DATASHEET

EYES

v3.4

On robot

1. Datasheet

1.1. Hardware Version

Components	Version
Eyes (camera)	v2.0
Eye Box	v1.4
Eyes Lighting Kit	v1.0

1.2. Eyes

Eyes

Camera Characteristics			Unit
Interface		USB-C 3.x	
Image Sensor Technology		Rolling Shutter. Size 1.4 x 1.4	[μm px]
RGB Camera Field of View (FOV)		69.4 x 42.5 x 77 (+/- 3)	[°]
RGB Camera Resolution	Standard	1280x720	[px]
	Close-up	1920x1080	[px]
Depth Technology		Active IR Stereo	
Depth FOV		65±2 x 40±1 x 72±2	[°]
Depth Output Resolution		1280 x 720	[px]
Working Distance		400-1000	[mm]
		15.75 - 39.37	[inch]
Operating Temperature		0 – 35	[°C]
		32 – 95	[°F]
IP Rating		IP 54	
Weight		0.260	[kg]
		0.57	[lb]
Calculated operation life		30 000	[h]

Eyes Features		Unit
Type of vision system	2.5 D	
Minimum workpiece size	10x10 or 15 diameter	[mm]
	0.39x0.39 or 0.59 diameter	[inch]

Eyes Features					Unit
Applications Supported	Detection, Sorting, Inspection, Landmark*				
Mounting options supported	Robot and External				
Reconfigurability when Robot mounted	12 configurations (4 x 3)				
	Around robot's flange		Tilt orientations		
	0 - 90 - 180 - 270		0 - 45 - 90		[degrees]
Processing time	Typical: 0.5				[s]
Detection Repeatability	< 2				[mm]
	< 0.078				[inch]
Detection Accuracy (typical) measured at 500 mm	External Mount		Robot Mount		
	2		2		[mm]
	0.078		0.078		[inch]
Minimum Inspection Defect Size	Standard		Close-up		
	5		3		[mm]
	0.197		0.118		[inch]
Landmark accuracy**	Waypoint distance from Landmark	Minimum error	Typical error	Maximum error	
	200	0.2635	0.6596	0.9500	[mm]
	7.874	0.0104	0.0260	0.0374	[inch]
	500	0.6586	1.6490	2.3750	[mm]
	19.68	0.0259	0.0649	0.0935	[inch]
	1000	1.3173	3.2981	4.7500	[mm]
	39.37	0.0519	0.1298	0.1870	[inch]

* Eyes lighting kit is not supported in Landmark applications.

** Depending on the distance from the waypoint (picking point) to Landmark. Obtained using dual capture approach with the camera being 300 mm (11.81 in) above the Landmark.

Application and set-up recommendations	
Lighting conditions	No drastic, instant changes
Reflections and focused light spots	Keep minimal
Characteristics of objects	Different from background
Camera with respect to workspace table	Looking straight to it

Eyes Lighting Kit

Eyes Lighting Kit Features		Unit
Input voltage	24	[V]
Maximum current	1	[A]
Connection	3-pin M8 connector	
Operating temperature	0–50 32–122	[°C] [°F]
IP rating	IP54	
Weight	0.131 0.288	[kg] [lb]
Calculated operation life	30 000	[h]

Eye Box

Eye Box	
Weight	1.01 kg 2.23 lb
Required power supply	24V (6.25A)
Calculated operation life	30 000 h

Power Supply (6.25A/150W)	Min	Typical	Max	Units
Input voltage (AC)	100	-	240	[V]
Input current	-	-	2.1	[A]
Output voltage	-	24	-	[V]
Output current	-	6.25		[A]

Power input (24V connector)	Min	Typical	Max	Units
Supply voltage	-	24	25	[V]
Supply current	-	6.25	-	[A]

Power output (Device connector)	Min	Typical	Max	Units
Output voltage	-	24	25	[V]
Output current (EB HW v1.2)	-	4.5	4.5 ***	[A]

*** Peak currents

Eye Box I/O interface:

Power Reference (24V, GND)	Min	Typical	Max	Units
Reference output voltage	-	24	25	[V]

Power Reference (24V, GND)	Min	Typical	Max	Units
Reference output current	-	-	100	[mA]

Digital Output (DO1-DO8)	Min	Typical	Max	Units
Output current - altogether	-	-	100	[mA]
Output resistance (active state)	-	24	-	[Ω]

Digital Input (DI1-DI8) as PNP	Min	Typical	Max	Units
Voltage level - TRUE	18	24	30	[V]
Voltage level - FALSE	-0.5	0	2.5	[V]
Input current	-	-	6	[mA]
Input resistance	-	5	-	[kΩ]

Digital Input (DI1-DI8) as NPN	Min	Typical	Max	Units
Voltage level - TRUE	-0.5	0	5	[V]
Voltage level - FALSE	18	24	30	[V]
Input current	-	-	6	[mA]
Input resistance	-	5	-	[kΩ]

1.3. Eyes box content

①	Cable - 5m (M12 to M8)	⑤	Power Supply (EU,US,UK,AS)	⑨	Camera Robot Mount	⑬ Screws for Calibration Sheet	⑰ Terminal Blocks
②	Cable - UTP (RJ45 to RJ45)	⑥	USB Stick	⑩	Cable Holder	⑭ Screw for Camera Locking Pre-mounted	⑱ Cable Straps
③	Cable - USB (USB A to USB C)	⑦	Calibration Plate	⑪	Screws for Dual QC* * Dual QC sold separately	⑮ Keys: T20/HEX 2.5 & 3 mm	⑲ Landmark
④	OnRobot Eye Box	⑧	Camera External Mount	⑫	Screws for QC* or HEX QC*	⑯ I/O Wires	⑳ Lens Cleaning Cloth

Eyes Lighting Kit box content

①	Cable 5m (M8)	③	Light cable holder	⑤	Diffuser cover
②	Torx Keys T10 and T20	④	Diffuser	⑥	LED light

1.4. Eyes - Robot Mount

4 x ⌀ 6.40 [0.252] THRU
∨ ⌀ 7 [0.276] X 90°, Near Side
∨ ⌀ 7 [0.276] X 90°, Far Side

35.35 [1.392]

35.35 [1.392]

⌀ 72 [2.835]

104 [4.094]

140 [5.512]

119 [4.685]

12 [0.472]

15 [0.591]

177 [6.969]

28 [1.102]

34.50 [1.358]

155 [6.102]

42 [1.654]
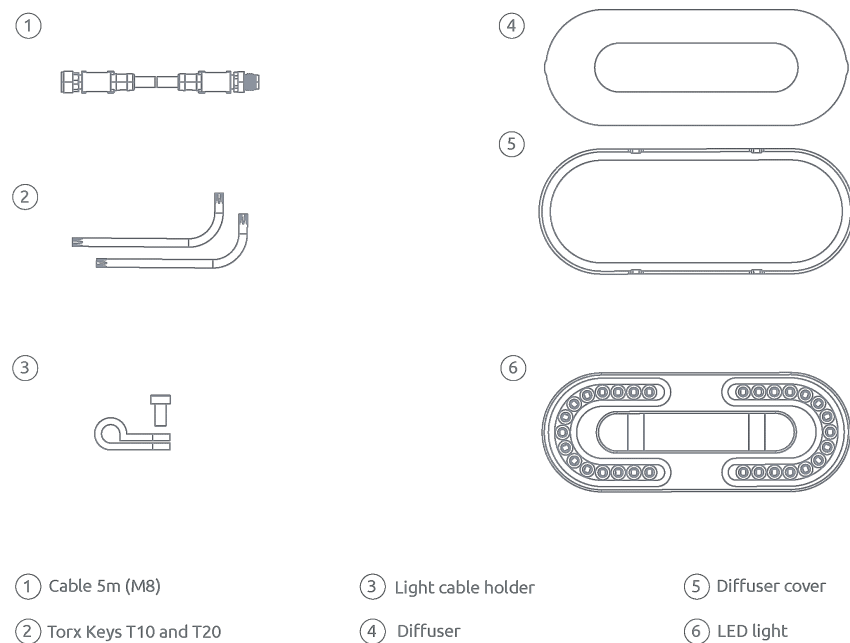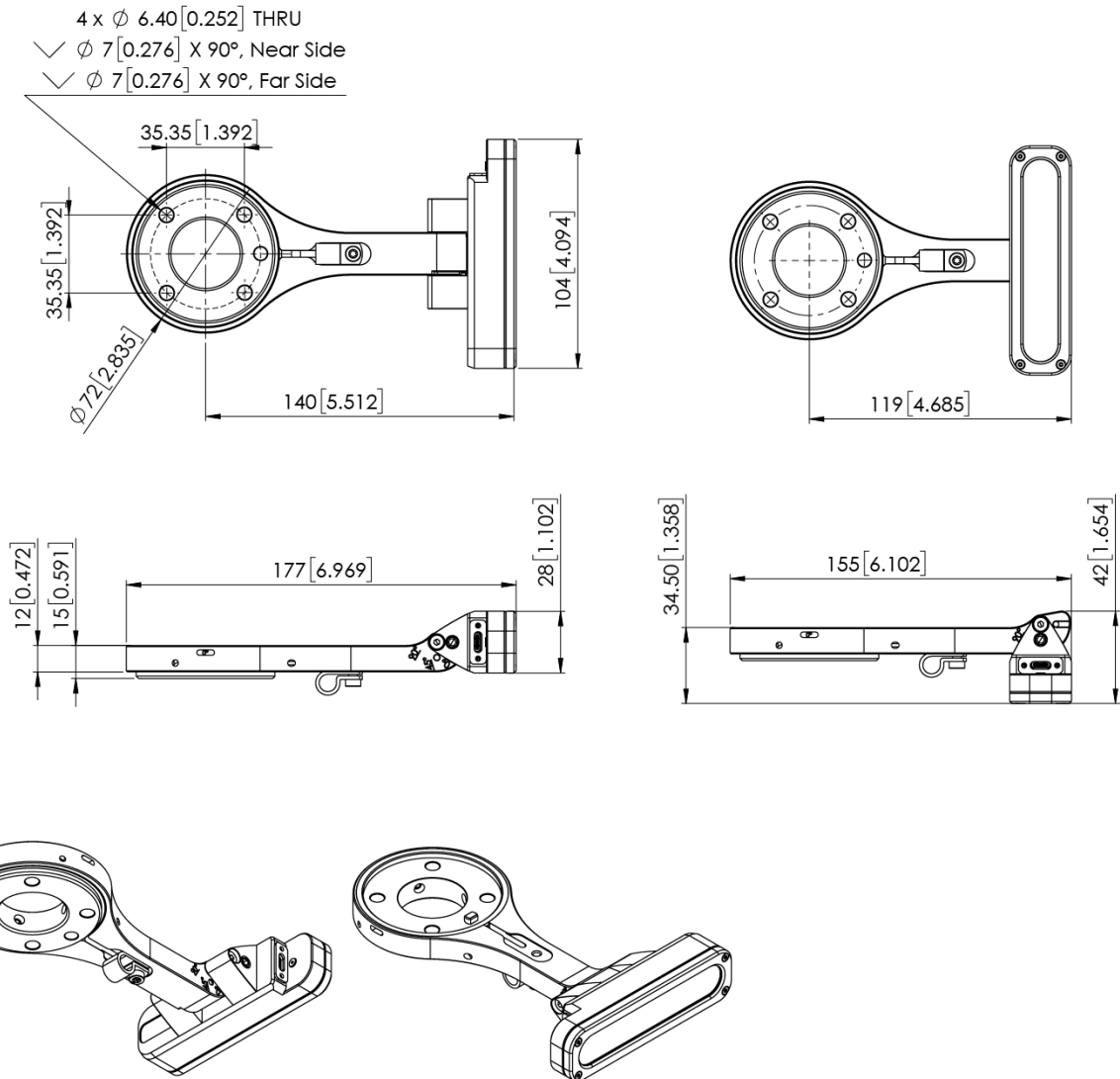
All dimensions are in mm and [inches].

1.5. Eyes - External Mount

2 x ⌀ 5,11 [0,201] ⤓ 8,50 [0.335]
1/4-20 UNC ⤓ 7 [0,276]
∨ ⌀ 6,38 [0,251] X 90°, Near Side

OnRobot - External Mount
40 mm
30 mm

20 [0.787]

60 [2,362]

2 x ⌀ 6,5 [0,256] THRU ALL
⌴ ⌀ 12,5 [0,492] ⤓ 3 [0,118]
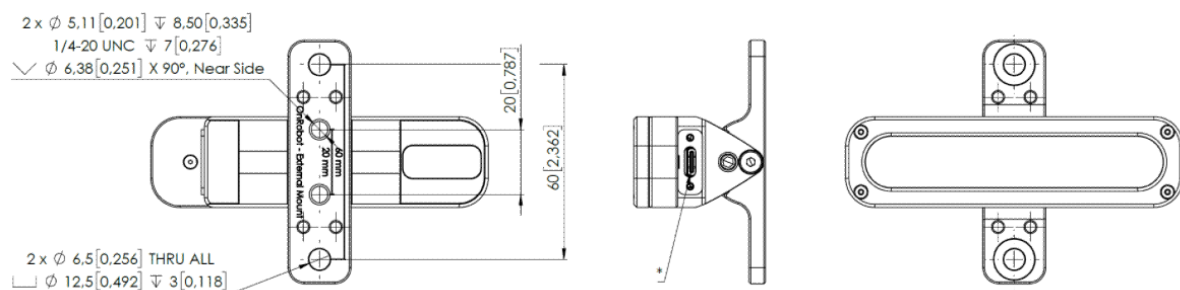
All dimensions are in mm and [inches].

1.6. Eyes Lighting Kit Mount

Eyes with Light

4 x Ø 6,4 [0,252] THRU
Ø 7 [0,276] X 90°, Near Side
Ø 7 [0,276] X 90°, Far Side

Ø 50 [1,969]
Ø 72 [2,835]
148 [5,827]
144 [5,669]

133,5 [5,256]

180 [7,087]
12 [0,472]
15 [0,591]
57 [2,244]

39,5 [1,555]
169,5 [6,673]
45 [1,772]
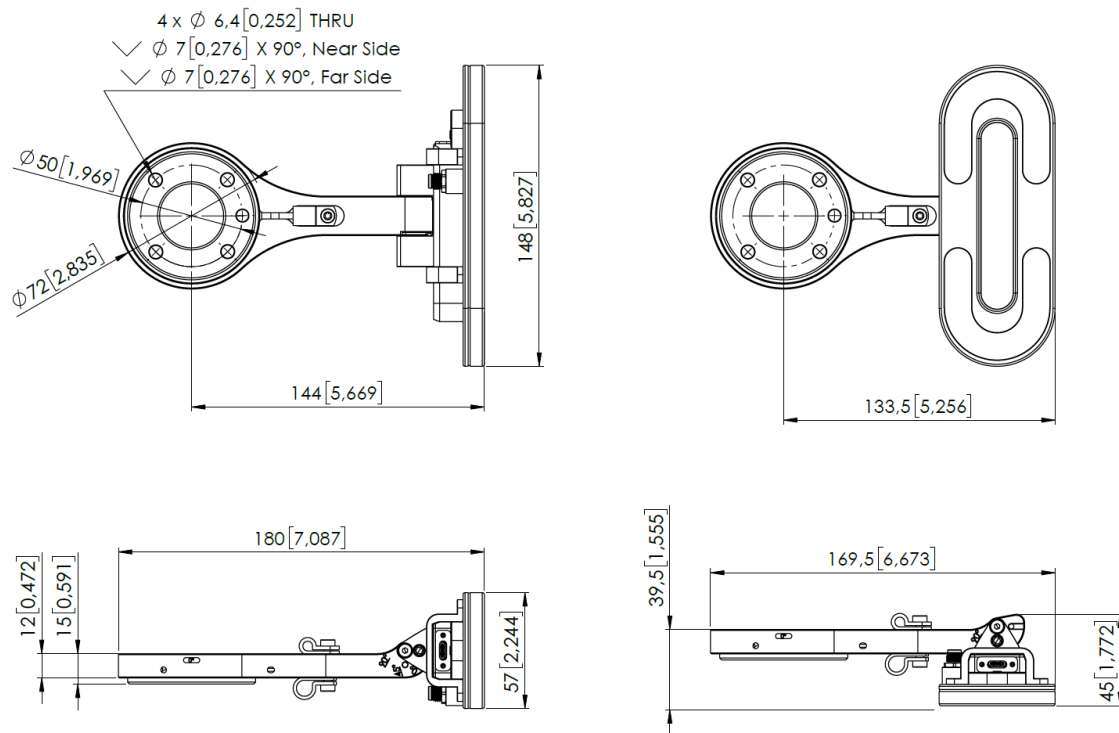
Eyes with Light and Diffuser

4 x Ø 6,4 [0,252] THRU
Ø 7 [0,276] X 90°, Near Side
Ø 7 [0,276] X 90°, Far Side

Ø 50 [1,969]
Ø 72 [2,835]
151 [5,945]
146 [5,748]

135 [5,315]

182 [7,165]
12 [0,472]
15 [0,591]
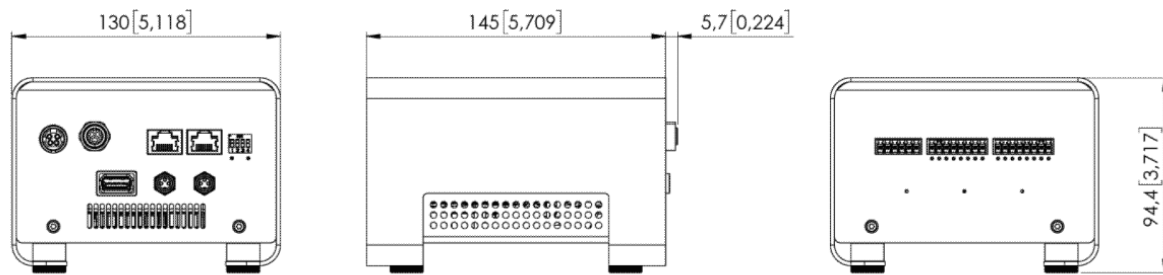60 [2,362]

39,5 [1,555]
171 [6,732]
47 [1,85]
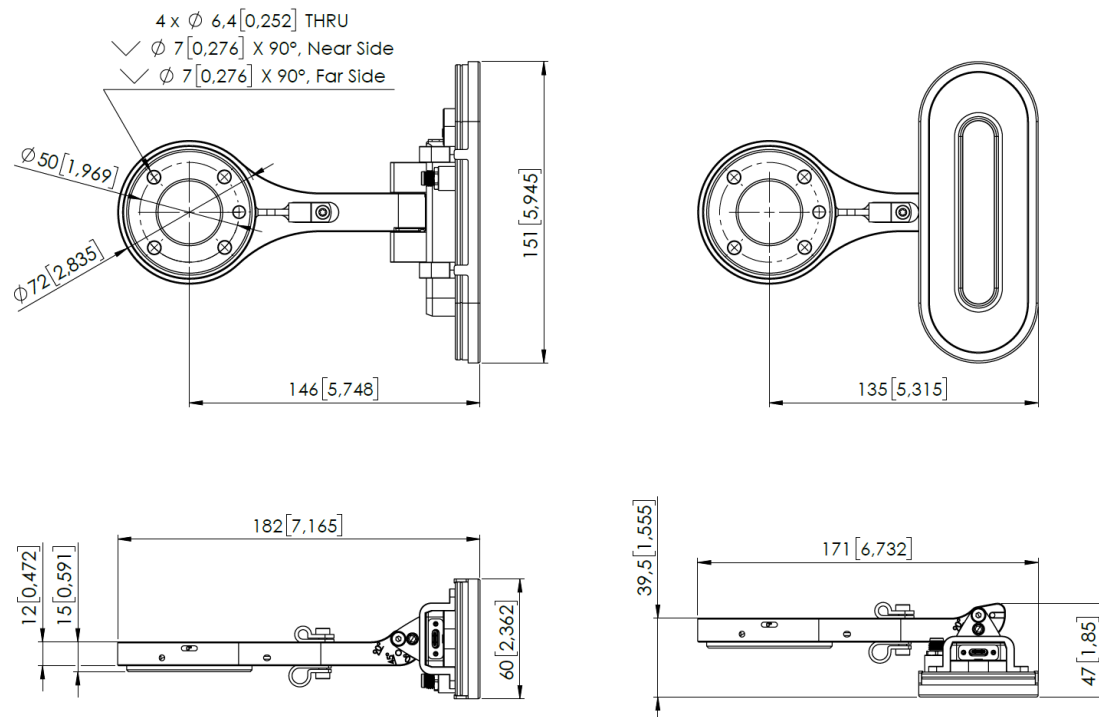
All dimensions are in mm and [inches].

1.7. Eye Box

All dimensions are in mm and [inches].