S-PLANE

Ground Control
Solutions

Overview

S-PLANE offers robust and flexible Ground Control Station (GCS) solutions for manned, unmanned and optionally piloted aircraft systems. These solutions are tailored for a variety of configurations, including fixed, containerised, vehicle-mounted and man-portable GCS, to Aircraft Control Stations (ACS) installed to manned aircraft. We deliver optimised and comprehensive mission and payload situational awareness to both aircrew and remote operators. This is made possible through the integration of S-PLANE's ParagonC2 and ParagonISR software, as well as seamless connectivity between the GCS, Air Traffic Control (ATC), UAS Traffic Management (UTM) operators and pilots in manned aircraft.

ParagonC2 serves as the central command and control (C2) hub, enabling feature-rich mission planning, aircraft management, and remote piloting. ParagonISR supports efficient payload management and control and delivers real-time situational intelligence. Together, these systems enable coordinated, informed, and agile mission execution.

Ground Control

Solutions

Modular | Intuitive | Certification-Ready

About

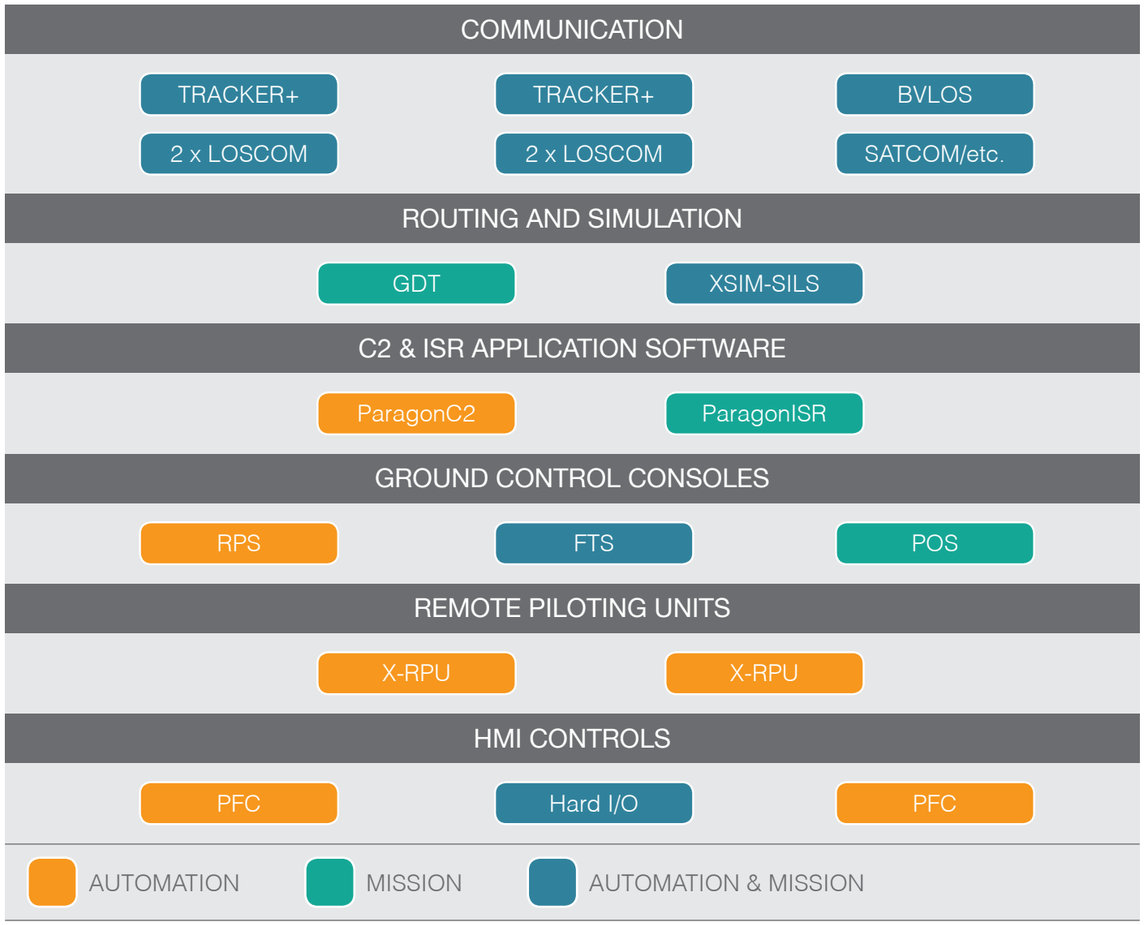
Built on a layered structure, S-PLANE's Ground Control Stations provide the communication, routing, simulation, C2, and piloting functions required to enable seamless, scalable solutions for your modern GCS for manned airborne systems, UAS, and OPS.

This network of ground control solutions supports a range of communication options including S-PLANE's TRACKER+ with LOSCOM, and BVLOS with SATCOM, ensuring reliable connectivity across various operational environments. Mission data routing is managed by the Ground Data Terminal (GDT), while our XSIM-SILS enables system testing, mission rehearsal, and operator training without requiring live flights.

Paragon serves as advanced HMI software for command and control (C2) and airborne ISR sensor payloads, delivering intuitive interfaces for mission planning, execution, and payload management.

Each S-PLANE Ground Control Console (GCC) can be configured as a Remote Piloting Station (RPS), a Payload Operator Station (POS), or a Flight Test Station (FTS), making it adaptable to a wide range of operational demands. Primary Flight Controls (PFCs), and hard I/O are interfaced to our innovative Remote Piloting Units (RPUs), providing high-resolution situational awareness and responsive control interfaces. RPUs and Paragon appliances also interface directly to the GCC for optimised and safe operation throughout all phases of flight.

Ground Control Solution Structure



X-RPU (Remote Piloting Unit)

- High performance safety-critical C2 computer
- I/O concentrator
- Network switch
- SW containerisation for 3rd party applications

TRACKER+

- Stand-alone GNSS-based antenna tracker
- Multi-band directional & omni-directional antennas
- >250km LOSCOM
- Supports multiple high-powered datalinks
- Environmentally controlled link bays

ParagonISR Appliance

- Multi-payload & mission software
- Shares 3D ParagonC2 environment
- Payload management and control
- Layered data fusion
- Proven EO/IR, Radar, SIGINT, AIS, etc. support

ParagonC2 Appliance

- Multi-vehicle C2 software
- Mission control
- Flight planning & visualisation
- Remote piloting
- Supports various data sources & sinks
- 3D graphical map interface

GCC (Ground Control Console)

- Can be configured as RPU, POS or FTS
- Safety-critical I/O
- Interfaces with ParagonC2/ ISR appliances and X-RPU

Peripheral Equipment

- Ground Data Terminal (GDT)
- Power Distribution Unit
- PFCs
- Hard I/O
- XSIM-SILS

Ground Control

Solutions

ParagonC2

ParagonC2 is a highly configurable command and control solution for Unmanned Aircraft Systems (UAS), combining an advanced 3D graphical interface with a customisable, context-sensitive user interface to enhance situational awareness and enable efficient multi-vehicle and airborne platform management and control.

Mission planning, simulation, execution, and all pre- and post-flight procedures can be performed from a single station. ParagonC2 seamlessly shares data and interfaces with ParagonISR and third-party applications, enabling integrated workflows, while maintaining compatibility with traditional systems and meeting customised user requirements.

ParagonISR

ParagonISR is a flexible solution for airborne ISR control, data fusion, and payload management across manned and unmanned systems. It integrates seamlessly with ParagonC2, third-party platforms, and advanced civil and military ISR systems through its open, configurable architecture.

ParagonISR supports full payload integration, including multisensor fusion across Radar, EO/IR, AIS, SIGINT, and COMINT systems. Its 3D mapping engine, with features like on-map projection and visibility analysis, enhances mission context and operator awareness. With standardised interfaces, superior target tracking, and advanced automation, it reduces operator workload and maximises multi-payload effectiveness, all within a streamlined, clutter-free interface for enhanced situational awareness and mission coordination.

Ground Control Console

S-PLANE's Ground Control Console (GCC) provides an advanced human-machine interface (HMI) for manned, unmanned, and optionally piloted aircraft systems. Configurable as a Remote Piloting Station (RPS), Payload Operator Station (POS), or Flight Test Station (FTS), it adapts to diverse operational needs.

The GCC features full HD displays and a multi-function touchscreen display (MFD) for safety-critical operations, supported by Primary Flight Controls (PFCs) and hard I/O. These connect to Remote Piloting Unit (RPU) computers, delivering high-resolution situational awareness and responsive control. Integrated with ParagonC2 and ParagonISR, the GCC provides a unified, intuitive, and redundant HMI for C2, mission management and payload control.

X-KIT Key Equipment

X-CUBE

- The X-CUBE is the core avionics unit of the X-KIT for UAS/OPS conversion
- Function: Flight Control Unit (FCU), Power Distribution Unit (PDU) and Input/Output (I/O) Concentrator
- Support SCP, DFR and TFR internal redundancy with dedicated voting
- Further supports dual X-CUBE external redundancy with failover architecture

X-ADT

- Airborne Data Terminal (ADT)
- Function: Mission Computer, I/O Concentrator, HD-SDI Video Encoder, Data Storage, Ethernet Switch
- Supports S-PLANE's mission software and third-party or custom containerised software
- Interfaces with and manages and controls mission payloads (RADAR, EO/IR, SIGINT, AIS and Direction Finder)

X-RPU

- Remote Piloting Unit (RPU)
- Function: Safety-critical Command & Control Computer, and I/O Concentrator
- Interfaces to Primary Flight Controls (PFC), GCC MFD, Hard I/O (buttons and switches with parallel redundancy) and to data links/tracker

TRACKER+

- Stand-alone GNSS-based antenna tracker for UHF, L-, S- and C-bands
- Function: Long-range Line of Sight Communication (LOSCom) between aircraft and Ground Control Stations (GCS)
- Mesh network enabled

GCC and Paragon

- Ground Control Console (GCC)
- Configured as a Remote Piloting Station, Payload Operating Station, or Engineering Station
- Function: HMI for Paragon, PFD with HUD, and MFD (touch display) for Remote Piloting

Equipment Chains & Products

	AIRBORNE CONTROL	GROUND CONTROL	COMMUNICATION	SIMULATION
NX-FCU	Automation & ISR Mission		Automation & ISR Mission	
X-CUBE	Automation		Automation	
X-ADT	ISR Mission		ISR Mission	
X-RPU		Automation		
GCC		Automation & ISR Mission		
Paragon	Automation & ISR Mission			
X-GDT		ISR Mission	Automation & ISR Mission	
TRACKER+			Automation & ISR Mission	
XSIM-HILS				Automation & ISR Mission
XSIM-Workbench				Automation & ISR Mission
XSIM-Video				Automation & ISR Mission

Contact Details: 9B Cyclonite Road, The Interchange, Somerset West, South Africa, 7130 • Phone: +27 21 851 9282, Fax: +27 86 298 4587, Email: info@s-plane.com

Information provided on this brochure is subject to change without notice.