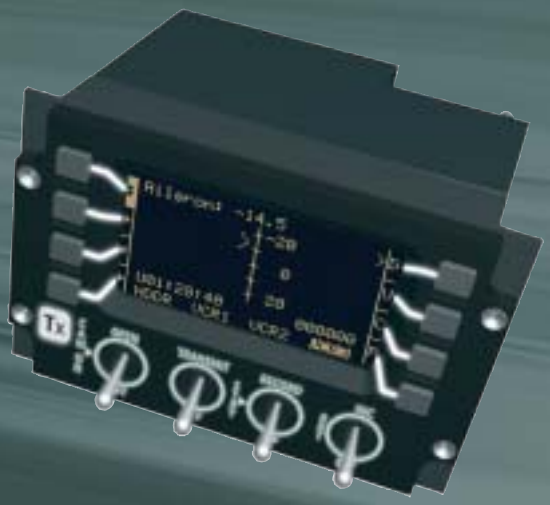
SPECIALIST ELECTRONICS SERVICES LTD

Solution Engineering




SYSTEM DESIGN PRODUCT DESIGN HARDWARE DESIGN SOFTWARE DESIGN MECHANICAL DESIGN



C3DU-G

SES Control and Display Unit - Graphical

SES Control and Display Solutions

SES offer the C3DU-G as part of their range of Control and Display Units.

The C3DU product range is designed for compatibility with a variety of military and commercial vehicle applications and environments and offers low cost customization to meet specific requirements. The family of products is based around a common processor module, has a selection of high performance flat panel displays and is supplied in a variety of physical enclosures. The C3DUs have a defined performance and are pre-qualified to work in the harshest of environments, including severe military EMC standards.

The SES C3DU-G is a part of the latest family of SES control and display units for aerospace and armoured vehicle applications, featuring a high reliability electro-luminescent panel with night vision goggle compatibility. A user can operate the unit via front panel mounted push-buttons and toggle switches; the electrical system interfaces are dependent on configuration and can include up to three RS422/485 serial links, up to 16 discrete digital inputs/outputs, and other inputs such as CAN bus or high-speed synchronous serial interface.

Customisation options include illuminated panel legends, switch combinations, mounting arrangements and of course, software to provide a bespoke function and screen layout. A supporting software customisation service is available from SES to provide a complete bespoke software application for a user. Alternately the C3DU-G is available with interfaces to a variety of avionic equipment for which display and control options can be controlled by a user.

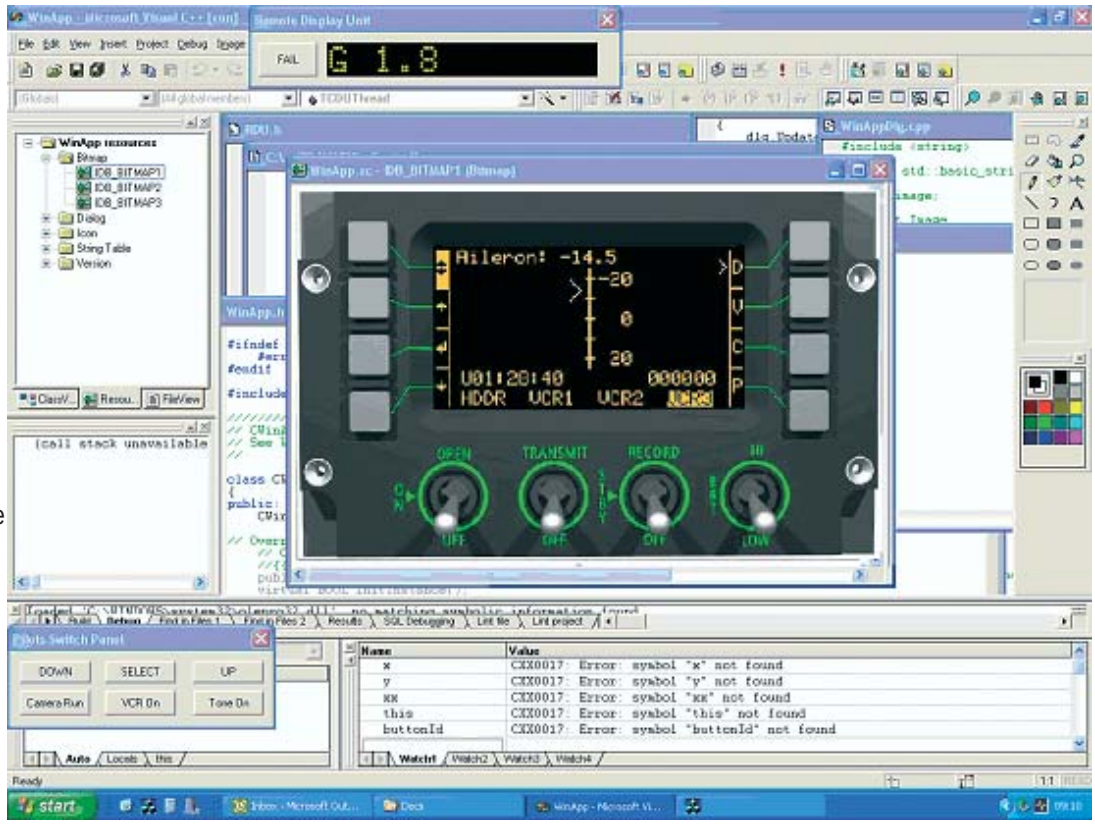
- NVG compatible 160x80 pixel electro-luminescent display. Sunlight readable, anti-reflective coating
- NVG compatible illuminated front panel with embedded hidden-until-lit annunciator.
- Illuminated switch legends can be customised to suit a specific application.
- Two 16-bit microcontrollers, each with 32kByte RAM, 256kByte ROM, programmed in ANSI-C using MISRA code guidelines
  In-service reprogrammable
- 8 software readable "soft" buttons. 4 software readable toggle switches, which can be configured for direct hardware link to the rear connector.
- Electro-Magnetic Compatibility testing to DEF STAN 59-41
  Environmental testing to MIL-STD-810E
- Power consumption:
  Max. 15W at 28V DC to BS3G100

Software Development

The C3DU-G can be supplied fully as a functional turnkey system with all software development performed by SES to a clients' functional specification.

SES has considerable experience in high-reliability embedded systems, including safety related system development to DEF STAN 00-55/56.

Alternatively, the C3DU-G can be supplied as off-the-shelf hardware and software application that can be customised by the user.



The C3DU-G simulator development environment.

For bespoke developments SES offers a range of software-based simulation systems. These 'mock' C3DU applications mimic, on a standard desktop PC, the complete function of the C3DU unit, allowing the testing and assessment of C3DU well in advance of the hardware units being available.

The simulation enables significantly more development and testing time to be allocated to any given C3DU based project timetable. Each application provides all the necessary interface, display and button functionality of the real hardware unit, in an easy to use Windows-based desktop application. Everything needed to begin trials of system operation right from the word go.

System Integration Support

SES can supply Special-to-Type Test Equipment (STTE) to support the development of C3DU-G applications and to provide in-service support test facilities.

These STTEs take the form of a ruggedised PC equipped with an interface adapter to provide to the C3DU the power and signal connections required to mimic the final installation.

This allows the unit to be subjected to stand-alone testing, such as at second line or during environmental testing, without the need for any additional installation equipment.

C3DU-G Physical Specifications

Physical Size:	93mm(h) x 151mm(w) x 114mm(d, inc. switches)
Weight:	<1.5kg
Casing:	Alluminium Alloy (L99)
Finish:	Matt black to FED-STD 595-37038
Storage Temperature:	-40ºC to +85ºC
Operating Temperature:	-40ºC to +70ºC
Humidity:	5% to 95% non-condensing
Operating altitude limit:	58,000ft. (18000m)
Power Consumption:	<15W at 28V D.C.
Display Resolution:	160 x 80 pixels
Vibration:	MIL-STD-810E
EMC Rating:	DEF STAN 59-41
Display Contrast:	100:1
Brightness:	adjustable from 3.9cd/m^2 to 78cd/m^2
NVG Compatible:	NVIS Yellow to MIL-L-85762A/ MIL-STD-3009 Class B
Interfaces:	3 x RS422/RS485 serial ports Up to 16 Isolated digital inputs or Volt-free digital outputs (details of configuration on request)
Processing:	Two 20MHz 16-bit microcontrollers, each with 32kByte RAM, 256kByte ROM, programmed in ANSI-C following MISRA coding guidelines

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