



# General Purpose Processor

## Overview

The AVI General Purpose Processor (GPP) is a small, lightweight, rugged unit with Ethernet, Serial, Analog, and I/O interfaces. This unit can be used as a stand-alone processing unit or in series with other AVI products. With flexible software-defined functions, this device can be adapted for many different protocols and applications.

AVI's GPP is a low-cost general purpose I/O processor. It is based on the AM335x 1GHz Arm Cortex-A8. The GPP provides Digital I/O, Analog I/O, USB, and Ethernet control/processing using Linux applications along with web-based hosted applications.

Combined with AVI's User Interface Modules, this unit can generate commands from customized buttons, general I/O buttons, switches, rotary encoders, and analog devices.

Applications of this unit include interfacing to display controls, rotary switch functions, push button controls, lighting controls, and much more. A sample application is given in Figure 1 below. In this example, the GPP takes I/O and RS-485 inputs to control AVI's Quad Processor (Q000304-00) displaying up to 16 different layouts on two SDI displays.

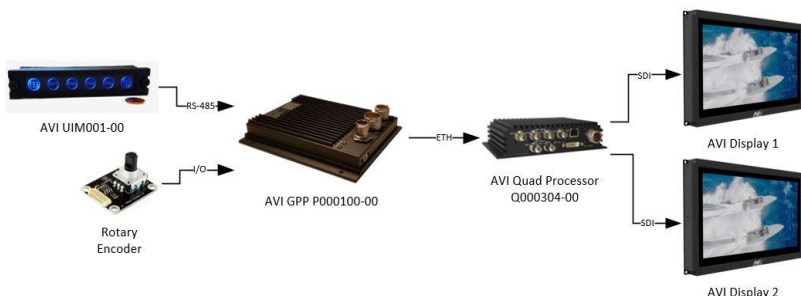


Figure 1. System Example



## Standard Features

- RS-232, RS-422, RS-485, USB, IO, Analog, and Ethernet interfaces
- Software defined functionality
- RS-485 MOD Bus protocol
- Custom interface protocols
- 9 – 36 V DC Power
- MIL-STD 38999 circular power, I/O, and Ethernet connectors
- Space-saving, compact design
- Standard three-year warranty

## Benefits

- General I/O control processing
- Generic system controller
- Low cost
- Seamless integration with other AVI products

## Typical Applications

- Surveillance systems
- Airborne Law Enforcement, Customs and Border Protection
- Naval, Air Force, and Coastguard mission systems
- Sensor output controls
- Ground Vehicle sensor mission systems



# General Purpose Processor - Specifications

|                              |   |                         |   |                      |               |                |                       |                 |                |                          |              |                |                           |                 |                |                            |              |                |                             |               |                |                  |                |               |            |                   |               |                             |                    |                  |             |                   |                |           |                    |                         |                 |                 |               |                  |           |               |                  |      |  |                      |          |              |
|------------------------------|---|-------------------------|---|----------------------|---------------|----------------|-----------------------|-----------------|----------------|--------------------------|--------------|----------------|---------------------------|-----------------|----------------|----------------------------|--------------|----------------|-----------------------------|---------------|----------------|------------------|----------------|---------------|------------|-------------------|---------------|-----------------------------|--------------------|------------------|-------------|-------------------|----------------|-----------|--------------------|-------------------------|-----------------|-----------------|---------------|------------------|-----------|---------------|------------------|------|--|----------------------|----------|--------------|
| <b>Interfaces</b>            | <ul style="list-style-type: none"> <li>RS-232, RS-422, RS-485, USB, I/O, Analog             <ul style="list-style-type: none"> <li>Connector type – 38999 Shell Size 13</li> </ul> </li> <li>Ethernet (10BaseT, 100BaseT)             <ul style="list-style-type: none"> <li>Connector type – 38999 Shell Size 9</li> </ul> </li> </ul> | <b>Model Numbers</b>    | <ul style="list-style-type: none"> <li>P000100-00 General Purpose Processor</li> </ul>  |                      |               |                |                       |                 |                |                          |              |                |                           |                 |                |                            |              |                |                             |               |                |                  |                |               |            |                   |               |                             |                    |                  |             |                   |                |           |                    |                         |                 |                 |               |                  |           |               |                  |      |  |                      |          |              |
| <b>Power</b>                 | <ul style="list-style-type: none"> <li>+9 to +36 DC</li> <li>0.1 amps @28V DC (no external connections)</li> <li>Connector Type MIL-STD D38999/20MB98PN</li> </ul>  | <b>Functionality</b>    | <ul style="list-style-type: none"> <li>Flexible, software defined functionality</li> <li>Interface control – Ethernet, USB, RS-232, RS-422, RS-485, I/O, and Analog</li> <li>Can be configured to user defined protocols</li> <li>Used with AVI products or existing system designs</li> </ul>  |                      |               |                |                       |                 |                |                          |              |                |                           |                 |                |                            |              |                |                             |               |                |                  |                |               |            |                   |               |                             |                    |                  |             |                   |                |           |                    |                         |                 |                 |               |                  |           |               |                  |      |  |                      |          |              |
| <b>Dimensions and Weight</b> | <ul style="list-style-type: none"> <li>138mm [5.433 in] W, 167 mm [6.575 in] D, 41.53 mm [1.635 in] H</li> <li>0.562 kg [1.24 lb]</li> </ul>  | <b>Environmental</b>    | <table border="0"> <tr> <td>• Operating Temp Low</td> <td>-40°C / -40°F</td> <td>DO-160G Cat B4</td> </tr> <tr> <td>• Operating Temp High</td> <td>+85° C / +185°F</td> <td>DO-160G Cat B4</td> </tr> <tr> <td>• Short Term Op Temp Low</td> <td>-45°C /-49°F</td> <td>DO-160G Cat B4</td> </tr> <tr> <td>• Short Term Op Temp High</td> <td>+85° C / +185°F</td> <td>DO-160G Cat B4</td> </tr> <tr> <td>• Ground Survival Low Temp</td> <td>-55°C /-67°F</td> <td>DO-160G Cat B4</td> </tr> <tr> <td>• Ground Survival High Temp</td> <td>+85°C /+185°F</td> <td>DO-160G Cat B4</td> </tr> <tr> <td>• Temp Variation</td> <td>5C° per minute</td> <td>DO-160G Cat B</td> </tr> <tr> <td>• Humidity</td> <td>0 to 95±4% @ 50C°</td> <td>DO-160G Cat A</td> </tr> <tr> <td>• Operational Shock &amp; Crash</td> <td>6g @ 20ms, 20g Sus</td> <td>DO-160G Cat A, R</td> </tr> <tr> <td>• Vibration</td> <td>Random, 10-2000Hz</td> <td>DO-160G Cat U2</td> </tr> <tr> <td>• EMI/EMC</td> <td>Sec 18, 19, 20, 21</td> <td>DO-160G Cat B, CC, R, B</td> </tr> <tr> <td>• Voltage Spike</td> <td>2x Line Voltage</td> <td>DO-160G Cat B</td> </tr> <tr> <td>• Waterproofness</td> <td>Drip Test</td> <td>DO-160G Cat W</td> </tr> <tr> <td>• Ingress Rating</td> <td>IP67</td> <td></td> </tr> <tr> <td>• Altitude Operating</td> <td>25,000ft</td> <td>DO160G Cat B</td> </tr> </table> <p>DO-160 Tested</p> | • Operating Temp Low | -40°C / -40°F | DO-160G Cat B4 | • Operating Temp High | +85° C / +185°F | DO-160G Cat B4 | • Short Term Op Temp Low | -45°C /-49°F | DO-160G Cat B4 | • Short Term Op Temp High | +85° C / +185°F | DO-160G Cat B4 | • Ground Survival Low Temp | -55°C /-67°F | DO-160G Cat B4 | • Ground Survival High Temp | +85°C /+185°F | DO-160G Cat B4 | • Temp Variation | 5C° per minute | DO-160G Cat B | • Humidity | 0 to 95±4% @ 50C° | DO-160G Cat A | • Operational Shock & Crash | 6g @ 20ms, 20g Sus | DO-160G Cat A, R | • Vibration | Random, 10-2000Hz | DO-160G Cat U2 | • EMI/EMC | Sec 18, 19, 20, 21 | DO-160G Cat B, CC, R, B | • Voltage Spike | 2x Line Voltage | DO-160G Cat B | • Waterproofness | Drip Test | DO-160G Cat W | • Ingress Rating | IP67 |  | • Altitude Operating | 25,000ft | DO160G Cat B |
| • Operating Temp Low         | -40°C / -40°F   | DO-160G Cat B4          |   |                      |               |                |                       |                 |                |                          |              |                |                           |                 |                |                            |              |                |                             |               |                |                  |                |               |            |                   |               |                             |                    |                  |             |                   |                |           |                    |                         |                 |                 |               |                  |           |               |                  |      |  |                      |          |              |
| • Operating Temp High        | +85° C / +185°F   | DO-160G Cat B4          |   |                      |               |                |                       |                 |                |                          |              |                |                           |                 |                |                            |              |                |                             |               |                |                  |                |               |            |                   |               |                             |                    |                  |             |                   |                |           |                    |                         |                 |                 |               |                  |           |               |                  |      |  |                      |          |              |
| • Short Term Op Temp Low     | -45°C /-49°F  | DO-160G Cat B4          |   |                      |               |                |                       |                 |                |                          |              |                |                           |                 |                |                            |              |                |                             |               |                |                  |                |               |            |                   |               |                             |                    |                  |             |                   |                |           |                    |                         |                 |                 |               |                  |           |               |                  |      |  |                      |          |              |
| • Short Term Op Temp High    | +85° C / +185°F   | DO-160G Cat B4          |   |                      |               |                |                       |                 |                |                          |              |                |                           |                 |                |                            |              |                |                             |               |                |                  |                |               |            |                   |               |                             |                    |                  |             |                   |                |           |                    |                         |                 |                 |               |                  |           |               |                  |      |  |                      |          |              |
| • Ground Survival Low Temp   | -55°C /-67°F  | DO-160G Cat B4          |   |                      |               |                |                       |                 |                |                          |              |                |                           |                 |                |                            |              |                |                             |               |                |                  |                |               |            |                   |               |                             |                    |                  |             |                   |                |           |                    |                         |                 |                 |               |                  |           |               |                  |      |  |                      |          |              |
| • Ground Survival High Temp  | +85°C /+185°F   | DO-160G Cat B4          |   |                      |               |                |                       |                 |                |                          |              |                |                           |                 |                |                            |              |                |                             |               |                |                  |                |               |            |                   |               |                             |                    |                  |             |                   |                |           |                    |                         |                 |                 |               |                  |           |               |                  |      |  |                      |          |              |
| • Temp Variation             | 5C° per minute  | DO-160G Cat B           |   |                      |               |                |                       |                 |                |                          |              |                |                           |                 |                |                            |              |                |                             |               |                |                  |                |               |            |                   |               |                             |                    |                  |             |                   |                |           |                    |                         |                 |                 |               |                  |           |               |                  |      |  |                      |          |              |
| • Humidity                   | 0 to 95±4% @ 50C°   | DO-160G Cat A           |   |                      |               |                |                       |                 |                |                          |              |                |                           |                 |                |                            |              |                |                             |               |                |                  |                |               |            |                   |               |                             |                    |                  |             |                   |                |           |                    |                         |                 |                 |               |                  |           |               |                  |      |  |                      |          |              |
| • Operational Shock & Crash  | 6g @ 20ms, 20g Sus  | DO-160G Cat A, R        |   |                      |               |                |                       |                 |                |                          |              |                |                           |                 |                |                            |              |                |                             |               |                |                  |                |               |            |                   |               |                             |                    |                  |             |                   |                |           |                    |                         |                 |                 |               |                  |           |               |                  |      |  |                      |          |              |
| • Vibration                  | Random, 10-2000Hz   | DO-160G Cat U2          |   |                      |               |                |                       |                 |                |                          |              |                |                           |                 |                |                            |              |                |                             |               |                |                  |                |               |            |                   |               |                             |                    |                  |             |                   |                |           |                    |                         |                 |                 |               |                  |           |               |                  |      |  |                      |          |              |
| • EMI/EMC                    | Sec 18, 19, 20, 21  | DO-160G Cat B, CC, R, B |   |                      |               |                |                       |                 |                |                          |              |                |                           |                 |                |                            |              |                |                             |               |                |                  |                |               |            |                   |               |                             |                    |                  |             |                   |                |           |                    |                         |                 |                 |               |                  |           |               |                  |      |  |                      |          |              |
| • Voltage Spike              | 2x Line Voltage   | DO-160G Cat B           |   |                      |               |                |                       |                 |                |                          |              |                |                           |                 |                |                            |              |                |                             |               |                |                  |                |               |            |                   |               |                             |                    |                  |             |                   |                |           |                    |                         |                 |                 |               |                  |           |               |                  |      |  |                      |          |              |
| • Waterproofness             | Drip Test   | DO-160G Cat W           |   |                      |               |                |                       |                 |                |                          |              |                |                           |                 |                |                            |              |                |                             |               |                |                  |                |               |            |                   |               |                             |                    |                  |             |                   |                |           |                    |                         |                 |                 |               |                  |           |               |                  |      |  |                      |          |              |
| • Ingress Rating             | IP67  |                         |   |                      |               |                |                       |                 |                |                          |              |                |                           |                 |                |                            |              |                |                             |               |                |                  |                |               |            |                   |               |                             |                    |                  |             |                   |                |           |                    |                         |                 |                 |               |                  |           |               |                  |      |  |                      |          |              |
| • Altitude Operating         | 25,000ft  | DO160G Cat B            |   |                      |               |                |                       |                 |                |                          |              |                |                           |                 |                |                            |              |                |                             |               |                |                  |                |               |            |                   |               |                             |                    |                  |             |                   |                |           |                    |                         |                 |                 |               |                  |           |               |                  |      |  |                      |          |              |

