Autonics

7 inch TFT Color LCD type Logic Panel

LP-S070

INSTRUCTION MANUAL

Thank you for choosing our Autonics product.
Please read the following safety considerations before use.

▣ Safety Considerations

※Please observe all safety considerations for safe and proper product operation to avoid hazards.
※⚠ symbol represents caution due to special circumstances in which hazards may occur.

⚠ **Warning** Failure to follow these instructions may result in serious injury or death.
⚠ **Caution** Failure to follow these instructions may result in personal injury or product damage.

⚠ Warning

1. **Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)**
   Failure to follow this instruction may result in fire, personal injury, or economic loss.
2. **Use the unit within the rated specifications.**
   Failure to follow this instruction may result in shortening the life cycle of the product or fire.
3. **Do not connect, repair, or inspect the unit while connected to a power source.**
   Failure to follow this instruction may result in fire.
4. **Check 'Power Wiring', 'Serial Interface', and 'Input/Output Wiring' before wiring.**
   Failure to follow this instruction may result in fire.
5. **In preparation for product damage, communication error, or malfunction, install external emergency stop circuit, forward/reverse interlock circuit, limit switch, emergency stop switch, or other protection circuit.**
   Failure to follow this instruction may result in fire, personal injury, or economic loss.
6. **Since Lithium battery is embedded in the product, do not disassemble or burn the unit.**
   Failure to follow this instruction may result in fire.
7. **Do not disassemble or modify the unit.**
   Failure to follow this instruction may result in fire.
8. **Please contact to us for battery replacement.**

⚠ Caution

1. **Do not use the unit in the place where flammable/explosive/corrosive gas, humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present.**
   Failure to follow this instruction may result in fire or explosion.
2. **Use dry cloth to clean the unit, and do not use water or organic solvent.**
   Failure to follow this instruction may result in electric shock or fire.
3. **When connecting the power input, use AWG 23 cable or over and tighten the terminal screw with a tightening torque of 0.5 to 0.8N·m.**
   Failure to follow this instruction may result in fire or malfunction due to contact failure.
4. **Keep metal chip, dust, and wire residue from flowing into the unit.**
   Failure to follow this instruction may result in fire or product damage.
5. **Do not push over 2 point at the same time.**
   Failure to follow this instruction may result in malfunction.

▣ Ordering Information

LP - S 070 - T 9 D 6 - C 5 R

I/O connector	**R**	Ribbon cable connector
	T	Terminal block connector
I/O composition	**5**	IN: 16 point, OUT: 16 point
Module	**C**	All-in-one type
Interface	**6**	RS232C, RS422,USB HOST USB DEVICE, Ethernet
	7	RS232C(2),USB HOST USB DEVICE, Ethernet
Power supply	**D**	24VDC
Color	**9**	16,777,216 color
Display unit	**T**	TFT Color LCD
Screen size	**070**	7 inch
Series	**S**	S series
Item	**LP**	Logic Panel

※**The above specifications are subject to change and some models may be discontinued without notice.**
※**Be sure to follow cautions written in the instruction manual, user manual and the technical descriptions (catalog, homepage).**

▣ Specifications

◎General specifications

Model		LP-S070-T9D6-C5R(T)	LP-S070-T9D7-C5R(T)
Power supply		24VDC⎓	
Allowable voltage range		90 to 110% of power supply	
Power consumption		Max. 7.2W	
Serial interface		asynchronous method: each port of RS232C, RS422	
		Each port of RS232C, RS422	Two ports of RS232C
USB interface		Each of USB Host, USB Device (version 1.1)	
Ethernet interface		IEEE802.3(U), 10/100Base-T	
Real-time controller		RTC embedded	
Battery life cycle		3 years at 25℃	
Insulated resistance		Over 100MΩ (at 500VDC megger)	
Ground		3rd grounding (max. 100Ω)	
Noise immunity		±0.5kV the squre wave noise (pulse width: 1μs) by the noise simulator	
Withstanding voltage		500VAC 50/60Hz for 1 minute	
Vibration	Mechanical	0.75mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 1 hour	
	Malfunction	0.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 min	
Shock	Mechnical	300m/s² (approx. 30G) in each X,Y,Z direction for 3 times	
	Malfunction	100m/s² (approx. 10G) in each X,Y,Z direction for 3 times	
Environment	Ambient temperature	0 to 50℃, storage: -20 to 60℃	
	Ambient humidity	35 to 85% RH, storage: 35 to 85%RH	
Protection structure		IP65 (front panel, IEC standard)	
Accessory		Fixing bracket: 4pcs, battery (included)	
Approval		CE KC	
Weight※1		Approx. 699g (approx. 510g)	

※1: The weight includes packaging. The weight in parenthesis is for unit only.
※Environment resistance is rated at no freezing or condensation.

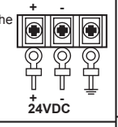
◎Performance specifications

Display performance			
LCD type	TFT Color LCD		
Resolution	800×480 dot		
Display area	152.4mm×91.44mm		
Color	16,777,216 color		
LCD view angle	Within each 60°/45°/60°/60°of top/bottom/left/right		
Backlight	White LED		
Brightness	Adjustable by software		
Graphic drawing performance			
Language※1	Korean, English		
Text	•Vector font •6×8, 8×8 ASC II character, high quality view of number •8×16 ASCII character, 16×16 regional characters (1 to 8times bigger for width, 0.5 to 5 times for height)		
Graphic drawing memory	16MB		
Number of user screen	500 pages		
Touch switch	Analog touch		
Interface type			
Communnication interface	LP-S070-T9D6-C5R(T): each port of RS232C, RS422, USB Host, USB Device, Ethernet		
	LP-S070-T9D7-C5R(T): two ports of RS232C, USB Host, USB Device, Ethernet		
Input		**Output**	
Input point	16 point	Out point	16 point
Insulation method	Photo coupler insulation	Power supply	24VDC
Rated input voltage	24VDC	Insulation method	Photocoupler insulation
Input resistance	Contact X0 to X5: approx. 10mA Contact X6 to XF: approx. 4mA	Rated load voltage	24VDC
Voltage range	19.2-28.8VDC	Allowable load voltage range	19.2-28.8VDC
Input resistance	Contact X0 to X5: 2.2kΩ Contact X6 to XF: 5.6kΩ	Max. load current	0.1A/1 point, 1.6A/1COM
Response time	1ms	Max. voltage falling when ON	Max. 0.2VDC
Common method	16 point/1 COM	Common method	16 point/1 COM
Acceptable wire	0.3 to 0.7mm²	Acceptable wire	0.3 to 0.7mm²
Control performance			
Command	Basic command: 28, application command: 233		
Program capacity	8K step		
Processing time	Average: approx. 2μs/basic command, application command		
I/O control type	Batch processing		
Computer control mode	Repeated-doubling method, interrupt processing		
Device range	Refer to 'LP-S070 user manual'		
Special function	Positioning function※2		

※1: Supported language can be added.
※2: Please refer to 'LP-S070 user manual' for more special function.

▣ Power Wiring

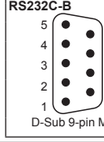
- For power supply, use the wire of which cross section is at least 0.75mm² and use the wire of which cross section is at least 1.25mm² for grounding.
- Use round terminal with at least 3mm of internal diameter and less than 6mm of external diameter.
- Do not apply power before power line connection.
- Check power polarity.
- Tighten the terminal screw with 0.5 to 0.8N·m torque.
- Ground resistance should be less than 100Ω and ground it separately.



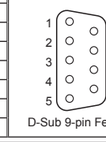
▣ Serial Interface

- All devices connectable into LP-S070 including PC, PLC, serial printer, barcode reader, and dedicated connectors can be connected in to both RS232C and RS422 ports.
- Device must be set for the port in system setting for LP-S070. For details, please refer to 'LP-S070 user manual'.
- For connecting external device such as PLC, refer to 'GP, LP user manual for communication'.

Port	Pin		Port	Pin	
RS232C **RS232C-A** **RS232C-B**	1	Non-Used	**RS422**	1	TXD+
	2	RXD		2	RXD+
	3	TXD		3	Non-Used
	4	DTR		4	Non-Used
	5	SG		5	SG
	6	DSR		6	TXD-
	7	Non-Used		7	RXD-
	8	Non-Used		8	Non-Used
	9	Non-Used		9	Non-Used

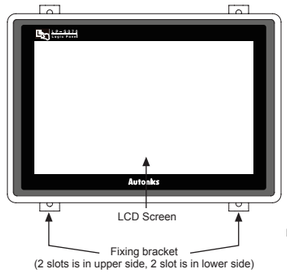


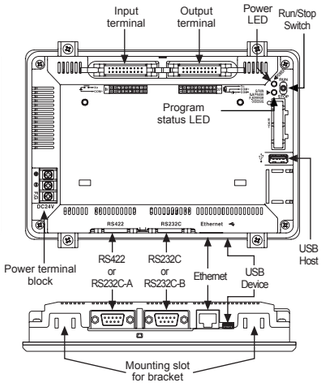
D-Sub 9-pin Male



D-Sub 9-pin Female

▣ Unit Description

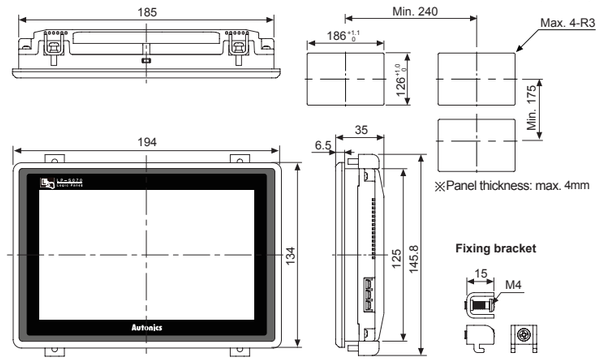




- Ethernet port: For connecting LAN cable and hub, use direct cable, and for connecting PC directly, use cross cable.
- USB Device: When setting USB Device mode to HID mode in serial setting, it is for uploading/downloading GP Editor, SmartStudio project. When setting to Storage mode, it is for transferring/coping data between PC and LP-S070 with recognition as a storage device by PC.
  For details, please refer to 'LP-S070 user manual'.
- USB Host: It is for transferring/coping data between USB storage device and LP-S070 and upgrading firmware.

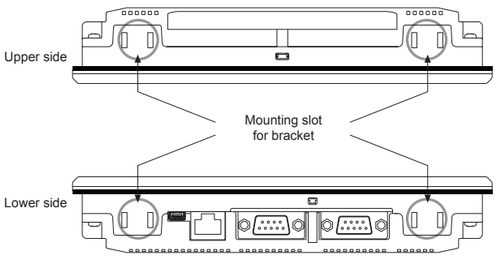
▣ Dimensions

(unit: mm)

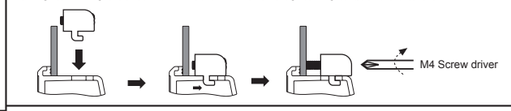


▣ Installation

1. Set LP-S070 in panel.
2. Set fixing brackets in 4 slots (2 slots is in upper side, 2 slots is in lower side).



3. Tighten fixing bracket with M4 screw driver and tightening torque is 0.3 to 0.5N·m.



▣ Software

Visit our homepage (www.autonics.com) to download GP Editor, SmartStudio, or firmware.

- **GP Editor**
  GP Editor is for editing shape, arrangement, default of tag data which is displayed on LP-S070 screen.
- **SmartStudio**
  SmartStudio is for writing program and debugging to LP-S070.
  ※For GP Editor, SmartStudio software, computer specification is as below.
  Operating system: Windows XP/7/8/10 (SmartStudio does not support Window XP.)

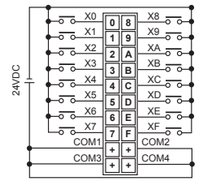
Item	Minimum specification	Recommended specification
CPU	Pentium4 or above	Pentium Dual Core
Memory	512MB	1GB
Hard disk	1GB (available space)	5GB (available space)
Resolution	1024×768	1280×1024

- **Firmware**
  Please refer to 'LP-S070 user manual', 'GP Editor user manual', and 'SmartStudio user manual'.

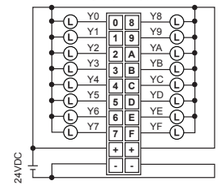
▣ Input/Output Wiring

1. LP-S070-T9D6(7)-C5R

●Input wiring (source type)

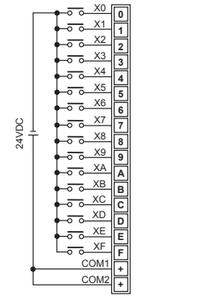


●Output wiring (sync type)

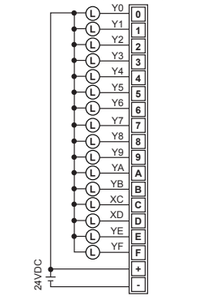


2. LP-S070-T9D6(7)-C5T

●Input wiring (source type)



●Output wiring (sync type)



※**Check the pin number of the case before wiring.**

▣ Manual

For the detail information and instructions, please refer to user manual and user manual for communication, and be sure to follow cautions written in the technical descriptions (catalog, homepage).
Visit our homepage (www.autonics.com) to download manuals.

- **GP Editor user manual**
  It describes how to write screen data, and is about related usage of LP HMI function.
- **SmartStudio user manual, SmartStudio programming manual, LP series command manual**
  It contains install method and usage, commands, etc of SmartStudio.
- **GP, LP user manual for communication**
  It describes connection for external devices such as PLC.
- **LP-S070 user manual**
  It describes general information on the installation and usage of LP-S070 and system contents.

▣ Cable (sold separately)

Communication cables connectable into external devices such as PLC are sold separately.
Please refer to "GP, LP user manual for communication" for communication cable.

▣ Battery Replacement

Please contact our service center to replace LP-S070 battery.
It may cause an explosion or a fire when using improper battery.

▣ Cautions during Use

1. Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
2. 24VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
3. Install a power switch or circuit breaker in the easily accessible place for supplying or disconnecting the power.
4. Operate the product after supplying power to the product, input/output equipment, and load.
   If operate product before supplying power, it may result in output error or malfunction.
5. Keep away from high voltage lines or power lines to prevent inductive noise.
   Do not use near the equipment which generates strong magnetic force or high frequency noise.
6. Make a required space around the unit for radiation of heat, and do not block ventilation openings.
7. Do not push the touch panel with a hard and sharp object or push the panel with excessive force.
   It may result in fire or malfunction.
   When skin is smeared with liquid crystal from the broken LCD, rinse with running water for over 15 minutes.
   If it gets into the eyes, rinse eyes with running water for over 15 minutes and contact a doctor.
8. This unit may be used in the following environments.
   ①Indoors (in the environment condition rated in 'Specifications')
   ②Altitude max. 2,000m
   ③Pollution degree 2
   ④Installation category II

▣ Major Products

■ Photoelectric Sensors
■ Fiber Optic Sensors
■ Door Sensors
■ Door Side Sensors
■ Area Sensors
■ Proximity Sensors
■ Pressure Sensors
■ Rotary Encoders
■ Connector/Sockets
■ Switching Mode Power Supplies
■ Control Switches/Lamps/Buzzers
■ I/O Terminal Blocks & Cables
■ Stepper Motors/Drivers/Motion Controllers
■ Graphic/Logic Panels
■ Field Network Devices
■ Laser Marking System (Fiber, Co_2, Nd:yag)
■ Laser Welding/Cutting System
■ Temperature Controllers
■ Temperature/Humidity Transducers
■ SSRs/Power Controllers
■ Counters
■ Timers
■ Panel Meters
■ Tachometer/Pulse (Rate)Meters
■ Display Units
■ Sensor Controllers

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