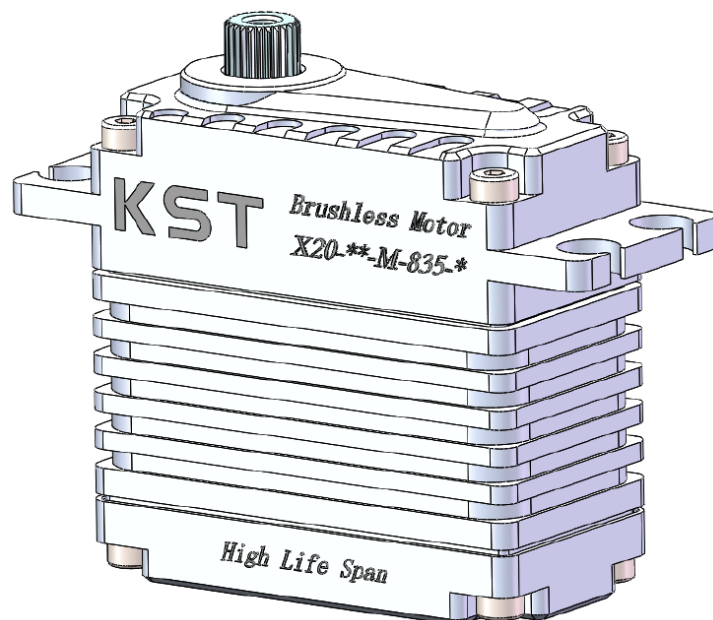


X20-**-M-835-*

Technical Specification

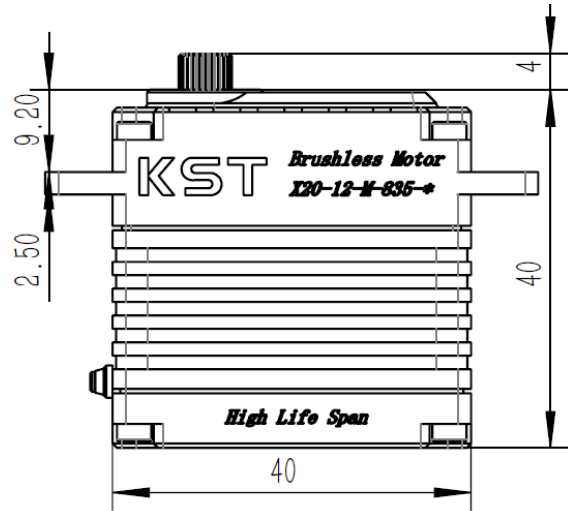
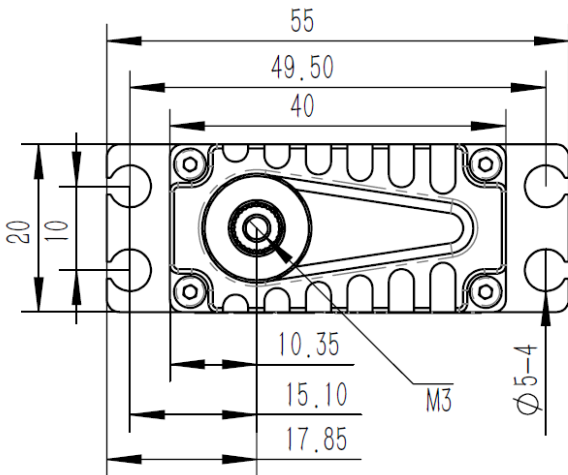


X20-7.4-M-835-*

X20-12-M-835-*

1. Installation Dimensions

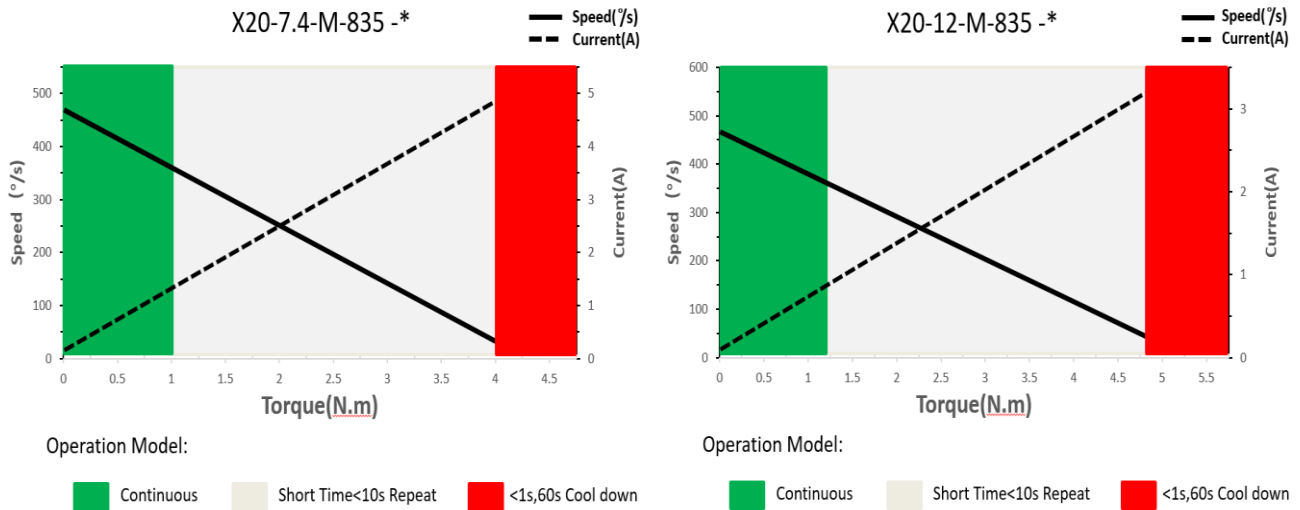
Case Dimensions	40mm*20mm*40mm(±0.2mm)
Weight	80g (±10%)



2. Operating Data

	X20-7.4-M-835-*	X20-12-M-835-*
Operation Voltage(Rated)	DC7.40V	DC12.0V
Operation Voltage Range	DC6.0V-8.4V	DC9.0V-13.0V
Stalling Torque	4.0N.m@7.4V	4.8N.m@12V
Rated Torque	1.0N.m@7.4V	1.2N.m@12V
Stalling Current	4.95A	3.25A
Rated Current	1.25A	0.85A
No-load Speed	0.13sec/60°@7.4V	0.14sec/60°@12V
Rated Speed	0.24sec/60°@7.4V	0.25sec/60°@12V
Travel Angle	±50° when 1000us-2000us	
	±100° when 500us-2500us	
Operating Temperature Range	-10°C.....+65°C	

3. Performance



4. Command Signal

4.1 PWM Command Signal

PWM	X20-**-M-835-*
Signal Voltage	TTL-Level: HIGH:min.3.3V,max.5.0V TTL-Level: Low:min.0.0V,max.1.5V
Pulse Lengths	500us - 2500us
Pulse Lengths for Position -100°/center/+100°	500us/1500us/2500us
Gear backlash	≤0.5°

4.2 RS485 Command Interface

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

4.2.1 RS485 Protocol Specifications

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

4.2.2 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

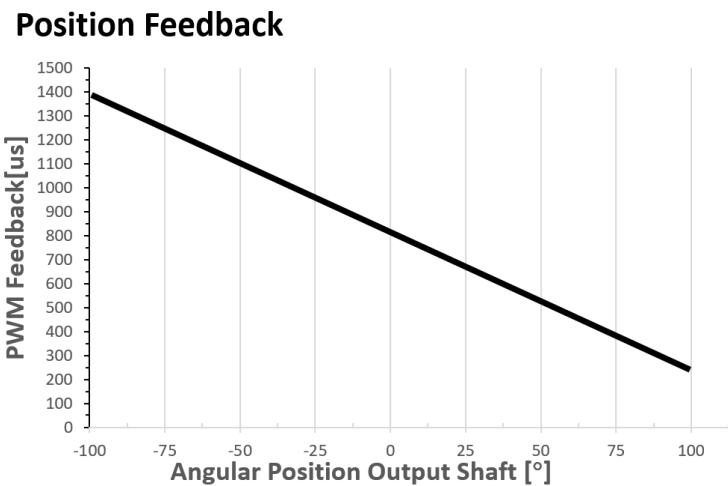
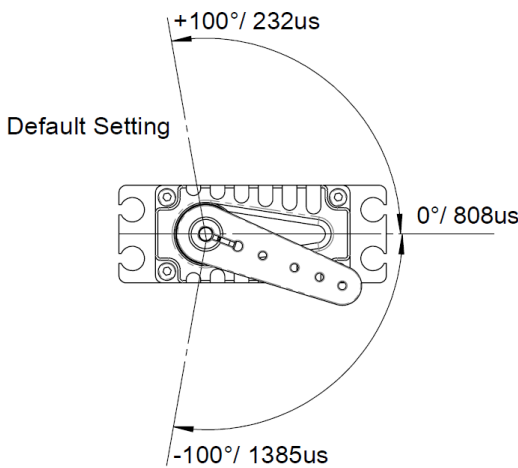
4.3 CAN Bus Command Interface

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

4.4. Feedback Signal

4.4.1 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.



* Tolerance ±1%

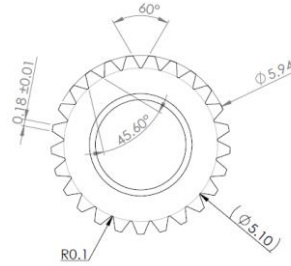
4.4.2 Feedback Value (Bus Versions)

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.

5. Materials and protective features

Case Material	Aluminum Alloy
Motor Type	Brushless
Gear Set Material	Hardened Steel
Position Sensor	Contactless
Connecting Cable	22AWG

6. Output Shaft Spline (25T)



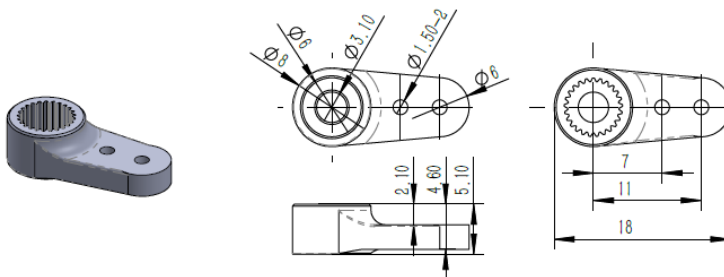
7. Electrical Connection

<p>4 3 2 1</p>	Pin Assignment (PWM)			
	1	Yellow	SIG	Command Signal
	2	Red	DC+	Supply Voltage
	3	Brown	DC-(GND)	Supply Ground, Signal Ground
	4	White(Options)	Feedback	Position Feedback
<p>4 3 2 1</p>	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	white	RS485B	Inverted Input / Output line
<p>4 3 2 1</p>	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

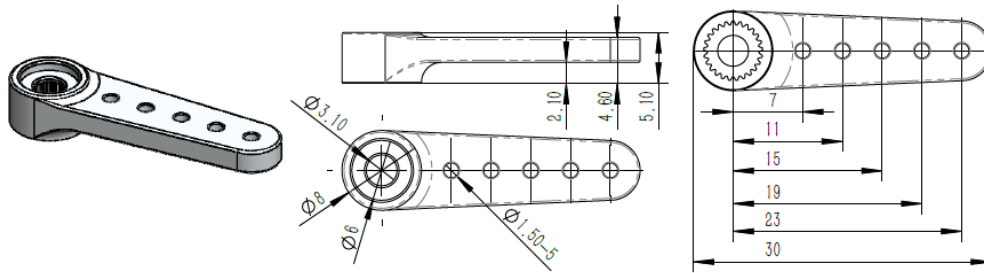
8. Accessories (Options)

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

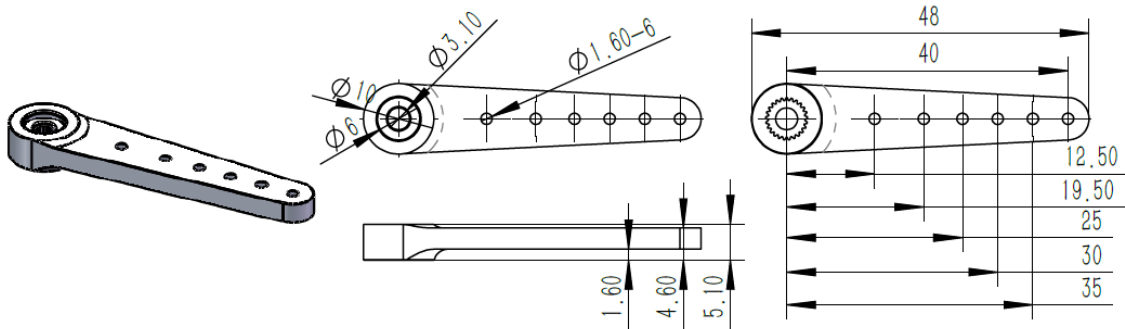
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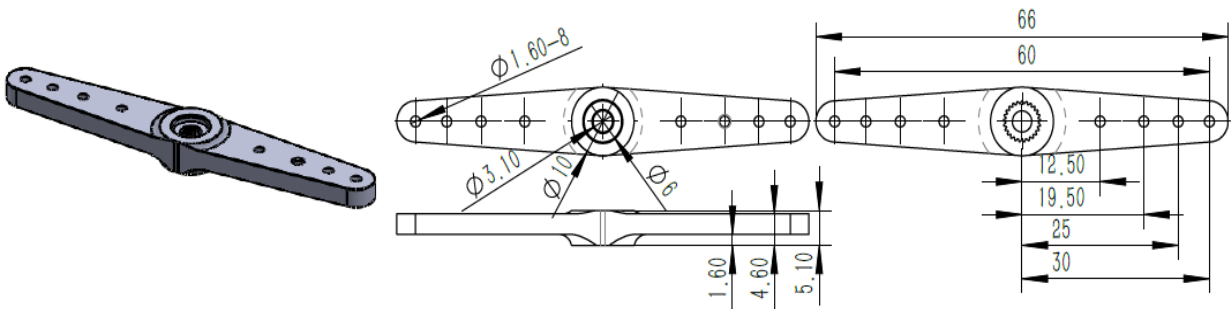
Item No.: 0625.23



Item No.: 0625.40



Item No.: 0625.60



9. Item Number System

