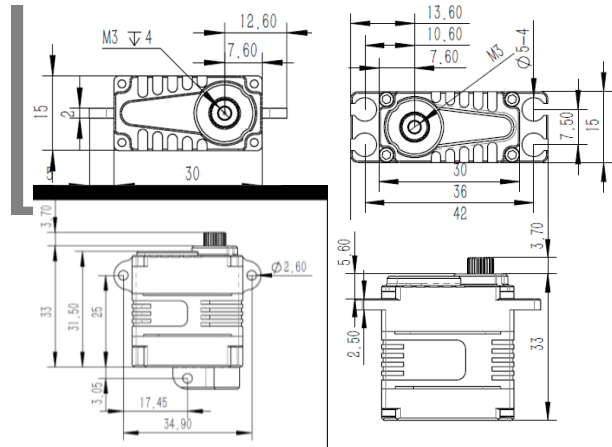
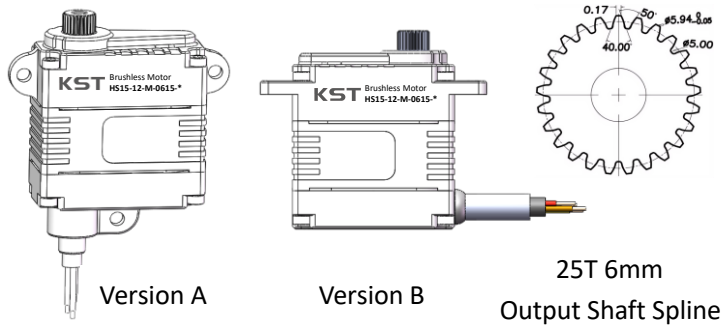


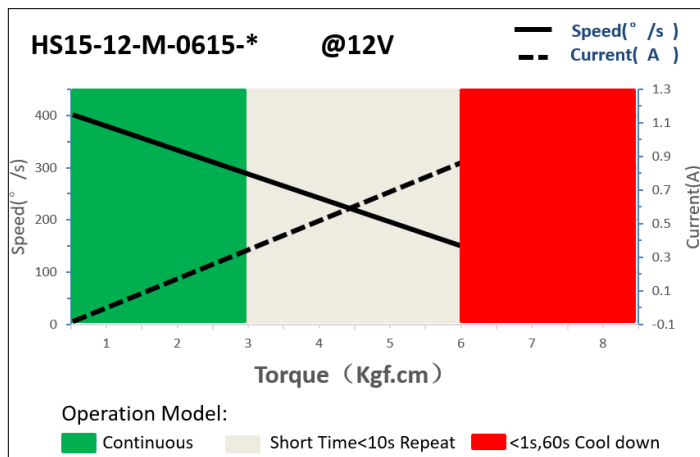
HS15-12-M-0615-x Technical Specification



1. Servo Data

| | |
|-----------------------------|---------------------------|
| Rated Voltage | DC12V |
| Voltage Range | DC9V-13V |
| Stalling Torque | 6Kgf.cm@12V |
| Rated Torque | 3Kgf.cm@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°C+65°C |
| Case Material | Aluminum Alloy 7075 |
| Motor Type | Brushless DC Motor |
| Gear Set Material | Hardened Steel |
| Position Sensor | Contactless |
| Ball Bearing | 6BB |
| 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 |

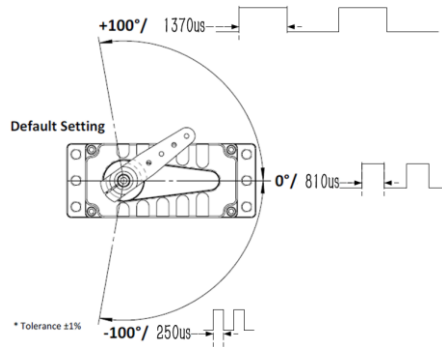
3.3 CAN Bus Command Interface

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

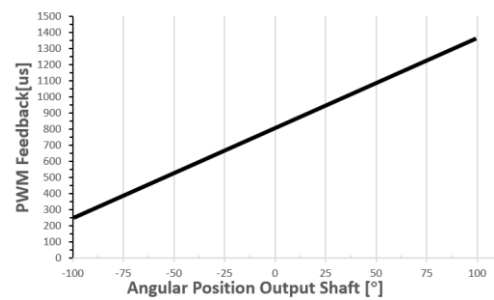
3.4. Feedback Signal

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.



Position Feedback



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) | | | Pin Assignment (RS485) | | | Pin Assignment (CAN_BUS) | | |
|--|---------------------|-------|-----|------------------------|-------|----------|--------------------------|-------|-------|
| | 1 | Red | DC+ | 1 | Red | DC+ | 1 | Red | DC+ |
| | 2 | Black | DC- | 2 | Black | DC- | 2 | Black | DC- |
| | 3 | White | SIG | 3 | White | RS 485 B | 3 | White | CAN_L |
| | 4 | Blue | NC | 4 | Blue | RS 485 A | 4 | Blue | CAN_H |

4.2. Industrial Standard M5 electrical Connector

| | Pin Assignment (RS485) | | | Pin Assignment (CAN_BUS) | | |
|--|------------------------|----------|----------------------------------|--------------------------|-------|------------------------------|
| | 1 | DC+ | Supply Voltage | 1 | DC+ | Supply Voltage |
| | 2 | RS 485 B | Inverted Input / Output line | 2 | CAN_L | CAN low |
| | 3 | DC- | Supply Ground, Signal Ground | 3 | DC- | Supply Ground, Signal Ground |
| | 4 | RS 485 A | Non-Inverted Input / Output line | 4 | CAN_H | CAN High |

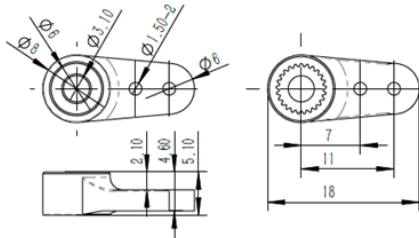
4.3. Industrial Standard J30J-9ZKP (External) electrical Connector

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

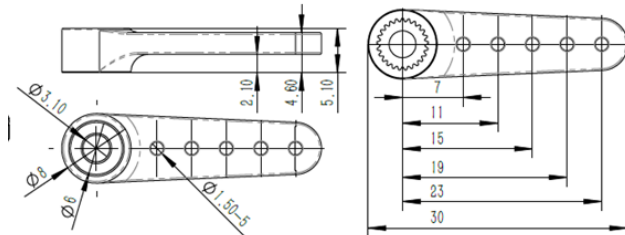
5. Accessories List

| Model | Output Shaft Spline | Item | Item No. |
|------------------|---------------------|-----------------------------------|----------|
| HS15-12-M-0615-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 |

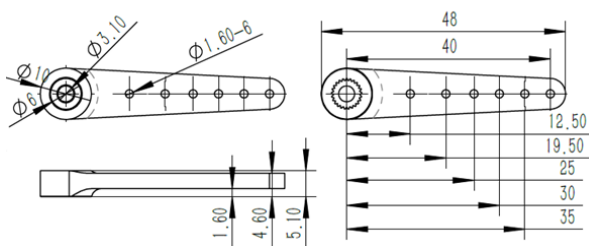
Item No.: 0625.11



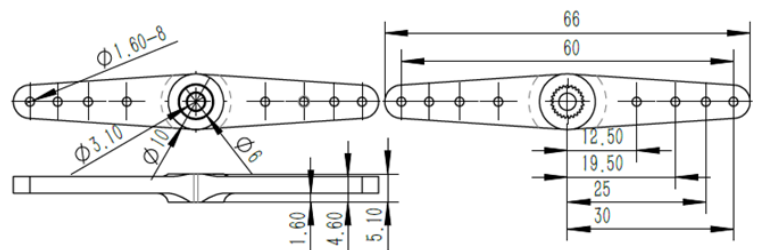
Item No.: 0625.23



Item No.: 0625.40



Item No.: 0625.60



6. Item Number System

| | | | | | | | | | |
|----------------|----|---|----|---|----------------|---|------------|-------------------------------|---|
| HS | 15 | - | 12 | - | M | - | 0615 | - | x |
| Servo Class | | | | | | | | Command | |
| 15mm Class | | | | | | | | 1: PWM | |
| | | | | | | | | 2: RS485 | |
| Supply Voltage | | | | | | | Servo Type | 3.1: CAN Open Standard Frame | |
| 12: DC12V | | | | | | | 0615 | 3.2: CAN Open Extended Frame | |
| | | | | | Sensor | | | 3.3: Drone CAN (UAVCAN) | |
| | | | | | M: Contactless | | | 3.5: Isolated CAN Bus | |
| | | | | | | | | 3.51: CAN Open Standard Frame | |
| | | | | | | | | 3.52: CAN Open Extended Frame | |