm	≥10.0 kg.cm	≥10.0 kg.cm
Stall Current	≤0.35 A. In addition, do not stall the motor or restart it repeatedly.									
Gearbox Length	19 mm	19 mm	19 mm	21 mm	21 mm	23 mm	25 mm	25 mm	27 mm	27 mm

24V DC PERFORMANCE DATA

NFP-GM25-BL2418, 24V DC / all reduced no-load speeds have a tolerance of ±15%.

Item	4.4:1	9.3:1	20:1	34:1	45:1	75:1	100:1	125:1	217:1	478:1
No-load Current	≤80 mA	≤80 mA	≤80 mA	≤80 mA	≤80 mA	≤80 mA	≤80 mA	≤80 mA	≤80 mA	≤80 mA
No-load Speed	2000 rpm	960 rpm	450 rpm	260 rpm	200 rpm	120 rpm	90 rpm	72 rpm	41 rpm	19 rpm
Rated Torque	0.15 kg.cm	0.30 kg.cm	0.65 kg.cm	1.10 kg.cm	1.50 kg.cm	2.50 kg.cm	3.30 kg.cm	4.00 kg.cm	6.00 kg.cm	8.00 kg.cm
Rated Speed	1450 rpm	700 rpm	325 rpm	190 rpm	145 rpm	85 rpm	65 rpm	52 rpm	30 rpm	12 rpm
Rated Current	≤0.26 A	≤0.26 A	≤0.26 A	≤0.26 A	≤0.26 A	≤0.26 A	≤0.26 A	≤0.26 A	≤0.26 A	≤0.26 A
Stall Torque	≥0.4 kg.cm	≥1.0 kg.cm	≥2.2 kg.cm	≥3.5 kg.cm	≥5.0 kg.cm	≥7.0 kg.cm	≥10.0 kg.cm			
Stall Current	≤0.65 A. In addition, do not stall the motor or restart it repeatedly.									
Gearbox Length	19 mm	19 mm	19 mm	21 mm	21 mm	23 mm	25 mm	25 mm	27 mm	27 mm

WIRING ORIENTATION REFERENCE

6V DC TYPE WIRING INTRODUCTION

Pin No.	Signal	I/O	Specifications	Note
1	CW/CCW Control (Orange wire)	IN	Input voltage rotation: 0-5V VIH: 2.0V Min. or open VIL: 0.5V Max	High: motor CCW Low: motor CW
2	PWM Control (White wire)	IN	60K MAX Typical (15K-25K) Input voltage range: 0-5V (15K-25K) VIH: 1.0V Min. stop VIL: 0.5V Max. running	High: motor OFF Low: motor ON
3	FG Speed Signal (Yellow wire)	OUT	VOH: 5.0V Max 10KΩ pull up VOL: 0.5V Max FG Signal Current: 5mA Pulse Outputs of Rotation: 18 Pulse/cycle	Hall Signal Pulse Outputs
4	Vm VCC (Red wire)	I/N	DC 5.5V-10.0V	Power Vcc
5	GND (Black wire)	IN	Power Ground	Power Ground

12V, 24V DC TYPE WIRING INTRODUCTION

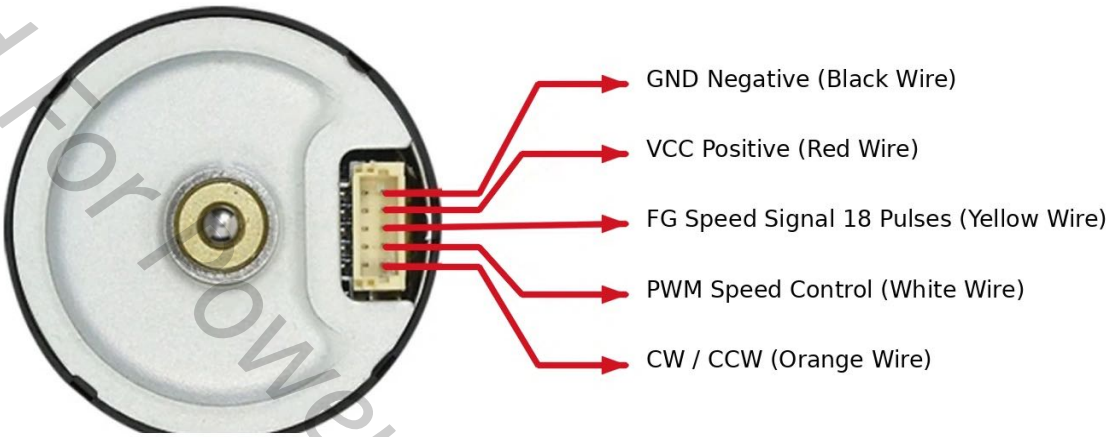
Pin No.	Signal	I/O	Specifications	Note
1	Vm (Red wire)	I/N	DC 24V ±10%	Power
2	FG (Green wire)	OUT	VOH: 5.0V Max VOL: 0.5V Max FG Signal Current: 2mA Pulse Outputs of Rotation: 6 Pulse/cycle	Hall Signal Pulse Outputs
3	CW/CCW Control (Yellow wire)	IN	Input Voltage Rotation: 0-5V VIH: 2.0V Min. or open VIL: 0.5V Max.	High: motor CCW Low: motor CW
4	GND	IN	Power Ground	Power Ground
5	PWM Control (Blue wire)	IN	60K MAX Typical (15K-25K) Input Voltage Range: 0-5V (15K-25K) VIH: 2.0V Min. or open VIL: 0.5V Max	High: motor OFF Low: motor ON

Wiring Instructions

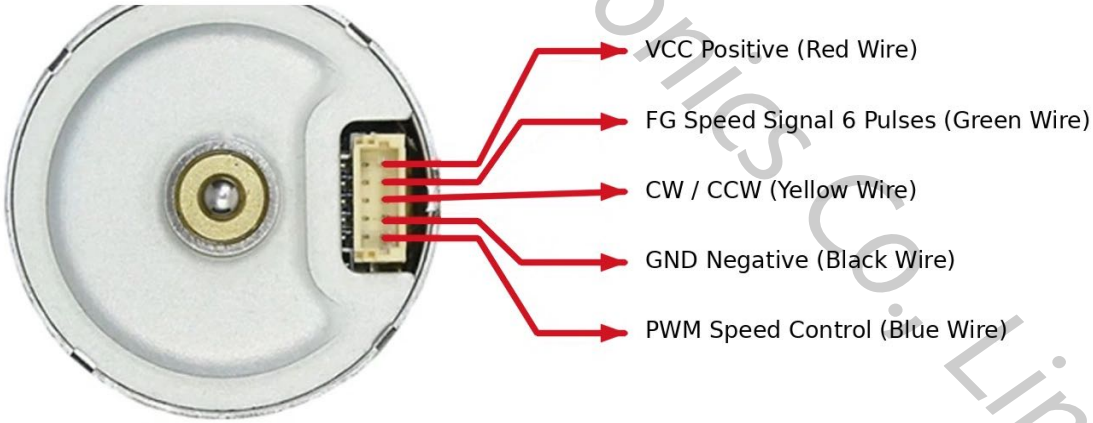
Published pin definitions for 6V and 12V/24V versions

DETAILED WIRING INSTRUCTIONS

DC 6.0V Motor (Black Motor)



DC 12V-24V Motor (Silver Motor)



Viewed from the outline drawing direction, PIN1 to PIN5 are wired from left to right as follows:

DC 6.0V Type

PIN NO.	Wire Color	Function
PIN-1	Black Wire	GND Negative
PIN-2	Red Wire	VCC Positive
PIN-3	Yellow Wire	FG Speed Signal 18 Pulses
PIN-4	White Wire	PWM Speed Control
PIN-5	Orange Wire	CW / CCW

DC 12V-24V Type

PIN NO.	Wire Color	Function
PIN-1	Blue Wire	PWM Speed Control
PIN-2	Black Wire	GND Negative
PIN-3	Yellow Wire	CW / CCW
PIN-4	Green Wire	FG Speed Signal 6 Pulses
PIN-5	Red Wire	VCC Positive

Control Wiring And FG Signal

Published speed control wiring and FG waveform reference

SPEED CONTROL WIRING

DC 6.0V SPEED CONTROL WIRING

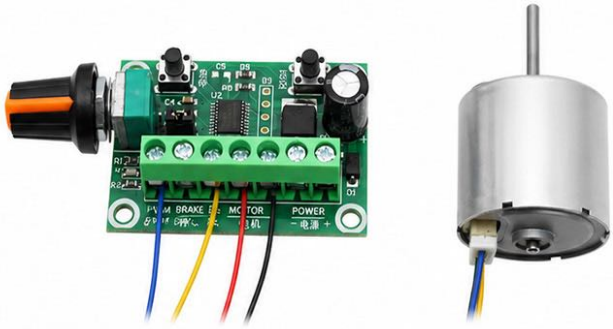
For BLDC2418-DC6.0V Black Motor

Speed Control Wiring (Supports Forward & Reverse)	
Terminal	Motor Wiring
POWER V+	DC V+ IN (Positive)
POWER V-	DC V- IN (Negative)
MOTOR VCC+	Motor Positive (Red)
MOTOR GND-	Motor Negative (Black)
CW/CCW	Direction Input (Orange)
BRAKE	Leave Unconnected
PWM	Speed Control Input (White)

Brake Wiring (Not Adjustable Speed, Supports Forward & Reverse)	
Terminal	Motor Wiring
POWER V+	DC V+ IN (Positive)
POWER V-	DC V- IN (Negative)
MOTOR VCC+	Motor Positive (Red)
MOTOR GND-	Motor Negative (Black)
CW/CCW	Direction Input (Orange)
BRAKE	Speed Control Input (White)
PWM	Leave Unconnected

FG Signal (Yellow) Not Connected

DC 12V-24V SPEED CONTROL WIRING



For BLDC2418-BLDC2430-BLDC2838 Silver Motor

Speed Control Wiring (Supports Forward & Reverse)	
Terminal	Motor Wiring
POWER V+	DC V+ IN (Positive)
POWER V-	DC V- IN (Negative)
MOTOR VCC+	Motor Positive (Red)
MOTOR GND-	Motor Negative (Black)
CW/CCW	Direction Input (Yellow)
BRAKE	Leave Unconnected
PWM	Speed Control Input (Blue)

Brake Wiring (Not Adjustable Speed, Supports Forward & Reverse)	
Terminal	Motor Wiring
POWER V+	DC V+ IN (Positive)
POWER V-	DC V- IN (Negative)
MOTOR VCC+	Motor Positive (Red)
MOTOR GND-	Motor Negative (Black)
CW/CCW	Direction Input (Yellow)
BRAKE	Speed Control Input (Blue)
PWM	Leave Unconnected

FG Signal (Green) Not Connected

FG SIGNAL WAVEFORM