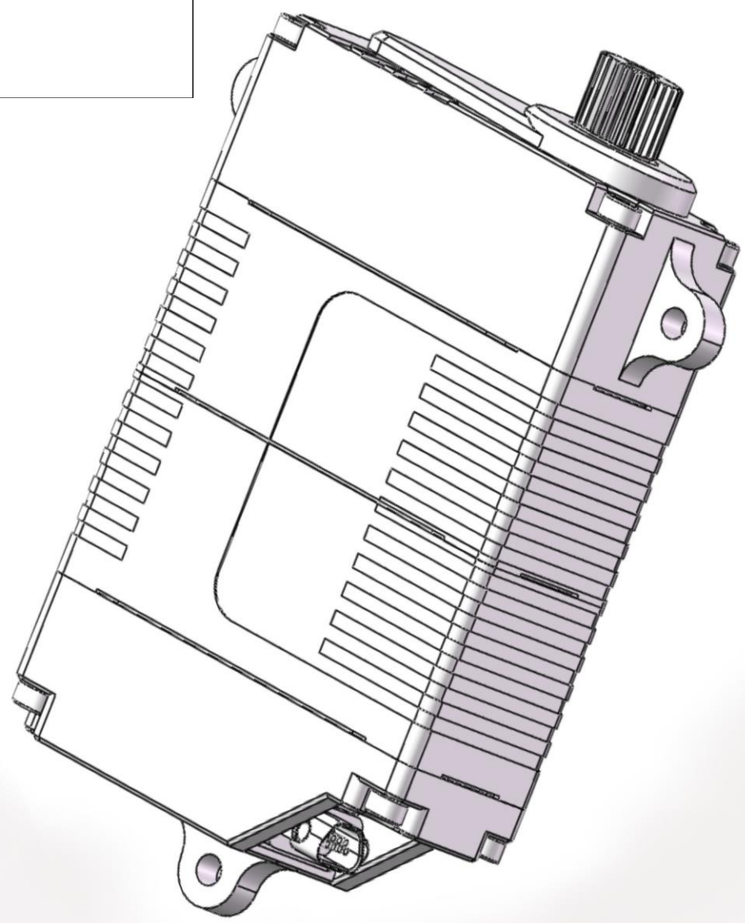
KST-Servos.com
Warthweg 5A
64823 Groß-Umstadt

Tel: +49(0)6078-9683-27
Fax: +49(0)6078-9683-28

E-Mail: info@avn-security.com

KST DIGITAL TECHNOLOGY LIMITED

KST®



HS Series

-30℃~+65℃

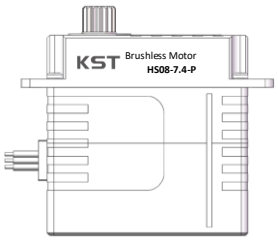
KST®

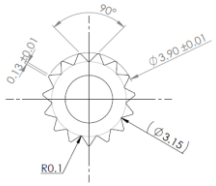
About us

KST Digital Technology Limited is one of the designers and manufacturers which can supply digital servo .KST Digital Technology Limited is constantly committed to improving the quality of products. The information and illustrations in the product manual or specification may be different and non binding. Please refer to the actual products. In any case, KST Digital Technology Limited makes no specific guarantee on the marketability, applicability for specific purposes, non infringement, own ership, accuracy, integrity or safety of third party component processing, and the user shall be fully responsible for the product equipment and application of KST servo .In no event shall KST Digital Technology Limited and its management, agents, distributor, dealer or employees be liable for any incidental, indirect, special or indirect damages related to the products or services provided by KST , Including (but not limited to) loss of profit or revenue, interruption of business, products or use of any re lated equipment, raw materials, components or products, damage to related equipment or loss of accessories and materials mixed with other uses.

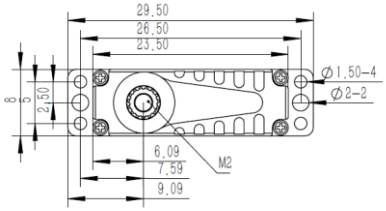
Contents

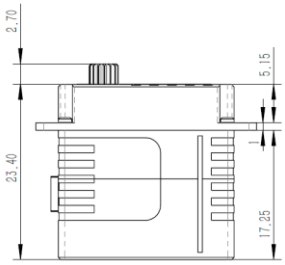
HS08-7.4-P





15T 4mm Output Shaft

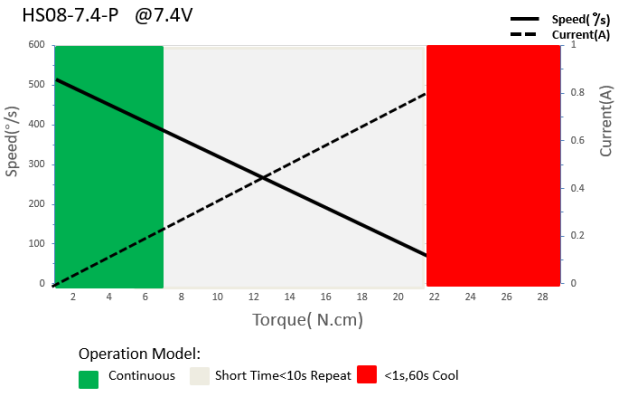




1. Servo Data

	HS08-7.4-P
Rated Voltage	DC7.4V
Voltage Range	DC6.0V-8.4V
Stalling Torque	18N.cm@6.0V
	26N.cm@7.4V
	30N.cm@8.4V
Rated Torque	7N.cm@7.4V
Stalling Current	0.85A@7.4V
Rated Current	0.22A@7.4V
No-load Speed	0.13sec/60°@6.0V
	0.10sec/60°@7.4V
	0.08sec/60°@8.4V
Rated Speed	0.20sec/60°@7.4V
Default Travel Angle	±50° = 100°total travel
Operating Temperature	-30℃.....+65℃
Case Material	Aluminum Alloy 7075
Motor Type	Brushless DC Motor
Gear Set Material	Hardened Steel
Position Sensor	Potentiometer
Case Dimensions	23.5mm*8mm*23.5mm (±0.2mm)
Weight	11g (±10%)

2. Performance

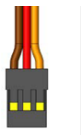


3. Command Signal

3.1. PWM Command Interface

Signal Voltage	HIGH:min.3.3V,max.5.0V Low:min.0.0V,max.1.5V
Pulse Lengths	1000us-2000us
Pulse Lengths for Position -50°/0°/+50°	1000us/1500us/2000us

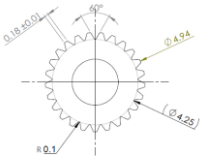
4. Electrical Connection

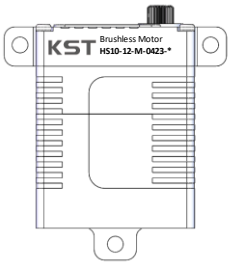


3 2 1

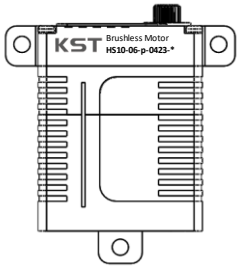
Pin Assignment			
1	Orange	PWM	PWM Command Signal
2	Red	DC+	Supply Voltage
3	Brown	DC-	Supply Ground, Signal Ground

HS10-06-P-0423-1
HS10-12-M-0423-*



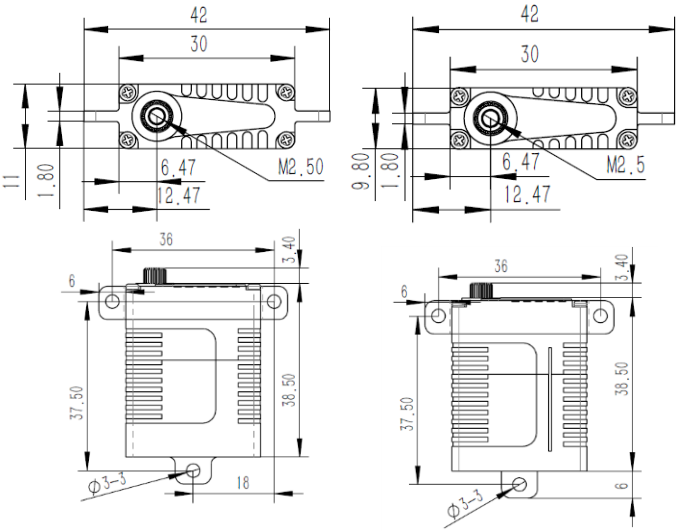


Contactless Version



Potentiometer Version

25T 5mm
Output Shaft

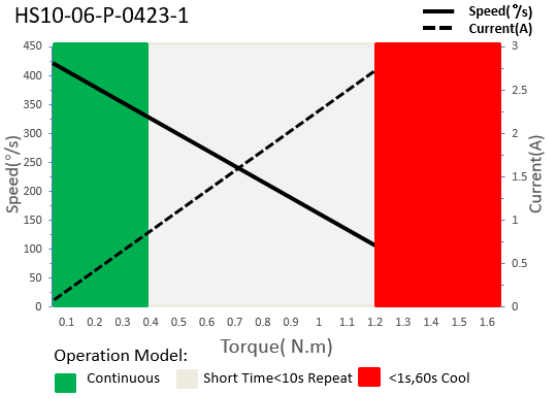


1. Servo Data

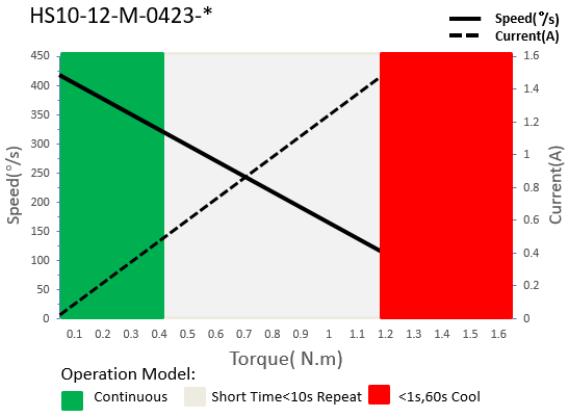
	HS10-06-P-0423-1	HS10-12-M-0423-*
Rated Voltage	DC6.0V	DC12V
Voltage Range	DC4.8V-8.4V	DC9.0V-12V
Stalling Torque	1.20N.m@6.0V	1.20N.m@12V
Rated Torque	0.40N.m@6.0V	0.40N.m@12V
Stalling Current	2.85A	1.45A
Rated Current	0.65A	0.33A
No-load Speed	420°/S@25℃	420°/S@25℃
Rated Speed	320°/S@25℃	320°/S@25℃
Default Travel Angle	±50°= 100° total travel	±100°= 200° total travel
Operating Temperature Range	-30……+65℃	-30……+65℃
Case Material	Aluminum Alloy 7075	Aluminum Alloy 7075
Motor Type	Brushless DC Motor	Brushless DC Motor
Gear Set Material	Hardened Steel	Hardened Steel
Position Sensor	Potentiometer	Contactless
Case Dimensions	30mm*9.8mm*38.5mm(±0.2mm)	30mm*11mm*38.5mm(±0.2mm)
Weight	28g(±10%)	30g(±10%)

2. Performance

HS10-06-P-0423-1



HS10-12-M-0423-*



3. Command Signal

3.1 PWM Command Interface

	HS10-12-M-0423-1	HS10-12-M-0423-1
Signal Voltage	HIGH:min.3.3V,max.5.0VLow:min.0.0V,max.1.5V	
Pulse Lengths	500us-2500us	1000us-2000us
Pulse Lengths for Position	500us/1500us/2500us -100°/0°/+100°	100us/1500us/2000us -50°/0°/+50°

3.2 RS485/RS422 Command Interface

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

3.2.1 RS485/RS422 Protocol Specifications

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

Command / Response Frame

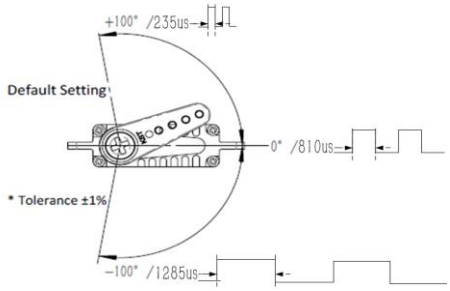
Byte #	Description	Byte #	Description
1	Frame Head(0xFE)	6	Data
2	Version(0xCA)	7	Data
3	Address	8	Data
4	Command code	9	Check Sum
5	Data	10	(0A)Frame End

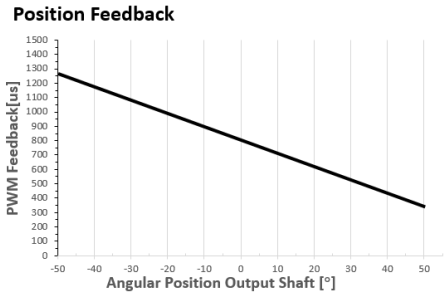
3.3. Feedback Signal

3.3.1 Position Feedback Signal (PWM Versions)

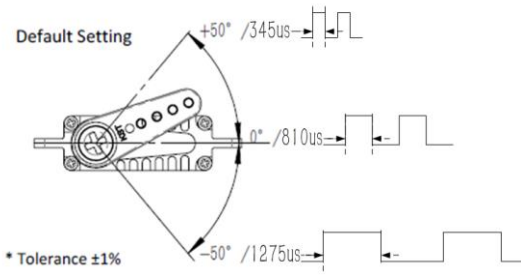
The Position Feedback signal is an output signal with a square wave which is directly related to the output shaft's angular position. Reference is Supply Ground.

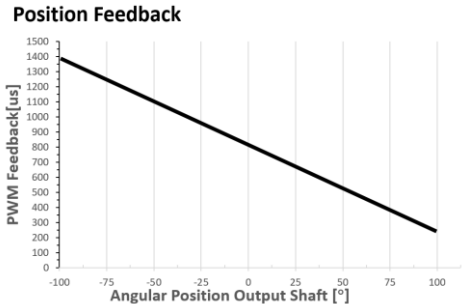
3.3.1.1 HS10-06-P-0423-1 Version





3.3.1.2 HS10-12-M-0423-1 Version





3.3.2 Feedback Value (RS485 Bus Version)

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

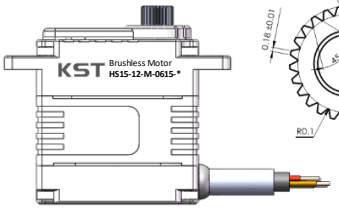
4. Electrical Connection Options

Silver plated, open leads.

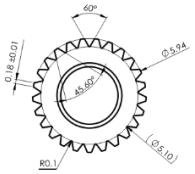
Pin Assignment RS485								
1	Red	DC+	Supply Voltage V+		1	Red	DC +	Supply Voltage
2	Black	DC-	Supply Ground, Signal Ground		2	Black	DC-	Supply Ground Signal Ground
3	White	RS485B	Inverted Input / Output line		3	White	SIG	Command Signal
4	Blue	RS485A	Non-Inverted Input / Output line					

HS15-12-M-0515-*
HS15-12-M-0615-*

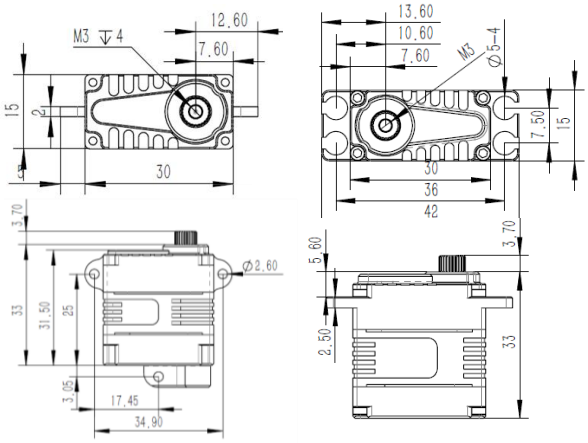
VersionA



VersionB



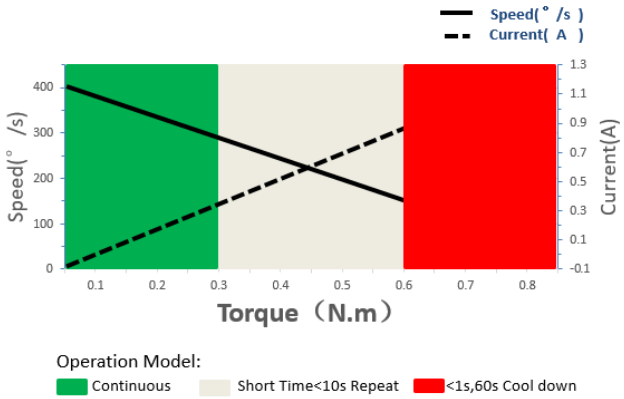
25T 6mm
Output Shaft Spline



1. Servo Data

Rated Voltage	DC12V
Voltage Range	DC9V-12V
Stalling Torque	0.6N.m@12V
Rated Torque	0.3N.m@12V
Stalling Current	0.90A
Rated Current	0.30A
No-load Speed	400°/s @25°C
Rated Speed	300°/s @25°C
Default Travel Angle	±100° = 200° total travel
Operating Temperature Range	-30℃.....+65℃
Case Material	Aluminum Alloy 7075
Motor Type	Brushless DC Motor
Gear Set Material	Hardened Steel
Position Sensor	Contactless
Shielded Connecting Cable	Options
Case Dimensions	30mm*15mm*33mm(±0.2mm)
Weight	35g(±10%)

2. Performance



3. Command Signal

3.1 PWM Command Interface

Signal Voltage	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/RS422 Command Interface

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

3.2.1 RS485/RS422 Protocol Specifications

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

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

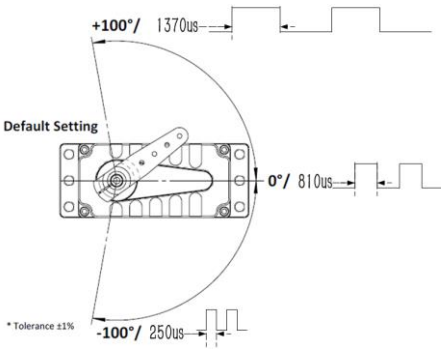
3.3 CAN Bus Command Interface

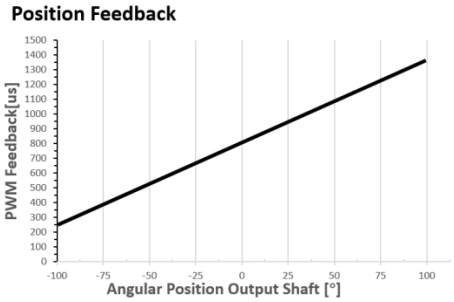
Baud-Rate	500Kbps
Node number	0 x25 (range 1 ~ 127, 0 is radio)
Communication	CAN Open standard frame CAN Extended frame UAVCAN

3.4. Feedback Signal

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.



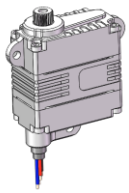


3.4.2 Feedback Value (Bus Version)

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

4.1. Shielded Cable， Open leads .(KFVP 4*0.14 AFR250, Cable diameter≤ Φ 3.5mm)

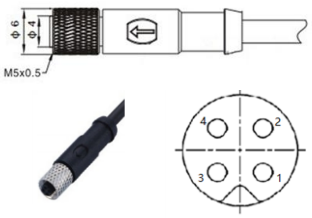


Pin Assignment(PWM)		
1	Red	DC+
2	Black	DC-
3	White	SIG
4	Blue	NC

Pin Assignment (RS485)		
1	Red	DC+
2	Black	DC-
3	White	RS 485 B
4	Blue	RS 485 A

Pin Assignment (CAN_BUS)		
1	Red	DC+
2	Black	DC-
3	White	CAN_L
4	Blue	CAN_H

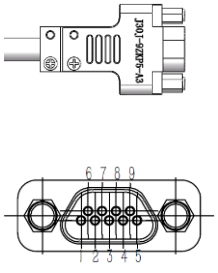
4.2. Industrial Standard M5 electrical Connector



Pin Assignment (RS485)		
1	DC+	Supply Voltage
2	RS 485 B	Inverted Input / Output line
3	DC-	Supply Ground, Signal Ground
4	RS 485 A	Non-Inverted Input / Output line

Pin Assignment (CAN_BUS)		
1	DC+	Supply Voltage
2	CAN_L	CAN low
3	DC-	Supply Ground, Signal Ground
4	CAN_H	CAN High

4.3. Industrial Standard J30J-9ZKP (External) electrical Connector



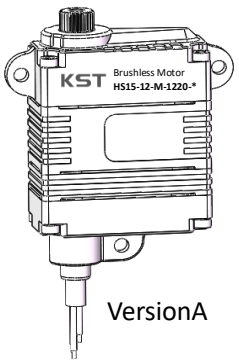
Assignment PWM	
1 2	DC + Supply Voltage
3	NC Do not connect
4 5	DC- Supply Ground
6 7	PWM Command Signal
8 9	NC Do not connect

Assignment RS485	
1 2	DC + Supply Voltage
3	NC Do not connect
4 5	DC- Supply Ground
6 7	RS485A
8 9	RS485B

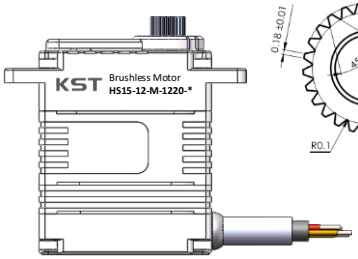
Assignment CAN	
1 2	DC + Supply Voltage
3	NC Do not connect
4 5	DC- Supply Ground
6 7	CAN_H
8 9	CAN_L

Assignment RS422	
1 2	DC + Supply Voltage
3	NC Do not connect
4 5	DC- Supply Ground
6	TX+
7	TX-
8	RX+
9	RX-

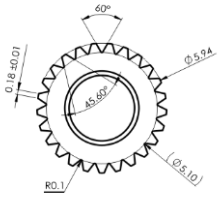
HS15-12-M-1020-*
HS15-12-M-1220-*



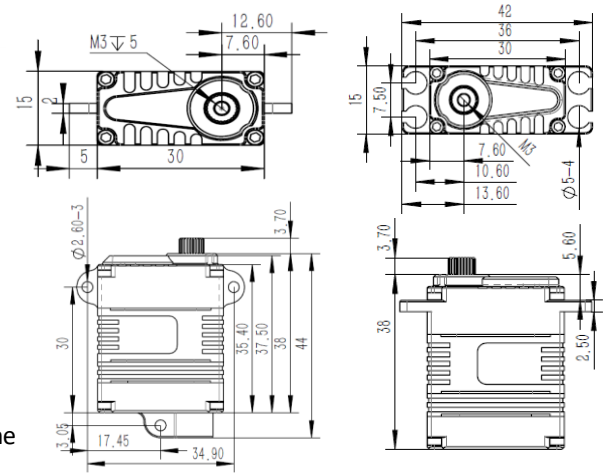
VersionA



VersionB



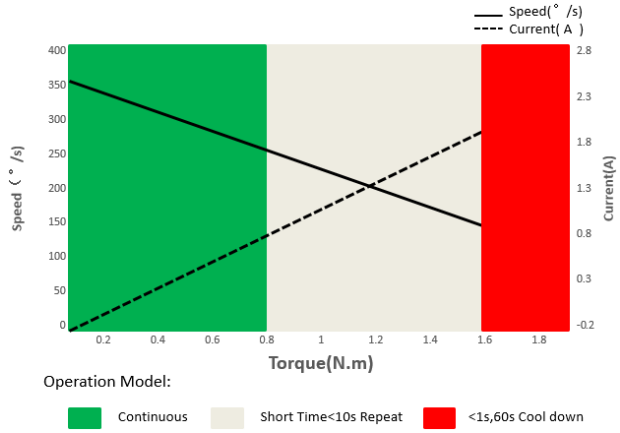
25T 6mm
Output Shaft Spline



1. Servo Data

Rated Voltage	DC12V
Voltage Range	DC9V-12V
Stalling Torque	1.6N.m@12V
Rated Torque	0.8N.m@12V
Stalling Current	2.05A
Rated Current	0.75A
No-load Speed	350°/s @25°C
Rated Speed	260°/s @25°C
Default Travel Angle	±100° = 200° total travel
Operating Temperature	-30℃.....+65℃
Case Material	Aluminum Alloy 7075
Motor Type	Brushless DC Motor
Gear Set Material	Hardened Steel
Position Sensor	Contactless
Shielded Connecting Cable	Options
Case Dimensions	30mm*15mm*38mm(±0.2mm)
Weight	40g (±10%)

2. Performance



3. Command Signal

3.1 PWM Command Interface

Signal Voltage	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/RS422 Command Interface

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

3.2.1 RS485/RS422 Protocol Specifications

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

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

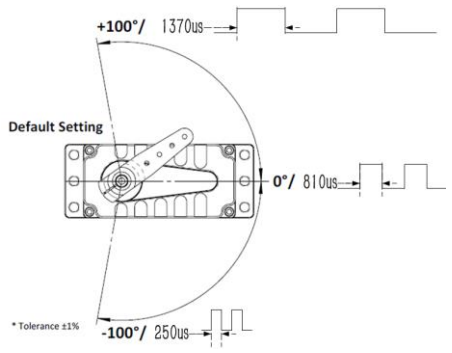
3.3 CAN Bus Command Interface

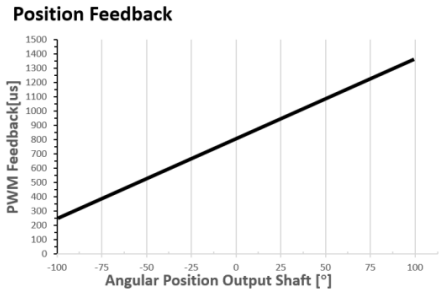
Baud-Rate	500Kbps
Node number	0 x25 (range 1 ~ 127, 0 is radio)
Communication	CAN Open standard frame CAN Extended frame UAVCAN

3.4. Feedback Signal

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



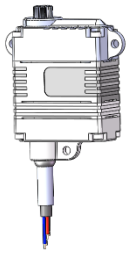


3.4.2 Feedback Value (Bus Version)

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

4.1. Shielded Cable， Open leads. (KFVP 4*0.14 AFR250, Cable diameter≤ Φ 3.5mm)

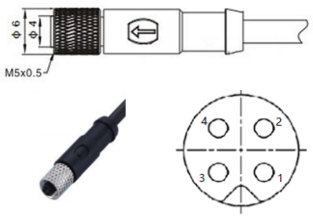


Pin Assignment(PWM)		
1	Red	DC+
2	Black	DC-
3	White	SIG
4	Blue	NC

Pin Assignment (RS485)		
1	Red	DC+
2	Black	DC-
3	White	RS 485 B
4	Blue	RS 485 A

Pin Assignment (CAN_BUS)		
1	Red	DC+
2	Black	DC-
3	White	CAN_L
4	Blue	CAN_H

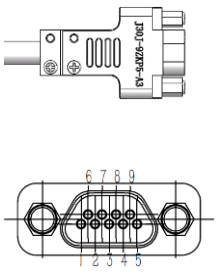
4.2. Industrial Standard M5 electrical Connector



Pin Assignment (RS485)		
1	DC+	Supply Voltage
2	RS 485 B	Inverted Input / Output line
3	DC-	Supply Ground, Signal Ground
4	RS 485 A	Non-Inverted Input / Output line

Pin Assignment (CAN_BUS)		
1	DC+	Supply Voltage
2	CAN_L	CAN low
3	DC-	Supply Ground, Signal Ground
4	CAN_H	CAN High

4.3. Industrial Standard J30J-9ZKP (External) electrical Connector



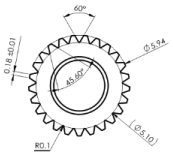
Assignment PWM	
1	DC + Supply Voltage
2	
3	NC Do not connect
4	DC- Supply Ground
5	
6	PWM Command Signal
7	
8	NC Do not connect
9	

Assignment RS485	
1	DC + Supply Voltage
2	
3	NC Do not connect
4	DC- Supply Ground
5	
6	RS485A
7	
8	RS485B
9	

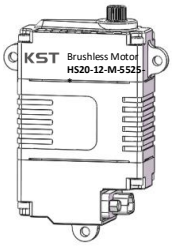
Assignment CAN	
1	DC + Supply Voltage
2	
3	NC Do not connect
4	DC- Supply Ground
5	
6	CAN_H
7	
8	CAN_L
9	

Assignment RS422	
1	DC + Supply Voltage
2	
3	NC Do not connect
4	DC- Supply Ground
5	
6	TX+
7	TX-
8	RX+
9	RX-

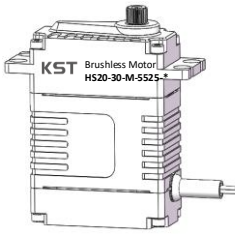
HS20-12-M-5025-*
HS20-12-M-5525-*
HS20-30-M-5525-*



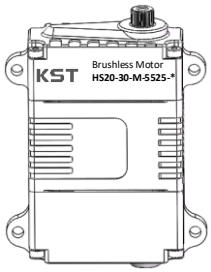
25T 6mmOutput Shaft Spline



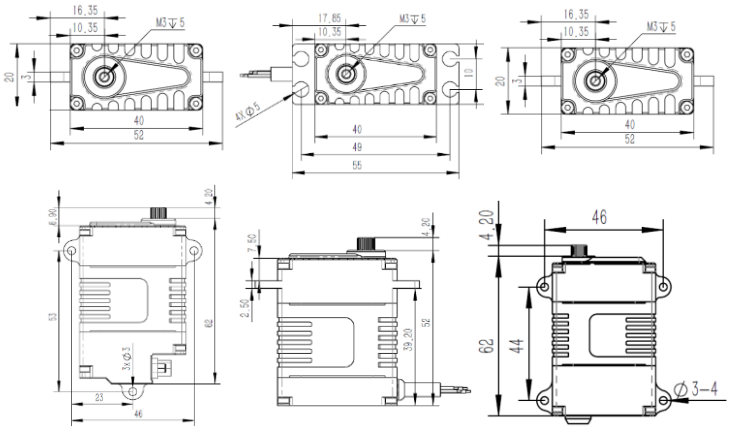
Version A



Version B



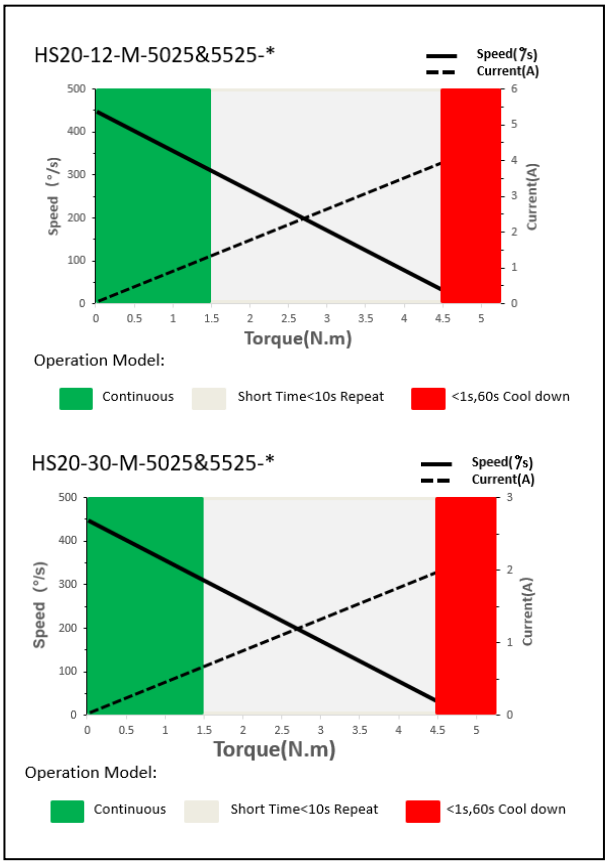
Version C



1. Servo Data

		HS20-12-M-***	HS20-30-M-****-
Rated Voltage		DC12V	DC30V
Voltage Range		DC9V-12V	DC24-32V
Stalling Torque		4.50N.m@12V	4.50N.m@12V
Rated Torque		1.5N.m@12V	1.5N.m@12V
Stalling Current		4.00A	2.20A
Rated Current		1.60A	0.65A
No-load Speed		450°/s @25°C	
Rated Speed		300°/s @25°C	
Default Travel Angle		±100° =200° total travel	
Operating Temperature		-30℃·····+65℃	
Case Material		Aluminum Alloy 7075	
Motor Type		Brushless DC Motor	
Gear Set Material		Hardened Steel	
Position Sensor		Contactless	
Version A	Case Dimensions	40mm*20mm*62mm(±0.2mm)	
	Weight	100g(±10%)	
Version B	Case Dimensions	40mm*20mm*52mm(±0.2mm)	
	Weight	90g((±10%)	
Version C	Case Dimensions	40mm*20mm*62mm(±0.2mm)	
	Weight	100g((±10%)	

2. Performance



3. Command Signal

3.1 PWM Command Interface

Signal Voltage	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/RS422 Command Interface

Baud-Rate	115200 ±1.5% bits/s
Protocol (Documentation available)	10 Byte (incl. 1 byte Check Sum)
Number of Data Bits	8
Number of Stop Bits	1
Parity	None

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

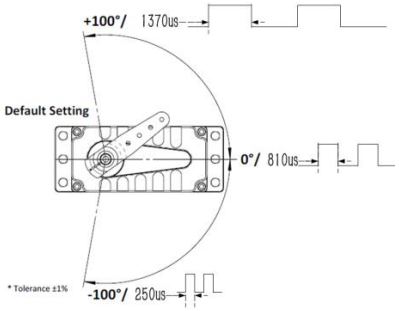
3.3 CAN Bus Command Interface

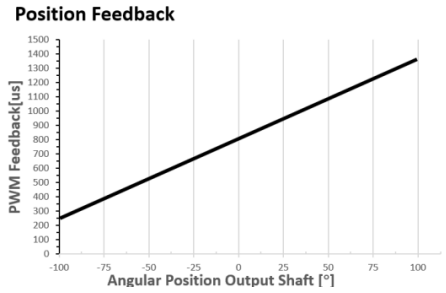
Baud-Rate	500Kbps	Communication	CAN Open standard frame CAN Extended frame UAVCAN
Node number	0 x25 (range 1 ~ 127, 0 is radio)		

3.4. Feedback Signal

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



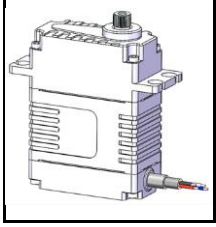


3.4.2 Feedback Value (Bus Version)

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

4.1 Shielded Cable， Open leads(Version B) (KFVP 2*0.14+2*0.30 AFR250, Cable diameter≤ Φ 4.3mm)

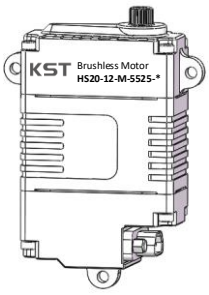


Pin Assignment(PWM)		
1	Red	DC+
2	Black	DC-
3	White	SIG
4	Blue	NC

Pin Assignment (RS485)		
1	Red	DC+
2	Black	DC-
3	White	RS 485 B
4	Blue	RS 485 A

Pin Assignment (CAN_BUS)		
1	Red	DC+
2	Black	DC-
3	White	CAN_L
4	Blue	CAN_H

4.2 Industrial Standard J30J-9ZKP electrical Connector (Version A)



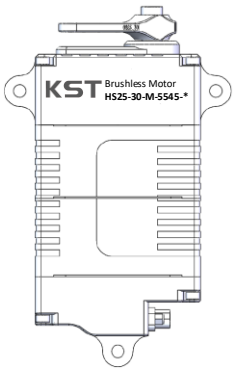
Assignment PWM	
1	DC + Supply Voltage
2	
3	NC Do not connect
4	DC- Supply Ground
5	
6	PWM Command Signal
7	
8	NC Do not connect
9	

Assignment RS485	
1	DC + Supply Voltage
2	
3	NC Do not connect
4	DC- Supply Ground
5	
6	RS485A
7	
8	RS485B
9	

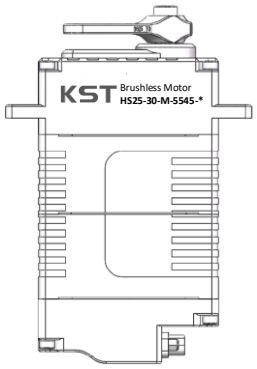
Assignment CAN	
1	DC + Supply Voltage
2	
3	NC Do not connect
4	DC- Supply Ground
5	
6	CAN_H
7	
8	CAN_L
9	

Assignment RS422	
1	DC + Supply Voltage
2	
3	NC Do not connect
4	DC- Supply Ground
5	
6	TX+
7	TX-
8	RX+
9	RX-

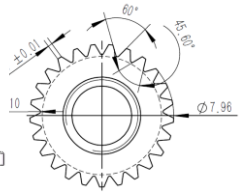
HS25-30-M-5545-*



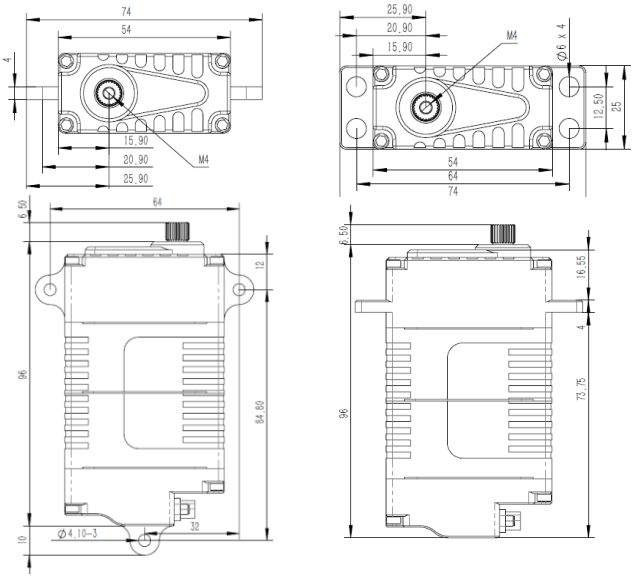
Version A



Version B



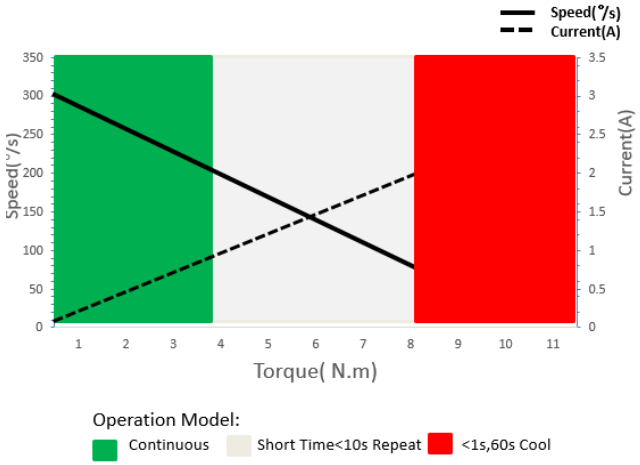
25T 8mm
Output Shaft Spline



1. Servo Data

Rated Voltage		DC30V
Voltage Range		DC24V-32V
Stalling Torque		8.0N.m@30V
Rated Torque		3.8N.m@30V
Stalling Current		2.00A
Rated Current		0.95A
No-load Speed		300°/s @25°C/30v
Rated Speed		200°/s @25°C/30v
Default Travel Angle		±100° = 200° total travel
Operating Temperature Range		-30℃.....+65℃
Case Material		Aluminum Alloy 7075
Motor Type		Brushless DC Motor
Gear Set Material		Hardened Steel
Position Sensor		Contactless
Shielded Connecting Cable		J30J-9TJL/900mm (1500mm:Options)
Version A	Case Dimensions	54mm*25mm*96mm(±0.2mm)
	Weight	300g (±10%)
Version B	Case Dimensions	54mm*25mm*96mm(±0.2mm)
	Weight	300g (±10%)

2. Performance



3. Command Signal

3.1 PWM Command Interface

Signal Voltage	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/RS422 Command Interface

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

3.2.1 RS485/RS422 Protocol Specifications

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

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

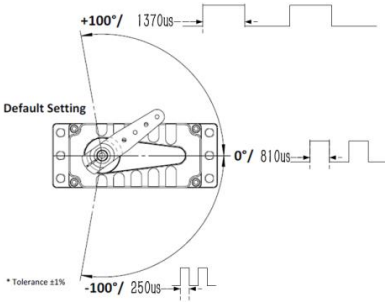
3.3 CAN Bus Command Interface

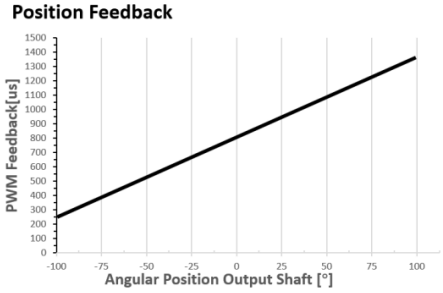
Baud-Rate	500Kbps
Node number	0 x25 (range 1 ~ 127, 0 is radio)
Communication	CAN Open standard frame CAN Extended frame UAVCAN

3.4. Feedback Signal

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.

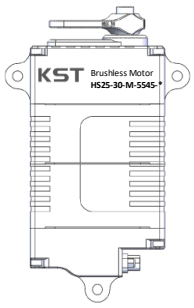




3.4.2 Feedback Value (Bus Version)

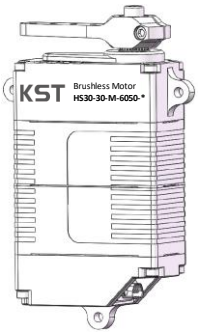
Integrated in the Bus protocol a Feedback Value, including the Angle position, Temperature, current value. Value read by sending request command. Provide the details of the bus in the document.

4. Industrial Standard J30J-9ZKP electrical Connector

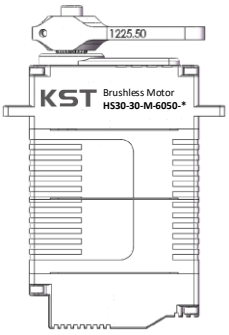


Assignment PWM		Assignment RS485		Assignment CAN		Assignment RS422	
1	DC + Supply Voltage	1	DC + Supply Voltage	1	DC + Supply Voltage	1	DC + Supply Voltage
2		2		2		2	
3	NC Do not connect	3	NC Do not connect	3	NC Do not connect	3	NC Do not connect
4	DC- Supply Ground	4	DC- Supply Ground	4	DC- Supply Ground	4	DC- Supply Ground
5		5		5		5	
6	PWM Command Signal	6	RS485A	6	CAN_H	6	TX+
7		7		7		7	TX-
8	NC Do not connect	8	RS485B	8	CAN_L	8	RX+
9		9		9		9	RX-

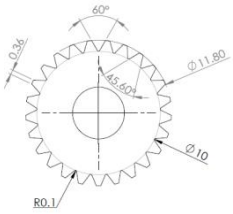
HS30-30-M-6050-*



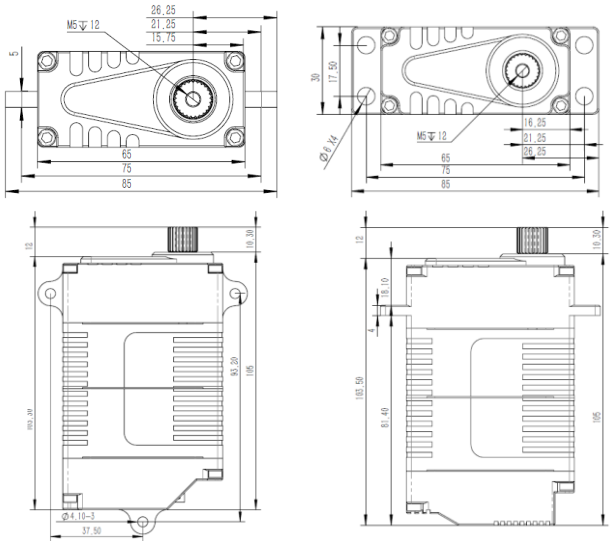
Version A



Version B



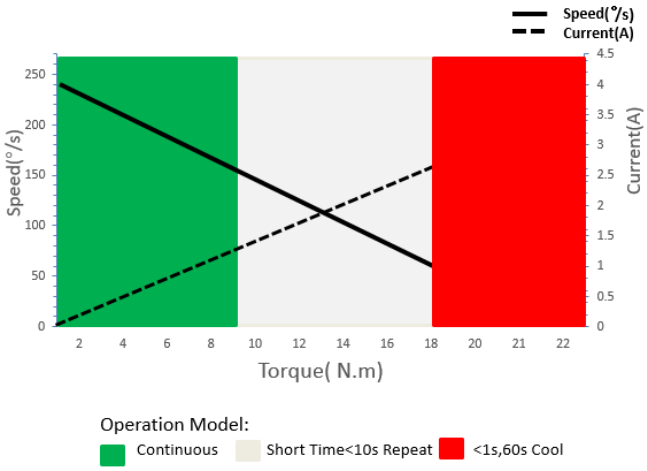
25T 12mm
Output Shaft Spline



1. Servo Data

Rated Voltage		DC30V
Voltage Range		DC24V-32V
Stalling Torque		18.0N.m@30V
Rated Torque		9.0N.m@30V
Stalling Current		3.00A
Rated Current		1.40A
No-load Speed		240°/s @25°C/30V
Rated Speed		160°/s @25°C/30V
Default Travel Angle		±100° = 200° total travel
Operating Temperature Range		-30℃.....+65℃
Case Material		Aluminum Alloy 7075
Motor Type		Brushless DC Motor
Gear Set Material		Hardened Steel
Position Sensor		Contactless
Shielded Connecting Cable		J30J-9TJL/900mm (1500mm:Options)
Version A	Case Dimensions	65mm*30mm*105mm(±0.2mm)
	Weight	450g(±10%)
Version B	Case Dimensions	65mm*30mm*105mm(±0.2mm)
	Weight	450g(±10%)

2.Performance



3. Command Signal

3.1 PWM Command Interface

Signal Voltage	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/RS422 Command Interface

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

3.2.1 RS485/RS422 Protocol Specifications

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

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

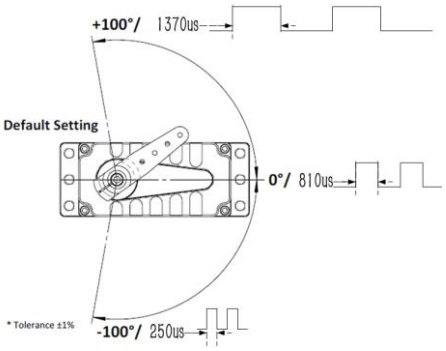
3.3 CAN Bus Command Interface

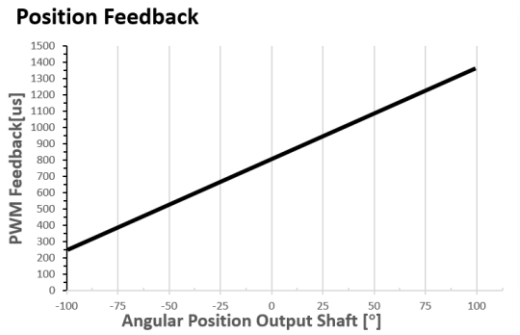
Baud-Rate	500Kbps
Node number	0 x25 (range 1 ~ 127, 0 is radio)
Communication	CAN Open standard frame CAN Extended frame UAVCAN

3.4. Feedback Signal

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.

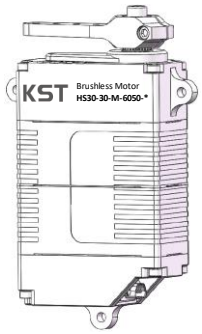




3.4.2 Feedback Value (Bus Version)

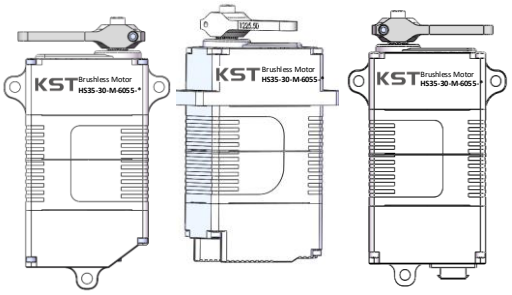
Integrated in the Bus protocol a Feedback Value, including the Angle position, Temperature, current value. Value read by sending request command. Provide the details of the bus in the document.

4. Industrial Standard J30J-9ZKP electrical Connector

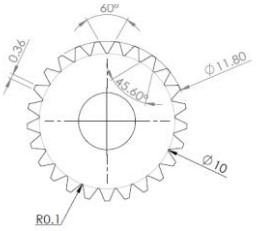


Assignment PWM		Assignment RS485		Assignment CAN		Assignment RS422	
1	DC + Supply Voltage	1	DC + Supply Voltage	1	DC + Supply Voltage	1	DC + Supply Voltage
2		2		2		2	
3	NC Do not connect	3	NC Do not connect	3	NC Do not connect	3	NC Do not connect
4	DC- Supply Ground	4	DC- Supply Ground	4	DC- Supply Ground	4	DC- Supply Ground
5		5		5		5	
6	PWM Command Signal	6	RS485A	6	CAN_H	6	TX+
7		7		7		7	TX-
8	NC Do not connect	8	RS485B	8	CAN_L	8	RX+
9		9		9		9	RX-

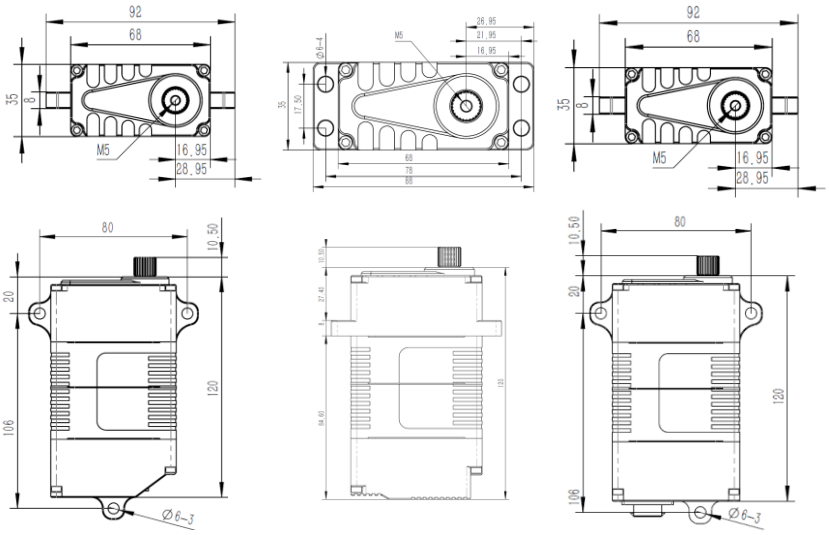
HS35-30-M-6055-*



Version A Version B Version C



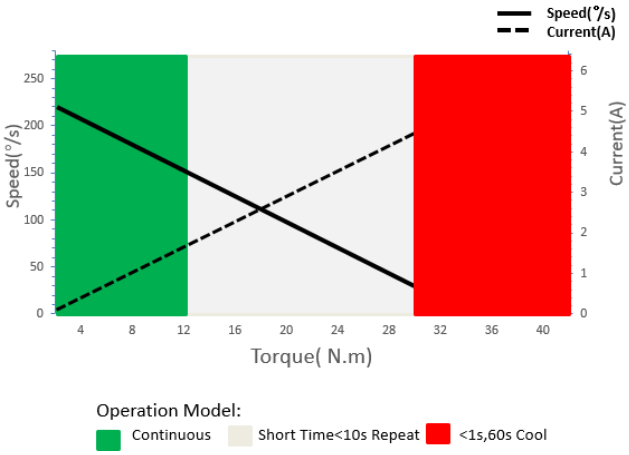
25T 12mmOutput Shaft Spline



1. Servo Data

Rated Voltage		DC30V
Voltage Range		DC24V-32V
Stalling Torque		30N.m@30V
Rated Torque		12N.m@30V
Stalling Current		5.00A
Rated Current		1.95A
No-load Speed		220°/s @25°C/30V
Rated Speed		150°/s @25°C/30V
Default Travel Angle		±100° = 200° total travel
Operating Temperature Range		-30℃.....+65℃
Case Material		Aluminum Alloy 7075
Motor Type		Brushless DC Motor
Gear Set Material		Hardened Steel
Position Sensor		Contactless
Shielded Connecting Cable		J30J-9TJL/900mm (1500mm:Options)
Version A	Case Dimensions	68mm*35mm*120mm(±0.2mm)
	Weight	680g(±10%)
Version B	Case Dimensions	68mm*35mm*120mm(±0.2mm)
	Weight	680g(±10%)
Version C	Case Dimensions	68mm*35mm*120mm(±0.2mm)
	Weight	680g(±10%)

2. Performance



3. Command Signal

3.1 PWM Command Interface

Signal Voltage	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/RS422 Command Interface

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

3.2.1 RS485/RS422 Protocol Specifications

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

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

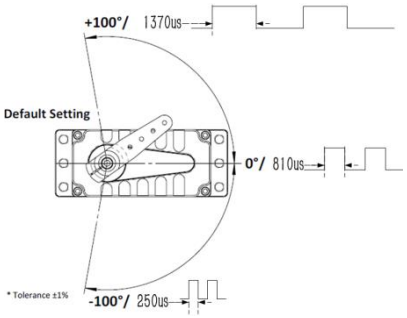
3.3 CAN Bus Command Interface

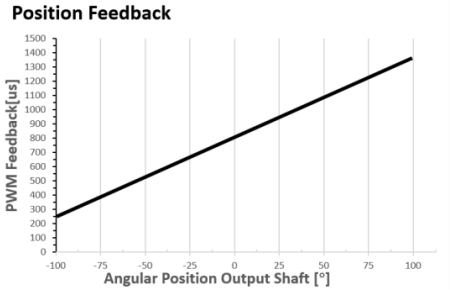
Baud-Rate	500Kbps
Node number	0 x25 (range 1 ~ 127, 0 is radio)
Communication	CAN Open standard frame CAN Extended frame UAVCAN

3.4. Feedback Signal

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.

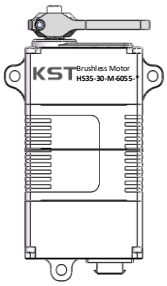




3.4.2 Feedback Value (Bus Version)

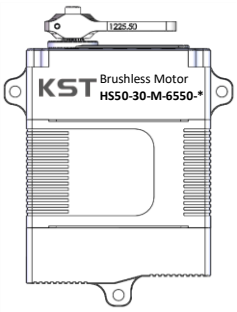
Integrated in the Bus protocol a Feedback Value, including the Angle position, Temperature, current value. Value read by sending request command. Provide the details of the bus in the document.

4. Industrial Standard J30J-15ZKP electrical Connector Pin Assignment

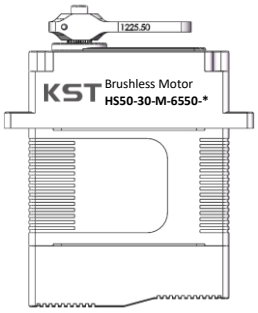


Assignment PWM		Assignment RS485		Assignment CAN		Assignment RS422	
1	DC + Supply Voltage	1	DC + Supply Voltage	1	DC + Supply Voltage	1	DC + Supply Voltage
2		2		2		2	
3		3		3		3	
4		4		4		4	
5	DC- Supply Ground	5	DC- Supply Ground	5	DC- Supply Ground	5	DC- Supply Ground
6		6		6		6	
7		7		7		7	
8		8		8		8	
9	NC Do not connect	9	NC Do not connect	9	NC Do not connect	9	NC Do not connect
10	PWM Command Signal	10		10		10	
11		11		11		11	
12	NC Do not connect	12	RS485A	12	CAN High	12	TX+
13		13		13		13	TX-
14		14	RS485B	14	CAN Low	14	RX+
15		15		15		15	RX-

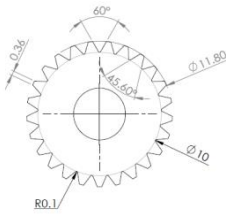
HS50-30-M-6550-*



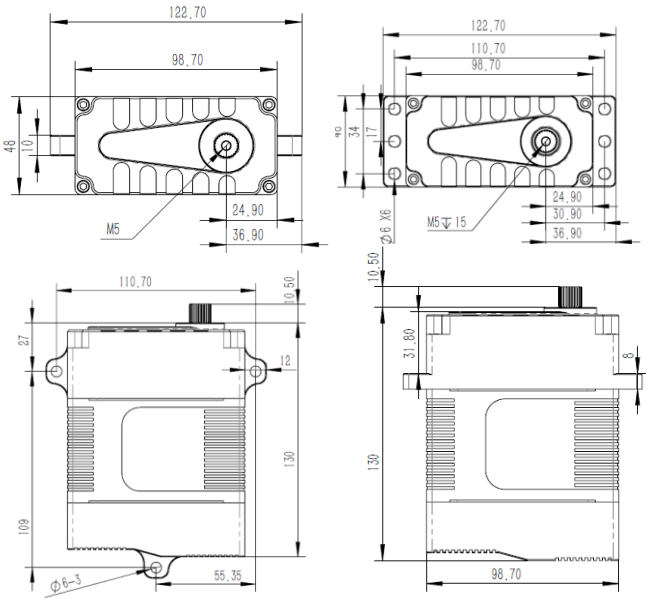
Version A



Version B



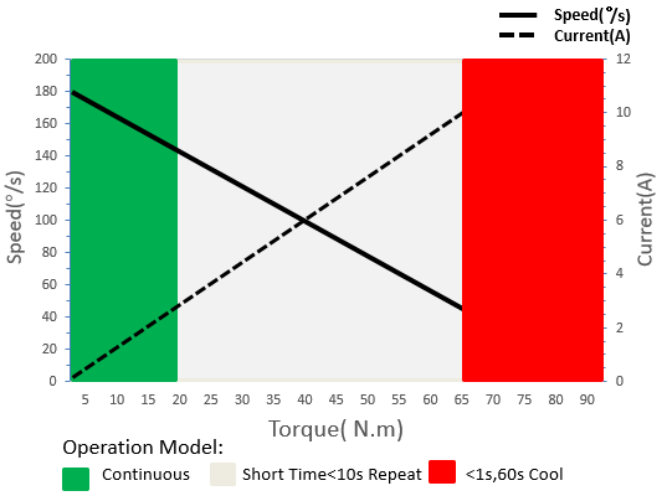
25T 12mm
Output Shaft Spline



1. Servo Data

Rated Voltage		DC30V
Voltage Range		DC24V-32V
Stalling Torque		65N.m@30V
Rated Torque		20N.m@30V
Stalling Current		8.50A
Rated Current		2.30A
No-load Speed		180°/s @25°C/30V
Rated Speed		135°/s @25°C/30V
Default Travel Angle		±100° = 200° total travel
Operating Temperature Range		-30℃.....+65℃
Case Material		Aluminum Alloy 7075
Motor Type		Brushless DC Motor
Gear Set Material		Hardened Steel
Position Sensor		Contactless
Shielded Connecting Cable		J30J-9TJL/900mm (1500mm:Options)
Version A	Case Dimensions	98.7mm*48mm*130mm(±0.2mm)
	Weight	1350g(±10%)
Version B	Case Dimensions	98.7mm*48mm*130mm(±0.2mm)
	Weight	1350g(±10%)

2. Performance



3. Command Signal

3.1 PWM Command Interface

Signal Voltage	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/RS422 Command Interface

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

3.2.1 RS485/RS422 Protocol Specifications

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

Command / Response Frame

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

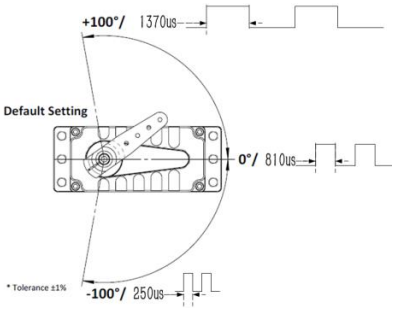
3.3 CAN Bus Command Interface

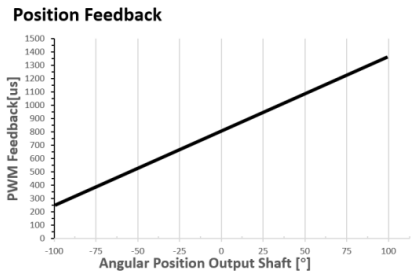
Baud-Rate	500Kbps
Node number	0 x25 (range 1 ~ 127, 0 is radio)
Communication	CAN Open standard frame CAN Extended frame UAVCAN

3.4. Feedback Signal

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.

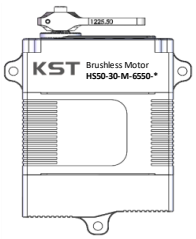




3.4.2 Feedback Value (Bus Version)

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. Industrial Standard J30J-15ZKP electrical Connector Pin Assignment



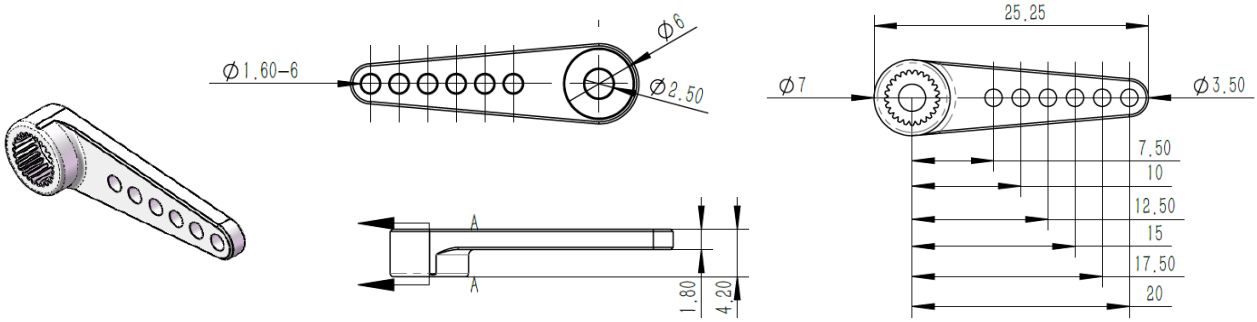
Assignment PWM		Assignment RS485		Assignment CAN		Assignment RS422	
1	DC + Supply Voltage	1	DC + Supply Voltage	1	DC + Supply Voltage	1	DC + Supply Voltage
2		2		2		2	
3		3		3		3	
4		4		4		4	
5	DC- Supply Ground	5	DC- Supply Ground	5	DC- Supply Ground	5	DC- Supply Ground
6		6		6		6	
7		7		7		7	
8		8		8		8	
9	NC Do not connect	9	NC Do not connect	9	NC Do not connect	9	NC Do not connect
10	PWM Command Signal	10		10		10	
11		11		11		11	
12	NC Do not connect	12	RS485A	12	CAN High	12	TX+
13		13		13		13	TX-
14		14	RS485B	14	CAN Low	14	RX+
15		15		15		15	RX-

Accessories List

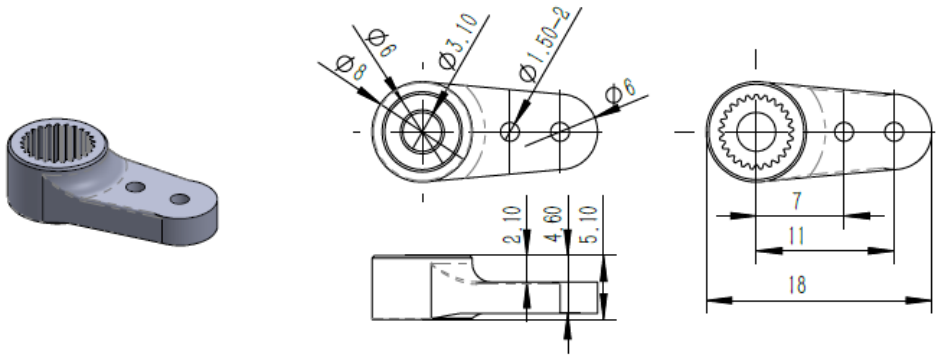
Model	Output Shaft Spline	Item	Item No.
HS08	15T 4mm		
HS10-XX-X-XXXX-X	25T 5mm	Aluminum Servo Arm (Single side)	0525.20
HS15-XX-X-XXXX-X HS20-XX-X-XXXX-X	25T 6mm	Aluminum Servo Arm (Single side)	0625.11
		Aluminum Servo Arm (Single side)	0625.23
		Aluminum Servo Arm (Single side)	0625.40
		Aluminum Servo Arm (Double side)	0625.60
HS25-30-M-5545-X	25T 8mm	Aluminum Servo Disc	0825.11
		Aluminum Servo Arm (Single side)	0825.30
HS30-30-M-6050-X	25T 12mm	Aluminum Servo Arm (Single side)	1225.50
HS35-30-M-6055-X		Aluminum Servo Arm (Double side)	1225.55
HS50-30-M-6550-X		Aluminum Servo Disc	1225.16.5

Accessories Spec

Item No.: 0525.23



Item No.: 0625.11



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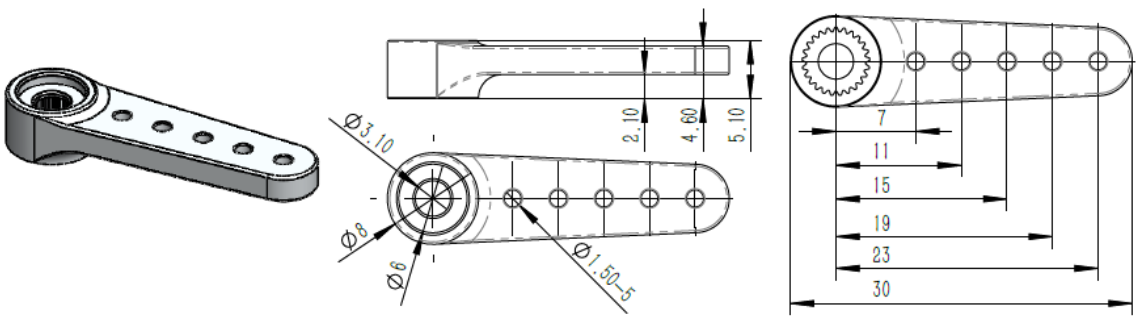

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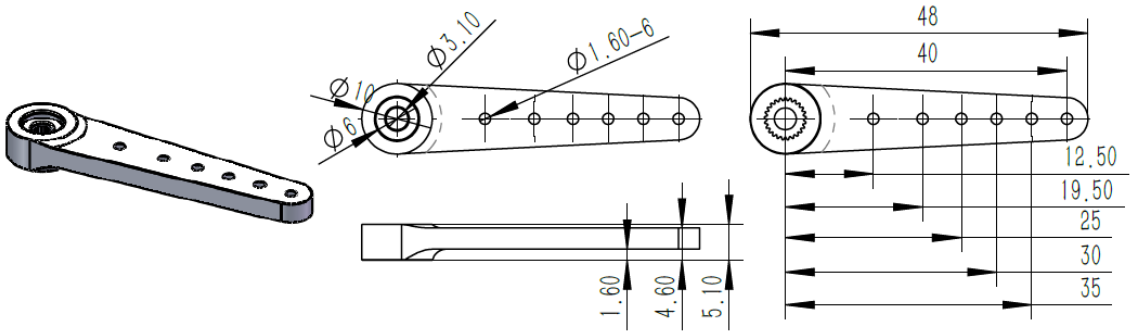

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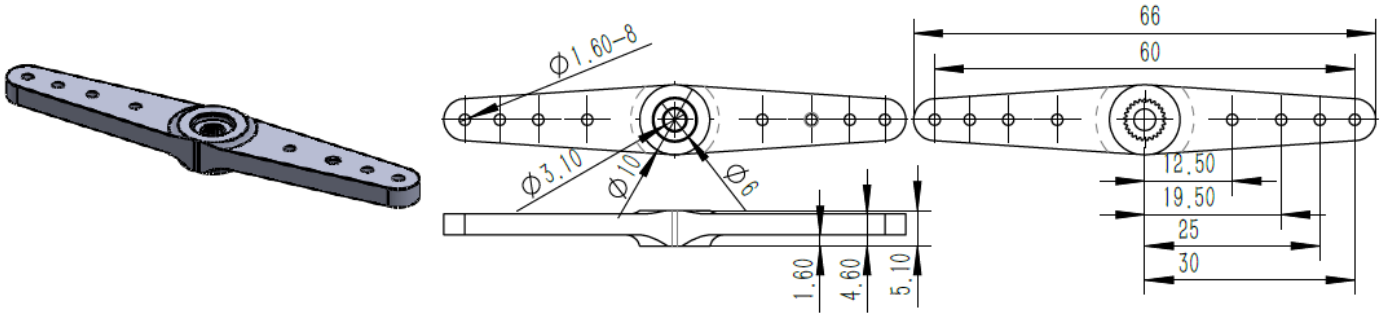

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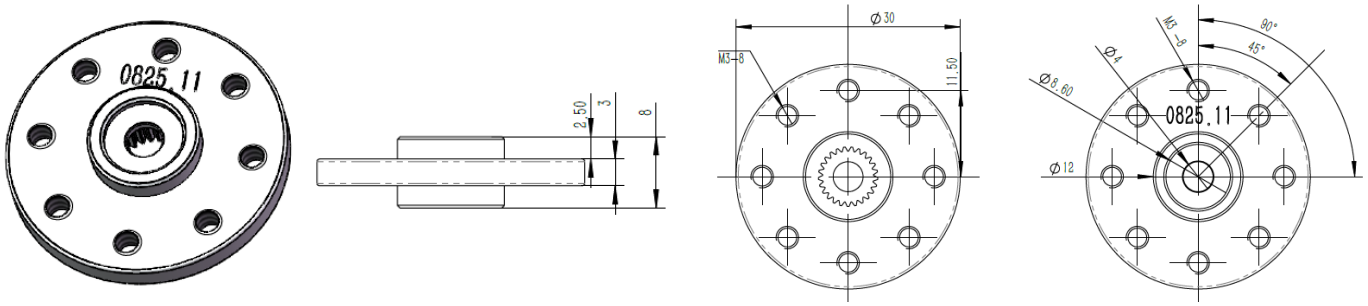

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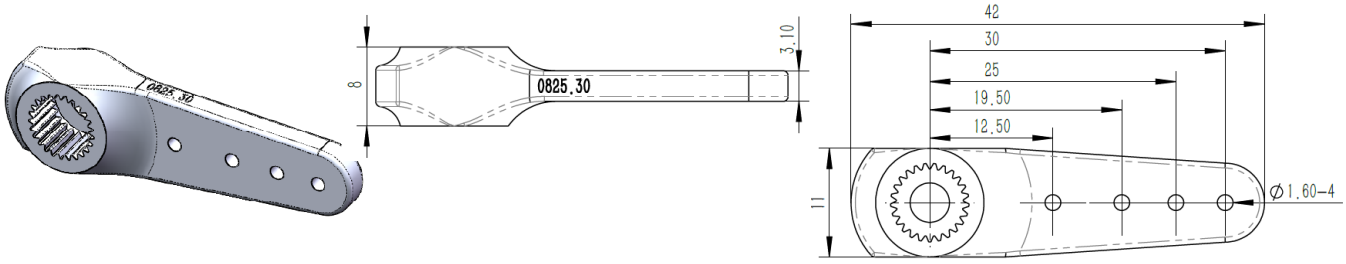

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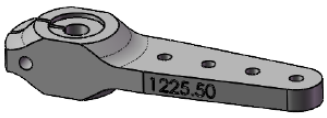

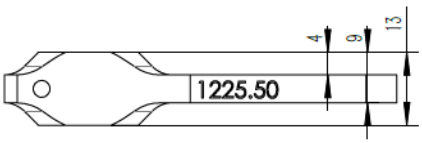

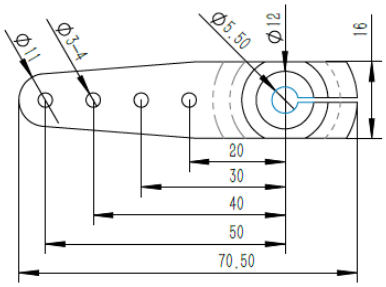

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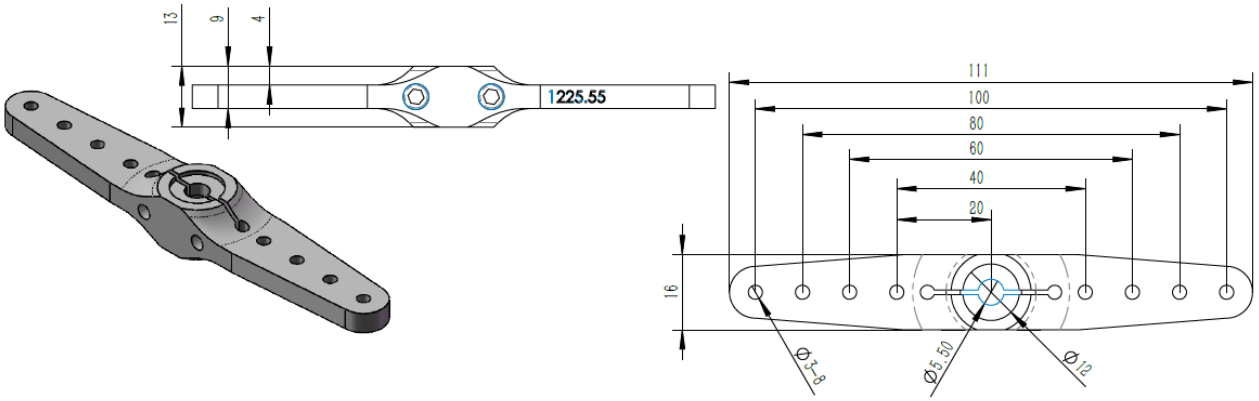

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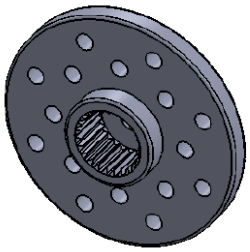

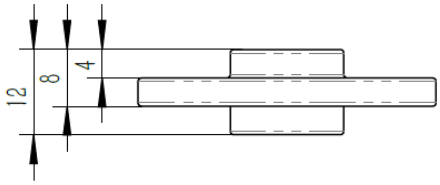

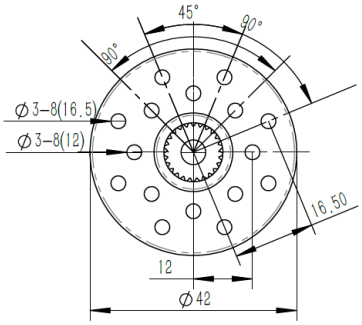

Item Number System

HS XX - XX - X - XXXX - X

Servo Class
- 08: 8mm
- 10: 10mm&11mm
- 15: 15mm
- 20: 20mm
- 25: 25mm
- 30: 30mm
- 35: 35mm
- 50: 48mm

Supply Voltage
- 06: DC6V
- 12: DV12V
- 30: DC30V

- P: Potentiometer
- M: Contactless

Servo Type
- 1: PWM Command
- 2: RS485 BUS
- 3: CAN BUS
- 4: RS422 BUS