

Feetech 2020 new product STS3215Magnetic Encoder 360° Serial bus Servo Evaluation

SKU: STS3215

Product Name: 7.4V 19KG.CM Plastic Case Metal Gear Magnetic Encoder Double shaft TTL Serial Bus Servo

Appearance size: 45.2X24.7X35mm (See the blueprint)

Stall Torque: 19.5kg.cm@7.4V

Stall Speed: 52RPM@7.4V

Feedback: load / position / speed / voltage / current / temperature

Electronic protection: overheat / overcurrent / overvoltage / overload protection

Structural Features:

The shell adopts engineering plastic shell with higher strength, Optimize the center distance, More compact overall structure, The servo gear adopts 1:345 copper Gear combination, higher torque; At the same Torque, compare with the standrd servo size, it looks lower profile (5mm), The body adopts double axis structure design, The structural characteristics of the circle lined solid, Wiring mode of double outgoing cables with metal Principal deputy servo horns, It is suitable for application in quadruped robot, snake robot, desktop robot, humanoid robot and mechanical arm.

Electronic control Function:

1.Acceleration start stop function: speed and acceleration value can be set, motion effect is more gentle.

2.High precision, 360 degree absolute position 4096 bit precision, the highest position resolution is 0.088 degrees, if the control is 90 degrees, input $4096 / 360 * 90 = 1024$, if the control is 180 degrees, input $4096 / 360 * 180 = 2048$, so as to calculate.

3.There are four working mode switching (mode 0 position servo, mode 1 speed closed-loop, mode 2 speed open-loop, mode 3 step servo).

1)、Mode 0: Location mode, the default mode. In this mode, 360 degree absolute angle

control can be realized. Support acceleration movement.

2)、Mode 1: Speed closed-loop, in the programming interface, the operation mode is set to 1, switch to speed closed-loop mode, and enter the corresponding speed in the speed column to run.

3)、Mode 2: Speed open-loop, in the programming interface, the operation mode is set to 2, switch to speed open-loop mode, and enter the corresponding time in the time column to run.

4)、Mode3: Step mode: in the programming interface, the maximum / minimum angle limit is set to 0, and the operation mode is set to 3. Switch to step mode. Enter the position in the position bar to step towards the target position. Click the position again to continue to step in the same direction.

4、**Multi turn mode**, 360 degree absolute control and feedback, under the highest accuracy, the absolute position control can be plus or minus 7 turns, but the number of power cycles is not saved, only the absolute position feedback value is retained.

5、**One key calibration**, 360 degree angle installation at any position, (40 (decimal) address input 128 (decimal)) one key correction current position is the middle (2048 (decimal)).

6、**TTL communication level**, half duplex asynchronous communication, bus protocol support to adjust read and write parameters, and add synchronous read function (send an instruction to receive the read back instruction from each servo on the bus in turn.)

7、**Multiple protections, (overload, overcurrent, overvoltage, overheating, switch setting, condition parameter changing)**

1)、Overload protection: through position detection, during the movement from the starting position to the target position, when the current position is detected to be not the target position after encountering the blocking of obstacles, the unloading force lasts for 2S (20% of the default blocking force). Until a new command is triggered, Release protection

2)、Overcurrent protection: through the set current value, check whether the current reaches the set current value. When it reaches the set current value, release the force (the default torque is 0). Until a new command is triggered, Release protection

3)、Over voltage protection: detect the current voltage value. If it exceeds the set voltage value, the alarm will display over-voltage.

4)、Overheat protection: detect the current motor temperature. If the temperature exceeds the set value, the alarm will display overheat.

8: Multiple feedback:

1) Load feedback: the current control output drives the voltage duty cycle of the motor, and the full scale is 1000 = 100% torque output.

2) Current feedback: The servo working current, 1 = 6.5mA

3) Voltage feedback: The servo working voltage, 70=7V, 0.1V

4) Temperature feedback: internal working temperature of current servo(measuring temperature)。

5) Speed feedback: feedback the speed of current motor rotation, and the number of steps in unit time (per second)

$50\text{steps/second}=0.732\text{RPM}$ $1\text{step}=0.088^\circ$

$88^\circ/\text{second}=1000\text{steps/second}\approx\text{About }15\text{RPM}$ $1\text{RPM}=6^\circ/\text{second}$ 。

$0.1\text{Sec}/60^\circ =10/0.10\text{RPM}=100\text{RPM}$

9、 Open PID parameters.