

PRODUCT NEWS 2021



SETTING
NEW
STANDARDS

Supplementary to Product Catalog 2020

SECURE KVM SOLUTIONS ■ IP ACCESS ■ MISSION CRITICAL 24/7

ihse.

WHO ARE WE AND WHAT DO WE DO?

Technology leader

IHSE is a world leading manufacturer of flexible and highly secure KVM (keyboard, video, mouse) extension and switching solutions for collaboration, resource and access management.

Made in Germany

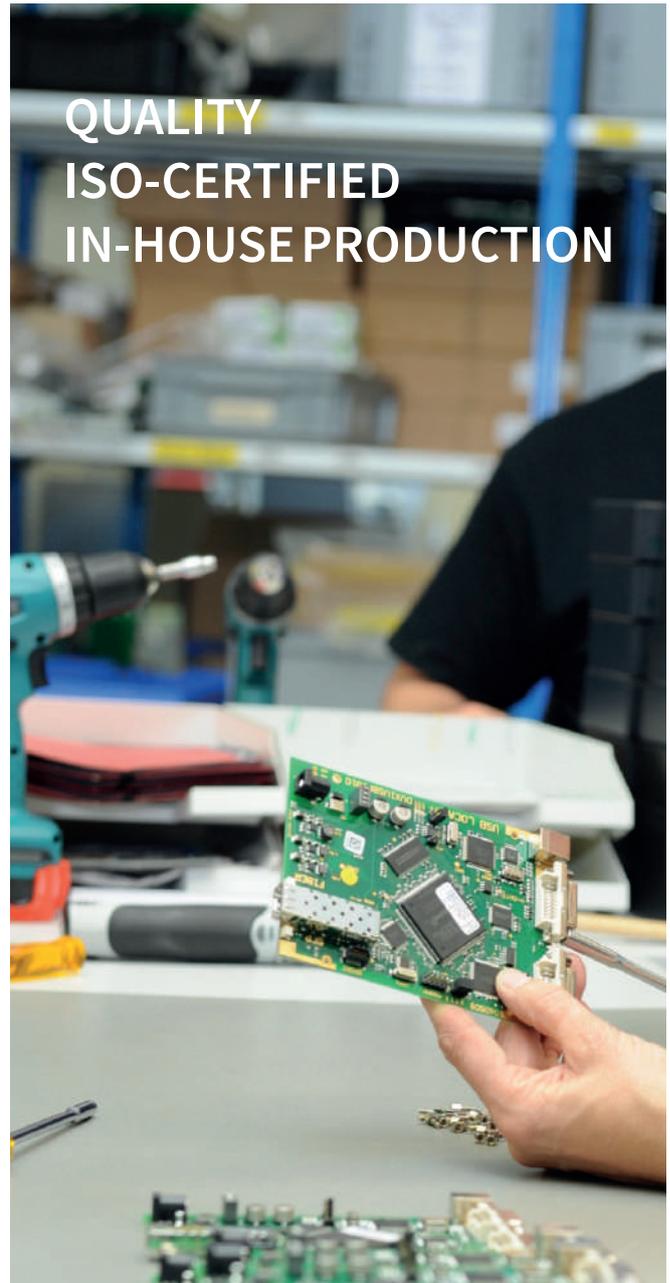
IHSE has over 35 years advanced in-house system design and manufacturing experience. Our certified and award-winning products are renowned for their outstanding manufacturing quality, 24/7 operation, high security and flexibility.

Technology for tomorrow

Our mission-critical solutions are future-proof, modular and provide security of investment. They can be configured from a range of hundreds of flexible modules to meet specific individual requirements and budgets. Installations can be easily upgraded with new features and interface standards without having to replace existing systems.

IP connectivity NEW

IHSE technology enables location-independent access over IP with supreme system security. Using sophisticated secure-core technology, we isolate the IP protocol from the matrix. While providing flexibility and secure access to mission-critical installations, the system keeps the requirements on IP networks as low as possible. There is no need for complex IGMP multicast configuration or high bandwidth.



Global market presence

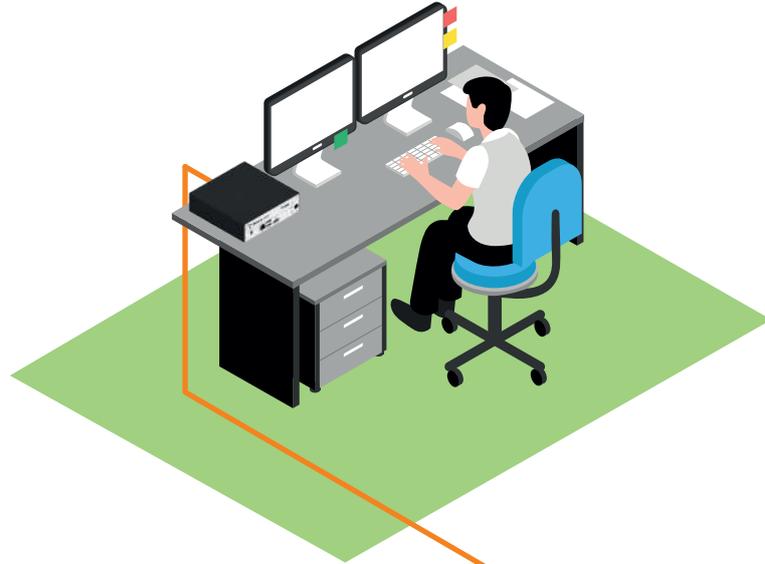
With our headquarters based near Lake Constance, we have IHSE-owned subsidiaries in New Jersey and Singapore with independent, authorized sales partners all over the world. This creates a comprehensive global sales network with round-the-clock support. Renowned international institutions rely on IHSE solutions in mission-critical operations in many application sectors, including Broadcast, ProAV, Esports, Banking, Healthcare, Maritime, Air Traffic Control and Government.



WHAT IS KVM?

KVM stands for Keyboard-Video-Mouse, referring to the familiar workplace computer input and output devices.

Our mission-critical system solutions extend the distance between the computer and peripheral devices (keyboard, screen, mouse). Allowing users to select between different source devices to create more comfortable and efficient working environments and streamlined workflows. We offer KVM products for the switching, sharing, extension and conversion of all types of computer signals, including analog and digital video and audio, USB and SDI video; applicable to all markets. Long distances are bridged by Cat X, fiber or mixed cabling, depending on requirements and applications.



HOW DO COMPANIES BENEFIT FROM KVM?

KVM enhances the workplace

- **Relocation of computers**
Reduction of bulky computer hardware, noise and heat in the user environment.
- **Reducing workplace clutter**
Operation of several computers and monitors by a single set of keyboard and mouse.
- **Easy access of resources**
Convenient and instant access to a large number of connected sources.

KVM increases IT security

- **Access control**
Limits access of source computers to authorized users.
- **Restricted internal access**
Prevents unauthorized removal of data and injection of malware.
- **Prevention of unauthorized external access**
The KVM system includes integral isolation against unauthorized network access or attack and guards against electronic eavesdropping.

KVM saves costs

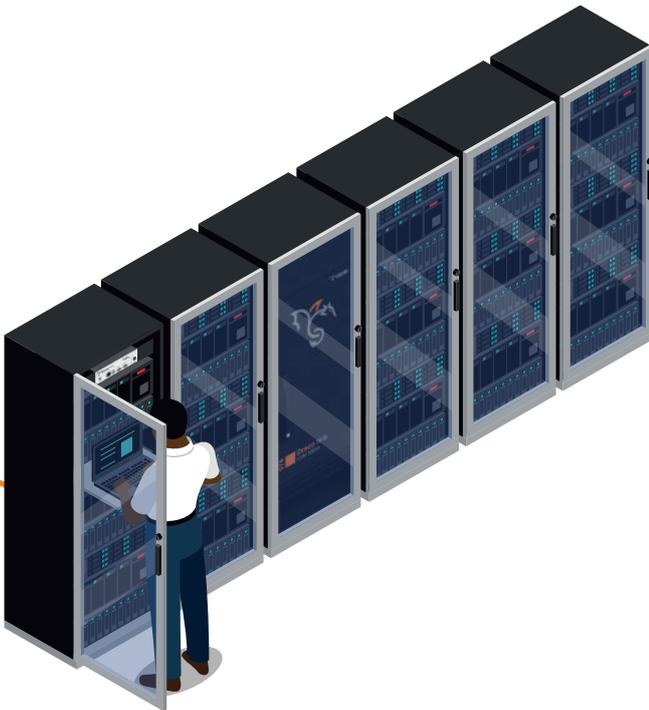
- **Increasing the lifespan of computers and equipment**
Locating sensitive computer equipment in secure and environmentally-controlled server rooms allows them to be maintained and managed in the best possible conditions.
- **Reducing hardware and software overheads**
Users from different areas and workstations can access and share computers and licensed software tools at different times.
- **Efficient use of space and technical resources**
Workstations can be flexibly reconfigured for various tasks and applications at the push of a button. Simultaneous access to content enables collaboration and cooperation between remote teams.

KVM Extenders

KVM extenders enable computer access from remotely-located workstations. This makes it easy to protect critical CPUs and servers from heat, dirt, moisture and unauthorized access.

Removing noisy, bulky, heat-producing computers from the operator workplace creates a more pleasant, less-cluttered, working environment users' desks simply require basic peripheral devices: monitors, keyboards and pointing devices.

KVM extenders provide great benefit in applications like data centers, hospitals, financial floors, post production suites and in extremely space-restricted environments on ships or ATC towers.



KVM Matrix Switches

A KVM matrix switch enables access to, and management of, any size of computer installation. Sources can be accessed, switched and shared instantly by users. Any connected user console, consisting of keyboard, mouse, monitor or other peripherals, can access any computer within the network. Expensive equipment and software licenses can be shared between multiple users accessing the same computers from their individual workstations in real time.

The system supports all relevant computer video formats up to 8K and higher resolutions as well as SDI and USB 3.0. Switches include comprehensive features such as multi-screen control and cross-conversion between AV signals and transmission media (Cat X and fiber).

A secure IP interface provides remote users with seamless, location-independent IP access via browser or client. For maximum security, the core matrix is completely shielded from the TCP/IP network.



Why are our systems modular?

Individual KVM modules can be integrated together to meet specific requirements. Enabling **tailor-made solutions** for every individual project. Standardized modules facilitate installation in common 19-inch chassis or rack cabinets found in server rooms.

Modularity offers a high level of investment security. Whenever new video standards are added or additional interfaces are required, the system can easily be expanded with additional modules. This **saves time-consuming and cost-intensive system replacements**.

TÜV SÜD awards IHSE GmbH ISO certifications 9001 and 14001 for successful quality and environmental management and especially emphasizes IHSE's outstanding sustainability concept.

The ISO 14001 standard confirms IHSE's goal-oriented environmental management that exceeds the specified criteria in an outstanding manner. The new building of IHSE GmbH, for example, features the whole range of environmentally friendly measures from energy-saving insulation, heating with heat exchangers and supporting concrete core temperature control to energy-efficient LED lighting.



SUCCESSFUL QUALITY AND ENVIRONMENTAL MANAGEMENT OF IHSE

At IHSE

■ Reducing waste

IHSE does not print order confirmations or offers any more — we only send these by email. Should these need to be printed, IHSE uses recycled paper.

■ Electric and hybrid drive

All company cars will be completely converted to electric and hybrid drive. For the newer company cars, the changeover has already taken place. The same principle will be applied to all new purchases. In addition, there is a possibility of recharging e-cars free of charge via the existing charging stations.

■ Leasing pedelecs

IHSE also motivates employees to switch to e-mobility alternatives.

■ Photovoltaic System

Environmentally friendly production process. The photovoltaic system covers a large part of the energy demand.

■ Unique biotope

The entire flora is composed of autochthonous plants. The animal kingdom in particular also benefits from this: Various species of dragonflies, frogs and even newts have already settled in the IHSE biotope.

■ Resettlement of the Northern Bald Ibis

IHSE supports the resettlement in Europe with a sponsorship for the male bird Drako in Austria.

■ Insect hotel

A nesting aid for the wild bees which are considered endangered. Five honey bee hives support the ecological balance with the nice side effect that honey will soon be produced.

The devices

■ Energy efficient design of the devices

Through intelligent use of space, the IHSE products are designed to allow maximum space efficiency in the rack unit. The chassis are made of aluminum which does not corrode and which is 100 % recyclable.

■ ROHS and REACH regulations

All devices comply with ROHS and REACH regulations (this means that certain chemicals are not being used in the production process).

■ Ressource-saving products

Having the ability to store the computers outside the office environment reduces costs of air-conditioning. Keeping the computers in special server rooms allows adequate climate control thus increasing the life of each device. This reduces electronic waste.

■ 50 - 60 % less energy requirement of the IHSE 4K₆₀ devices

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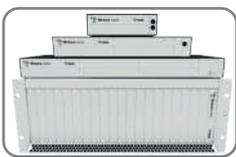
ICON GLOSSARY

 4K resolution @ 30 Hz (4096 x 2160)	 Integrated local video in/out	 DisplayPort 1.1
 4K resolution @ 60 Hz (4096 x 2160)	 KVM switch functionality	 DisplayPort 1.2
 One Dual Link monitor	 DVI-D	 SDI
 Two Single Link monitors	 HDMI	 VGA
 Cat X	 USB	 Internet Protocol (VDI/SSH)
 Cat X 3G	 USB 2.0 (36 Mbit/s)	 Internet Protocol (TCP/IP)
 Single-mode Fiber	 USB 2.0 (50/100 Mbit/s)	 RS232
 Multi-mode Fiber	 USB 2.0 Hi-Speed (480 Mbit/s)	 RS422
 Fiber 3G	 USB 3.1	 Analog audio bidirectional
 Micro-BNC	 USB-HID	 Digital audio bidirectional
 Redundant signal transmission	 PS/2 interface	 Balanced audio

DESIGN YOUR OWN DEVICE - DRACO SYSTEM DESIGNER

IHSE offers a configurator for all Draco products. Check out our product site at ihse.com/configurator and select your preferred solution. Equip it with your required modules and simulate your fully loaded frame.

The configurator features all regular Draco switches, Draco vario chassis, main modules, add-on modules, USB 2.0 and 3.0 modules and accessories.



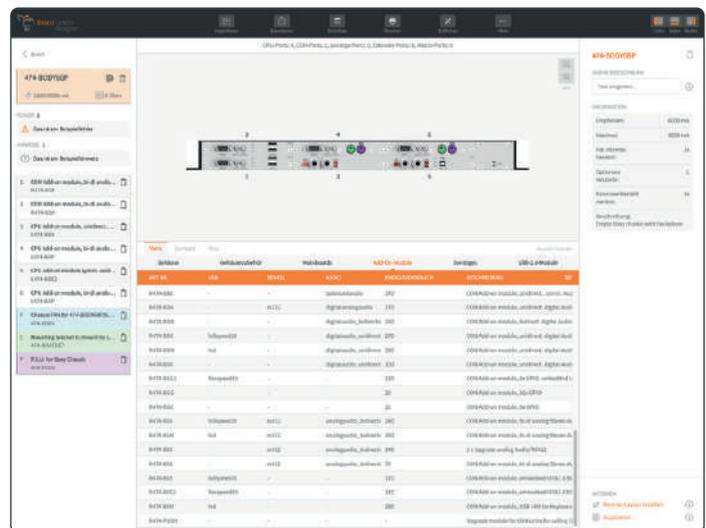
- Step 1: Chassis**
 - > Select a Frame Type
 - > Chassis Accessories



- Step 2: Modules**
 - > Basic Modules
 - > Add-On Modules



- Step 3: Export**
 - > Parts List
 - > Print Out or CSV
 - > Direct Order Placement



LONG DISTANCE TRANSMISSION OF VIDEO, USB, RS232 AND PS/2 SIGNALS UP TO 10 KM



The Draco vario product family is a modular approach to extenders that allow customization for nearly any application. Each extender option can be installed in one of the unique frame assemblies. Four frame types are available — 2, 4, 6, or 21 cards per frame. All variants can be flexibly assembled as Multi-Head models.

There are two new models of the Draco vario and Draco vario ultra series which you can find on the following pages.

DIGITAL KVM EXTENDERS

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Classic Series

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DRACO VARIO CLASSIC

(Series 47x/48x)

Video Formats

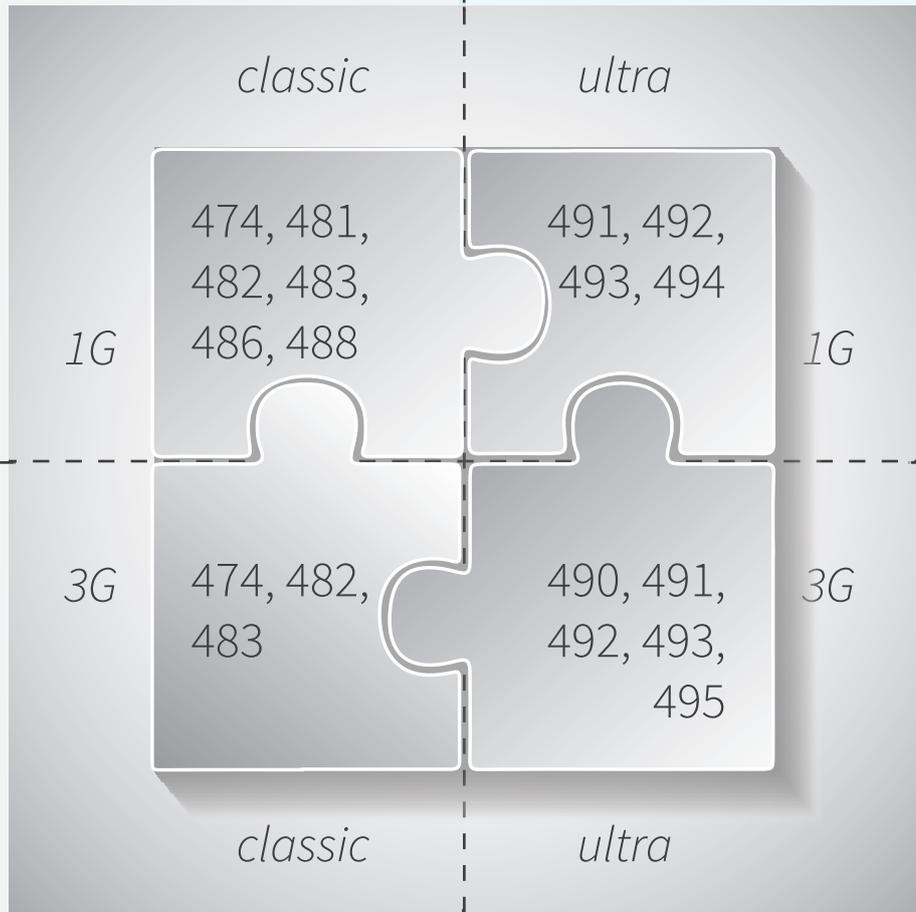
- VGA
- DVI, DVI DH / DL
- HDMI 1.3
- DisplayPort 1.1 (4K30)
- SDI

DRACO VARIO ULTRA

(Series 49x)

Video Formats

- DVI DH / DL
- HDMI 1.3
- DisplayPort 1.1 (4K30)
- SDI coming soon!



DRACO VARIO CLASSIC XV

Video Formats

- VGA
- DVI, DVI DH / DL
- DisplayPort 1.1 (4K30)

DRACO VARIO ULTRA XV

Video Formats

- DVI DH / DL
- HDMI 1.3
- HDMI 2.0
- DisplayPort 1.1 (4K30)
- DisplayPort 1.2 (4K60)
- SDI coming soon!

PLEASE CONTACT SALES@IHSE.DE
ON COMPATIBILITY CONCERNS!

NEW TECHNOLOGY OF DRACO VARIO ULTRA

Next generation KVM extenders with integrated Fraunhofer IIS's lightweight coding technology



Gefördert durch:



Bundesministerium für Wirtschaft und Energie

aufgrund eines Beschlusses des Deutschen Bundestages



The Draco vario ultra is the first ever KVM extender that uses the Lightweight Image Coding technology Lici® and has been developed in partnership with the Fraunhofer Institute for Integrated Circuits. The innovative codec enables the transmission of high resolution video streams within the available infrastructure and bandwidth capacity at very low latency, without sacrificing either image quality or dynamic range.

Lici® (Lightweight Image Coding technology)

- Mezzanine compression up to mathematically lossless
- Low latency
- No frame drops
- RGB/YCbCr or raw data compression
- 2K/4K/8K possible or higher frame rates
- Source synchronous transmission

PRODUCT NAME	SERIES
Draco vario ultra DisplayPort 1.2	490
Draco vario ultra HDMI 1.3	491
Draco vario ultra Dual Link	492
Draco vario ultra DisplayPort 1.1 Single-Head	493
Draco vario ultra DisplayPort 1.1 Dual-Head NEW (see on the following page)	493
Draco vario ultra DVI-I	494
Draco vario ultra HDMI 2.0	495

For detailed information about the Draco vario Ultra Series refer to the "IHSE Product Catalog 2020" on page 30 cont.



- Energy and space saving for high packing density
- Variable chassis selection due to modular design
- Expandable with audio and data interfaces
- Transmission of two video signals via one cable
- Ergonomic working due to noiseless operation

Product Information

The Draco vario ultra DisplayPort 1.1 Dual-Head KVM extender allows the visually lossless extension of high resolution video and audio signals via the DisplayPort interface. Fully digital video signals can be transmitted in Single-Head operation in 4K resolutions up to 4096 x 2160 (4K

DCI) and 3840 x 2160 (UHD). In Dual-Head mode, resolutions of up to 1920 x 1200 pixels per channel are supported. The embedded audio signal is directly reproduced by the connected displays with integrated speakers. In combination with optional analog or digital audio

modules, the stereo signal can be extracted and outputted separately. The Draco vario ultra DisplayPort 1.1 Dual-Head KVM extender is also compatible* with Draco tera KVM matrix systems.

Product Features

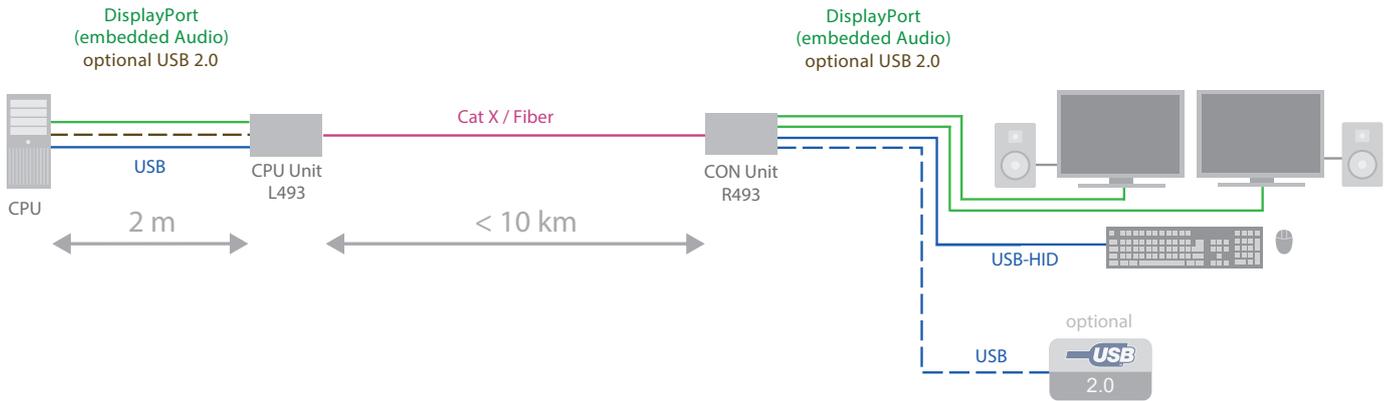
- Operation of a CPU from a remote workstation with two DisplayPort monitors and USB-HID devices (keyboard/mouse)
- Transmission of fully digital video signals up to 4K DCI (4096 x 2160) and UHD (3840 x 2160) up to 30 Hz, color depth 8 bit (4:4:4) when in Single-Head operation
- The DisplayPort interface can transmit the audio format at a sample rate of up to 192 kHz
- Intelligent monitor EDID management
- Optional: Redundant connections for 24/7 availability
- Compatibility with all common operating systems (Linux, Unix, Windows, Mac OS) and Draco vario chassis
- Compatible* with IHSE Draco tera KVM matrix systems, all additional modules of the Draco vario extender series for audio and data signals such as USB or RS232
- No frame drops, lossless image compression
- Synchronous video transmission in Multi Head applications, full 60 fps, Low-Latency Mode

TECHNICAL DATA	
Input	Primary Channel: 1x DisplayPort 1.1 Secondary Channel: 1x Mini Display-Port 1.1
Output	Primary Channel: 1x DisplayPort 1.1 Secondary Channel: 1x Mini Display-Port 1.1
Audio (embedded)	Stereo Linear Pulse Code Modulation (LPCM), DTS, DTS-HD (5.1), Dolby Digital, Dolby Digital Plus (5.1)
Maximum Resolution	Single-Head: 4K30 Dual-Head: 1920 x 1200 @ 60 Hz
Keyboard / Mouse	USB-HID
Interfaces with optional add-on modules	Suitable add-on modules under the following link: www.ihse.com/add-on-modules/
Maximum Cable Distance	Cat X: 140 m Single-mode: 10 km Single-mode XV: 5 km Multi-mode: 1 km Multi-mode XV: 400 m
Power supply	Power supply via the used Draco vario chassis**

** For detailed information refer to the user manual.

*Draco vario ultra CONs can be coupled with either Draco vario or Draco vario ultra CPUs. But Draco vario CONs only support connectivity to Draco vario CPUs.

Functional Diagram



Order Numbers

FUNCTIONS	CPU UNIT (LOCAL)	PART NO.	CON UNIT (REMOTE)	PART NO.
		L493-B2HC L493-B2HS L493-B2HX		R493-B2HC R493-B2HS R493-B2HX
		L493-B2HCR L493-B2HSR L493-B2HXR		R493-B2HCR R493-B2HSR R493-B2HXR



- Energy and space saving for high packing density
- Variable chassis selection due to modular design
- Expandable with audio and data interfaces
- Transmission of two video signals via one cable
- Ergonomic working due to noiseless operation

Product Information

The Draco vario DisplayPort 1.1 Dual-Head KVM extender allows the visually lossless extension of high resolution video and audio signals via the DisplayPort interface. Fully digital video signals can be transmitted in Single-Head operation in 4K resolutions up to 4096 x 2160 (4K

DCI) and 3840 x 2160 (UHD). In Dual-Head mode, resolutions of up to 1920 x 1200 pixels per channel are supported. The embedded audio signal is directly reproduced by the connected displays with integrated speakers. In combination with optional analog or digital audio

modules, the stereo signal can be extracted and outputted separately. The Draco vario DisplayPort 1.1 Dual-Head KVM extender is also compatible with Draco tera KVM matrix systems.

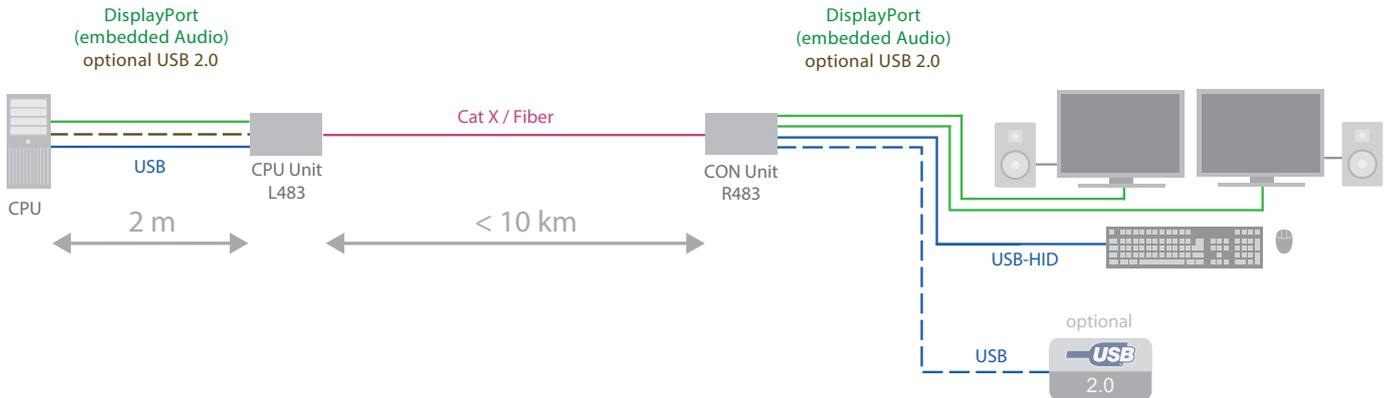
Product Features

- Operation of a CPU from a remote workstation with two DisplayPort monitors and USB-HID devices (keyboard/mouse)
- Transmission of fully digital video signals up to 4K DCI (4096 x 2160) and UHD (3840 x 2160) up to 30 Hz, color depth 8 bit (4:4:4)
- The DisplayPort interface can transmit the audio format at a sample rate of up to 192 kHz
- Intelligent monitor EDID management
- Optional: Redundant connections for 24/7 availability
- Compatibility with all common operating systems (Linux, Unix, Windows, Mac OS) and Draco vario chassis
- Compatible with IHSE Draco tera KVM matrix systems, all additional modules of the Draco vario extender series for audio and data signals such as USB or RS232

TECHNICAL DATA	
Input	Primary channel: 1x DisplayPort 1.1 Secondary channel: 1x Mini DisplayPort 1.1
Output	Primary channel: 1x DisplayPort 1.1 Secondary channel: 1x Mini DisplayPort 1.1
Audio (embedded)	Stereo Linear Pulse Code Modulation (LPCM), DTS, DTS-HD (5.1), Dolby Digital, Dolby Digital Plus (5.1)
Maximum Resolution	Single-Head: 4K30 Dual-Head: 1920 x 1200 @ 60 Hz
Keyboard / Mouse	USB-HID
Interfaces with optional add-on modules	Suitable add-on modules under the following link: www.ihse.com/add-on-modules/
Maximum Cable Distance	Cat X: 140 m Single-mode: 10 km Single-mode XV: 5 km Multi-mode: 1 km Multi-mode XV: 400 m
Power Supply	Power supply via the used Draco vario chassis*

* For detailed information refer to the user manual.

Functional Diagram



Order Numbers

FUNCTIONS	CPU UNIT (LOCAL)	PART NO.	CON UNIT (REMOTE)	PART NO.
DisplayPort 1.1 4K 30Hz ULTRAHD USB HID		L483-B2HC L483-B2HS L483-B2HX		R483-B2HC R483-B2HS R483-B2HX
DisplayPort 1.1 4K 30Hz ULTRAHD USB HID Redundant		L483-B2HCR L483-B2HSR L483-B2HXR		R483-B2HCR R483-B2HSR R483-B2HXR

DISPLAYPORT 1.1 DUAL-HEAD EXTENDER



The new extender enables video transmission of two DisplayPort screens including keyboard and mouse signals over a single duplex fiber optic cable or a Cat X cable and includes keyboard and mouse control. This reduces the complexity of an installation, saves cost, space, cabling and reduces the need for matrix ports in a KVM matrix switch installation.

The DisplayPort 1.1 Dual-Head (DPDH) extender is the perfect solution to separate a dual-head workstation workplace from its associated computer. Users are able to access and operate a remote computer in real time using their own workplaces' keyboard, mouse and monitors.

Locating source computers in an environmentally-controlled server room protects them from unauthorized access and adverse environmental influences including dust, moisture and heat. It also frees working environments from computers that take up space and emit heat and fan noise.

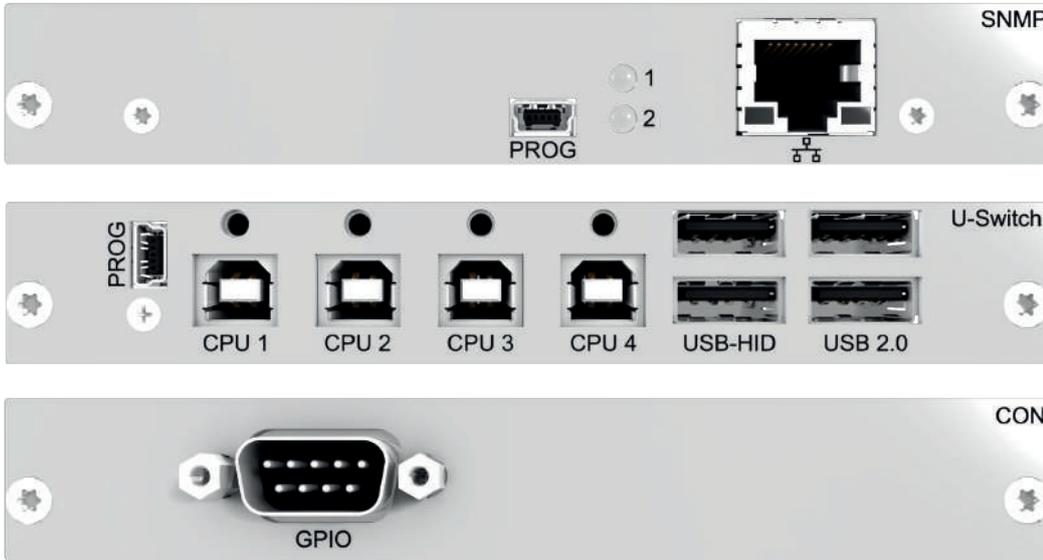
What's new?

The device replaces the DVI Dual-Head series 482 and 492. The state-of-the-art video interface DisplayPort includes audio transmission.

Can the extender be combined with other KVM devices?

The device is compatible with other extenders and additional modules within the respective series. It is suitable for point-to-point operation and compatible with Draco tera KVM matrix switches. It can be installed in all Draco vario chassis.

DRACO VARIO OPTIONAL MODULES



The Draco vario main modules transmit USB-HID, keyboard and mouse signals together with video signals. As an option, data signals (USB 2.0, RS232, RS422) as well as various audio signal formats (analog balanced/unbalanced, digital) can be transmitted across the same link using corresponding add-on modules. These add-on modules can be configured with the initial assembly or can be upgraded on demand any time later during lifetime of the extender.

DRACO VARIO MODULES	SERIES	FROM PAGE	16
SNMPv3 module	474		17
U-Switch module	476		19
GPIO module	474		21



- Secure monitoring of system health
- Syslog and SNMPv3 support
- Remote firmware update and extender configuration
- API control (remote link switching)
- Retrofitting of existing installs

Product Information

The module 474-SNMPv3 offers SNMP support for Draco vario series. SNMP allows the monitoring of function-critical parts of extenders and chassis. When using the SNMP function, the device status can be monitored at any time.

The SNMP module can be polled for system health information as well as sending SNMP traps based on an event. Further, the installed extenders can be updated and configured from remote using Draco tera Tool. Consoles with redundant

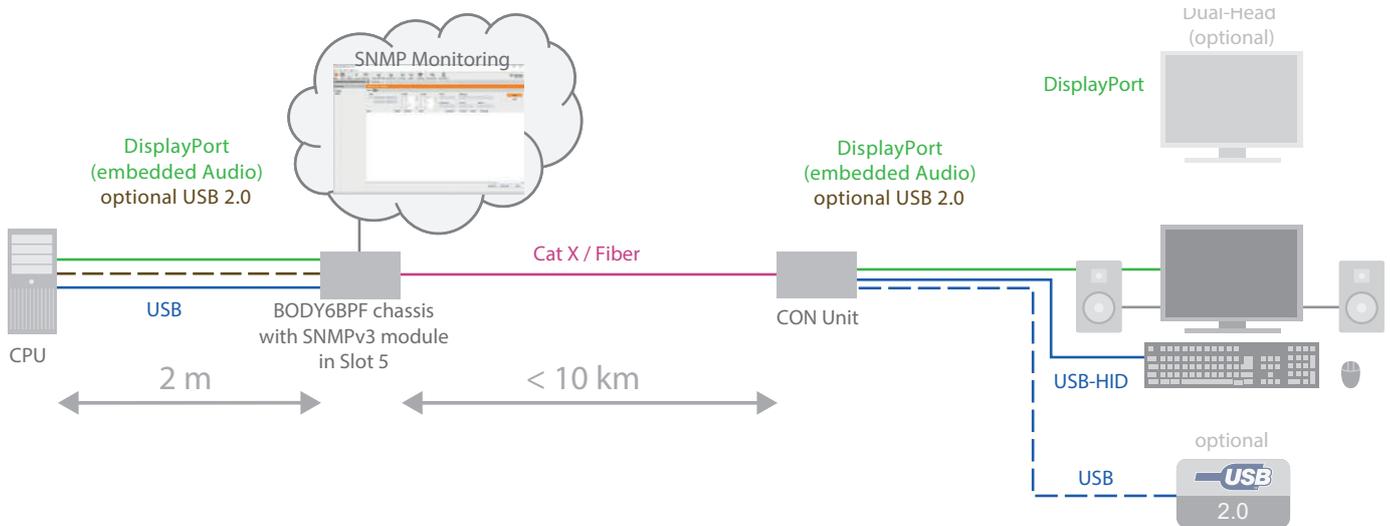
link interface and local input can be switched remotely via API.

Product Features

- Designed for installation in 474-BODY6BP, 474-BODY6BPF and 474-BODY21/4U chassis
- Monitoring of function-critical parts of the chassis and integrated modules
- Monitoring of point-to-point connections and device status
- Extender parameters can be monitored via TCP/IP
- MIB file available (description of available status information)
- SNMP configuration via Draco tera Tool including remote firmware update via Draco tera Tool
- Support of syslog monitoring through Draco tera Tool or any existing syslog server

TECHNICAL DATA	
Power Consumption	4 W
Positioning in the chassis	BODY6BP/BODY6BPF: Slot 5 BODY21/4U: Slot 21
Connectors	Mini-USB, RJ-45
Supported Functionality	GET: Link status, module status, module type TRAP for BODY6BP/BODY6BPF: PSU monitoring, link switching, module status TRAP for BODY21/4U: link switching, module status, temperature

Functional Diagram

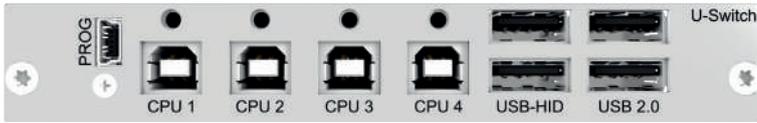


Order Numbers

FUNCTIONS	DEVICE	PART NO.
Draco vario system health monitoring and configuration module with SNMPv3 (add-on module suitable for 474-BODY6BP, 474-BODY6BPF and 474-BODY21/4U)		474-SNMPV3

Related Chassis

FUNCTIONS	PART NO.
Chassis for 6 modules, backplane and 2 integrated PSUs, hot swap function	474-BODY6BP
Chassis for 6 modules, backplane and 2 integrated PSUs with single-sided interfaces, hot swap function	474-BODY6BPF
4 RU / 19" rack chassis for 21 modules, integrated power supply, setup for redundant power supply, hot swap function	474-BODY21/4U



- Supports Multi-Screen Control 2.0
- Switching via keyboard & mouse
- Quick and instant switching
- Optional push-buttons via GPIO module
- LEDs indicators

Product Information

When it is necessary to operate several computers with multiple displays via a single keyboard and mouse, the Draco U-Switch is the ideal solution. A user-friendly interface makes it quick and easy to manage multiple CPU data from a single workstation. The Draco U-Switch is perfect for computer workstations normally found in banking, surveillance and command & control environments where multiple displays connected to different CPUs must be managed simultaneously. By integrating the Draco U-Switch in the KVM environment users can

perform fast and accurate mouse selections across multiple screens without the need to manually change keyboard and mouse connections. It now becomes a seamless and smooth operation to move a mouse across adjacent screen boundaries. Alternatively, changing the mouse and keyboard to another screen can be achieved using simple hotkey commands. The Draco U-Switch can be combined with the Draco tera enterprise, flex and compact matrix switches to enhance the flexibility of multiple CPU management from a single multi-screen workstation.

The Draco U-Switch saves valuable workspace, increases productivity, and gives the user realtime switching with seamless mouse movement across multiple displays.

Security

The Draco U-Switch supports both USB-HID and USB 2.0 transparent peripherals. For USB-HID - only connectivity, the transparent USB 2.0 can be disabled to avoid unwanted data transmission.

Product Features

- Instant switching for fast, delay-free switching
- Switching via keyboard or optional push buttons
- Supports MSC 2.0: Multi-Screen Control (switching via mouse movement)
- Compatible with all Draco products and chassis
- Compatible with all USB-HID devices
- Supports USB-HID (keyboard & mouse)
- USB 2.0 (can be switched off per port)
- Space-saving design
- GPIO functionality as an option

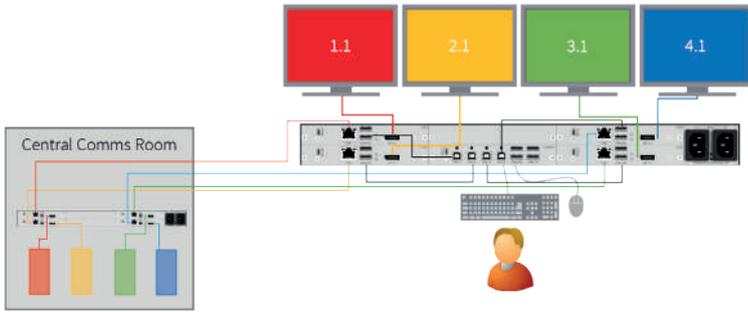
TECHNICAL DATA	
Input	4x USB Type B
Output	4x USB Type A (2x HID, 2x USB 2.0)
Service	1x Mini USB
Keyboard / Mouse	USB-HID
Power Supply	Power supply via the used Draco vario chassis*
Chassis / Mounting Accessories	Suitable Draco vario chassis and mounting accessories under the following link: www.ihse.com/chassis-accessoires/

* For detailed information refer to the user manual.

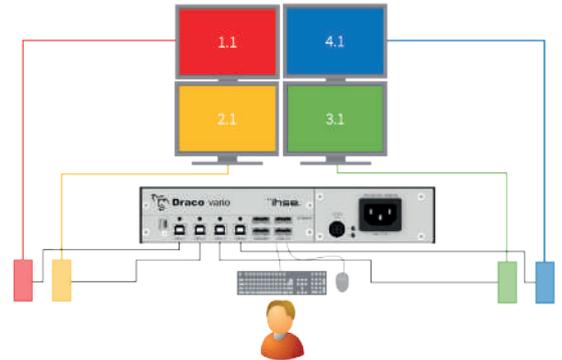
Functional Diagram

U-Switch MSC 2.0 - Next Gen Multi-Screen Control

Mission critical control rooms often are equipped with operator desks having 4 displays in various setups for a single operator and servers locked away in central rooms extended via draco vario Cat X or Fiber extenders.



Combined with extenders



Stand-Alone

Order Numbers

DEVICES	PART NO.
	B476-4U4T

For detailed information about the Draco U-Switch refer to the "IHSE Product Catalog 2020" on page 70.



With Draco U-Switch and extenders

Draco U-Switch clears up your workspace

- No desktop clutter
- Faster computer access
- Ideal solution for control room workstations
- Integrates Single-Head and Dual-Head sources



Without Draco U-Switch and extenders



- Eight contacts as inputs or outputs
- Inputs for Multi-Screen Control Switching
- Outputs to highlight active MSC monitor
- Easy dip-switch configuration

Product Information

The add-on GPIO (General Purpose Input/Output) module in the Draco vario KVM extender series offers a DB9M interface to connect a variety of external devices.

Integration

The additional module is to be used with all basic modules (CON units and Draco U-Switch module) in the Draco vario series. Up to eight contacts can be defined as inputs or outputs via an integrated DIP switch.

The programmed configuration is recognized and monitored by the Draco tera Tool, when used in a matrix setup.

Application

In multi-monitor applications, based on a Draco tera MSC or U-Switch module setup, the GPIO add-on module allows LEDs to be connected to highlight the monitor with active keyboard/mouse control. This option was previously only available

in conjunction with addition of a separate the Draco U-Switch. The GPIO add-on module also enables switching between monitors by an external dry-contact keypad or push buttons.

When used in combination with Draco tera KVM matrix systems, the I/O's can be used to force macro or favorite execution or to send predefined HID scan codes to a target source.

Product Features

- Compatible with Draco vario CONs: Add-On module to be fitted on top of all CON mainboards
- Draco vario chassis compatible
- Half-size module to allow combinations of add-ons
- Compatible with modular U-Switch
- DIP-Switch configurable behaviour of the module:
 - 8 GPIO contacts - configurable as in or out
 - Connector interface DB9M
 - Configuration setting can be read and set via Tera Tool
- Execution of Draco tera macros
- 5 VDC output to drive e.g. LEDs
- Enhanced matrix features:
 - Execution of predefined User Macros or CON Macros
 - Execution of predefined User Favorites or CON Favorites
 - Execution of predefined HID Scan Codes (= keystrokes)

TECHNICAL DATA		
Power Supply	Power supply via the used Draco vario chassis*	
Connectors	DB-9 (M)	
Pin-outs	Pin	Description
	1	GPIO1 (active low)
	2	GPIO2 (active low)
	3	+5V
	4	GPIO3 (active low)
	5	GPIO4 (active low)
	6	GPIO5 (active low)
	7	GPIO6 (active low)
	8	GPIO7 (active low)
9	GPIO8 (active low)	

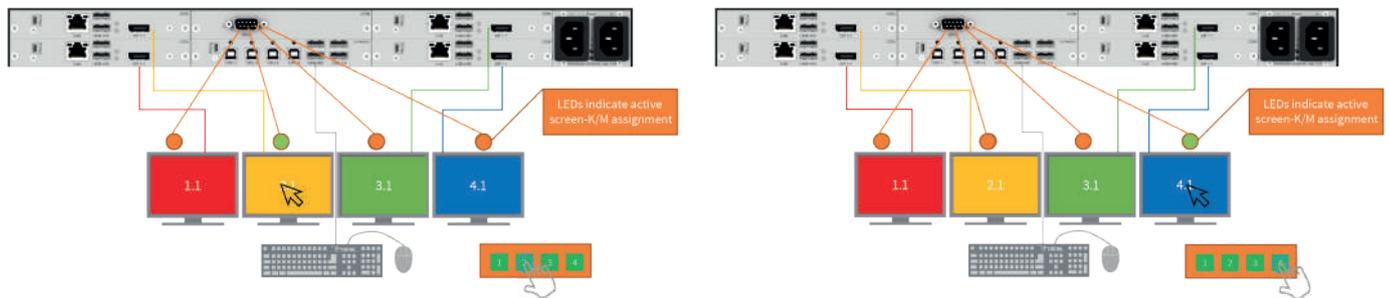
* For detailed information refer to the user manual.

Functional Diagram

Use Cases: Multi-Screen Control



Multi-Screen Control with dry contact push button trigger to indicate active screen



Order Numbers

DEVICE	PART NO.
	R474-BGX

SPACE IS LUXURY - THIS IS YOURS TO TAKE NOTES



SECURE IP ACCESS - HIGH FLEXIBILITY, LOW IP COMPLEXITY



Enterprises are built around people who need to access data, communicate with each other, and perform remote activities. However, many tasks cannot be carried out remotely using traditional packetized IP-connected systems that do not provide sufficient reliability or robust operation.

A solution is offered by the IP module Draco SIRA (Secure IP Remote Access). SIRA delivers highly secure, accessible and immediate access to remote computers.

Signals passed between the operator and computer retain full integrity, have the highest possible transmission rate, and can be switched by the user on demand. Crucially, SIRA maintains maximum system security.

SIRA delivers maximum performance with minimal IP complexity. This means that any network switch is supported; there is no requirement for multicast/IGMP or Jumbo Frame settings. It offers adaptive bandwidth control. Further, it has only minimal requirements to pass a firewall.

SIRA incorporates multiple built-in safety layers to ensure total privacy and integrity of intellectual property. It incorporates 2-layer log-in authentication for SIRA and Draco tera KVM switch access. IP address range masking is available for inbound and outbound connections. Data is secured through RSA2048 key, AES128/256-bit encryption.

DRACO SIRA	SERIES	FROM PAGE	24
Draco SIRA CON	488		25
Draco SIRA Stand-Alone	488		27
Draco SIRA User Station	488		29
Draco SIRA CPU	488		31



R488-BIPCR in 474-BODY2BPF

- Remote access gateway via WAN
- Real-time access via LAN
- HTML 5.0 Browser based access
- Seamless integration with Draco switches
- IP isolation from Secure Core Matrix

Product Information

Fully flexible - fully secure

The new IP module Draco SIRA CON (Secure IP Remote Access) adds more flexibility to the Draco tera matrix series without sacrificing the philosophy of securely isolating the core matrix and signal management from TCP/IP. Encrypted signal transmission via IP ensures protection of intellectual property while still offering most flexible access to matrix connected target devices from remote locations via private or public networks.

Video resolutions up to 4K

HTML 5 based browser access offers highest flexibility even from mobile devices for remote administration. The Windows® or Linux based client software adds more performance and features while still offering a high level of flexibility when used on laptops or desktop computers. Even more access and operational features at highest performance will be available using Draco User Station IP with 1080 video signal at 8 bit color depth and full 60 fps or even 4K30. Draco SIRA User Station can drive up to three 4K displays for multiple stream operation.

Highly compatible

Physically, the Secure IP Access Gateway is compatible with the Draco vario extender series fitting in Draco vario chassis. It occupies two slots and is recommended to be mounted into chassis with backplane such as the 2-slot (474-BODY2BPF), the 6-slot (474-BODY6BP/F) or 21-slot (474-BODY21/4U). Besides the remote access option, it offers HDMI and USB interfaces for local access at the rack level.

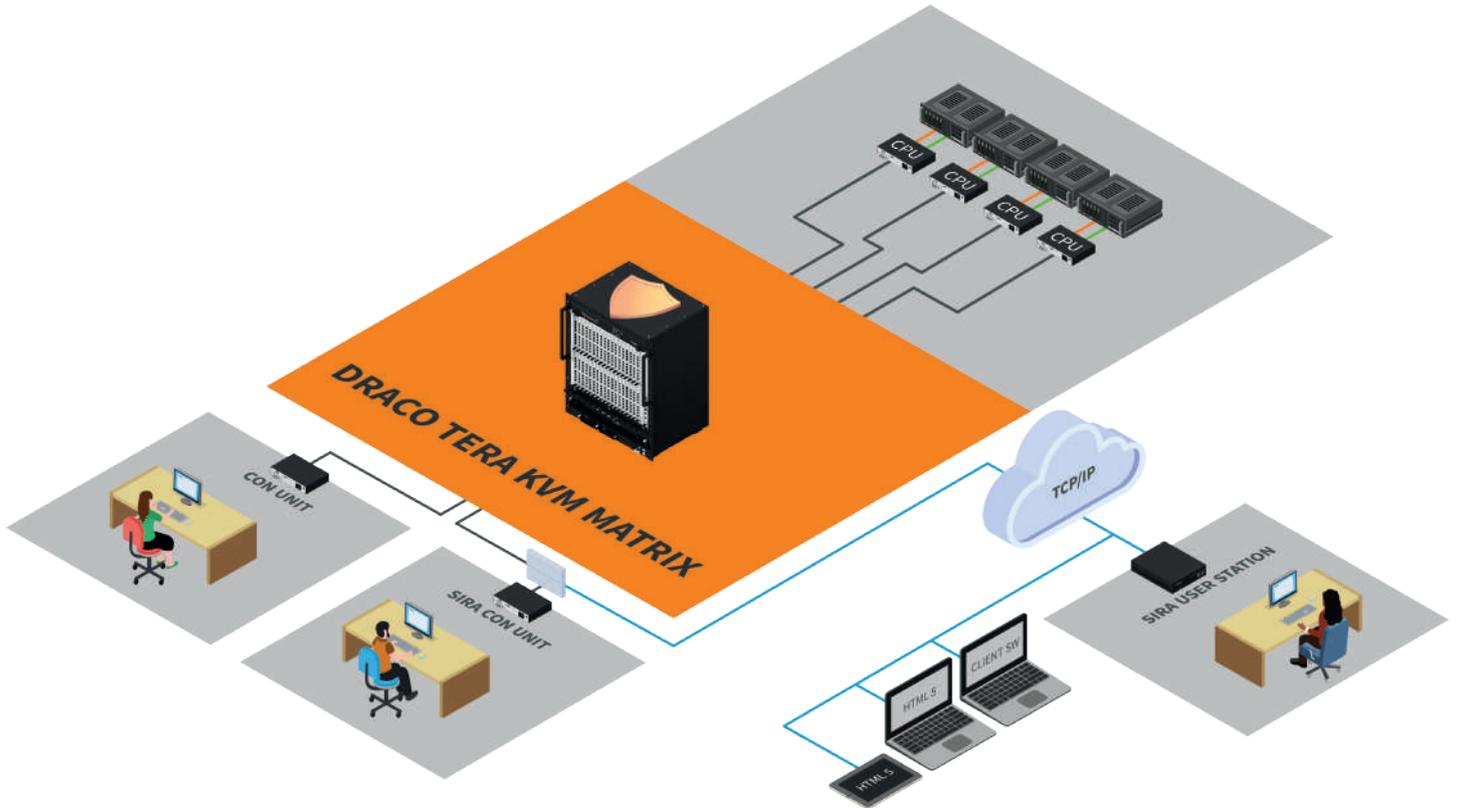
Product Features

- Remote access gateway via WAN for service personnel
- High-performance real-time like access via LAN
- HTML 5.0 browser based access provides highest flexibility
- Windows client software for more features and higher performance
- Appliance based access for best performance out of the box (Draco SIRA User Station)
- Encrypted signal transmission and IP isolation from Secure Core Matrix
- Seamless integration into Draco tera matrices

TECHNICAL DATA	
Power Supply	Via the used Draco vario chassis*
Interfaces	1x HDMI 1.4 (F) 2x USB Type A (F) K/M and service 1x RJ45 (F) Gigabit (TCP/IP) 1 or 2x RJ45 (F) for Cat X versions (matrix link) 1x or 2x Duplex LC (F) for single-mode fiber optic versions
Service	1x Mini USB (F) for service
Network Security Protocols	SSL with 128-bit or 256-bit encryption; SNMPv3 (AES or DES), LDAPS with TLS 1.2 / 1.3
Supported Signals	Video: up to 3840 x 2160 @ 30 Hz Audio: 2-channel PCM embedded, USB-HID
Distance (max.)	Cat X: 140 m Single-mode: 10 km Multi-mode: 1 km

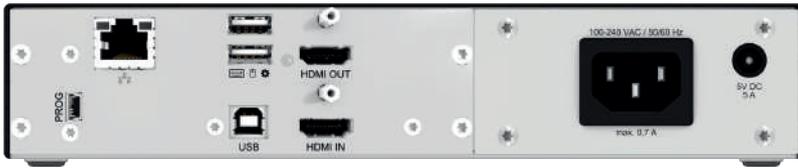
* For detailed information refer to the user manual.

Functional Diagram



Order Numbers

FUNCTIONS	CON UNIT (REMOTE)	PART NO.
  		 R488-BIPC  R488-BIPS
   		 R488-BIPCR  R488-BIPSR



R488-BIPHHL in 474-BODY2N

- Seamlessly integrated IP connectivity
- USB virtual media support
- HDMI input up to 4K30
- Highly secure transmission
- Best in class performance
- Multiple remote access options

Product Information

SIRA - Secure IP Remote Access
 For installations that do not require full matrix switching capability, IHSE offers an IP module for direct computer connection. Individual computers can be accessed and operated remotely over an IP network using an HTML5 browser, client software or SIRA User Station down to the BIOS level since the SIRA Stand-Alone only

connects to the external interfaces and does not require any drivers to be installed. Additional local outputs (signal feed-through) allow users to access the local computer at the same time. Includes USB virtual media support to enable transmitting files. The modular design allows several mounting options including redundant power feeding. Up to three

SIRA Stand-Alone encoders fit into 1 RU. In combination with Draco tera matrix switching system for 4K₆₀ networks, the SIRA Stand-Alone encoder is the ideal remote service gateway in combination with an HDMI 2.0 CON module (R495) without sacrificing the local 4K₆₀ performance.

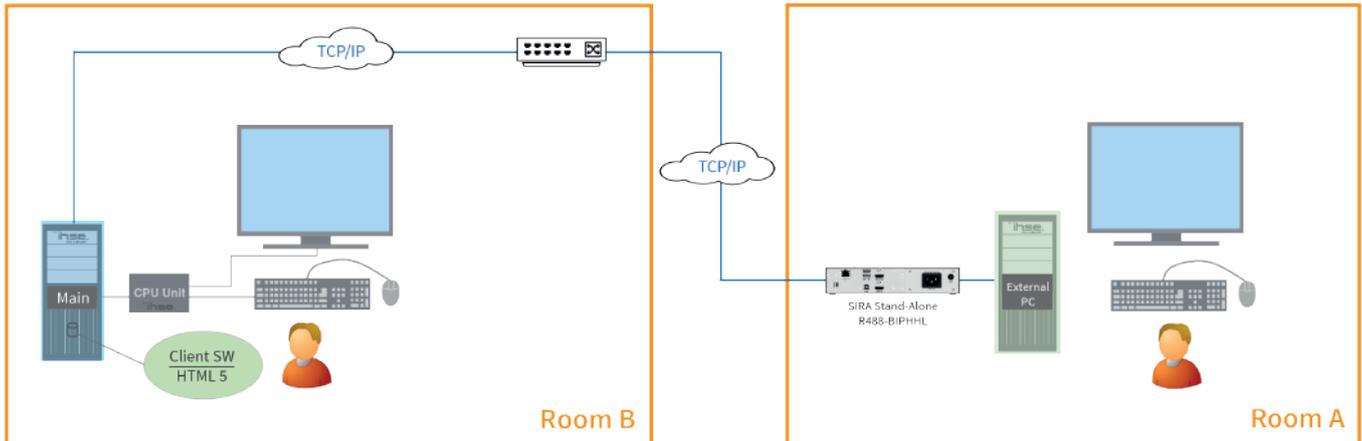
Product Features

- Stand-Alone version directly connects to PCs or 3rd party KVM
- HDMI input up to 4K30
- USB HID input
- Local console interface
- HDMI embedded audio
- Virtual media support (file transfer to target PC)

TECHNICAL DATA	
Input	HDMI up to 4K30, USB 2.0 (Type B)
Output	HDMI 4K30, 2x USB Type A, 1x RJ-45 Gigabit (TCP/IP)
Audio (embedded)	2-channel stereo audio
Maximum Resolution	Up to 4K30 or 1920 x 1200 x 60 Hz
Keyboard / Mouse	USB-HID
Network Security Protocols	SSL with 128-bit or 256-bit encryption; SNMPv3, LDAPS
Power Supply	Power supply via the used Draco vario chassis*

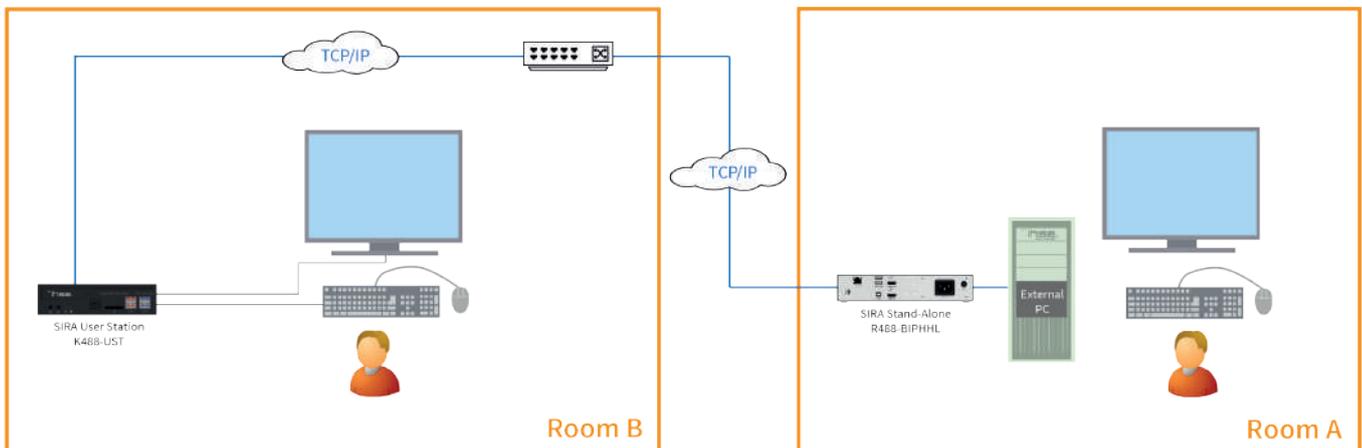
* For detailed information refer to the user manual.

Functional Diagram



Remote user via Desktop PC running remote client SW or HTML5 browser

Stand-Alone PC with local user



Remote user via dedicated SIRA Remote User Station (K488-UST)

Stand-Alone PC with local user

Order Numbers

FUNCTIONS	CON UNIT (REMOTE)	PART NO.
		<p>R488-BIPHHL</p>



- Operator space up to 3x4K60
- Free configurable PiP layouts
- RDP, VNC and HTML integration
- Dual network interface
- Easy setup and operation
- Ideal for surveillance

Product Information

A high-performance appliance to remotely access, monitor and control servers and workstations via secure TCP/IP streams, generated by Draco SIRA CONs.

The Draco SIRA User Station is a handy extension for KVM networks with Draco SIRA CON for IP access. The appliance provides keyboard and mouse connectivity via USB as well as analog audio output. Up to three 4K displays can be connected via DP 1.2 (2) and HDMI 2.0 (1) interfaces.

Multiple incoming KVM streams are supported and can be arranged and displayed in a MultiView-like layout side by side with RDP, VNC and HTML streams.

Connection via Remote IP CON

The Draco SIRA User Station integrates with the Draco tera matrix system via the IP connection to the Draco SIRA CON, allowing KVM access to sources within the KVM system or individual PCs and servers via Draco SIRA Stand-Alone.

Maximum security and flexibility

The Draco SIRA User Station provides flexible remote access to all servers and devices connected to a Draco tera matrix.

The TCP/IP protocol is isolated from the matrix by the use of native interfaces.

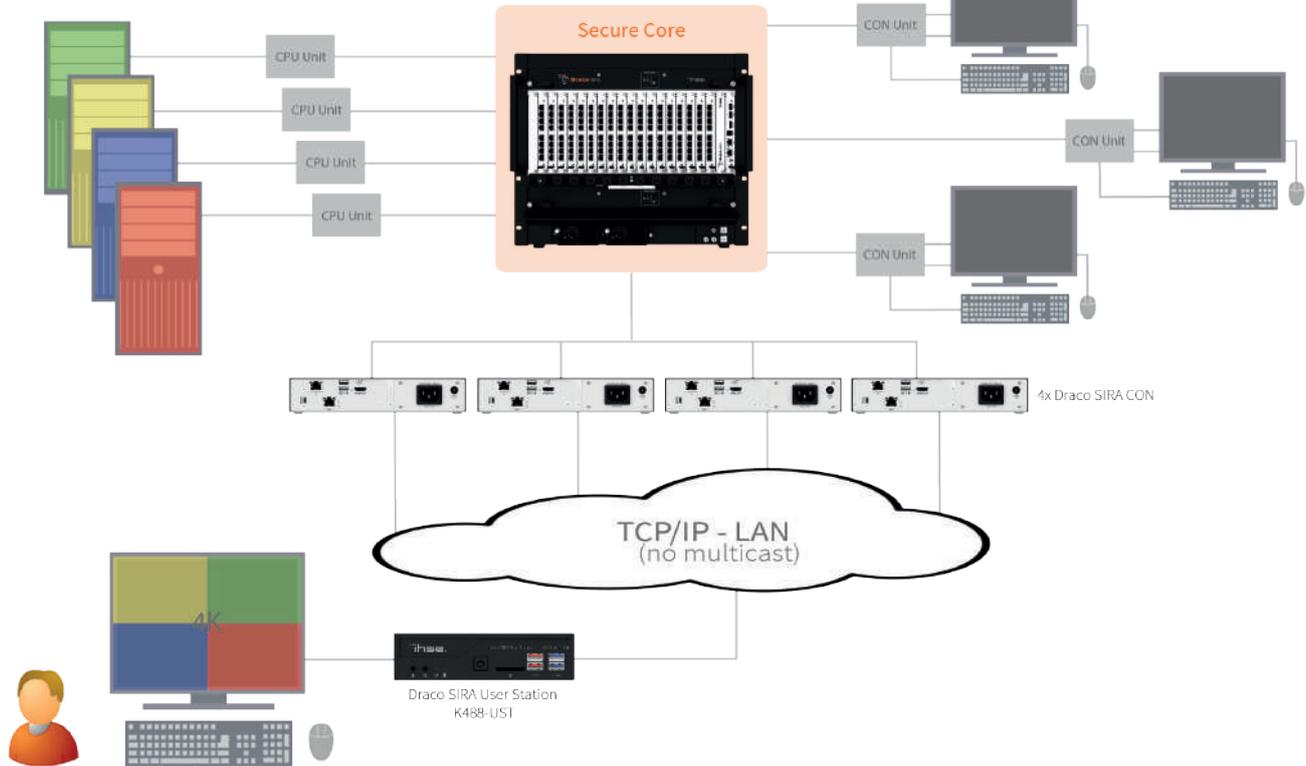
Product Features

- Provides secure access from remote locations
- Increasing flexibility in accessing the matrices via LAN or WAN
- Supports MultiViewing capabilities with freely definable layouts
- Up to five SIRA User Stations can be synchronized to one homogeneous multiscreen setup (or 15 monitors)
- Adjusts video sensing and color calibration settings
- Connects or disconnects a virtual media drive or a smart card reader from the target server, if the target supports virtual media
- Shows several display options, such as scaled video (picture-in-picture modes) or full-screen mode

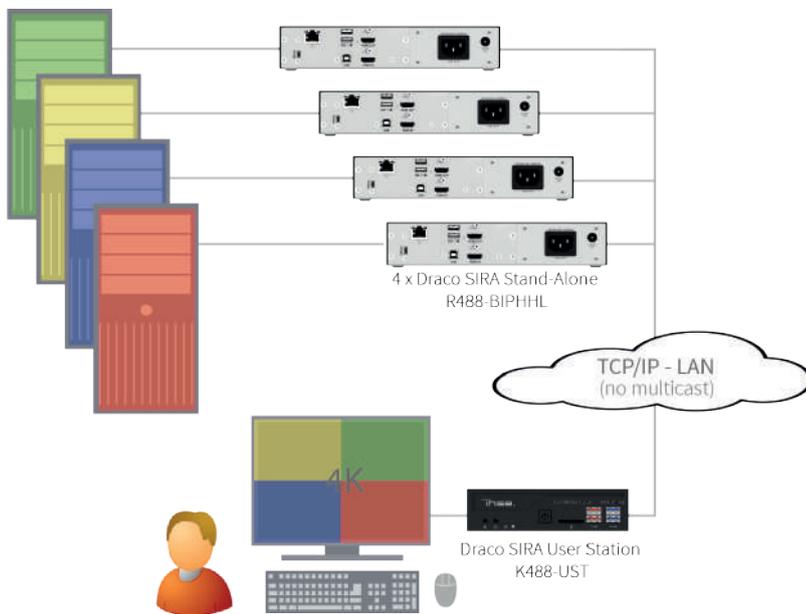
TECHNICAL DATA	
Power Supply	100-240VAC / 19VDC external PSU
Interfaces	2x RJ-45 (Gigabit Ethernet) 2x DP 1.2 1x HDMI 2.0 8x USB Type A
Audio	Analog audio 3.5 mm jacks or via DP/HDMI
Keyboard / Mouse	USB-HID
Supported Protocols	TCP/IP, RDP, VNC, SSH, HTML5, ESXi
Encryption	AES (up to 256 bit)
Resolution (max.)	Up to 3x 3840 x 2146 @ 60 Hz
Color depth	8 bit / True Color

Functional Diagram

Operation with KVM matrix switch



Operation without KVM matrix switch



Order Numbers

FUNCTIONS	DEVICE	PART NO.
		K488-UST



L488-BIPC in 474-BODY2N and L488-BIPSR in 474-BODY2N

- KVM access to virtual machines via RDP
- Sharing of RDP sessions via KVM
- Supports keyboard, video and mouse signals
- RDP, RFX, SSH, HTML 5 etc.
- Seamless combination of KVM and VDI
- Up to 8 parallel sessions
- Secure kiosk mode for HTML5 access

Product Information

Concept

The Draco SIRA CPU combines the functionality of a Thin Client and a KVM extender (transmitter). This space-saving solution is fully compatible with the Draco vario extender, the Draco enterprise, Draco tera flex and compact matrix switch series.

Function

The IP module provides seamless KVM connectivity to an IP infrastructure. It supports RDP, RemoteFX, SSH, VNC and HTML5 (kiosk mode) protocols. Other remote access protocols are available on request. A single IP CPU can host up to 8 simultaneous sessions.

KVM meets VDI

Using diverse remote access proto-

cols the SIRA CPU provides KVM access from the KVM system to virtual machines and web-based interfaces in the same manner as accessing real PCs.

Security

The Draco tera KVM matrix system enables the parallel operations of several Draco SIRA CPUs - even with different network connections. It isolates the networks from each other like a firewall and thus allows secure access to "private cloud" and "public cloud" systems from one workstation.

RDP and the benefits of KVM

The KVM infrastructure adds extensive flexibility to a RDP session. RDP sessions can now be shared amongst

multiple users, delivering better collaboration and control room solutions.

Immediate access

Immediate access to real PCs and virtual machines is achieved through permanent connection. Switching between the two types occurs instantaneously, with no disruption or inconvenience to the users.

Single Sign On

For ease of operation, the system can be configured to support SSO. Single stage user identification is all that is required, either locally or via AD. User credentials are stored for future connection setup.

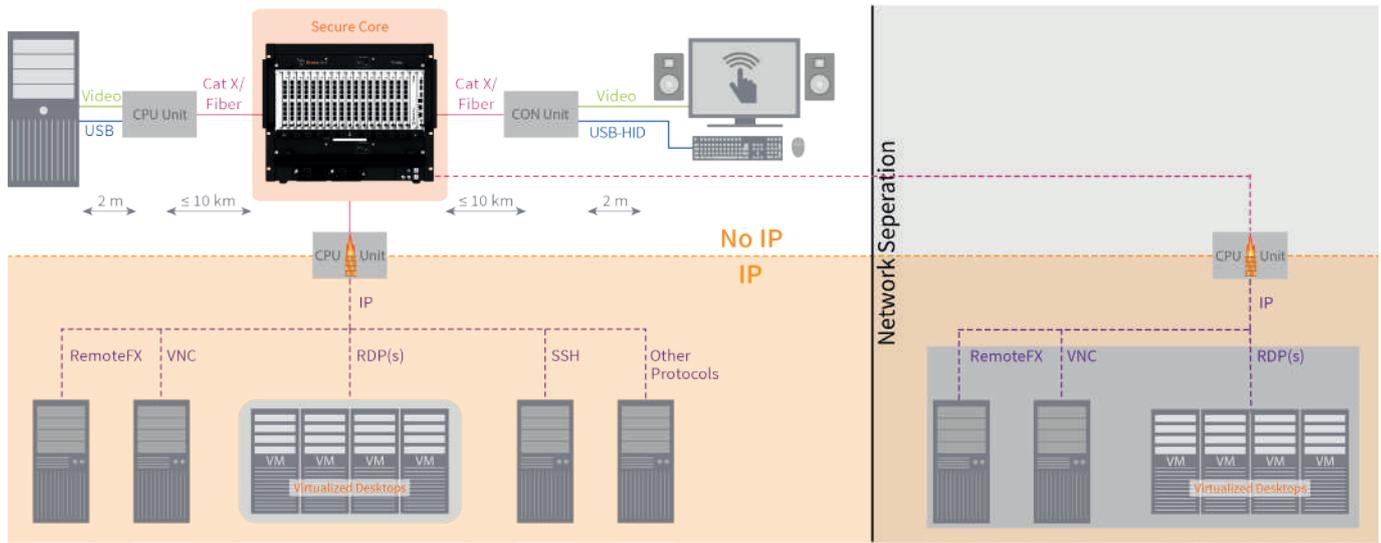
Product Features

- Integration into IP infrastructure without compromising security
- Link redundancy for fail-safe operation in mission critical applications
- Homogeneous integration into traditional high-performance redundancy and compact design
- Improvement of usability and performance with IP infrastructure without compromising security
- Single-Head operation with resolutions of up to 4K30
- Dual-Head operation with resolutions of up to 1920x1200 @ 60 Hz
- Gigabit LAN
- USB embedded
- Digital audio embedded

TECHNICAL DATA	
Link interface	RJ-45 or Duplex LC (Single-mode)
Input Interface	RJ-45 (TCP/IP)
Service	Mini-USB
Supported Protocols	RDP, RemoteFX, SSH, VNC (Client), VMware / Blast PCoIP, HTML5
Maximum resolution	Single-Head operation: up to 4K30 Dual-Head operation: up to 1920x1200 @ 60 Hz
Keyboard / mouse	USB-HID
Audio	2-channel PCM embedded
Additional interfaces	USB 2.0 embedded
Maximum cable distance	Cat X: 140 m Single-mode: 10 km Multi-mode: 1 km
Power Supply	Power Supply via the used Draco vario chassis*

* For detailed information refer to the user manual.

Functional Diagram



Order Numbers

FUNCTIONS	CPU UNIT (LOCAL)	PART NO.

Installation in ventilated chassis (chassis with backplane or additional fan 474-MODFAN).

COMPARISON OF SIRA CPU AND REMOTE IP CPU

DRACO SIRA CPU		DRACO VARIO REMOTE IP CPU
L488-BIPC (Cat X) L488-BIPS (Single-mode) L488-BIPCR (Cat X, redundant) L488-BIPSR (Single-mode, redundant)		L488-BIPEC (Cat X) L488-BIPES (Single-mode) L488-BIPECR (Cat X, redundant) L488-BIPESR (Single-mode, redundant)
USB 2.0 embedded	↔	USB 2.0 embedded
K/M support	↔	K/M support
4K30 Single-Head or 1920x1200 @ 60 Hz Dual-Head	↔	1080p Single-Head
Audio support	↔	Audio support
HTML5, SSH, VMware / Blast, PCoIP, VNC, RDP, RFX, SIRA Client	↔	HTML5, SSH VMware / Blast, PCoIP, VNC, RDP, RFX
1 Gbit/s NIC	↔	100 Mbit/s NIC
Higher performance		

For detailed information about the Draco vario Remote IP CPU refer to the "IHSE Product Catalog 2020" on page 24-25.



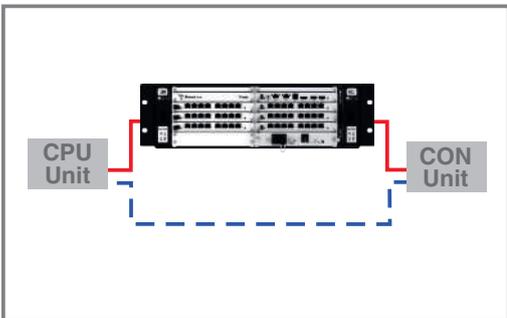
Instant Switching

The Draco tera offers instant switching between CPUs. This means, the Draco tera switches within a few milliseconds, so displays won't blank when switching sources of identical resolutions.



Flex-Port Technology

Flex-Port technology offers a totally flexible configuration of all ports. Each port can be used as either a CPU port (connection to a computer) or as a CON port (connection to a console) and it can be switched according to the requirements.



System Redundancy

IHSE offers an exceptional fully-redundant KVM system architecture, including redundant interconnections from the CPU (source end) to the matrix switch to the redundant CON Unit (workstation end). In the case of an interconnection failure the redundant link ensures continuous and uninterrupted communication between the CON Unit and CPU Unit: transmission faults are automatically detected and indicated. Data flow is instantly switched to the secondary transmission link.



Multi-Screen Control

Multi-screen Control allows several computers and monitors to be controlled using a single keyboard and mouse. Computers with multi-head outputs can also be included. A new upgrade enables the simultaneous operation of up to eight screens/sources via two keyboard and mouse sets. This allows two users to work simultaneously on a multi-monitor workspace and access all connected sources.

KVM SWITCHES

IHSE's KVM matrix switches connect and switch users to remote CPUs and servers instantly with no transmission delay or picture degradation.



The new Draco tera flex matrix switching series with its compact size of 1, 2 or 4 RU and up to 160 Flex-Ports is designed to support both small to midsize applications as well as large ones. Operators can instantly switch between sources to meet the demands of changing conditions, without loss of signal, allowing them to stay on top of any situation. At all times.

DRACO TERA FLEX	SERIES	FROM PAGE	34
Cat X & Cat X 3G	480		37
Fiber & Fiber 3G	480		38
Hybrid & Hybrid 3G	480		39
Grid versions	480		39
Custom Design 2 RU & 4 RU	480		40

MULTIVIEWER	SERIES	FROM PAGE	43
Draco MultiView 4K60	MV42		43



- Enterprise features in compact format
- Redundant network interface
- Multi-lingual management interface
- 4K60 10-Bit per color 4:4:4 via Cat X & fiber
- Up to 160-Port within only 4 RU
- Individual configuration options
- Scalability from 40- to 80- or 160-Port

Product Information

The Draco tera flex matrix switching series with its compact size of 1, 2 or 4 RU and up to 160 Flex-Ports is designed to support both small to mid-size applications as well as large ones. With its capability to facilitate 1G and 3G technology within a single frame as well as Cat X and fiber interfaces, it supports modern applications with a mix of 2K and 4K in very economic way. Custom design chassis even allow for future field upgradability scaling a system from 40-Port to 80-Port or even 160-Port completely non-blocking.

Grid connectivity

With its 10G grid option Draco tera flex can act as a nice satellite to a core enterprise system using the least

amount of infrastructure building a deployed homogeneous large matrix grid.

Easy of setup

By simply connecting the extender to the chassis, the internal application control software will recognize and auto-configure the port as a CPU or CONdevice. This Flex-Port technology provides a huge time saving for system installers who normally have to pre-configure ports to specific I/O requirements. The system also supports instant switching technology. With incredible speed, switching between sources is glitch-free and instantaneous thus reducing eye strain and annoying video tearing found with other systems.

Where centralized switching of KVM is necessary, the Draco tera flex is the perfect KVM solution. It is especially suited for factory floor automation control systems, production studios, OB Vans as well as command and control environments.

Compatibility

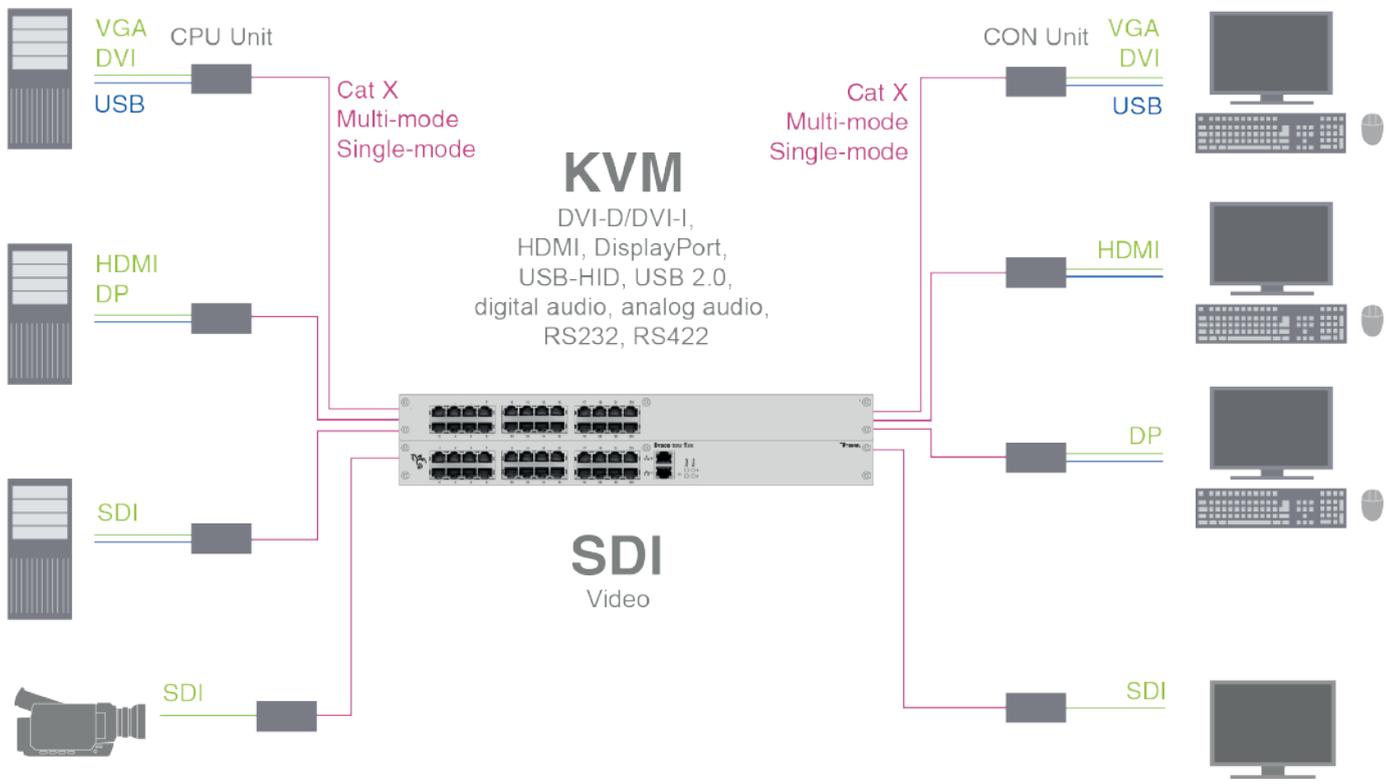
Draco tera flex is compatible with all Draco vario extenders. All that needs to be taken care of is correct link speed and interface of the used endpoints and their codec version. Draco tera flex is already prepared for future backward compatibility of Draco vario ultra CON units to Draco vario CPUs.

Product Features

- Features compatible to current Draco tera enterprise series and those with new controller cards:
 - SNMPv3, LDAPS
 - O/S v04.x support for multilingual OSD (Chinese, German, French, Spanish, ...)
 - encrypted communication for API, Tool and Grid, individual routing of protocols
 - faster boot up
 - improved Grid integration (faster & more reliable communication) incl. grid modules
- Variations with Cat X and fiber as well as 1G, 3G possible - also mixed is possible
- Prepared for upcoming 1G/3G compatibility, IPv6
- Internal modular concept allows for scalability and maintenance (similar to Draco major series)
- Compatible to all Draco vario and Draco vario ultra extenders
- Redundant Power supply unit and Network interface connections
- Versatility: With only 3 types of chassis and only 5 types of I/O modules, an almost endless number of customer specific Draco tera flex matrix switches are possible
- Replaces current Draco tera compact series - the 8-port compact switch will still be available as an entry-level variant for smaller KVM installations and training environments.

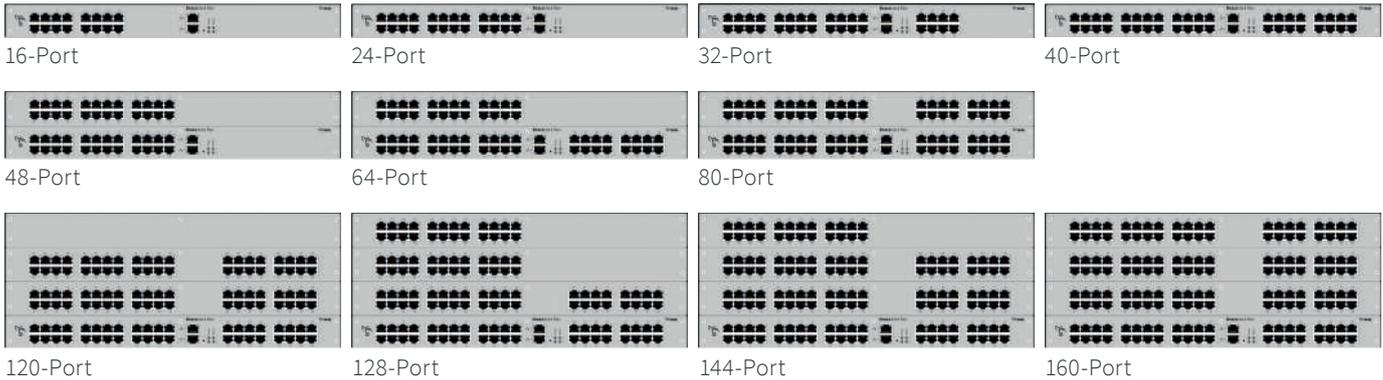
TECHNICAL DATA						
Input / Output	16x - 160x Cat X or fiber (any combination) 2x RJ-45 Gigabit Ethernet					
Supported Signals	DisplayPort, HDMI, DVI-D, DVI-I, USB 2.0, USB-HID, RS232, RS422, analog / digital or balanced audio, SDI via Draco vario extenders					
Maximum cable distance	Cat X	Cat X 3G	Single-Mode Fiber (9 µm)	Single-Mode Fiber 3G (9 µm)	Multi-Mode Fiber (50 µm, OM3)	Multi-Mode Fiber (50 µm)
	140 m	100 m	10 km	5 km	1 km	400 m
Control	OSD (On Screen Display), Draco tera Tool (.Java), API					
Suitable extenders	Compatible to all Draco vario extenders: www.ihse.com/KVM-extender/					

Functional Diagram



Order Numbers

Draco tera flex Cat X & Cat X 3G

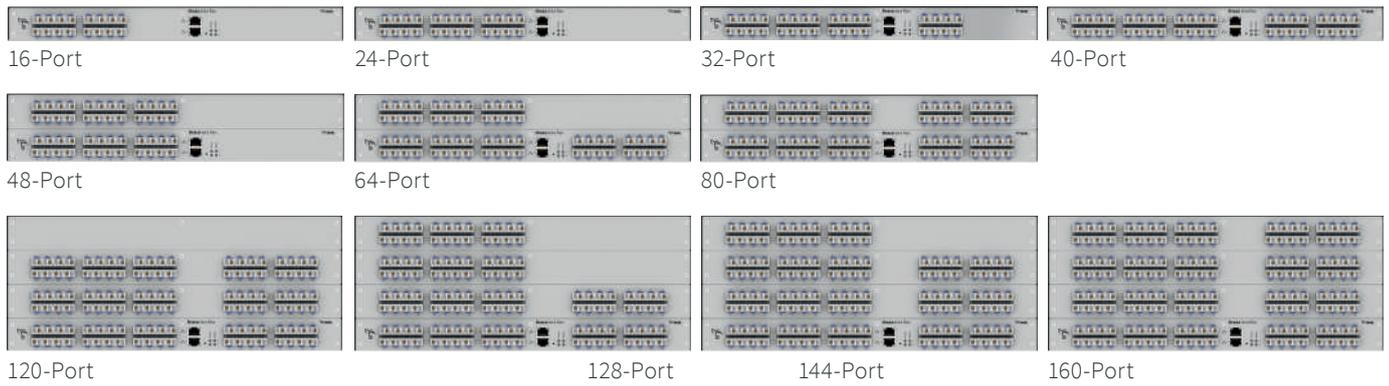


CAT X 1G DEVICE MODELS	DATA TRANSMISSION	PART NO.
Draco tera flex KVM matrix 16 ports, Cat X 1G		K480-C16
Draco tera flex KVM matrix 24 ports, Cat X 1G		K480-C24
Draco tera flex KVM matrix 32 ports, Cat X 1G		K480-C32
Draco tera flex KVM matrix 40 ports, Cat X 1G		K480-C40
Draco tera flex KVM matrix 48 ports, Cat X 1G		K480-C48
Draco tera flex KVM matrix 64 ports, Cat X 1G		K480-C64
Draco tera flex KVM matrix 80 ports, Cat X 1G		K480-C80
Draco tera flex KVM matrix 120 ports, Cat X 1G		K480-C120
Draco tera flex KVM matrix 128 ports, Cat X 1G		K480-C128
Draco tera flex KVM matrix 144 ports, Cat X 1G		K480-C144
Draco tera flex KVM matrix 160 ports, Cat X 1G		K480-C160

CAT X 3G DEVICE MODELS	DATA TRANSMISSION	PART NO.
Draco tera flex KVM matrix 16 ports, Cat X 3G		K480-CX16
Draco tera flex KVM matrix 24 ports, Cat X 3G		K480-CX24
Draco tera flex KVM matrix 32 ports, Cat X 3G		K480-CX32
Draco tera flex KVM matrix 40 ports, Cat X 3G		K480-CX40
Draco tera flex KVM matrix 48 ports, Cat X 3G		K480-CX48
Draco tera flex KVM matrix 64 ports, Cat X 3G		K480-CX64
Draco tera flex KVM matrix 80 ports, Cat X 3G		K480-CX80
Draco tera flex KVM matrix 120 ports, Cat X 3G		K480-CX120
Draco tera flex KVM matrix 128 ports, Cat X 3G		K480-CX128
Draco tera flex KVM matrix 144 ports, Cat X 3G		K480-CX144
Draco tera flex KVM matrix 160 ports, Cat X 3G		K480-CX160

Order Numbers

Draco tera flex Fiber & Fiber 3G



FIBER 1G DEVICE MODELS	DATA TRANSMISSION	PART NO.
Draco tera flex KVM matrix 16 ports, fiber 1G		K480-F16
Draco tera flex KVM matrix 24 ports, fiber 1G		K480-F24
Draco tera flex KVM matrix 32 ports, fiber 1G		K480-F32
Draco tera flex KVM matrix 40 ports, fiber 1G		K480-F40
Draco tera flex KVM matrix 48 ports, fiber 1G		K480-F48
Draco tera flex KVM matrix 64 ports, fiber 1G		K480-F64
Draco tera flex KVM matrix 80 ports, fiber 1G		K480-F80
Draco tera flex KVM matrix 120 ports, fiber 1G		K480-F120
Draco tera flex KVM matrix 128 ports, fiber 1G		K480-F128
Draco tera flex KVM matrix 144 ports, fiber 1G		K480-F144
Draco tera flex KVM matrix 160 ports, fiber 1G		K480-F160

FIBER 3G DEVICE MODELS	DATA TRANSMISSION	PART NO.
Draco tera flex KVM matrix 16 ports, fiber 3G		K480-FX16
Draco tera flex KVM matrix 24 ports, fiber 3G		K480-FX24
Draco tera flex KVM matrix 32 ports, fiber 3G		K480-FX32
Draco tera flex KVM matrix 40 ports, fiber 3G		K480-FX40
Draco tera flex KVM matrix 48 ports, fiber 3G		K480-FX48
Draco tera flex KVM matrix 64 ports, fiber 3G		K480-FX64
Draco tera flex KVM matrix 80 ports, fiber 3G		K480-FX80
Draco tera flex KVM matrix 120 ports, fiber 3G		K480-FX120
Draco tera flex KVM matrix 128 ports, fiber 3G		K480-FX128
Draco tera flex KVM matrix 144 ports, fiber 3G		K480-FX144
Draco tera flex KVM matrix 160 ports, fiber 3G		K480-FX160

Order Numbers

Draco tera flex Hybrid & Hybrid 3G



40-Port



64-Port



64-Port



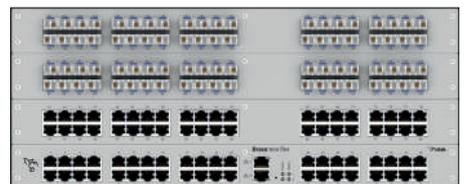
80-Port



120-Port



160-Port



160-Port

HYBRID 1G DEVICE MODELS	DATA TRANSMISSION	PART NO.
Draco tera flex KVM matrix 40 ports (24 Cat X, 16 fiber), hybrid 1G		K480-C24F16
Draco tera flex KVM matrix 64 ports (24 Cat X, 40 fiber), hybrid 1G		K480-C24F40
Draco tera flex KVM matrix 64 ports (40 Cat X, 24 fiber), hybrid 1G		K480-C40F24
Draco tera flex KVM matrix 80 ports (40 Cat X, 40 fiber), hybrid 1G		K480-C40F40
Draco tera flex KVM matrix 120 ports (80 Cat X, 40 fiber), hybrid 1G		K480-C80F40
Draco tera flex KVM matrix 160 ports (120 Cat X, 40 fiber), hybrid 1G		K480-C120F40
Draco tera flex KVM matrix 160 ports (80 Cat X, 80 fiber), hybrid 1G		K480-C80F80

HYBRID 3G DEVICE MODELS	DATA TRANSMISSION	PART NO.
Draco tera flex KVM matrix 40 ports (24 Cat X, 16 fiber), hybrid 3G		K480-CX24FX16
Draco tera flex KVM matrix 64 ports (24 Cat X, 40 fiber), hybrid 3G		K480-CX24FX40
Draco tera flex KVM matrix 64 ports (40 Cat X, 24 fiber), hybrid 3G		K480-CX40FX24
Draco tera flex KVM matrix 80 ports (40 Cat X, 40 fiber), hybrid 3G		K480-CX40FX40
Draco tera flex KVM matrix 120 ports (80 Cat X, 40 fiber), hybrid 3G		K480-CX80FX40
Draco tera flex KVM matrix 160 ports (120 Cat X, 40 fiber), hybrid 3G		K480-CX120FX40
Draco tera flex KVM matrix 160 ports (80 Cat X, 80 fiber), hybrid 3G		K480-CX80FX80

Draco tera flex Grid versions



GRID VERSIONS 1G	DATA TRANSMISSION	PART NO.
Draco tera flex KVM matrix 32 ports + Grid, 1 RU, Cat X 1G		K480-C32G
Draco tera flex KVM matrix 32 ports + Grid, 1 RU, fiber 1G		K480-F32G

Order Numbers

Draco tera flex Custom Design 2 RU & 4 RU

MODULAR CONCEPT

- Start with a 40-Port Matrix with the scalability of up to 80 ports non-blocking (2 RU)
- Start with a 40-Port Matrix with the scalability of up to 160 ports non-blocking (4 RU)
- Mix & match Cat X and Fiber in a variety of options
- Mix & match 1G and 3G (4K60) interface in a variety of options
- Offers almost Draco tera enterprise flexibility and scalability at compact size and price
- All versions with integrated Dual PSU and Dual NIC



Custom Design: up to 80-Ports
K480-C40-2RU
K480-CX40-2RU



Custom Design: up to 80-Ports
K480-F40-2RU
K480-FX40-2RU



Custom Design: up to 80-Ports
K480-C24F16-2RU
K480-CX24FX16-2RU



Custom Design: up to 160-Ports
K480-C40-4RU
K480-CX40-4RU



Custom Design: up to 160-Ports
K480-F40-4RU
K480-FX40-4RU



Custom Design: up to 160-Ports
K480-C24F16-4RU
K480-CX24FX16-4RU



Custom Design: up to 80-Ports
K480-C32G-2RU
K480-CX32G-2RU



Custom Design: up to 80-Ports
K480-F32G-2RU
K480-FX32G-2RU



Custom Design: up to 160-Ports
K480-C32G-4RU
K480-CX32G-4RU



Custom Design: up to 160-Ports
K480-F32G-4RU
K480-FX32G-4RU

Order Numbers

CUSTOM DESIGN STARTERKIT 2RU UP TO 80 PORTS	DATA TRANSMISSION	PART NO.
Draco tera flex KVM matrix 40 ports, custom design 2 RU, Cat X 1G		K480-C40-2RU
Draco tera flex KVM matrix 40 ports, custom design 2 RU, fiber 1G		K480-F40-2RU
Draco tera flex KVM matrix 40 ports, custom design 2 RU, hybrid 1G		K480-C24F16-2RU
Draco tera flex KVM matrix 40 ports, custom design 2 RU, Cat X 3G		K480-CX40-2RU
Draco tera flex KVM matrix 40 ports, custom design 2 RU, fiber 3G		K480-FX40-2RU
Draco tera flex KVM matrix 40 ports, custom design 2 RU, hybrid 3G		K480-CX24FX16-2RU
Draco tera flex KVM matrix 32 ports + Grid, custom design 2 RU, Cat X 1G		K480-C32G-2RU
Draco tera flex KVM matrix 32 ports + Grid, custom design 2 RU, fiber 1G		K480-F32G-2RU

CUSTOM DESIGN STARTERKIT 4RU UP TO 160 PORTS	DATA TRANSMISSION	PART NO.
Draco tera flex KVM matrix 40 ports, custom design 4 RU, Cat X 1G		K480-C40-4RU
Draco tera flex KVM matrix 40 ports, custom design 4 RU, fiber 1G		K480-F40-4RU
Draco tera flex KVM matrix 40 ports, custom design 4 RU, hybrid 1G		K480-C24F16-4RU
Draco tera flex KVM matrix 40 ports, custom design 4 RU, Cat X 3G		K480-CX40-4RU
Draco tera flex KVM matrix 40 ports, custom design 4 RU, fiber 3G		K480-FX40-4RU
Draco tera flex KVM matrix 40 ports, custom design 4 RU, hybrid 3G		K480-CX24FX16-4RU
Draco tera flex KVM matrix 32 ports + Grid, custom design 4 RU, Cat X 1G		K480-C32G-4RU
Draco tera flex KVM matrix 32 ports + Grid, custom design 4 RU, fiber 1G		K480-F32G-4RU

CUSTOM DESIGN I/O MODULES	DATA TRANSMISSION	PART NO.
Draco tera flex 8 ports, I/O module, Cat X 1G		F480-C8
Draco tera flex 8 ports, I/O module, fiber 1G		F480-F8
Draco tera flex 8 ports, I/O module, Cat X 3G		F480-CX8
Draco tera flex 8 ports, I/O module, fiber 3G		F480-FX8
Draco tera flex Grid module fiber 10G		F480-G

Order Numbers

CUSTOM DESIGN FRONT PLATES (2. RU)	DATA TRANSMISSION	PART NO.
Draco tera flex front plate 24x Cat X 1G/3G, Ports 41-64	 /  3G	F480-C24S2
Draco tera flex front plate 40x Cat X 1G/3G, Ports 41-80	 /  3G	F480-C40S2
Draco tera flex front plate 24x fiber 1G/3G, Ports 41-64	 /  3G	F480-F24S2
Draco tera flex front plate 40x fiber 1G/3G, Ports 41-80	 /  3G	F480-F40S2
Draco tera flex front plate 32x Cat X 1G/3G plus Grid, Ports 41-80	 /  3G	F480-C32GS2
Draco tera flex front plate 32x fiber 1G/3G plus Grid, Ports 41-80	 /  3G	F480-F32GS2

CUSTOM DESIGN FRONT PLATES (3. RU)	DATA TRANSMISSION	PART NO.
Draco tera flex front plate 24x Cat X 1G/3G, Port 81-104	 /  3G	F480-C24S3
Draco tera flex front plate 40x Cat X 1G/3G, Port 81-120	 /  3G	F480-C40S3
Draco tera flex front plate 24x fiber 1G/3G, Port 81-104	 /  3G	F480-F24S3
Draco tera flex front plate 40x fiber 1G/3G, Port 81-120	 /  3G	F480-F40S3
Draco tera flex front plate 32x Cat X 1G/3G plus Grid, Port 81-120	 /  3G	F480-C32GS3
Draco tera flex front plate 32x fiber 1G/3G plus Grid, Port 81-120	 /  3G	F480-F32GS3

CUSTOM DESIGN FRONT PLATES (4. RU)	DATA TRANSMISSION	PART NO.
Draco tera flex front plate 24x Cat X 1G/3G, Port 121-144	 /  3G	F480-C24S4
Draco tera flex front plate 40x Cat X 1G/3G, Port 121-160	 /  3G	F480-C40S4
Draco tera flex front plate 24x fiber 1G/3G, Port 121-144	 /  3G	F480-F24S4
Draco tera flex front plate 40x fiber 1G/3G, Port 121-160	 /  3G	F480-F40S4
Draco tera flex front plate 32x Cat X 1G/3G plus Grid, Port 121-160	 /  3G	F480-C32GS4
Draco tera flex front plate 32x fiber 1G/3G plus Grid, Port 121-160	 /  3G	F480-F32GS4



- 4:2 KVM MultiViewer @ 4K60
- Redundant power supply
- Single- and Dual-Head option
- DisplayPort 1.2 and HDMI 2.0 version
- Different modes of operation
- Multi-Screen Control
- SNMPv3 monitoring

Product Information

The Draco MultiView 4K₆₀ typically allows visualization scenarios common in air traffic control and control room applications, including 4:1 / 4:2 Single-Head or Dual-Head.

The individual screens can be arranged freely and displayed in different modes: Fullscreen Mode, Quadscreen Mode (Quad Mode), Picture-in-Picture Mode (PiP Mode), Preview Mode, 2+2 Mode and Free Mode. Presets allow instant switching between the desired layouts.

Easy Switching

Real-time switching between the video sources is done by keyboard commands. External control options are possible via API or the GPIO interface.

Don't miss any audio alerts

The embedded audio signals can be output to a loudspeaker via a separate audio interface. Either the audio track of the currently active screen can be output or the various audio signals can be combined

(summed) so that relevant signal tones can be heard at any time, regardless of the source.

Fail-safe and space-saving

The Draco MultiView 4K₆₀ has redundant power supply and extensive SNMP options for status monitoring (video, PSU and switching status). It is build for 24/7 operation.

The Draco MultiView 4K₆₀ seamlessly integrates with Draco vario extenders and Draco tera matrices.

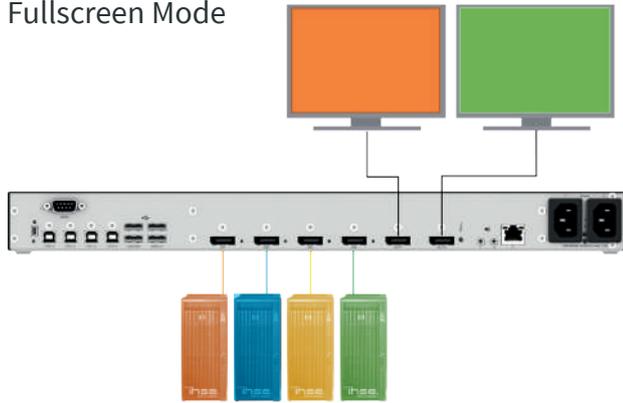
Product Features

- Integrated Single-Head and Dual-Head switch for 4K60 DisplayPort 1.2 or HDMI 2.0 video signals and USB
- Facilitates the monitoring of numerous video signals at a glance
- Reduces cost and effort by displaying on a single large monitor
- Redundant power supply for Single-Head and Dual-Head
- GPIO for control via pushbutton
- Draco MultiView 4K₆₀ allows different modes of operation: Fullscreen Mode, Quadscreen Mode (Quad Mode), Picture-in-Picture Mode (PiP Mode), Preview Mode, 2+2 Mode, Free Mode
- Cropping and zooming function
- Switching via keyboard, API and GPIO
- SNMP monitoring (Video Status, PSU Status, Switching Status)
- Amalgamated stereo audio or individual 8-channel audio with de-embedding (analog or digital)

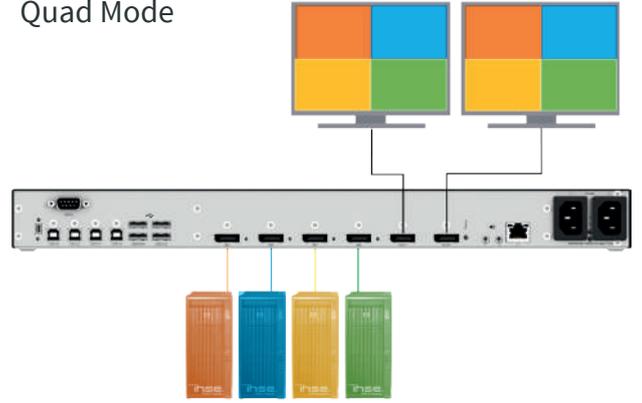
TECHNICAL DATA		
	Single-Head	Dual-Head
Input	Up to 4x DP1.2 or HDMI 2.0 @ up to 4K60, USB	Up to 8x DP1.2 DH or HDMI 2.0 DH @ up to 4K60, USB
Output	Up to 2x DP1.2 or HDMI 2.0 @ 4K60, 2x USB-HID and 2x USB 2.0	Up to 4x DP1.2 or HDMI 2.0 @ 4K60, 2x USB-HID and 2x USB 2.0
Audio	Synchronized switching, mixed audio, de-embedding digital / analog	

Display Modes

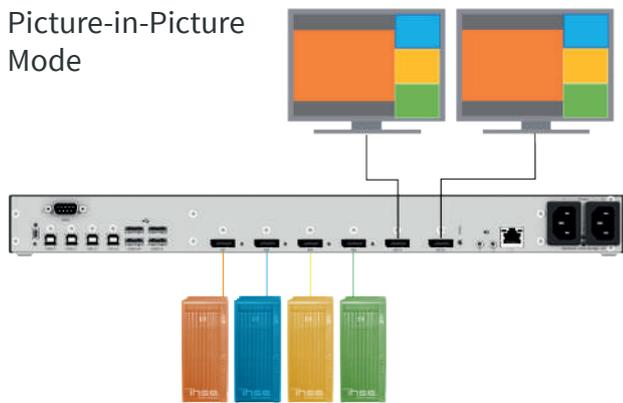
Fullscreen Mode



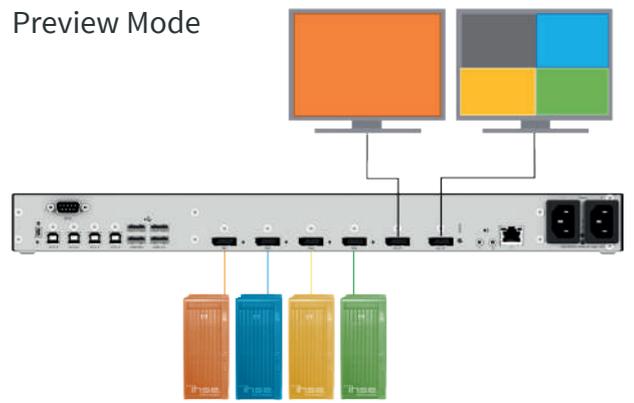
Quad Mode



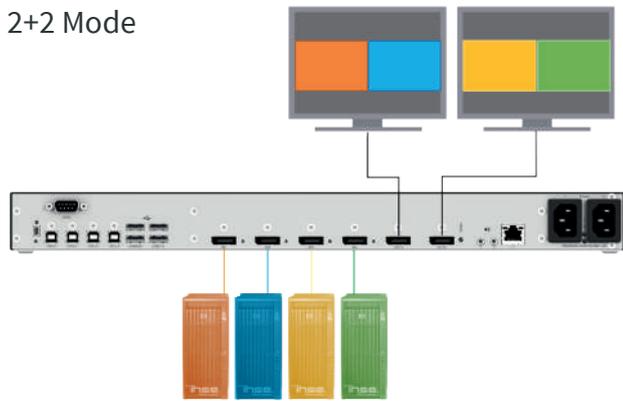
Picture-in-Picture Mode



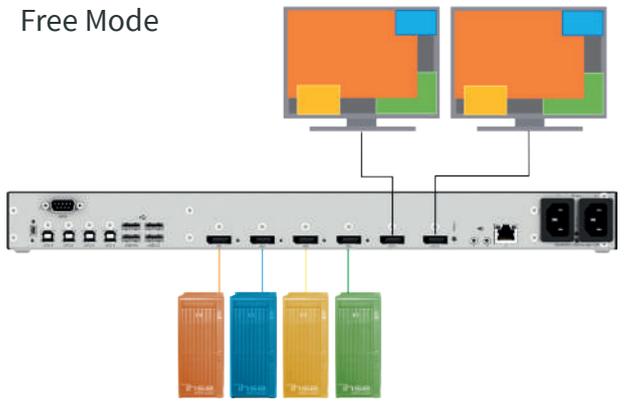
Preview Mode



2+2 Mode



Free Mode

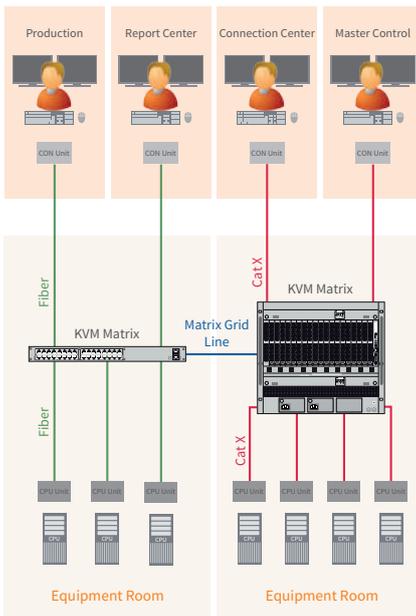


Order Numbers

FUNCTIONS	DEVICES	PART NO.
   		MV42-DPSH
   		MV42-DPDH
   		MV42-H2SH
   		MV42-H2DH

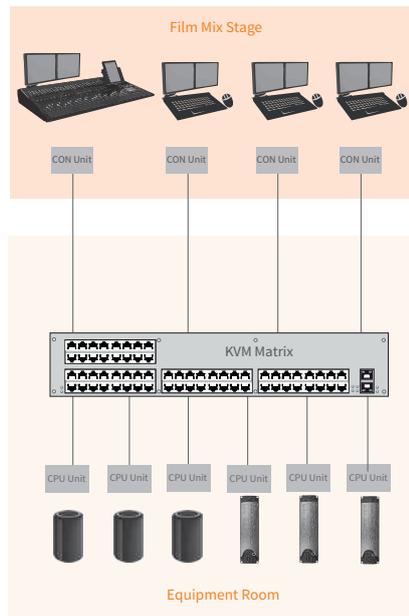
FUNCTIONAL DIAGRAMS OF SELECTED INSTALLATIONS

KVM IN BROADCAST



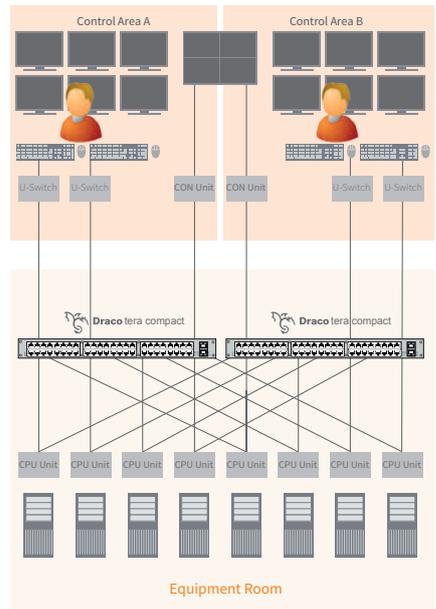
In operation at Chukyo TV
(national Japanese broadcaster)

KVM IN POST PRODUCTION



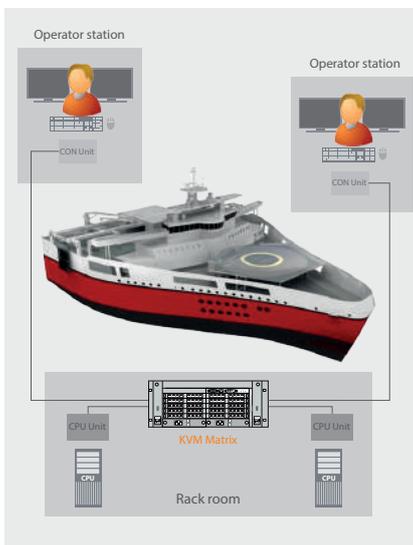
Abbey Road Studio's Dolby Atmos
Mix Stage; London

KVM IN CONTROL CENTERS



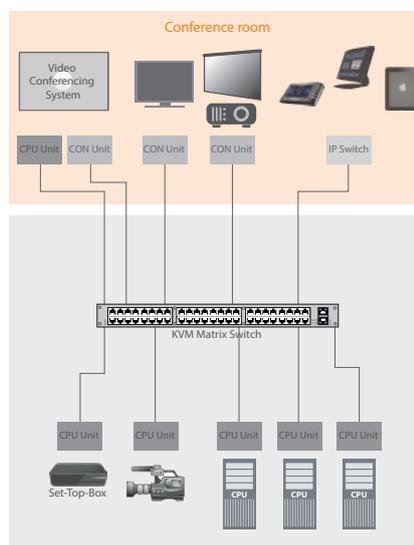
Eiffage Energie's high-speed rail
link maintenance, France

KVM IN RESEARCH VESSELS



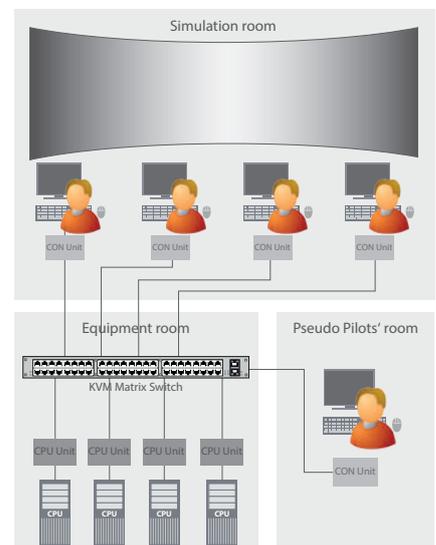
In operation at Petroleum
Geo-Services (PGS), Norway

KVM IN MARITIME CONTROL



In operation at Haifa RCC, Israel

KVM IN AIR TRAFFIC CONTROL



In operation at Frankfurt Airport



Read more at ihse.com/casestudies



Air Traffic / Airports

Airports operate several different control centers which are manned 24/7 throughout the year and are critical to airport operations. In addition to Air Traffic Control towers, these include control rooms for Apron Control Centers that analyze, process and coordinate central flight information for ground and airport surface traffic control. KVM technology allows operators to perform their tasks at specially designed workstations with high-speed data transmission and full computer access.

Maritime / Off Shore

Maritime applications impose special requirements on IT equipment due to tough environmental conditions at sea. Computers are usually located in a protected, watertight area and separated from peripheral devices by rugged KVM extenders to give users full control, as though the computers were local to them. KVM matrix switches enable selection and switching between individual computers and users in response to operational conditions, meeting the demands and requirements of ships of all sizes.

Security Areas

In several environments, security is paramount. Direct KVM connection over fiber cabling ensures data security, preventing eavesdropping and threats from unauthorized sources. And with extensive access configurability it is the proven choice for mission-critical installations.

KVM IN SPECIFIC ENVIRONMENTS

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Secure KVM Isolator / Extender DP/HDMI, Series 487	49
Security in KVM Systems	51

4K₆₀ ATC-Switch

All data in your sight: With the new ATC-Switch, IHSE offers a single-head/dual-head switch with additional multiviewer functionality. The device is ideally suited as a fallback switch for air traffic control, where controllers need to switch between multiple single-head or dual-head sources in real time to ensure redundancy. It also enables picture-in-picture displays in form of presets, independent of the monitor used.

The ATC-Switch allows the operation of several computers from one workstation. Up to four single-head or dual-head computers can be connected via DisplayPort. The device supports 4K resolutions at a user-friendly frame rate of 60 Hz.

The connected sources are displayed on one or two monitors depending on the setup. Besides the normal FullScreen switching function for main, backup and last resort, the ATC-Switch also offers processing capabilities for various picture-in-picture layouts.



Fast and intuitive operation

Users can switch immediately between the required layouts or source signals via hotkey or API, which allows them to work in a focused and ergonomic environment.

Keyboard and mouse can be connected via USB-HID. Additional USB 2.0 ports allow the connection of e.g. touch screens or graphics tablets.

Maximum reliability

The ATC-Switch features redundant power supply and extensive SNMP options for status monitoring (video, power supply, temperature and switching status).

Space-saving and compatible

The ATC-Switch fits seamlessly into the modular Draco vario design and its compact size of a 1U form factor allows mounting under the desk to save space.

The unit is designed for stand-alone use, but can also be integrated in a larger KVM system. It is fully compatible with Draco vario extenders and the Draco tera KVM matrix family.

Availability

The ATC-Switch with MultiView option is available in two versions:

Single-Head: 4 video inputs - 2 outputs: DP1.2: **MV42-DPSH**

Dual-Head: 4 x 2 video inputs - 2 x 2 outputs: DP1.2: **MV42-DPDH**

Symphony of the Seas and Harmony of the Seas



IHSE KVM systems have been installed on Royal Caribbean Cruise Lines largest and most prestigious cruise ships. The KVM solutions enable the crew to quickly and easily access important data from workstations around the ships.

The cruise company Royal Caribbean Cruise Line recently expanded its fleet to include the two largest passenger ships in the world: Harmony of the Seas and Symphony of the Seas, each capable of carrying 6,750 passengers, along with 2,100 crew members.

It is essential for crew members to be able to access information quickly and easily. Critical decisions need to be taken in a timely manner to ensure the utmost comfort and safety on board. With eighteen decks and an overall length of 360 meters, moving to a dedicated location somewhere in the ship to use a particular computer system would take time and reduce the efficiency of the crew and their ability to provide the best possible level of service and safety to customers.

Real-time access and flexibility for the crew

Thanks to the KVM solution, crew members have instant access to all the information they need from any convenient workstation - comprising a screen, keyboard and mouse - and can instantly switch between the computers they need to access. This system ensures a high degree of flexibility, convenience and greatly improves crew efficiency.

Maximum safety on the high seas

The KVM system increases safety: data is always available to the crew ensuring that they do not miss any important safety-critical information.

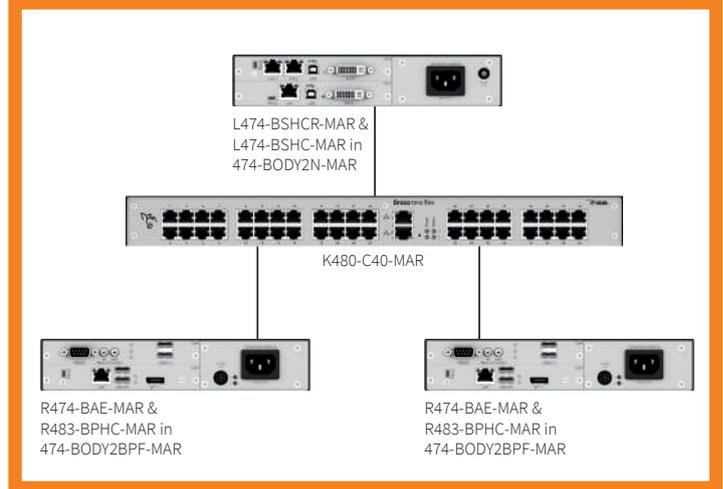
Back-up and redundant connections ensure continuous operation of the systems in the event of failure or emergency.

Computer systems are located at a long distance from the operators. The KVM system enables the crew to access data from their own workstations and select and instantly change the computer they are using. They work more efficiently and effectively, and the ship operates safely at sea.

Certification

All the Draco elements are tested and maritime approved by Nemko thus setting a high quality standard to the system. Sufficient spare ports are available on the switches to accommodate future growth or changes to the infrastructure, without requiring changes to the wiring of the vessel.

Typical IHSE Maritime Certified Application*



* Further information about IHSE's products with certifications on request at sales@ihse.de.

SECURE KVM ISOLATOR / EXTENDER DP/HDMI



- NIAP PP 4.0 pending
- Common Criteria EAL4+ pending
- Compatible with Draco vario extenders
- Compatible with Draco tera matrices
- DP/HDMI combo interface

Product Information

When it is key to protect your intellectual property or homeland security while still allowing the most flexible access to IT assets, use the Secure KVM Isolator / Extender DP/HDMI to extend keyboard, video, mouse and audio signals without entailing any loss of quality up to 10 km. Pictures are displayed without delay, brilliantly clear and in highest resolutions, including full HD and 2K. Even 3D formats can be transmitted fast and without difficulty. Experience

excellent sound data with finest details by digital audio transmission via DP/HDMI or the analog interface. Take advantage of link and power redundancy for most failsafe interconnections via single-mode or multi-mode fiber. Both, CPU and CON devices, are equipped with signal isolation for future compatibility with NIAP PSD PP 4.0. For this behalf, IHSE has integrated known and reliable certified components of security specialist HighSecLabs (HSL). This

makes sure there is up to date security against leaking data. In combination with Draco tera matrix switches and Draco vario extenders, even a secure setup of classified and unclassified endpoints can be achieved that way. And, since isolation is available at both ends data leakage or eaves dropping is impossible even, if there is a cross-over of secured devices and unsecured devices used for commercial reasons.

Product Features

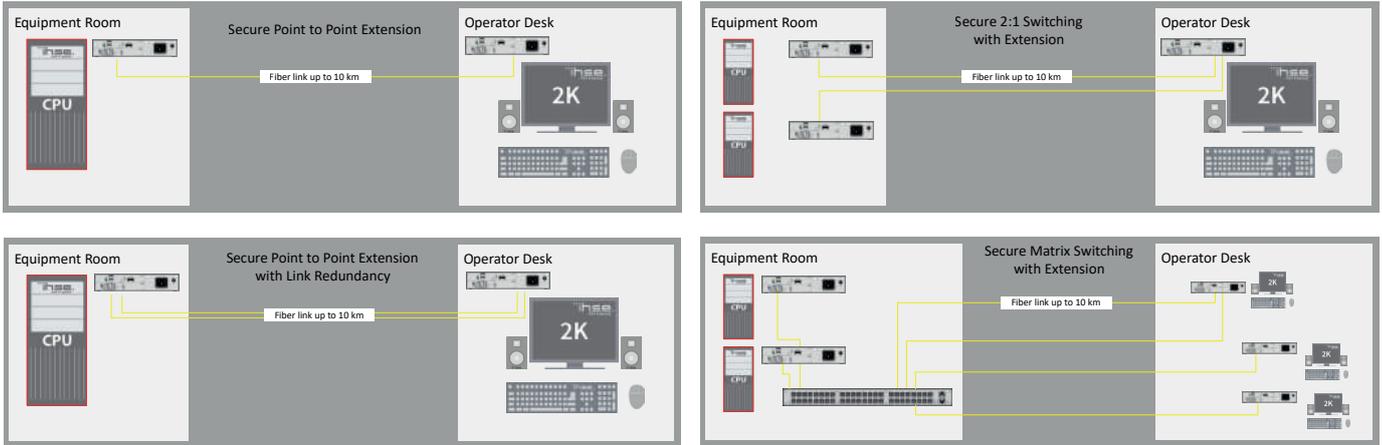
- Draco vario series 487 in 474-BODY2N chassis (Kit)
- DP/HDMI combo port
- High resolution video can be transmitted via DP/HDMI interface
- The interface is compatible with 3D technology. Side-by-Side and Top-and-Bottom formats can be transmitted
- Allows operation of a remote workstation with a DP/HDMI monitor and two USB-HID devices (such as a keyboard and pointing devices) and audio speakers
- Compatible with all major operating systems
- Compatible with all IHSE Draco KVM switches as well as Draco vario and Draco compact extenders
- DP/HDMI embedded audio is cross-compatible with digital audio add-on modules
- Redundant data link

TECHNICAL DATA	
Input	DP/HDMI
Output	DP/HDMI
Maximum Resolution	1920 x 1200 @ 60 Hz, Full HD (1080 p) or 2 K HD (up to 2048 x 1152)
Maximum Cable Distance	Cat X: 140 m Single-mode: 10 km Single-mode XV: 5 km Multi-mode: 1 km Multi-mode XV: 400 m
Audio	2-channel PCM embedded digital audio and analog audio
Keyboard/mouse	USB-HID
Power Supply	International power supply unit (90-240V Input)
Secure Certifications	NIAP PSD PP 4.0 and CC EAL4+ pending

Additional Options

- Support for Draco tera matrix switches 8 - 576 ports
- Pair with Draco vario Non-PP4 extenders when used in secure facilities
- Anti-tampering

Functional Diagram



Order Numbers

SECURE KVM ISOLATOR / EXTENDER DP/HDMI	PART NO.
Draco vario 2N FHD KVMA Isolated Secure Extender Kit (CPU and CON), Cat X	K487-1PHCA-N
Draco vario 2N FHD KVMA Isolated Secure Extender Kit (CPU and CON), Cat X, red.	K487-1PHCRA-N
Draco vario 2N FHD KVMA Isolated Secure Extender Kit (CPU and CON), LWL	K487-1PHSA-N
Draco vario 2N FHD KVMA Isolated Secure Extender Kit (CPU and CON), LWL, red.	K487-1PHSRA-N



All business, government and military organisations have a duty to ensure that data they hold and manage is kept secure. The loss of sensitive commercial information can adversely affect the performance of a commercial corporation, whilst leaking of personal information and military intelligence may lead to increased criminal activity or threats to personal or national security.

It is a priority of system managers to ensure that the operational systems they are responsible for are protected to the very highest level against external threats. These may appear from a number of different directions, emanating from both internal and external sources. IHSE products are engineered with security foremost, to maintain complete data integrity and reduce unauthorised access.

Hardware and physical design

The role of a KVM matrix switch is to transmit data and commands over significant distances, often over relatively insecure buildings or terrain. The electronic equipment and signal transmission networks need to be resilient to external, unauthorised access. These include:

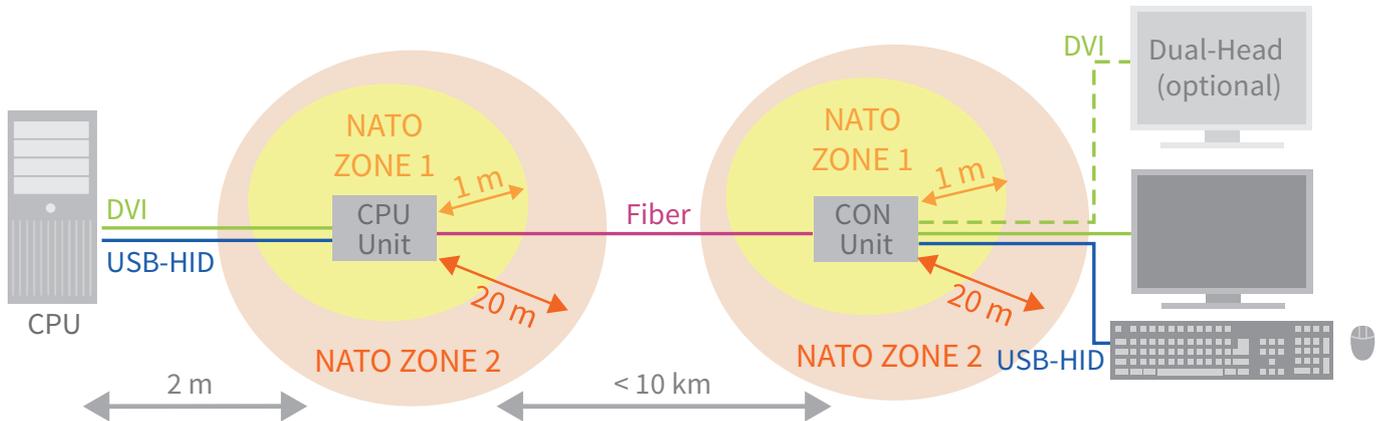
- **Physical attack - including signal interception and eaves dropping:** Attempts to intercept or access data carried on a KVM system are defended through the use of proprietary hardware devices and by preventing access to signals carried on the host network. Fiber connections are superior to copper as they do not radiate electromagnetic fields and require physical interruption in order to break into the signal being carried.
- **Radio frequency (RF) emanation and signal crosstalk:** IHSE devices are designed to prevent signal detection from RF emissions. A range of products is available with Tempest Level B compliance for the highest level of security. Circuit design eliminates crosstalk between I/O ports and pulses on power lines enabling complete separation of signals and enabling split Red/Black security systems to be built with single switches.

Access security

IHSE KVM systems contain extensive features to prevent access to sensitive data by unauthorised users. Measures are also available to prevent mass copying and injection of data. These include:

- **User access controls:** Multiple system parameters are available to control the access of individual users to sources. Settings are managed at the software level by the system administrator or at a firmware level, as is required for Red/Black installations. Access control lists limit users and workstations to specific CPUs and levels. In addition, IHSE provides monitoring options in case of rights violations.
- **Restricted USB access:** An HID interface provides hardware protection against mass data copy onto remote storage devices and prevents unauthorised and potentially harmful data being injected into the system.
- **Network separation:** Whenever KVM data is transmitted over an IP network, security is severely compromised. Almost any firewall can be overcome by hackers who then get access to both KVM system control and data. A secure KVM architecture should be built on a separate network for signal transmission. Dedicated networks used for IHSE Draco matrix switches are inherently more secure than open data networks of the type used for KVM-over-IP systems. In this case, the advantages of an IP-based KVM solution are largely negated.
- **In-band and out-of-band control:** For greatest security, IHSE system offers in-band control (where switching operations are controlled by keyboard commands and an on-screen selection menu). This eliminates the need for external access and a potential risk from external threats. In situations in which out-of-band control is necessary, the system should be configured so that operations are dynamically controlled or even performed by a central management function using the external switch control.

TEMPEST-certified IHSE systems meet the criteria of NATO SDIP-27 Level B and Level C / NATO Zone 1+2 in accordance with the Zone short measurement. These systems provide a high level of security, including Access Control Lists (e.g. Red/Black separation for security level environment). The new Draco vario Secure Extender (487 series) include certified components, providing future compatibility with NIAP PP 4.0 protection standard. Isolation at all endpoints completely prevents data leakage or eaves dropping. Further information regarding the Tempest and Secure Extenders is available on request.



How do our systems provide maximum security?

Physical attack	→	Restrict physical access to hardware
Signal interception	→	Protect signal transmission against interception
Signal leakage	→	Protect on-board signals against crosstalk
Human error	→	Restrict user access to the „Need to know“ level
Hardware failure	→	Provide redundant system architecture Provide resilient system components
IP-based systems	→	Provide IP connectivity with secure separation of core matrix and TCP/IP networks as an effective countermeasure to potential cyber attacks
External control (API)	→	In-band control vs. out-of-band control

TERMS AND CONDITIONS

Please note our general terms and conditions available on WWW.IHSE.COM/GTC. In addition to your statutory warranty rights according to our general terms and conditions, we offer for IHSE products a free of charge extended warranty of 24 months from our shipment date. Additional annual warranty extensions are available thereafter. Please contact your sales representative for further details.

TERMS OF DELIVERY

We supply exclusively according to our terms of delivery and payment to industrial, business and commercial clients.

All deliveries are Ex-Works (Incoterms 2010) - usually from our factory in Oberteuringen, Germany. The customer is responsible for payment of all transportation and insurance costs. Shipment is done by our logistics partners. Shipping costs will be determined on the day of dispatch.

Standard parcel service: UPS
Standard freight forwarding: DACHSER

Lead time

The delivery period for standard products is normally ten working days after receipt of the purchase order. For volume and special orders the delivery period is around four weeks.

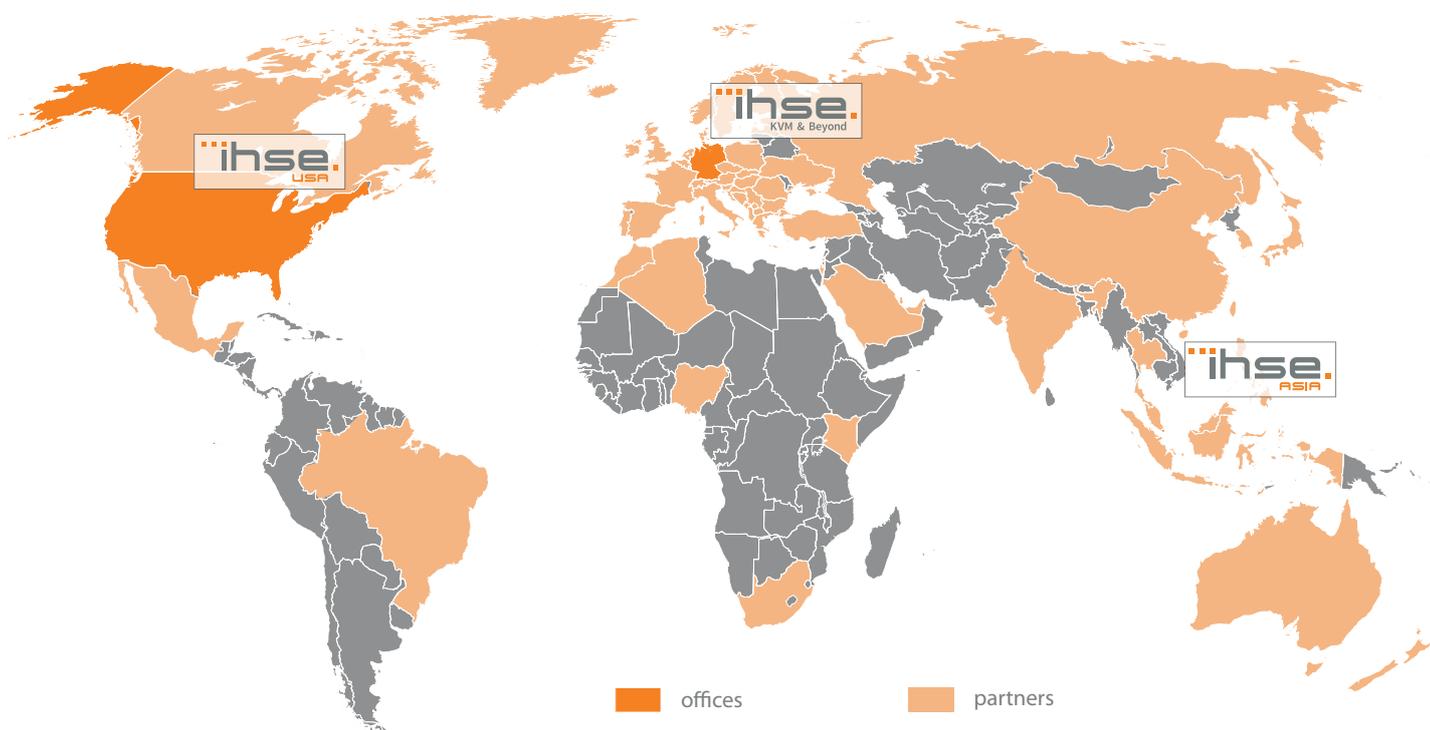
TERMS OF PAYMENT

All prices in Euro, Ex Works (EXW), plus VAT.

Payment: Advance payment against proforma invoice (invoice for registered customers)
Accounting currency: € (Euro)

HEADQUARTERS AND OFFICES

Please contact us for information about our company, events, products or partners. We look forward to hearing from you!



Subsidiary USA

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info@ihseusa.com

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support@ihseusa.com

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Regional Office France

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Tel: +33 (678) 478 822
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Friday: 8:00 - 15:00

Register court:

Local court Freiburg, HRB 580617
VAT-No: DE 146 965 085
WEEE: DE 39 900 275
DUNS-No: 31-801-4289

Subsidiary Singapore

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