



# More Precision

**thermoIMAGER TIM** // Compact thermal imaging cameras





**thermoIMAGER TIM LightWeight**

Extra light thermoIMAGER mini PC for flight applications

- Fully-radiometric IR inspection with up to 640x480 pixels
- 380g two-piece design: independent, additional use of the IR camera with any Windows PC or tablet PC
- Simultaneous video signal generation in real-time parallel to a 32Hz onboard radiometric recording in VGA resolution (125Hz in VGA sub-frame mode)
- GPS and GoPro support
- Extensive TIMConnect analysis software included
- Automatic transfer of flight videos (IR and GoPro) to USB flash drive



**Photovoltaic thermography from the air**

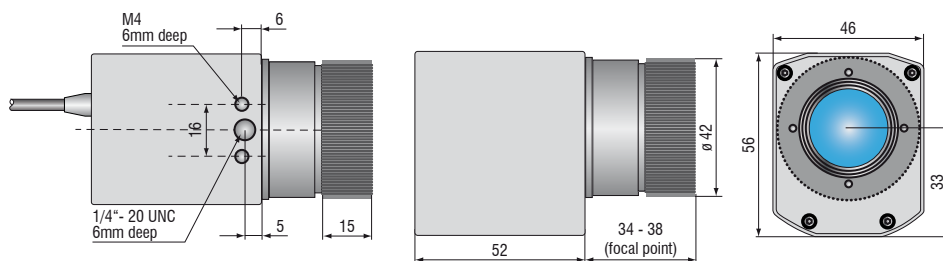
The 380-gramme thermal imaging camera can be mounted to a quadcopter to carry out defect analysis on solar cells.



Possible extension with GoPro Hero camera, GPS USB flash drive and 2.4 GHz flight control receiver



Temperature monitoring for building thermography



Model	TIM LightWeight	
Optical resolution	640x480 pixels / 382x288 pixels	
Temperature ranges	-20°C to 900°C	
Spectral range	7.5 to 13µm	
System accuracy	±2°C or ±2%, whichever is greater	
Lens	13°... 90° HFOV	
Thermal sensitivity (NETD)	40/ 80mK (depending on camera model)	
Operating temperature	0...50 / 70°C (TIM 450)	
Storage temperature	-20°C to 50°C	
Relative humidity	10 to 95% (non-condensing)	
Power supply	9.5...48V DC	
Power consumption	6W	
Cooling	Active (integrated fan)	
Dimensions	TIM camera	46 x 56 x 90mm
	Miniature PC	96 x 67 x 47mm
Weight	380g (TIM camera + miniature PC)	
Material (housing)	Aluminium	
Module	Odroid XU4	
Processor	Samsung Exynos/ 2GHz	
Operating system	Linux	
Memory	32GB eMMC, 2GB RAM (LPDDR3), SDHC card (32GB)	
Ports	Ethernet (GigE/ 1000Mbit/ s), 2x USB 3.0/ 1x USB 2.0, 1x Mini-USB for GoPro Hero3+ (or better), 1x HDMI, 1x TVout, JR connectors	
Terminals	+5V DC out, Video IN (VIS camera), TVout, 2x external switches	
Control (via JR connectors or terminal)	Start/ Stop recording, Switch VIS/ IR camera	
Additional functions	GPS support, 5 status LEDs	

thermoIMAGER TIM LightWeight



### Scope of supply

#### TIM 400/450

- TIM process camera  
incl. a selectable lens
- Operation manual
- USB cable 40 cm integrated
- Software
- Aluminium case
- Miniature PC

TIM M1 with VGA resolution 764 x 480 px	Focal length [mm]	Angle	Minimum measurement distance*	Distance to measurement object [m]											
					0.1	0.2	0.3	0.5	1	2	4	6	10	30	100
f=16mm Wide angle lens	16	39° 25° 46° 0.94 mrad	0.2m	HFOV [m]		0.14	0.21	0.36	0.72	1.43	2.87	4.30	7.2	21.5	71.6
				VFOV [m]		0.09	0.14	0.23	0.45	0.90	1.80	2.70	4.5	13.5	45.0
				DFOV [m]		0.17	0.25	0.42	0.85	1.69	3.38	5.08	8.5	25.4	84.6
				IFOV [mm]		0.2	0.3	0.5	0.9	1.9	3.8	5.6	9.4	28.1	93.8
f=25mm Standard lens	25	26° 16° 30° 0.60 mrad	0.5m	HFOV [m]	0.046	0.09	0.14	0.23	0.46	0.92	1.83	2.75	4.6	13.8	45.8
				VFOV [m]	0.029	0.06	0.09	0.14	0.29	0.58	1.15	1.73	2.9	8.6	28.8
				DFOV [m]	0.054	0.11	0.16	0.27	0.54	1.08	2.17	3.25	5.4	16.2	54.1
				IFOV [mm]	0.1	0.1	0.2	0.3	0.6	1.2	2.4	3.6	6.0	18.0	60.0
f=50mm Telephoto lens	50	13° 8° 15° 0.30 mrad	1.5m	HFOV [m]				0.11	0.23	0.46	0.92	1.38	2.3	6.9	22.9
				VFOV [m]				0.07	0.14	0.29	0.58	0.86	1.4	4.3	14.4
				DFOV [m]				0.14	0.27	0.54	1.08	1.62	2.7	8.1	27.1
				IFOV [mm]				0.2	0.3	0.6	1.2	1.8	3.0	9.0	30.0
f=75mm Super telephoto lens	75	9° 5° 10° 0.20 mrad	2.0m	HFOV [m]					0.15	0.31	0.61	0.92	1.5	4.6	15.3
				VFOV [m]					0.10	0.19	0.38	0.58	1.0	2.9	9.6
				DFOV [m]					0.18	0.36	0.72	1.08	1.8	5.4	18.0
				IFOV [mm]					0.2	0.4	0.8	1.2	2.0	6.0	20.0

Please note: the camera provides 764 x 480 px in the 32Hz mode



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