

Corona Cameras Selection Guide



Ofil's 2017 range of corona cameras includes a variety of solutions to match budgets, needs, applications, locations or any other consideration. Ofil's cameras incorporate the core DayCor® technology offering high sensitivity to corona PD, true output and optimal working experience.

Ofil's corona cameras are classified as non-destructive and non-intrusive (NDT). Ofil suggests: solutions, systems and OEM components that are either commercial off-the-shelf (COTS) or customized to specific customers' requirements.

TARGETED APPLICATION ☆FREQUENCY OF INSPECTION ☆ENHANCING THE SPECTRUM

The first argument to consider when selecting a corona detection system should be the targeted application, because the requirements that are typical to monitoring long transmission lines or big substations differ from those of distribution lines or of indoors installations. Another argument to consider is the required frequency of inspections. As such, some components that are defined as critical might call for more frequent inspections, as are installations in contaminated industrial or coastal areas. Frequency involves having available inspection instruments. UV inspection adds valuable information in real time and complements information that is being gained with IR cameras. Both technologies do not overlap and should be used in tandem. Using separate high quality cameras for IR and UV inspection has the advantage of always getting quality data, not to mention the cumbersome complicated operation of a combined UV&IR camera.

BUDGET

When it comes to budget, Ofil is always attentive to its customers' needs and constraints and as a rule tries to find the most appropriate and cost effective solution for its customers.

DayCor® range of products is classified according to the manner of operation: Handheld cameras, Mounted Terrain Systems, Mounted Airborne systems. Before reviewing the mounted and aerial solutions it should be noted that any of Ofil's corona detecting products shares the core DayCor® technology as follows:

DayCor® technology

- **UV filters** - Highest UV transmission
- **UV optics** – High efficiency + adaptive FOV
- **Precise mechanics** - Corresponding responsive engines
- **Electronics and algorithms** – Signals processing and functions
- **Solar blind | Visible blind systems** – Highest absorption

Handheld Systems:

Ofil's handheld systems are designed for multipurpose use. These systems are specially designed to be conveniently carried and operated, are fit for foot patrol, can be mounted on tripods and be used from within helicopters and vehicles. Systems differ in their design, dimensions, mode of operation, sensitivity to UV and RIV sources, price and recommended working distance. Each product is presented with its prominent features and a price indication. Additional information can be found in Ofil's website: www.ofilsystems.com/products.

Models: DayCor® Luminar^{HD} | DayCor® Superb OD | DayCor® Superb XD | DayCor® UVollé-VX | DayCor® UVollé SX | DayCor® Scalar

DAYCOR® SCALAR

Visible-blind corona camera that is dedicated to indoor inspections. Scalar is offered at a very attractive low price and is affordable to small, medium or big companies with installations inside buildings, laboratories, underground spaces, mines, motor workshops, factories, data centers, electrical distribution companies etc.

Scalar is an efficient, affordable, very reasonably priced tool that provides instant imaging of existing corona or arcing and high quality recordings.

FUNCTIONALITY - Scalar provides a clear view of corona and arcing on motors, switchgears, electrical cabinets etc., and has a powerful LED flashlight that enables inspecting very dark compartments. DayCor® Scalar captures corona events, stores video clips and still images with playback.

PHYSICAL PROPERTIES – a sleek design, palm grip, carried by a shoulder strap, 0.9Kg (2lb) 28 x 12 x 9 cm (11 x 4.7 x 3.5")

MODE OF OPERATION – Manual; On screen menu + swift buttons; Very simple straight forward operation; Preset stored settings variations can be provoked at any time streamlining operation and assist getting to the desired results; Backlit buttons facilitate maneuvering in poor lit conditions. A rechargeable battery provides extra-long operation duration. Camera can also be operated when plugged into the wall.

TESTED CERTIFIED SENSITIVITY TO UV SOURCES – 15pC @1m, as required for short distance inspection

FIELD OF VIEW – 15°x11°

SPECTRAL RANGE	SENSITIVITY	RECOMMENDED WORKING DISTANCES	FOV	LCD	WEIGHT	LED	PRESET PROFILES	RECORD & PLAY
310-320 Visible Blind	15 pC @ 1 m 43.9 dB μ V @ 1MHz	0.5-5m	15° x 11°	4.3"	0.9Kg	Built-in	4	Video & Stills

DAYCOR® UVOLLÉ [SX | VX]



UVollé-X corona cameras series is a light weight handheld solar blind UV corona detection solution for in/outdoors working environments of distances up to 30 m (33 ft). UVollé cameras appeal to maintenance teams due to the outstanding clear large LCD, easy operation, extended run time battery, pinpointed accurate provided information, at an affordable reasonable price. UVollé series is being used by electrical utilities; manufacturing companies that maintain their privately

owned substations and high voltage installations, motor workshops, services providers, manufacturers of components for the electrical grid that need to perform quality tests, high voltage laboratories and more. 2 offered variants with a price difference: VX – enables video capturing, SX – enables stills capturing.

Moderately priced, UVollé is an optimal selection of an affordable professional solar blind tool providing instant accurate imaging of existing corona or arcing and high quality recordings that are used for creating inspection and trending reports.

FUNCTIONALITY – UVollé displays corona signals and the emitting sources with indications of the corona severity. Zooming, long integration, gain control, manual & auto focus, and changing corona color assist operators during investigating cases of faulty grid components. A protecting hood supports sunny working conditions while a powerful LED flashlight and backlit buttons support working in dark spaces. DayCor® UVollé captures corona events with additional overlaid information such as GPS temperature & humidity conditions and audio annotations, stores video clips and still images and provide for their playback.

PHYSICAL PROPERTIES – wide VGA 5" LCD, elegant design, comfortable hand grip, carried by a shoulder strap, 1.3 Kg (3 lb) 29 x 12 x 8.5 cm (11.4 x 4.7 x 3.3")

MODE OF OPERATION – Manually or remotely controlled; On screen menu + swift buttons; Very simple straight forward operation; Backlit buttons facilitate maneuvering in poor lit conditions. A rechargeable battery provides extra-long operation duration. Camera can be mounted on a tripod and remotely controlled.

TESTED CERTIFIED SENSITIVITY TO UV SOURCES –1pC from a distance of 10m (33 ft) enables seeing corona from distances of 0.5 (1.64 ft) m up to 30 m (98.5 ft).

FIELD OF VIEW – 6.4° x 4.8°

SPECTRAL RANGE	SENSITIVITY	RECOMMENDED WORKING DISTANCES	FOV	LCD	WEIGHT	LED	ANNOTATION	ZOOM
240-280 Solar Blind	1 pC @ 10 m 3.6 dB μ V @ 1MHz	1.5-30m & 0.5-1.5 with close-up lens	6.4° x 4.8° & 10° x 7.5° w/ext lens	5"	1.39Kg	Built-in	Audio	Visible & UV

DAYCOR® LUMINAR^{HD}



Luminar^{HD} corona cameras are Ofil’s prominent solar blind UV imagers with outstanding detecting capabilities. Luminar^{HD} is fit for multiple working conditions of both outdoors and indoors, inspecting remote and nearby objects, with continuous narrow and wide fields of view. Luminar cameras appeal to maintenance teams due to the outstanding detection performance, bright sun readable adjustable monitor, HD media recording. Operating the camera is simple with self-explanatory menu. Luminar^{HD} has an extended run time battery, a built-in GPS, built-in LED flashlight, voice annotations, powerful zoom, counting, gain control, humidity & temperature plug, and can be remotely controlled wirelessly. Luminar^{HD} is being used by all kinds of electrical utilities, manufacturing companies either for QA or to maintain their privately-owned substations and high voltage installations. Motor workshops use Luminar^{HD} to test refurbished or new motors before handing them to end users. Services providers use Luminar to generate detailed reports with findings. High voltage laboratories use Luminar for their research.

Luminar^{HD} is offered to companies that appreciate high end products and wish to own a top-quality corona camera.

FUNCTIONALITY – Provides instant accurate information about the condition of the inspected asset. Luminar^{HD} displays corona signals and the discharging sources with indications of the discharge severity. Powerful zooming, gain control, corona magnification, manual & auto focus, rainbow corona selection colors are handy during inspecting very distant objects trying to identify faults that relate to corona. The captured video clips and still images of corona include photon counting values, GPS data, ambient measured conditions, and text subtitles added by inspectors.

PHYSICAL PROPERTIES – a robust design that fits professional extensive working hours, comfortable hands grip, carried by a shoulder strap, Luminar^{HD}’s dimensions: 2.2 Kg (4.5 lb), 29 x 12 x 8.5 cm (11.4 x 4.7 x 3.3”)

MODE OF OPERATION – Manual and remotely controlled; On screen menu + swift buttons; Multiple functions presented on screen using clear icons; simple straight forward operation. Interchangeable fields of view; Rechargeable battery provides extra-long operation duration. Camera can be mounted on a tripod and remotely controlled.

TESTED CERTIFIED SENSITIVITY TO UV SOURCES –1pC from a distance of 15m (49.2 ft) enables seeing corona from distances of 3m (9.8 ft) up to 100 m (328 ft).

FIELDS OF VIEW – 10°x5.6° up to 1.6°x 0.9°, continues zoom for both UV and Visible

SPECTRAL RANGE	SENSITIVITY	RECOMMENDED WORKING DISTANCES	FOV	LCD	WEIG HT	GPS	COM.	ZOOM
240-280 Solar Blind	1 pC @ 15 m 3.6dB μV (RIV) @1MHz	3-100m & 0.6m with close-up lenses	10° - 1.6° Horizontal	5” Folding 1000 cd/m ²	2.2Kg	Built-in	Wi-Fi Bluetooth Ethernet	Visible & UV

DAYCOR® SUPERB [OD | XD]



Superb is Ofil's trouser model that has been used by worldwide companies for almost a decade. Its stability and robust operation makes it still attractive. DayCor® Superb is a solar blind UV imager with excellent detecting capabilities and is fit for almost any light and weather conditions. Superb is offered in 2 models: OD with a 5" 450cd/m² reflective LCD and XD with an extra-large 6.5" 850 cd/m² reflective LCD. Superb has a keyboard with direct access to functions, a powerful zoom, counting, gain control, and can be remotely controlled. Superb is being used by manufacturing companies, owners of substations and high voltage installations, motor workshops, services providers, high voltage laboratories and academies.

Moderately priced, Superb is a proven high performing corona detection camera that is being still highly demanded by research, workshops and testing laboratories. Superb is renowned for its high sensitivity, reliable on going operation and high quality captured media.

FUNCTIONALITY – Superb displays corona signals and the discharging sources with indications of the discharge severity. Powerful zooming, gain control, corona magnification, manual & auto focus, audio annotation are handy functions during inspecting very distant objects trying to catch, identify and capture faults that relate to corona. A folding LCD and a hood enable working in sunny conditions. The captured video clips and still images of corona include photon counting values, GPS data, ambient measured conditions, and text subtitles added by inspectors

PHYSICAL PROPERTIES – a robust design that fits extensive working hours under tough conditions, carried by a supportive harness or mounted on a tripod. Dimensions: 3.2 Kg (7.3 lb), 23 x 18 x 15 cm (9.1 x 7.1 x 5.9")

MODE OF OPERATION – Manually and remotely controlled; Keypad; Simple straight forward operation. Narrow field of view that can be changed into wide using an external auxiliary lens (accessory); Rechargeable battery provides long operation duration.

SENSITIVITY TO UV SOURCES –1pC from a distance of 10m (33 ft) enables seeing corona from distances of 3m (9.8 ft) up to 100 m (328 ft).

FIELDS OF VIEW – 5°x3.75°

SPECTRAL RANGE	SENSITIVITY	RECOMMENDED WORKING DISTANCES	FOV	LCD	WEIGHT	GPS	ANNOTATIONS	ZOOM
240-280 Solar Blind	1pC @ 15 m 3.6dB μ V (RIV) @1MHz	3-100m 0.5m with close-up lenses	5° x 3.75° 10°x7.5° w/ext lens	5" OD Folding 6.5" XD Folding	2.2Kg	Built-in	Text + Audio	Visible & UV



Mounted Systems

Ofil's mounted systems are designed for terrain and aerial use. These systems are specially designed to be conveniently carried and operated. The variety in camera's models allows using them on UAVs as well as in gimbaled payloads. Ofil's mounted system can be used in rail testing wagons and on vehicles' roof. Systems can also be mounted on tripods and used as fixed scouts.

Models: DayCor® Ranger | DayCor® Rail® | DayCor® ROM | DayCor® ROMpact | DayCor® Swift



DAYCOR® RANGER

Ofil's terrain mounted inspection systems are offered either as full solutions that include: a roof mount, a corona detecting camera with or without an additional sensor such as IR or HD camera, and a remote control unit, or as modules that can be added to existing mounts.



Ranger is attractive to electrical utilities that need to inspect overhead lines and have a direct line of sight to the installations throughout the ride. Due to the high sensitivity of the sensors involved, inspection can be performed from far away.

To accommodate for lengthy inspection processes Ranger efficiently minimizes the time spent over processing recorded cruises by storing encountered corona events in a dedicated folder.

FUNCTIONALITY

RANGER provides a clear view of corona and arcing on remote and tall transmission and distribution overhead grid lines. DayCor® Ranger records high resolution video clips with GPS, date & time; audio commentating & UV counting, and stores encountered events in a dedicated folder. It is set to incorporate an additional camera, hence concurrent inspections with combinations of UV, IR, HD etc., streamlines inspection duration and provides a comprehensive view of the inspected assets.

PHYSICAL PROPERTIES

Ranger system consists of a pan & tilt roof mount, a remote control unit and a bi-spectral UV-Visible camera. The roof mount of a composite design ensures low system weight and extended mission endurance. It has shock absorbers and interface connectors compatible with MIL-C-26482 standard. The remote control unit is L7.6 x W31.7 x H22.6 cm | L3" x W12.5" x H8.9" with 8.4" high-resolution color LCD. The bi-spectral DayCor® camera is L25 x W18 x H14.5 cm | L9.8 x W7.0 x H5.7 in dimension and operates in -20°C up to +55°C.

MODE OF OPERATION

Ranger is operated from within a vehicle by a remote control unit. The mount has panning (horizontal) capabilities of 340° at 10°/Sec and tilting (vertical) of -90° to +30° at 10° / Sec. Multiple preset positions enable operating in a controlled automatic mode. The camera caters rapid zoom of 25 optical x 12 digital and UV magnification of X2 and X4.

INSTALLATION

Installation is easy and fast. It is adjustable to most vehicle makes and sizes. The systems is supplied with an installation kit and detailed instructions.

SENSITIVITY TO DISCHARGE SOURCES

1pC @ 10 meters equivalent to 7.7dB μ V (RIV) @1MHz.

FIELD OF VIEW

– 5° x 3.75° and 10° x7.5° (optional)

MULTIPLE SENSORS	SENSITIVITY CORONA	FOV	RECOMMENDED WORKING DISTANCES	ANNOTATION	ZOOM	OPERATION	SPECIAL FEATURES
Yes: Optional UV + IR	1 pC@15 m 3.6dB μ V (RIV) @1MHz	5°x3.75° & 10°x7.5° w/ext lens	Easy Self 3-100m	Audio GPS Date &Time	Visible & UV	- Remote control - Pan & Tilt - Preposition	<ul style="list-style-type: none"> • Preset positions • Corona events folder

DAYCOR® RAIL



DayCor® Rail is an automatic corona and arcing discharge detection system designed for railways. The system recognizes corona events on overhead high voltage railway lines, records them for further processing, stores the processed data and provides a report of all encountered events. The raw data as well as the processed information can be viewed any time on a monitor.

DayCor® Rail is attractive to railways whose operation involves strict safety standards. As a sensitive testing equipment that sees beyond human spectral range Rail can alert on time of existing faults. Rail is a unique system that processes raw data on the fly into meaningful information. As such, if during testing a corona event is encountered an alert is created. The system distinguishes between false alarm and real corona events. Due to the high sensitivity of the sensors involved, inspection results are reliable and precise.

Rail is the only corona detection system that provides an automatic report at the end of a line scan, which means less processing costs and fast results.

FUNCTIONALITY



DAYCOR® RAIL autonomous automatic corona detection and reporting system used for inspecting railways catenary systems. Corona signals and the emitting sources are depicted with GPS and severity while recording can last more than 10 continuous hours. DayCor® Rail is customizable and can be tailor made to match specific needs, architectures, platforms, languages and general preferences

PHYSICAL PROPERTIES

DayCor® Rail consists of a Bi-spectral (UV + Visible) Solar Blind Imager, GPS Antenna, Main Processor Unit , 19" Monitor, a Keyboard & touch pad and a Corona-Catch software. Components have high tolerance to jerky rides and can withstand strong vibrations, resulting in smooth movie clips and continuous uninterrupted recordings.

MODE OF OPERATION

Automatic corona events capture; Per demand recording; Per demand report generation.

SENSITIVITY TO DISCHARGE SOURCES

1pC from a distance of 10m or 7.7dB μ V (RIV) @1MHz with UV-Visible overlay perfect accuracy (deviation less than 1miloradian)

FIELD OF VIEW

5° x 3.75° and 10° x 7.5° (optional)

SENSORS	SENSITIVITY CORONA	FOV	RECOMMENDED WORKING DISTANCES	ANNOTATION	RECORD	OPERATION	SPECIAL FEATURES
Bi-spectral UV-Visible	1 pC@15 m 3.6dB μ V (RIV) @1MHz	5°x3.75° & 10°x7.5° w/ext lens	Easy Self	Text GPS, Temp & Humidity, D&T	Over 10 hours	- Automatic - Per demand	<ul style="list-style-type: none"> • Auto detection • Auto reports generation



DAYCOR® ROM



Ofil's aerial inspection systems are offered either as a full solution that includes a gimbaled stabilized payload, a corona detecting camera with or without additional sensors such as IR and HD camera, and a control and display unit, a full system referenced as ROM, or as a module that can be added to an existing payload referenced as ROMpact.

Aerial inspection is an attractive solution to electrical utilities that need to inspect long overhead grid lines with limited or no available alternative inspection options. Aerial inspection of lines can be accomplished within a considerable shorter time and therefore repeated occasionally, as would be expected in areas with high vulnerability to contamination or to extreme climatic conditions.

ROM systems offered by Ofil consist of active gyro with five-axis stabilization payloads and a combination of selected first choice sensors. The payload size correlates to the number of implemented sensors, ranging between one and four. Mounts are fitted to the helicopter model and are easily and safely installed abiding FAA & EASA regulations. Due to the high quality and sensitivity of the sensors involved, inspection can be remotely performed in high speed while collecting accurate information about the true condition of the inspected lines.

FUNCTIONALITY

DayCor® ROM is a reliable corona detection solution for high speed airborne inspection. Systems are light in weight and fit to be mounted on most known helicopters. Configured for multiple sensors ROM benefits from a long wave radiometric thermal camera, combined with a solar blind Bi-spectral UV camera and a high definition video camera. Features include: Digital video recording and storing; intercom voice annotation recording; rapid zoom; auto focus, GPS data; auto tracking.

PHYSICAL PROPERTIES

Gimbals are designed and manufactured using an aluminum structure combined with composite covers. Gimballed payload dimensions vary between Ø400 mm (15.7 in) Weight 30 kg (66 lb) and Ø300 mm (11.8 in) Weight 20 kg (44lb) (depending on configuration). Typical Installations: Bell 206, AS350/355, MD500/600MI-17, EC-120, EC135/145 Robinson 44, etc.

MODE OF OPERATION

System is operated through a Hand-Control-Unit (HCU) that controls the Turret-Camera-Unit (TCU) and the mounted cameras. Coverage Az 360° Continuous Coverage El +20° to -120° Slew rate 60°/s Stabilization Typical less than 10 micro Rad.

SENSITIVITY

UV discharge sensitivity: 1pC from a distance of 10m; thermal sensitivity better than 50mK @ 30°C; HD resolution 1920x1080 pixels.

FIELDS OF VIEW

UV 8° x 6°, IR 16°x 12°, HD 59.5° (wide end) to 2.1° (tele end)

Spectral Ranges

UV 240 –280nm, thermal range 7.5–14µm, visible range

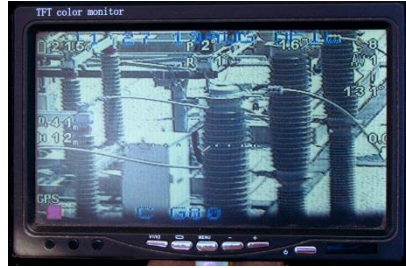
MULTIPLE SENSORS	SENSITIVITY CORONA	PAYLOAD DIMENSION	FOV (UV)	STABILIZATION	ZOOM	ANNOTATION
Yes: UV + variation of IR+HD+frame	1 pC@10m 3.6dB µV (RIV) @1MHz	Ø300 mm for 3 sensors Ø400 mm For 4 sensors	8° x 6°	Active gyro 5 axis	Fast 10 Opt X 12 Dig	Text + Audio+ GPS

NOTE: the additional integrated sensors are per specific customers' requirements



Data acquired from 3 sensors: IR, HD, UV

DAYCOR® ROMPACK



DayCor® ROMPACK is Ofil’s aerial corona inspection module that can be incorporated in existing payloads and provide bi-spectral solar blind UV – Visible detection capabilities. ROMPACK camera is valuable for scanning high and medium

voltage electrical installations. It fits payloads of various sizes and shapes including UAVs. ROMPACK can also be mounted on a tripod and operated manually from within a helicopter with an open window.

FUNCTIONALITY

DayCor® ROMPACK enjoys high sensitivity to UV signals of corona & arcing. Due to its great detection capabilities and resilient rigid structure ROMPACK endures flight conditions. ROMPACK is fit for high speed inspection as can be seen in the smooth recorded media where corona signals are depicted clear and sharp, superimposed accurately and naturally on their emitting sources. Absolute blindness to solar radiation guarantees detection in full daylight conditions.

PHYSICAL PROPERTIES

A robust compact design. Dimensions: 1.2 kg | 2.65lb, L245 x W125 x H101 mm | L9.65” x W4.92” x H3.9” .

MODE OF OPERATION

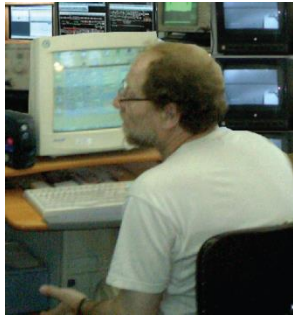
System is controlled through a laptop keyboard or stick via RS232 communication protocol. Imaging is transmitted wired or wireless to a remote monitor, providing immediate view of the entire inspection including corona.

SENSITIVITY TO CORONA DISCHARGE

2.2pC from a distance of 10m (33 ft).

SPECTRAL RANGE	SENSITIVITY	FOCUS RANGE	FOV	ZOOM	WEIGHT	DIMENSIONS	COMMUNICATION
240-280 Solar Blind	2.2pC @ 10 m 7.7dB μ V (RIV) @1MHz	1.5m 4.9ft – Infinity	8° x 6°	120 optical x digital	1.2Kg 2.65 lb	LxWxH 25x12.5x10 cm 9.6”x4.9”x3.9”	RS-232 Wireless & wired

DAYCOR® SWIFT



DayCor® Swift is a block OEM corona inspection module that can be incorporated in UAVs and as a fixed 24/7 monitoring camera mounted on a rotating fixture. Swift streams bi-spectral solar blind UV – Visible video to a receiver. Due to its special low cost Swift camera is attractive to UAV operators and to nonstop inspection by multiple overlapping detectors.

FUNCTIONALITY

DayCor® Swift enjoys high sensitivity to UV signals of corona & arcing. Due to its great detection capabilities and resilient rigid structure Swift endures extreme environmental conditions and can be positioned outdoors. Swift is fit for aerial inspection mounted on a UAV, transmitting video of corona and of the emitting sources. Swift can alert in real time of existing corona signals. Swift is fully solar blinded and therefore most appropriate for clear and sunny illuminated conditions.

PHYSICAL PROPERTIES

A robust compact design. Dimensions: 1.4 kg | 3.08lb, L247 x W125 x H73 mm | L9.72" x W4.93" x H2.87".

MODE OF OPERATION

System is controlled through a laptop keyboard or stick via RS232 communication protocol. Imaging is transmitted wired to a receiver, providing immediate view of the entire inspection including corona.

SENSITIVITY TO CORONA DISCHARGE

1pC from a distance of 10m (33 ft), 3.6dB μ V (RIV) @1MHz fit for inspection distances of up to 30 meters.

SPECTRAL RANGE	SENSITIVITY	FOCUS RANGE	FOV	ZOOM	WEIGHT	DIMENSIONS	COMMUNICATION
240-280 Solar Blind	1pC @ 10 m 3.6dB μ V (RIV) @1MHz	1.5m 4.9ft – Infinity	6.4° x 4.8°	120 optical x digital	1.4Kg 3.08 lb	LxWxH 24.7x12.5x7.3 cm 9.72"x4.93"xH2.87"	RS-232 Wired