Invitation to Quote

**Project Title: Real-Time Environmental Parameters Monitoring System**

**Procurement title:** Programmable drone and sensor equipment

**Date:** 01.07.2020.

**Source of Funding:** Ministry of Science of Montenegro and Faculty for Information Systems and Technologies, University of Donja Gorica

**Contract Ref:** 01-2312/4

Dear Supplier,

1. You are invited to submit your price quotation(s) for the supply of the following Lots:

 LOT1

|  |  |  |  |
| --- | --- | --- | --- |
| **Item No.** | **Name** | **Unit** | **Qty** |
|  | Programmable drone | piece | 1 |
|  | Touch screen display | piece | 2 |

 LOT2

|  |  |  |  |
| --- | --- | --- | --- |
| **Item No.** | **Name** | **Unit** | **Qty** |
|  | ATmega328P microcontroller with suitable programmer  | piece | 4 |
|  | ATmega328 microcontroller with suitable programmer  | piece | 4 |
|  | AT91SAM3X8E microcontroller with suitable programmer  | piece | 4 |
|  | Micro camera suitable with AT91SAM3X8E microcontroller | piece | 4 |
|  | Display suitable with 1., 2. and 3. microcontrollers | piece | 4 |
|  | RF 433 MHz transmitter-receiver pair | piece | 4 |
|  | Water temperature sensor | piece | 8 |
|  | Transformer 230 to 5V - power supply | piece | 4 |
|  | Bluetooth 4.1 communication interface | piece | 4 |
|  | Bluetooth 2.0 communication interface | piece | 15 |
|  | One channel relay 5V | piece | 4 |
|  | Solid state relay 5V | piece | 4 |
|  | Touch sensor | piece | 40 |
|  | RGB LED | piece | 40 |
|  | SD card reader module | piece | 8 |
|  | NodeMCU ESP8266 | piece | 8 |
|  | LM317 voltage regulator | piece | 5 |
|  | Dimmable voltage regulator | piece | 4 |
|  | Diode bridge | piece | 40 |
|  | BLE Beacon | piece | 4 |

1. You may quote for one or more lots. Each Lot shall be evaluated and contract awarded separately to the firm(s) offering the lowest evaluated price for each Lot (prices quoted shall correspond to 100 % of the items specified for each lot and to 100% of the quantities specified for each item of a lot).
2. Your price quotation in the form attached may be submitted by hand, mail, facsimile or electronically at the below address (paragraph 7).
3. The deadline for receipt of your quotation (s) by the Purchaser at the addressed indicated in this paragraph is: **July 7, 2020, 12,00h local time.**
4. Your quotation in duplicate and in English, should be accompanied by adequate technical documentation and catalogue(s) and other printed material or pertinent information for each item quoted, including names and addresses of firms providing service facilities in **Montenegro**.
5. Your quotation(s) should be submitted as per the following instructions and in accordance with the attached Contract. The attached Terms and Conditions of Supply is an integral part of the Contract.
	1. PRICES: The prices should be quoted in EUR for the Total Cost at final destination Oktoih 1, 81000, Podogrica, Montenegro, which includes all taxes, VAT, customs, duties, inland transportation and insurance, loading, unloading, assembly and installation of equipment.
	2. EVALUATION OF QUOTATIONS: Offers determined to be substantially responsive to the technical specifications will be evaluated by comparison of the total price at final destination.
	3. AWARD OF PURCHASE ORDER: The award will be made to the bidder offering the lowest evaluated price and that meets the required technical standards. The successful bidder will sign a Contract as per attached form of contract and terms and conditions of supply.
6. Further information can be obtained from address below:

**Name:** Strahinja Jakić

**Address:** Oktoih 1, 81000 Podgorica, Montnegro

**Contact mail:** strahinja.jakic@udg.edu.me

**Inspections and Audits**

* 1. The Supplier shall carry out all instructions of the Purchaser which comply with the applicable laws where the destination is located.
	2. The Supplier shall permit, and shall cause its Subcontractors and consultants to permit, the Ministry of Science and/or persons appointed by the Ministry to inspect the Supplier’s offices and all accounts and records relating to the performance of the Contract and the submission of the bid, and to have such accounts and records audited by auditors appointed by the Ministry if requested by the Ministry.

**Attachment 1**

**Technical specification**

 **Lot1**

|  |  |
| --- | --- |
| **Required by the Purchaser** | **Offered by the Bidder*****(Bidder to provide name of the technical specification of offered goods)*** |
| **Item #1** | Aircraft:* **Weight (Battery & Propellers Included):** 1368 g
* **Diagonal Size (Propellers Excluded):** 350 mm
* **Max Ascent Speed:** S-mode: 6 m/sP-mode: 5 m/s
* **Max Descent Speed:** S-mode:4 m/sP-mode :3 m/s
* **Max Speed:** S-mode: 45 mph (72 kph)A-mode: 36 mph (58 kph)P-mode: 31 mph (50 kph)
* **Max Tilt Angle:** S-mode:42°A-mode: 35°P-mode: 25°
* **Max Angular Speed:** S-mode: 250°/sA-mode: 150°/s
* **Max Service Ceiling Above Sea Level:**19685 feet (6000 m)
* **Max Wind Speed Resistance:**10 m/s
* **Max Flight Time:**Approx. 30 minutes
* **Operating Temperature Range:**32° to 104°F (0° to 40°C)
* **Satellite Positioning Systems:**GPS/GLONASS
* **Hover Accuracy Range:**Vertical:±0.1 m (with Vision Positioning)±0.5 m (with GPS Positioning)Horizontal:±0.3 m (with Vision Positioning)±1.5 m (with GPS Positioning)

Vision System:* **Vision System:**Forward Vision SystemDownward Vision System
* **Velocity Range:**≤31 mph (50 kph) at 6.6 ft (2 m) above ground
* **Altitude Range:**0 - 33 feet (0 - 10 m)
* **Operating Range:**0 - 33 feet (0 - 10 m)
* **Obstacle Sensory Range:**2 - 98 feet (0.7 - 30 m)
* **FOV:**Forward: 60°(Horizontal), ±27°(Vertical)Downward: 70°(Front and Rear), 50°(Left and Right)
* **Measuring Frequency:**Forward: 10 HzDownward: 20 Hz
* **Operating Environment:**Surface with clear pattern and adequate lighting (lux>15)

Gimbal:* **Stabilization:**3-axis (pitch, roll, yaw)
* **Controllable Range:**Pitch: -90° to +30°
* **Max Controllable Angular Speed:**Pitch: 90°/s
* **Angular Vibration Range:**±0.02°

Camera:* **Sensor:**1’’ CMOSEffective pixels: 20M
* **Lens:**FOV 84° 8.8 mm/24 mm (35 mm format equivalent) f/2.8 - f/11 auto focus at 1 m - ∞
* **ISO Range:**Video:100 - 3200 (Auto)100 - 6400 (Manual)Photo:100 - 3200 (Auto)100- 12800 (Manual)
* **Mechanical Shutter Speed:**8 - 1/2000 s
* **Electronic Shutter Speed:**8 - 1/8000 s
* **Image Size:**3:2 Aspect Ratio: 5472 × 36484:3 Aspect Ratio: 4864 × 364816:9 Aspect Ratio: 5472 × 3078
* **PIV Image Size:**4096×2160(4096×2160 24/25/30/48/50p)3840×2160(3840×2160 24/25/30/48/50/60p)2720×1530(2720×1530 24/25/30/48/50/60p)1920×1080(1920×1080 24/25/30/48/50/60/120p)1280×720(1280×720 24/25/30/48/50/60/120p)
* **Still Photography Modes:**Single ShotBurst Shooting: 3/5/7/10/14 framesAuto Exposure Bracketing (AEB): 3/5 bracketed frames at 0.7 EV BiasInterval: 2/3/5/7/10/15/20/30/60 s
* **Video Recording Modes:**H.265C4K:4096×2160 24/25/30p @100Mbps4K:3840×2160 24/25/30p @100Mbps2.7K:2720×1530 24/25/30p @65Mbps2.7K:2720×1530 48/50/60p @80MbpsFHD:1920×1080 24/25/30p @50MbpsFHD:1920×1080 48/50/60p @65MbpsFHD:1920×1080 120p @100MbpsHD:1280×720 24/25/30p @25MbpsHD:1280×720 48/50/60p @35MbpsHD:1280×720 120p @60MbpsH.264C4K:4096×2160 24/25/30/48/50/60p @100Mbps4K:3840×2160 24/25/30/48/50/60p @100Mbps2.7K:2720×1530 24/25/30p @80Mbps2.7K:2720×1530 48/50/60p @100MbpsFHD:1920×1080 24/25/30p @60MbpsFHD:1920×1080 48/50/60 @80MbpsFHD:1920×1080 120p @100MbpsHD:1280×720 24/25/30p @30MbpsHD:1280×720 48/50/60p @45MbpsHD:1280×720 120p @80Mbps
* **Max Video Bitrate:**100 Mbps
* **Supported File Systems:**FAT32 (≤32 GB); exFAT (>32 GB)
* **Photo:**JPEG, DNG (RAW), JPEG + DNG
* **Video:**MP4/MOV (AVC/H.264; HEVC/H.265)
* **Supported SD Cards:**Micro SDMax Capacity: 128GBWrite speed ≥15MB/s, Class 10 or UHS-1 rating required
* **Operating Temperature Range:**32° to 104°F (0° to 40°C)

Remote Controller:* **Operating Frequency:**2.400 - 2.483 GHz
* **Max Transmission Distance:**2.400 - 2.483 GHz (Unobstructed, free of interference)FCC: 4.3 mi (7 km) CE: 2.2 mi (3.5 km)SRRC: 2.5 mi (4 km)
* **Operating Temperature Range:**32° to 104°F (0° to 40°C)
* **Battery:**6000 mAh LiPo 2S
* **Transmitter Power (EIRP):**2.400 - 2.483 GHzFCC: 26 dBmCE: 17 dBmSRRC: 20 dBmMIC: 17 dBm
* **Operating Current/Voltage:**1.2 A@7.4 V
* **Video Output Port:**GL300E: HDMIGL300C: USB
* **Mobile Device Holder:**GL300E: Built-in display device (5.5 inch screen, 1920×1080, 1000 cd/m2, Android system, 4 GB RAM＋16 GB ROM) GL300C: Tablets and smart phones

These are minimum specifications. It is preferred that offered product has better characteristics. |  |
| **Item #2** | LCD* **Type:** 22" (21.5"/54.6 viewable) Wide Color TFT Active Matrix LED or larger
* **Optimum Resolution:** 1920x1080
* **Contrast Ratio:** 1000:1 (typ.)
* **Viewing Angles:** 170º horizontal, 160º vertical
* **Response Time:** 5ms (typ.)
* **Panel Surface:** hard-coating (7H)
* **Display Area:** 18.8"/47.8cm horizontal x 10.6"/ 26.9 cm vertical;21.5"/ 54.6 cm diagonal
* **Brightness:** 200 cd/m2 (typ.)
* **Dynamic Contrast Ratio:** 20,000,000:1
* **Backlight:** White-light LED
* **Backlight Life:** 40,000 hours (min.)

Video input* **Analog:** RGB analog (0.7 / 1.0 Vp-p, 75 ohms)
* **Digital:** DVI (TMDS, 100 ohms)
* **Frequency:** Fh: 24~83kHz, Fv: 50~76Hz
* **Sync:** Separate Sync

Compatability* **PC:** PC compatible (Windows ®7, 8, 10 operating system)

These are minimum specifications. It is preferred that offered product has better characteristics. |  |

 **Lot2**

|  |  |
| --- | --- |
| **Required by the Purchaser** | **Offered by the Bidder*****(Bidder to provide name of the technical specification of offered goods)*** |
| **Item #1** | * Operating Voltage:5V
* Digital I/O Pins:14
* PWM Digital I/O Pins:6
* Analog Input Pins:6
* DC Current per I/O Pin:20 mA
* Flash Memory:32 KB
* SRAM:2 KB
* EEPROM:1 KB
* Clock Speed:16 MHz
 |  |
| **Item #2** | * Operating Voltage:5 V
* Flash Memory:32
* SRAM:2 KB
* Clock Speed:16 MHz
* Analog IN Pins:8
* EEPROM:1 KB
* Digital I/O Pins:22 (6 of which are PWM)
* PWM Output:6
* Power Consumption:19 mA
 |  |
| **Item #3** | * Operating Voltage:3.3V
* Digital I/O Pins:54
* Analog Input Pins:16
* Analog Output Pins:2 (DAC)
* Total DC Output Current on all I/O lines:130 mA
* DC Current for 3.3V Pin:800 mA
* DC Current for 5V Pin:800 mA
* Flash Memory:512 KB all available for the user applications
* SRAM:96 KB (two banks: 64KB and 32KB)
* Clock Speed:84 MHz
 |  |
| **Item #4** | * OV7670 image sensor
* High sensitivity for low-light applications
* Low voltage suitable for embedded applications
* Standard SCCB interface compatible with I2C interface
* RawRGB to RGB (GRB4: 2:2, RGB565/555/444), YUV (4:2:2) and YCbCr (4:2:2) output format
* support VGA, CIF, and from CIF to 40x30 the size
* VarioPixel subsampling way
* eliminate light stripes, automatic black level calibration image quality control including color saturation, hue, gamma, sharpness ANTI\_BLOOM
* The lens is the loss of light compensation
* 50/60Hz detection
* Noise Reduction automatically adjust
* Photosensitive array 640X480
* IO voltage 2.5V to 3.0V
* power operation 60mW/15fpsVGAYUV
* temperature operation from -30 °C to 70 °C
* Optical size of 1/6 "
* signal to noise ratio of 46 dB
* dynamic range of 52 dB
 |  |
| **Item #5** | * 84 X 84 dot matrix LCD,
* 4 lines of characters
* Serial interface communication
* Transfer rate up to 4Mbps,
* LCD controller/driver chip
* Working current lower than 200μA
 |  |
| **Item #6** | Receiver* Operating voltage : DC5V
* Quiescent current: 4MA
* Receiving frequency: 433.92MHZ
* Receiver sensitivity: - 105DB

Transmitter* Distance: 20 -200 meters
* Operating voltage: 3.5-12V
* Transmitting frequency: 433M
* An external antenna: 25cm
 |  |
| **Item #7** | * Usable with 3.0V to 5.5V power/data
* Accuracy ±0.5°C
* Usable temperature range: -55°C to 125°C
* 9 to 12 bit selectable resolution
* 1-Wire interface- requires only one digital pin for communication
* Unique 64 bit ID burned into chip
* Query time is less than 750ms
 |  |
| **Item #8** | * Input Voltage Range: AC 55-277V; DC 70-390V
* No Load Power: <0.05W;
* Max input power: 3.5W
* Output Voltage: 5V;
* Max output voltage range: 4.9-5.3V;
* Output Current: 0-600mA;
* Output Power: 3W; efficiency 80%
* Output Protection: overvoltage, overcurrent, overtemperature, overpower, short circuit protection;
* Working temperature:-25~85℃.
 |  |
| **Item #9** | * Bluetooth Specifications: Bluetooth V4.1
* Supply voltage: DC3.3 ~ 4.2V
* Support Bluetooth protocol HFPV1.5, A2DPV1.2, AVRCPV 1.5, HSP1.2
* Working current: 45mA
* Standby current:500uA
* Temperature range -40 to +80
* Wireless transmission range: 10 meters
* Transmission power: CLASS2.4dbm
* Sensitivity: -80dBm <0.1% BER
* Frequency range: 2.402GHz-2.480GHz
* External interface: I2C, SPI and UART interface
* Audio performance: SBC decoding
* Frequency interference ratio:> 75dB
 |  |
| **Item #10** | * Coverage up to 10m.
* Bluetooth version: V2.0+EDR
* Operating voltage: 3.3V
* With LED indicator light, use 150mA and 3.3V regulation chip.
* With "Re-seach" button(ON/OFF/WAKE foot for it , external MCU outinput "High level" can control module to re-seach)
* Compatible with bluetooth master module".slave module"or master-slave(whole) module.
* Input voltage: 3.3~6V
 |  |
| **Item #11** | * 3,5 V-12V to TTL control signal
* Control signal DC or AC, 220V AC load can be controlled.
* Normally open and one normally closed contact
* Transistor drive to increase the relay coil control pins high impedance.
* Control pin with pull-down circuit to prevent relay malfunction
 |  |
| **Item #12** | * 5V-240V solid state relay 2A,
* Input power supply: 5V DC (160MA)
* Input control signal voltage: the state of the 0-1.5V low level relay ON the state of the 2.5-5V high level relay OFF)
* Blue KF301 terminal is connected to the line of control more convenient
 |  |
| **Item #13** | * Power supply: 3.3-6.0 v
* Capacitive touch
* Digital output
 |  |
| **Item #14** | * Emitting Color: RGB (Common Cathode)
* Luminous Intensity: R:2000-3000mcd G:15000-18000mcd B:7000-8000mcd
* Viewing Angle: 30 Degree
* Forward Voltage / Current: R:2V-2.2V G:3V-3.2V B:3V-3.2V | 20mA (each color)
* Polarity: Anode (Shorter Part) | Cathode (Longer Part)
 |  |
| **Item #15** | * Supports Micro SD cards, Micro SDHC card (high speed card) l
* evel conversion circuit board that interfaces level for 5V or 3.3V
* power supply is 4.5V ~ 5.5V, 3.3V voltage regulator circuit board
* standard communication interface SPI interface
* Control Interface: A total of six pins (GND, VCC, MISO, MOSI, SCK, CS), GND to ground, VCC is the power supply, MISO, MOSI, SCK is SPI bus, CS is the chip select signal pin;
* 3.3V voltage regulator circuit: LDO regulator output is 3.3V level converter chip, Micro SD card supply;

  |  |
| **Item #16** | * Microcontroller: Tensilica 32-bit RISC CPU Xtensa LX106
* Operating Voltage: 3.3V
* Input Voltage: 7-12V
* Digital I/O Pins (DIO): 16
* Analog Input Pins (ADC): 1
* UARTs: 1
* SPIs: 1
* I2Cs: 1
* Flash Memory: 4 MB
* SRAM: 64 KB
* Clock Speed: 80 MHz
* USB-TTL based on CP2102 is included onboard, Enabling Plug n Play
* PCB Antenna
* Small Sized module to fit smartly inside your IoT projects
 |  |
| **Item #17** | * Output Current: 1.5A (minimum), 2.2A (typ)
* Input and output voltage difference (VI-VO): 40Vdc (max)
* Adjustable output voltage range: 1.2 ~ 37V
* Operating temperature: -55 to +150
* Output Current: 1.5A
* Input voltage: 4.2 ~ 40 V
 |  |
| **Item #18** | * Input voltage range:440VDC
* Output voltage range:1.25-37VDC adjustable
* Output current:2A
* Input reverse polarity protection
* Built in output short protection function
* Built in thermal shutdown function
 |  |
| **Item #19** | * MB10S or better
 |  |
| **Item #20** | * BLE 4.1/5.0
* Battery powered
* Transmitting range 100m
* Long battery life
* App programmable
 |  |