

Top 100
Global
Innovator
for 10 years

Human Machine Interface

LXP Series

Limitless XGT Panel



LS ELECTRIC

VICPAS
HMI Parts Center



Limitless XGT Panel LXP Series

Trending and Customized Solutions

Customized Solutions provided with XP-VLink.

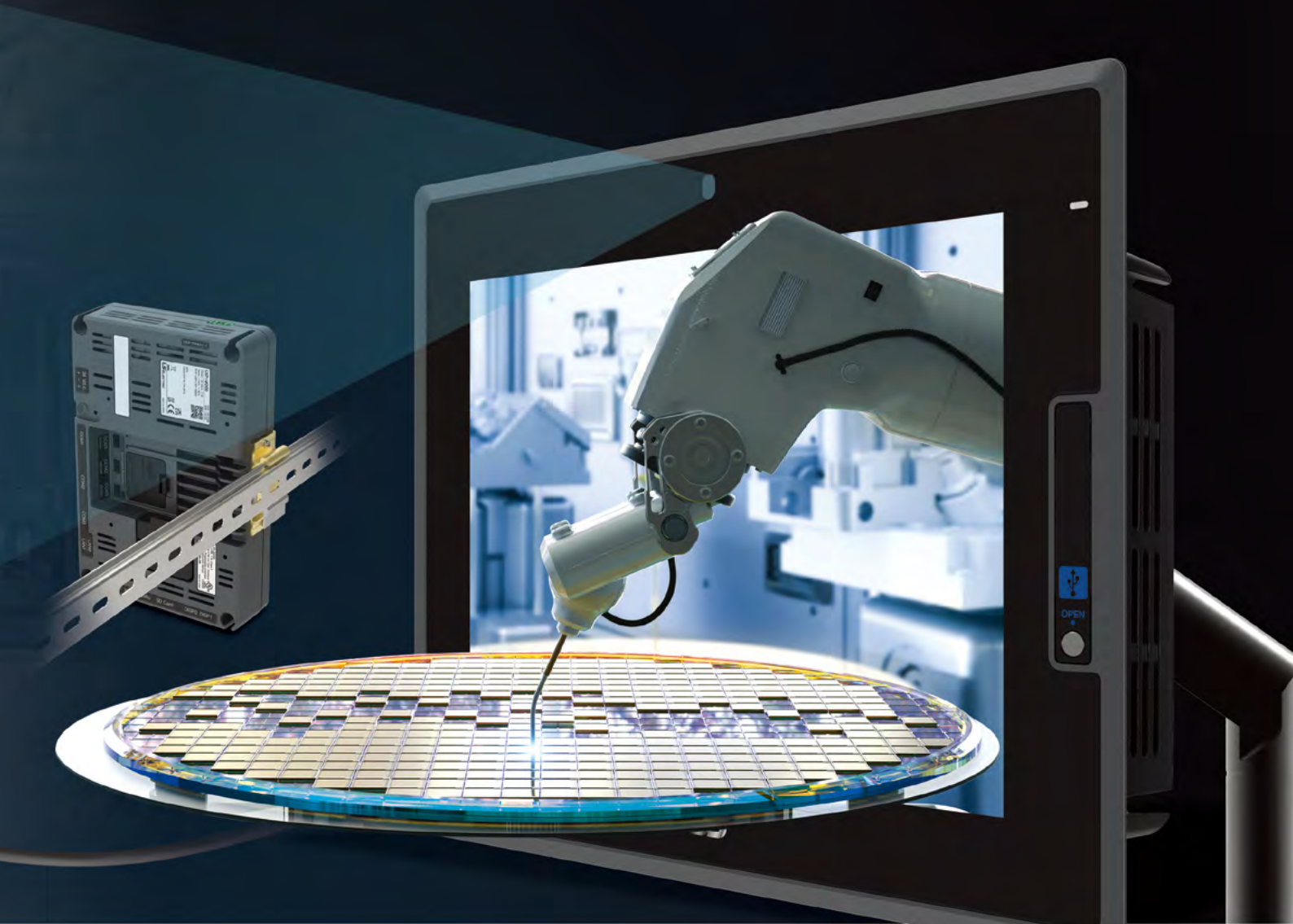
Predictive Maintenance Accurate and Fast Screen Switching.

Meet the new LXP Series of LS ELECTRIC.



Flexibility

- Adaptive to various field requirements with separable Display-Main Unit structure.
- "Display Unit Hot Swap" feature allows the display to be replaced during malfunction/failure without turning off the power supply. (Improved maintenance)
- Compatibility of existing programs in case of product discontinuation
- Application examples/samples supported through SSQ(Solution Square)



XP-VLink(XGT Panel-View Link)

XP-VLink refers to the function that can connect LXP Display Unit and Main Unit using XP-VLink I/F cable. For models that support XP-VLink, the display unit and main unit can be attached or separated during installation.



Connectivity

- Enhances the role of the "Gateway" suitable for IoT environment
- Optimizes user usability with Gigabit Ethernet, USB 3.0, and SDXC
- Added network features: FTP, VPN, VNC, DB
- Improved synergy with LS automation products.



Visibility & Control

- Improved IT technology to display and control the screen without distortion
- Improved control performance with reliable capacitive touch technology verified in the industrial field
- Multimedia functions such as camera (built-in, IP, USB)/HDMI available
- Expressing images without distortion by providing vector images



Security & Safety

- Improved security with Linux
- MPU without backdoor issue
- Monitoring inside the panel with thermal imaging camera interface (fire prevention, predictive maintenance)
- Enhanced gas/chemical environment responsiveness by acquiring T6 level international explosion-proof certification.
- Provides stability in N2 gas environment, which is required in semiconductor industry.



Flexibility



Separable Display-Main Unit

Can be configured as a separate product to meet various customer needs (screen size/panel cut/performance/price).

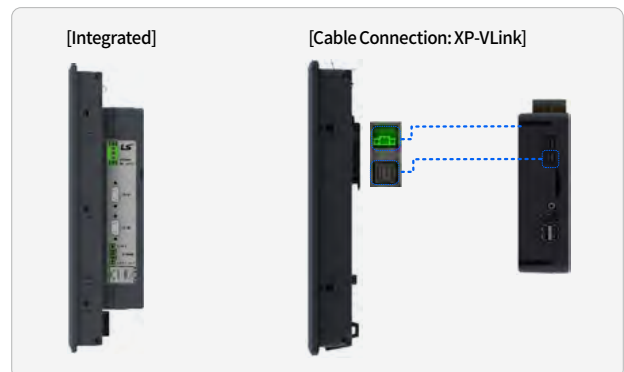
Product Configuration

By default, 12.1" TFT LCD + Display Unit with capacitive touch panel and Main Unit with the latest 1.6GHz Quad Core-based MPU is provided.



Installation Flexibility

Integrated/cable connection structures are provided to allow the user to select based on the installation environment

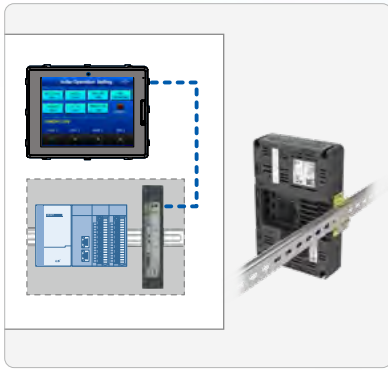


XP-VLink Examples

In addition to basic integrated structure, LS Electric's dedicated XP-VLink interface is provided for installation flexibility.

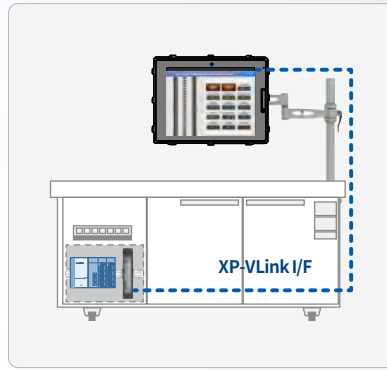
Basic Panel Installation

Display Unit is installed on the panel, and Main Unit is installed on the DIN-Rail



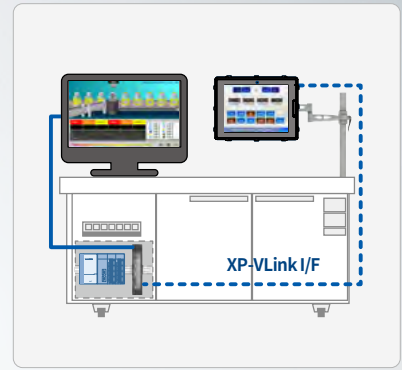
VESA Installation

The Display Unit is mounted on the VESA hole, and the Main Unit is installed on DIN-Rail



Monitor Expansion

Connected to the monitor via HDMI output port in the Main Unit



Easy Maintenance

In order to solve the maintenance inconvenience, which is often considered as a disadvantage of the integrated HMI, the following ideas of improved maintenance is reflected.

Hot Swap

Able to replace the Display Unit while maintaining the power supply

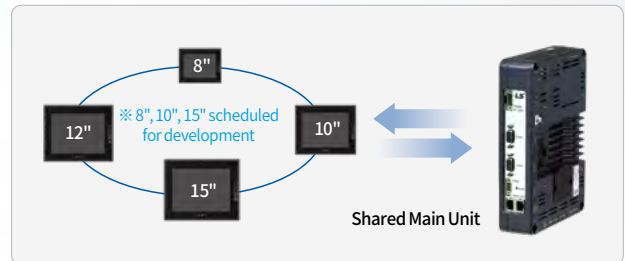
One-Stop Diagnosis

When a quality problem occurs at the site, logs are collected to quickly analyze the issues.

[System Log Backup]

[Function Diagnosis]

A timely response to component discontinuation.



Enhanced System Monitoring Function

Function provided for real time system monitoring and file explorer during HMI in operation

[System Information]



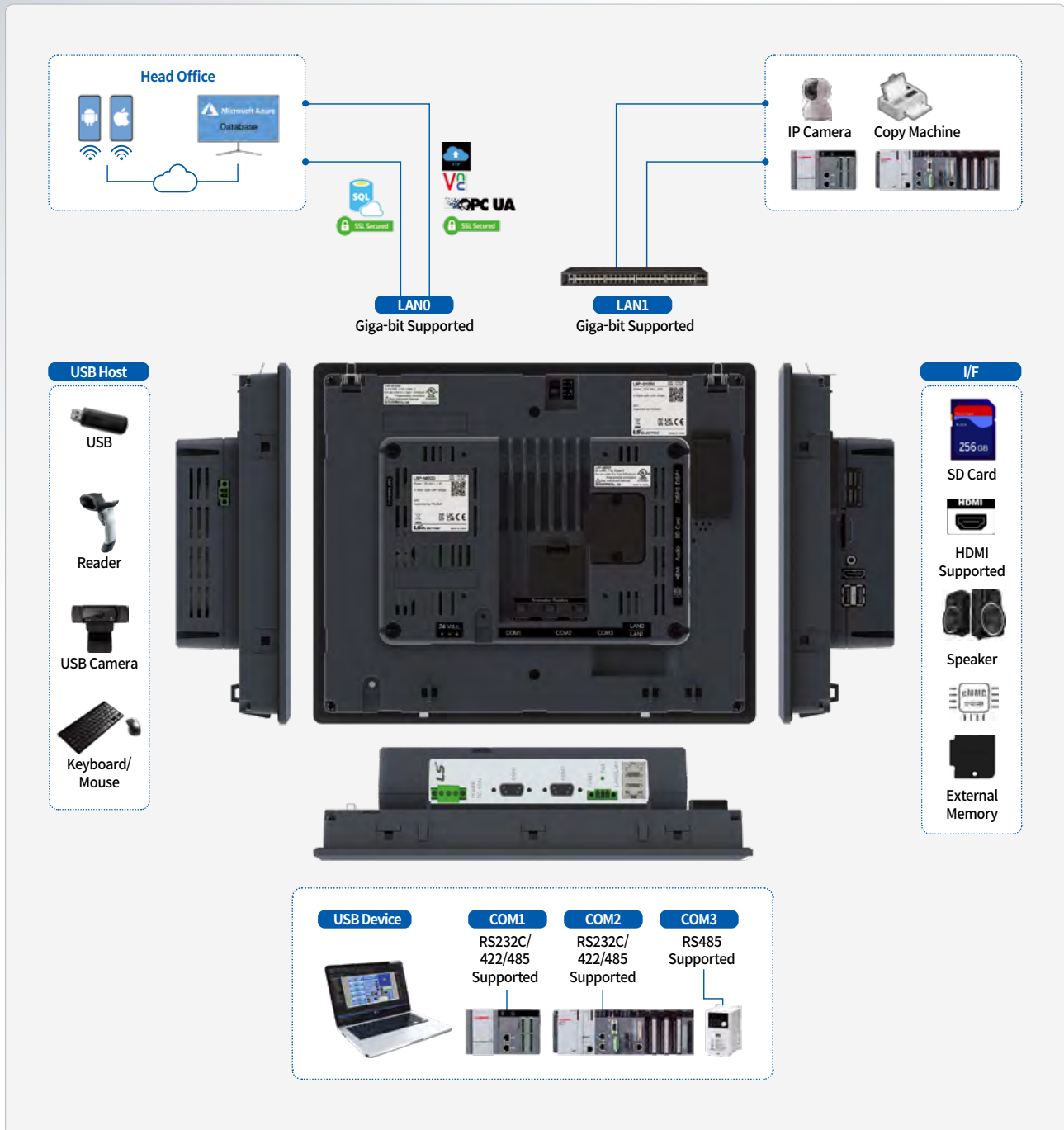
Connectivity

Improved User Interface

In order to maximize the usability with external devices such as controllers, the latest interface and network technologies are applied.

Log Data Backup Function

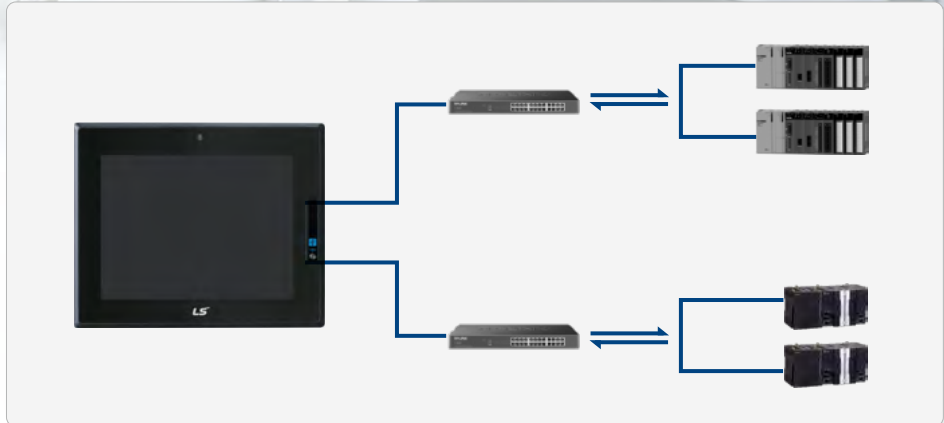
Large-capacity USB storage, SD card, and expansion memory (optional) provided to backup the log data (alarm, logging, camera video, etc.) collected from HMI.



Enhanced Gateway Feature

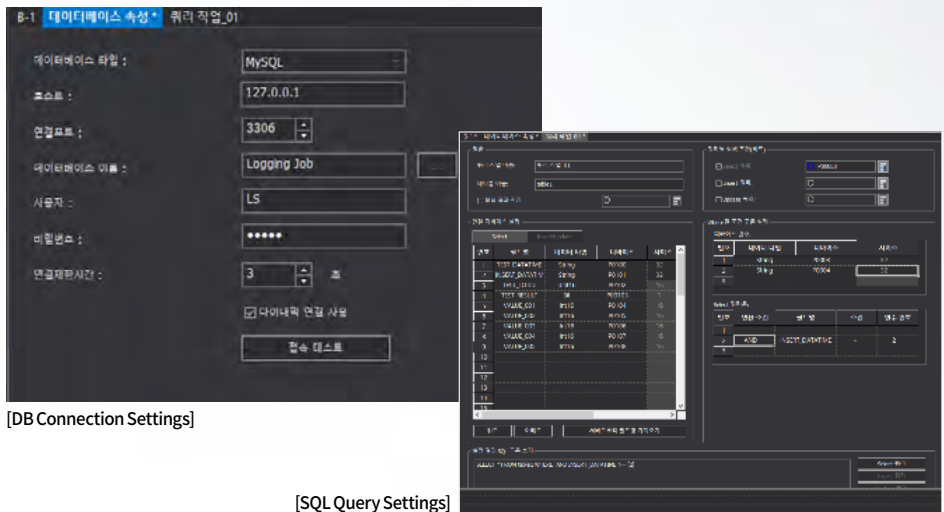
Controller Connection

By providing 2-channel Gigabit Ethernet and 3-channel serial communication, stable and fast communication can be established with various controllers



Database Connection

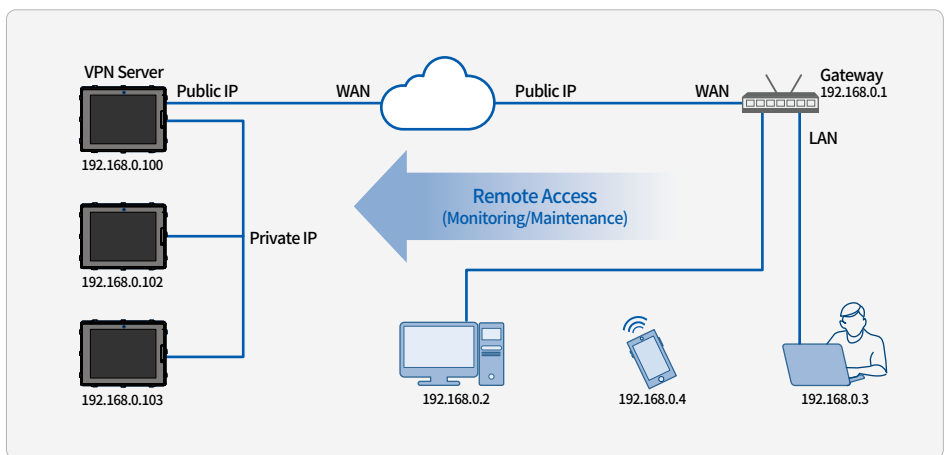
GUI-based MS-SQL, MySQL, MariaDB connections, and easy SQL query setup



VPN Server

With the VPN server function, a platform is provided for monitoring and maintenance through remote access under WAN environment.

※ This function is scheduled to open in the second half of '22





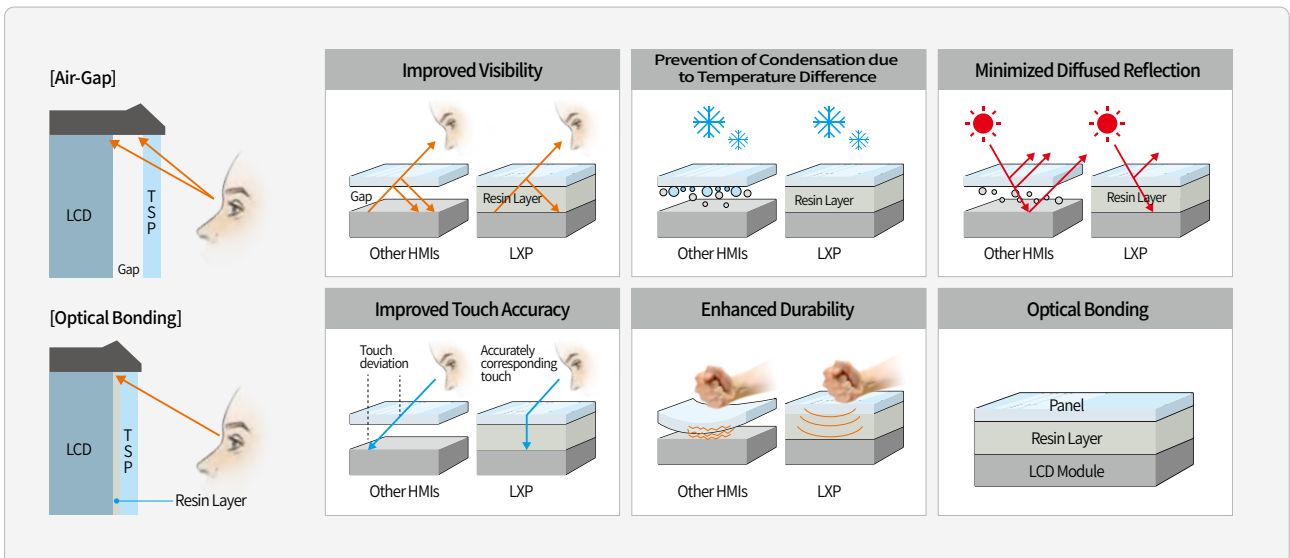
Visibility & Control



Screen Display and Control without Distortion

With optical bonding technology, clearer screen display is provided with various viewing angles.

Optical Bonding



Capacitive Touch Screen Technology Applied

Capacitive touch screen proved from performance and quality standpoints also provides touch solutions such as multi-touch and gesture functions.

Capacitive Touch vs. Resistive Touch

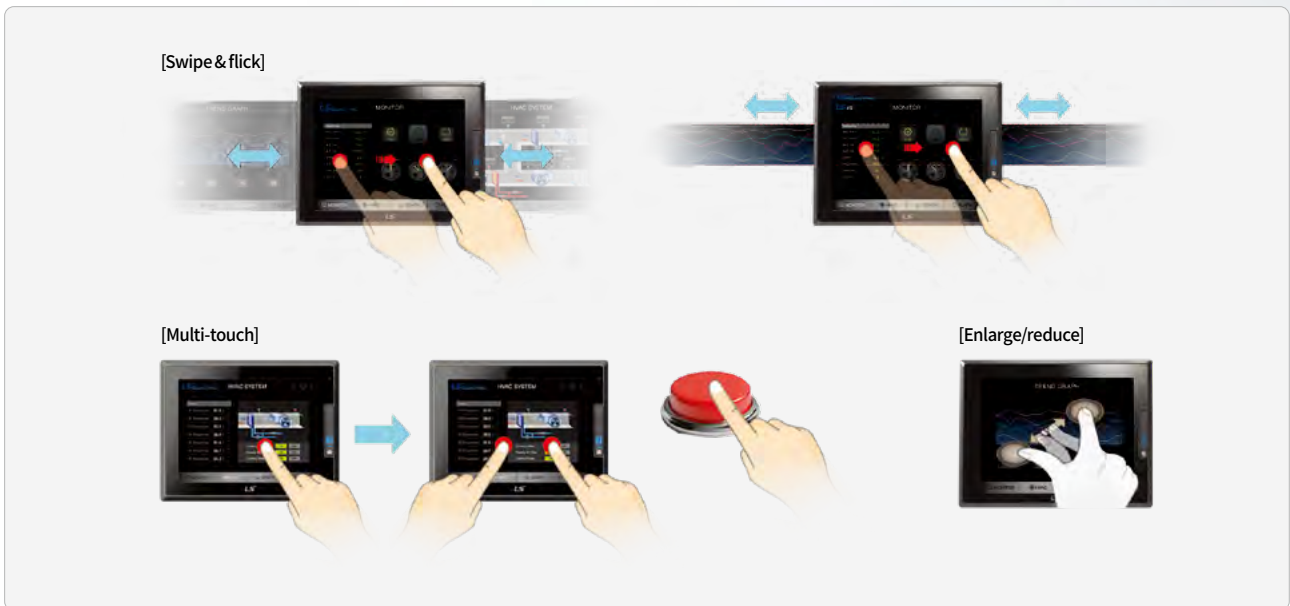
Capacitive touch screen applied in order to provide various control technologies

Item	Capactive	Resistive
Penetration Ratio	90% or above	80% or below
Multi-touch Function	Supported	2 point touch supported (in case of multi-resistive)
Gesture Function	Enlarge/reduce, swipe, flick	Not supported
Touch Accuracy	No calibration needed	Calibration needed periodically Lower accuracy in case of touch on corners
Touch Screen Lifespan	Long-lasting	100,000 touches

※ Various setting modes provided for different types of gloves

Multi-touch & gesture functions

Easier control/monitoring with the same touch type provided in mobile phones or tablet PC



Dual Monitor Function

Function to run and control HMI in 2 different screens with HDMI output function

Duplicate Mode



Extend Mode

Function provided to run two HMI screens by creating another screen in addition to the originally operating HMI





Visibility & Control

Strong Multimedia Function

Embedded Camera

Back up of work history into storing device or server using black box function

Functions provided to record work history with embedded high-resolution camera or to monitor work environment with IP camera interface based on USB/Ethernet

Item	LXP	Other HMIs
Resolution	Max. 1280X720(HD) Recommended 640X480(SD)	640 X 480 (SD)
Storing	HD, 15FPS	SD, 10FPS
Angle Adjustment	4 levels	4 levels
Functions	Live View, Black Box, Snap Shot, Web Stream supported	Live View, Black Box, Snap Shot, Record

※ Enhancement to support up to 30FPS to be planned

IP Camera & Video Play

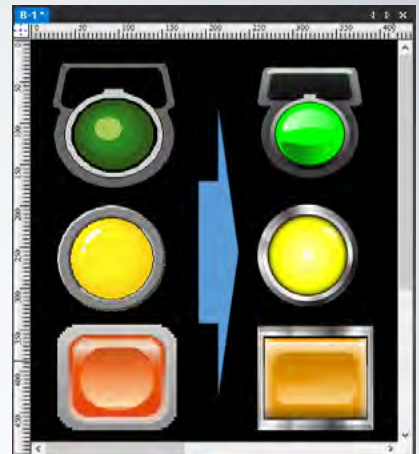
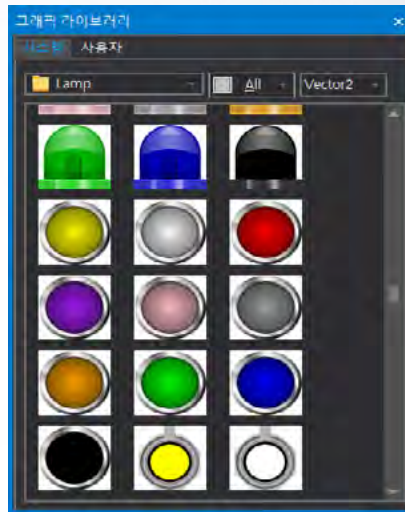
Function provided to monitor the field or security facility with camera interface and to observe them remotely via VNC



Vector Image with No Distortion

Unlike BMP format, which creates distortions when enlarging or reducing, visibility and engineering time is improved by applying high quality vector image

High Quality Vector Image Library



[Graphic library]

[Bitmap vs Vector]



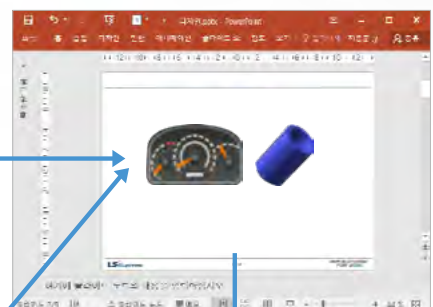
[Function provided to switch to specific color]

Library Linked with MS PowerPoint

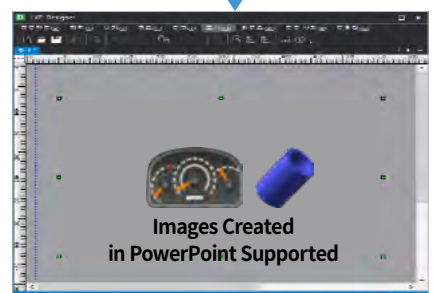
Function provided to easily use the images created in MS PowerPoint as library



[Library Store App.]



[Power Point]





Security & Safety



Applying Linux to Respond to Security Concerns

As an open source operation system, Linux can respond immediately to security vulnerability and provide protection in a timely manner.

Improved Reaction Capability to Security Issues

Outstanding reaction time to security weakness compared to commercial products

Deadline adherence and fix time 2019-2021, by bug report volume

Vendor	Total bugs	Fixed by day 90	Fixed during grace period	Exceeded deadline & grace period	Avg days to fix
Apple	84	73 (87%)	7 (8%)	4 (5%)	69
Microsoft	80	61 (76%)	15 (19%)	4 (5%)	83
Google	56	53 (95%)	2 (4%)	1 (2%)	44
Linux	25	24 (96%)	0 (0%)	1 (4%)	25
Adobe	19	15 (79%)	4 (21%)	0 (0%)	65
Mozilla	10	9 (90%)	1 (10%)	0 (0%)	46
Samsung	10	8 (80%)	2 (20%)	0 (0%)	72
Oracle	7	3 (43%)	0 (0%)	4 (57%)	109
Others*	55	48 (87%)	3 (5%)	4 (7%)	44
TOTAL	346	294 (84%)	34 (10%)	18 (5%)	61

* For completeness, the vendors included in the "Others" bucket are Apache, ASWF, Avast, AWS, c-ares, Canonical, F5, Facebook, git, Github, glibc, gnupg, gnutls, gstreamer, haproxy, Hashicorp, insidesecond, Intel, Kubernetes, libseccomp, libz264, Logmein, Node.js, opencontainers, QT, Qualcomm, RedHat, Reliance, SCTPLabs, Signal, systemd, Tencent, Tor, udicks, uszscip, Vandyke, VietTel, webrtc, and Zoom.

※ Extract: Google's Project Zero

MPU with no Backdoor Risk

Brand new MPU applied to LXP which does not carry any backdoor risks discovered recently in other MPUs.

[DB connection setup]



※ Extract: dailysecu.com

[SQL query settings]



※ Extract: choesin.com

Thermo-graphic Camera

Thermo-graphic camera option provided to meet customer needs for observing inner part of control panels to react to fires

Thermo-graphic Camera System (Optional)

Function provided to execute real-time monitoring or logging from HMI by measuring temperature of ROI (Region of Interest) inside the control panel



Thermo-graphic Camera Operating Function

Functions to connect up to 4 thermo-graphic cameras via RS-485 communication and to create overlay display of the background image and actual temperature values by setting up to 10 ROIs (Region of Interest) per each channel

[Setting of thermo-graphic camera]

[Example of operation displaying]

Explosion Proof Certifications

Globally recognized explosion proof certifications to use LXP safely and stably under harsh environmental conditions with gas or chemical

Explosion Proof Certifications

IECEX(International), ATEX(European), CCC(Chinese), KCs(Korean) (Standard: Ex nA nC IIC T6 Gc, Ex tc IIC T85 Dc IP66)

※ Compared to competitors, nC(Sparking Equipment), IP66 and dust environment certification added



Prevention of N2 Gas Infall

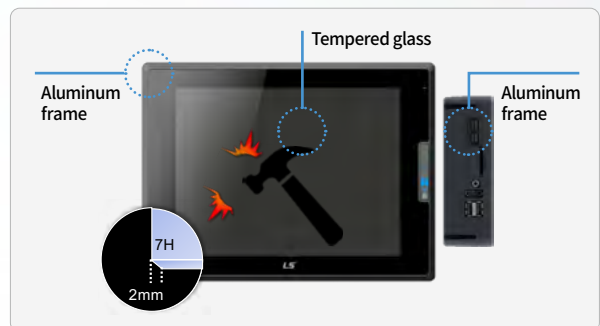
LXP designed to prevent degradation of product performance due to possible N2 gas infall from working process

Robust Product Design

Product developed to be robust both from design and component standpoints to secure high-standard quality

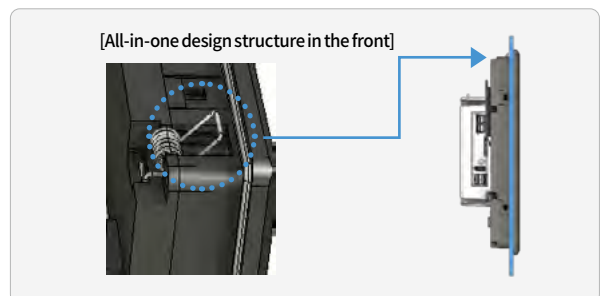
Hardware Design to Guarantee High-quality

Designed with aluminum/tempered glass to maximize robustness and protection against heat



Strengthened Installation Stability

Applying improved anti-locker to prevent LXP to be damaged when installing it (Anti-Drop Lock: prevention of falling)



Product Configuration

Display Unit Shape and Name

Display Unit



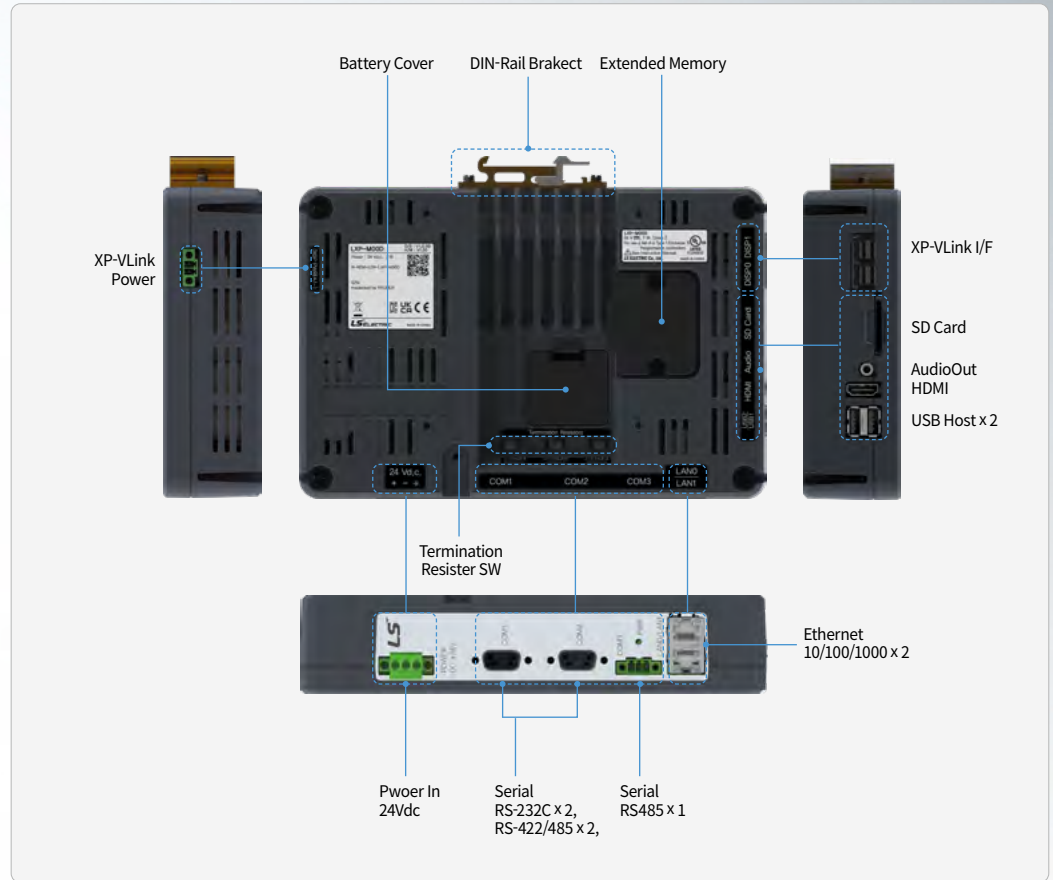
User Interface Features

Improved performance of each interface

Item	LXP	iXP2
USB	USB 3.0, 500mA	USB 2.0, 250mA
HDMI	HDMI V2.0	HDMI V1.4
SD Card	256GB	32GB
Extended memory	64GB	Not supported
Ethernet	Giga-Bit 2 channel	100M 1 channel, Giga-Bit 1 channel
Serial	3 channel	2 channel

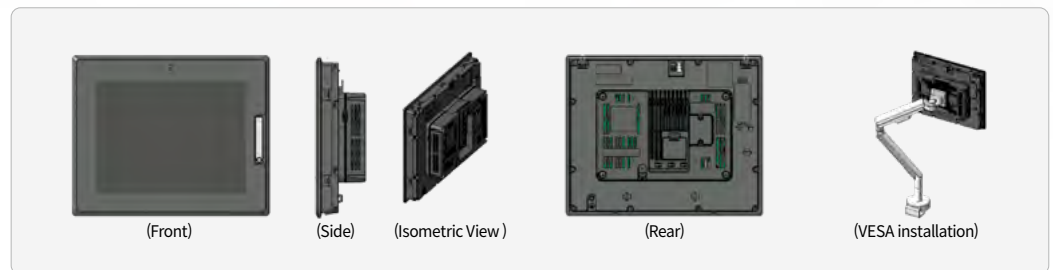
Main Unit Shape and Name

Main Unit

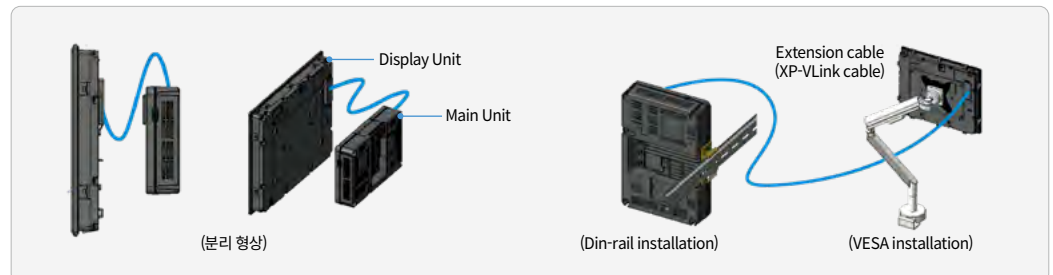


Combined/Extension Installation

Combined Installation



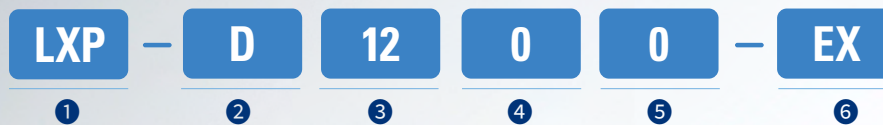
Extension Installation



Product Name Rule

Name Rule and Model Names

Display Unit



① Series Type	
LXP	LXP series
② Type	
D	Display unit
M	Main unit
O	Option unit
③ Screen Size	
08	8"
10	10"
12	12"
15	15"

④ Camera Option	
0	Support
1	Not supported
⑤ XP-VLink Support	
0	Support
1	Not supported
⑥ Reserved	
blank	-
EXP	Export product
MR	Ship certification
EX	Explosion proof product
G3	Coated product

Main Unit



① Series Type	
LXP	LXP series
② Type	
D	Display unit
M	Main unit
O	Option unit
③ Runtime Option	
0	Runtime installed
1	Runtime not installed
2	Reserved

④ XP-VLink	
0	Support
1	Not supported
⑤ Power	
D	DC 24V
⑥ Reserved	
blank	-
EXP	Export product
MR	Ship certification
EX	Explosion proof product
G3	Coated product

Extended Memory Option



① Series Type	
LXP	LXP series
② Type	
0	Option unit

③ Option Type	
M	Extended memory
④ Memory Capacity	
64G	64GB

Name Rule and Model Names

**XP-VLink
Cable option**

LXP – **0** **C** **0** **03M**

① ② ③ ④ ⑤

① Series Type		④ Cable Type	
LXP series		0	Large size
② Type		⑤ Cable Length	
0	Option unit	03M	3m
③ Option Type		05M	5m
M	Extended cable		

**Thermal Imaging
Camera Option
Module**

LXP – **0** **T** **3224** **0**

① ② ③ ④ ⑤

① Series Type		④ Image	
LXP series		3224	32*24
② Option Type		⑤ I/F Method	
0	Option unit	0	RS-485
③ Camera Type			
T	Thermal camera		

**Product
Configuration
Example**

Display Unit and Main Unit can be configured depending on the application

Type	Model Name	Function	
		Camera	XP-VLink
Display	LXP-D1200	O	O
	LXP-D1201	O	X
	LXP-D1210	X	O
	LXP-D1211	X	X
Main	LXP-M00D	-	O
	LXP-M01D	-	X

Performance Specification

Nomal Type Display Unit

Item		LXP-D1200	LXP-D1201	LXP-D1210	LXP-D1211
Display	Display type	TFT color LCD			
	Color indication	24bit(16.7M)			
	Screen size	12.1"			
	Display resolution	1024x 768			
	Backlight	LED method, automatic On/Off support			
	Backlight lifetime	50,000 hour			
Touch	Touch panel	Capacitive touch			
	Operation mode	Bare hands, Glove, Waterproof			
	Sensitivity adjustment	10 steps adjustable for each mode			
	Function	Multi-touch, Zoom in/out, change screen			
Built-in camera	Resolution	720p, 15fps(30FPS will be supported)			
	Support	○	○	-	-
XP-VLink		○	-	○	-
Buzzer		90dB, 9 steps adjustable			
USB	Device	USB 2.0, 1 channel			
	Host	USB 2.0, 1 channel			
Certification	Standard	CE, KC, UL, IP66			
Construction	Dimensions (mm)	320 x 261 x 44			
	Panel Cut (mm)	306 x 247			
	Weight (kg)	3.0Kg			
Power	Power (V)	15.5Vdc			
	Power consumption (W)	9W		8W	

Nomal Type Main Unit

Item		LXP-M00D	LXP-M01D	LXP-M10D	LXP-M11D
Processor		1.6GHz, Quad core			
Memory	Drawing memory	128Mbyte			
	Operation RAM	4GByte			
	Backup RAM	1Mbyte			
XP-VLink		○	-	○	-
RTC		Support, Battery CR2032(about 3years/25°C)			
Interface	HDMI	V2.0, 1 channel			
	Audio out	3.5Φ, 40mW, 1 channel			
	Extended Interface	Support, 64GB extended memory			
Storage	SD	Max. 256GB(SDXC, SDHC)			
	USB host	USB 3.0, 2 channel			
Communication	LAN0	10Base-T/100Base-TX/1000Base-T Auto MDIX RJ-45			
	LAN1				
	COM1	RS-232C, RS-422/485, Isolated Baud rate: 9,600~115,200(Max. 5kbps) 9pin D-sub(Female)			
	COM2	RS-232C, RS-422/485, 5Vdc/250mA Power out Baud rate: 9,600~115,200(Max. 5kbps) 9pin D-sub(Female)			
	COM3	RS-485 Baud rate: 9,600~115,200(Max. 5kbps) 3pin Open connector			
Certification	Standard certification	CE, KC, UL, IP20			
Structure	Dimension (mm)	220 x 147 x 51.3			
	Weight (Kg)	1.4kg			
Power	Power (V)	24Vdc			
	Power consumption (W)	7W			

Performance Specification

Special Type(Explosion-proof product) Display Unit

Item		LXP-D1200	LXP-D1201	LXP-D1210	LXP-D1211
Display	Display type	TFT color LCD			
	Color indication	32bit color(16.7M)			
	Screen size	12.1"			
	Display resolution	1024x 768			
	Backlight	LED method, automatic On/Off support			
	Backlight lifetime	50,000 hour			
Touch	Touch panel	Capacitive touch			
	Operation mode	Bare hands, Glove, Waterproof			
	Sensitivity adjustment	10 steps adjustable for each mode			
	Function	Multi-touch, Zoom in/out, change screen			
Built-in camera	Resolution	720p, 30fps			
	Support	○	○	-	-
XP-VLink		○	-	○	-
Buzzer		90dB, 9 steps adjustable			
USB	Device	USB 2.0, 1 channel			
	Host	USB 2.0, 1 channel			
Certification	Standard	CE, KC, UL, IP, IECEx, ATEX, CCC, KCs			
	Protection standard	Ex nA nC IIC T6 Gc, Ex tc IIIC T85°C Dc IP 66			
Structure	Dimension (mm)	320 x 261 x 44			
	Panel cut (mm)	306 x 247			
	Weight (Kg)	3.0Kg			
Power	Power (V)	15.5Vdc			
	Power consumption (W)	9W		8W	
Specific conditions of use		<ol style="list-style-type: none"> 1. The equipment presents a potential electrostatic hazard. Clean only with a damp cloth. 2. The equipment must be installed in accordance with EN 60079-14. 3. Do not connect or separate plugs and sockets while an explosive atmosphere is present 4. Avoid direct sunlight. 5. The USB hosts only must be used for maintenance function. 6. The equipment can be installed in an EX p purged enclosure which provides at least IP4X ingress protection rating. 7. The equipment shall be installed in an enclosure IP6X for marked tc and IP54 for marked nA. 8. The equipment shall only be used in an area of not more than pollution degree 2, as defined in IEC 60664-1. 9. Plugs and sockets shall not be separated while an explosive atmosphere may be present. 10. The equipment presents a potential electrostatic hazard. The user shall therefore Tensure that the equipment is not installed in a location where it may be subjected to external conditions which might cause a build-up of electrostatic charges. 11. The equipment shall be used always in a vertical position. 12. The equipment shall be supplied by an appropriately rated transient protective device that is set to a level not exceeding 140% of the peak rated voltage. 13. The equipment shall be installed so as to be protected from mechanical impact. 			

Special Type(Explosion-proof product) Main Unit

Item		LXP-M00D	LXP-M01D	LXP-M10D	LXP-M11D
Processor		1.6GHz, Quad core			
Memory	Drawing memory	128Mbyte			
	Operation RAM	4GByte			
	Backup RAM	1Mbyte			
XP-VLink		○	-	○	-
RTC		Support, Battery CR2032(about 3years/25°C)			
Interface	HDMI	V2.0, 1 channel			
	Audio out	3.5Φ, 40mW, 1 channel			
	Extended interface	Support, 64GB extended memory			
Storage	SD	Max. 256GB(SDXC, SDHC)			
	USB host	USB 3.0, 2 channel			
Communication	LAN0	10Base-T/100Base-TX/1000Base-T Auto MDIX RJ-45			
	LAN1				
	COM1	RS-232C, RS-422/485, Isolated Baud rate: 9,600~115,200(Max. 5kbps) 9pin D-sub(Female)			
	COM2	RS-232C, RS-422/485, 5Vdc/250mA Power out Baud rate: 9,600~115,200(Max. 5kbps) 9pin D-sub(Female)			
	COM3	RS-485 Baud rate: 9,600~115,200(Max. 5kbps) 3pin Open connector			
Certification	Standard certification	CE, KC, UL, IP, IECEx, ATEX, CCC, KCs			
	Protection standard	Ex nA nC IIC T6 Gc, Ex tc IIIC T85°C Dc IP 66			
Structure	Dimension (mm)	220 x 147 x 51.3			
	Weight (Kg)	1.4kg			
Power	Power (V)	24Vdc			
	Power consumption (W)	7W			

Thermal Imaging Camera (Option)

LXP-OT32240

- 32×24 Low-pixel thermal imaging camera
- Multiple units can be installed due to low unit price
- Easy to install in narrow spaces
- Small product capable of monitoring ignition of specific target in close range
- RS-485 communication supported
- Temperature analysis and alarm function supported
- Video blending function supported (manual blending function)



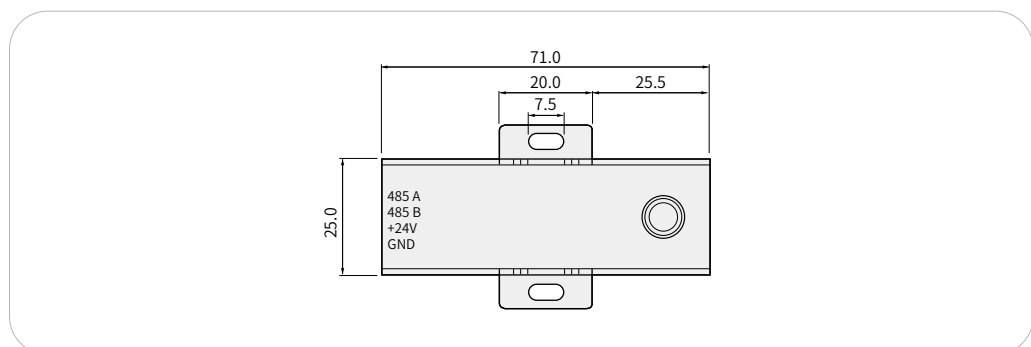
performance Specification

Item	Details
Image Pixel	32 X 24 (768 Pixel)
Target Temperature	-40°C ~ 300°C
Spectral Range	8~13μm
NETD	<100mK / 0.1°C
Accuracy	±2% (0~60°C : ±1°C)
Field of View	110°x75°
Refresh Rate	0.5Hz ~ 64Hz (Default 4Hz)
Calibrated	Factory
Power	DC24V
Operating Temperature	-40°C ~ 85°C
Interface	Serial(RS-485)
Size(WxHxD)	71 x 25 x 13mm

Specification Range

Item	Range
Storage Temperature	-65 to 150°C
Operating temperatures	-40 to 85°C
VCC Supply Voltage	-0.5 to +6.00V
DC Input Voltage – DP and DM	-0.5 to +3.8V
DC Output Current – Outputs	24mA
DC Output Current – Low Impedance	24mA
Power Dissipation (VCC = 5.25V)	500mW

Dimension



Memo





Safety Instructions

- For your safety, please read user's manual thoroughly before operating.
- Contact the nearest authorized service facility for examination, repair, or adjustment.
- Please contact qualified service technician when you need maintenance. Do not disassemble or repair by yourself!
- Any maintenance and inspection shall be performed by the personnel having expertise concerned.



- According to The WEEE Directive, please do not discard the device with your household waste.



www.ls-electric.com

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