

The Application

The US Navy requested a custom LCD display and keyboard for use in officer's staterooms aboard submarines. The staterooms provide a built-in desk with a fold-down writing surface and a secure network connection. The Navy wanted a unit that fit in the desk when open, was of minimal weight, had the ergonomics of a laptop, and contained no electronics that could be used to capture data from the secure network. Video input is provided as analog VGA but the keyboard and mouse interface via an Icron extender board.



The Specification

Video Input	1280x1024, 75Hz
Display Resolution	1280x1024
Keyboard	Full sized keys
Pointing Device	Touchpad
Power Connector	Locking
Communications	Via Icron USB Ranger
Weight	13 Lbs
Controls	Display power, brightness, contrast

Features: Latches for display in folded position, aluminum construction, 2 open USB ports, ergonomically comfortable, no internal buffers.



The Solution

The physical constraints of the desks built into the submarines required an innovative new design. A limited vertical space is provided between the desk writing surface and the inside top of the desk opening.

Using 3-D modeling, Chassis Plans engineers devised a unique design layout that minimized open height yet provided for installation of a full-size keyboard and wrist pad. A touchpad was integrated in beside the keyboard. The available vertical overhead in the keyboard area required locating, sourcing, and qualifying a keyboard assembly requiring minimal height while providing full travel functionality. Integrated into the keyboard area is the electronics from an Icron USB Ranger 410 USB extender. This device consolidates the USB signals from the keyboard, touchpad, and two available external USB ports onto a single RJ45 connector.

The design was validated with solid modeling analysis to assure no weak areas in the design that would bend or warp during use or transportation.