

DTBird® System Specifications for Wind Turbines

Day & Night
On & Offshore

DTBIRD TEAM

November 2017.

Ref.: DTB0516SPWTG.Rev2

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	DTBird® Day Detection Module		٧4	١
Service description	Automatic and real-time ¹ detection in daylight of bird flight (WTG).	s in the airspace surrounding a Wind Turbine		
	Video and audio recordings of every bird flight detected upl with Username and Password protected access, ensuring bi	,	,	✓
nstallation site	Wind Turbines (WTGs) - On & Offshore.		✓	
Module specifications				
•	HD cameras: 4 units/WTG.		√	
Components	8 units/WTG.			
	Environmental sensors: Light, Temperature and Humidity. Of Speed and Wind Direction. Cabinet (1/WTG): Analysis Unit, Detection Software, Electric Communications Hardware. Mounting System (not intrusive on WTG).		,	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
	Cables & Connections.			
Location on the facility	Cables & Connections. HD Cameras + Environmental Sensors + Mounting System (patented): outdoors on the WTG tower, from 5 to 80 m height (Project specific).		√	
	Cabinet: indoors, normally inside the tower.		~	
	Cables & Connections: outdoors on the WTG tower, and ins	ide the WTG tower.		
Cabinet				
	51x65x25 cm, WxHxD.		✓	
Dimensions	51x130x25 cm, WxHxD.			
Weight	10 Kg.		✓	
weight	20 Kg.			
Power supply	110-250 AC monophasic 50/60Hz (Power Grid Connection).		v	/
Power consumption	55 W. 95 W.		✓	
Operation conditions	Daylight (>50 lux).		✓	
Weatherproof	Outdoor components: IP 66 / -30° to 50° C. Falling blocks of ice protection system (optional). Cabinet components: IP 65 / 0° to 40° C. Heating or Cooling (optional).		,	<u> </u>
Communications	Wind Farm Network/Mobile Router 4G/ADSL/Optic Fiber/S	atellite Internet.	√	/
Service specifications				
	All hird Species /Groups		→	_
Detectable bird Species/Groups	All bird Species/Groups.			
Bird Species/Group identification	Yes, through the review of bird flight video and audio record	dings.	✓	
Surveillance area	360° around the WTG. See pages 7-8 (Examples of the Surveillance Area of DTBird Detection Module models V4 and V8).		~	_
	Bird wingspan	Set up range	√	
	>150 cm	200-320 m 350-600 m		
Radius around the WTG	75-150 cm	100-200 m	✓	
		175-350 m 25-100 m	✓	
	<75 cm	25-175 m		
Simultaneous detection of multiple bird flights	Yes (360° around WTG), detection of an unlimited number of	of flights and birds at the same time.	✓	
Bird flight detectability	>80%²		✓	
Bird flight traceability ³	Video and audio recordings of every bird flight stored in the Wind Farm online Data Analysis Platform, with Username and Password protected access.		~	_
False Positive rate (recording with no bird)	0.5 - 5.5 FP/day (yearly average).		√	
Recorded data	Location.			
	Flight ID. Flight time data: Init time and total length.			
	Flight video records, with embedded audio record.		,	/
	Online Snapshots of HD cameras every hour.			
	Environmental data, and WTG operational parameters during	ng bird flight.		
	Species/group and bird behavior analysis from video and au	udio recordings.		
	Bird flights videos with audio storage for 2 years (up to 50 Gb/Year/DTBird unit) and data storage for 5 years, in DTBird® Server in Data Center Classified Tier 4. Optional one-year extensions. Flight Analysis tools: review of video and audio records, flight analysis, data export, video download and automatic service reports.		,	~
Online Data Analysis Platform	automatic service reports.	, , , , , , , , , , , , , , , , , , , ,		
Online Data Analysis Platform Service Control	• ,	,	✓	<u> </u>

¹ Real-time means that time from image capture by the HD Camera to bird detection, is <1 second

² Norwegian Institute for Nature Research (NINA). 2012. Evaluation of the DTBird video-system at the Smola wind-power plant. Detection capabilities for capturing near-turbine avian behavior.





	DTBird® Night Detection Module	
Service description	Automatic and real-time detection at night of bird flights in the	airspace surrounding a Wind Turbine (WTG).
	Video and audio recordings of every bird flight detected uploads Password protected access, ensuring bird flight traceability.	ed to DTBird online Data Analysis Platform with Username and
Installation site	Wind Turbines (WTGs) - On & Offshore.	
Module specifications		
Components	Themal Cameras: Variable number per WTG (Project specific). Environmental sensors: Light, Temperature and Humidity. Optio Direction. Cabinet (1/WTG): Analysis Unit, Detection Software, Electrical and	· · · · · · · · · · · · · · · · · · ·
	Mounting System (not intrusive on WTG).	
	Cables & Connections.	
Location on the facility	Thermal Cameras + Environmental Sensors + Mounting System ((Project specific).	patented): outdoors on the WTG tower, from 5 to 80 m height
	Cabinet: indoors, normally inside the tower.	
	Cables & Connections: outdoors on the WTG tower, and inside t	he WTG tower.
Cabinet		
Dimensions	51x65x25 cm, WxHxD.	
Weight	10 Kg.	
Power supply	110-250 AC monophasic 50/60Hz (Power Grid Connection).	
Power consumption	55 W.	
Operation conditions	Night (<50 lux).	
Weatherproof	Outdoor components: IP 66 / -30° to 50° C. Falling blocks of ice protection system (optional). Cabinet components: IP 65 / 0° to 40° C. Heating or Cooling (optional).	
Communications	Wind Farm Network/Mobile Router 4G/ADSL/Optic Fiber/Satellite Internet.	
Service specifications		
Detectable bird Species/Groups	All bird Species/Groups.	
Bird Species/Group identification	The review of bird flight video and audio records, allows the indentification based on bird shape, flight pattern, and wing beats frequency.	
Surveillance area	45° horizontal and 33° vertical per HD Camera.	
	Bird wingspan	Set up range
Radius around the WTG	>150 cm	140-230 m
Nadius around the WTG	75-150 cm	70-140 m
	<75 cm	20-70 m
Simultaneous detection of multiple bird flights	Yes, detection of an unlimited number of flights and birds at the same time.	
Bird flight detectability	Under evaluation.	
Bird flight traceability ¹	Video and audio recordings of every bird flight stored in the Wind Farm online Data Analysis Platform, with Username and Password protected access.	
False Positive rate (recording with no bird)	1 - 4 FP/day (yearly average)/Camera. Based on preliminary test.	
Recorded data	Location. Flight ID.	
	Flight time data: Init time and total length.	
	Flight video records, with embedded audio record.	
	Environmental data, and WTG operational parameters during bi Species/group and bird behavior analysis from video and audio	-
Online Data Analysis Platform	Bird flights videos with audio storage for 2 years (up to 50 Gb/Year/DTBird unit) and data storage for 5 years, in DTBird® Server Data Center Classified Tier 4. Optional one-year extensions. Flight Analysis tools: review of video and audio records, flight analysis, data export, video download and automatic service	
Sarviga Control	reports.	
Service Control	Self-checking and daily verification done remotely from DTBird Headquarters.	
Warranty	2-year worldwide.	





	DTBird® Collision Avoidance Module
Service description	Automatic emission of Warning/Discouraging sounds from the WTG linked to real-time bird flight detection in
	collision risk. Video and audio recordings of every bird flight detected uploaded to DTBird online Data Analysis Platform
	with Username and Password protected access, ensuring bird flight traceability.
Installation site	Wind Turbines (WTGs) - On & Offshore.
Module specifications	
Components	DTBird® Detection Module V4 or V8.
Components	1 Amplifier & 4 – 10 Speakers per WTG.
	Sound signal:
	Frequency range: 250-12,500 Hz
	Maximum Power: 120 W RMS
	Mounting System (not intrusive for WTG).
	Cables & Connections.
Location on the WTG	Amplifier: DTBird® Cabinet inside the WTG tower.
	Speakers: outdoors on the WTG tower, from 10 to 130 m height and occasionally on the nacelle (Project specific).
	Cables & Connections: outdoors on the WTG tower, and inside the WTG tower.
Dimensions	Amplifier 26x43x9 cm, WxHxD
Difficusions	Speaker 25x25x35 cm, WxHxD
Weight	20 – 30 Kg.
Power supply	Standard Power Grid Connection: 110-250 AC monophasic 50/60Hz
Power consumption	Including DTBird® Detection Module: 135 – 240 W
Weatherproof	Outdoor components: IP 66 / -30° to 50° C. Falling blocks of ice protection system (optional). Cabinet components: IP 65 / 0° to 40° C.
Service specifications	
	Adjustable to target Species.
Sound type:	Emission of Warning sounds to bird flights with Potential Collision Risk.
	Emission of Discouraging sounds to bird flights in High Collision Risk Area & Rotor Swept Area.
	Adjusted to legal requirements and bird sensitivity (Project specific).
Sound power	Maximum power location: Rotor Swept Area.
	Attenuation proportional to distance from the Rotor Swept Area.
Sound coverage	360° around WTG.
Sound trigger	Automatic and in real-time, <2 s after flight detection with Potential Collision Risk.
Sound trigger	Standard sound emission only with the WTG operating. No sound or low sound emission with the WTG stopped.
Sound emission traceability ¹	Sound recordings of every trigger uploaded to online Data Analysis Platform, with Username and Password protected access.
	Reduction of the bird flight time in the danger zone, especially larger birds, by 61-87%. Change of the bird
Collision Risk Reduction ²	flights' direction in 88% of cases where the bird is on a collision course with the wind turbine. ²
False Positive rate (sound trigger by DTBirdV4 with no bird)	0.2 – 4.0 FP/day, with a total duration of 0.1 - 2.5 min/day (yearly average).
Recorded data	Location.
Necorded data	Flight with sound trigger ID.
	Sound time data: Init time and total length.
	Flight video records, with embedded audio record.
	Flight video with environmental data and WTG operational parameters.
	Species/group and bird behavior analysis from video and audio recordings.
	Bird flights videos with audio storage for 2 years (up to 50 Gb/Year/DTBird unit) and data storage for 5 years, in DTBird® Server in Data Center Classified Tier 4. Optional one-year extensions.
Online Data Analysis Platform	Flight Analysis tools: review of video and audio records, flight analysis, data export, video download and
	automatic service reports.
Service Control	Self-checking and daily verification done remotely from DTBird Headquarters.
Warranty	2-year worldwide.

 $^{^{\}scriptsize 1}$ Traceability: Ability to verify location, time and sound emission by means of recorded sound, video and data.



² Ecocom AB. 2016. "Pilotinstallation av DTBird-systemet i Sverige. Möjligheter med skyddssystem för fågelfaunan vid vindkraftanläggningar – erfarenheter från Sveriges första installation av DTBird.". Report's summary translated by DTBird available in http://www.dtbird.com/index.php/downloads-3 Experiencies From Sweden's first DTBird Installation. Ecocom AB. December 2016.



	DTBird® Stop Control Module
Comice description	Automatic and real-time WTG Stop triggered by bird flights detected with Collision Risk.
Service description	Video recordings of the entire WTG Stop uploaded to DTBird Data Analysis Platform, with Username and Password protected access, ensuring bird flight and stop traceability.
Installation site	WTGs (On & Offshore).
Module specifications	
Components & Location	DTBird® Detection Module V4 or V8 + Stop Control Software installed within DTBird® cabinet.
Dimensions/Weight/Power supply/Power consumption/Operation conditions/Weatherproof	Within DTBird® <i>Detection Module. See DTBird Detection Module</i> specifications for day or night (pages 2 and 3).
Communications	Connection with WTG PLC/Scada.
Service specifications	
Species/Group Stop trigger sensitivity (true positives) and specificity (true negatives)	Variable, depending on target Species/Group and bird community inhabiting the installation site.
Surveillance area	360° around WTG.
Radius of the Surveillance area around the wind turbine	DTBird® Detection Module V4 or V8.
Simultaneous detection of multiple bird flights	Yes (360° around WTG), detection of an unlimited nº of flights and birds at the same time.
Bird flight detectability	>80%
Stop trigger	Automatic and linked to real-time bird flight detection with collision risk.
	Collision risk calculation according to bird flight features. Depending on WTG manufacturer, 2 – 18 s after DTBird® stop trigger¹.
Rotor Stop init time	
Complete rotor Stop	Depending on WTG manufacturer, 15 – 35 s after WTG Stop init ¹ . Linked to real-time bird flight detection in collision risk.
Stop length	Automatic restart of WTG when the collision risk disappears.
Stop & bird flight traceability ²	Video recordings of every Stop & bird flight uploaded to DTBird Data Analysis Platform with Username and Password protected access. Automatic e-mail notification of every Stop: trigger time (first e-mail), end time and duration (second e-mail).
False Positive rate (Stops with no bird triggered by DTBirdV4)	0.5 – 10 hours/year/WTG
Recorded data	Flight with Stop trigger ID. Stop time data: Init time and total length.
	Stop video records, with embedded audio record. Environmental data and WTG operational parameters of every stop event.
	Species/group, bird behavior and Stop analysis from video and audio recordings.
Online Data Analysis Platform	Bird flights videos with audio storage for 2 years (up to 50 Gb/Year/DTBird unit) and data storage for 5 years, in DTBird® Server in Data Center Classified Tier 4. Optional one-year extensions.
Online Data Analysis Platform	Flight Analysis tools: review of video and audio records, flight analysis, data export, video download and automatic service reports.
Service Control	Self-checking and daily verification done remotely from DTBird Headquarters.
Warranty	2-year worldwide.
¹ The lowest wind turbine Stop time technically feasible should be used to achieve the maximum collision risk reduction. For individual bird flight efficient stops values below 30 s are recommended (species and site specific). DTBird stop protocol based on bird flight thresholds can be very efficient depending on the local bird activity.	

activity.



² Traceability: Ability to verify location, time and Stop of the rotor/blades by means of recorded documented identification.

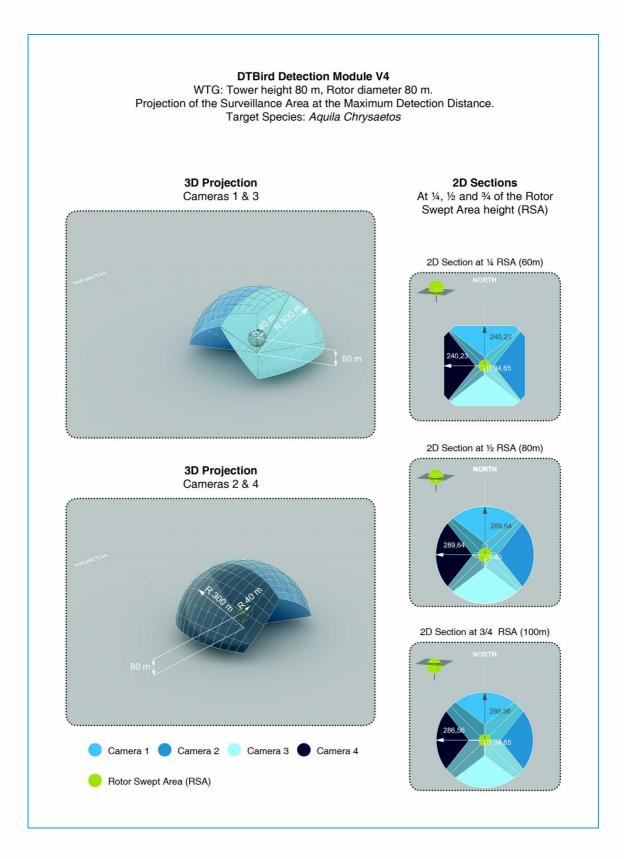


Service description Automatic and real-time detection of bird flights in Collision Risk Areas, and collision check from video and sound recordings, including birds optentially injured that fly away. Video and audio recordings suploaded to DTBird online Data Analysis Platform, with Username and Password protected access, that ensure bird flight and collision traceability. Module specifications WTGs - On & Offshore. DTBird Detection Module Va or V8. See pages 7-8 (Examples of the Surveillance Area of DTBird Detection Module Va or V8. See pages 7-8 (Examples of the Surveillance Area of DTBird Detection Module Va or V8. See pages 7-8 (Examples of the Surveillance Area of DTBird Detection Module Va or V8. See pages 7-8 (Examples of the Surveillance Area of DTBird Detection Module Va or V8. See pages 7-8 (Examples of the Surveillance Area of DTBird Detection Module Va or V8. See pages 7-8 (Examples of the Surveillance Area of DTBird Detection Module Va or V8. See pages 7-8 (Examples of the Surveillance Area of DTBird Detection Module Va or V8. See pages 7-8 (Examples of the Surveillance Area of DTBird Detection Module Va or V8. See pages 7-8 (Examples of the Surveillance Area of DTBird Detection Module Va or V8. See pages 7-8 (Examples of the Surveillance Area of DTBird Detection Module Va or V8. See pages 7-8 (Examples of the Surveillance Area of DTBird Detection Module Va or V8. See pages 7-8 (Examples of the Surveillance Area of DTBird Detection Module Va or V8. See pages 7-8 (Examples of the Surveillance Area of DTBird Detected bird flight. Page 2	DTBird® Collision Control Module		
installation site Module specifications DIBI'd' Detection Module Vo or V8. See pages 7-8 (Examples of the Surveillance Area of DTBird Detection Module wad v8). Simultaneous video and sound recording of interconnected cameras for every detected bird flight. Continuous video recording saved for 5-10 days. Service specifications Petertable bird Species/Groups All bird Species/Groups. All bird Species/Group identification Yes, through the review of bird flight video and audio recordings. Ves. No of bird collisions simultaneously recorded Bird flights tack & detection Yes. All bird Species/Groups and the review of bird flight detectability in video and bird flights detectability in video of bird flights detectability in video of bird flights detectability in video of recordings Powerall bird collision detectability Overall bird collision detectability Ves. All bird Species/Groups All bird Species/Group identification of bird flight video and sundivercordings of every bird flight and potential collision uploaded to DTBird flight. Collision traceability in video records, with embedded audio record access. All bird All bird Species/Groups All bird All bird Species/Groups All bird All bird Species/Groups in the bird flight. Collision time data: Init time and total	Service description	· ·	
Module specifications Diffird' Detection Module V4 or V8. See pages 7.8 (Examples of the Surveillance Area of DTBird Detection Module models V4 and V8). Simultaneous video and sound recording of interconnected cameras for every detected bird flight. Continuous video recording saved for 5-10 days. Service specifications Detectable bird Species/Groups Bird Species/Group identification Surveillance area Whitplie bird flights track & detection Nº of bird collisions simultaneously recorded Bird flights detectability Percorded Bird flights detectability Power all bird collision detectability Overall bird collision detectability Overall bird collision detectability Request of in situ inspection to verify a potential collision and/or to recover a potential collision and/or to recover a potential vinjured bird Collision lib. Collision lib. Collision lib. Collision in detectability in video and andio recording of every bird flight and potential collision uploaded to DTBird online Data Analysis Platform, with Username and Password protected access. Request of in situ inspection to verify a potential collision and/or to recover a potential collision in and/or to recover a potential collision wideo recording to every bird flight and potential collision wideo and sound recording. Ernall notifications of potential collision events, including online video data of the bird flight. Collision ID. Collision time data: Init time and total length. Collision wideo records, with embedded audio record. Collision event analysis from video and sound recordings. Bird flights videos with audio storage for 2 years (up to 50 Gb/Year/DTDIad unit) and data storage for 5 years, in DTBird's Server in Data Center Classified first 4. Optional one-year extensions. Service Control Warranty Varanty			
Module specifications Module models Ve and V8. Simultaneous video and sound recording of interconnected cameras for every detected bird flight. Continuous video recording saved for 5-10 days. Service specifications Bird Species/Groups All bird Species/Groups. Bird Species/Group identification Yes, through the review of bird flight video and audio recordings. Surveillance area Whole WTG (including blades, nacelle and tower). Multiple bird flights track & detection Yes. Nº of bird collisions simultaneously recorded Unlimited. Bird flights detectability in video recordings >96% (within the bird flights detected). Powerall bird collision detectability in video recordings of every bird flight and potential collision uploaded to DTBird online Data Analysis Platform, with Username and Password protected access. Permandance of the bird flight. Request of in situ inspection to verify a potential collision and/or to recover a potentially injured bird Location. Collision line data: Init time and total length. Collision time data: Init time and total length. Collision video records, with embedded audio record. Everal modulate and VTG operational parameters of the collision event. Poeces/group, bird behavior and collision event analysis from video and sound recordings. Bird flights videos with audio storage	Installation site	WTGs - On & Offshore.	
Service specifications Detectable bird Species/Groups All bird Species/Groups. Bird Species/Group identification Yes, through the review of bird flight video and audio recordings. Surveillance area Whole WTG (including blades, nacelle and tower). Whole WTG (including blades, nacelle and tower). Yes. Multiple bird flights track & detection No of bird collisions simultaneously recorded Bird flights detectability >880% Bird collision detectability in video recordings Overall bird collision detectability in video recordings Overall bird collision detectability Overall bird collision detectability All bird detectability on 3.6 (bird flight detectability) x 0.96 (collision detectability in video recordings of every bird flight and potential collision uploaded to DTBird online Data Analysis Platform, with Username and Password protected access. Request of in situ inspection to verify a potential collision and/or to recover a potential collision and/or to recover a potentially injured bird Recorded data Collision in Collision in Collision in the data: Init time and total length. Collision intended ata: Init time and total length. Collision video records, with embedded audio record. Environmental data, and WTG operational parameters of the collision event. Species/group, bird behavior and collision event analysis from video and sound recordings. Bird flights videos with audio storage for 2 years (up to 50 Gb/vear/Difful unit) and data storage for 5 years, in DTBird* Server in Data Center Classified Ter 4. Optional one-year extensions. Flight Analysis tools: review of video and audior records, flight analysis, data export, video download and automatic service reports. Service Control Warranty Warranty Warranty	Module specifications		
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Surveillance area Whole WTG (including blades, nacelle and tower).	Service specifications		
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Multiple bird flights track & detection Nº of bird collisions simultaneously recorded Bird flights detectability Bird collision detectability Nº of within the bird flights detected). Some of the collision detectability Nº of the collision detectability in video recordings of every bird flight and potential collision uploaded to DTBird online Data Analysis Platform, with Username and Password protected access. Request of in situ inspection to verify a potential collision and/or to recover a potential collision and/or to recover a potential collision and/or to recover a potential in the collision of potential collision events, including online video data of the bird flight. Collision ID. Collision time data: Init time and total length. Collision video records, with embedded audio record. Environmental data, and WTG operational parameters of the collision event. Species/group, bird behavior and collision event analysis from video and sound recordings. Bird flights videos with audio storage for 2 years (up to 50 Gb/Year/DTBird unit) and data storage for 5 years, in DTBird* Server in Data Center Classified Tier 4. Optional one-year extensions. Flight Analysis tools: review of video and audio records, flight analysis, data export, video download and automatic service reports. Service Control Warranty Varranty Password Analysis Platform Service Control Password Password protected access. Lenalision detectability of collision detectability of video and audio records, flight analysis, data export, video download and automatic service reports. Service Control	Bird Species/Group identification	Yes, through the review of bird flight video and audio recordings.	
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recorded Bird flights detectability Bird collision detectability in video recordings Overall bird collision detectability Video with audio recordings of every bird flight and potential collision uploaded to DTBird online Data Analysis Platform, with Username and Password protected access. Request of in situ inspection to verify a potential collision and/or to recover a potential collision and/or to recover a potential printing bird Recorded data Collision ID. Collision ID. Collision time data: Init time and total length. Collision time data: Init time and total length. Collision event analysis from video and sound recordings. Bird flights videos with audio storage for 2 years (up to 50 Gb/Year/DTBird unit) and data storage for 5 years, in DTBird* Server in Data Center Classified Tier 4. Optional one-year extensions. Flight Analysis tools: review of video and audio records, flight analysis, data export, video download and automatic service reports. Service Control Warranty Overall bird etectability in video (within the bird flights detected). 2-year worldwide.	Multiple bird flights track & detection	Yes.	
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Overall bird collision detectability O.8 (bird flight detectability) x 0.96 (collision detectability in video recordings) = 0.77 Video with audio recordings of every bird flight and potential collision uploaded to DTBird online Data Analysis Platform, with Username and Password protected access. Request of in situ inspection to verify a potential collision and/or to recover a potential collision and/or to recover a potentially injured bird E-mail notifications of potential collision events, including online video data of the bird flight. Collision ID. Collision ID. Collision time data: Init time and total length. Collision video records, with embedded audio record. Environmental data, and WTG operational parameters of the collision event. Species/group, bird behavior and collision event analysis from video and sound recordings. Bird flights videos with audio storage for 2 years (up to 50 Gb/Year/DTBird unit) and data storage for 5 years, in DTBird® Server in Data Center Classified Tier 4. Optional one-year extensions. Flight Analysis tools: review of video and audio records, flight analysis, data export, video download and automatic service reports. Service Control Self-checking and daily verification done remotely from DTBird® Headquarters. 2-year worldwide.	· ·	>96% (within the bird flights detected).	
Collision traceability¹ Request of in situ inspection to verify a potential collision and/or to recover a potential collision and/or to recover a potentially injured bird Recorded data Collision ID. Collision time data: Init time and total length. Collision video records, with embedded audio record. Environmental data, and WTG operational parameters of the collision event. Species/group, bird behavior and collision event analysis from video and sound recordings. Bird flights videos with audio storage for 2 years (up to 50 Gb/Year/DTBird unit) and data storage for 5 years, in DTBird® Server in Data Center Classified Tier 4. Optional one-year extensions. Flight Analysis tools: review of video and audio records, flight analysis, data export, video download and automatic service reports. Service Control Video with audio recordings of every bird flight and potential collision uploaded to DTBird® Headquarters. Video with audio records, including online video data of the bird flight. Double of the bird flight analysis of the bird flight. Video with audio records, with embedded audio record. Environmental data, and WTG operational parameters of the collision event. Species/group, bird behavior and collision event analysis from video and sound recordings. Bird flights videos with audio storage for 2 years (up to 50 Gb/Year/DTBird unit) and data storage for 5 years, in DTBird® Server in Data Center Classified Tier 4. Optional one-year extensions. Flight Analysis tools: review of video and audio records, flight analysis, data export, video download and automatic service reports. Service Control Varranty 2-year worldwide.	Overall bird collision detectability		
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Flight Analysis Platform Flight Analysis tools: review of video and audio records, flight analysis, data export, video download and automatic service reports. Service Control Self-checking and daily verification done remotely from DTBird® Headquarters. Varranty 2-year worldwide.		Bird flights videos with audio storage for 2 years (up to 50 Gb/Year/DTBird unit) and data storage for 5 years,	
Warranty 2-year worldwide.	Online Data Analysis Platform	Flight Analysis tools: review of video and audio records, flight analysis, data export, video download and	
	Service Control	Self-checking and daily verification done remotely from DTBird® Headquarters.	
¹ Traceability: Ability to verify bird flight collision events, time and Species/Group identification by means of recorded video and sound.	Warranty	2-year worldwide.	
	¹ Traceability: Ability to verify bird flight collision events,	time and Species/Group identification by means of recorded video and sound.	

6



Annex. Examples of the Surveillance Area of DTBird Detection Module models V4 and V8.

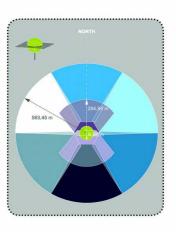




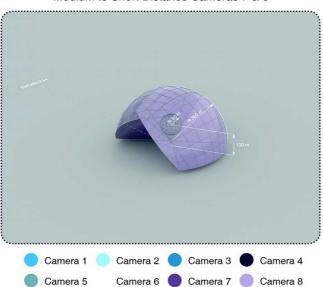
DTBird Detection Module V8 WTG: Tower height 130 m, Rotor diameter 120 m. Projection of the Surveillance Area. Target Species: . Golden Eagle (Aquila chrysaetos) . WTE (Haliaeetus albicilla)

3D Projection Long Distance Cameras 1-2-3-4-5 & 6

2D Sections At 1/2 of the Rotor Swept Area height (RSA)



3D Projection Medium to Short Distance Cameras 7 & 8



Rotor Swept Area (RSA)

2D Plan projection

