



THORKELL A-232

Templeforce Danmark ApS



THORKELL A-232

ABOUT

THORKELL A-232 UAV is configured with a conventional two-tail boom. A piston engine is mounted on its tail, and flaps and ailerons are arranged on the wings.

The fuselage adopts the production technology of full composite material, which has the advantages of perfect aerodynamic performance, easy for disassembling and maintenance, strong structural strength of fuselage, high safety performance, and easy for operation.

The whole electronic system adopts the multi-redundant sensor design. The equipment is arranged along the fuselage, and the mission load equipment and avionics equipment are centrally arranged.





CHARACTERISTICS	
PARAMETER	VALUE
• Version	Melkor A-232 Pro VTOL
• Type	VTOL
• Wingspan	3200mm
• Lenght	1980mm
• Clearance to ground	170mm
• Suggested payload (excluding battery)	2,5kg
• Max take-off weight	24kg
• Suggested take-off weight	21.5kg
• Endurance (4x 6s 27000mAh)	Over 4h@no payload Over 3h@2.5kg payload
• Stall speed	17m/s
• Cruising speed	21m/s
• Max cruising speed	30m/s
• Max climb angle	15°
• Max climb speed	5.6m/s
• Max descent angle	25°
• Max descent speed	9.6m/s
• Working voltage	12S
• Working temperature	-20°C~45°C
• Battery	6s 27000mAh x4



30X ZOOM EO/IR OBJECT TRACKING – 3 AXIS GIMBAL CAMERA



Camera can be binded by both additional remote control and GCS

HARDWARE PARAMETER

PARAMETER	VALUE
• Working voltage	12V
• Input voltage	3S~6S
• Output voltage	5V (connect with PWM)
• Dynamic current	750mA @ 12V
• Idle current	650mA @ 12V
• Working environment temp.	-20°C~ +60°C
• Output	Micro HDMI (1080P 25fps/30fps/50fps/60fps) / IP (720p/1080p 25fps/30fps) / SDI (1080P 30fps)
• Local-storage	TF card (Up to 128G, class 10, FAT32 or ex FAT format)
• Control method	PWM / TTL / S.BUS / TCP (IP output)

GIMBAL SPEC

• Angle range of structure design	Pitch/Tilt: -55°~125°, Roll: ±70°, Yaw/Pan: ±300°/ ±360° *N (IP/SDI output version)
• Angle range of software design	Pitch/Tilt: -45°~90°, Yaw/Pan: ±290°/ ±360° *N (IP/SDI output version)
• Vibration angle	Pitch/Roll: ±0.02°, Yaw: ±0.02°
• One key to center	√

CAMERA SPEC

PARAMETER	VALUE
• Imager Sensor	SONY 1/2.8" "Exmor R" CMOS
• Picture quality	Full HD 1080 (1920*1080)
• Effective pixel	2.13MP
• Lens optical zoom	30x, F=4.3~129mm
• Digital zoom	12x (360x with optical zoom)
• Min object distance	10mm(wide end) to 1200mm(-tele end). Default 300mm
• Horizontal viewing angle	1080p mode: 63.7° (wide end) ~ 2.3°(tele end)
• Sync system	Internal
• S/N ratio	more than 50dB
• Min illumination	Color 0.01lux@F1.6
• Exposure control	Auto, Manual, Priority mode (shutter priority & Iris priority), Bright, EV compensation, Slow AE
• Gain	- Auto/Manual 0dB to 50.0dB(0 to 28 steps + 2 set-step/ total 15 steps) - Max.Gain Limit 10.7 dB to 50.0dB (6 to 28 steps + 2 step/ total 12 steps)
• White balance	Auto, ATW, Indoor, Outdoor, One Push WB, Manual WB, Outdoor Auto, Sodium Vapor Lamp (Fix/ Auto/Outdoor Auto)
• Shutter speed	1/1s to 1/10,000s, 22 steps
• Backlight compensation	Yes
• Aperture control	16 steps
• Defog	Yes
• OSD	Yes

30X ZOOM EO/IR OBJECT TRACKING – 3 AXIS GIMBAL CAMERA

CAMERA OBJECT TRACKING		EMISSIONITY CORRECTION	
PARAMETER	VALUE	• Lens size	25mm
• Update rate of deviation pixel	50Hz	• Horizontal FOV	24.6
• Output delay of deviation pixel	5ms	• Vertical FOV	18.5
• Minimum object contrast	5%	• Diagonal FOV	30.4
• SNR	4	• Detective Distance (Man: 1.8 × 0.5m)	735 meters
• Minimum object size	32*32 pixel	• Recognize Distance (Man: 1.8 × 0.5m)	184 meters
• Maximum object size	128*128 pixel	• Verified Distance (Man: 1.8 × 0.5m)	92 meters
• Tracking speed	±32 pixel/frame	• Detective Distance (Car: 4.2 × 1.8m)	2255 meters
• Object memory time	100 frames (4s)	• Recognize Distance (Car: 4.2 × 1.8m)	564 meters
• The mean square root values of pulse noise in the object position	< 0.5 pixel	• Verified Distance (Car: 4.2 × 1.8m)	282 meters
THERMAL IMAGER OBJECT TRACKING		• Working mode	Uncooled long wave (8μm~14μm) thermal imager
• Update rate of deviation pixel	50Hz	• Detector pixel	640*480
• Output delay of deviation pixel	5ms	• Pixel size	17μm
• Minimum object size	32*32 pixel	• Focusing method	Athermal prime lens
• Maximum object size	128*128 pixel	• Emissivity correction	0.01~1
• Tracking speed	±32 pixel/frame	• NETD	≤50mK (@25°C)
• Object memory time	100 frames (4s)	• MRTD	≤650mK (@characteristic frequency)
PACKING INFORMATION		• Image enhancement	Auto adjust image brightness and contrast ratio
• N.W.	1029g	• Color palette	White, iron red, pseudo color
• Product meas.	112.4* 129.9* 185.4mm	• Auto Non-uniform correction	Yes (no shutter)
• Accessories	1pc gimbal camera device, screws, copper cylinders, damping balls, damping boards, 1pc USB to TTL cable / Hight quality plastic box with foam cushion	• Digital zoom	1x, 4x
		• Sync correct time	Yes
		• Thermometry type	Temperature bar (psudo color display) max temp, min temp, FOV center temp (Optional)
		• Temperature warning	0°C~120°C

GROUND CONTROL STATION - DUAL TOUCH SCREEN

GROUND CONTROL STATION	
PARAMETER	VALUE
• Dimension	364mm(L) * 190mm(W) * 40mm(H)
• Weight	3100g
• Channel	23
• Control Range	up to 150Km
• Output power	Max 25 dBm
• Remote control latency	40ms
• Battery capacity	12V/10200mAh, external battery is available
• Endurance	3h with full capacity
• Display Screen	10,1 inch + touch screen + 800cd / sunlight readable screen
• Resolution	1920*1200
• Processor	Intel i7 5th generation 5500U
• Memory	8GB DDR3L
• Storage Capacity	128GB
• Operation System	Windows 10
• Three proofings	IP53
• Network type	4G/WIFI (optional)
• Interface	USB 3.0, 4G card slot, LAN, Audio, Amplifier, HDMI
• Operating temperature	-10 ~ +60°C



The ground control station of **Melkor A-232** UAV system is a full functional command shelter, which could complete the remote test and control mission of the UVA and real time transmission of the surveillance images.

The communication control design action radius is 150km (LOS). It could be installed on the chassis of sport-utility vehicles (SUVs) (optional) to realize the mobile deployment.

The main functions are as follows:

- Remote control, data telemetry, reconnaissance images and data transmission.
- Flight data processing, display and storage.
- Information collection, processing and feedback.
- Mission load operation and delivery management
- Ground taxiing control (remote control stick)





Templeforce Danmark ApS

CVR-nummer: 44643779

Vodskov – Denmark

www.templeforce.dk

[linkedin.com/templeforce-danmark-aps](https://www.linkedin.com/company/templeforce-danmark-aps)

contactme@templeforce.dk

