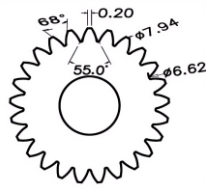
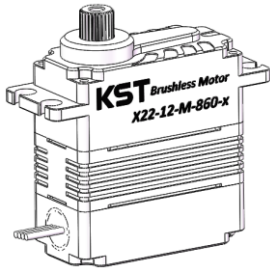
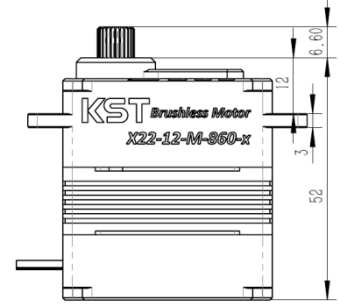
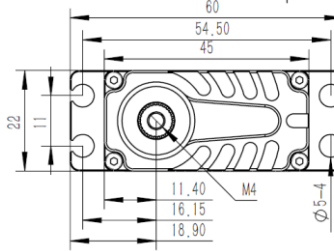


### X22-xx-M-860-x Technical Specification



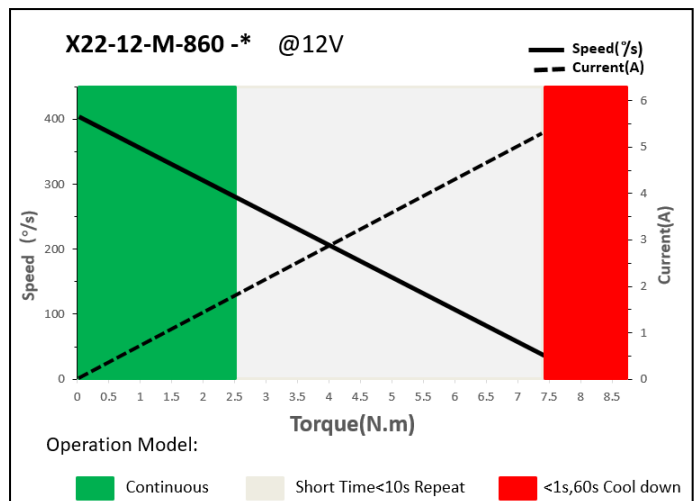
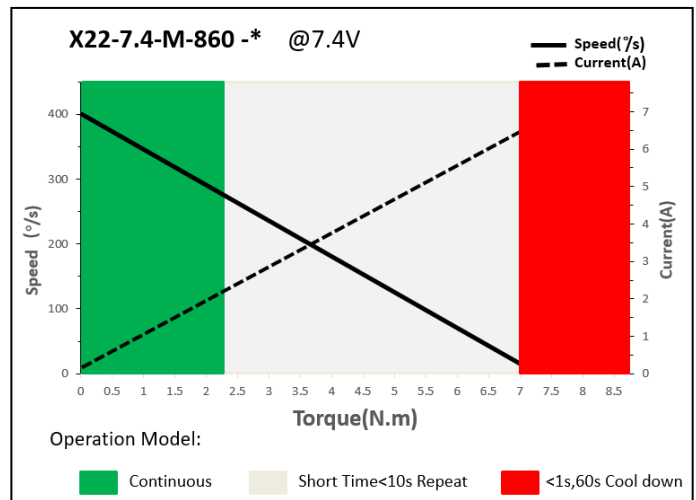
25T- 8mm Output Shaft Spline



## 1. Operating Data

	X22-7.4-M-860-*	X22-12-M-860-*
Rated Voltage	DC7.4V	DC12.0V
Voltage Range	DC6.0V-8.4V	DC9.0V-13V
Stalling Torque	7.0N.m@7.4V	7.5N.m@12V
Rated Torque	2.2N.m@7.4V	2.5N.m@12V
Stalling Current	7.50A	6.00A
Rated Current	1.98A	1.68A
No-load Speed	0.15sec/60°@7.4V	0.14sec/60°@12V
Rated Speed	0.21sec/60°@7.4V	0.20sec/60°@12V
Working Frequency	1520us/333Hz	
Default Travel Angle	± 100°=200°Total When 500us-2500us	
Temperature Range	-20°C.....+65°C	
Case Material	Aluminum Alloy	
Motor Type	Brushless DC Motor	
Gear Set Material	Hardened Steel	
Position Sensor	Contactless	
Ball Bearing	6BB	
Waterproof level	IP67	
Case Dimensions	45mm*22mm*52mm±0.2mm	
Weight	128g±10%	

## 2. Performance



## 3. Command signal

### 3.1. PWM Command Interface

Signal Voltage	TTL-level: HIGH: min.3.3V, max.5.0V Low: min.0.0V, max.1.5V
Pulse Lengths	500us-2500us
Pulse Lengths for Position-100°/ 0°/+100°	500us/1500us/2500us

### 3.2. RS485 Command Interface

Baud-Rate	115200 $\pm$ 1.5% bits/s
Protocol (Documentation available)	10 Byte (incl. 1 byte Check Sum)

#### 3.2.1. RS485 Protocol Specifications

Number of Data Bits	8
Number of Stop Bits	1
Parity	None

#### 3.2.2. Command / Response Frame

Byte #	Description	Byte #	Description
1	Frame Head(0xFE)	6	Data
2	Version(0xCA)	7	Data
3	Address	8	Data
4	Command code	9	Check Sum
5	Data	10	(0A) Frame End

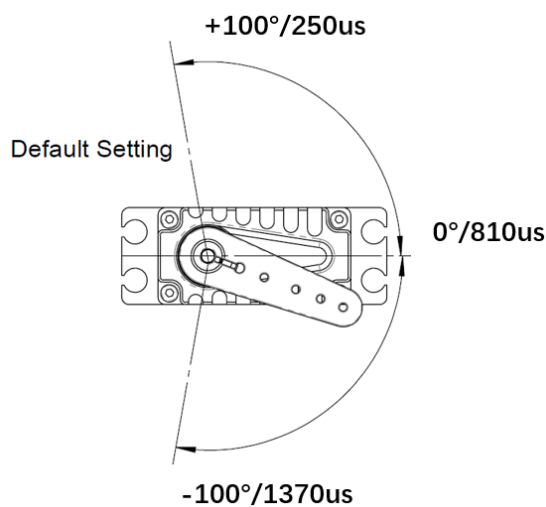
### 3.3. CAN Bus Command Interface

Baud-Rate	500Kbps
Node number	0 x25 (range 1 ~ 127, 0 is radio)
Communication	3.1: CAN Open standard frame format 3.2: CAN Extended frame

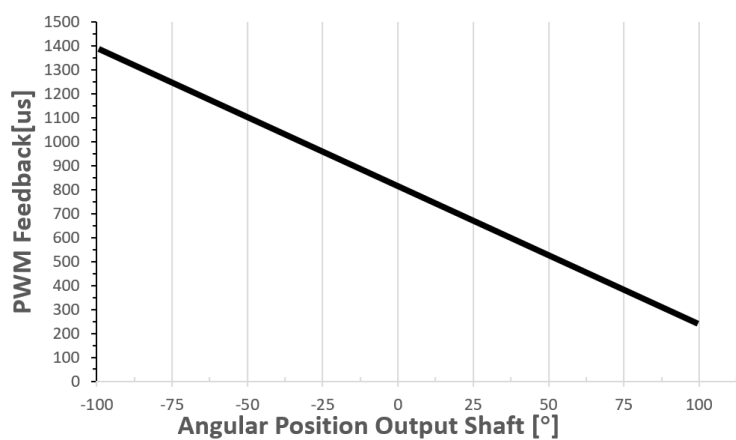
### 3.4. Feedback Singnal

#### 3.4.1. Position Feedback Signal (PWM Versions)

The Position Feedback signal is an output signal with a square wave which is directly related to the output shaft's angular position. Reference is Supply Ground.



Position Feedback



\* Tolerance  $\pm$ 1%

