

# MicroHAWK V420-F

## Autofocus Multicode Reader

### Autofocus to read codes at different distances.

- Simple configuration with WebLink.
- 5 megapixel sensor available.
- Autofocus available.
- Serial RS-232, USB, or Ethernet over USB.
- IP54.
- Corner-exit cable.



## MicroHAWK V420-F

### Mounting Options

Appearance	Type	Part Number
	L Bracket Adjustable Angle Mounting Kit	V430-AM0
	1/4-20 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

# V420-F

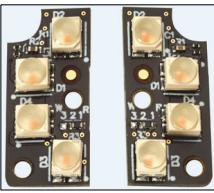
## Optics Options

Appearance	Type	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

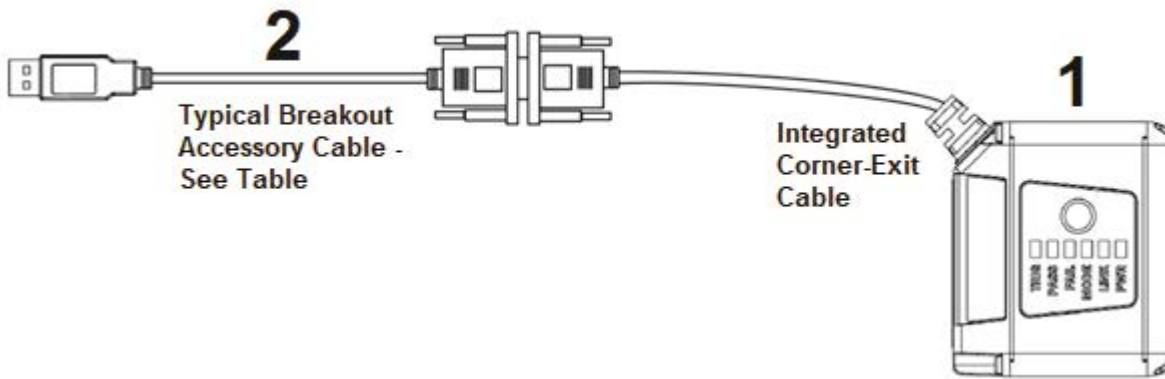
**\*Note:** V430-AF10, AF11, and AF12 are used for MicroHAWK V/F4X0-FXXXXXXXX-XXX readers in this datasheet. The prior generation MicroHAWK V430-FXXXXXXXX code reader uses part numbers V430-AF0, AF1, and AF2. Please select the correct accessory from the table based on your reader part number format.


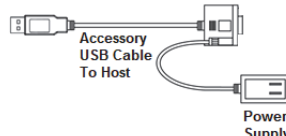
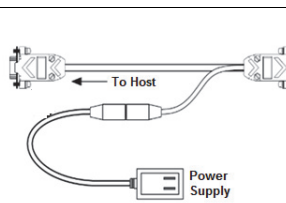
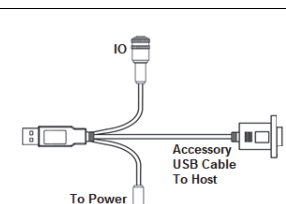
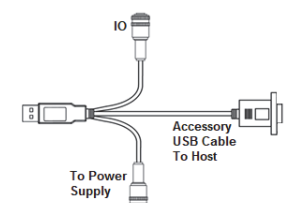
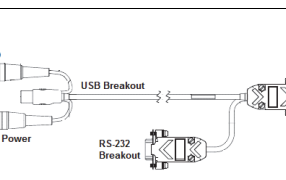
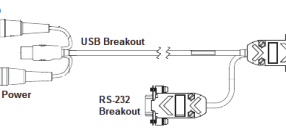
Accessory	Prior V430-FXXXXXXXX Code Reader	New V/F4X0-FXXXXXXXX-XXX Code Reader and Smart Camera
Front Window Installation Kit	V430-AF0	V430-AF10
Diffuser Installation Kit	V430-AF1	V430-AF11
Polarizer Installation Kit	V430-AF2	V430-AF12

## Lighting Options

Appearance	Type	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

Wiring Options



Drawing Reference	Appearance	Category	Length / Spec	Part Number
2		USB Breakout Cable	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	

# V420-F

## 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	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

#### 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-F000N12M-RRX: Autofocus, Narrow Lens, 1.2 MP Mono, Ring Light, Red, High Speed, X-Mode
- V420-F000L50C-SWP: Autofocus, Long Range 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	None, Red, White	P, X
			12M	N	64, 400	None, Red, White	P, X
		Autofocus	03M	W, M	50 <-> 300 Autofocus	None, Red, White	P, X
			12M	W, M, N	50 <-> 300 (W, M) 40 <-> 150 (N) Autofocus	None, Red, White	P, X
	Color	Fixed Focus	50C	W, M	50, 64, 81, 102, 133, 190, 300	None, White	P, X
		Autofocus	50C	W, M	50 <-> 300 Autofocus	None, White	P, X
	Specialty	Long Range Autofocus	12M	L	75 <-> 1160 Autofocus	None, Red, White	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

## V420-F

### 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)	064	Fixed Focus at 64 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.

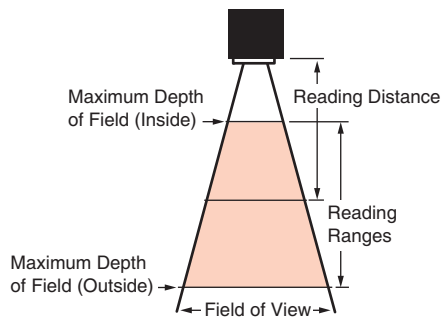
### V420-F000L12M-[L][C][P]

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

# V420-F

## Read Ranges

Read range specifications are subject to change.



### Fixed Focus Field of View (mm) - Wide Lens

Distance (mm)	0.3 MP		1.2 MP		5 MP	
	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
400	353	225	376	282	359	268

### Fixed Focus Field of View (mm) - Medium Lens

Distance (mm)	0.3 MP		1.2 MP		5 MP	
	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
400	245	156	260	195	249	186

### Fixed Focus Field of View (mm) - Narrow Lens

Distance (mm)	0.3 MP		1.2 MP		5 MP	
	Width	Height	Width	Height	Width	Height
50	15	10	16	12	16	12
64	19	12	21	15	20	15
81	24	15	25	19	24	18
102	30	19	32	24	30	22
133	38	24	40	30	39	29
190	54	34	57	43	54	41
300	83	53	89	67	85	63
400	111	71	118	88	113	84



### Autofocus Field of View (mm) - Wide Lens

Distance (mm)	0.3 MP		1.2 MP		5 MP	
	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

Distance (mm)	0.3 MP		1.2 MP		5 MP	
	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

Distance (mm)	0.3 MP		1.2 MP		5 MP	
	Width	Height	Width	Height	Width	Height
50	15	10	16	12	16	12
100	29	19	31	23	30	22
150	43	27	45	34	43	32

### Long Range Autofocus Field of View (mm)

Distance (mm)	0.3 MP		1.2 MP		5 MP	
	Width	Height	Width	Height	Width	Height
75	22	14	24	18	23	17
100	29	19	31	23	30	22
200	56	36	60	45	57	43
300	83	53	89	67	85	63
400	111	71	118	88	113	84
500	138	88	147	110	140	105
600	165	105	176	132	168	125
700	192	123	204	153	196	146
800	219	140	233	175	223	166
900	247	157	262	197	251	187
1000	274	175	291	218	279	208
1200	328	209	349	262	334	249
1300	355	227	378	283	362	270
1400	382	244	407	305	389	290
1500	410	261	436	327	417	311

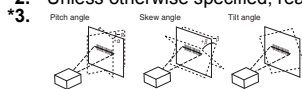
# V420-F

## Ratings and Specifications

V420-F		V420-F□□□□03M-□□□	V420-F□□□□12M-□□□	V420-F□□□□50C-□□□
Symbolologies *1	1D Symbolologies	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 Symbolologies	Data Matrix (ECC 0-200), QR Code, Micro QR Code, Aztec Code, DotCode		
	Stacked Symbolologies	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:
	Reading Distance / Field of View	Refer to <i>Read Ranges</i> section for detail.		
	Pitch Angle ( $\alpha$ ) *3	$\pm 30^\circ$		
	Skew Angle ( $\beta$ ) *3	$\pm 30^\circ$		
	Tilt Angle ( $\gamma$ ) *3	$\pm 180^\circ$		
Image Capture	Focus	Liquid Lens Autofocus or Fixed Focus (Wide = 5.2 mm, Medium = 7.7 mm, Narrow = 16 mm, L = 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 $\mu$ s		
Image Logging	FTP			
Trigger	External Trigger (Edge or Level), Communication Trigger (Ethernet, RS-232C)			
I/O Specifications	Input Signals	Trigger Input: 5-28 V rated (0.16 mA @ 5V DC); New Master: 5 to 28 V rated (0.16 mA @ 5 VDC); Default: 3.3 V rated (0 mA @ 3.3 V)		
	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%			
Current Consumption	650 mA at 5 VDC (max.)			
Environmental Immunity *4	Ambient Temperature Range	Operating: 0 to 45° C Storage: -50 to 75°C (No Icing or Condensation)		
	Ambient Humidity Range	Operating and storage: 5% to 95% (Non-Condensing)		
	Ambient Atmosphere	No Corrosive Gases		
	Vibration Resistance (Destructive)	Sine Vibration: 10 Hz to 55 Hz, 0.35 mm displacement, 20 cycles/axis. Random Vibration: 20 Hz to 2000 Hz, 6.295 Grms, 30 min/axis		
	Shock Resistance (Destructive)	50G, 11 ms, sawtooth profile. 3X in each X, Y, Z axis		
	Degree of Protection	IEC 60529 IP54		
Weight	Main Body Only	120 g		
	Packaging Weight	Approx. 230 g (including packing)		
Dimensions	Main Body Dimensions	44.5 (W) x 38.1 (D) x 25.4 (H) mm		
	Packaging Dimensions	170 (W) x 117 (D) x 86 (H) mm		
Accessories	ReadMeFirst, CE Compliance Sheet			
LED Safety Standard	IEC 62471-1: 2006 Risk-Exempt Group			
Safety Standards	EN 55024:2010, EN 55032:2015 + AC:2016 FCC Part 15, Subpart B (Class A) UL60950-1 BIS RCM, KC, EAC and BSMI Pending			
Materials	Case	Aluminum Diecast, Alumite (Black)		
	Reading Window	Acrylic		
Software	WebLink			

\*1. These symbolologies are supported based on Omron's read capability validation standard. Omron recommends that validation be performed for each application.

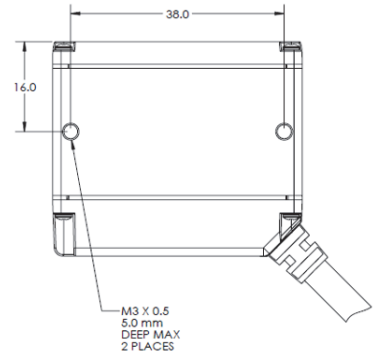
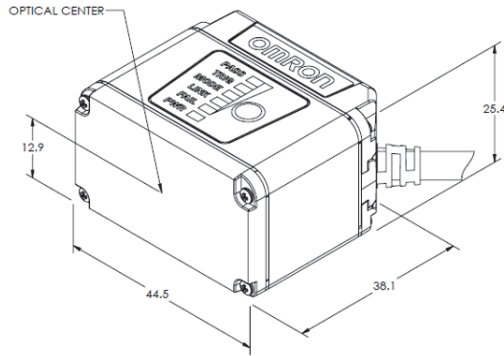
\*2. Unless otherwise specified, reading performance is defined with center of field of view, angle  $R = \infty$ .



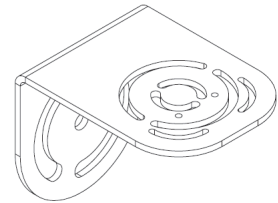
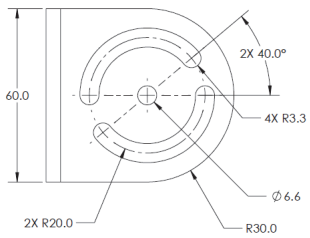
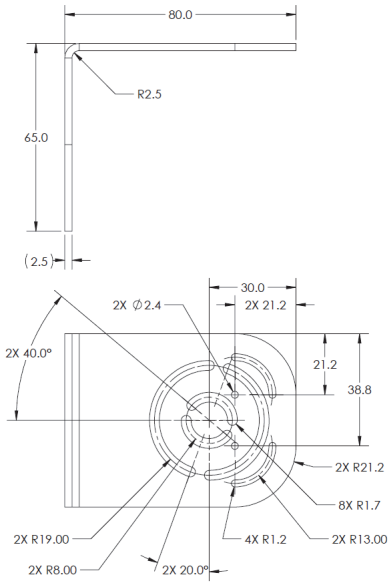
\*4. In an electrically noisy environment, use only the V430-F in combination with a noise filter cable (V430-W□F-□M) to ensure proper operation.

Dimensions

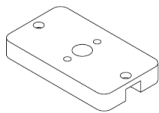
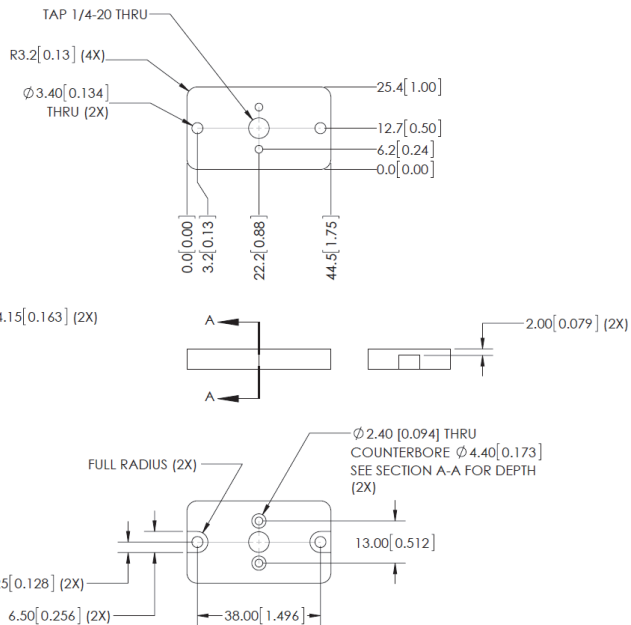
(Unit: mm)



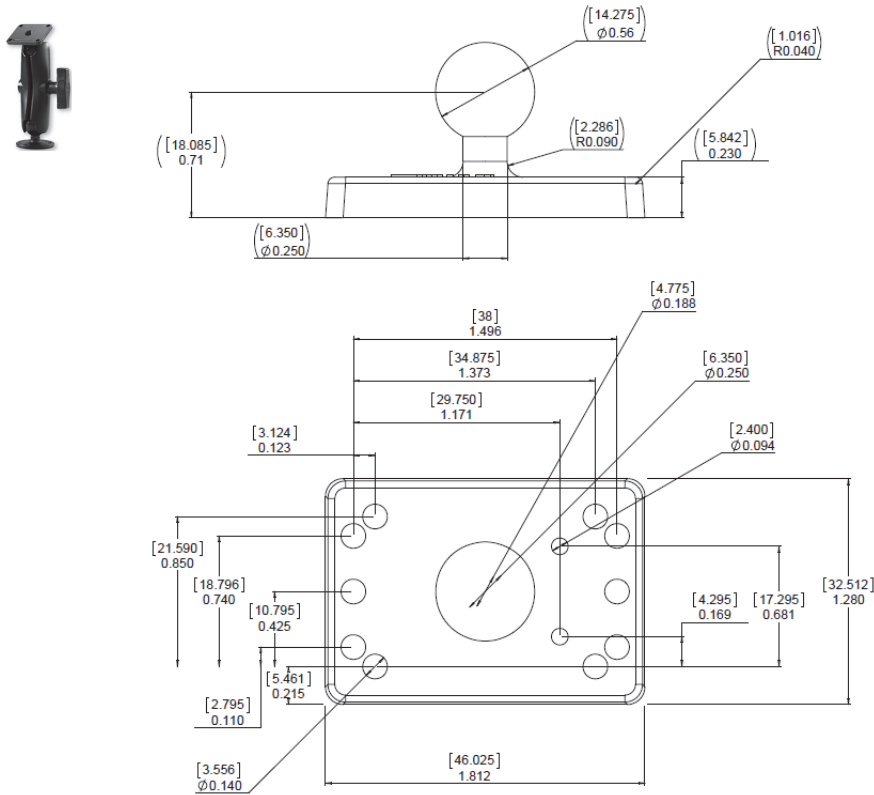
L Bracket Adjustable Angle Mounting Kit V430-AM0



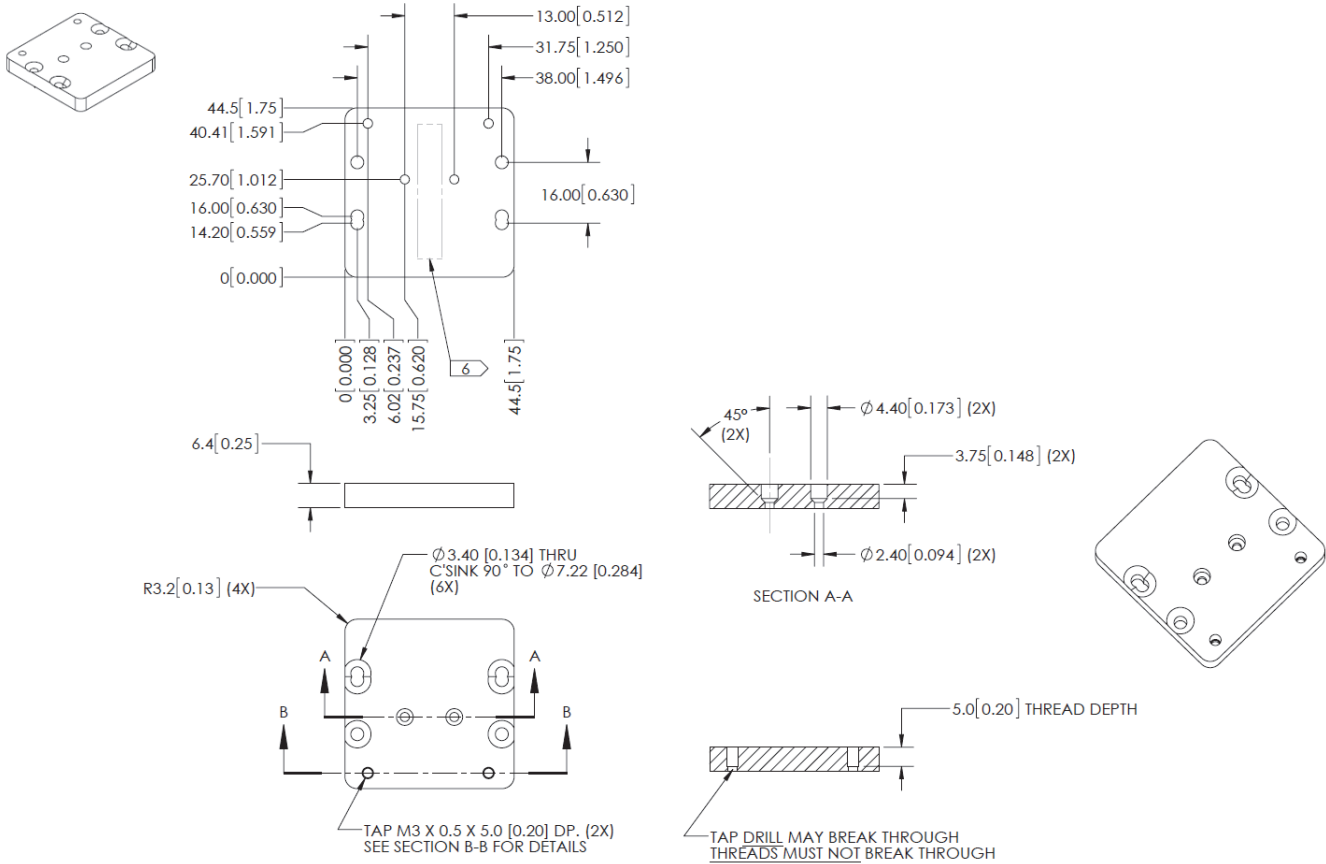
1/4-20 Camera Mounting Block Kit V430-AM1



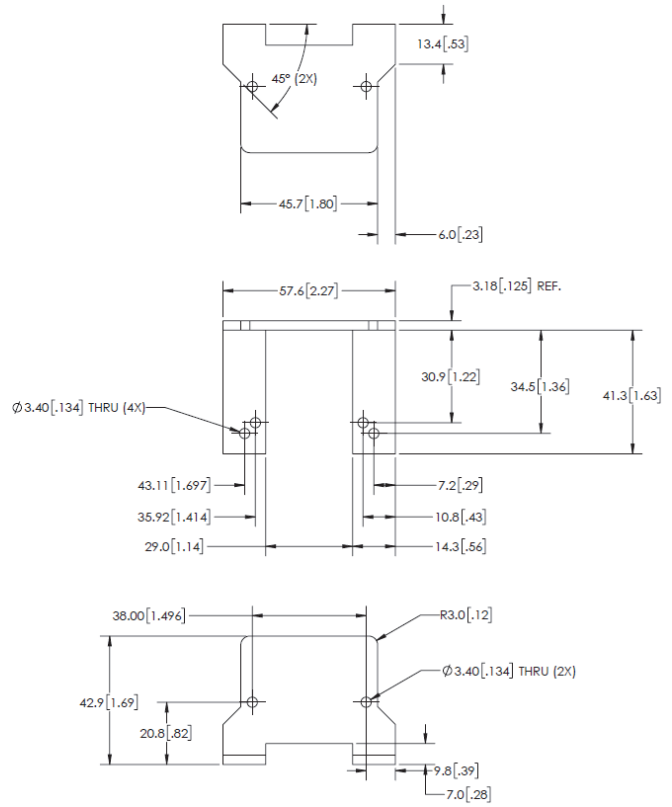
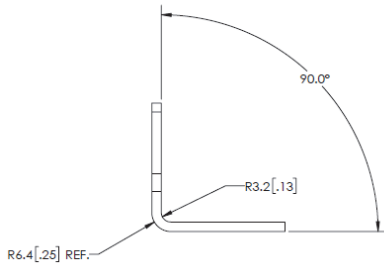
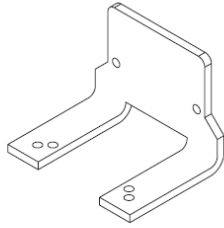
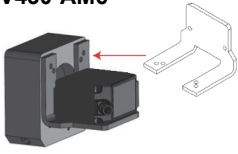
## 4" (102 mm) Ram Mount Stand V430-AM2



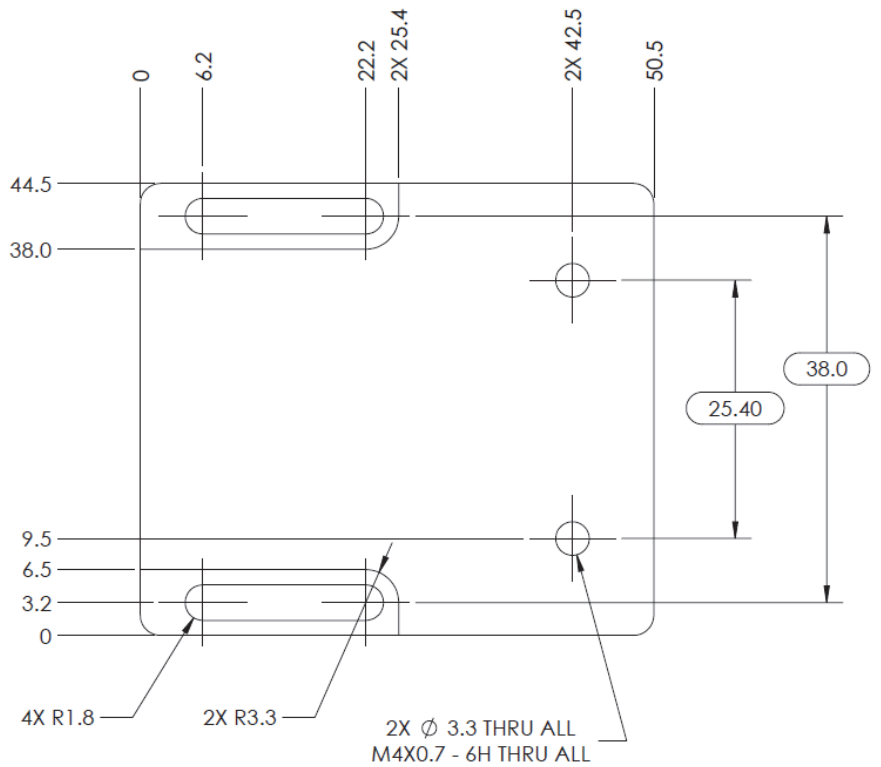
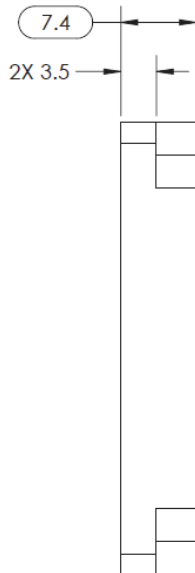
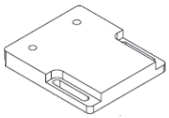
## MS-4 / MINI to V/F4XX-F Adapter Plate V430-AM5



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



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



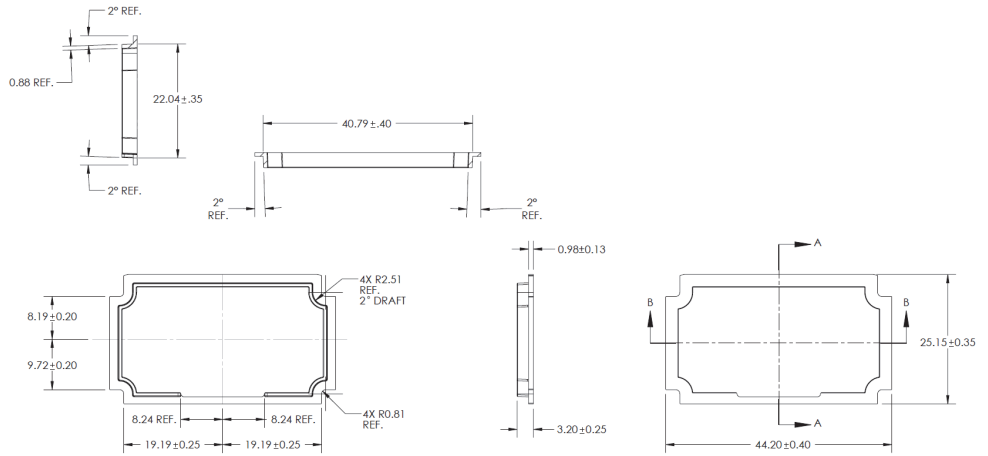
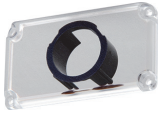
**Front Window Installation Kit  
V430-AF10**

**Diffuser Installation Kit  
V430-AF11**

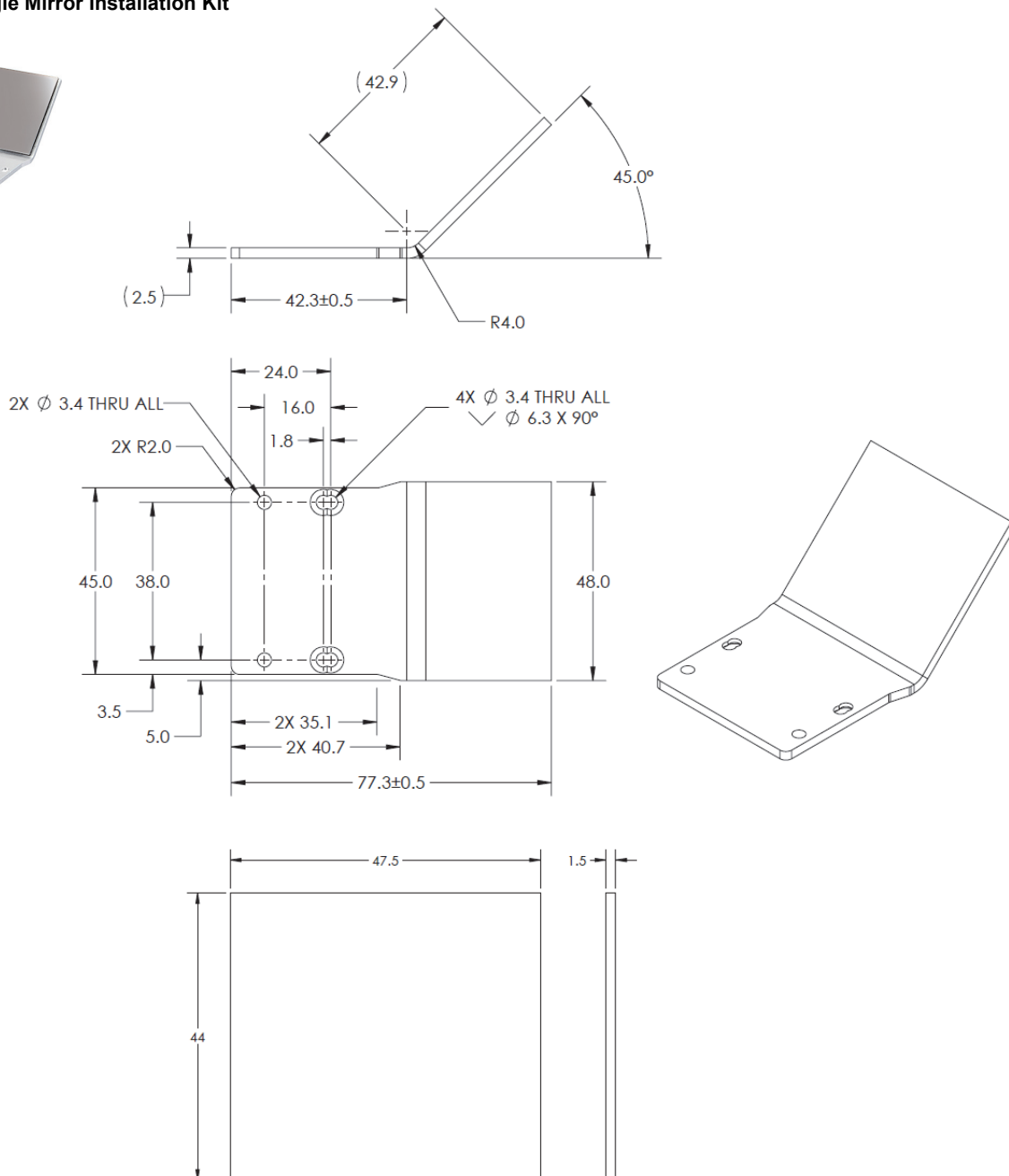
**Polarizer Installation Kit  
V430-AF12**

**YAG Filter Installation Kit  
V430-AF4**

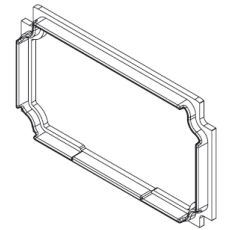
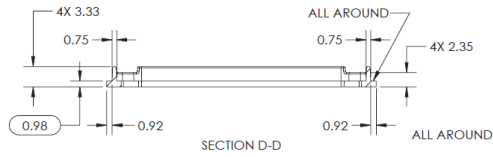
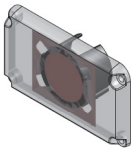
**ESD-Safe Window Installation Kit  
V430-AF5**



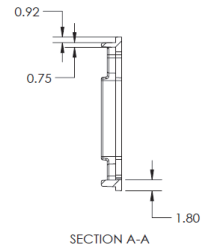
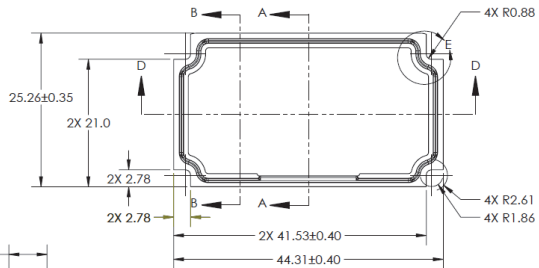
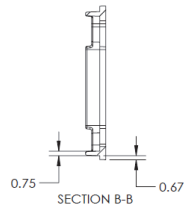
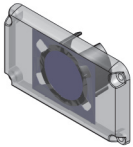
**Right Angle Mirror Installation Kit  
V430-AF3**



**Red Filter Installation Kit  
V430-AF6**



**Blue Filter Installation Kit  
V430-AF7**

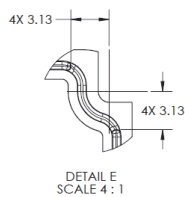
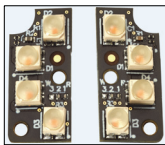


**Red Light Installation Kit  
V430-ALR**

**White Light Installation Kit  
V430-ALW**

**Blue Light Installation Kit  
V430-ALB**

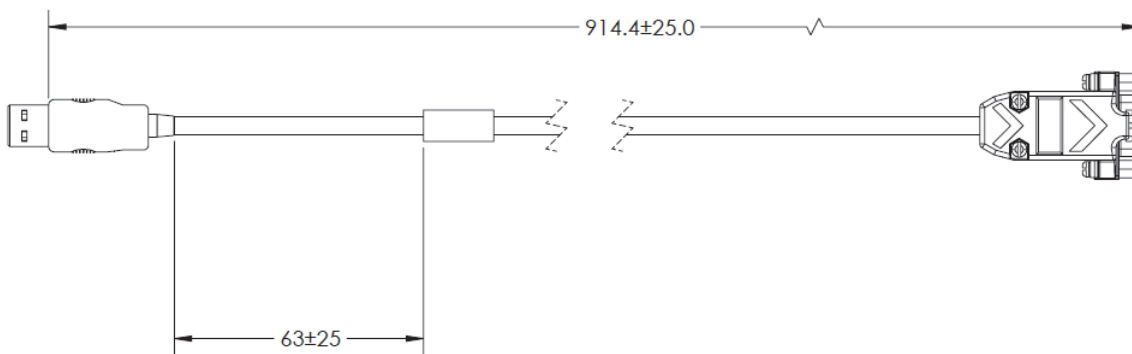
**IR Light Installation Kit  
V430-ALI**



**USB Breakout Cable – 1 Meter  
V420-WUB-1M**

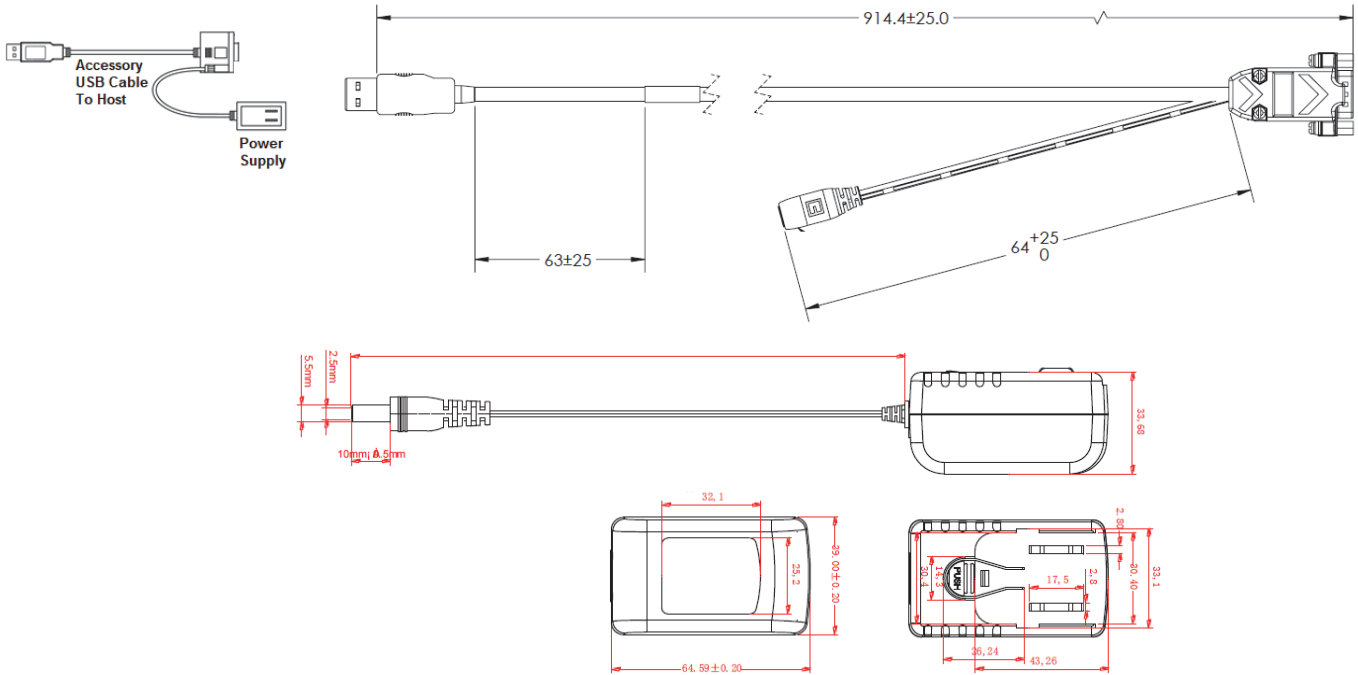


Accessory  
USB Cable  
To Host

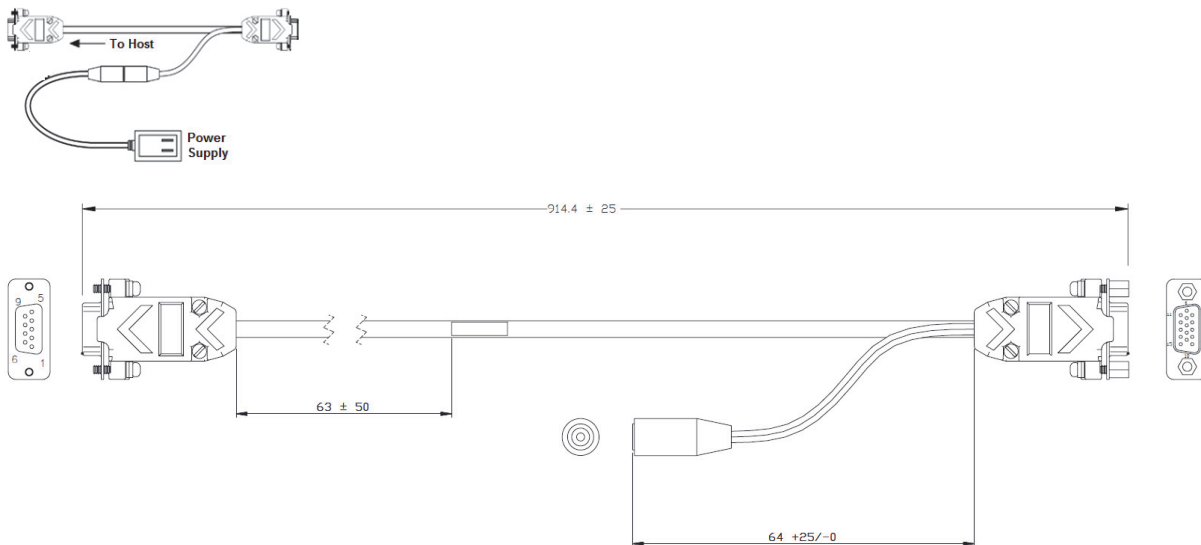


# V420-F

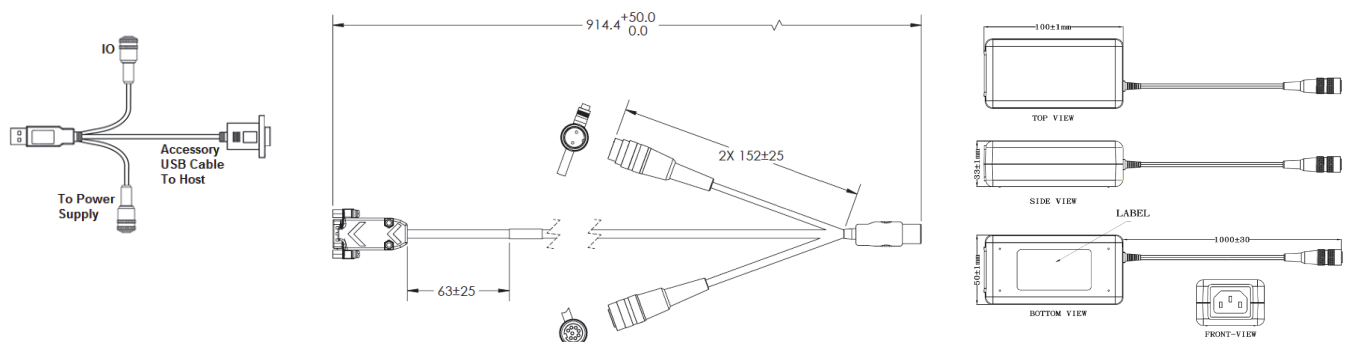
## Kit – USB Breakout Cable with External Power Input (1 Meter) and Power Supply (2 Meters) V420-AC1



## Kit – RS-232 Breakout Cable (DB-15) with External Power Input (1 Meter) and Power Supply (2 Meters) V420-AC0

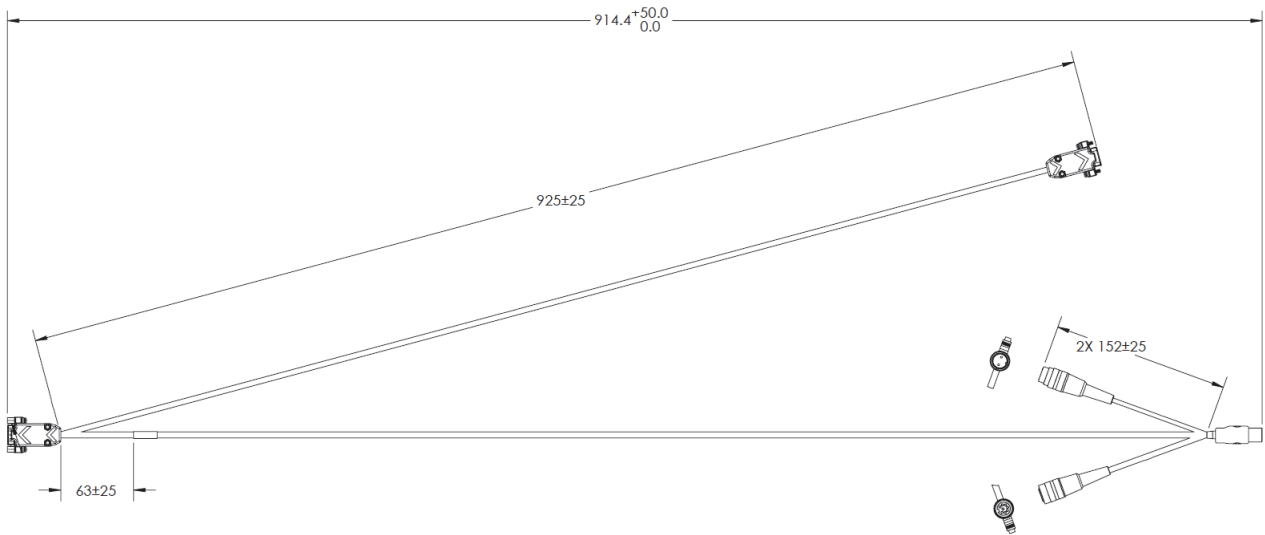
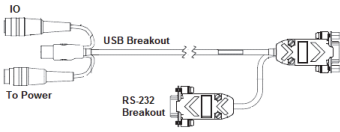


## Kit – USB, IO, and Power Breakout Cable (1 Meters) and Power Supply (2 Meters) V420-AC2





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



**Related Manuals**

Man. No.	Model	Manual
Z432-E-02 (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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