



SPHERICAL MANIPULATOR  
MODERN VARIANT

$n$	$\theta$	$a$	$r$	$d$
${}^0_1H$ 1	$0^\circ + \theta_1$	$90^\circ$	0	$a_1$
${}^1_2H$ 2	$90^\circ + \theta_2$	$90^\circ$	$a_2$	0
${}^2_3H$ 3	$0^\circ$	$0^\circ$	0	$a_3 + d_3$

# CARTESIAN manipulator on ceiling

n	$\theta$	a	r	d
1	$0^\circ$	$90^\circ$	0	-1
2	$90^\circ$	$90^\circ$	0	$a_2 + d_1$
3	$270^\circ$	$90^\circ$	0	$a_3 + d_2$
4	$0^\circ$	$0^\circ$	0	$a_4 + d_3$

