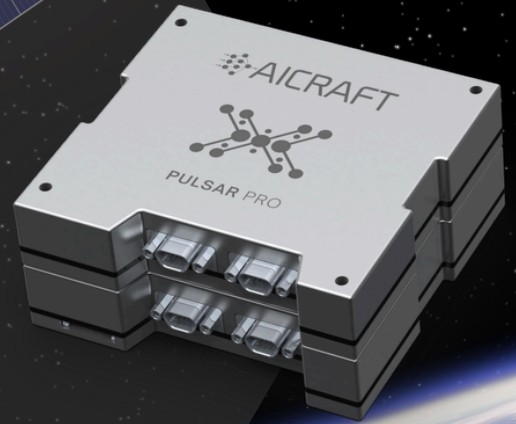


# SPACE EDGE COMPUTING MODULE



## PULSAR PRO

**ITAR  
FREE**

**ON-THE-GO  
TRAINING**

**ULTRA  
FAST**

This data processing device brings server computing capacity on orbit in extremely compact form factor.

Pulsar Pro turns raw data into tiny actionable representations which allows large-scale AI inferences ultra-quickly. These AI-ready instances can be pre-loaded in a library and augmented over time as new data is acquired, effectively training the AI engine on the go.

A massive 1200 TOPS peak AI performance will satisfy demands of transformers, convolutional neural networks and many other advanced machine learning models.

The module can be scaled up in performance to meet the computing demands of large satellites while having compact size, weight and low power consumption. The design can be made compliant to the SpaceVPX standard.

Pulsar Pro is ITAR-free. Engineering Model and Flight Model are supplied with:

1. Board support package
2. Machine learning compiler
3. Tailored application libraries.

Pulsar Pro electronic ground support equipment comes in two form factors:

- Pulsar Pro Engineering Model (0.5U)
- NEXON-1 server (1U) with additional interfaces for greater networking.



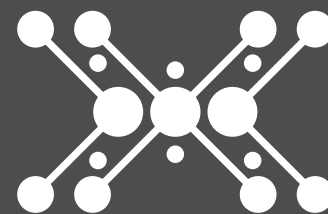
*NEXON-1 edge AI server*



More info  
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## Key benefits

- AI-capable ultra-fast Big Data processing
- World-leading AI engine for training on the go
- Unlimited on-orbit reconfiguration
- Small SWaP.

## Technical specifications

### Computing performance

|                 |                                                                               |
|-----------------|-------------------------------------------------------------------------------|
| Processor       | Multi-core ARMv8, 64-bit operations                                           |
| ML co-processor | 1200 TOPS peak performance                                                    |
| RAM             | 16 GB DDR4 SDRAM with ECC                                                     |
| Storage         | 256 GB SSD with ECC (up to 2 TB)<br>16Mb rad-hard-equivalent memory with EDAC |

### Interfaces

|           |                                                                 |
|-----------|-----------------------------------------------------------------|
| ADC       | 18x LVDS (Default: 1.6 Gbps)                                    |
| Serial    | PPS, SPI, CAN 2.0B, I2C, RS-422 (Default: 115200 bps)           |
| SpaceWire | 200 Mbps (with AICRAFT's IP core)                               |
| Ethernet  | 1x 10 Gbps (Configurable to 100 Mbps, 1 Gbps, 2.5 Gbps, 5 Gbps) |
| USB 3.0   | 1x 5 Gbps (Compatible with USB 2.0)                             |

### Software

|                  |                                                            |
|------------------|------------------------------------------------------------|
| Operating system | Linux (Option: RTOS)                                       |
| ML compiler      | Supports common frameworks (e.g., Keras, Pytorch, Darknet) |

### Sensors

|                |                                               |
|----------------|-----------------------------------------------|
| Vibrations     | 3-axis lateral and 3-axis longitudinal        |
| Temperature    | Device, processor, co-processor               |
| Power monitors | Device (total power), processor, co-processor |

### Other properties

|                        |                    |
|------------------------|--------------------|
| Input voltage          | 12VDC – 60VDC      |
| Power consumption      | 15W – 180W         |
| Mass                   | 800g               |
| Dimensions (L x W x H) | 95mm x 90mm x 50mm |
| Operating temperature  | -20°C to +55°C     |