



## PURCHASE REQUEST

Dept./Office: **DABE**PR #: **GF-2021-05-00261**Date: **05-31-2021**Section/End-User: **Lorbert G. Mazo**Category: **Electronics supplies**Funding Source: **General Fund - MOOE**Project Title/Code: **VSU-IP-2021-5**

| Item # | Item Description                               | Unit | Qty | Unit Cost | PAR/ICS | Total Cost |
|--------|------------------------------------------------|------|-----|-----------|---------|------------|
| 1      | <b>Assorted Dupont and Jumper Wires Cables</b> | set  | 1   | 3,000.00  |         | 3,000.00   |

**Specification:**

- Wire type: 28 AWG (7 strands @ 36 AWG)
- Material: Durable hard plastic and copper wire.
- Weight: 31g(1.1oz)
- Package: Female –Female Dupont Wires – 20pcs x 300mm, Male –Female Dupont Wires – 20pcs x 300mm, Male –Male Dupont Wires – 20pcs x 300mm, Female –Female Dupont Wires – 20pcs x 200mm, Male –Female Dupont Wires – 20pcs x 200mm, Male –Male Dupont Wires – 20pcs x 200mm, Female –Female Dupont Wires – 20pcs x 100mm, Male –Female Dupont Wires – 20pcs x 100mm, Male –Male Dupont Wires – 20pcs x 100mm, Female –Female Jumper Wires – 20pcs x 300mm, Male –Female Jumper Wires – 20pcs x 300mm, Male –Male Jumper Wires – 20pcs x 300mm, Female –Female Jumper Wires – 20pcs x 200mm, Male –Female Jumper Wires – 20pcs x 200mm, Male –Male Jumper Wires – 20pcs x 200mm, Female –Female Jumper Wires – 20pcs x 100mm, Male –Female Jumper Wires – 20pcs x 100mm, Male –Male Jumper Wires – 20pcs x 100mm

|   |                                 |     |   |          |                   |           |
|---|---------------------------------|-----|---|----------|-------------------|-----------|
| 2 | <b>Camera Module + 6mm lens</b> | set | 3 | 5,800.00 | ELDON P. DE PADUA | 17,400.00 |
|---|---------------------------------|-----|---|----------|-------------------|-----------|

**Specification:**

- Image Sensor: SONY IMX477R stacked, black-illuminated sensor, 12.3 Megapixels, 7.9mm sensor diagonal, 1.55um x 1.55 um pixel size
- Output: RAW12/10/8, COMP8
- Back Focus: Adjustable (12.5mm - 22.4mm)
- Lens standards: C-mount or CS-mount (C-CS adapter included)
- IR filter: integrated
- Ribbon cable/FFC length: 200mm
- Tripod mount: 1/4" - 20
- Compliance: \*FCC 47 CFR Part 15, Subpart B, Class B Digital Device, \*Electromagnetic Compatibility Directive (EMC) 2014/30/EU, \*Restriction of Hazardous Substances (RoHS) Directive 2011/65/EU, Connects to the Raspberry Pi board via the FFC/Ribbon cable (included)
- Include a 6mm wide angle lens with the following specs
  - Image Format: 1/2"
  - Focal Length: 6mmR
  - Resolution: 3MegaPixel
  - Aperture: F1.2
  - Mount: CS
  - Field Angle DxHxV°: 63°



- M.O.D.: 0.2m
- Back Focal Length: 7.53mm

|   |                                |     |   |          |                   |          |
|---|--------------------------------|-----|---|----------|-------------------|----------|
| 3 | Camera Module, 8MP, Pi NoIR v2 | set | 3 | 2,200.00 | ELDON P. DE PADUA | 6,600.00 |
|---|--------------------------------|-----|---|----------|-------------------|----------|

**Specification:**

- CCD size:1/4 inch
- Aperture(F):2
- Focal Length:3.04 mm (adjustable)
- Field of View:73.8 degrees
- Picture Resolution:3280 × 2464
- Video Record Resolution: 1080p30, 720p60 and 640x480p90
- Compatible: Raspberry Pi controller/ processor
- Pi NoIR Infrared Camera Board V2
- Camera sensor: Sony IMX219 8 megapixel sensor
- Included Components: Compatible ribbon cable (150mm CSI camera cable), Blue filter

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|   |                                                            |      |   |          |  |          |
|---|------------------------------------------------------------|------|---|----------|--|----------|
| 4 | LED Light, lens LED reflector and Reflector Collimator Cup | sets | 2 | 1,500.00 |  | 3,000.00 |
|---|------------------------------------------------------------|------|---|----------|--|----------|

**Specification:**

- Item Type: LED Lens + Reflector + Fixed Bracket
- Beam Angle: 60°, ° (Optional)
- Lens Height: 19mm(60°) 0.2mm(°)
- Lens Width: 2mm
- Transmittance: >95%
- Lens Material: High-Temperature Resistant Optical Glass (Temperature Resistance: -0+?)
- Product Design: Aspheric Surface Design
- Reflective Cup Diameter: 50mm
- Bracket Diameter: 77mm (Including Fixing Screws), 5mm (Excluding Fixing Screws)
- Thickness: 6.5mm
- Package List:
  - 1 x mm Lens
  - 1 x 50mm Reflector Cup
  - 1 x Fixed Bracket

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|   |                                                           |     |   |          |                   |           |
|---|-----------------------------------------------------------|-----|---|----------|-------------------|-----------|
| 5 | Microcontroller, System on a Chip (SOC) computer, 4GB RAM | pcs | 3 | 4,000.00 | ELDON P. DE PADUA | 12,000.00 |
|---|-----------------------------------------------------------|-----|---|----------|-------------------|-----------|

|                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Specification:</b>                                                                                                                                                     |
| <ul style="list-style-type: none"><li>• Processor: Broadcom BCM2711, quad-core Cortex-A72 (ARM v8) 64-bit SoC @ 1.5 GHz</li><li>• Memory: 4GB LPDDR4-2400 SDRAM</li></ul> |

- |                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Specification:</b>                                                                                                                                                     |
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- Connectivity: 2.4 GHz and 5.0 GHz IEEE 802.11b/g/n/ac wireless LAN, Bluetooth 5.0, BLE, 2 x USB 3.0 ports, 2 x USB 2.0 ports
- GPIO: Standard 40-pin GPIO header (fully backwards-compatible with previous boards)
- Video & Sound: 2 x micro HDMI ports (up to 4Kp60 supported) 2-lane MIPI DSI display port 2-lane MIPI CSI camera port 4-pole stereo audio and composite video port, 2 x micro HDMI ports (up to 4Kp60 supported) 2-lane MIPI DSI display port 2-lane MIPI CSI camera port 4-pole stereo audio and composite video port, 2 x micro HDMI ports (up to 4Kp60 supported) 2-lane MIPI DSI display port 2-lane MIPI CSI camera port 4-pole stereo audio and composite video port

|   |                                                                  |     |   |          |                   |          |
|---|------------------------------------------------------------------|-----|---|----------|-------------------|----------|
| 6 | <b>Microcontroller, System on a Chip (SOC) Computer, 8GB RAM</b> | set | 1 | 7,000.00 | ELDON P. DE PADUA | 7,000.00 |
|---|------------------------------------------------------------------|-----|---|----------|-------------------|----------|

**Specification:**

- SoC Type (processor): Broadcom BCM2711, 64-bit ARM Cortex-A72 (ARMv8), Quad-core, 28nm
- core type: cortex- A72 64-bit (ARMv8)
- No. of Cores: quad-core
- GPU: VideoCore VI
- Multimedia: H.265 (4Kp60 decode); H.264 (1080p60 decode, 1080p30 encode); OpenGL ES, 3.0 graphics
- CPU Clock: 1.5 GHz
- Memory/ OS Storage: micro SD
- Ram LPDDR4: 8GB
- Ethernet: Gigabit Ethernet
- USB Port: 2 x micro HDMI support Dual Display
- wifi: 802.11 b/g/n/ac ( 2.4GHz + 5GHz & Shielded)
- Bluetooth: 5.0 + BLE ( Shielded)
- antenna
- PCB Antenna
- GPIO
- 40 pins( fully backwards- compatible with Previous boards)
- Operating System: Raspbian
- 5V Via USB Type C ( up to 3A), 5V Via GPIO header ( upto 3A), Power over Ethernet, Requires PoE HAT
- Enclosure
- Clear Case with Fan
- Included Components
- type-C USB cord and HDMI cord

|   |                                 |     |   |        |  |          |
|---|---------------------------------|-----|---|--------|--|----------|
| 7 | <b>MUX Breakout (8 Channel)</b> | pcs | 3 | 900.00 |  | 2,700.00 |
|---|---------------------------------|-----|---|--------|--|----------|

**Specification:**

- Operating Voltage: 1.65V - 5.5V
- Operating Temperature: -40 - 85° C
- I2C Address: 0x70 (default) up to 0x77
- 10x Qwiic Connector: 8x Channels
- 2x Pass Through (Daisy Chain)

|   |                                                                 |     |   |          |  |           |
|---|-----------------------------------------------------------------|-----|---|----------|--|-----------|
| 8 | <b>Nano Engraving Transmission Diffraction Grating Teaching</b> | set | 3 | 4,000.00 |  | 12,000.00 |
|---|-----------------------------------------------------------------|-----|---|----------|--|-----------|

**Specification:**



- Size: 20x20mm
- Thickness: 2mm
- Material: Float Glass
- Scribed line density: 300lines/mm 600lines/mm 1000lines /mm 1200lines /mm 1800lines /mm
- Working Wavelength: 200nm~1000nm

|   |                    |     |   |        |  |        |
|---|--------------------|-----|---|--------|--|--------|
| 9 | <b>Qwiic Cable</b> | pcs | 8 | 110.00 |  | 880.00 |
|---|--------------------|-----|---|--------|--|--------|

**Specification:**

- 100mm long
- 4-conductor cable
- 1mm JST termination
- t's designed to connect Qwiic enabled components together

|    |                                       |     |   |          |                   |          |
|----|---------------------------------------|-----|---|----------|-------------------|----------|
| 10 | <b>Silicon Wire, Flexible, 28 AWG</b> | box | 1 | 2,000.00 | ELDON P. DE PADUA | 2,000.00 |
|----|---------------------------------------|-----|---|----------|-------------------|----------|

**Specification:**

- size: 28 AWG
- materials:silicon rubber, tinning copper
- voltage rating: 300 volts
- rated temp: -60 to -+ 150 degree celsius
- wire length: 10Meter
- item package quality: 4
- color: assorted

|    |                                               |     |   |          |                   |          |
|----|-----------------------------------------------|-----|---|----------|-------------------|----------|
| 11 | <b>Soldering Iron Kit, with carrying case</b> | set | 1 | 1,000.00 | ELDON P. DE PADUA | 1,000.00 |
|----|-----------------------------------------------|-----|---|----------|-------------------|----------|

**Specification:**

- Electronics 15 Pieces Set Adjustable Temperature Soldering Tool, 5 Soldering Tips, Desoldering Pump w/ heater, Soldering Iron Stand, Tweezers, with carrying bag
- Work Voltage: 220V
- Power: 60W
- Temp Range: 200? - 450 ?
- Tweezers: ESD-15, Length at least 4.7inches
- Soldering Iron Stand: Steel
- Tips Model: 900M series
- Desoldering Pump: Plastic and aluminum alloy
- Carrying bag: Fabric

|    |                                  |     |   |          |                   |           |
|----|----------------------------------|-----|---|----------|-------------------|-----------|
| 12 | <b>Triad Spectroscopy Sensor</b> | set | 3 | 5,000.00 | ELDON P. DE PADUA | 15,000.00 |
|----|----------------------------------|-----|---|----------|-------------------|-----------|

**Specification:**

- Selectable interface: I2C or Serial (115200bps)
- 18 frequencies of light sensing: 410nm to 940nm
- Special Features:
  - Integrated 405nm UV, 5700k White, and 875nm IR LEDs
  - Software control over each illumination LED as well as current control
  - Optional external bulb or illumination control
  - Programmed with latest firmware from AMS
  - 28.6 nW/cm2 per count

- Packing List: Triad Spectroscopy Sensor and Compatible Cord

|    |                |     |   |          |                   |          |
|----|----------------|-----|---|----------|-------------------|----------|
| 13 | Wire Connector | set | 1 | 2,000.00 | ELDON P. DE PADUA | 2,000.00 |
|----|----------------|-----|---|----------|-------------------|----------|

**Specification:**

- Application Wire: Single Strand hard wire 0.2-4.0 mm2
- Multi- Strand hard wire 0.14-4.0 mm2
- Electrical parameters: 450V/32A
- Stripping length: About 10mm
- Quantity: 95 pcs
- Type: Compact Terminal Block Plug-in Electrical Wire Connectors

|  |              |  |  |  |  |                  |
|--|--------------|--|--|--|--|------------------|
|  | <b>TOTAL</b> |  |  |  |  | <b>84,580.00</b> |
|--|--------------|--|--|--|--|------------------|

Purpose: For Research and Extension Use

|                                     |                        |                           |                         |
|-------------------------------------|------------------------|---------------------------|-------------------------|
| Checked by:                         |                        | Funds Available:          |                         |
| <b>MICHAEL ANTHONY JAY B. REGIS</b> |                        | <b>MYRNA S. PANCITO</b>   |                         |
| TWG - Electronics supplies          |                        | HEAD, BUDGET OFFICE       |                         |
| Signature:                          | Requested by:          | Noted by:                 | Approved by:            |
| Printed Name:                       | <b>LORBERT G. MAZO</b> | <b>ELDON P. DE PADUA</b>  | <b>EDGARDO E. TULIN</b> |
| Designation:                        | END USER               | UNIT HEAD, PROJECT LEADER | PRESIDENT, VSU          |