

# M-LINE SECURE MINI-MATRIX

Optimize user experience when working with multiple computers. View and control two out-of-four computers at the same time whilst securely sharing keyboard, video, mouse and audio.

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The Mini-Matrix KVM switch offered by HSL provides increased productivity in challenging multi-computer environments where users are required to view and interact with several computers while maintaining the highest isolation between computers and peripherals.

# **MINI-MATRIX HIGHLIGHTS**

- For Israeli market
- Securely share peripherals across different security domains Securely share peripherals between computers that belong to different security classification levels while keeping the highest possible data separation security.

#### Prevent information leaks

Obstacle threats derived from sharing and switching of vulnerable, untrusted or unauthorized peripheral devices. Block peripheral exploits, information leaks, eavesdropping, signal transmission, computer malware, hardware and firmware tampering by enforcing multilayered security mechanisms.

- The ideal KVM switch for meeting rooms and control centers Best suites scenarios where one or more computers have to be presented at the same time on multiple displays. For example:
  - In control centers where information from several sources has to be constantly displayed in real-time.
  - In meeting rooms where both visitor and host computers are to be viewed and controlled simultaneously.



HSL 2-Port Secure M-LINE Mini-Matrix KVM Switch System Diagram

Obviate the need for purchasing and installing dedicated, per computer peripheral sets.

HighSecLabs

# SECURITY FEATURES

#### Video Security

- Computer video input interfaces are isolated through the use of different electronic components, power and ground domains.
- The display is isolated by a dedicated, read-only, EDID emulation for each computer.
- Access to the monitor's Extended Display Identification Data (EDID) is blocked.
- Access to the Monitor Control Command Set (MCCS commands) is blocked.

#### Keyboard & Mouse Security

- The keyboard and mouse are isolated by a dedicated, USB device emulation for each computer.
- One-way, peripheral-to-computer data flow is enforced through unidirectional optical data diodes.
- Communication from computer-to-keyboard/mouse is blocked.
- Non HID (Human Interface Device) data transaction is blocked.

#### Audio Security

- Enforce computer-to-speaker, one-way flow of sound through unidirectional optical data diodes.
- Prevent eavesdropping and line-in re-tasking by blocking speaker-to-computer communication.

#### • Hardware Anti-Tampering

- Any attempt to open the product enclosure will activate an antitamper system making the product inoperable.
- Blinking LEDs provide a clear indication of a tampering event.
- Special holographic tampering evident labels on the product's enclosure provide a clear visual indication if the product has been opened or compromised.

#### Firmware Anti-Tampering

- There is no access to the product's firmware or memory through any port.
- Firmware is permanently stored on a non-reprogrammable Read Only Memory (ROM) to prevent any modification.
- Firmware integrity is verified through a self-test procedure during power-up. Upon detection of a critical failure the device disables normal operation and provides the user with a clear visual indication of failure.







#### SX22H-M

### **OPERATIONAL HIGHLIGHTS**

• Independently switch the Video/ USB/Audio/Keyboard & Mouse ports between computers

Use the front-panel push buttons to independently switch the Video/USB/Audio/ Keyboard & Mouse ports between the primary and secondary computers.

Useful for various scenarios, for instance:

- When a USB smart card reader must remain mapped to a certain computer while the keyboard, video, mouse and audio are switched to another computer.
- When a user has to listen to audio originating from one computer while working on another computer.
- Smoothly switch between computers (Virtual Display Technology) Automatically switch control from one computer to another by dragging the mouse cursor over the computer's display border. Peripherals switch to the next computer without having to press any buttons once the mouse is passing the display border.
- View applications in Ultra High Definition (UHD) 4K video quality. Never compromise on video quality. Run graphic-intensive, ultrahigh definition applications on all Mini-Matrix models.

Avoid typing mistakes Since two-way communication is blocked by the Mini-Matrix security, keyboard lock LEDs do not function. Help users avoid typing mistakes by visually indicating the status of keyboard locks (CAPS-LOCK | NUM LOCK | SCROLL LOCK)

Work simultaneously on two computers, view the screens of four computers:

on the product's front facing panel.

Connect up to eight computers and two displays to the Mini-Matrix. Select which computer to present on each of the two attached displays. Displays can be positioned in various layouts (Horizontal / Vertical / Custom). Duplicate the screen of any computer by presenting it on both Mini-Matrix displays at the same time. Extend the screen of any computer to an additional 3rd and 4th external displays.

## SPECIFICATION

PART NUMBERSX22H-MNo. of Sources2CONSOLE PORTS2 x HDMI 1.4Displays2 x HDMI 1.4Max Resolution (Input & Output)Supporting UHD 4K resolutions up to 3840x2160 @ 30 HzMouse and KeyboardGUSB Type AAduio Jack3.5 mm JackCOMPUTER PORTS2 x HDMI 1.4Mouse and KeyboardQ Starporting UHD 4K resolutions up to 3840x2160 @ 30 HzAdio Jack3.5 mm JackCOMPUTER PORTS2 x HDMI 1.4Mouse and KeyboardQ Starport BAdio Jack3.5 mm JackPhysicAL100 Starpore BPhysicAL0.52 kg (1.1 lbs)Power Requirements12V DC, 1.5AA Cliput100 to 240V ACPower TypeStorago TemperatureStorago Temperature32° to 104° F (0° to 40° C)Storago TemperatureSVIndows, Linux, MacCHTHEICATIONVindows, Linux, MacCHTHEICATIONStorago TemperatureStorago TemperatureNIAP Common Criteria PP3.0 for Peripheral Sharing Switch (PSS) devicesProduct CertificationCE, RCM, FCC class B, VCCI, TUV US, TUV CanadaCHTHEICATIONCERCM, FCC class B, VCCI, TUV US, TUV CanadaCHTHEICATIONSIGRAGLProduct CertificationCE, RCM, FCC class B, VCCI, TUV US, TUV CanadaCHTHEICATIONSIGRAGLProduct CertificationCE, RCM, FCC class B, VCCI, TUV US, TUV CanadaCHTHEICATIONSIGRAGLProduct Life-cycleGIO SIGRAGLProduct Life-cycleSIGRAGLProduct Life-cycle <th></th> <th></th>		
CONSOLE PORTS         Displays       2 x HDMI 1.4         Max Resolution       Supporting UHD 4K resolutions up to 3840x2160 @ 30 Hz         Mouse and Keyboard       USB Type A         Audio Jack       3.5 mm Jack         COMPUTER PORTS       2 x HDMI 1.4         Mouse and Keyboard       USB Type A         Audio Jack       3.5 mm Jack         Power Requirements       3.5 mm Jack         POWER       0.52 kg (1.1 lbs)         Power Requirements       12V DC, 1.5A         AC Input       100 to 240V AC         Power Type       3.2° to 104° F (0° to 40° C)         Storage Temperature       -4° to 140° F (-2° to 60° C)         Humidity       0.80% RH, non-condensing         SofTWARE       Windows, Linux, Mac         CERTIFICATION       Windows, Linux, Mac         CERTIFICATION       CERTIFICATION         Product Certification       CE, RCM, FCC class B, VCCI, TUV US, TUV Canada         Generating Femore       Supported Sharing Switch (PSS) devices	PART NUMBER	SX22H-M
Displays2 x HDMI 1.4Max Resolution Max Resolutions up to 3840x2160 @ 30 HzMuse and KeyboardUSB Type AAudio JackGAudio JackCOMPUTER PORTSDisplay TypeQAudio JackGMouse and KeyboardUSB Type BAudio JackGMouse and KeyboardGMouse and KeyboardGMouse and KeyboardGMouse and KeyboardGMouse and KeyboardGMouse and KeyboardGMouse and KeyboardGMach DackGPower SequenceGPower Requirements177 x 82 x 35 mm / 7 x 3.2 x 1.4 inchesPower Requirements12V DC, 1.5AA CliputGPower TypeSternalChyper SequenceGPower TypeSternalStorage TemperatureSternalStorage TemperatureSternalStorage TemperatureSternalStorage TemperatureWindows, Linux, MacCERTIFICATIONSternal Sharing Switch (PSS) devicesProduct CertificationNIAP Common Criteria PP3.0 for Peripheral Sharing Switch (PSS) devicesProduct CertificationCE, RCM, FCC class B, VCCI, TUV US, TUV CanadaGENERAL INFOStrafelMade InISRAELOr CertificationISRAELOut CertificationISRAELOut CertificationISRAELOut CertificationISRAEL	No. of Sources	2
Max Resolution (Input & Output)     Supporting UHD 4K resolutions up to 3840x2160 @ 30 Hz       Mouse and Keyboard     USB Type A       Audio Jack     3.5 mm Jack       COMPUTER PORTS     2 x HDMI 1.4       Mouse and Keyboard     USB Type B       Audio Jack     3.5 mm Jack       Power Addio Jack     3.5 mm Jack       PHYSICAL     0.52 kg (1.1 lbs)       Power Requirements     102 V DC, 1.5A       A Cliput     100 to 240V AC       Power Type     2 x HDMI 1.4       ENVIRONMENTAL     2 x HDMI 1.4       Operating Temperature     12 V DC, 1.5A       A Cliput     100 to 240V AC       Power Type     2 x HDMI 1.4       ENVIRONMENTAL     2 x HDMI 2.4       Operating Temperature     3.2° to 104° F (0° to 40° C)       Storage Temperature     -4° to 140° F (-20° to 60° C)       Humidity     0 -80% RH, non-condensing       SOFTWARE     Supported OS       EXERTIFICATION     Xindows, Linux, Mac       CERTIFICATION     CERTIFICATION       Security Certification     CE, RCM, FCC class B, VCCI, TUV US, TUV Canada       GENERAL INFO     ISRAEL       Made In     ISRAEL       Made In     ISRAEL	CONSOLE PORTS	
Imput & Output)     Supporting UHD 4k resolutions up to 3840x2160 @ 30 H2       Mouse and Keyboard     USB Type A       Audio Jack     3.5 mm Jack       COMPUTER PORTS     2 x HDM11.4       Mouse and Keyboard     USB Type B       Audio Jack     3.5 mm Jack       PhysicAL     3.5 mm Jack       PHYSICAL     100 to 2 kg (1.1 lbs)       Power Requirements     12V DC, 1.5A       AC Input     100 to 240V AC       Power Type     External       ENVIRONMENTAL     External       ENVIRONMENTAL     32° to 104° F (0° to 40° C)       Storage Temperature     32° to 104° F (0° to 40° C)       Storage Temperature     Supported 05       Storage Temperature     Windows, Linux, Mac       CERTIFICATION     Security Certification       Product Certification     CE, RCM, FCC class B, VCCI, TUV US, TUV Canada       GENERAL INFO     100 years	Displays	2 x HDMI 1.4
Audio Jack       3.5 mm Jack         COMPUTER PORTS       2 x HDMI 1.4         Mouse and Keyboard       USB Type B         Audio Jack       3.5 mm Jack         PhysicAL       105 Type B         PhysicAL       177 x 82 x 35 mm / 7 x 3.2 x 1.4 inches         Weight       0.52 kg (1.1 lbs)         POWER       100 to 240V AC         Power Requirements       12V DC, 1.5A         AC Input       100 to 240V AC         Power Type       External         ENVIRONMENTAL       22° to 104° F (0° to 40° C)         Storage Temperature       32° to 104° F (0° to 40° C)         Storage Temperature       100 to 800 RH, non-condensing         SofTWARE       Windows, Linux, Mac         CERTIFICATION       Xina C, FCC, TUV US, TUV Canada         GENERAL INFO       NIAP Common Criteria PP3.0 for Peripheral Sharing Switch (PSS) devices         Product Certification       CE, RCM, FCC class B, VCCI, TUV US, TUV Canada         GENERAL INFO       ISRAEL         Made In       ISRAEL         Made In       ISRAEL         Made In       ISRAEL		Supporting UHD 4K resolutions up to 3840x2160 @ 30 Hz
COMPUTER PORTS         Display Type       2 x HDMI 1.4         Mouse and Keyboard       USB Type B         Audio Jack       3.5 mm Jack         PHYSICAL       Dimensions         Dimensions       177 x 82 x 35 mm / 7 x 3.2 x 1.4 inches         Weight       0.52 kg (1.1 lbs)         POWER       Power Requirements         Power Requirements       12V DC, 1.5A         AC Input       100 to 240V AC         Power Type       External         ENVIRONMENTAL       Storage Temperature         Storage Temperature       32° to 104° F (0° to 40° C)         Storage Temperature       32° to 104° F (0° to 60° C)         Humidity       0.880% RH, non-condensing         SOFTWARE       Supported OS         Supported OS       Windows, Linux, Mac         CERTIFICATION       CERTIFICATION         Security Certification       CE, RCM, FCC class B, VCCI, TUV US, TUV Canada         GENERAL INFO       ISRAEL         Made In       ISRAEL         Made In       ISRAEL         Product Certification       ISRAEL	Mouse and Keyboard	USB Type A
Display Type2 x HDMI 1.4Mouse and KeyboardUSB Type BAudio Jack3.5 mm JackPHYSICALUPhysicAl0.52 kg 1.1 lbs)Power Requirements12V DC, 1.5AAC Input100 to 240V ACPower Requirements22° to 104° F (0° to 40° C)Storage Temperature32° to 104° F (0° to 40° C)Storage Temperature32° to 104° F (0° to 60° C)Bundidity0.80% RH, non-condensingSofTWAREUSupported OSWindows, Linux, MacCERTIFICATIONSecurity CertificationProduct CertificationNIAP Common Criteria PP3.0 for Peripheral Sharing Switch (PSS) devicesProduct CertificationCE, RCM, FCC class B, VCCI, TUV US, TUV CanadaGENERAL INFOISRAELProduct CertificationISRAELProduct Liffe-cycle10 years	Audio Jack	3.5 mm Jack
Mouse and Keyboard       USB Type B         Audio Jack       3.5 mm Jack         PHYSICAL       Dimensions         Dimensions       177 x 82 x 35 mm / 7 x 3.2 x 1.4 inches         Weight       0.52 kg (1.1 lbs)         POWER       Power Requirements         Power Requirements       12V DC, 1.5A         AC Input       100 to 240V AC         Power Type       External         ENVIRONMENTAL       External         Operating Temperature       32° to 104° F (0° to 40° C)         Storage Temperature       -4° to 140° F (-20° to 60° C)         Humidity       0-80% RH, non-condensing         SOFTWARE       Windows, Linux, Mac         CERTIFICATION       Security Certification         Security Certification       NIAP Common Criteria PP3.0 for Peripheral Sharing Switch (PSS) devices         Product Certification       CER, CM, FCC class B, VCCI, TUV US, TUV Canada         GENERAL INFO       ISRAEL         Made In       ISRAEL         Product Liffe-cycle       10 years	COMPUTER PORTS	
Audio Jack       3.5 mm Jack         PHYSICAL       177 x 82 x 35 mm / 7 x 3.2 x 1.4 inches         Weight       0.52 kg (1.1 lbs)         POWER       100 to 24 0V AC         Power Requirements       12V DC, 1.5A         AC Input       100 to 240V AC         Power Type       External         ENVIRONMENTAL       32° to 104° F (0° to 40° C)         Storage Temperature       -4° to 140° F (-20° to 60° C)         Humidity       0-80% RH, non-condensing         SofTWARE       Windows, Linux, Mac         CERTIFICATION       Vindows, Linux, Mac         Security Certification       CE, RCM, FCC class B, VCCI, TUV US, TUV Canada         GENERAL INFO       ISRAEL         Made In       ISRAEL         Product life-cycle       10 years	Display Type	2 x HDMI 1.4
PHYSICAL         Dimensions       177 x 82 x 35 mm / 7 x 3.2 x 1.4 inches         Weight       0.52 kg (1.1 lbs)         POWER       0.52 kg (1.1 lbs)         Power Requirements       12V DC, 1.5A         AC Input       100 to 240V AC         Power Type       External         ENVIRONMENTAL       32° to 104° F (0° to 40° C)         Storage Temperature       32° to 104° F (0° to 40° C)         Storage Temperature       -4° to 140° F (-20° to 60° C)         Humidity       0-680% RH, non-condensing         SOFTWARE       Windows, Linux, Mac         CERTIFICATION       CERTIFICATION         Security Certification       NIAP Common Criteria PP3.0 for Peripheral Sharing Switch (PSS) devices         Product Certification       CE, RCM, FCC class B, VCCI, TUV US, TUV Canada         GENERAL INFO       ISRAEL         Product life-cycle       10 years	Mouse and Keyboard	USB Type B
Dimensions       177 x 82 x 35 mm / 7 x 3.2 x 1.4 inches         Weight       0.52 kg (1.1 lbs)         POWER       12V DC, 1.5A         Power Requirements       12V DC, 1.5A         AC Input       100 to 240V AC         Power Type       External         ENVIRONMENTAL       Derating Temperature         Operating Temperature       32° to 104° F (0° to 40° C)         Storage Temperature       -4° to 140° F (-20° to 60° C)         Humidity       0-80% RH, non-condensing         SOFTWARE       Windows, Linux, Mac         CERTIFICATION       NIAP Common Criteria PP3.0 for Peripheral Sharing Switch (PSS) devices         Product Certification       CE, RCM, FCC class B, VCCI, TUV US, TUV Canada         GENERAL INFO       ISRAEL         Made In       ISRAEL         Product Life-cycle       10 years	Audio Jack	3.5 mm Jack
Weight       0.52 kg (1.1 lbs)         POWER       12V DC, 1.5A         Power Requirements       12V DC, 1.5A         AC Input       100 to 240V AC         Power Type       External         ENVIRONMENTAL       External         Operating Temperature       32° to 104° F (0° to 40° C)         Storage Temperature       -4° to 140° F (-20° to 60° C)         Humidity       0-800% RH, non-condensing         SOFTWARE       Windows, Linux, Mac         CERTIFICATION       NIAP Common Criteria PP3.0 for Peripheral Sharing Switch (PSS) devices         Product Certification       CE, RCM, FCC class B, VCCI, TUV US, TUV Canada         GENERAL INFO       ISRAEL         Product Life-cycle       10 years	PHYSICAL	
POWER         Power Requirements       12V DC, 1.5A         AC Input       100 to 240V AC         Power Type       External         ENVIRONMENTAL       22° to 104° F (0° to 40° C)         Storage Temperature       32° to 104° F (0° to 40° C)         Storage Temperature       -4° to 140° F (-20° to 60° C)         Humidity       0-80% RH, non-condensing         SOFTWARE       Windows, Linux, Mac         CERTIFICATION       NIAP Common Criteria PP3.0 for Peripheral Sharing Switch (PSS) devices         Product Certification       CE, RCM, FCC class B, VCCI, TUV US, TUV Canada         GENERAL INFO       ISRAEL         Product life-cycle       10 years	Dimensions	177 x 82 x 35 mm / 7 x 3.2 x 1.4 inches
Power Requirements       12V DC, 1.5A         AC Input       100 to 240V AC         Power Type       External         Power Type       External         ENVIRONMENTAL       32° to 104° F (0° to 40° C)         Storage Temperature       32° to 140° F (-20° to 60° C)         Humidity       0-80% RH, non-condensing         SOFTWARE       Windows, Linux, Mac         CERTIFICATION       Vindows, Linux, Mac         Security Certification       NIAP Common Criteria PP3.0 for Peripheral Sharing Switch (PSS) devices         Product Certification       CE, RCM, FCC class B, VCCI, TUV US, TUV Canada         GENERAL INFO       ISRAEL         Made In       ISRAEL         Product Iife-cycle       10 years	Weight	0.52 kg (1.1 lbs)
AC Input       100 to 240V AC         Power Type       External         ENVIRONMENTAL       32° to 104° F (0° to 40° C)         Operating Temperature       32° to 104° F (0° to 40° C)         Storage Temperature       -4° to 140° F (-20° to 60° C)         Humidity       0-80% RH, non-condensing         SOFTWARE       Windows, Linux, Mac         CERTIFICATION       NIAP Common Criteria PP3.0 for Peripheral Sharing Switch (PSS) devices         Product Certification       CE, RCM, FCC class B, VCCI, TUV US, TUV Canada         GENERAL INFO       ISRAEL         Product life-cycle       10 years	POWER	
Power Type       External         ENVIRONMENTAL       32° to 104° F (0° to 40° C)         Operating Temperature       32° to 140° F (-20° to 60° C)         Storage Temperature       -4° to 140° F (-20° to 60° C)         Humidity       0-80% RH, non-condensing         SOFTWARE       Windows, Linux, Mac         Supported OS       Windows, Linux, Mac         CERTIFICATION       NIAP Common Criteria PP3.0 for Peripheral Sharing Switch (PSS) devices         Product Certification       CE, RCM, FCC class B, VCCI, TUV US, TUV Canada         GENERAL INFO       ISRAEL         Product life-cycle       10 years	Power Requirements	12V DC, 1.5A
ENVIRONMENTAL         Operating Temperature       32° to 104° F (0° to 40° C)         Storage Temperature       -4° to 140° F (-20° to 60° C)         Humidity       0-80% RH, non-condensing         SOFTWARE       Windows, Linux, Mac         CERTIFICATION       NIAP Common Criteria PP3.0 for Peripheral Sharing Switch (PSS) devices         Product Certification       CE, RCM, FCC class B, VCCI, TUV US, TUV Canada         GENERAL INFO       ISRAEL         Product life-cycle       10 years	AC Input	100 to 240V AC
Operating Temperature       32° to 104° F (0° to 40° C)         Storage Temperature       -4° to 140° F (-20° to 60° C)         Humidity       0-80% RH, non-condensing         SOFTWARE       Windows, Linux, Mac         Supported OS       Windows, Linux, Mac         CERTIFICATION       NIAP Common Criteria PP3.0 for Peripheral Sharing Switch (PSS) devices         Product Certification       CE, RCM, FCC class B, VCCI, TUV US, TUV Canada         GENERAL INFO       ISRAEL         Product life-cycle       10 years	Power Type	External
Storage Temperature      4° to 140° F (-20° to 60° C)         Humidity       0-80% RH, non-condensing         SOFTWARE       Windows, Linux, Mac         Supported OS       Windows, Linux, Mac         CERTIFICATION       NIAP Common Criteria PP3.0 for Peripheral Sharing Switch (PSS) devices         Product Certification       CE, RCM, FCC class B, VCCI, TUV US, TUV Canada         GENERAL INFO       ISRAEL         Product life-cycle       10 years	ENVIRONMENTAL	
Humidity       0-80% RH, non-condensing         SOFTWARE       Supported OS         Supported OS       Windows, Linux, Mac         CERTIFICATION       NIAP Common Criteria PP3.0 for Peripheral Sharing Switch (PSS) devices         Product Certification       CE, RCM, FCC class B, VCCI, TUV US, TUV Canada         GENERAL INFO       ISRAEL         Product life-cycle       10 years	Operating Temperature	32° to 104° F (0° to 40° C)
SOFTWARE Supported OS Windows, Linux, Mac CERTIFICATION Security Certification NIAP Common Criteria PP3.0 for Peripheral Sharing Switch (PSS) devices Product Certification CE, RCM, FCC class B, VCCI, TUV US, TUV Canada GENERAL INFO Made In ISRAEL Product life-cycle 10 years	Storage Temperature	-4° to 140° F (-20° to 60° C)
Supported OS       Windows, Linux, Mac         CERTIFICATION       NIAP Common Criteria PP3.0 for Peripheral Sharing Switch (PSS) devices         Product Certification       CE, RCM, FCC class B, VCCI, TUV US, TUV Canada         GENERAL INFO       ISRAEL         Product life-cycle       10 years	Humidity	0-80% RH, non-condensing
CERTIFICATION       Security Certification     NIAP Common Criteria PP3.0 for Peripheral Sharing Switch (PSS) devices       Product Certification     CE, RCM, FCC class B, VCCI, TUV US, TUV Canada       GENERAL INFO     ISRAEL       Product life-cycle     10 years	SOFTWARE	
Security Certification       NIAP Common Criteria PP3.0 for Peripheral Sharing Switch (PSS) devices         Product Certification       CE, RCM, FCC class B, VCCI, TUV US, TUV Canada         GENERAL INFO       ISRAEL         Product life-cycle       10 years	Supported OS	Windows, Linux, Mac
Product Certification       CE, RCM, FCC class B, VCCI, TUV US, TUV Canada         GENERAL INFO       ISRAEL         Made In       ISRAEL         Product life-cycle       10 years	CERTIFICATION	
GENERAL INFO Made In ISRAEL Product life-cycle	Security Certification	NIAP Common Criteria PP3.0 for Peripheral Sharing Switch (PSS) devices
Made In     ISRAEL       Product life-cycle     10 years	Product Certification	CE, RCM, FCC class B, VCCI, TUV US, TUV Canada
Product life-cycle 10 years	GENERAL INFO	
	Made In	ISRAEL
Warranty 2 Years	Product life-cycle	10 years
	Warranty	2 Years

