SIM100 SENSOR EMULATOR

AIREYES, INC.

AIREYES, INC. has integrated and optimized a range of sensor processing and simulation LRUs designed for rapid prototyping of sensor processing algorithms and sensor simulations. The **AIREYES MODEL SIM100**, is a small LRU designed for rapid deployment of Infrared (multiple spectral bands) or mm-Wave emulation to any flight simulator. This system has already proved valuable in support of:

- **Pilot training** on sensor phenomenology, appearance, interpretation
- Customer **familiarization with sensor** imagery, operation and failure modes
- **Marketing demonstrations** of sensor capabilities at trade shows, marketing videos, etc.
- 'What if' scenarios: model the performance of sensor systems in various weather conditions, and to optimize sensor specifications
- Customization of the sensor processing pipeline for specific requirements is simple and quick, allowing for sensor processing algorithm evaluations in real time
- Human factor tradeoffs (field of view, resolution, processing algorithm effectiveness)

The MODEL SIM100 system interfaces to visual simulators with minimal effort and permits real time simulation of sensor imagery, including sensor image degradation due to weather effects, sensor operational controls and sensor failure modes. Most sensors suitable for EVS operations are available for emulation: Infrared (all bands), mm-Wave radar (35 or 94 GHz) and UV. Multiple spectral bands fused sensors and the fusion process itself can also be emulated in more advanced installations.

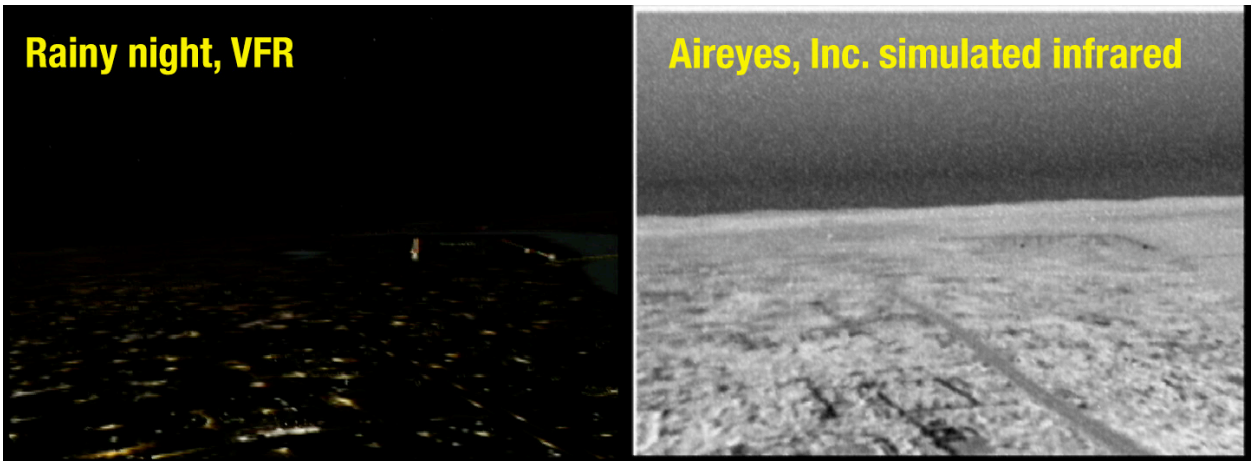
Items such as image polarity, sensor noise, sensor image degradation in the presence of obscurants, including weather (fog, rain, etc. specified as RVR, sensor-RVR or in terms of ICAO visibility conditions such as CATI, CATII, CATIIIA etc.) can all be emulated and modified in real time (during flight). Specific sensor configurations can be loaded from pre-sets. Basic sensor processing algorithms can be introduced and evaluated for their effectiveness against system goals (acquisition of landing lights, acquisition of runway, etc.).

Options for the MODEL SIM100 include operator or pilot control via touchscreen or keypad interfaces, pilot/evaluator interfaces, automated configuration from visual simulator via Ethernet, digital image and data collection, real-time temperature and humidity monitoring and reporting, etc.

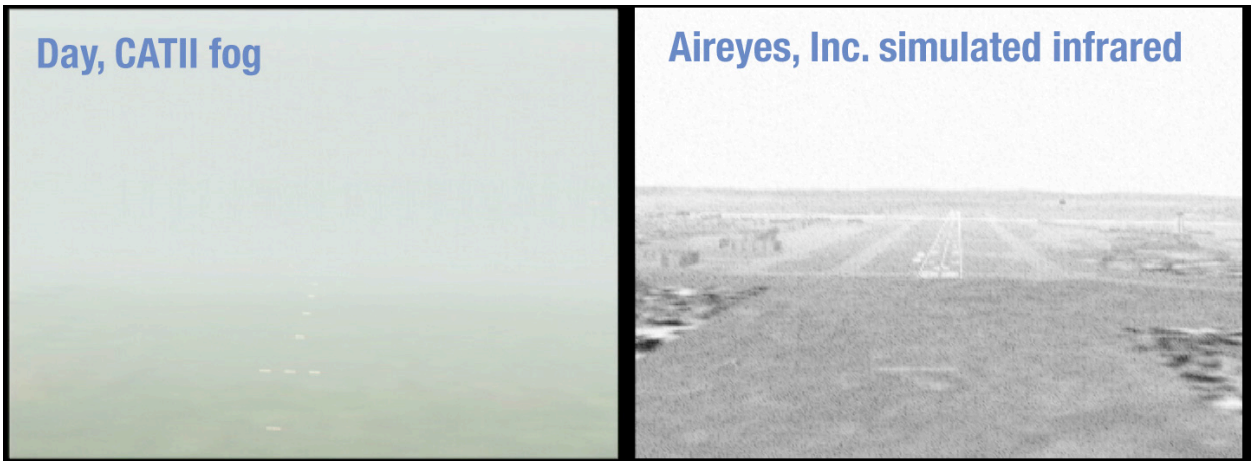
The **MODEL SIM100** is housed in a small form factor industrial-rugged enclosure, with high-reliability power supply, redundant forced-air cooling. The system is also available in a standard avionics 4MCU form factor. A picture of each hardware option is shown above.

Sample images of emulated IR sensors at night VFR and in CATII fog conditions are shown on the next page.

For more information please email us at **info@aireyes.com** or call **(503) 288 4060**.



RAINY NIGHT VFR CONDITIONS (LEFT) AND EMULATED IR IMAGE (RIGHT) OF THE SAME SCENE. LOW RUNWAY CONTRAST IN IR SCENE IS TYPICAL OF SITUATIONS WHERE THERMAL CONTRAST IS GREATLY REDUCED BY EXTENDED RAIN PERIODS AND LOW SOLAR IRRADIANCE.



CATII DAYTIME FOG CONDITIONS, AT APPROXIMATELY 100' AGL. RUNWAY THRESHOLD IS BARELY VISIBLE IN LEFT PANEL (SIMULATOR VISUAL). SUN-IRRADIATED FOG LEADS TO BRIGHT SKY IN INFRARED (RIGHT PANEL). INFRARED SENSOR DEGRADATION IN ALL TYPES OF WEATHER CAN BE CUSTOMIZED AND CALIBRATED TO MATCH ACTUAL PERFORMANCE OF SPECIFIC INFRARED SENSORS (DETECTOR, OPTICS, PROCESSING).

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