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KHR-3HV is the best in class humanoid robot platform with sturdy design and ability to perform amazing maneuvers that cannot even be attempted by its rivals. This is made possible by up to 22 degrees of freedom with 17 actual servos and 5 dummy servos. The dummy servos can be replaced by actual servos to achieve 22-DOF. However we have seen that all the cool maneuvers are possible even with 17 servos that come with the standard package.

RCB-4HV and ICS 3.0

The new micro controller board RCB-4 enables the control of up to 35 serial servos.

It is compatible with ICS3.0 (serial) servo protocol and a wide range of options parts. The board also includes several extension ports (10x A/D and 10x PIO) which enable the use of a wide range of sensors and extension options.

KHR 3HV uses KRS-2555HV servos that use ICS 3.0 serial protocol. The use of a serial protocol allows the connection of several servos in a Daisy chain. By connecting in a Daisy chain the number of cables is drastically reduced and prevents the tangling and the requirement for complicated harnesses.

KRS-2555HV Servo Specs

- Maximum Operating Angle 270°
- Maximum Holding Torque 14kgf.cm (11.1V)
- Speed 0.14s/60° (11.1V, under no load)
- Size 41x21x30.55 mm
- Weight 41.5g
- Operating Voltage 9V~12V

*The new servo is slightly smaller than KHR-2HV servos and offers **increased torque and operating angles**. The use of metal gears improves servo reliability and strength. ICS 3.0 servos operate at 1.25Mbps standard for fast communication but may be adjusted for lower speeds.*

New Frame

A design to ease and to smooth the folding of the knee has been enhanced. Thanks to the new design, the robot can retract and stand up faster from a sitting pose.

The use of materials such as aluminium, polycarbonate and ABS with incorporation of Glass allow for lighter yet robust frames.

Improved Angles and Servo Arms

Thanks to the strengthened servo arms, the robot is more resistant to shocks and thus become a real ally during robot competitions.

Body Cover

The main frame cover is made out a light ABS plastic. It is easy to change to another body frame for customization and modding.

Thanks to the slim body, the user can handle the robot more easily.

Dummy Servos

The robot comes fitted with five dummy servos in strategic places for extension (chest/torso, arms) and is assembled with these static servos in place for the first minute to build the robot's tall and slim figure.

You simply need to replace the dummy servo with the optionally available KRS-2552HV servos for added DOF.

This new faculty enables the user to easily add new degrees of freedom and set up new capabilities for the robot.

Servo Head

The new design of the servo head makes it possible to assemble it naturally to the shoulder. It is meant to give the robot a more intrepid style.

Battery

A nickel battery 10.8V-800mAh has been included.

With the "fast charger" included the battery takes only one hour to charge.

New Software - Heart to Heart 4

Heart to Heart software has been upgraded to version 4 and now includes **new motions and a new type of programming**

The new software also includes **"project management" features** for improved collaboration and performance in team competitions.

Bath tub Sole

The new design of the sole gives a more secure walk.

Maintenance

The new design of the back pack enables an easier maintenance of the robot. The user will be able to easily add sensors and motors.

Kit Contents

Optional Accessories

KHR 3HV is backwards compatible with most of Kondo accessories for previous KHR editions:

- The KRI-3 Interface Board was designed to interface KHR 3HV with Remote Controllers from Kondo. It enables the connection and use of KRC3-AD and other radio units to the new RCB-4HV.
- RAS-2, KRG-3 and KRG-4 are also compatible with KHR 3HV and are recommended sensors for this robot.
- PC-101LR: Battery charger with 220-240 V 50Hz input
- Additional KRS-2555HV servos can be added to the robot (to replace the dummy servos) to extend it from 17 DOF progressively up to 22 DOF.

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