E

lectronic control over your final ACES ISP **must** be in the form of custom PCB populated with either *through hole* and/or *surface mount* components. In the case of the latter, you can consider taking your design to the next level, in the form of a Flex circuit that will be laminated into a page of your DER. If your circuit proves fully functional, a flexible [3.5V, 150 mA Powerfilm solar cell](http://darcy.rsgc.on.ca/ACES/TEI4M/images/PowerFilm-MPT3-6-150-2.png) will be included in the lamination Attach this completed document to an email ACESHandin by the deadline, under the Subject: **Long ISP Proposal**

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| **1. Your Name** |  |
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| --- | --- |
| **2. Project Title** |  |
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| **3. General Description** |  |
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| **4. PCB (Highlight One)** |  |
|  Fixed | Flex with [3.6V 100mA Flexible Solar Film](https://www.digikey.ca/product-detail/en/powerfilm-inc/MPT3.6-150/1996-1013-ND/9559463) ([Video](https://www.youtube.com/embed/CGJohXZRcUM)) |

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| **5. ISP Strategy (Highlight One)** |  |
| [6 pin ISP](https://www.digikey.ca/product-detail/en/amphenol-icc-fci/67997-206HLF/609-3234-ND/1878491) | [Soldered SMT Connector](https://www.digikey.ca/product-detail/en/molex-llc/0522070660/WM10939CT-ND/5170941) | [Custom ISP ‘Finger’](http://darcy.rsgc.on.ca/ACES/PCBs/images/FlexPCBMorland.png) | PreFlashed | Other (Specify) |

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| **6. Components (Highlight One or Both)** |  |
| Through Hole | Surface Mount | Both |

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| --- | --- |
| **7. MCU (Highlight One)** |  |
| ATtiny84 | ATtiny85 | ATmega328P | Other (Specify) |

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| **8. CODE (Highlight)** |  |
| Arduino C | C | C with Ports/Registers | C with Inline Assembly | Pure AVR Assembly |

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| **9. Design Details (PCB, Stripboard, PermaProto, Point-to-Point,Acrylic, 3D Design/Print, …)**  |  |
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| **10. Communication Details (Serial, SPI, I2C, RF, IR, Bluetooth, WiFi, etc.)** |  |
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| **11. Mechanical Details (DC Motor, SErvo, Stepper, Solenoid, Etc.)** |  |
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| **12. Hand-Drawn Sketch of Your vision of the Final Prototype (For Site)** |  |
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**NOTE: Be sure to check ALL the applicable boxes on Page 3
.**

Please check all **additional** boxes corresponding to the skills you intend to exploit in this project.

|  |  |  |  |
| --- | --- | --- | --- |
| **Hardware Components** | **Software Techniques** | **Power** | **Skills** |
| □ resistors□ capacitors□ potentiometers□ transistors□ diodes□ push buttons□ switches□ LDRs□ thermistor□ temperature sensor□ IR proximity sensor□ Oper. Amp.□ voltage regulators□ MOSFETs□ Logic ICs (40xx)□ shift registers□ Specialty ICs (555, MSGEQ7, H-Bridge, LM3914, 24LC256, etc.)□ Real Time Clock (RTC)□ ATtiny84□ ATtiny85□ LEDs (single, Bi, RGB, neo)□ 7-segment display□ Alphanumeric display□ Bargraph□ LED Matrix□ LCD Panel□ Graphics Panel□ DC motor□ servo motor□ stepper motor□ relay□ solenoid □ microphone□ audio line in□ speaker□ magnets□ point-to-point board□ perma-proto board□ custom PCB□ OTHER | □ High-Level□ Assembly□ Arrays□ Structs□ bitwise operators□ I2C (TWI)□ Libraries□ ADC□ PWM□ Serial Comm. (ISP)□ Debouncing□ LookUp Table□ Polling□ Persistence of Vision□ Interrupts□ Recursion□ ISP□ EEPROM□ Processing□ Charlieplexing□ Timing related□ UML Design□ OTHER | □ Batteries□ AC/DC Adapter□ Transformers□ coils/chokes□ 12V□ 24V□ solar□ manual□ Peltier tiles□ OTHER | □ reading a schematic□ TH soldering□ SM soldering□ DMM Debugging☑ CAD□ 3D printing□ 2D acrylic fabrication□ EAGLE PCB layout and manufacturing☑ Word□ Excel☑ Time-management□ Fritzing□ Presentation Overview☑ video creation☑ technical writing□ OTHER |
| **Communication** |
| □ (wired) Serial Comm.□ (wired) SPI□ (wired) I2C (aka. TWI)□ (wireless) RF□ (wireless) IR□ (wireless) Bluetooth |
| **Design** |
| □ EAGLE (PCB)□ FUSION 360□ ViaCAD□ OTHER |
| **Engineering Fields**  |
| □ electrical□ computer□ mechanical□ software□ design□ OTHER |