FLEX II

Debut FLEX II series comprises solar-driven GNSS-ACC trackers designed for attachment to harnesses. These trackers boast a housing crafted from PC+ABS injection molding, ensuring exceptional durability. Their highly efficient solar units are safeguarded by a transparent PC layer, offering protection against scratches. Within a weight range of 10 to 20 grams, these trackers offer both 4G and Argos transmission options.

BASIC SPECIFICATIONS

MODEL	FLEX II	FLEX II Max
Appearance		
Dimensions (LWH)	50.3mm x 24.4mm x 13.1mm	50.3mm x 24.4mm x 20.1mm
Battery Capacity	30 mAh	210 mAh
Battery Life	Over 300/2000 positions under optimal GNSS satellite view at 5-minute interval	
Battery Type	Lithium polymer rechargeable battery with under-and-over-charge protection	
Solar type	GaAs solar unit (30% efficiency) with good performance under weak light	
Antenna	Internal	
Housing	ABS & PC injection molding	
Color	Light brown / Black	
GNSS Module	Precision: CEP (50%) 5m Maximum update rate: 10 Hz	
Working Temperature	-20°C~60°C (enough for very cold winter if close to warm-blood animal body)	
Waterproof	IP 68 (2 ATM)	
Data Types	- GNSS: longitude, latitude, altitude, altitude (ellipsoid), course, satellite quantity - ENV: voltage, light intensity, temperature - ODBA (overall dynamic body acceleration) - ACC: x/y/z acceleration data (upon request) - Beacon: with Debut series gateway devices	
Data Storage	Collected data will be stored in memory before transmission. - Flash memory: 16 MB - Regular data storage: 460 days at default setting (1h GNSS+1h ENV+10 min ODBA) - BOOST data storage: 280,000 pieces - ACC data storage: 28,700 pieces	
Working Schedule	Programmable from 1 min, changeable via 2G/4G network, or instantly via INTELINK (Bluetooth)	
Firmware Upgrade	Remotely via 4G network, or instantly via INTELINK (Bluetooth)	

FLEX II 4G

SUB-MODELS

Name	Weight	Total Height	Battery
FLEX II 4G	9.6±0.2g	13.1mm	30 mAh
FLEX II 4G Max	14±0.2g	20.1mm	210 mAh
FLEX II 4G Max 95	11.7±0.2g	20.1mm	95mAh
FLEX II 4G Max 100	11.8±0.2g	20.1mm	100mAh
FLEX II 4G Max 460	16.7±0.2g	20.1mm	460mAh
FLEX II 4G CF1 [1]	16.6±0.3g	30mm	210 mAh
FLEX II 4G CF1 460	18.6±0.2g	30mm	460mAh
FLEX II 4G CF2	17.8±0.3g	30mm	210 mAh
FLEX II 4G CF2 95	15.2±0.3g	30mm	95 mAh
FLEX II 4G CF2 100	15.3±0.3g	30mm	100 mAh
FLEX II 4G CF2 460	20.5±0.3g	30mm	460 mAh
FLEX II 4G Transformer [2]	Depends on collar choice	/	30mAh
FLEX II 4G Max Transformer	Depends on collar choice	/	210mAh

[1] The CF series is an evolution of the FLEX II 4G Max, featuring elevated solar panels (one or two) to accommodate thick feathers. Pictured to the right are the FLEX II 4G CF1 (top) and FLEX II 4G CF2 (bottom) models.

Constructed from nylon using 3D-printing technology, the housing surpasses waterproof standards with a rating exceeding IP68.

[2] The Transformer series utilizes the FLEX II 4G as a neck collar, as depicted in the images to the right. For a visual demonstration of the assembly process, please refer to the following link:

http://druid-dabiao.oss-cn-shanghai.aliyuncs.com/quick_start/Video/FLEX%20II%20collar%20assembly.mp4?OSSAccessKeyId=LTAIi3pRI18L9f9P&Expires=1000001640238759&Signature=aWniRIB23RjmeJROuoxqjU2Z6jg%3D

This design offers exceptional flexibility, allowing for minor customization of the collar diameter to suit individual needs.

TRANSMISSION MODULE

4G Band	Uplink（MHz）	Downlink（MHz）	Output Power（dBm）
LTE-FDD B1	1920 ~1980	2110 ~2170	23 dBm±2.7 dB
LTE-FDD B3	1710 ~1785	1805 ~1880	23 dBm±2.8 dB
LTE-FDD B5	869 ~ 894	824 ~ 849	23 dBm±2.9 dB
LTE-FDD B8	880 ~915	925 ~960	23 dBm±2.1 dB

Maximum output power: 23 dBm

Maximum uplink/downlink data rate: 5 Mbps/10 Mbps

FLEX II ARGOS

FLEX II Argos provides both GNSS data, and Doppler locations estimated by the Argos system. Additionally, it is equipped with multiple sensors capable of generating data that reflects ambient environmental conditions and animal activity and behaviors.

In addition to scheduled Argos transmission, FLEX Argos utilizes patented INTELINK® technology to transmit data to smartphones or Debut series gateway devices. This facilitates ground search operations, retrieval of data stored onboard (often exceeding the capacity for Argos transmission), and enables real-time modeling based on raw acceleration data downloading and tagging using specialized tools.

SUB-MODELS

Name	Weight	Antenna [1]	Battery
FLEX II Max Argos	13.9±0.2g	External, 0.4mm titanium alloy wire	210mAh

[1] Based on the behavioral characteristics of the species, users have the option to opt for a sturdier and thicker external antenna. By switching from the default 0.4mm titanium alloy wire antenna to a 7*7 braided rope made of titanium alloy wire, the total weight increases by approximately 1 gram.

TRANSMISSION FREQUENCY BANDS

Duplex mode	f（MHz）	Uplink（MHz）	Duplex spacing（MHz）	Bandwidths（KHz）	Downlink（MHz）
single frequency	400	399.99-401.690	1.79	10	466

TRANSMISSION STRATEGY

FLEX Argos monitors Argos satellite pass and attempts transmission only when a satellite is over head. This mode is particularly recommended for long-distance migrating species, but it is also advisable for other

species when you are unfamiliar with satellite pass schedules in the tracking region.

A crucial parameter is the "GNSS queue," which determines how many of the latest GNSS data points should enter the queue for Argos transmission attempts. Since Argos transmits one piece of GNSS data per time following a 90s/60s periodic pattern during satellite passes, and the device does not confirm whether the satellite has successfully received it, setting an appropriate GNSS queue value ensures that you receive the data as complete as possible.

The GNSS queue should be configured considering the GNSS interval you set, as well as the satellite pass duration of the region (the longer the pass, the more data can be transmitted). A successful example is at a south latitude of 38°, for seabirds with favorable solar charging conditions, where GNSS data was collected every 30 minutes, and the GNSS queue was set to 20. In this scenario, the researcher can receive 42~48 non-repetitive GNSS data points per day.

If another transmission strategy is required to suit the study's scenario and objectives, such as periodic or on-time transmission, please contact your sales manager for configuration assistance.

PRICING

Sub Model-Name	Device (Feed Subscription)		Ecotopia Data Services [1]	Debut Renewal
	Retail Price	Promotion Price	(per unit per year)	Plan [2]
FLEX II 4G	1199	1099	131.88	249
FLEX II 4G Max	1199	1099	131.88	249
FLEX II 4G Max 95	1199	1099	131.88	249
FLEX II 4G Max 100	1199	1099	131.88	249
FLEX II 4G Max 460	1199	1099	131.88	249
FLEX II 4G CF1	1199	1099	131.88	249
FLEX II 4G CF1 460	1199	1099	131.88	249
FLEX II 4G CF2	1299	1199	131.88	299
FLEX II 4G CF2 95	1299	1199	131.88	299
FLEX II 4G CF2 100	1299	1199	131.88	299
FLEX II 4G CF2 460	1299	1199	131.88	299
FLEX II Max Argos	1199	N/A	59.88	249

Note: The prices are in US dollar.

[1] To know more about Ecotopia Data Service, please click:
https://www.ecotopiago.com/help/en/#/essential/data_service/overview

[2] To know more about Debut Renewal Plan, please click:
https://www.youtube.com/watch?v=IM75JLGhsHU&t=6s

[3] The promotion period for the FLEX II 4G series is 2023 Sep 1 ~2024 December 31.

ACCESSORIES

FLEX II series is primarily engineered for back-mounting using harnesses. However, it's also adaptable for use with a set of accessories referred to as "transformers," allowing for alternative applications such as neck-collar usage.

BACK-MOUNT

Each device will be provided along with 2 meters of 5mm wide UHMWPE tape (for harness use) and 6 aluminum rings (for binding the harness) for free.

NECK-COLLAR

Injection-molding collars at 38/43/55 mm diameter are provided at the price of USD 6.99 for each.

If you need different collar diameter, please contact us for customization using 3D-printed structure.