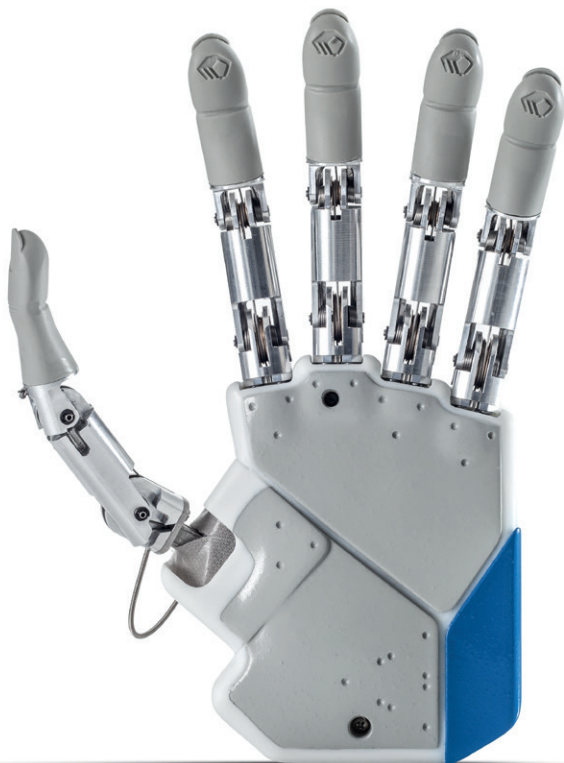# PRENSILIA
GRASPING INNOVATION

IH2 AZZURRA HAND

ROBOTIC HAND, ANTHROPOMORPHIC SIZE, **FIVE ACTIVE AXES** FOR MULTIPLE ROBOTICS AND BIOROBOTICS SCENARIOS.

ANTHROPOMORFIC HAND

The IH2 Azzurra series is a human-sized programmable anthropomorphic hand able to grasp a variety of objects and to sense them through multiple force and position sensors. It is also able to count and press buttons.
The hand is totally self-contained, and weighing 640 g is among the lightest available for research. It contains a CPU, firmware, sensor acquisition and communication electronics, servo-controllers, and 5 brushed electrical motors.

Communicating through a standard interface (RS232 or USB), the hand is ready to be easily integrated with your application within multiple research scenarios.

POSSIBLE SCENARIOS

Prosthetics
Neuroscience
Human-robot interaction
Rehabilitation

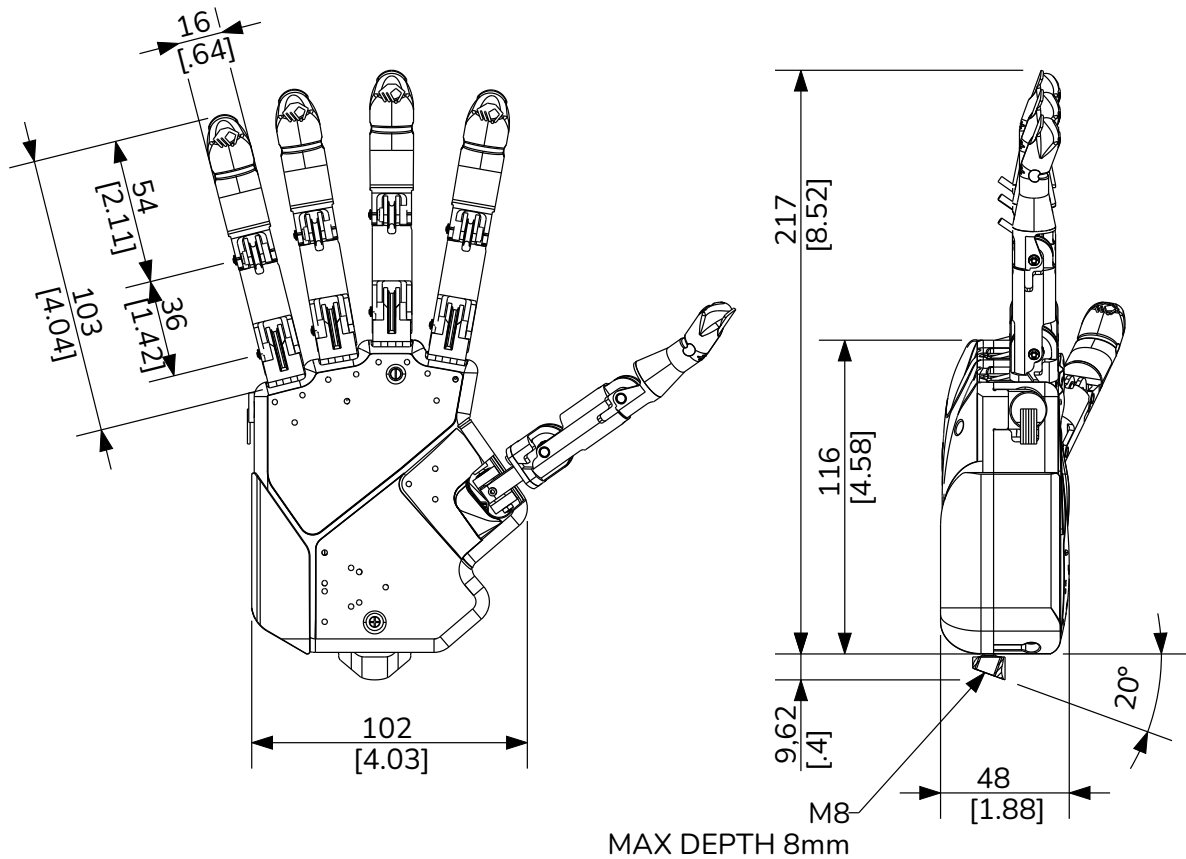## GRASP CAPABILITIES

CILINDRICAL

PRECISION

LATERAL

AND MANY MORE!

16 [.64]
54 [2.11]
103 [4.04]
36 [1.42]
102 [4.03]

217 [8.52]
116 [4.58]
9,62 [.4]
48 [1.88]
M8
20°

MAX DEPTH 8mm

MECHANICAL SPECIFICATIONS

Weight	640 g
Size (w,h,d)	102 x 45 x 213 mm
Grasp force (Cyl, Lat)	35 N, 7 N
Degrees of actuation/freedom	5/11
Flexion/extension time	1 s
Abduction/adduction time	1 s
Coupled fingers	Ring/Little

ELECTRICAL SPECIFICATIONS

Power requirements	9V @ 5A peak
Communication	RS-232/USB

CONTROL AND SENSORY SYSTEM

Embedded PID controllers	position, current, force* (1 kHz)
Configurable pre-set grasps	10
Position sensors (digital): 5	1000 pulses/deg
Motor current sensors (analog): 5	1 mA (10 bits)
Limit switches (digital): 10	-
Force sensors (analog)*: 4	~200 mN (10 bits)

*tendon tension sensors on thumb, index, middle and ring/little fingers available on request

STANDARD FEATURES

Underactuated self-adaptive fingers with manually adjustable stiffness

Independent thumb, index and middle flexion/extension

Ring/little flexion/extension coupled via adaptive grasping mechanism

Independent thumb abduction/adduction

Tendon actuation in adjustable Bowden cable transmission

M8 thread mechanical interface

3-wire communication bus based on RS232 protocol (USB compatible)

Embedded CPU with 1 kHz current and position servo-control loops. Sensor reading delay less than 1 ms

Customization of firmware, communication and mechanical components is available on request.

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