

## 06 ACS Series AC&BLDC Servo Drives

Leadshine's fully digital ACS series servo drives are developed with 32-bit DSP control technology based on advanced control algorithm. Because of their high performance and highly competitive price, they are ideal for replacing many popular AC servo drives available on the market. The AC servo drives accept input commands of step & direction signals, so they can be used to upgrade stepper systems to servo systems without modifying control systems, offering higher precision, higher speed, lower heating and lower noise performance.

A built-in controller can be used for the testing and tuning. PC-based software and handheld configuration and tuning tools can meet different tuning environments or requirements.

**Rated Power**

- 150W
- 200W
- 400W

### 6.1 Features

- Cost-effective, 32-bit DSP control technology
- Input:18 VDC to 80 VDC, Peak Cur:18A, Cont. Cur:7.5 A (Max)
- For 25 to 400W AC & Brushless DC servo motors
- FOC-SVPWM technologies
- Opto-isolated, single-ended and differential inputs
- Support step&direction and CW/CCW pulse commands
- Electronic gear rate from 1/255 to 255
- Built-in pulse generator for the tuning and self-test
- PC-based and handheld configuration tools
- Adjustable following error lock range
- Over-voltage, over-current, encoder error detection
- 10 last errors recorded for easy troubleshooting

## 6.2 Typical Applications

Suitable for small to medium automation machinery and equipment, such as large format printers, engraving machines, electronics manufacturing equipment, pick and place machines, packing machines, etc. Particularly suited to applications require high speed, high precision, high reliability, low motor noise and with DC power input.



### 6.3 Part Number

**ACS**    **8**    **06**  
 ①        ②        ③

①	Series	ACS: ACS Series AC&BLDC Servo Drives
②	Maximum Input Voltage	8: 80 VDC 6: 60 VDC 3: 30 VDC
③	Maximum Continuous Current	06: 6 A

## 6.4 Specifications

### Electrical Specifications

Parameters	ACS306	ACS606	ACS806	ACS806-DA
Maximum Continuous Power	150 W	200 W	400 W	400 W
Maximum Continuous Current	6 A	6 A	6 A	6 A
Peak Current	15 A	18 A	18 A	18 A
Input Voltage	18 to 30 VDC	18 to 60 VDC	20 to 80 VDC	20 to 80 VDC
Logical Signal Input Current	7 to 20 mA	7 to 20 mA	7 to 20 mA	7 to 20 mA
Pulse Input Frequency	0 to 250 kHz	0 to 250 kHz	0 to 600 kHz	0 to 600 kHz
Isolation Resistance	500 MΩ	500 MΩ	500 MΩ	500 MΩ
Current Provided for Encoder	100 mA	100 mA	100 mA	100 mA

### Control Specifications

Parameters	ACS306	ACS606	ACS806	ACS806-DA
Command Input	Step/Direction	Step/Direction	Step/Direction CW/CCW	Step/Direction CW/CCW ± 10 V Analog Input
Enable/Disable Input	Differential	Differential	Differential	Differential
Alarm Signal Output	Isolated OC Output	No	Isolated OC Output	Isolated OC Output
End Limit Input	No	No	Positive & Negative	Positive & Negative
In Position Signal Output	No	No	Isolated OC Output	Isolated OC Output
Encoder Feedback	A, B, Z (Differential)	A, B, Z (Differential)	A, B, Z (Differential)	A, B, Z (Differential)
Hall Effect Sensor Feedback	U, V, W (Single-ended)	U, V, W (Single-ended)	U, V, W (Differential)	U, V, W (Differential)
Encoder Output	No	No	A, B, Z (Differential)	A, B, Z (Differential)
Communication Interface	RS232	RS232	RS232	RS232
Braking Resistor	No	No	Support External BR	Support External BR

### Configuration and Tuning Tools

Parameters	ACS306	ACS606	ACS806	ACS806-DA
PC based tuning software	ProTuner	ProTuner	ProTuner	ProTuner
Handheld tuning unit	STU-ACS	STU-ACS	STU-ACS	STU-ACS

### Mechanical Specifications

Parameters	ACS306	ACS606	ACS806	ACS806-DA
Size (mm)	116 × 69.2 × 26.5	118 × 75.5 × 34	166 × 97 × 32	166 × 97 × 32
Weight (g)	280	280	430	430

### Powering Motors

Parameters	ACS306	ACS606	ACS806	ACS806-DA
Powering Motors	18 - 30 VDC, 10-150 W Brushless Servo Motors: BLM57025, BLM57050	18 - 60 VDC, 10-200 W Brushless Servo Motors: BLM57090, BLM57130, BLM57180, 57BL180	20- 80 VDC, 50-400 W Brushless Servo Motors: ACM601V36, ACM602V36 ACM602V60, ACM604V60	20- 80 VDC, 50-400 W Brushless Servo Motors: ACM601V36, ACM602V36 ACM602V60, ACM604V60

### Operating Environment

Cooling	Natural cooling or Forced cooling	
Environment	Avoid dust, oil fog and corrosive gases	
Operating Environment	Ambient Temperature	0 to +50 °C.
	Humidity	40% RH to 90%RH, no condensation
	Vibration	5.9 m/s <sup>2</sup> MAX
Storage Temperature	-20 °C to 80 °C	

## 6.5 System Tuning and Configuration

### Configuration and Tuning Tools

Leadshine offers PC based and handheld configuration & tuning tools to meet different requirements and configuration and tuning environments. The user can tune the ACS series drives with two different tuning tools, including ProTuner (Windows based setup software) and STU-ACS (Handheld servo tuning unit).

### STU-ACS (Handheld Servo Tuning Unit)

- Similar to most HMI of servo drives from other manufacturers
- PID parameter settings for position loop
- Electronic gear rate setting from 1/255 to 255
- Position following error range setting
- Real-time current, velocity, position following error display.
- Parameter settings for self motion test (with trapezoidal velocity profile)
- Read the latest 10 failure events and clear the events

#### Notes:

1. Leadshine offers a special cable for communication between the drive and STU-ACS handheld tuner.



### ProTuner (Windows Based Setup Software)

- Upload and Download parameter settings
- Digital oscilloscope for real-time current, velocity, position following error display. Measurements can be taken using the mouse pointer.
- PID parameter settings for position loop
- PI parameter settings for current loop
- Electronic gear rate setting from 1/255 to 255
- Position following error range setting
- Encoder resolution setting
- Parameter settings for self motion test (with trapezoidal velocity profile)
- Read the latest 10 failure events and clear the events

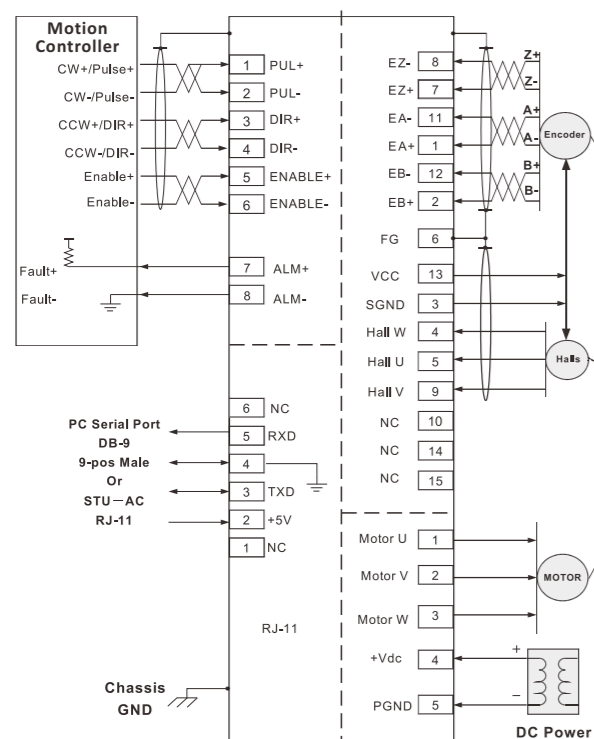
#### Notes:

1. One PC RS232 interface or one USB port for USB-to-RS232 converter is necessary.
2. Leadshine offers special cable (part number: Cable-PC) for communication between ProTuner and the drive.

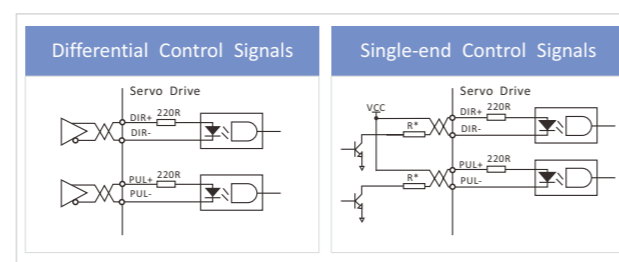
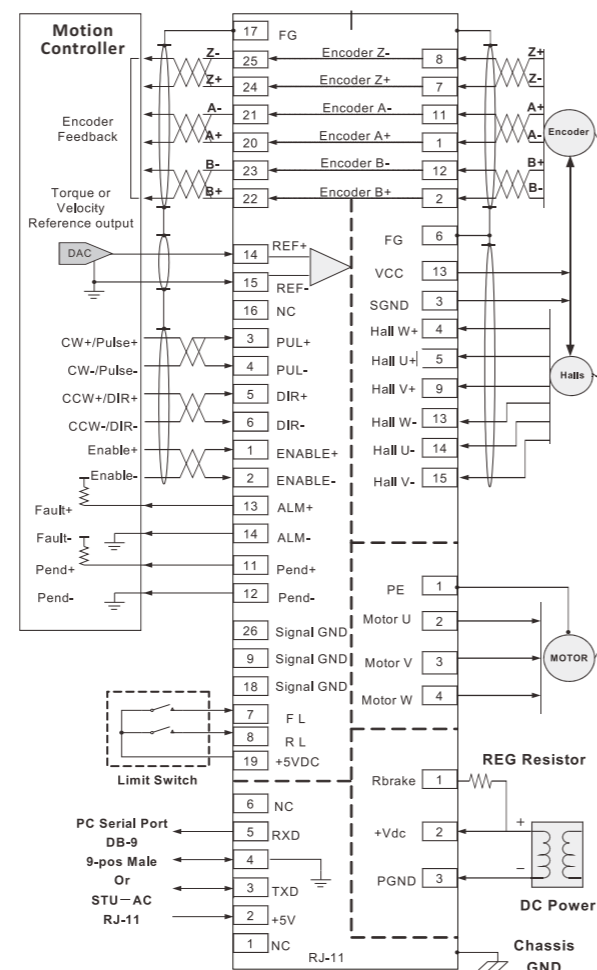


## 6.6 Wiring Examples

### •ACS306, ACS606



### •ACS806



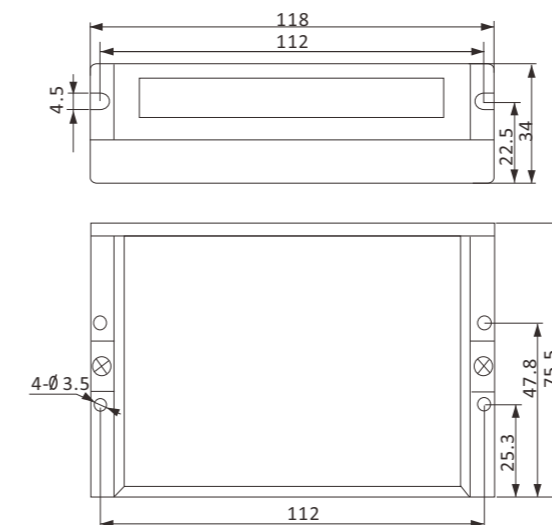
### Notes:

1. The ACS606 does NOT have ALM+ and ALM- outputs.
2. The ACS806-DA supports torque and velocity mode, while the ACS806 does NOT support torque and velocity mode.
3. The drive can accept differential and single-ended inputs, including open-collector and PNP output. Recommend use differential (line driver) control signals to increase noise immunity of the system.
4. \*Series connect resistors for current-limiting when +12V or +24V single-ended control signals are used. R=1K (Power>0.25W), if Vcc=12 V, and R=2K (Power>0.25W), if Vcc=24 V.

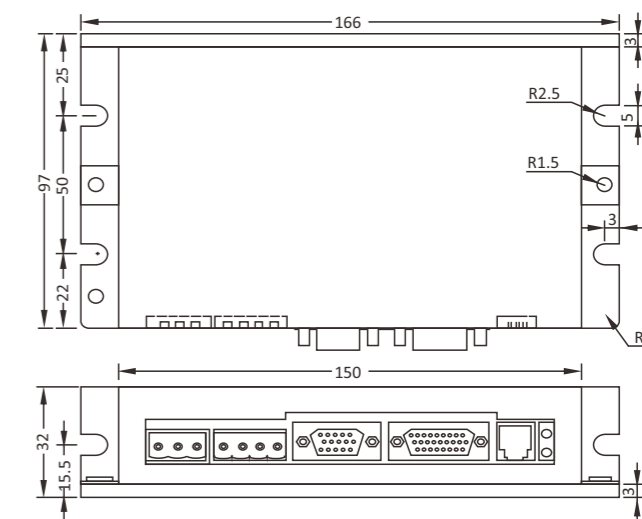
## 6.7 Mechanical Specifications

Units: mm 1 inch = 25.4 mm

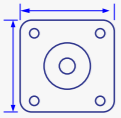
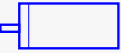
### •ACS306, ACS606



### •ACS806



## 07 ACM/BLM Series AC/BLDC Servo Motors

	<b>Frame Size</b>	ACM Series: 60mm (NEMA24)	BLM Series: 57mm (NEMA23)			
	<b>Rated Power</b>	ACM Series: 100W	200W	400W	BLM Series: 25W 50W 90W 130W 180W	

The ACM series of AC servo motors and BLM series of brushless DC servo motors offer high performance with models ranging from 25W to 400W. Mounting is compatible with NEMA24 and NEMA23 motors on the market. Standard models come with a standard 2500-line or 1000-line differential encoder with index signal (A, B, Z), and Hall sensors (U, V, W).

When driven by Leadshine ACS series servo drives, these motors can meet application requirements from as low as 1 rpm to as high as 4000 rpm, offering high reliability, high speed, high precision, low motor noise and heating motion control solutions. The 57BL180 features a compact, screw-mount body.

### 7.1 Part Number

**ACM** **60** **2** **V36** — **01** — **2500**  
 ① ② ③ ④ ⑤ ⑥

①	<b>Series</b>	ACM: ACM Series		
②	<b>Frame Size</b>	60: 60mm (NEMA24)		
③	<b>Power</b>	1: 100W	2: 200W	4: 400W
④	<b>Rated Voltage</b>	V36: 36 VDC	V60: 60 VDC	
⑤	<b>Motor Type</b>	01: White	02: Black	
⑥	<b>Encoder Resolution</b>	1000: 1000-line(4000ppr)	2500: 2500-line(10000ppr)	

Notes:  
 The ACM motors with brakes or different rated voltages are also available. Contact Leadshine or visit our website for more information please.

**BLM** **57** **025** — **1000**  
 ① ② ③ ④

①	<b>Series</b>	BLM: BLM Series				
②	<b>Frame Size</b>	57: 57mm (NEMA23)				
③	<b>Power</b>	025: 25W	050: 50W	090: 90W	130: 130W	180: 180W
④	<b>Encoder Resolution</b>	1000: 1000-line(4000ppr)		2500: 2500-line(10000ppr)		

Notes:  
 1. The 57BL180 is a screw mounted model and the above "Part Number" does not apply.  
 2. Rated voltage of the BLM57025, BLM57050 is 24VDC, and rated voltage of the BLM57090, BLM57130, BLM57180 and 57BL180 is 36VDC.  
 3. Standard models of the BLM series come with a standard 1000-line differential encoder with index slits (A, B, Z), and Hall Sensors (U, V, W).

## 7.2 Electrical Specifications

ACM Series, NEMA24 (□ 60 mm)  
 Power: 100W, 200W, 400W



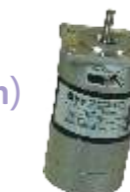
### Specifications

Parameters	Units	ACM601V36-01	ACM602V36-01	ACM604V60-01
Rated Voltage	VDC	36	36	60
Rated Power	W	100	200	400
Rated Torque	Nm	0.31	0.64	1.27
Rated Current	A	3.7	7.6	8.4
Rated Speed	RPM	3000	3000	3000
Peak Torque	Nm	0.93	1.91	3.82
Peak Current	A	11	22	25
Torque Constant	Nm/A	0.084	0.092	0.161
Back EMF Constant	V/krpm	7	3.21	5.54
Inertia	Kg*m <sup>2</sup> ×10 <sup>-5</sup>	1.1	1.76	3.55
Poles	-	8	8	8

### Operating Environment

Parameters	Descriptions	Parameters	Descriptions
Insulation Level	B	Insulation Voltage	DC 500V, 60seconds
Insulation Resistance	DC 500V, above 10M Ω	Vibration	<2.5 G
Ambient Temperature	0 to 40 °C	Humidity	20%RH to 90%RH
Storage Temperature	-20 to 70 °C	Mounting Method	Flange Mounted

BLM Series, NEMA23 (□ 57 mm)  
 Power: 25W to 180W



### Specifications

Parameters	Units	BLM57025	BLM57050	BLM57090	BLM57130	BLM57180	57BL180
Rated Voltage	VDC	24	24	36	36	36	36
Rated Power	W	25	50	90	130	180	180
Rated Torque	Nm	0.08	0.16	0.29	0.41	0.57	0.57
Rated Current	A	1.6	3	3.45	5.3	6.7	7
Rated Speed	RPM	3000	3000	3000	3000	3000	3000
Peak Torque	Nm	0.24	0.48	0.87	1.23	1.71	1.71
Peak Current	A	4.8	9	10.35	15.9	20	20.5
Torque Constant	Nm/A	0.05	0.053	0.084	0.078	0.085	0.089
Back EMF Constant	V/krpm	5.2	5.55	8.8	8.2	8.9	9.3
Inertia	Kg*m <sup>2</sup> ×10 <sup>-5</sup>	0.3	0.75	1.19	1.73	2.3	2.3
Poles	-	4	4	4	4	4	4

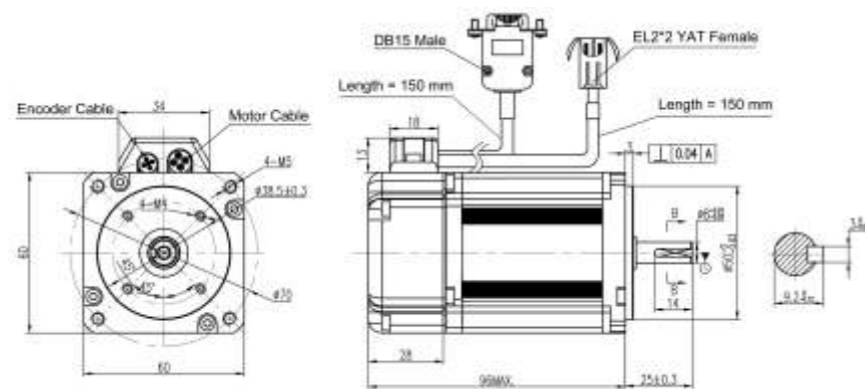
### Operating Environment

Parameters	Descriptions	Parameters	Descriptions
Insulation Level	B	Insulation Voltage	DC500V, 60seconds
Insulation Resistance	DC 500V, above 10M Ω	Vibration	<2.5 G
Ambient Temperature	0 to 40 °C	Humidity	20%RH to 90%RH
Storage Temperature	-20 to 70 °C	Mounting Method	Flange Mounted

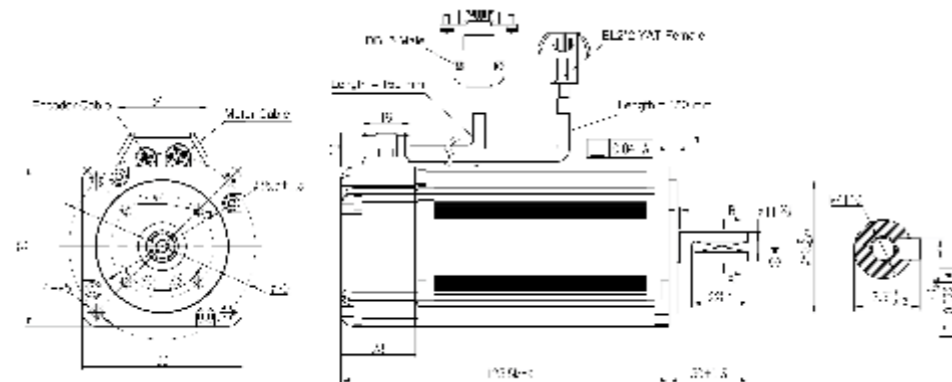
## 7.3 Mechanical Specifications

Units: mm 1 inch = 25.4 mm

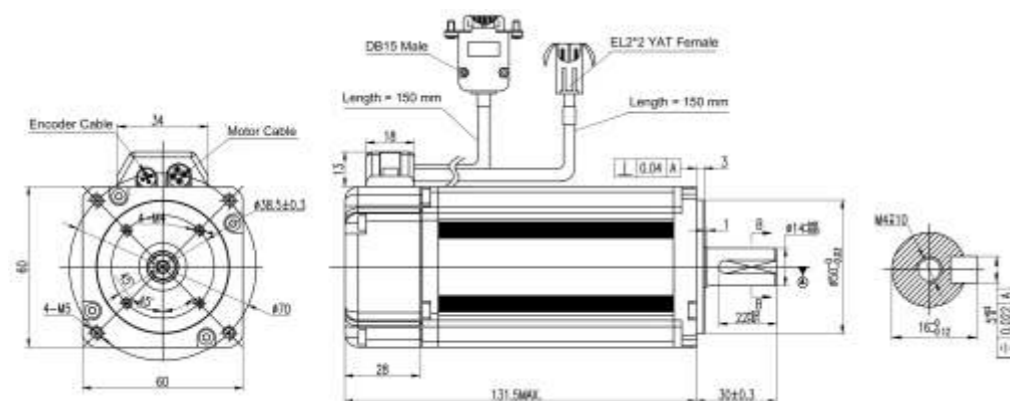
●ACM601V36-01



●ACM602V36-01



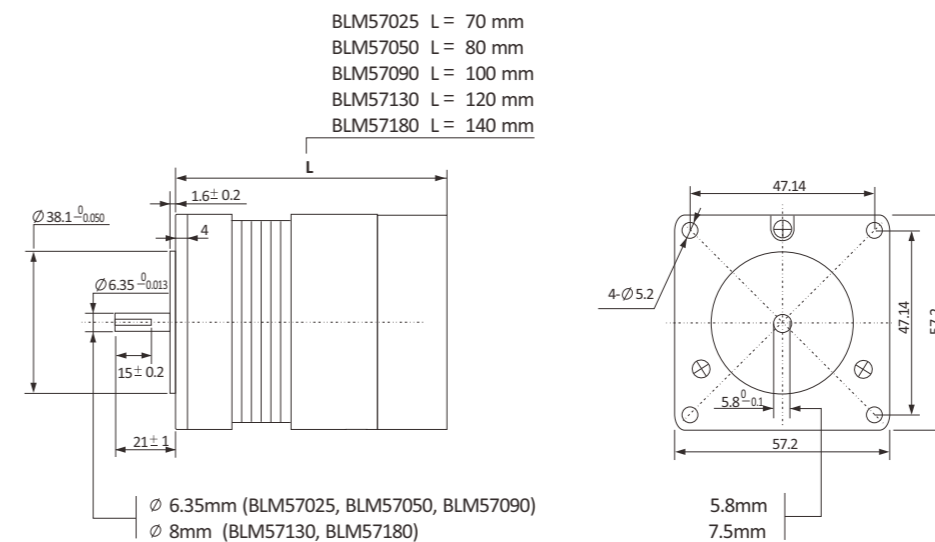
●ACM604V60-01



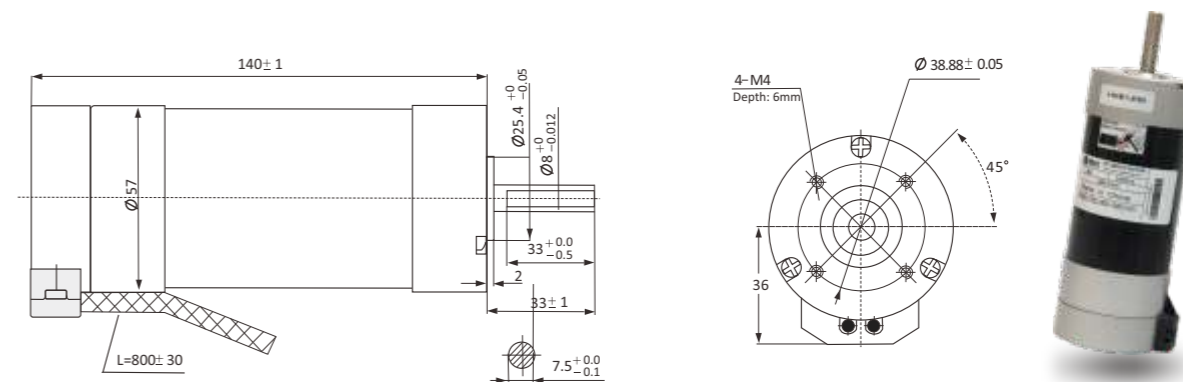
Installation Notes:

- (1) Do not give strong impact shock to the motor shaft.
- (2) Make sure the hall sensor signals U/V/W are connected to the drive correctly.
- (3) The motors are not water proof. Please contact Leadshine if you need a water proof product.
- (4) Keep the ambient temperature within the permissible temperature range (0 to 40°C) for the product. Use force cooling method if necessary.
- (5) Motors with brakes and oil seal are available. Please contact Leadshine if you need.

●BLM57025, BLM57050, BLM57090, BLM57130, BLM57180



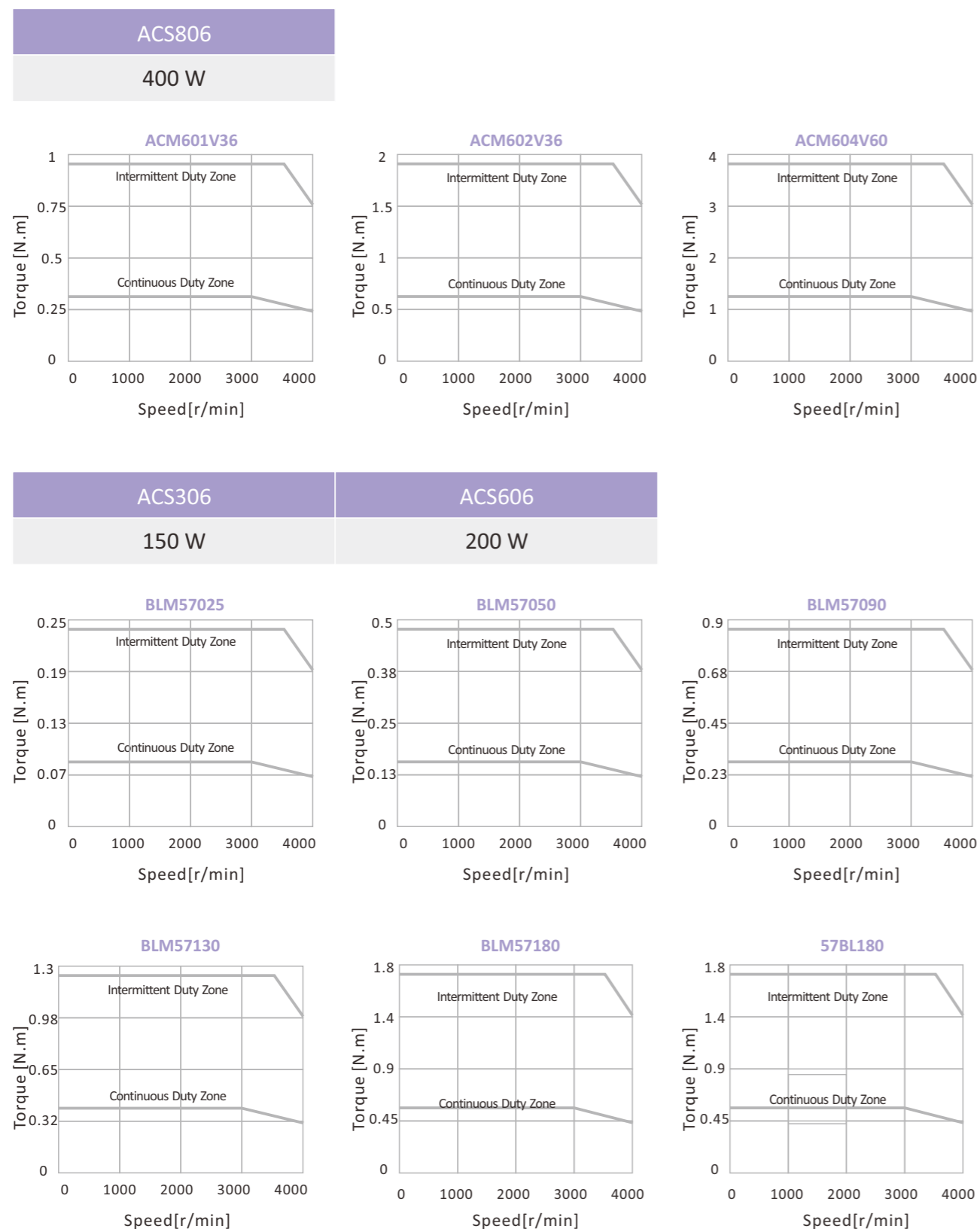
●57BL180



Installation Notes:

- (1) Do not give strong impact shock to the motor shaft.
- (2) Make sure the hall sensor signals U/V/W are connected to the drive correctly.
- (3) The motors are not water proof. Please contact Leadshine if you need a water proof product.
- (4) Keep the ambient temperature within the permissible temperature range (0 to 40 °C) for the product. Use force cooling method if necessary.
- (5) The thread depth of the M4 mounting holes of the 57BL180 is 6.0 mm. Do not screw more than 6.0 mm as this will cause damage to the motor.

## 7.4 Speed-Torque Curves



## 08 Low-Medium Brushless Servos Order Information

Power	Drive	Motor	Accessories
100 W	ACS806	ACM601V36	CABLE-ENCODER (Encoder cable. Length is optional, 3m standard, 1.2m, 5m,10m optional.) CABLE-ACM WINDING (Motor cable. Length is optional, 3m standard, 1.2m, 5m,10m optional.) CABLE-PC (RS232 cable for using ProTuner. 1.5m standard.) CABLE-DB26 (Control signal cable. Length is optional, 2.2m standard, 0.6m, 1.2m optional.)
200 W	ACS806	ACM602V36	CABLE-ENCODER (Encoder cable. Length is optional, 3m standard, 1.2m, 5m,10m optional.) CABLE-ACM WINDING (Motor cable. Length is optional, 3m standard, 1.2m, 5m,10m optional.) CABLE-PC (RS232 cable for using ProTuner. 1.5m standard.) CABLE-DB26 (Control signal cable. Length is optional, 2.2m standard, 0.6m, 1.2m optional.)
400 W	ACS806	ACM604V60	CABLE-ENCODER (Encoder cable. Length is optional, 3m standard, 1.2m, 5m,10m optional.) CABLE-ACM WINDING (Motor cable. Length is optional, 3m standard, 1.2m, 5m,10m optional.) CABLE-PC (RS232 cable for using ProTuner. 1.5m standard.) CABLE-DB26 (Control signal cable. Length is optional, 2.2m standard, 0.6m, 1.2m optional.)
25 W	ACS306/ACS606	BLM57025	CABLE-ENCODER (Encoder cable. Length is optional, 3m standard, 1.2m, 5m,10m optional.) CABLE-BLM WINDING (Motor cable. Length is optional, 3m standard, 1.2m, 5m,10m optional.) CABLE-PC (RS232 cable for using ProTuner. 1.5m standard.)
50 W	ACS306/ACS606	BLM57050	CABLE-ENCODER (Encoder cable. Length is optional, 3m standard, 1.2m, 5m,10m optional.) CABLE-BLM WINDING (Motor cable. Length is optional, 3m standard, 1.2m, 5m,10m optional.) CABLE-PC (RS232 cable for using ProTuner. 1.5m standard.)
90 W	ACS606	BLM57090	CABLE-ENCODER (Encoder cable. Length is optional, 3m standard, 1.2m, 5m,10m optional.) CABLE-BLM WINDING (Motor cable. Length is optional, 3m standard, 1.2m, 5m,10m optional.) CABLE-PC (RS232 cable for using ProTuner. 1.5m standard.)
130 W	ACS606	BLM57130	CABLE-ENCODER (Encoder cable. Length is optional, 3m standard, 1.2m, 5m,10m optional.) CABLE-BLM WINDING (Motor cable. Length is optional, 3m standard, 1.2m, 5m,10m optional.) CABLE-PC (RS232 cable for using ProTuner. 1.5m standard.)
180 W	ACS606	BLM57180	CABLE-ENCODER (Encoder cable. Length is optional, 3m standard, 1.2m, 5m,10m optional.) CABLE-BLM WINDING (Motor cable. Length is optional, 3m standard, 1.2m, 5m,10m optional.) CABLE-PC (RS232 cable for using ProTuner. 1.5m standard.)
180 W	ACS606	57BL180	CABLE-ENCODER (Encoder cable. Length is optional, 3m standard, 1.2m, 5m,10m optional.) CABLE-BLM WINDING (Motor cable. Length is optional, 3m standard, 1.2m, 5m,10m optional.) CABLE-PC (RS232 cable for using ProTuner. 1.5m standard.)

Note: The STU-ACS and the cable between the STU-ACS and drive are NOT standard accessories. Please specify when you place an order if you need.