DATA SHEET

LS Human Machine Interface

XP70-TTA(B)/DC
XP70-TTA(B)/AC
XP80-TTA(B)/DC
XP80-TTA(B)/AC
XP90-TTA(B)/AC

- **When using LSIS equipment, thoroughly read this datasheet and associated manuals introduced in this datasheet. Also pay careful attention to safety and handle the module properly.**
- **Store this datasheet in a safe place so that you can take it out and read it whenever necessary.**

LS Industrial Systems Co.,Ltd.

LS constantly endeavors to improve our products so that information in this datasheet is subjected to change without notice.

10310000880

∘ Safety Precautions

- Safety Precautions is for using the product safe and correct in order to prevent the accidents and danger, so please go by them.
- The precautions explained here only apply to the XP70-TTA/DC, XP70-TTA/AC, XP80-TTA/DC, XP80-TTA/AC and XP90-TTA/AC module. For safety precautions on the HMI system, refer to the XGT Panel user manual.
- The precautions are divided into 2 sections, 'Warning' and 'Caution'. Each of the meanings is represented as follows.

⚠Warning — If violated instructions, it can cause death, fatal injury or considerable loss of property.

⚠Caution — If violated instructions, it can cause a slight injury or slight loss of products

- The symbols which are indicated in the HMI and User's Manual mean as follows

⚠ This symbol means paying attention because of danger of injury, fire, or malfunction.

⚠ This symbol means paying attention because of danger of electrical shock.

- Store this datasheet in a safe place so that you can take it out and read it whenever necessary. Always forward it to the end user.

⚠Warning

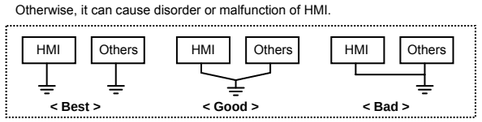
- Do not contact the terminals while the power is applied.
  Risk of electric shock and malfunction.
- Protect the product from being gone into by foreign metallic matter.
  Risk of fire, electric shock and malfunction.
- Do not charge, heat, short, solder and break up the battery.
  It can cause injury and fire by explosion and ignition.

⚠Caution

- Be sure to check the rated voltage and terminal arrangement for the module before wiring work.
  Risk of electric shock, fire and malfunction.
- Tighten the screw of terminal block with the specified torque range.
  If the terminal screw looses, it can cause fire and electric shock.
- Use the HMI in an environment that meets the general specifications contained in this datasheet.
  Risk of electrical shock, fire, erroneous operation and deterioration of the HMI.
- Be sure that external load does not exceed the rating of output module.
  Risk of fire and erroneous operation.
- Do not use the HMI in the environment of direct vibration.
  Risk of electrical shock, fire and erroneous operation.
- Do not disassemble, repair or modify the HMI.
  Risk of electrical shock, fire and erroneous operation.
- When disposing of HMI and battery, treat it as industrial waste.
  Risk of poisonous pollution or explosion.

Precautions for use

- Do not use hard or pointed objects to operate the touch screen panel, since it can damage the panel surface.
- Make sure that the FG terminal is grounded with class 3 grounding which is dedicated to the HMI. Otherwise, it can cause disorder or malfunction of HMI.



- Connect expansion connector correctly when expansion module is needed.
- Do not detach PCB from the case of the module and do not modify the module.
- Turn off power when attaching or detaching module.
- Cellular phone or walkie-talkie should be farther than 30cm from the HMI.
- Input signal and communication line should be farther than minimum 100mm from a high-tension line and a power line in order not to be affected by noise and magnetic field.

Before handling the product

Before using the product, read the datasheet and the User's manual through to the end carefully in order to use the product efficiently.

Name	Code
XGT Panel Manual	10310000867
XGT Panel Communication Manual	10310000857
XP-Builder Manual	10310000876

Revision History

Date	Version	Updated Information
2007.12	V1.0	First Edition
2009. 4	V1.1	XP70/80-TTA/DC, XP90-TTA/AC types added
2010. 8	V1.2	Power consumption added for DC type

1. Introduction

XGT Panel as HMI (Human Machine Interface) watches and controls the condition of the PLC, Inverter and other instruments.
XGT Panel series provide the function which is various and a stable efficiency.

2. General Specifications

No	Item	Specifications				Standard
1	Operating temp.	0℃ ~ +50℃				-
2	Storage temp.	-20℃ ~ +60℃				-
3	Operating humidity	10 ~ 85%RH, (Non-condensing)				-
4	Storage humidity	10 ~ 85%RH, (Non-condensing)				-
5	Vibration	For discontinuous vibration			Number	-
		Frequency	Acceleration	Amplitude	Each 10 times in X,Y,Z directions	IEC 61131-2
		5≤f< 9 Hz	-	3.5mm		
		9≤f≤150 Hz	9.8 ㎨(1G)	-		
		For continuous vibration				
		Frequency	Acceleration	Amplitude		
		5≤f< 9 Hz	-	1.75mm		
		9≤f≤150 Hz	4.9 ㎨(0.5G)	-		
6	Shocks	* Max. impact acceleration: 147 ㎨(15G) * Authorized time: 11 ㎳ * Pulse wave : Sign half-wave pulse (3 times each in X, Y and Z directions)				IEC 61131-2
7	Noise	Square wave impulse noise	±1,000V			LSIS Standard
		Electrostatic discharging	Voltage: 6 kV(contact discharging)			IEC 61131-2 IEC 61000-4-2
		Radiated electromagnetic field noise	27 ~ 500 MHz, 10 V/m			IEC 61131-2 IEC 61000-4-3
		Fast Transient /burst noise	Class	Power module	Communication interface	IEC 61131-2 IEC 61000-4-4
			Voltage	2 kV	1 kV	
8	Ambient conditions	No corrosive gas or dust				-
9	Operating height	2,000m(6,562ft) or less				-
10	Pollution degree	2 or less				-
11	Cooling method	Self-cooling				-

3. XGT Panel Function Specifications

XGT Panel's function specification is as follows.

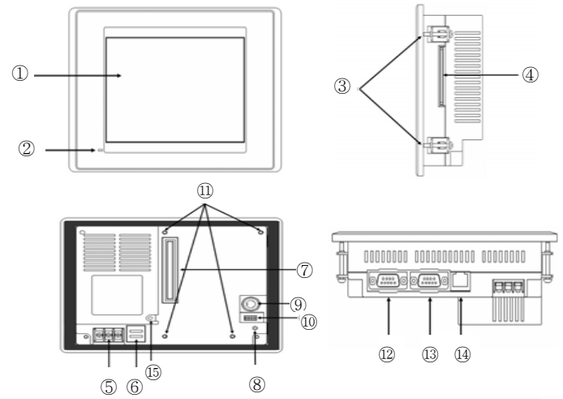
Type	XP70-TTA	XP80-TTA	XP90-TTA/AC
Display type	TFT color LCD		
Screen size	10.4" (26cm)	12.1" (31cm)	15" (38cm)
Display resolution	640 x 480 pixel	800 x 600 pixel	1024 x 768 pixel
Display color	65,000 Color		
Display angle	Left/Right: 65 deg. Upper: 45 deg. Lower: 65 deg.	Left/Right: 65 deg. Upper: 45 deg. Lower: 75 deg.	Left/Right: 75 deg. Upper: 50 deg. Lower: 60 deg.
Backlight	CCFL (Replacement is available), Supporting automatic On/Off		
Backlight life	50,000 hour		
Contrast	-		
Brightness	430cd/㎡	400cd/㎡	450cd/㎡
Touch panel	8Line, Analog		
Sound	Magnetic buzzer		
Process	ARM920T (32bit RISC), 200MHz		
Graphic accelerator	Hardware Accelerator		
Memory: Flash	32MB		64MB
Memory: Operating RAM	64MB		128MB
Memory: Backup RAM	512KB		
Backup type	Date/Hour data and Logging/Alarm/Recipe data		
Battery duration	Approx. 3 years (Operating ambient temperature of 25℃)		
Ethernet	1 channel, IEEE802.3, 10/100Base-TX		
USB host	2 channel, USB 2.0 (printer, USB memory stick driver is available)		
RS-232C	2 Channels		
RS-422/485	1Channel, RS-422/485 mode		
CF card	1 Slot (Compact Flash)		
Extension module	Option module is available.		
Multilingual language	Up to 4 language simultaneously		
Animation	GIF format is available.		

Type	XP70-TTA	XP80-TTA	XP90-TTA/AC
Recipe	Available		
Data logging	Available		
Script executor	Available		
Standard certification	CE, UL, KCC		
Degree of protection	IP65F		
Dimension (mm)	317 x 243 x 73		395 x 294 x 73
Panel cut (mm)	294.5 x 227.5		383.5 x 282.5
Input voltage(V)	/DC: DC24V	/AC: AC100~240V	/DC: DC24V; /AC: AC100~240V; AC100~240V
Power consumption (W)	27	37	30; 40; 46
Weight (kg)	2.2		2.4; 3.9

Remark
1) Battery operation and life
: Battery is used to reserve backup data and RTC (date/time) when power is off. Because battery is used when power is off, battery is not consumed when power is on.
2) LCD Backlight replacement
: XP70-TTA and XP80-TTA LCD backlight can be replaced by technician.
3) DC power supply is not supported on XP90-TTA
4) Wiring Precautions
: If AC Power is applied into the product for DC Power, it may cause damage or fire.

4. Part names of functions

Part names of functions are as described below.



No.	Name	Description	
①	Front side	1)Analog touch panel: User touch input 2)LCD: screen display	
②	LED Status	Indicates operation status of module.	
		Green	Normal RUN status (monitoring, downloading the project data) Initializing mode when booting (HMI does not Ready)
		Red	Error occurs (communication error, project data error)
③	Panel fixed part	XGT Panel is fixed at panel by bracket.	
④	CF card	1) Logging/recipe/screen data backup. 2) Upgrade of Windows CE is available.	
⑤	Power connection terminal	It consists of power input and FG terminal.	
⑥	USB interface	It consists of 2 ports. 1) USB memory connection: logging/recipe/screen data backup 2) USB memory connection: project data transmission/backup 3) User interface connection: use of mouse/keyboard 4) Printer connection: printing is available	
⑦	Extension port	Extension module installation	
⑧	Reset switch	Hardware reset switch	
⑨	Tool interface	RS-232C interface 1) Project data transmission 2) Logging/recipe/alarm/screen data backup 3) Machine software upgrade	
⑩	Setting switch 4 3 2 1 B A	Module setting switch	
		No.1	Reserved
		No.2	A setting: Normal operation (basic setting) B setting: When upgrading Windows CE
		No.3	A setting: Use of Watchdog (basic setting) B setting: No use of Watchdog
		No.4	A setting: RS-422/485 terminal resistor setting (120Ω) B setting: No use of RS-422/485 terminal resistor
⑪	Extension module fixing hall	Using the extension module fixing hall.	
⑫	RS-422/485 port	RS-422/485: PLC/control machine communication	
⑬	RS-232C port	RS-232C: PLC/control machine communication	
⑭	Ethernet port	Ethernet: 10/100 BASE-TX 1) Project data transmission 2) Logging/recipe/alarm/screen data backup 3) Machine software upgrade 4) PLC/control machine communication	
⑮	FG terminal	FG terminal hole for extension module	

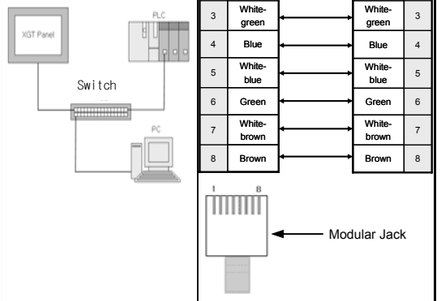
Remark

1) Using the no.5 FG terminal for the module's frame ground. And Using the no.15 FG terminal for the extension module's frame ground.
2) There is prevention sheet in prevention of battery discharge. In order to use backup, remove the prevention sheet.

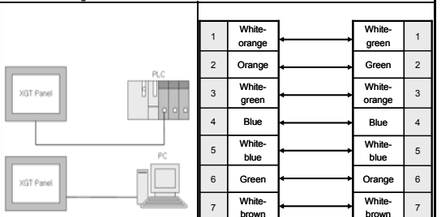
5. Communication cable configuration and wiring method

5.1 Ethernet cable configuration and wiring

Item	Description
Cable Specification	►Type: UTP / FTP / STP cable ►Specification: CAT.5 / Enhanced CAT.5 / CAT.6
Direct cable	When communicating through LAN, connected to network equipment like a switching hub, direct cable is used for communication to PLC/control devices.
Cross cable	When communication with computer, PLC and control device directly without using a hub, in this case cross cable is used.



1	White-orange	⟷	White-orange	1
2	Orange	⟷	Orange	2
3	White-green	⟷	White-green	3
4	Blue	⟷	Blue	4
5	White-blue	⟷	White-blue	5
6	Green	⟷	Green	6
7	White-brown	⟷	White-brown	7
8	Brown	⟷	Brown	8



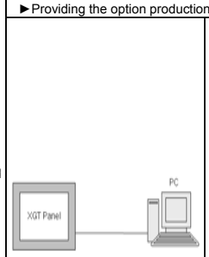
1	White-orange	⟷	White-green	1
2	Orange	⟷	Green	2
3	White-green	⟷	White-orange	3
4	Blue	⟷	Blue	4
5	White-blue	⟷	White-blue	5
6	Green	⟷	Orange	6
7	White-brown	⟷	White-brown	7
8	Brown	⟷	Brown	8

Remark

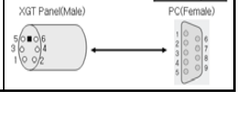
1) Ethernet setting
: Ethernet IP sets from XGT Panel, the communication parameter of the PLC/controller set from the XP-Builder.
2) 1:1 connection
: If LAN is not supported, using cross cable is recommended. It will gives fast and convenient to send/receive project data.
3) When designing the cables please make sure Modular Jack has no broken part such as Lock part, it can gives poor connection. And using a Plug Cover when designing Ethernet cable is recommended.

5.2 Tool cable specification and wiring

Item	Description
Cable specification	►Name: PMC-310S (Using for download and upload the project program) ►Length: flexible tube type 1[m]
Configuration and wiring	►Directly connect to PC and XP Panel ►Providing the option production



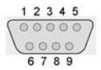
1		⟷	CD	1
2	RD	⟷	RD	2
3	SG	⟷	SD	3
4		⟷		4
5		⟷	SG	5
6	SD	⟷	DSR	6
		⟷	RTS	7
		⟷	CTS	8
		⟷		9



5.3 RS-232C cable configuration and wiring

Item	Description
Cable specification	►Please use the AWG24 type. ►Keep the length of cable within 15[m]. ►Recommends to using the shielded cable
Configuration and wiring	Connect to PLC or control devices. (1:1 communication) ►Pin arrangement of XGT Panel's connector ►Connector type: D-Sub 9pin, Male type

1	
2	RD
3	SD
4	
5	SG
6	
7	
8	
9	

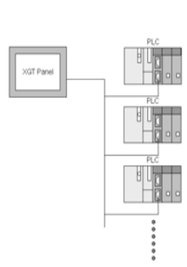


Remark

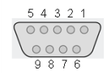
1) Wiring precaution
: Because of male connector for XGT Panel, Please use D-SUB 9P (female type) for the connector.
: Because PLC and control devices are different wiring methods, please refer to communication manual for more detail.

5.4 RS-422/485 cable configuration and wiring

Item	Description
Cable specification	►Please use the (UL) Style 2464 AWG22. ►Keep the length of cable within 500[m]. ►Recommends to using the shielded cable
Configuration and wiring	Connect to PLC or control devices. (1:1, 1:N communication) ►Pin arrangement of XGT Panel's connector ►Connector type: D-Sub 9pin, Female type



1	
2	
3	SG
4	TX+
5	TX-
6	SG
7	
8	RX+
9	RX-



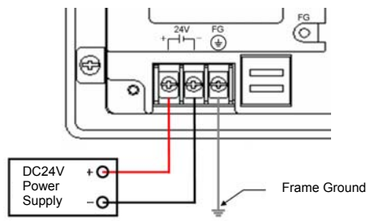
Remark

1) Set terminal resistance of the XGT Panel.
2) Because of female connector for XGT Panel, Please use D-SUB 9P (male type) for the connector.
3) Please connect no. 4 (TX+) with no.8 (RX+), no. 5 (TX-) with no.9 (RX-).

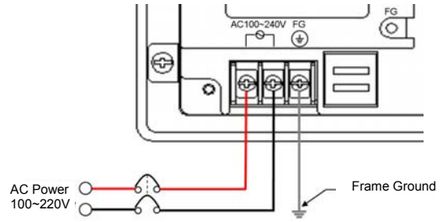
6. Power input wiring

6.1 Power Supply Wiring

XP70-TTA/DC and XP80-TTA/DC are connected to DC24V.



XP70-TTA/AC, XP80-TTA/AC and XP90-TTA/AC are connected to AC100~220V.



6.2 Power terminal and wire specification

(unit: mm)

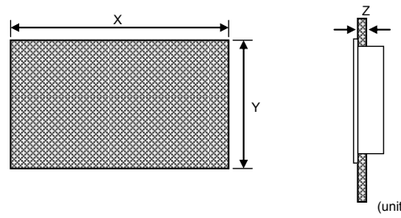
Wire specification	1.5(AWG16) ~ 2.5(AWG12)
Power terminal	Less than 6.00mm, Ø3.2 / Less than 6.00mm, Ø3.2

Remark

(1) When the regulation of power is bigger than provision, use the constant voltage transformer.
(2) In case power has much noise, use the insulation transformer.
(3) Separate the XGT Panel's power from the main circuit (high voltage, large current) cable, I/O signal cable. If possible, install at a interval of more than 100mm.

7. Installation

7.1 Panel cut



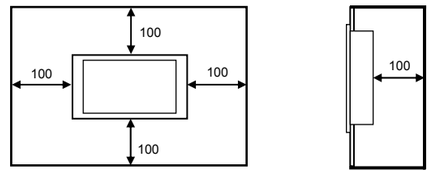
(unit: mm)

Item	X		Y		Z
XP70- TTA	294.5	+1 −0	227.5	+1 −0	1.6~9.5
XP80-TTA	294.5	+1 −0	227.5	+1 −0	
XP90-TTA	383.5	+1 −0	282.5	+1 −0	

7.2 Panel installation

Keep the distance of 100 mm between XGT Panel and panel per each direction.

(unit: mm)



7.3 Fixation

The bracket is included in the product.

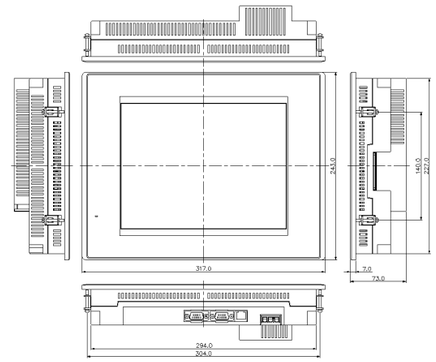
Remark

1) Precaution for installation
: This machine should be install within 0~50℃, otherwise the screen may be changed or cause malfunction.
: Because the product can be affected by dust, use the anti-vibration rubber packing.
: Don't touch the terminals while power is on, otherwise, it may cause electric shock or erroneous operation.

8. Dimension

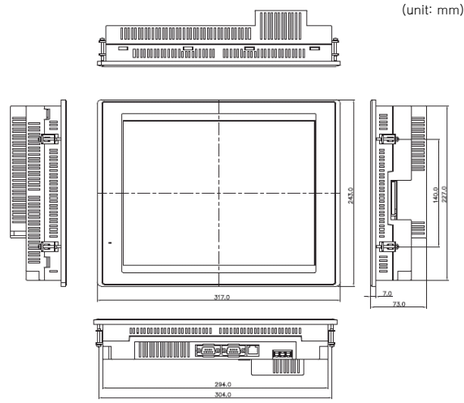
8.1 XP70-TTA

(unit: mm)



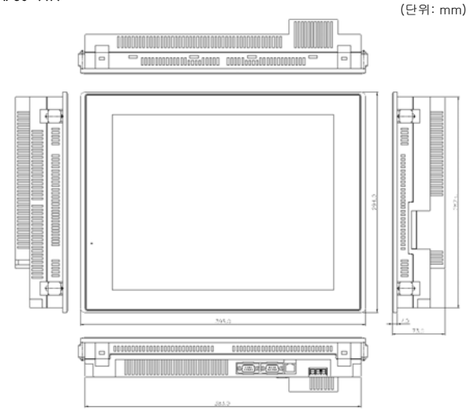
8.2 XP80-TTA

(unit: mm)



8.3 XP90−TTA

(단위: mm)



9. Warranty

1. Warranty period
LSIS provides an 18-month-warranty from the date of the production.
2. Warranty conditions
For troubles within the warranty period, LSIS will replace the entire HMI or repair the troubled parts free of charge except the following cases.
(1) The troubles caused by improper condition, environment or treatment except the instructions of LSIS.
(2) The troubles caused by external devices.
(3) The troubles caused by remodeling or repairing based on the user's own discretion.
(4) The troubles caused by improper usage of the product.
(5) The troubles caused by the reason which exceeded the expectation from science and technology level when LSIS manufactured the product.
(6) The troubles caused by natural disaster.
3. This warranty is limited to the HMI itself only. It is not valid for the whole system which the HMI is attached to.