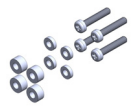
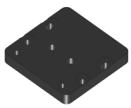
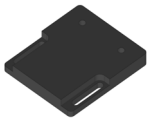
MicroHAWK V420-F
Autofocus Multicode Reader

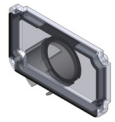
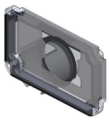
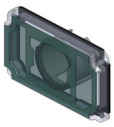
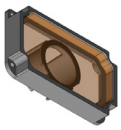
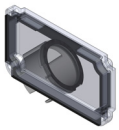
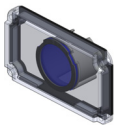
Autofocus to read codes at different distances.

- Simple programming with WebLink.
- Highly configurable.
- 0.3, 1.2, and 5 megapixel sensor available.
- Fixed Focus and Autofocus lens options.
- Alternate LED configurations available.
- Smallest in class.
- IP54.
- Corner-exit cable.
- Digital I/O, Serial RS-232, or Ethernet over USB.

Mounting Options

Appearance	Description	Part Number
	L Bracket Adjustable Angle Mounting Kit	**V430-AM0**
	¼-20 Camera Mounting Block Kit	**V430-AM1**
	4” (102 mm) Ram Mount Stand	**V430-AM2**
	APG Pan and Tilt Camera Mount	**V430-AM3**
	Nylon Screw and Washer Electrical Isolation Mounting Kit	**V430-AM4**
	MS-4 / MINI to V/F4XX-F Adapter Plate	**V430-AM5**
	Smart Ring Light to V/F4XX-F Mounting Bracket	**V430-AM6**
	QX / Vision HAWK to V/F4XX-F Adapter Plate	**V430-AM7**

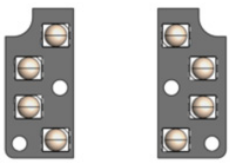
Optics Options

Appearance	Description	Part Number
	Front Window – Installation Kit	**V430-AF10 ✻**
	Diffuser – Installation Kit	**V430-AF11 ✻**
	Polarizer – Installation Kit	**V430-AF12 ✻**
	Right Angle Mirror – Installation Kit	**V430-AF3**
	YAG Filter – Installation Kit	**V430-AF4**
	ESD-Safe Window – Installation Kit	**V430-AF5**
	Red Filter – Installation Kit	**V430-AF6**
	Blue Filter – Installation Kit	**V430-AF7**

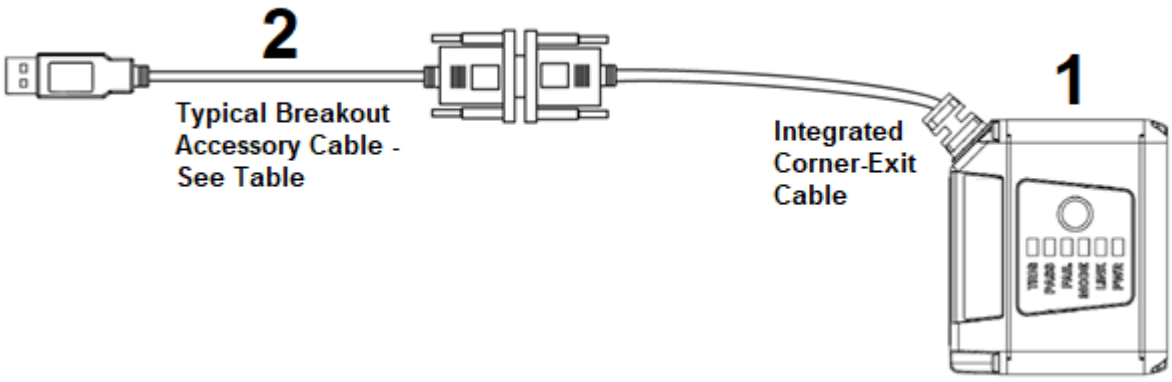
✻ Note: V430-AF10, AF11, and AF12 are used for **MicroHAWK V/F4X0-FXXXXXXX-XXX** readers in this datasheet. The prior generation **MicroHAWK V430-FXXXXXXX** code reader uses part numbers V430-AF0, AF1, and AF2. Please select the correct accessory from the table based on your reader part number format.

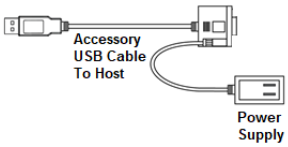
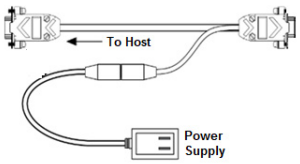
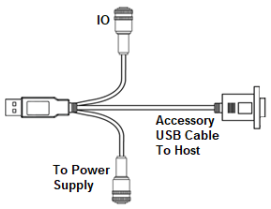
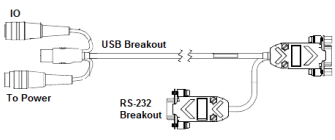
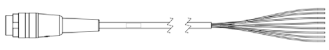
Accessory	Prior V430-FXXXXXXX Code Reader	New V/F4X0-FXXXXXXX-XXX Code Reader and Smart Camera
Front Window Installation Kit	V430-AF0	V430-AF10
Diffuser Installation Kit	V430-AF1	V430-AF11
Polarizer Installation Kit	V430-AF2	V430-AF12

Lighting Options

Appearance	Description	Part Number
	Red Light – Installation Kit	**V430-ALR**
	White Light – Installation Kit	**V430-ALW**
	Blue Light – Installation Kit	**V430-ALB**
	IR Light – Installation Kit	**V430-ALI**
	High Bright Red Light Installation Kit (1.8x brighter than standard Red Light Installation Kit)	**V430-ALRH**

Wiring Options



Drawing Reference	Appearance	Description	Length / Spec	Part Number
2		USB Breakout Cable **Note:** USB cable delivers approximately 30% less power.	1 Meter	**V420-WUB-1M**
		Cable – USB Breakout with External Power Input	1 Meter	**V420-WUX-1M**
		Power Supply	2 Meters	**97-9000006-01**
		Kit – Cable and Power Supply		**V420-AC1**
		Cable – RS-232 Breakout (DB-15) and External Power Input	1 Meter	**V420-WRX-1M**
		Power Supply	2 Meters	**97-9000006-01**
		Kit – Cable and Power Supply		**V420-AC0**
		Cable – USB, IO, and Power Breakout	1 Meter	**V420-WU8X-1M**
		Power Supply	2 Meters	**97-000011-02**
		Kit – Cable and Power Supply		**V420-AC2**
		Cable – RS-232, USB, IO, and Power Breakout	1 Meter	**V420-WRU8X-1M**
		Power Supply	2 Meters	**97-000011-02**
		Cable – Trigger, IO, and Power Breakout	900 Millimeters	**61-000151-01**

V420-F Part Number Structure

Use this legend when defining product part numbers. Please note that not all combinations of parameters are valid. For instance, color cameras are only available with white lighting, and 400 mm fixed focus is only available with UHD lenses. When ordering, use valid part numbers from the tables in the Ordering Information section only.

V420-F[XXX][Y][ZZZ]-[L][C][P]

Key	Classification	Code	Meaning
XXX	Focus Distance (mm)	000	Autofocus – Variable Distance
		050	Fixed Focus at 50 mm
		064	Fixed Focus at 64 mm
		081	Fixed Focus at 81 mm
		102	Fixed Focus at 102 mm
		133	Fixed Focus at 133 mm
		190	Fixed Focus at 190 mm
		300	Fixed Focus at 300 mm
		400	Fixed Focus at 400 mm
Y	Lens	W	Wide Field of View – 5.2 mm Focal Length Lens
		M	Medium Field of View – 7.7 mm Focal Length Lens
		N	Narrow Field of View – 16 mm Focal Length Lens
		L	Narrow 16 mm Lens – Autofocus to 1160 mm
ZZZ	Sensor	03M	752 x 480 (0.3 MP) Pixel, Mono Sensor, Global Shutter
		12M	1280 x 960 (1.2 MP) Pixel, Mono Sensor, Global Shutter
		50C	2592 x 1944 (5 MP) Pixel, Color Sensor, Rolling Shutter
L	Light Type	N	None (Engine Lighting Only)
		S	Standard Outer Light
C	Light Color	N	None (Engine Lighting Only)
		R	Red
		W	White
P	Software License	P	High Speed, Plus Mode
		X	High Speed, X-Mode

Example Part Numbers:

- V420-F081W03M-NNP: Fixed Focus at 81 mm, Wide Lens, 0.3 MP Monochrome Sensor, No Outer Light, High Speed, Plus Mode
- V420-F000W50C-SWP: Autofocus, Wide Lens, 5 MP Color, Standard Light, White, High Speed, Plus Mode

V420-F Valid Product Matrix

Model	Category	Focus Type	Sensor	Lens	Focus Distance (mm)	Light	License
V420-F	Monochrome	Fixed Focus	03M, 12M	W, M	50, 64, 81, 102, 133, 190, 300	NN, SR, SW	P, X
			12M	N	400	NN, SR, SW	P, X
		Autofocus	03M	W, M	50 <-> 300 Autofocus	NN, SR, SW	P, X
			12M	W, M, N	50 <-> 300 (W, M) 40 <-> 150 (N) Autofocus	NN, SR, SW	P, X
	Color	Fixed Focus	50C	W, M	50, 64, 81, 102, 133, 190, 300	NN, SR, SW	P, X
		Autofocus	50C	W, M	50 <-> 300 Autofocus	NN, SR, SW	P, X
	Specialty	Long Range Autofocus	12M	L	75 <->1160 Autofocus	NN, SR, SW	P, X

V420-F Ordering Information

Categories:

1. Fixed Focus Camera

a.) V420-F Monochrome Fixed Focus Camera

b.) V420-F Color Fixed Focus Camera

c.) V420-F 1.2 MP Monochrome Fixed Focus Camera with Narrow Lens

2. Autofocus Camera

a.) V420-F 0.3 MP Monochrome Autofocus Camera (50 -300 mm)

b.) V420-F 1.2 MP Monochrome Autofocus Camera (50 – 300 mm for Wide and Medium Lens, 40 – 150 mm for Narrow Lens)

c.) V420-F Color Autofocus Camera (50 - 300 mm)

d.) V420-F 1.2 MP Monochrome Long Range Autofocus Camera (75 - 1160 mm)

1a) V420-F Monochrome Fixed Focus Camera: Valid Combinations

V420-F[XXX][Y][ZZZ]-[L][C][P]

Key	Classification	Code	Meaning
XXX	Focus Distance (mm)	050	Fixed Focus at 50 mm
		064	Fixed Focus at 64 mm
		081	Fixed Focus at 81 mm
		102	Fixed Focus at 102 mm
		133	Fixed Focus at 133 mm
		190	Fixed Focus at 190 mm
		300	Fixed Focus at 300 mm
Y	Lens	W	Wide Field of View - 5.2 mm Focal Length Lens
		M	Medium Field of View – 7.7 mm Focal Length Lens
ZZZ	Sensor	03M	752 x 480 (0.3 MP) Pixel, Mono Sensor, Global Shutter
		12M	1280 x 960 (1.2 MP) Pixel, Mono Sensor, Global Shutter
L	Light Type	N	No Outer Light
		S	Standard Outer Light
C	Light Color	N	No Outer Light
		R	Red
		W	White
P	Software License	P	High Speed, Plus Mode
		X	High Speed, X-Mode

1b) V420-F 5.0 MP Color Fixed Focus Camera: Valid Combinations

Note: 5 MP Color cameras are available with No Outer Light or White Light options only.

V420-F[XXX][Y]**50C**-[L][C][P]

Key	Classification	Code	Meaning
XXX	Focus Distance (mm)	050	Fixed Focus at 50 mm
		064	Fixed Focus at 64 mm
		081	Fixed Focus at 81 mm
		102	Fixed Focus at 102 mm
		133	Fixed Focus at 133 mm
		190	Fixed Focus at 190 mm
		300	Fixed Focus at 300 mm
Y	Lens	W	Wide Field of View - 5.2 mm Focal Length Lens
		M	Medium Field of View – 7.7 mm Focal Length Lens
L	Light Type	N	No Outer Light
		S	Standard Outer Light
C	Light Color	N	No Outer Light
		W	White
P	Software License	P	High Speed, Plus Mode
		X	High Speed, X-Mode

1c) V420-F 1.2 MP Monochrome Fixed Focus Camera with Narrow Lens: Valid Combinations

Note: Fixed Focus Narrow lens option available for 1.2 MP Mono camera only.

V420-F[XXX]**N12M**-[L][C][P]

Key	Classification	Code	Meaning
XXX	Focus Distance (mm)	400	Fixed Focus at 400 mm
L	Light Type	N	No Outer Light
		S	Standard Outer Light
C	Light Color	N	No Outer Light
		R	Red
		W	White
P	Software License	P	High Speed, Plus Mode
		X	High Speed, X-Mode

2a) V420-F 0.3 MP Monochrome Autofocus Camera (50 - 300 mm): Valid Combinations

V420-F000[Y]**03M**-[L][C][P]

Key	Classification	Code	Meaning
Y	Lens	W	Wide Field of View - 5.2 mm Focal Length Lens
		M	Medium Field of View – 7.7 mm Focal Length Lens
L	Light Type	N	No Outer Light
		S	Standard Outer Light
C	Light Color	N	No Outer Light
		R	Red
		W	White
P	Software License	P	High Speed, Plus Mode
		X	High Speed, X-Mode

2b) V420-F 1.2 MP Monochrome Autofocus Camera (50 – 300 mm for Wide and Medium, 40 – 150 mm for Narrow): Valid Combinations

V420-F000[Y]**12M**-[L][C][P]

Key	Classification	Code	Meaning
Y	Lens	W	Wide Field of View - 5.2 mm Focal Length Lens
		M	Medium Field of View – 7.7 mm Focal Length Lens
		N	Narrow Field of View – 16 mm Focal Length Lens
L	Light Type	N	No Outer Light
		S	Standard Outer Light
C	Light Color	N	No Outer Light
		R	Red
		W	White
P	Software License	P	High Speed, Plus Mode
		X	High Speed, X-Mode

2c) V420-F 5.0 MP Color Autofocus Camera (50 - 300 mm): Valid Combinations

Note: Narrow Autofocus lens option not available for color camera.

V420-F000[Y]**50C**-[L][C][P]

Key	Classification	Code	Meaning
Y	Lens	W	Wide Field of View - 5.2 mm Focal Length Lens
		M	Medium Field of View – 7.7 mm Focal Length Lens
L	Light Type	N	No Outer Light
		S	Standard Outer Light
C	Light Color	N	No Outer Light
		W	White
P	Software License	P	High Speed, Plus Mode
		X	High Speed, X-Mode

2d) V420-F 1.2 MP Monochrome Long Range Autofocus Camera (75 - 1160 mm): Valid Combinations

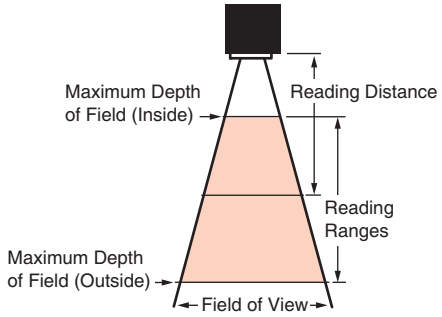
Note: Autofocus Long Range lens option available for 1.2 MP Monochrome camera only.

V420-F000L12M-[L][C][P]

Key	Classification	Code	Meaning
L	Light Type	N	No Outer Light
		S	Standard Outer Light
C	Light Color	N	No Outer Light
		R	Red
		W	White
P	Software License	P	High Speed, Plus Mode
		X	High Speed, X-Mode

Field of View Charts

Specifications are subject to change.



Fixed Focus Field of View (mm) - Wide Lens

	0.3 MP		1.2 MP		5 MP	
Distance (mm)	Width	Height	Width	Height	Width	Height
50	49	32	53	39	50	38
64	62	39	66	49	63	47
81	76	49	81	61	78	58
102	95	60	101	75	96	72
133	121	78	129	97	124	92
190	171	109	182	136	174	130
300	266	170	283	213	271	202

Fixed Focus Field of View (mm) - Medium Lens

	0.3 MP		1.2 MP		5 MP	
Distance (mm)	Width	Height	Width	Height	Width	Height
50	34	22	36	27	35	26
64	43	27	45	34	43	32
81	53	34	56	42	54	40
102	66	42	70	52	67	50
133	84	54	90	67	86	64
190	119	76	126	95	121	90
300	185	118	196	147	188	140

Fixed Focus Field of View (mm) - Narrow Lens

	1.2 MP	
Distance (mm)	Width	Height
400	118	88

Autofocus Field of View (mm) - Wide Lens

	0.3 MP		1.2 MP		5 MP	
Distance (mm)	Width	Height	Width	Height	Width	Height
50	51	33	55	41	52	39
100	97	62	103	77	98	73
150	142	90	151	113	144	107
200	187	119	199	149	190	142
250	232	148	247	185	236	176
300	277	177	295	221	282	210

Autofocus Field of View (mm) - Medium Lens

	0.3 MP		1.2 MP		5 MP	
Distance (mm)	Width	Height	Width	Height	Width	Height
50	33	21	36	27	34	25
100	63	40	67	50	64	48
150	92	59	98	73	94	70
200	121	77	129	97	123	92
250	151	96	160	120	153	114
300	180	115	191	144	183	136

Autofocus Field of View (mm) - Narrow Lens

	1.2 MP	
Distance (mm)	Width	Height
50	16	12
100	31	23
150	45	34

Long Range Autofocus Field of View (mm)

	1.2 MP	
Distance (mm)	Width	Height
75	24	18
100	31	23
200	60	45
300	89	67
400	118	88
500	147	110
600	176	132
700	204	153
800	233	175
900	262	197
1000	291	218
1200	349	262
1300	378	283
1400	407	305
1500	436	327

Readability Tables

The readability tables on the following pages are designed to help users choose the best read-distance, sensor, and lens combination to read their particular code size and code type successfully.

The readability tables show the calculated PPE (pixels per element) for a range of typical code sizes at all the MicroHAWK Fixed Focus distances with the Wide, Medium, Narrow, and Long Range lens as well as with the 0.3MP, 1.2MP, and 5MP sensors.

PPE is defined as the following for 1D and 2D codes:

- PPE for 1D codes is the number of pixels across the thinnest bar in the barcode.
- PPE for 2D codes is the number of pixels across a single code cell.

The tables show a color code for readability based on Direct Part Marks (DPM) where red means not likely to read, and green means that it should read. The tables also show a range of colors between red and green, while showing the zone where read rates may be acceptable for high-contrast, well-printed labels and can be considered. See the 1D and 2D Code Readability Guidelines below for Minimum and Preferred PPE for both DPM marks and high-contrast labels.

1D Code Readability Guidelines

High-Contrast Labels

- 1.5 pixels per thin bar is suggested minimum;
- 2 pixels or more per thin bar is preferred.

Direct Part Marks

- 2 pixels per thin bar is suggested minimum;
- 2.5 pixels or more per thin bar is preferred.

2D Code Readability Guidelines

High-Contrast Labels

- 2.5 – 2.75 pixels per 2D cell is suggested minimum;
- 3.5 – 5 pixels per 2D cell is preferred.

Direct Part Marks

- 3.25 pixels per 2D Cell is suggested minimum;
- 4 – 6 pixels per 2D Cell is preferred.

Readability Table – 0.3 Megapixel

= Maximum Readability
= Minimum Readability

	0.3 Megapixel – Pixels Per Element / Readability Chart																
	Readability of 1D Code at Distance (mm)									Readability of 2D Code at Distance (mm)							
Minimum Element Size	50	64	81	102	133	190	300	400	Lens	50	64	81	102	133	190	300	400
2 mil	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.1	Wide Lens	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.1
2.5 mil	0.9	0.7	0.6	0.5	0.4	0.3	0.2	0.1		0.9	0.7	0.6	0.5	0.4	0.3	0.2	0.1
3.3 mil	1.2	1.0	0.8	0.6	0.5	0.4	0.2	0.2		1.2	1.0	0.8	0.6	0.5	0.4	0.2	0.2
5 mil	1.9	1.5	1.2	1.0	0.8	0.5	0.3	0.3		1.9	1.5	1.2	1.0	0.8	0.5	0.3	0.3
7.5 mil	2.8	2.2	1.8	1.5	1.1	0.8	0.5	0.4		2.8	2.2	1.8	1.5	1.1	0.8	0.5	0.4
10 mil	3.7	3.0	2.4	1.9	1.5	1.1	0.7	0.5		3.7	3.0	2.4	1.9	1.5	1.1	0.7	0.5
15 mil	5.6	4.5	3.6	2.9	2.3	1.6	1.0	0.8		5.6	4.5	3.6	2.9	2.3	1.6	1.0	0.8
20 mil	7.4	6.0	4.8	3.9	3.0	2.1	1.4	1.0		7.4	6.0	4.8	3.9	3.0	2.1	1.4	1.0
30 mil	11.1	8.9	7.2	5.8	4.5	3.2	2.1	1.6		11.1	8.9	7.2	5.8	4.5	3.2	2.1	1.6
40 mil	14.9	11.9	9.6	7.8	6.0	4.3	2.8	2.1		14.9	11.9	9.6	7.8	6.0	4.3	2.8	2.1
2 mil	1.2	1.0	0.8	0.6	0.5	0.3	0.2	0.2	Medium Lens	1.2	1.0	0.8	0.6	0.5	0.3	0.2	0.2
2.5 mil	1.5	1.2	1.0	0.8	0.6	0.4	0.3	0.2		1.5	1.2	1.0	0.8	0.6	0.4	0.3	0.2
3.3 mil	2.0	1.6	1.3	1.0	0.8	0.6	0.4	0.3		2.0	1.6	1.3	1.0	0.8	0.6	0.4	0.3
5 mil	3.0	2.4	1.9	1.6	1.2	0.9	0.6	0.4		3.0	2.4	1.9	1.6	1.2	0.9	0.6	0.4
7.5 mil	4.5	3.6	2.9	2.3	1.8	1.3	0.8	0.6		4.5	3.6	2.9	2.3	1.8	1.3	0.8	0.6
10 mil	5.9	4.8	3.8	3.1	2.4	1.7	1.1	0.8		5.9	4.8	3.8	3.1	2.4	1.7	1.1	0.8
15 mil	8.9	7.2	5.8	4.7	3.6	2.6	1.7	1.2		8.9	7.2	5.8	4.7	3.6	2.6	1.7	1.2
20 mil	11.9	9.5	7.7	6.2	4.8	3.4	2.2	1.7		11.9	9.5	7.7	6.2	4.8	3.4	2.2	1.7
30 mil	17.8	14.3	11.5	9.3	7.3	5.2	3.3	2.5		17.8	14.3	11.5	9.3	7.3	5.2	3.3	2.5
40 mil	23.8	19.1	15.4	12.4	9.7	6.9	4.4	3.3		23.8	19.1	15.4	12.4	9.7	6.9	4.4	3.3
2 mil	2.5	2.0	1.6	1.3	1.0	0.7	0.5	0.3	Narrow Lens	2.5	2.0	1.6	1.3	1.0	0.7	0.5	0.3
2.5 mil	3.1	2.5	2.0	1.6	1.3	0.9	0.6	0.4		3.1	2.5	2.0	1.6	1.3	0.9	0.6	0.4
3.3 mil	4.1	3.3	2.6	2.1	1.7	1.2	0.8	0.6		4.1	3.3	2.6	2.1	1.7	1.2	0.8	0.6
5 mil	6.2	4.9	4.0	3.2	2.5	1.8	1.1	0.9		6.2	4.9	4.0	3.2	2.5	1.8	1.1	0.9
7.5 mil	9.2	7.4	6.0	4.8	3.8	2.7	1.7	1.3		9.2	7.4	6.0	4.8	3.8	2.7	1.7	1.3
10 mil	12.3	9.9	8.0	6.4	5.0	3.6	2.3	1.7		12.3	9.9	8.0	6.4	5.0	3.6	2.3	1.7
15 mil	18.5	14.8	12.0	9.7	7.5	5.4	3.4	2.6		18.5	14.8	12.0	9.7	7.5	5.4	3.4	2.6
20 mil	24.7	19.8	16.0	12.9	10.0	7.1	4.6	3.5		24.7	19.8	16.0	12.9	10.0	7.1	4.6	3.5
30 mil	37.0	29.7	24.0	19.3	15.1	10.7	6.9	5.2		37.0	29.7	24.0	19.3	15.1	10.7	6.9	5.2
40 mil	49.3	39.6	31.9	25.8	20.1	14.3	9.2	6.9		49.3	39.6	31.9	25.8	20.1	14.3	9.2	6.9

Readability Table – 1.2 Megapixel

	1.2 Megapixel – Pixels Per Element / Readability Chart																
	Readability of 1D Code at Distance (mm)									Readability of 2D Code at Distance (mm)							
Minimum Element Size	50	64	81	102	133	190	300	400	Lens	50	64	81	102	133	190	300	400
2 mil	1.2	1.0	0.8	0.6	0.5	0.4	0.2	0.2	Wide Lens	1.2	1.0	0.8	0.6	0.5	0.4	0.2	0.2
2.5 mil	1.5	1.2	1.0	0.8	0.6	0.4	0.3	0.2		1.5	1.2	1.0	0.8	0.6	0.4	0.3	0.2
3.3 mil	2.0	1.6	1.3	1.1	0.8	0.6	0.4	0.3		2.0	1.6	1.3	1.1	0.8	0.6	0.4	0.3
5 mil	3.1	2.5	2.0	1.6	1.3	0.9	0.6	0.4		3.1	2.5	2.0	1.6	1.3	0.9	0.6	0.4
7.5 mil	4.6	3.7	3.0	2.4	1.9	1.3	0.9	0.6		4.6	3.7	3.0	2.4	1.9	1.3	0.9	0.6
10 mil	6.2	5.0	4.0	3.2	2.5	1.8	1.1	0.9		6.2	5.0	4.0	3.2	2.5	1.8	1.1	0.9
15 mil	9.3	7.4	6.0	4.8	3.8	2.7	1.7	1.3		9.3	7.4	6.0	4.8	3.8	2.7	1.7	1.3
20 mil	12.4	9.9	8.0	6.5	5.0	3.6	2.3	1.7		12.4	9.9	8.0	6.5	5.0	3.6	2.3	1.7
30 mil	18.5	14.9	12.0	9.7	7.5	5.4	3.4	2.6		18.5	14.9	12.0	9.7	7.5	5.4	3.4	2.6
40 mil	24.7	19.8	16.0	12.9	10.1	7.2	4.6	3.5		24.7	19.8	16.0	12.9	10.1	7.2	4.6	3.5
2 mil	1.8	1.4	1.2	0.9	0.7	0.5	0.3	0.2	Medium Lens	1.8	1.4	1.2	0.9	0.7	0.5	0.3	0.2
2.5 mil	2.2	1.8	1.4	1.2	0.9	0.6	0.4	0.3		2.2	1.8	1.4	1.2	0.9	0.6	0.4	0.3
3.3 mil	2.9	2.4	1.9	1.5	1.2	0.9	0.5	0.4		2.9	2.4	1.9	1.5	1.2	0.9	0.5	0.4
5 mil	4.5	3.6	2.9	2.3	1.8	1.3	0.8	0.6		4.5	3.6	2.9	2.3	1.8	1.3	0.8	0.6
7.5 mil	6.7	5.4	4.3	3.5	2.7	1.9	1.2	0.9		6.7	5.4	4.3	3.5	2.7	1.9	1.2	0.9
10 mil	8.9	7.2	5.8	4.7	3.6	2.6	1.7	1.2		8.9	7.2	5.8	4.7	3.6	2.6	1.7	1.2
15 mil	13.4	10.7	8.7	7.0	5.4	3.9	2.5	1.9		13.4	10.7	8.7	7.0	5.4	3.9	2.5	1.9
20 mil	17.8	14.3	11.5	9.3	7.3	5.2	3.3	2.5		17.8	14.3	11.5	9.3	7.3	5.2	3.3	2.5
30 mil	26.7	21.5	17.3	14.0	10.9	7.7	5.0	3.7		26.7	21.5	17.3	14.0	10.9	7.7	5.0	3.7
40 mil	35.6	28.6	23.1	18.6	14.5	10.3	6.6	5.0		35.6	28.6	23.1	18.6	14.5	10.3	6.6	5.0
2 mil	3.9	3.2	2.6	2.1	1.6	1.1	0.7	0.6	Narrow Lens	3.9	3.2	2.6	2.1	1.6	1.1	0.7	0.6
2.5 mil	4.9	4.0	3.2	2.6	2.0	1.4	0.9	0.7		4.9	4.0	3.2	2.6	2.0	1.4	0.9	0.7
3.3 mil	6.5	5.2	4.2	3.4	2.7	1.9	1.2	0.9		6.5	5.2	4.2	3.4	2.7	1.9	1.2	0.9
5 mil	9.9	7.9	6.4	5.2	4.0	2.9	1.8	1.4		9.9	7.9	6.4	5.2	4.0	2.9	1.8	1.4
7.5 mil	14.8	11.9	9.6	7.7	6.0	4.3	2.7	2.1		14.8	11.9	9.6	7.7	6.0	4.3	2.7	2.1
10 mil	19.7	15.8	12.8	10.3	8.0	5.7	3.7	2.8		19.7	15.8	12.8	10.3	8.0	5.7	3.7	2.8
15 mil	29.6	23.8	19.2	15.5	12.0	8.6	5.5	4.1		29.6	23.8	19.2	15.5	12.0	8.6	5.5	4.1
20 mil	39.5	31.7	25.6	20.6	16.1	11.4	7.3	5.5		39.5	31.7	25.6	20.6	16.1	11.4	7.3	5.5
30 mil	59.2	47.5	38.3	30.9	24.1	17.1	11.0	8.3		59.2	47.5	38.3	30.9	24.1	17.1	11.0	8.3
40 mil	78.9	63.3	51.1	41.3	32.1	22.8	14.6	11.1		78.9	63.3	51.1	41.3	32.1	22.8	14.6	11.1

Readability Table – 5 Megapixel

	5 Megapixel – Pixels Per Element / Readability Chart																
	Readability of 1D Code at Distance (mm)								Lens	Readability of 2D Code at Distance (mm)							
Minimum Element Size	50	64	81	102	133	190	300	400		50	64	81	102	133	190	300	400
2 mil	1.7	1.4	1.1	0.9	0.7	0.5	0.3	0.2	Wide Lens	1.7	1.4	1.1	0.9	0.7	0.5	0.3	0.2
2.5 mil	2.2	1.7	1.4	1.1	0.9	0.6	0.4	0.3		2.2	1.7	1.4	1.1	0.9	0.6	0.4	0.3
3.3 mil	2.8	2.3	1.8	1.5	1.2	0.8	0.5	0.4		2.8	2.3	1.8	1.5	1.2	0.8	0.5	0.4
5 mil	4.3	3.5	2.8	2.3	1.8	1.2	0.8	0.6		4.3	3.5	2.8	2.3	1.8	1.2	0.8	0.6
7.5 mil	6.5	5.2	4.2	3.4	2.6	1.9	1.2	0.9		6.5	5.2	4.2	3.4	2.6	1.9	1.2	0.9
10 mil	8.6	6.9	5.6	4.5	3.5	2.5	1.6	1.2		8.6	6.9	5.6	4.5	3.5	2.5	1.6	1.2
15 mil	12.9	10.4	8.4	6.8	5.3	3.7	2.4	1.8		12.9	10.4	8.4	6.8	5.3	3.7	2.4	1.8
20 mil	17.3	13.9	11.2	9.0	7.0	5.0	3.2	2.4		17.3	13.9	11.2	9.0	7.0	5.0	3.2	2.4
30 mil	25.9	20.8	16.8	13.5	10.5	7.5	4.8	3.6		25.9	20.8	16.8	13.5	10.5	7.5	4.8	3.6
40 mil	34.5	27.7	22.4	18.1	14.1	10.0	6.4	4.8		34.5	27.7	22.4	18.1	14.1	10.0	6.4	4.8
2 mil	2.5	2.0	1.6	1.3	1.0	0.7	0.5	0.3	Medium Lens	2.5	2.0	1.6	1.3	1.0	0.7	0.5	0.3
2.5 mil	3.1	2.5	2.0	1.6	1.3	0.9	0.6	0.4		3.1	2.5	2.0	1.6	1.3	0.9	0.6	0.4
3.3 mil	4.1	3.3	2.7	2.1	1.7	1.2	0.8	0.6		4.1	3.3	2.7	2.1	1.7	1.2	0.8	0.6
5 mil	6.2	5.0	4.0	3.3	2.5	1.8	1.2	0.9		6.2	5.0	4.0	3.3	2.5	1.8	1.2	0.9
7.5 mil	9.3	7.5	6.0	4.9	3.8	2.7	1.7	1.3		9.3	7.5	6.0	4.9	3.8	2.7	1.7	1.3
10 mil	12.5	10.0	8.1	6.5	5.1	3.6	2.3	1.7		12.5	10.0	8.1	6.5	5.1	3.6	2.3	1.7
15 mil	18.7	15.0	12.1	9.8	7.6	5.4	3.5	2.6		18.7	15.0	12.1	9.8	7.6	5.4	3.5	2.6
20 mil	24.9	20.0	16.1	13.0	10.1	7.2	4.6	3.5		24.9	20.0	16.1	13.0	10.1	7.2	4.6	3.5
30 mil	37.4	30.0	24.2	19.5	15.2	10.8	6.9	5.2		37.4	30.0	24.2	19.5	15.2	10.8	6.9	5.2
40 mil	49.8	40.0	32.3	26.0	20.3	14.4	9.2	7.0		49.8	40.0	32.3	26.0	20.3	14.4	9.2	7.0
2 mil	5.5	4.4	3.6	2.9	2.2	1.6	1.0	0.8	Narrow Lens	5.5	4.4	3.6	2.9	2.2	1.6	1.0	0.8
2.5 mil	6.9	5.5	4.5	3.6	2.8	2.0	1.3	1.0		6.9	5.5	4.5	3.6	2.8	2.0	1.3	1.0
3.3 mil	9.1	7.3	5.9	4.8	3.7	2.6	1.7	1.3		9.1	7.3	5.9	4.8	3.7	2.6	1.7	1.3
5 mil	13.8	11.1	8.9	7.2	5.6	4.0	2.6	1.9		13.8	11.1	8.9	7.2	5.6	4.0	2.6	1.9
7.5 mil	20.7	16.6	13.4	10.8	8.4	6.0	3.8	2.9		20.7	16.6	13.4	10.8	8.4	6.0	3.8	2.9
10 mil	27.6	22.1	17.8	14.4	11.2	8.0	5.1	3.9		27.6	22.1	17.8	14.4	11.2	8.0	5.1	3.9
15 mil	41.3	33.2	26.8	21.6	16.8	12.0	7.7	5.8		41.3	33.2	26.8	21.6	16.8	12.0	7.7	5.8
20 mil	55.1	44.2	35.7	28.8	22.4	15.9	10.2	7.7		55.1	44.2	35.7	28.8	22.4	15.9	10.2	7.7
30 mil	82.7	66.4	53.5	43.2	33.7	23.9	15.3	11.6		82.7	66.4	53.5	43.2	33.7	23.9	15.3	11.6
40 mil	110.2	88.5	71.4	57.6	44.9	31.9	20.5	15.4		110.2	88.5	71.4	57.6	44.9	31.9	20.5	15.4

Readability Table – Long Range

Long Range readability is shown out to 1,500 even though Autofocus is only specified out to 1,160. At the longest focus distance, the lens has a very deep depth of field. Large codes can actually be read beyond 2,000 mm.

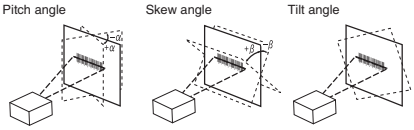
	Long Range 1.2 MP - Pixels Per Element/Readability Chart														
	Readability of 1D Code at Distance (mm)														
Min Element Size	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500
2 mil	2.10	1.09	0.73	0.55	0.44	0.37	0.32	0.28	0.25	0.22	0.20	0.19	0.17	0.16	0.15
2.5 mil	2.63	1.36	0.92	0.69	0.55	0.46	0.40	0.35	0.31	0.28	0.25	0.23	0.22	0.20	0.19
3.3 mil	3.47	1.79	1.21	0.91	0.73	0.61	0.52	0.46	0.41	0.37	0.34	0.31	0.28	0.26	0.25
5 mil	5.25	2.72	1.83	1.38	1.11	0.93	0.80	0.70	0.62	0.56	0.51	0.47	0.43	0.40	0.37
7.5 mil	7.88	4.07	2.75	2.07	1.66	1.39	1.19	1.04	0.93	0.84	0.76	0.70	0.65	0.60	0.56
10 mil	10.51	5.43	3.66	2.76	2.22	1.85	1.59	1.39	1.24	1.12	1.02	0.93	0.86	0.80	0.75
15 mil	15.76	8.15	5.49	4.14	3.33	2.78	2.39	2.09	1.86	1.67	1.52	1.40	1.29	1.20	1.12
20 mil	21.02	10.86	7.32	5.53	4.44	3.70	3.18	2.79	2.48	2.23	2.03	1.86	1.72	1.60	1.49
30 mil	31.52	16.30	10.99	8.29	6.65	5.56	4.77	4.18	3.72	3.35	3.05	2.79	2.58	2.40	2.24
40 mil	42.03	21.73	14.65	11.05	8.87	7.41	6.36	5.57	4.96	4.47	4.06	3.73	3.44	3.20	2.98

	Readability of 2D Code at Distance (mm)														
Min Element Size	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500
2 mil	2.10	1.09	0.73	0.55	0.44	0.37	0.32	0.28	0.25	0.22	0.20	0.19	0.17	0.16	0.15
2.5 mil	2.63	1.36	0.92	0.69	0.55	0.46	0.40	0.35	0.31	0.28	0.25	0.23	0.22	0.20	0.19
3.3 mil	3.47	1.79	1.21	0.91	0.73	0.61	0.52	0.46	0.41	0.37	0.34	0.31	0.28	0.26	0.25
5 mil	5.25	2.72	1.83	1.38	1.11	0.93	0.80	0.70	0.62	0.56	0.51	0.47	0.43	0.40	0.37
7.5 mil	7.88	4.07	2.75	2.07	1.66	1.39	1.19	1.04	0.93	0.84	0.76	0.70	0.65	0.60	0.56
10 mil	10.51	5.43	3.66	2.76	2.22	1.85	1.59	1.39	1.24	1.12	1.02	0.93	0.86	0.80	0.75
15 mil	15.76	8.15	5.49	4.14	3.33	2.78	2.39	2.09	1.86	1.67	1.52	1.40	1.29	1.20	1.12
20 mil	21.02	10.86	7.32	5.53	4.44	3.70	3.18	2.79	2.48	2.23	2.03	1.86	1.72	1.60	1.49
30 mil	31.52	16.30	10.99	8.29	6.65	5.56	4.77	4.18	3.72	3.35	3.05	2.79	2.58	2.40	2.24
40 mil	42.03	21.73	14.65	11.05	8.87	7.41	6.36	5.57	4.96	4.47	4.06	3.73	3.44	3.20	2.98

Ratings and Specifications

V420-F		V420-F□□□□03M-□□□	V420-F□□□□12M-□□□	V420-F□□□□50C-□□□
Symbologies ✻1	1D Symbologies	Code 39, Code 128, BC412, Interleaved 2 of 5, UPC/EAN, Codabar, Code 93, Pharmacode, PLANET, Postnet, Japanese Post, Australian Post, Royal Mail, Intelligent Mail, KIX		
	2D Symbologies	Data Matrix (ECC 0-200), QR Code, Micro QR Code, Aztec Code, DotCode		
	Stacked Symbologies	PDF417, MicroPDF417, GS1 Databar (Composite and Stacked)		
Reading Performance ✻2	Number of Reading Digits	No Upper Limit (depending on bar width and reading distance)		
	Aiming Light	Two Blue LEDs		
	Illumination	Inner LEDs: Four White and Four Red (Wavelength: 625 nm)		
		Outer LEDs: 8 Red or White	Outer LEDs: 8 Red or White	Outer LEDs: 8 White
	Reading Distance / Field of View	Refer to *Field of View Charts* for details.		
	Pitch Angle (α) ✻3	±30°		
	Skew Angle (β) ✻3	±30°		
	Tilt Angle (γ) ✻3	±180°		
Image Capture	Focus	Liquid Lens Autofocus or Fixed Focus (Wide = 5.2 mm, Medium = 7.7 mm, Narrow = 16 mm)		
	Resolution	752 (H) x 480 (V)	1280 (H) x 960 (V)	2592 (H) x 1944 (V)
	Color / Monochrome	Monochrome CMOS	Monochrome CMOS	Color CMOS
	Shutter	Global Shutter	Global Shutter	Rolling Shutter
	Frames per Second	60 fps	42 fps	5 fps
	Exposure	50 to 100,000 µs		
Image Logging		FTP		
Trigger		External Trigger (Edge or Level), Communication Trigger (Ethernet, RS-232C)		
I/O Specifications	Input Signals	3 Signals: 5-28 V rated (0.16 mA @ 5V DC)		
	Output Signals	3 Signals: 5 V TTL-compatible, can sink 10 mA and source 10 mA		
Communication	Connectivity	RS-232C, USB 2.0 High Speed, Ethernet over USB/HID		
	Ethernet Specifications	100BASE-TX / 10BASE-T		
Indicator LEDs		PASS (Green), TRIG (Amber), MODE (Amber), LINK (Amber), FAIL (Red), PWR (Green)		
Power Supply Voltage		5 VDC +/- 5% (5V at the connector, or by standard cables only)		
Current Consumption		PS powered: 650 mA at 5 VDC (max.); USB powered: 500mA at 5VDC (max.)		
Environmental/ Immunity✻4	Operating Temperature	0 to 40° C		
	Ambient Atmosphere	No Corrosive Gases		
	Storage Temperature	-40° to 75° C		
	Humidity (Operating and Storage)	5% to 95% (Non-Condensing)		
	Destructive Vibration Resistance	Sine Vibration: 10 Hz to 55 Hz, 0.35 mm displacement, 20 cycles/axis. Random Vibration: 20 Hz to 2000 Hz, 0.02G^2/Hz for 30 minutes		
	Shock Resistance	50G, 11 ms		
	Water Resistance Rating	IP 54 per IEC 60529		
Weight	Main Body Only	120 g		
	Packaging Weight	Approx. 230 g (including packing)		
Dimensions	Main Body Dimensions	44.5 (W) × 38.1 (D) × 25.4 (H) mm		
	Packaging Dimensions	170 (W) × 117 (D) × 86 (H) mm		
Accessories		ReadMeFirst, CE Compliance Sheet		
LED Safety Standard		IEC 62471-1: 2006 Risk-Exempt Group		
EMC Standards - ITE (CODE READER)		FCC 47 CFR PART 15 Subpart B, ICES-003, EN 55024, EN 55032, EN 55035,KN32, KN35, CNS13438		
Safety Standards - ITE (CODE READER)		UL 62368-1, UL 60950-1, IEC 62471-1, CAN/CSA C22.2, IS 13252		
Regulatory Marks - ITE (CODE READER)		FCC, UL, cUL (Canada), CE (EU), BIS (India), BSMI (Taiwan), KC (S. Korea), RCM (Australia/NZ)		
Materials	Case	Aluminum		
	Reading Window	Acrylic		
Software		WebLink		

***1.** These symbologies are supported based on Omron's read capability validation standard. Omron recommends that validation be performed for each application.
***2.** Unless otherwise specified, reading performance is defined with center of field of view, angle R=∞.
***3.**

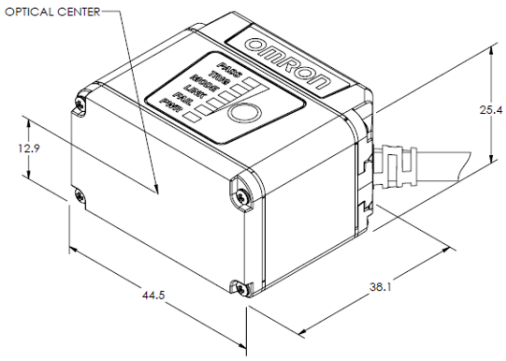


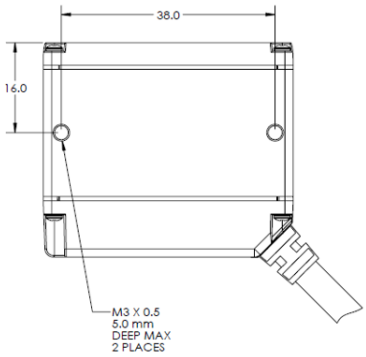
***4.** In an electrically noisy environment, use only the V430-F in combination with a noise filter cable (V430-W□F-□M) to ensure proper operation.

Product Dimensions

(Unit: mm)

Recommended torque:
0.5 - 1.0NM for M3 mounting points.

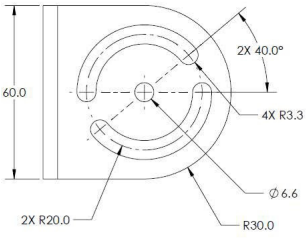


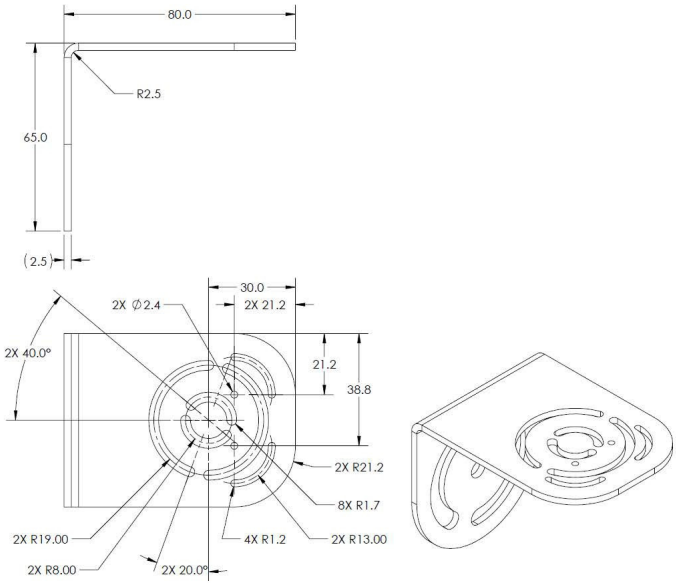


Mounting Information

General Note: Recommended torque for all M3 mounting holes: 0.5 - 1.0 NM.

L Bracket Adjustable Angle Mounting Kit
V430-AM0





Kit Contents:

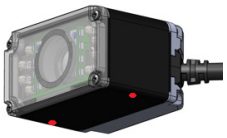
- L Bracket, SUS304 (1)
- M3 X 6mm SS Phillips screws (2)
- M2 X 6mm SS Phillips screws (2)
- Flat washer, SS, size M3 (2)
- Flat washer, SS, size M2 (2)

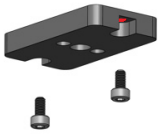
Recommended Tools and Hardware (not included):

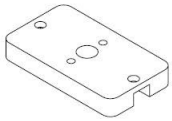
- Phillips torque driver

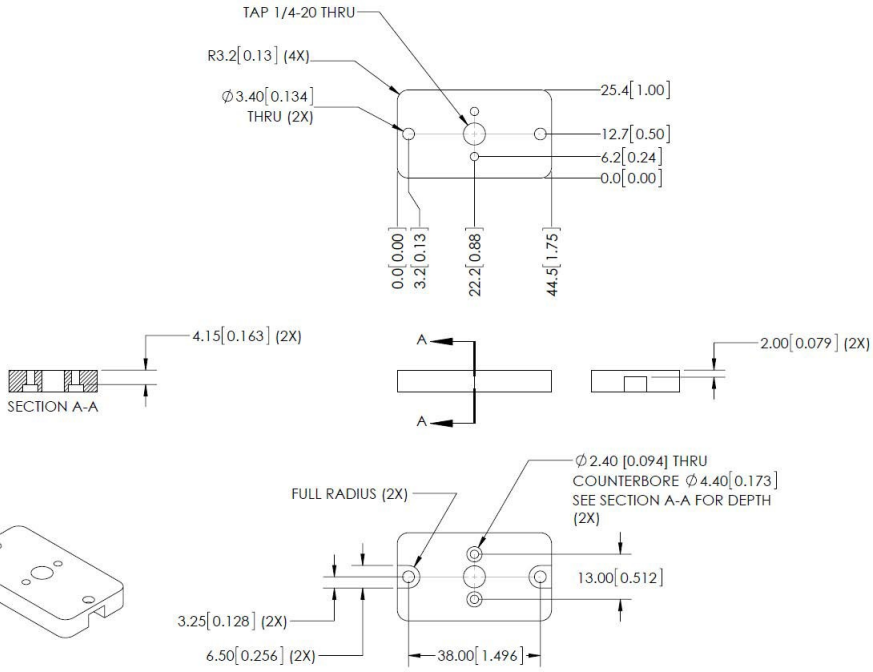
Installation Notes: For V420 cameras, the M2 screws and washers are not necessary to use. Use only the M3-sized hardware.

¼-20 Camera Mounting Block Kit
V430-AM1









Kit Contents:

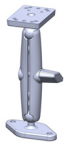
- Mounting Block, Aluminum alloy (1)
- M3 X 6mm SS Socket screws (2)
- M2 X 8mm SS Socket screws (2)

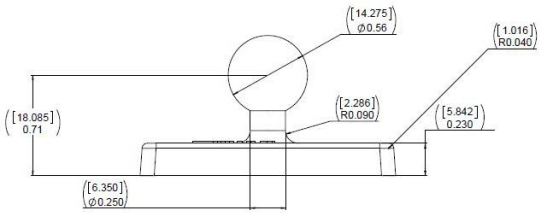
Recommended Tools and Hardware (not included):

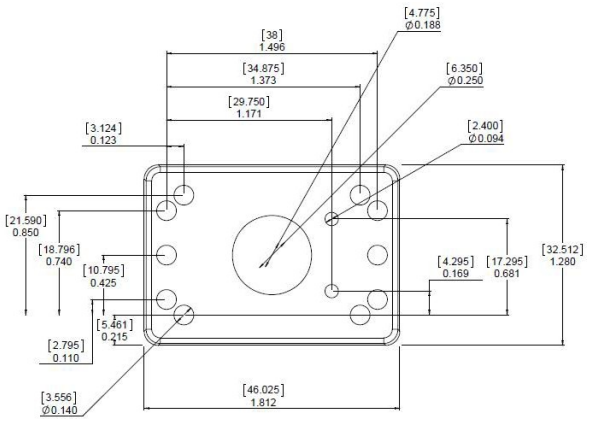
- Torque wrench

Installation Notes: For V420 cameras, the M2 screws are not necessary to use. Use only the M3-sized hardware.

4” (102 mm) Ram Mount Stand
V430-AM2







Kit Contents:

- Diamond Ball Base (1)
- Double Socket Arm (1)
- Base Plate (1)
- M2 X 10mm SS Phillips screws (2)
- M3 X 10mm SS Phillips screws (4)
- M4 X 10mm SS Phillips screws (2)
- Split Washer, SS, size #3 (2)
- Split Washer, SS, size M3 (4)
- Split Washer, SS, size M4 (2)

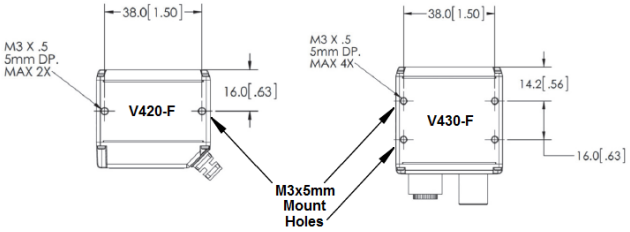
Recommended Tools and Hardware (not included):

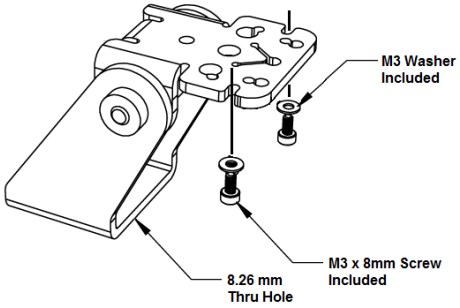
- Phillips torque driver

Note: Dimensions for the diamond ball base and the double socket arm can be found at the manufacturer’s website at:
Diamond ball base: https:// www.rammount.com/part/ RAM-A-238U
Double socket arm: https:// www.rammount.com/part/ RAM-A-201U-B

Installation Notes: For V420 cameras, the M2 & M4 screws, and #3 & M4 washers are not necessary to use. Use only the M3-sized hardware.

APG Pan and Tilt Camera Mount
V430-AM3





Kit Contents:

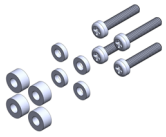
- APG Mount, Stainless steel (1)
- Flat Washers, SS, size M3 (2)
- Flat Washers, SS, oversized (2)
- M2 X 8mm SS Socket screws (2)
- M3 X 8mm SS Socket screws (2)

Recommended Tools and Hardware (not included):

- Torque wrench

Note: Dimensions for the base and arm can be found on the manufacturer's website at: apgvision.com. For V420 cameras, the M2 screws and oversized washers are not necessary to use. Use only the M3-sized hardware.

Nylon Screw and Washer Electrical Isolation Kit
V430-AM4



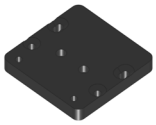
Kit Contents:

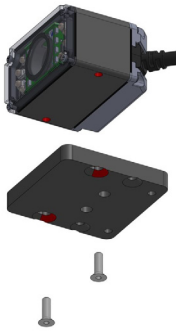
- M3 X 16mm Phillips nylon screw (4)
- Nylon Washer, size M3, 1.6mm thick
- Nylon Washer, size M3, 3.6mm thick

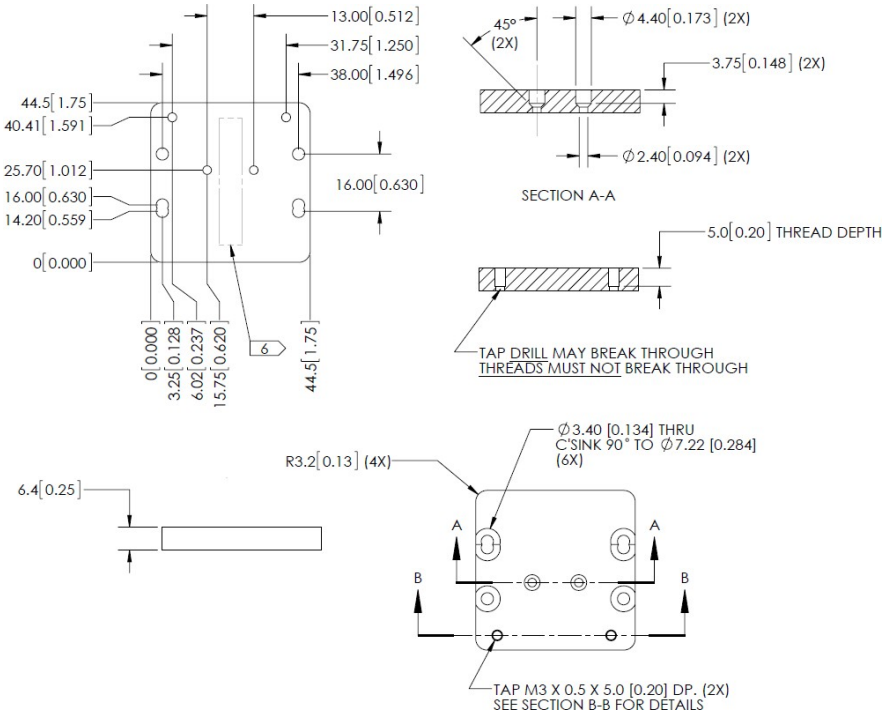
Recommended Tools and Hardware (not included):

- Torque wrench

MS-4 / MINI to V/F4XX-F Adapter Plate
V430-AM5







Kit Contents:

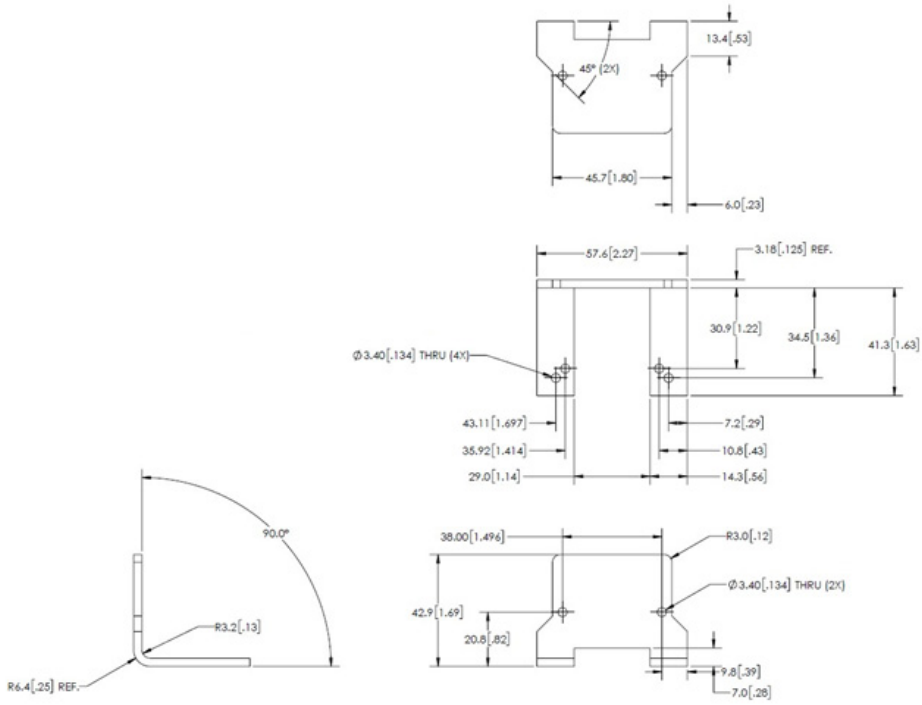
- Adapter Plate, Aluminum alloy (1)
- M3 X 10mm SS Socket screws (4)
- M2 X 6mm SS Phillips screws (2)

Recommended Tools and Hardware (not included):

- Torque wrench

Installation Notes: For V420 cameras, the M2 screws are not necessary to use. Use only the M3-sized hardware.

Smart Ring Light to V/F4XX-F Mounting Bracket
V430-AM6



Kit Contents:

- Mounting Bracket, Aluminum alloy (1)
- M3 X 6mm Phillips screws (2) [mounts the ring light to camera]

Recommended Tools and Hardware (not included):

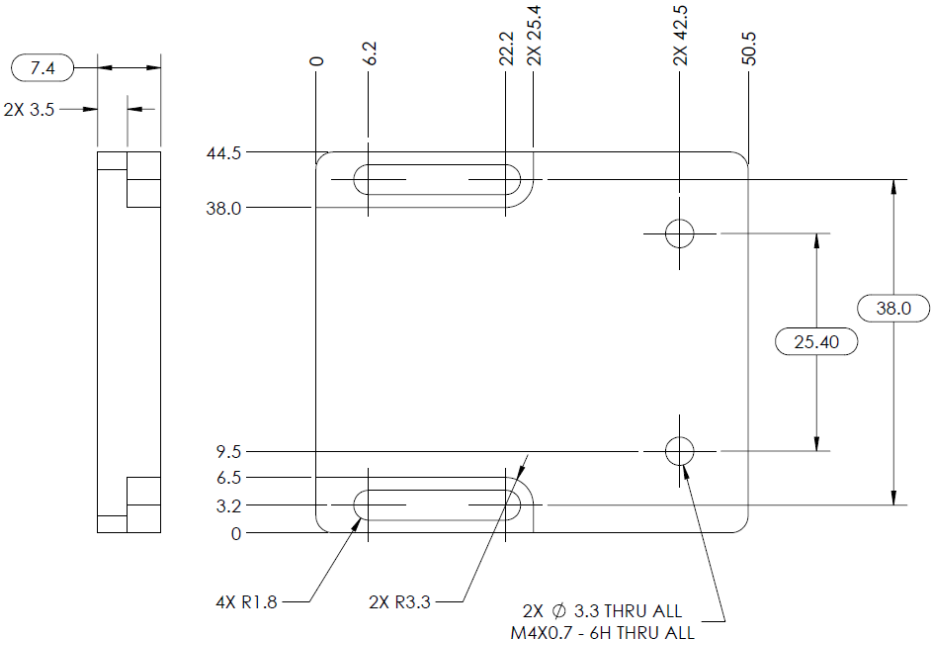
- Phillips torque driver
- M3 X L screws [mount camera to bracket; where L = mounting surface thickness + 6]

Installation Note: The Smart Ring Light Mounting Bracket can be used with the R-60 and R-70 series Smart Ring Lights. The R-60 series Ring Light will utilize the inner holes of the pronged half of the bracket, and the R-70 series will utilize the outer holes. The R-100 series Ring Lights are not compatible with this bracket.

Bracket Assembly with 60 Series Smart Ring Light

Bracket Assembly with 70 Series Smart Ring Light

QX / Vision HAWK to V/F4XX-F Adapter Plate
V430-AM7



Kit Contents:

- Adapter Plate, Nylon (1)
- M3 X 8mm SS Phillips screws (2)
- M3 X 8mm Nylon Phillips screws (2)
- M4 X 10mm SS Phillips screws (2)
- M4 X 16mm Nylon Phillips screws (2)
- Nylon Washer, size: M4, 1.5mm thickness (4)
- Nylon Washer, size: M4, 3.2mm thickness (4)

Recommended Tools and Hardware (not included):

- Phillips torque driver

Installation Notes: For V420 cameras, the M4 screws and washers are not necessary to use. Use only the M3-sized hardware.

Optics Information

General notes: See optics and lighting accessory guide for detailed installation instructions.

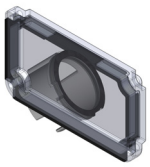
Optics maintenance:

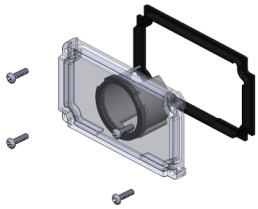
Wipe optics options with a lens cleaning cloth or an airbrush. A cloth dampened with water can be used to remove more stubborn contaminants.

ESD Safe Window - Wiping the ESD window with a lens cleaning cloth has been shown to not impact the surface resistance when wiped up to 500 times (1 wipe = 1 back and forth wipe across the window).

Never use paint thinners or other organic solvents to clean the surfaces of the products.

Front Window Installation Kit
V430-AF10 ✻





Purpose: Replaces the standard front

Kit Contents:

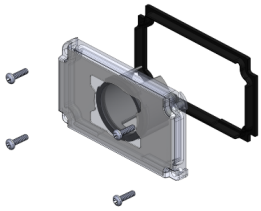
- Window (1)
- Window gasket (1)
- 0-80 Phillips head screws (4)

Recommended Tools (not included):

- Phillips torque driver

Installation Note: Apply a torque of 1.0 in./lbs. (0.11 nm max.) to the screws during installation to maintain gasket function and reduce risk of damaging the window.

Diffuser Installation Kit
V430-AF11 ✻



Purpose: To create contrast between specular and non-specular surfaces. Diffusion can be useful when imaging textured codes on mirror like surfaces or reflective DPM marks on textured surfaces.

Kit Contents:

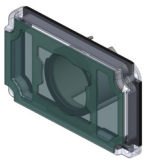
- Diffuser Window (1)
- Window gasket (1)
- 0-80 Phillips head screws (4)

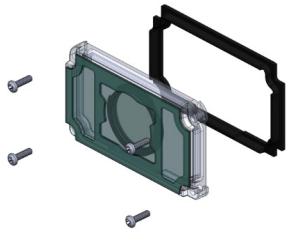
Recommended Tools (not included):

- Phillips torque driver

Installation Note: Apply a torque of 1.0 in./lbs. (0.11 nm max.) to the screws during installation to maintain gasket function and reduce risk of damaging the window.

Polarizer Installation Kit
V430-AF12 ✻





Purpose: To reduce glare when imaging specular surfaces. Cross Polarization can be useful when imaging codes on glossy surfaces or DPM marks on polished metal substrates.

Kit Contents:

- Polarizer Window (1)
- Window gasket (1)
- 0-80 Phillips head screws (4)

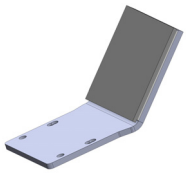
Recommended Tools (not included):

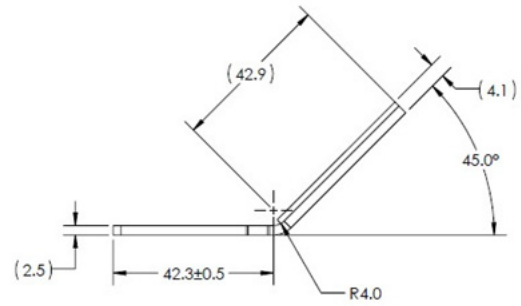
- Phillips torque driver

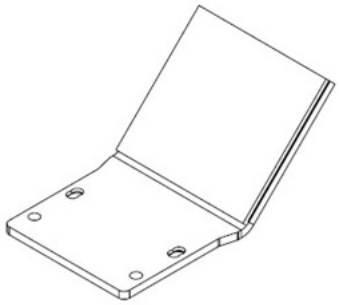
Installation Note: Apply a torque of 1.0 in./lbs. (0.11 nm max.) to the screws during installation to maintain gasket function and reduce risk of damaging the window.

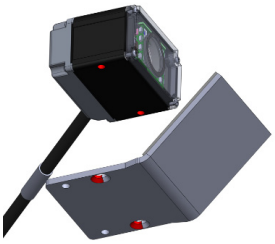
(Unit:mm)

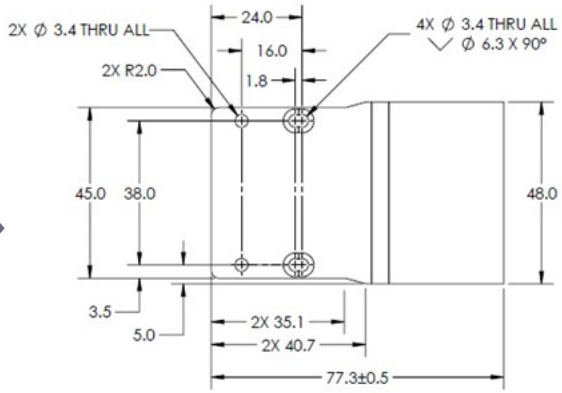
Right Angle Mirror Installation Kit
V430-AF3











Purpose: Redirects the imaging path of the camera by 90 degrees.

Kit Contents:

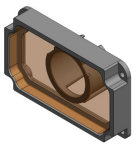
- Right angle mirror bracket, Aluminum [bracket] and glass [mirror] (1)

Recommended Tools and Fasteners (not included):

- M3 X L screws (2) [where L = mounting surface thickness + 6]
- M3 x 6 Flat head screws (2)
- Phillips torque driver

Installation Note: Apply a torque of 4.4 - 8.8 in. lbs. (0.5 - 1.0 NM) to the screws during installation.

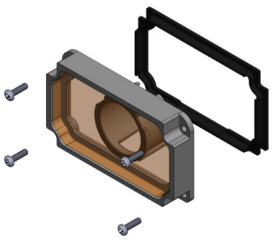
YAG Laser Filter Window
V430-AF4



Window Material
Polymer

Laser Type
Argon
Broadband
KTP
Nd:YAG

Protection
OD 6+ @ 200-532 nm
OD 4+ @ 850-879 nm
OD 5+ @ 900-1070 nm



The V430-AF4 YAG Laser Filter is used to block a range of wavelengths from a variety of laser types from being seen by the MicroHAWK camera that will either disrupt the cameras view of the object, or damage the MicroHAWK sensor.

The table shows the laser types that are handled by the V430-AF4 Filter window, as well as the level of protection they provide at the various wavelengths.

Note: Optical Density (OD) is a measure of the attenuation of energy passing through a filter. The higher the OD value, the higher the attenuation and the greater the protection level.

OD 4 blocks 99.99% of the laser energy.

OD 5 blocks 99.999% of the laser energy (YAG).

OD 6 blocks 99.9999% of the laser energy (Argon, KTP)

Kit Contents:

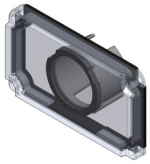
- YAG filter(1)
- Window gasket (1)
- 0-80 Phillips head screws (4)

Recommended Tools and Fasteners (not included):

- Phillips torque driver

Installation Note: Apply a torque of 1.0 in/lbs. (0.11 nm max.) to the screws during installation to maintain gasket function and reduce risk of damaging the window.

ESD-Safe Window
V430-AF5



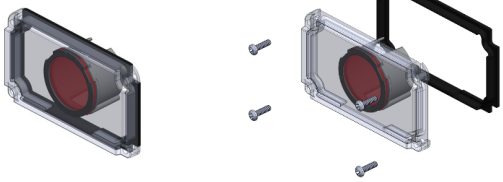
Purpose: An ESD event occurs when an electrostatic charge rapidly transfers between two objects. This transfer is usually caused when two objects with a notable potential difference in electrical charge contact each other. However, ESD events can also happen when two objects close to one another create a highly charged electrostatic field.

ESD safety precautions are extremely important in the electronics and semiconductor industries where sensitive components can be damaged even by a discharge of a mere 20 volts. Less sensitive components may still be susceptible, and cumulative discharges can create long-term problems affecting the functionality and performance of electronic components.

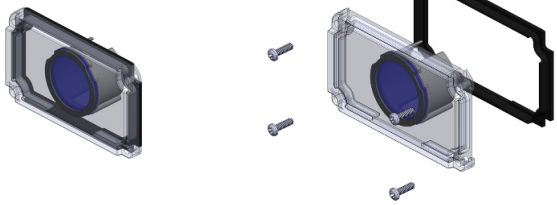
The MicroHAWK V430-AF5 ESD-Safe window is designed with an ESD coating on the exterior surface to prevent static discharge between the camera or smart camera when the camera is deployed close to the component surface. The antistatic coating offers a resistivity of ≤ 1.0 X 10^9 Ω/sq to prevent these electrostatic discharges.

Red and Blue Filter Installation Kits

Red Filter Installation Kit
V430-AF6



Blue Filter Installation Kit
V430-AF7



The Red Filter (V430-AF6), and Blue Filter (V430-AF7) are used to turn MicroHAWKs equipped with white lights into units that emit red or blue light. The filters limit passage of wavelengths -- other than red when using the red filter, or other than blue when using the blue filter -- to the sensor and reduce the response of an opposing color.

Kit Contents:

- Filter Window (1) [red or blue]
- Window Gasket (1)
- 0-80 Phillips head screws (4)

Recommended Tools (not included):

- Phillips torque driver

Installation Note: Apply a torque of 1.0 in/lbs. (0.11 nm max.) to the screws during installation to maintain gasket function and reduce risk of damaging the window.

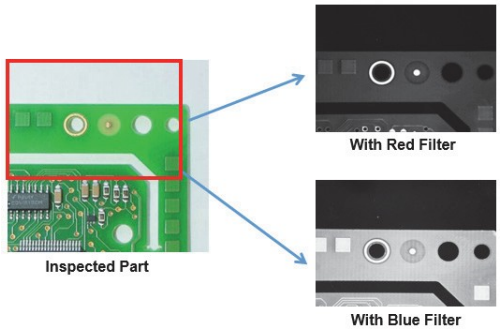
Lighting Information

General notes: See optics and lighting accessory guide for detailed installation instructions.

Red, White, Blue, and IR Light Installation Kits

Purpose: MicroHAWK light color changes can be also be accomplished using the F430-F Red, Blue, White, or IR LED kits. Red or blue LED kits replace or change the color of the outer LED boards. Using a specific color can enhance the response of that color or reduce the response of an opposing color. White LED kits replace or provide full spectrum illumination for applications using a chromatic sensor inspecting colors. IR LED kits replace or create contrast on features that have a single hue or to enhance the response of black features and reduce the response of colors.

A typical example of how to use different color filters or LEDs with monochrome cameras is shown below. The emitted color is matched with the color of the part that needs to be emphasized or de-emphasized, which creates sufficient contrast for the part to be inspected or for the symbol to be decoded. In the example below, the red filter makes the reddish copper look bright, while the green circuit board looks dark. The blue filter produces the opposite effect.



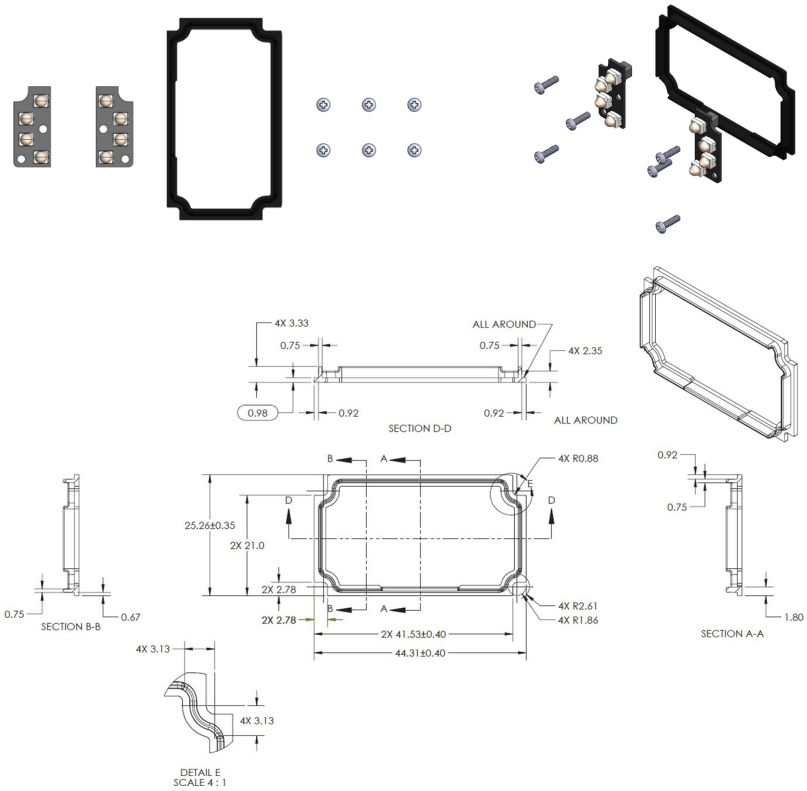
Red Light Installation Kit
V430-ALR

White Light Installation Kit
V430-ALW

Blue Light Installation Kit
V430-ALB

IR Light Installation Kit
V430-ALI

High Bright Red Light Installation Kit
V430-ALRH



Kit Contents:

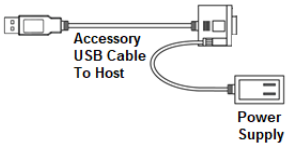
- LED Boards Kit (1) [Red, Blue, White or IR]
- Window gasket (1)
- 0-80 Phillips head screws (6)

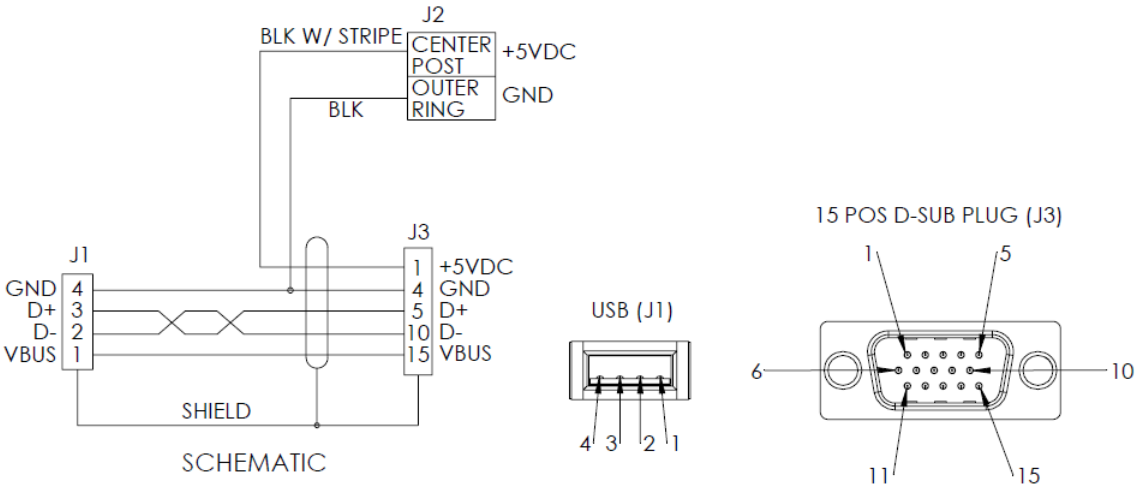
Recommended Tools:

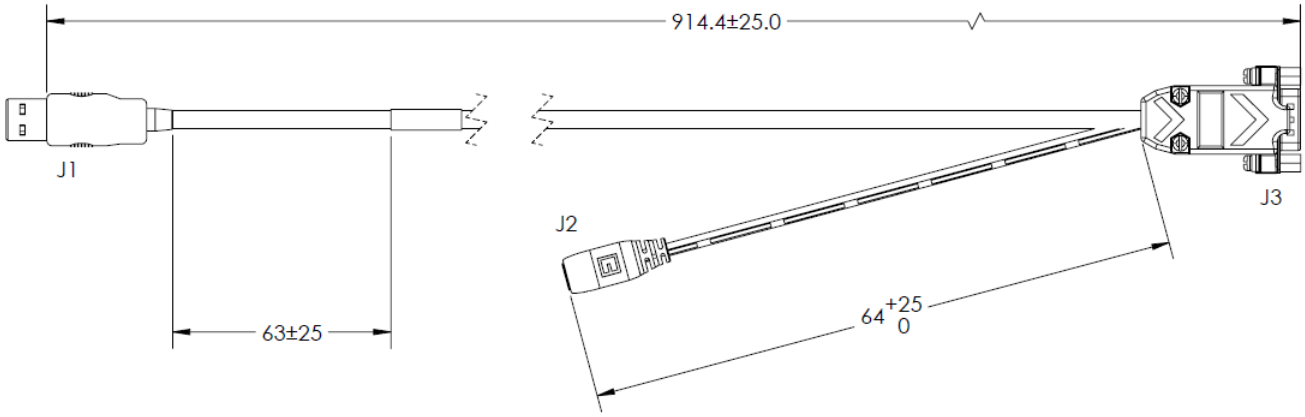
- Phillips torque driver
- Fine tip tweezers

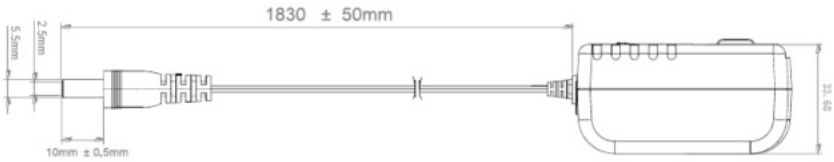
Installation Notes: Apply a torque of [1.0 in. lbs. (0.11 Nm max.) screws during installation to maintain gasket function and reduce risk. of damaging the product.

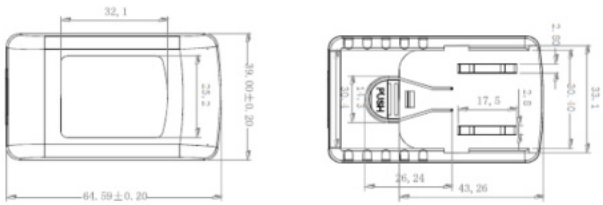
Kit – USB Breakout Cable with External Power Input (1 Meter) and Power Supply (1 Meter)
V420-AC1



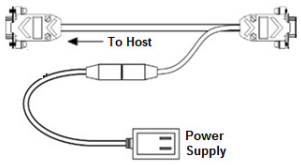


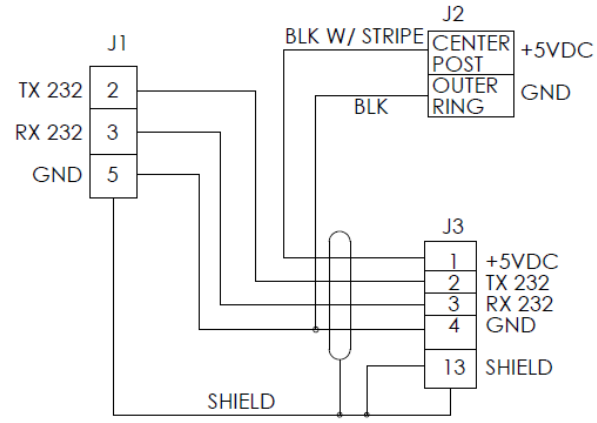




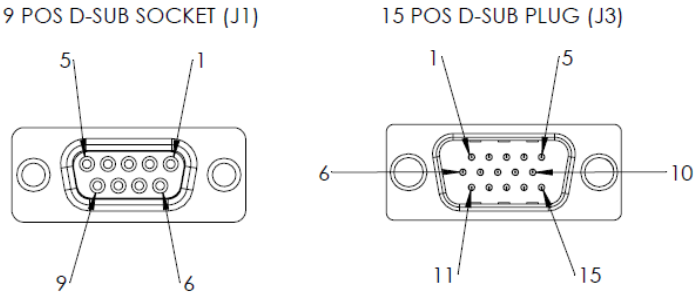


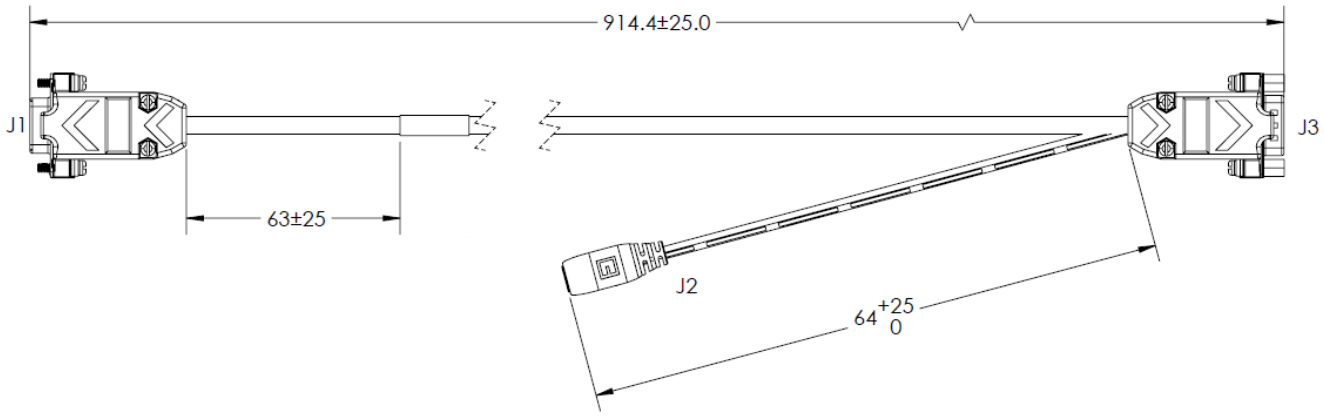
Kit – RS-232 Breakout Cable (DB-15) with External Power Input (1 Meter) and Power Supply (1 Meter)
V420-AC0



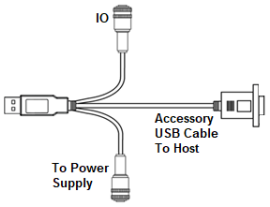


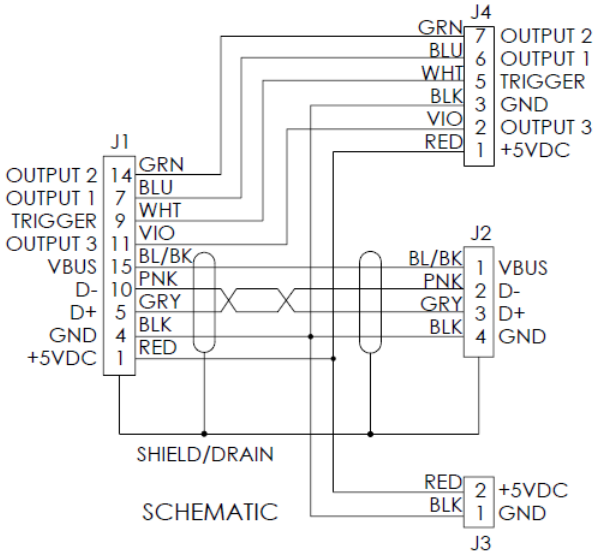
SCHEMATIC

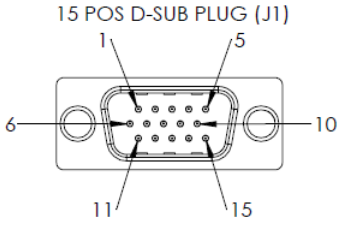


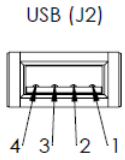


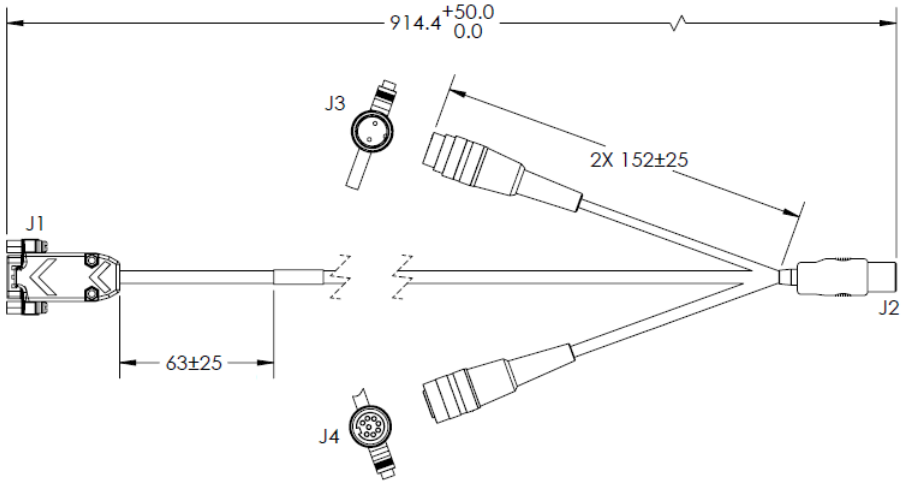
Kit – USB, IO, and Power Breakout Cable (1 Meters) and Power Supply (1 Meter)
V420-AC2

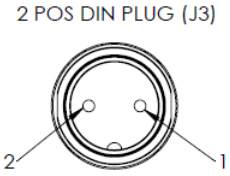


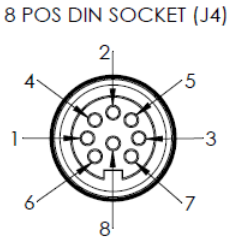


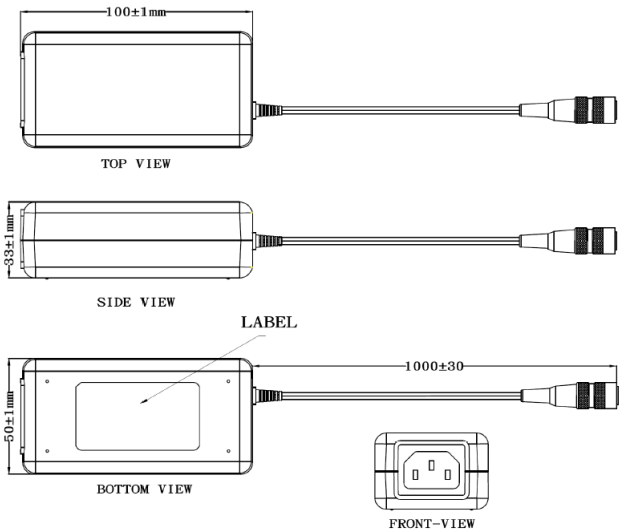




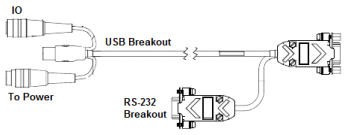


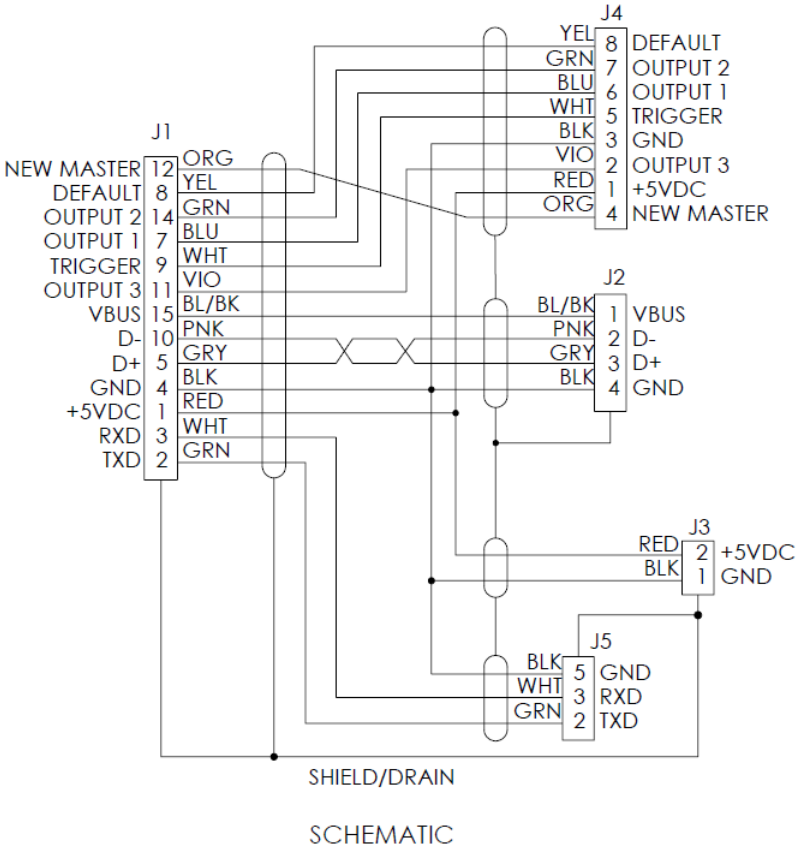






Cable – RS-232, USB, IO, and Power Breakout – 1 Meter
V420-WRU8X-1M





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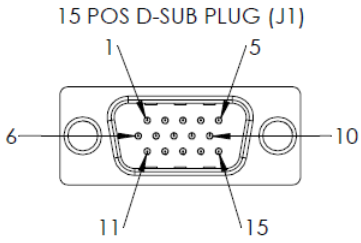
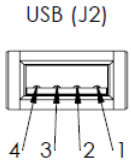
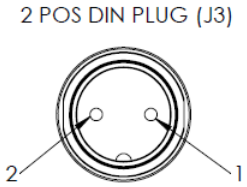
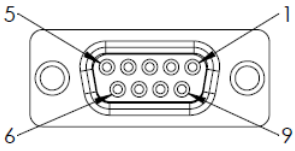
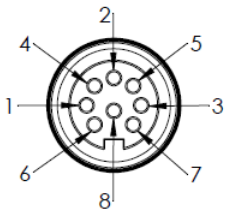
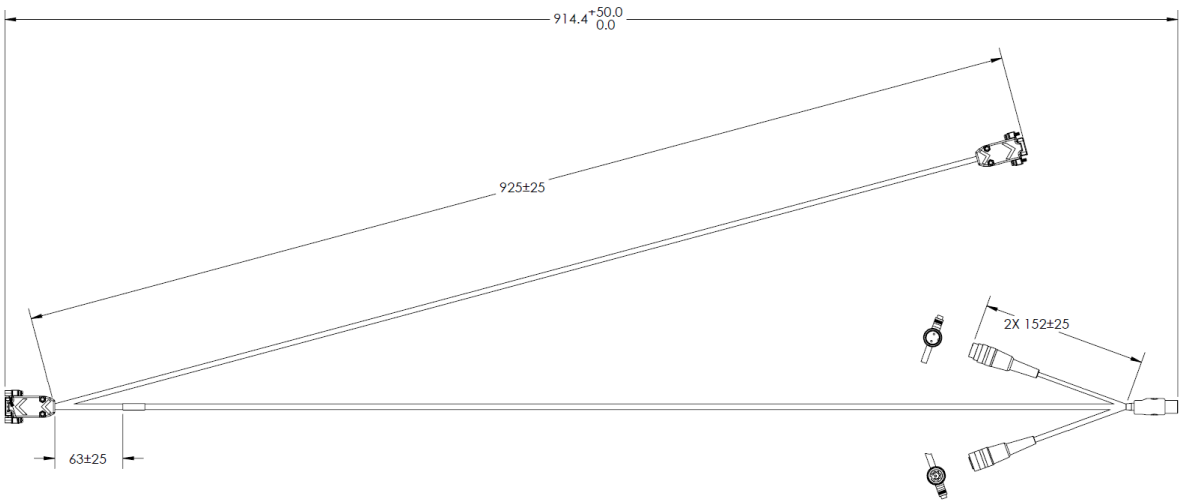






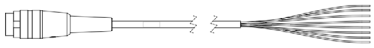


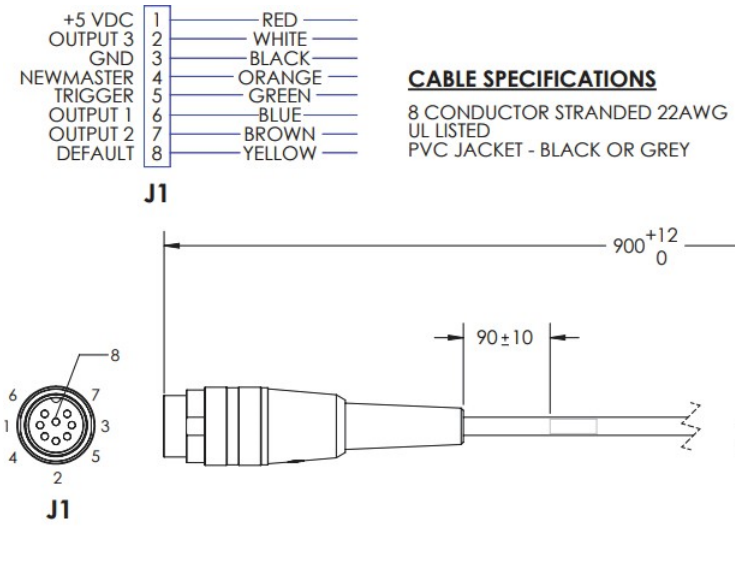




Cable – Trigger, IO, and Power Breakout – 900 Millimeters
61-000151-01

Plugs into the IO connector on the V420-WU8X-1M and V420-WRU8X-1M cables.





Related Manuals

Man. No.	Model	Manual
Z432 (84-9000400-02)	V320-F, V330-F, V420-F, V430-F	MicroHAWK V320-F / V330-F / V420-F / V430-F User Manual

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