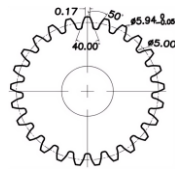
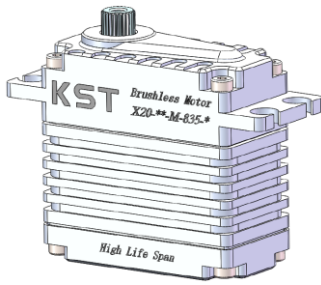
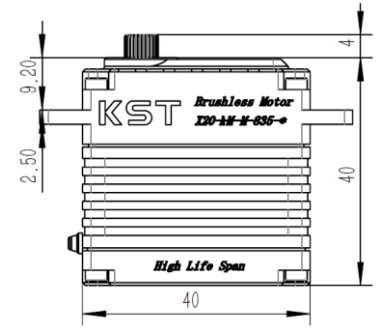
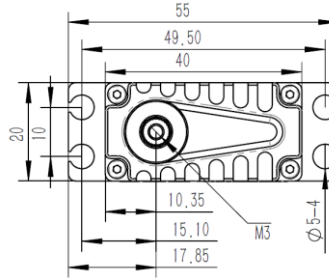


X20-xx-M-835-x Technical Specification



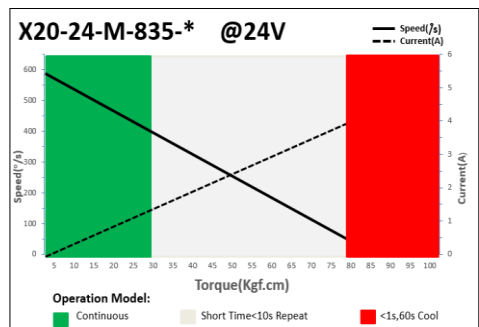
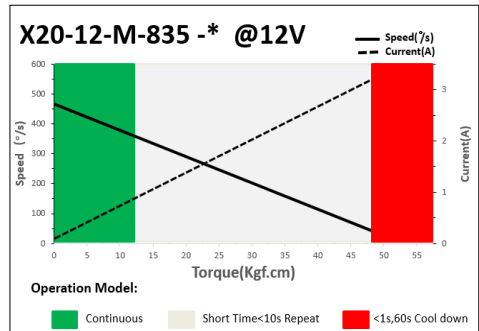
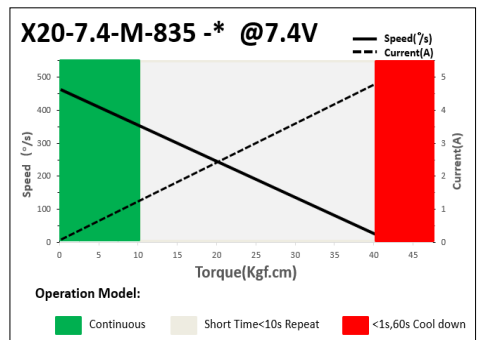
25T 6mm Output
Shaft Spline



1. Operating Data

	X20-7.4-M-835-*	X20-12-M-835-*	X20-24-M-835-*
Rated Voltage	DC7.4V	DC12.0V	DC24.0V
Voltage Range	DC6.0V-8.4V	DC9.0V-13V	DC20.0V-28.0V
Stalling Torque	40Kgf.cm@7.4V	48Kgf.cm@12V	85Kgf.cm@24V
Rated Torque	10Kgf.cm@7.4V	12Kgf.cm@12V	30Kgf.cm@24V
Stalling Current	4.95A	3.25A	5.25A
Rated Current	1.25A	0.85A	1.30A
No-load Speed	0.13sec/60°@7.4V	0.14sec/60°@12V	0.12sec/60°@24V
Rated Speed	0.24sec/60°@7.4V	0.25sec/60°@12V	0.20sec/60°@24V
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	Brushless DC Motor	High Power Brushless Motor
Gear Set Material	Hardened Steel		
Position Sensor	Contactless		
Ball Bearing	6 BB		
Case Dimensions	40mm*20mm*40mm±0.2mm		
Weight	80g±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

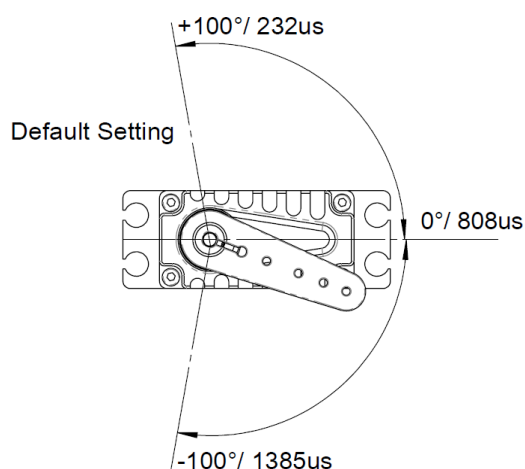
3.3. CAN Bus Command Interface

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

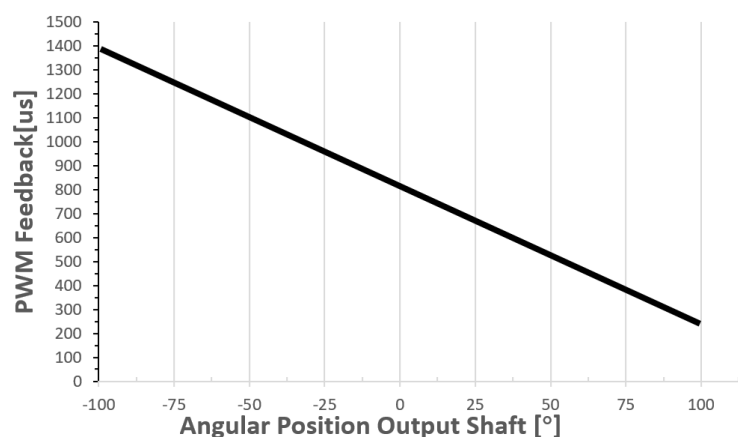
3.4. Feedback Singnal

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

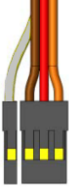
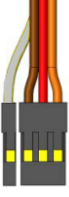
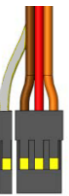


* Tolerance \pm 1%

3.4.2 Feedback Value (Bus Versions)

Integrated in the Bus protocol a Feedback Value, including the Angle position, Temperature, current value. Value read by sending request command. Provide the details of the bus in the document.

4. Electrical Connection Options

 4 3 2 1	Pin Assignment (PWM)			
	1	Yellow	SIG	Command Signal
	2	Red	DC+	Supply Voltage
	3	Brown	DC-(GND)	Supply Ground, Signal Ground
 4 3 2 1	Pin Assignment (RS485)			
	1	Yellow	RS485A	Non-Inverted Input / Output line
	2	Red	DC+	Supply Voltage
	3	Brown	DC-(GND)	Supply Ground, Signal Ground
 4 3 2 1	Pin Assignment (CAN_BUS)			
	1	Yellow	CAN_H	CAN High
	2	Red	DC+	Supply Voltage
	3	Brown	DC-(GND)	Supply Ground, Signal Ground
	4	white	CAN_L	CAN Low

5. Accessories (Options)

Item	Item-No.
Aluminum Servo Arm (Single side)	0625.11
Aluminum Servo Arm (Single side)	0625.23
Aluminum Servo Arm (Single side)	0625.40
Aluminum Servo Arm (Double side)	0625.60

6. Item Number System

