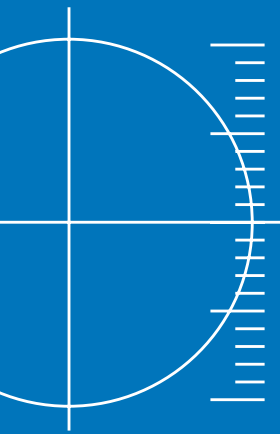


Intelligent Innovative Integration

AirSpace

Ultra
ELECTRONICS



Ultra Electronics is an international group of businesses specialising in the design, manufacture and support of electronic, electromechanical and software systems for the defence, security and aerospace markets worldwide.

The AirSpace business sector of the Electrics Division designs and manufactures a range of high integrity cockpit systems and components for civil and military aircraft applications. Products include electronic systems, pilot's grips, control panels, switches, indicators, lighting solutions and high integrity harness systems.



Hands-On Collective and Stick (HOCAS) controls providing Human Machine Interface (HMI) to the aircraft's flight control, communications and weapon systems



High integrity toggle, push-button, trim and multi-way switches

Intelligent Innovative Integration

Human Machine Interface solutions

Ultra's innovative hands-on technology is in daily use in the most advanced airborne platforms and high fidelity simulators. Electrics Division manufactures a range of standard and customised flight safety and mission critical solutions for the management and control of complex systems. From fighter pilot to winchman, Ultra's products are designed to reduce operator workload and increase effectiveness.

Ergonomically designed **Hands-On Throttle and Stick (HOTAS)** controllers and control yokes utilise a wide range of multi-functional switches and transducers. These meet the increasingly demanding HOTAS requirements of modern combat aircraft, flight simulators and synthetic training equipment.

Highly reconfigurable **Hands-On Collective and Stick (HOCAS)** controllers are also available for use in modern helicopter applications.

Harnesses and components

Ultra has been designing and manufacturing aircraft harnesses for over 40 years and has a particular expertise for high integrity harnesses operating within extreme environments.

The **Advanced Conduit System** provides cost effective solutions for the protection of wiring harnesses against the effects of electro-magnetic interference, environmental debris and contamination. New developments include the **Ultralock®** device which eliminates the requirement for anti-vibration wire locking of backshell spin couplings.

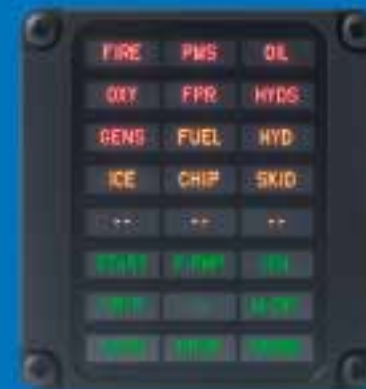
The **Inner Screen Termination Device** provides an innovative way of terminating screened conductors to backshells, eliminating the need to pass wires through the connectors.



Helicopter engine control panel with integrated rotor brake switch



Master armament external indicator providing sunlight readable indication of aircraft weapons status to ground crew



Dedicated Warning Panel (DWP) providing sunlight readable secondary warning and cautionary LED indication

Lighting solutions

Ultra provides customised lighting solutions using a number of standard controller and lighting modules. The range of lighting controllers offers a comprehensive solution for LED, electro-luminescent and incandescent lights. Typical applications include aircraft cockpits, instrument panels and navigation lights. A selection of control inputs is available from continuously variable to fixed pre-set levels and flashing outputs. Both multi-channel and single channel variants are also available.

Task, flood and safety lighting modules can be easily integrated to provide complete aircraft lighting solutions.

The **LED laplight** and **LED floodlight** use the latest LED technology and can be NVG filtered. The laplight is adjustable, dimmable and sealed with integral switching.

High integrity switches and indicators

The Electrics Division offers a comprehensive range of high integrity switches, indicators, miniature joysticks, trackballs, optical encoders and terminal blocks designed and approved to operate in harsh environments. High integrity switches include toggle, push button and hermetically sealed limit switches, incorporating fail-safe contact designs. These products are used extensively in flight critical systems.

A wide range of **landing gear selector switches** utilises fail safe switching technology and also incorporates LED warning indication and safety interlocks to prevent inadvertent selection.

The wide range of indication devices provides solutions for most cockpit applications. New developments include direct viewed, sunlight readable LED indicators and warning panels which meet Night Vision Goggle (NVG) and Night Vision Imaging System (NVIS) specifications.

The NVG compatible **illuminated push switch** is a compact 4-pole device using the latest bespoke filtered LED technology to provide status and system readouts in red, amber and green NVG compatible lighting.

LED indicators incorporating the latest LED technology have been developed as drop-in replacements for conventional electro-magnetic indicators.

Ultra also provides a range of **Dedicated Warning Panels (DWPs)**. These high reliability LED displays provide secondary warning, advisory and cautionary information to the pilot. LED captions are dimmable via a control input or to pre-set day/night levels.

Sunlight readable **master armament external indicators** reveal the weapons status of the aircraft at dispersal, enabling the ground crew to refuel and rearm without delay.



Our AirSpace product range

Human Machine Interface solutions

- Hands-On Throttle and Stick (HOTAS)
- Hands-On Collective and Stick (HOCAS)
- High fidelity simulation controls
- Cursor control pointing devices
- Mission grips
- Cockpit control panels
- Dedicated warning panels

Harnesses and components

- Complete electrical harness systems
- Discrete harness components
- Terminal connectors

Lighting solutions

- Cockpit dimming systems
- Discrete lighting controllers
- Cockpit map and wander lights (NVIS)
- LED and EL floodlighting (NVIS)
- Formation lighting
- Emergency lighting systems

High integrity switches

- Landing gear and flap selector switches
- Rotor brake switches
- Late arm switches
- Toggle, trim and push button switches
- Master Armament Safety Switch (MASS)

High integrity indicators

- LED indicators (NVIS)
- LED push button indicators (NVIS)
- Landing gear position indicators
- Master armament external indicators
- Magnetic indicators



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