

Camera Specification Overview – Metric Units



Product	WingtraOne QX1 20mm	WingtraOne QX1 15mm	WingtraOne RX1	WingtraOne Rededge	WingtraOne FLIR
Description and optimal usecase	Professional entry bundle for mapping and hands-on surveyors	Sophisticated bundle for 3D reconstruction specialists	Best quality bundle for the high-resolution aficionado. For low GSD, ultra high precision, forest and mountain mapping	Advanced bundle for precision farmers and plant analysis	Advanced bundle for thermal mapping and monitoring

Overview	Sony QX1 / 20 mm lens, APS-C sensor, 20 MP, RGB	Sony QX1 / 15 mm Voigtlander lens, APS-C sensor, 20 MP, RGB	Sony RX1R1I / 35 mm lens, Full-frame sensor, 42 MP, RGB	Micasense RedEdge M / 5.5 mm lens, 5 individual custom sensors, multispectral	FLIR Duo Pro R 640 / 13 mm, thermal (7.5 – 13.5 µm) and visible spectrum
Technical specifications					
Main quality features	High image quality, flexible lens options	Ultra-high quality, Largest coverage at limited flight altitude, flexible lens options	Ultra-high quality, best coverage to GSD ratio, sub-cm GSD	High quality multispectral images	High precision thermal images and high resolution visible mapping
Camera weight (incl. mount)	330 g (0.73 lb)	600 g (1.32 lb)	575 g (1.27 lb)	325 g (0.72 lb)	425 g (0.94 lb)
GSD range	1.4-53 cm/px 0.55-21.0 in/px	1.4-70 cm/px 0.55-28.0 in/px	0.7-31 cm/px 0.28-12.3 in/px	6.7-170 cm/px 2.6-67.0 in/px	6.5-320 cm/px (thermal) 1.3-66.0 cm/px (visible) 2.5-127.0 in/px (thermal) 0.5-26 in/px (visible)
Coverage at lowest GSD*	150 ha (at 1.4 cm/px) at 66m flight altitude 370 acres (at 0.55 in/px) at 218 ft flight altitude	130 ha (at 1.4 cm/px) at 50 m flight altitude 320 acres (at 0.55 in/px) at 164 ft flight altitude	100 ha (at 0.7 cm/px) at 57 m flight altitude 247 acres (at 1.18 in/px) at 188 ft flight altitude	160 ha (at 6.8 cm/px) at 98 m flight altitude 395 acres (at 2.62 in/px) at 321 ft flight altitude	80 ha (at 6.5 cm/px thermal) at 50 m flight altitude 200 acres (at 2.55 in/px) at 164 ft flight altitude
Coverage at 120 m / 394 feet*	270 ha (at 2.6 cm/px) 667 acres (at 1.0 in/px)	320 ha (at 3.4 cm/px) 790 acres (at 1.3 in/px)	210 ha (at 1.5 cm/px) 520 acres (at 0.6 in/px)	150 ha (at 8.2 cm/px) 370 acres (at 3.2 in/px)	190 ha (at 15.5 cm/px thermal) 469 acres (at 6.1 in/px thermal)

Detailed Camera Specifications	Sony QX1 + SEL20F28	Sony QX1 + Voigtlander 15mm	Sony RX1R1I	Micasense Rededge-M	FLIR Duo Pro R 640 (thermal)	FLIR Duo Pro R 640 (visible)
Sensor type	APS-C	APS-C	Full Frame	5 individual sensors	thermal sensor	visible sensor
Sensor size x [mm]	23.2	23.2	35.9	4.8		
Sensor size y [mm]	15.4	15.4	24.0	3.6		
mega pixel	19.8	19.8	42.4	5x 1.22	0.32	12
Shutter type	focal plane	focal plane	leaf shutter	electronic shutter	electronic shutter	electronic shutter
Pixel in x	5,456	5,456	8,000	1,280	640	4,000
Pixel in y	3,632	3,632	5,320	960	512	3,000
Focal length of lens [mm]	20.0	15.0	35.9	5.5	13.0	
Focal length equivalent (at 35mm) [mm]	30.0	22.5	35.0	40.0		
Vertical angle of view [°]	42.1	54.3	37.0	36.2	37.0	45.0
Horizontal angle of view [°]	60.2	75.4	53.1	47.1	45.0	56.0
Minimal trigger time [s]	0.8	0.8	0.6	1.0	0.03	0.03
Minimal trigger distance [m]	12.8	12.8	9.6	16.0	0.5	0.5

GSD Overview	Sony QX1 + SEL20F28	Sony QX1 + Voigtlander 15mm	Sony RX1R1I	Micasense Rededge-M	FLIR Duo Pro R 640 (thermal)	FLIR Duo Pro R 640 (visible)
Lowest possible GSD [cm/px]	1.4	1.4	0.7	6.7	6.5	1.3
Flight altitude [m]	66	50	57	98	50	50
Trigger distance @ 75 % frontal overlap [m]	13	13	10	16	8	10
Maximal frontal overlap	75%	75%	75%	75%	>85%	>85%
Max. coverage at 60 % side overlap [ha]	150	130	100	160	80	80
GSD 1.5 cm/px	1.5	1.5	1.5	-	7.4	1.5
Flight altitude [m]	71	53	120	-	57	57
Trigger distance @ 75 % frontal overlap [m]	14	14	20	-	10	12
Maximal frontal overlap	80%	80%	87%	-	>85%	>85%
Max. coverage at 60 % side overlap [ha]	160	140	210	-	90	90
GSD 3.0 cm/px	3.0	3.0	3.0	-	14.8	3.0
Flight altitude [m]	141	106	240	-	114	114
Trigger distance @ 75 % frontal overlap [m]	27	27	40	-	19	24
Maximal frontal overlap	>90%	>90%	>90%	-	>90%	>85%
Max. coverage at 60 % side overlap [ha]	310	280	400	-	180	180
GSD 6.0 cm/px	6.0	6.0	6.0	-	29.3	6.0
Flight altitude [m]	282	212	480	-	226	226
Trigger distance @ 75 % frontal overlap [m]	54	54	80	-	38	47
Maximal frontal overlap	>90%	>90%	>90%	-	>90%	>90%
Max. coverage at 60 % side overlap [ha]	610	550	780	-	350	350
GSD 8.0 cm/px	8.0	8.0	8.0	8.0	38.8	8.0
Flight altitude [m]	376	282	640	117	300	300
Trigger distance @ 75 % frontal overlap [m]	72	72	107	19	50	62
Maximal frontal overlap	>90%	>90%	>90%	90%	>90%	8737%
Max. coverage at 60 % side overlap [ha]	800	730	1,010	190	470	470
highest possible GSD*	53.2	70.9	31.3	170.5	323.6	66.5
Flight altitude [m]	2500	2500	2500	2500	2500	2500
Trigger distance @ 75 % frontal overlap [m]	481	642	418	409	418	518
Maximal frontal overlap	>90%	>90%	>90%	>90%	>90%	>90%
Max. coverage at 60 % side overlap [ha]	3,940	4,440	2,640	3,020	2,880	2,880
GSD at 120 m flight altitude	2.6	3.4	1.5	8.2	15.5	3.19
Flight altitude [m]	120	120	120	120	120	120
Trigger distance @ 75 % frontal overlap [m]	23	31	20	20	20	25
Maximal frontal overlap	85%	85%	90%	75%	>85%	>85%
Max. coverage at 60 % side overlap [ha]	270	320	210	200	190	190

* limited by maximum flight altitude (at 2500 m above home)

Camera Specification Overview – Imperial Units



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Camera weight (incl. mount)	0.73 lb (330 g)	1.32 lb (600 g)	1.27 lb (575 g)	0.72 lb (325 g)	0.94 lb (425 g)
GSD range	0.55-210 in/px 1.4-53 cm/px	0.55-280 in/px 1.4-70 cm/px	0.28-12.3 in/px 0.7-31 cm/px	2.6-67.0 in/px 6.7-170 cm/px	2.5-126.0 in/px (thermal) 0.5-26 in/px (visible) 6.5-320 cm/px (thermal) 1.3-66.0 cm/px (visible)
Coverage at lowest GSD*	370 acres (at 0.55 in/px) 150 ha (at 1.4 cm/px) at 218 ft (66 m) flight altitude	320 acres (at 0.55 in/px) 130 ha (at 1.4 cm/px) at 164 ft (50 m) flight altitude	247 acres (at 1.18 in/px) 100 ha (at 0.7 cm/px) at 188 ft (57 m) flight altitude	395 acres (at 2.62 in/px) 160 ha (at 6.8 cm/px) at 321 ft (98 m) flight altitude	200 acres (at 2.55 in/px) 80 ha (at 6.5 cm/px thermal) at 164 ft (50 m) flight altitude
Coverage at 400 feet*	667 acres (at 1.0 in/px) 270 ha (at 2.6 cm/px)	790 acres (at 1.3 in/px) 320 ha (at 3.4 cm/px)	520 acres (at 0.6 in/px) 210 ha (at 1.5 cm/px)	370 acres (at 3.2 in/px) 150 ha (at 8.2 cm/px)	469 acres (at 6.1 in/px thermal) 190 ha (at 15.5 cm/px thermal)

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mega pixel	19.8	19.8	42.4	5x 1.22	0.3	12.0
Shutter type	focal plane	focal plane	leaf shutter	electronic shutter	electronic shutter	electronic shutter
Pixel in x	5,456	5,456	8,000	1,280	640	4000
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Focal length of lens [mm]	20.0	15.0	35.9	5.5	13.0	
Focal length equivalent (at 35mm) [mm]	30.0	22.5	35.0	40.0		
Vertical angle of view [°]	42.1	54.3	37.0	36.2	37.0	45.0
Horizontal angle of view [°]	60.2	75.4	53.1	47.1	45.0	56.0
Minimal trigger time [s]	0.8	0.8	0.6	1.0	0.03	0.03
Minimal trigger distance [ft]	42	42	31	52	2	2

GSD Overview	Sony QX1 + SEL20F28	Sony QX1 + Voigtlander 15mm	Sony RX1R1I	Micasense Rededge-M	FLIR Duo Pro R 640 (thermal)	FLIR Duo Pro R 640 (visible)
Lowest possible GSD [in/px]	0.55	0.55	0.28	2.62	2.55	0.52
Flight altitude [ft]	218	164	188	321	164	164
Trigger distance @ 75 % frontal overlap [ft]	42	42	31	52	8	10
Maximal frontal overlap	75%	75%	75%	75%	75%	75%
Max. coverage at 60 % side overlap [ac]	371	321	247	395	198	198
GSD 0.6 in/px	0.6	0.6	0.6	-	2.9	0.6
Flight altitude [ft]	236	177	402	-	187	187
Trigger distance @ 75 % frontal overlap [ft]	45	45	66	-	31	39
Maximal frontal overlap	81%	81%	87%	-	>85%	>85%
Max. coverage at 60 % side overlap [ac]	395	346	519	-	222	222
GSD 1.2 in/px	1.2	1.2	1.2	-	5.9	1.2
Flight altitude [ft]	472	354	803	-	377	377
Trigger distance @ 75 % frontal overlap [ft]	91	91	134	-	63	78
Maximal frontal overlap	>90%	>90%	>90%	-	>90%	>85%
Max. coverage at 60 % side overlap [ac]	791	717	1,013	-	445	445
GSD 2.5 in/px	2.5	2.5	2.5	-	12.2	2.5
Flight altitude [ft]	981	736	1,669	-	784	784
Trigger distance @ 75 % frontal overlap [ft]	189	189	279	-	131	162
Maximal frontal overlap	>90%	>90%	>90%	-	>90%	>90%
Max. coverage at 60 % side overlap [ac]	1,606	1,433	2,026	-	914	914
GSD 3.5 in/px	3.5	3.5	3.5	-	3.5	3.5
Flight altitude [ft]	1,373	1,030	2,336	-	428	984
Trigger distance @ 75 % frontal overlap [ft]	264	264	390	-	70	165
Maximal frontal overlap	>90%	>90%	>90%	-	100%	>90%
Max. coverage at 60 % side overlap [ac]	2,199	1,977	2,768	-	544	1,161
Highest possible GSD*	20.9	27.9	12.3	67.1	127.4	26.2
Flight altitude [ft]	8200	8200	8200	8200	8200	8200
Trigger distance @ 75 % frontal overlap [ft]	1,579	2,105	1,371	1,342	1,372	1,699
Maximal frontal overlap	>90%	>90%	>90%	>90%	>90%	>90%
Max. coverage at 60 % side overlap [ac]	9,736	10,971	6,524	7,463	7,117	7,117
GSD at 400 ft flight altitude GSD [in/px]	1.02	1.36	0.60	3.27	6.22	1.28
Flight altitude [ft]	400	400	400	400	400	400
Trigger distance @ 75 % frontal overlap [ft]	77	103	67	65	67	83
Maximal frontal overlap	85%	85%	90%	75%	75%	75%
Max. coverage at 60 % side overlap [ac]	667	791	519	494	469	469

* limited by maximum flight altitude (at 8200 ft above home)