

ProMOTION[®] Robot Servo Datasheet (Doc ver. 1.0.0814)

Robot Servo proMotion CDS55xx



FEATURES

ProMOTION CDS series robot servo is a robot actuator which integrated motor, sensor, servo algorithm and serial bus port. It's an ideal actuator for small robots and other simple position control equipment.

- High torque:
 - 16Kgf.cm (CDS5516/5500)
 - 6Kgf.cm (CDS5506)
- High speed:
 - 0.18s/60°(CDS5516/5500)
 - 0.16s/60°(CDS5506)
- DC 6.0V~16V power supply
- 0.32° position resolution
- Double-side output shaft
- Alloy gearbox, dual ball-bearing (CDS5516)
- Resin gearbox, dual ball-bearing (CDS5516)
- Rubber O-ring at output shaft
- Position control range: 0-300°
- 1023 step speed control, continuous rotation
- Up to 30-50 servos serial bus link
- 1Mbps High baud rate
- 250Hz servo refresh rate
- Position/Temperature/Voltage/Speed feedback
- Interface and protocol mostly compatible to Robotis Dynamixel AX12+

CDS55xx robot servo uses advanced

control algorithm and high-speed micro controller, with fast response and high position accuracy.

The CDS55xx robot servo integrated a continuous rotation position sensor with 330° measure range for position control, and it enables the continuous rotation.

The CDS55xx use a half-duplex UART as communication bus port. User can assign a address for each servo, and control single servo or broadcast instruction to each servo.

The communication protocol of CDS55xx is opened to users; please refer to the "CDS55xx USER MANUAL". The bus port is compatible to Robotis' Dynamixel AX12+, and the protocol is mostly compatible to it.

There are two work modes of CDS55xx: Position mode and gear motor mode. User can change mode with instructions.

The profile and mount flange is compatible to most off-the-shelf standard R/C servos.

TYPICAL APPLICATION

As joint position actuators:

- Small size humanoids
- Small size manipulators
- Compact mobile robots

As drive actuators:

- Compact robot wheel actuators

NOTE

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ABSOLUTE MAXIMUM RATINGS

Item	Value			Unit
	Min.	Typ.	Max.	
Supply voltage	-0.5	—	16	VDC
Maximum continuous current (1)	CDS5516	—	0.8	A
	CDS5506	—	0.5	A
Maximum axial load	—	8	—	N
Maximum radial load	—	22	—	N
SIG pin Voltage	-0.5	—	5.5	VDC
Working temperature	-20	25	80	°C

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

PERFORMANCE CHARACTERISTICS

Item	Value			Unit	
	Min.	Typ.	Max.		
Supply Voltage	6.6	8.2	16	VDC	
Quiescent current (2)	30	40	50	mA	
No load current (3)	CDS5516/00	60	—	200	mA
	CDS5506	30	—	120	mA
Stall current (4)	CDS5516/00	1000	1100	1300	mA
	CDS5506	500	600	650	mA
PWM frequency	—	15.6	—	KHz	
SIG pin Voltage (High)	3	5	5.5	VDC	
SIG pin Voltage (Low)	0	0.2	0.8	VDC	
Baud rate (5)	19200	1000 000	1000 000	Bps	
Maximum node on bus (6)	—	32	254	-	
Reduction ratio	-	1 : 270	-	-	
Weight	CDS5516/00	-	60	-	g
	CDS5506	-	45	-	g
Position mode					
Position range (@8.2V)	0°	—	300°	°	
Position resolution	—	0.32	—	°	
Speed mode					
Maximum speed (@8.2V)	—	—	62	rpm	
Speed range	0	—	62	rpm	

(1) under this current , CDS55xx robot servo will reach the maximum safe temperature.

(2) under this current , CDS55xx robot servo is powered but the motor output is shut down.

(3) under this current , CDS55xx robot servo is running without load.

(4) under 8.2VDC power supply.

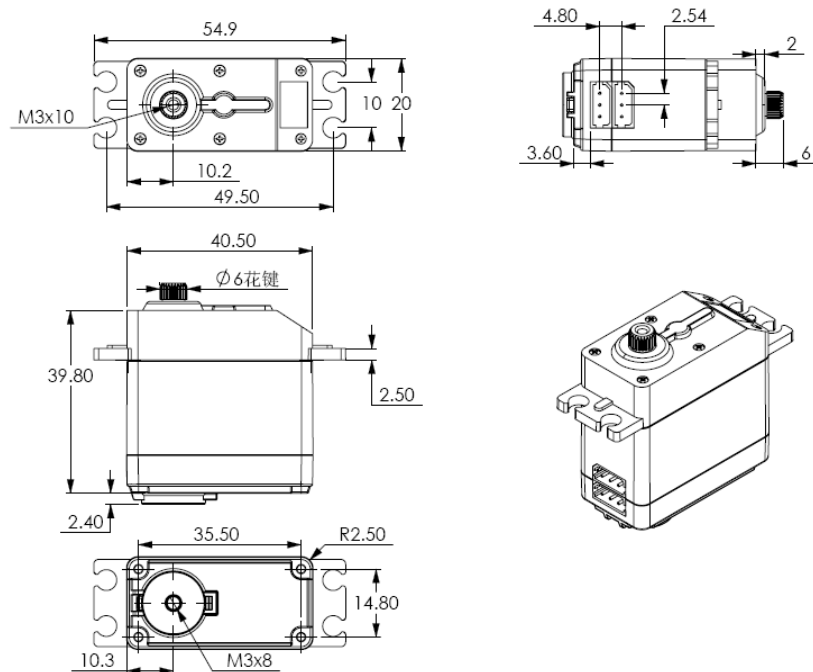
(5) The baud rate can be changed to 500K,250K,115200,57600,19200.

(6) The actual maximum node number is depend on power capacity and cable current capacity.

BUS PORT SPECIFICATION

Item	Parameters	Note
Provider	Molex	
Pin number	3	
Molex part No.	22-03-5045	Male
Molex part No.	50-37-5043	Female
Temperature range	-40°C to +105°C	
Insert force	14.7N	

DIMENSION



MAIN DIFFERENCE BETWEEN CDS5500 and CDS5516/5506

Model	CDS5500	CDS5516/5506
Start time (S)	2	0.6
Input Voltage (V)	6.6~10	6.0~14
Status LED	Internal(Invisible)	Visible

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