

SR500系列机器人舵机规格说明书

本系列机器人舵机属于一种集电机、伺服驱动、总线式通讯接口为一体的集成伺服单元，主要用于微型机器人的关节、轮子、履带驱动，也可用于其他简单位置控制场合。

型号	重量 (g)	齿轮材料	轴承	减速比	马达	6V			7.4V		
						速度 s/60°	堵转扭矩 (kg-cm)	空载工作电 流 (mA)	速度 s/60°	堵转扭矩 (kg-cm)	空载工作电 流 (mA)
SR508	75	MG×6	BB×2	192	碳刷	0.18	8.2	250	0.16	9.5	210
SR508H	66	MG×3 PG×3	BB×2	192	碳刷	0.18	8.1	240	0.16	9.2	200
SR518	75	MG×6	BB×2	230	空心杯	0.13	14.4	200.33	0.1	17.3	240.7
SR518D	70	MG×6	BB×2	298	强磁碳刷	0.22	13.9	250	0.19	16.5	210
SR528	—	MG×6	BB×2	230	空心杯	—	—	—	—	—	—

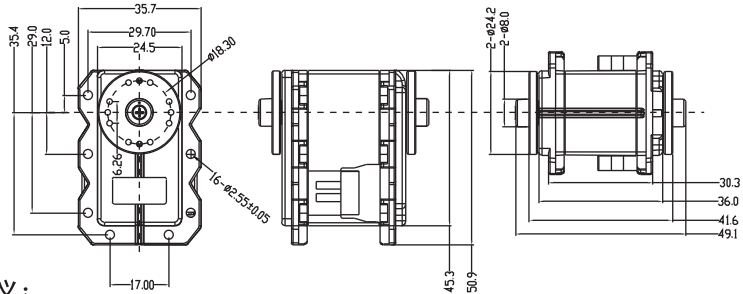
注：MG=金属齿轮；PG=塑胶齿轮；BB=滚珠轴承

工作电压：DC 6V~12V
(电机模式下工作电压不可高于7.5V)
控制角度：0~300° (可连续旋转)
分辨率：0.32°

通信类型：半双工异步串行总线
运行温度：-5~+70℃
指令信号：
通讯速度：最高500Kbps

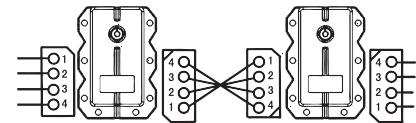
ID:254个单元 (理论值)
通信协议：兼容Robotis Dynamixel
静态电流：<25mA
反馈功能：位置、温度、速度、电压

● 结构尺寸：



● 引脚定义：

舵机电气接口如下图，两组引脚定义一致的接线端子可将舵机逐个串联起来。



PIN1:GND
PIN2:VCC(6.0~12V)
PIN3:RS485A
PIN4:RS485B

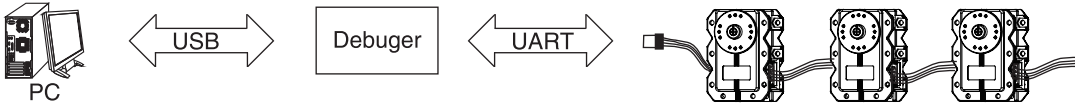
● 舵机通讯方式：

舵机采用异步串行总线通讯方式，理论多至 254个机器人舵机可以通过总线组成链型，通过 UART异步串行接口统一控制。每个舵机可以设定不同的节点地址，多个舵机可以统一运动也可以单个独立控制。舵机的通讯指令集开放，通过异步串行接口与用户的上位机(控制器或PC 机)通讯，您可对其进行参数设置、功能控制。通过异步串行接口发送指令，舵机可以设置为电机控制模式或位置控制模式。在电机控制模式下，舵机可以作为直流减速电机使用，速度可调；在位置控制模式下，本系列舵机拥有0~300°的转动范围，在此范围内具备精确位置控制性能，速度可调。

只要符合协议的半双工 UART异步串行接口都可以和舵机进行通讯，对舵机进行各种控制。主要有以下两种方式：

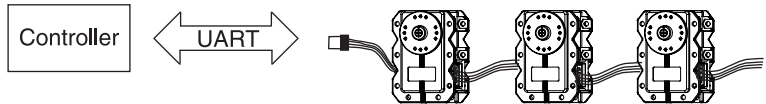
方式 1：通过调试器控制

PC机将调试器识别为串口设备，上位机软件通过串口发出符合协议格式的数据包，经调试器转发给舵机。舵机会执行数据包指令，并且返回应答数据包。 RobotServoTerminal是推荐使用的调试软件，您也可根据产品手册提供的协议设计专用的PC端软件。



方式 2：通过专用控制器控制

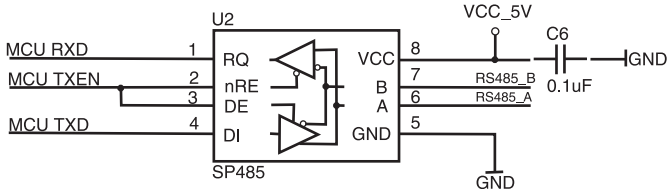
方式 1可以快捷地调试本系列机器人舵机、修改各种性能与功能参数。但是，这种方式离不开 PC机，不能搭建独立的机器人构型。您可以设计专用的控制器，通过控制器的UART端口控制舵机，请参考控制器UART接口原理图。



● UART接口原理图：

本系列机器人舵机用程序代码对 UART 异步串行接口进行时序控制，实现半双工异步串行总线通讯，通讯速度可高达 500Kbps，且接口简单、协议精简。

在您自行设计的控制器中，用于和舵机通讯的 UART 接口必须如下图所示进行处理。



SR500 Series Robot Servo Specification

This series robot servos are composite servo units that include motor,servo driver and bus communication interface, are mainly applicable to mini-robot's joint,wheel and caterpillar band drive,also simple position control.

ITEM	WEIGHT (g)	GEAR	BEARING	REDUCTION RATIO	MOTOR	6V			7.4V		
						SPEED s/60°	TORQUE (kg-cm)	No-load Operating Current (mA)	SPEED s/60°	TORQUE (kg-cm)	No-load Operating Current (mA)
SR508	75	MG × 6	BB × 2	192	Carbon brush	0.18	8.2	250	0.16	9.5	210
SR508H	66	MG × 3+PG × 3	BB × 2	192	Carbon brush	0.18	8.1	240	0.16	9.2	200
SR518	75	MG × 6	BB × 2	230	Coreless motor	0.13	14.4	200.33	0.1	17.3	240.7
SR518D	70	MG × 6	BB × 2	298	Magnetic	0.22	13.9	250	0.19	16.5	210
SR528	—	MG × 6	BB × 2	230	Coreless motor	—	—	—	—	—	—

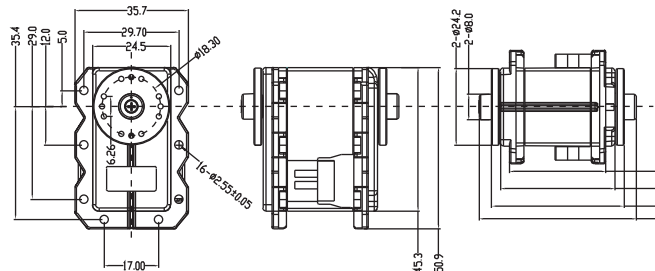
Note: MG=metal gear; PG=plastic gear; BB=ball bearing

Operating voltage: DC 6V~12V
(Under the motor mode,the operating voltage can not be higher than 7.5V.)
Control angle: 0~300°(can be continuous rotation)
Resolution: 0.32°

Communication type: half-duplex
communication
Operating temperature: -5~+70℃
Order signal:
Communication speed: maxima 500Kbps

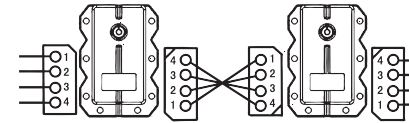
ID: 254 units (theoretical value)
Communication Agreement: be compatible with Robotis Dynamixel
Quiescent current: <25mA
Feedback function: position,temperature,speed and voltage

● Physical dimension:



● Pin definition:

The picture below is the servo electrical connection,servo can be tandemed in series one by one via two groups of same pin definition terminals.



PIN1:GND
PIN2:VCC(6.0~12V)
PIN3:RS485A
PIN4:RS485B

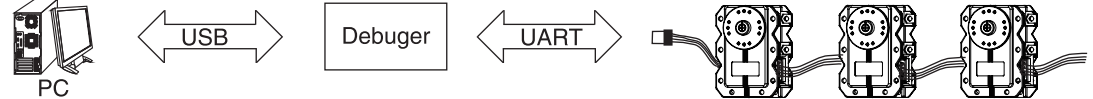
● Servo communication type:

The series servos use asynchronous serial bus communication mode, theoretically,at most 254 robotservos can be connected byBus and to form a chain through UART asynchronous serial interfaceunified control. Every servo can set different node address, multiple servos can move together by unified signal, also can move seperately via independent control. Servo's communication instruction set to open, through asynchronous serial interface and the user's PC (controller or PC), you can set its parameters to change function control. Through asynchronous serial interface sends commands, the servo can set for motor control mode or position control mode. In motor control mode, the servo can be used as a DC decelerating motor withadjustable speed, In the position control mode, the series servos have 0-300 degrees of rotation, within the scope it has the exact position control performance with the adjustable speed.

Those half-duplex UART asynchronous serial interface ,as long as they accord with the agreement ,all can communicate with the servo , and execute various control for the servo. Basicallyit has the following two types:

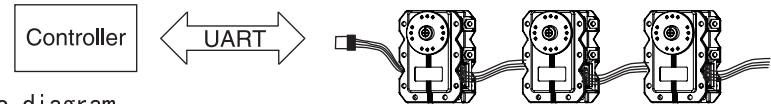
Mode 1. through the debugger to control the servo

PC software through a serial send out a packet (accord with protocol format) , the debugger with serial interface transmitted to the servo. It will execute the instruction of packet, and will return to respond the packet.Robot Servo Terminal is a debugged software wed like to recommend, user can alsodesign an exclusive PC software according to the protocol of our manual.



Model 2. through exclusive controller to control the servo

Model 1 can quickly debug this series robot servo, modify paramenters of function. However, this method can't work without PC, cannot build independent robots configurations. You can design a special controller, through the UART port of controller to control servo,please refer to the UART interface schematic diagram of controller.



● UART interface Schematic diagram

This series robot servos use procedure code to control the time sequence of UART asynchronous serialinterface, realizing half-duplex asynchronous serial bus communication, communication speed can reach to 500Kbps.Moreover the interface is easy,and the agreement is concise.

In your own designed controller, UART interface used to communicate with the servo must be installed as below.

