# HighSecLabs
Highest Security Solutions

SECURE RUGGED 8-PORT DP/HDMI MINI MATRIX KVM

HSL's 8-port DP/HDMI secure rugged Mini Matrix KVM improves situational awareness and workflow while eliminating the threat of data leaks through shared peripherals, under the most challenging of environmental conditions. The product allows viewing two source feeds simultaneously on two operator displays.

For easier installation and operation, the Mini Matrix KVM is equipped with a remote control that can be mounted on the operator's dashboard. The remote control is used to select the computer source for each of the two operator displays.
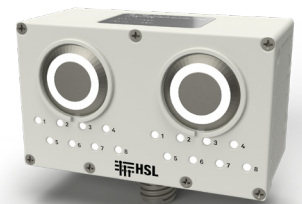
The SX82PHU-4TR is part of HSL's rugged product family which is compatible with **NIAP PP4.0 for PSD**, **MIL-STD-810, MIL-STD-461** and **MIL-STD-1275**. HSL's rugged product family is designed to be deployed on military vehicles, marine vessels and airborne platforms.

Highly Rugged

The Mini Matrix features a robust sealed aluminum enclosure, all metallic MIL-DTL-38999 connectors and sealed illuminated remote control push-buttons. The Mini Matrix meets harsh MIL-STD-810 environmental conditions including temperature, solar radiation, humidity, shock and altitude. The product is compliant with IP67.

Versatile Interfaces

The product supports 8 computers/video sources with HDMI or DP interfaces. Video sources ranging from 480p legacy to 1920x1200@60Hz, 2560x1600@60Hz and 3840x2160@30HZ (4K30) resolutions are supported.

Unidirectional Optical Data Diodes

HSL products are renowned for providing the highest level of isolation between connected computers or sources. The Mini Matrix is equipped with patented unidirectional optical data diodes to prevent potential cyber-attacks and data leaks on the KVM, the host and from connected peripherals. No reverse data flow is possible, by design. The Mini Matrix is ideal for preventing data leaks and insertion of malicious code between networks of different classification levels.

Hardware Based Peripheral Protection/Isolation

The SX82PHU-4TR security functions are hardware implemented, with absolutely no dependency on firmware or software. All firmware is in protected ROM (Read Only Memory). No keyboard buffering or memory is retained. Peripheral devices can be authorized or rejected through configurable white and black lists.

Display Plug & Play (DDC) Protection

HSL's patented EDID protection is the most secure video protection method in the market today, employing emulation technology for leakage protection. Signaling attacks are prevented by design.

Protected Power Input

The Mini Matrix is powered directly from the 18-36VDC vehicle power bus and is fully compliant with MIL-STD-1275. High radiation nuclear event protection is optional.

Extensive BIT (Built-In-Test) Functionality

Receive the unit's operational readiness status and diagnostics via RS232. BIT results are reported upon startup, on demand and continuously every 5 minutes.

SX82PHU-4TR Rear View

SPECIFICATION

MODEL NUMBER	SX82PHU-4TR
MAIN FEATURES	
Dimensions	433.8 (W) x 215 (D) x 65.85 (H) mm [17.07 x 8.46 x 2.6 Inch]
Weight	4.536 Kg [10 lbs]
Host Input Ports	8 x HDMI or DP and two USB 2.0 interfaces based on a single female TVP00ZNCI17-35P.
Console ports	HDMI or DP, 3 USB devices and remote control via a single male TVP00ZNCI17-35S.
Channel Switching	Remote control connected via console port
Supported Video Modes	• HDMI/DP supported up to 4K@30Hz or 2600x1600@60Hz • Support for other video formats available.
ENVIRONMENTAL (PARTIAL LIST)	
Shock	MIL-STD-810G, Method 516.7 Procedure I with a peak amplitude of 40 ± 4.0g
Vibration	MIL-STD-810G, Method 514.7 Procedure I for operational use on a Category 20 wheeled Ground Vehicles
Humidity	MIL-STD-810G, Method 507.6, Procedure I based upon Table 507.6-I
Temperature	Operating - 46°C to 52°C (-51°F to 125°F); Storage -51°C to 71°C (-60°F to 160°F)
Altitude	MIL-STD-810G, Method 500.6 Procedure I
Immersion	MIL-STD-810G, Method 512.6 Procedure I to a depth of 3 meters in fresh water
Salt Fog	MIL-STD-810G, Method 509.6.
Blowing Sand	MIL-STD-810G, Method 510.6 Procedure II with 10.6 to 17.7 grams per cubic meter (g/m3)
Blowing Dust	MIL-STD-810G, Method 510.6 Procedure I with 0.006 g/m3 silica flour dust from 0.0001mm to 0.01mm in diameter blowing at a velocity of 1.5 ±0.2 m/s

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POWER	
DC Input	Nominal power input 28VDC (18V-36V)
Power Compliance	MIL-STD-1275E Compliant Designed to operate with a steady-state supply voltage per fault free conditions as specified in MIL-STD-1275E
Power Requirements	Max power consumption 40W
REGULATORY COMPLIANCE	
Safety	MIL-STD-882
EMI/EMC	MIL-STD-461
Tests	CE102, CS101, CS114, CS115, CS116, RE102, RE103, CE101
Security	• Compliant with NIAP PP4.0 for PSD (Peripheral Sharing Device)
RELIABILITY	
Standard	MIL-HDBK-216
MTBF	65,000 hours of operation at 40°C
HOW TO ORDER	
Product Model #	SX82PHU-4TR
Remote Control for Model #	WX80-4TR
Cables KIT Model #	Host SH HDMI: KC82HH-4TRKIT Host SH DP: KC82PH-4TRKIT

Rugged Product Cable Sample

Secure 8-Port Rugged Mini Matrix System Diagram

Primary Display Secondary Display

Smart-Card Reader

Remote Control Keyboard & Trackball Mouse

Computers

8 6 4 2

7 5 3 1

— fUSB Cable
— RC Cable
— Mouse Cable
— Display Cable
— Keyboard Cable

CONSOLE PORTS COMPUTER/SOURCE PORTS