

Installation manual for OP920

This manual contains text, diagrams and explanations which will guide the reader in the correct installation, safe use and operation of the OP920. It should be read and understood before attempting to install or use the unit. Further information can be found in the associated manuals list below.

Specifications are subject to change without notice.

Guidelines for the Safety of the User and Protection of the OP920

This manual has been written to be used by trained and competent personnel. The definition of such a person or persons is as follows:

a) Any engineer using the product associated with this manual, should be of a competent nature, trained and qualified to the local and national standards. These engineers should be fully aware of all aspects of safety with regards to automated equipment.


b) Any commissioning or service engineer must be of a competent nature, trained and qualified to the local and national standards.


c) All operators of the completed equipment (see note) should be trained to use that product in a safe manner in compliance to established safety practices.

Note: The term 'completed equipment' refers to a third party constructed device which contains or uses the product associated with this manual.

Note's on the Symbols Used in this Manual

At various times throughout this manual certain symbols will be used to highlight points of information which are intended to ensure the users' personal safety and protect the integrity of equipment.

 1) Indicates that the identified danger WILL cause physical and property damage.

 2) Indicates that the identified danger could POSSIBLY cause physical and property damage.

- Under no circumstances will HCFA be liable or responsible for any consequential damage that may arise as a result of the installation or use of this equipment.

- All examples and diagrams shown in this manual are intended only as an aid to understanding the text, not to guarantee operation. HCFA will accept no responsibility for actual use of the product based on these illustrative examples.

- Please contact a HCFA distributor for more information concerning applications in life critical situations or high reliability.

Associated manuals

Please refer to the following manuals when using OP920.

Manual Name	Manual Number	Description
○ OP920 Installation Manual	920AZSC(this manual)	Describes the hardware such as specifications, wiring and installation of the OP920.
○ OP920 Operation Manual (TP Software)	(PDF files on CD-ROM included with screen creation software)	Describes the operation and use of the 920 Series with TP Software.
○ 920 Series Operation Manual	920SZSC	Describes the operation and use of the 920 Series text display.
○ 920 Series Hardware Manual (connection diagram)	920YJSC	Describes wiring and installation of the 920 Series graphic operation terminals
○ TX-WIN-C Hardware Manual	WINRJSC	Describes the operation of TX-WIN-C screen creation software
○ TP-Software Operation Manual	(PDF files on CD-ROM included with screen creation software)	Describes the operation method of TP-Software, data transfer to the 920 Series, etc

○ Necessary manual

○ Either manual is necessary

1. Introduction

1) The OP920 are to be mounted on the face of a control or operations panel, and connected to the programming port (CPU port) of a PLC.

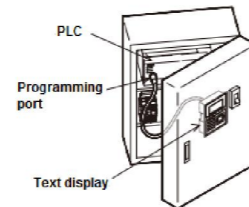
2) Various devices can be monitored and PLC data changed through the screens in the OP920.

3) Using PLC programming software, HC Series PLC user programming can be uploaded, downloaded and monitored via the OP920.

4) The OP920 is driven by 5V DC power supply (from the PLC through a communication cable).

5) The OP920 can be connected to the TX/LX Series PLC, PLC manufactured by another company and micro computer board.

For further details concerning applicable PLCs and connections to the PLC, refer to the OP920 Series Hardware Manual (Connection Diagram) offered as a separate volume.



1.1 Product lists

OP920 Main Unit

Product Name	Model Name	Specifications
Text display	OP920-5V	128×64 dots, Grey STN LCD, Light color panel, Built-in backlight, 128KB memory, Maintenance supplies and 4 tightening bolts(M4×25), 1 Packing seal for dust and water resistance, 1 PLC connection cable

Optional communication cable

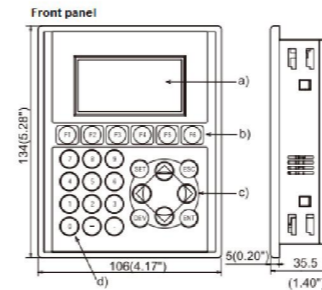
Product name	Classification	Model Name	Length	Specifications
PLC connection cable	OP920-5V	TP-PLC-R4-8P-3M	3 or 5 meters	OP920 ↔ CPU port in LX1S, LX1N, TX1S, TX1N, TX2N and TX3U series PLC & RS-422
		TP-PLC-R4-8P-5M		
Screen data transfer cable	OP920	TP-PC-R2-9S-3M	3 meters	Data exchange cable (OP920 ↔ Personal computer <9-pin D-sub>)

For further details concerning connectable equipment and communication cables, refer to the OP920 Series Hardware Manual [Connection] offered as a separate volume.

1.2 Part names

1.2.1 Front panel

- Display
- Function keys
- Cursor keys
- 0 to 9 keys



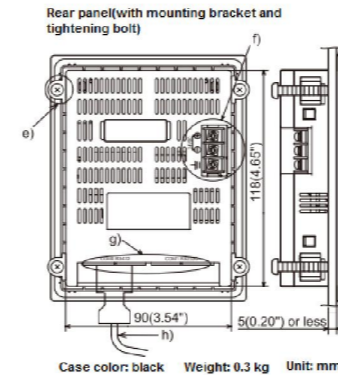
1.2.2 Rear panel

- Mounting bracket and tightening bolt (accessory)
- Power terminals (Not provided for the OP920-5V)
- Communication ports

Port	Description
COM0(RS-422)	RS-422 port for connecting TX/LX PLC <9-pin D-sub>
COM1(RS-232C)	RS-232C port for connecting a personal computer or PLC <9-pin D-sub>

h) Communication cable (optional)

i) Packing seal (accessory)



For the details of display performance, operation and use, refer to <920 series operation manual>

1.3 Precaution for safe use

CAUTION

- During abnormal communication (including cable breakage) when monitoring within the OP920, communication between the OP920 and programmable controller CPU is interrupted and it is impossible to operate keys or devices in the PLC via the OP920.

- Communication and operation resumes when the OP920 system is correctly configured.

DO NOT configure the emergency stop or safety features through the OP920, and be sure that there will be no adverse consequences in the event of a OP920 - PLC communications malfunction.

NOTE

- Do not lay signal cables near high voltage power cables or allow them to share the same trunking duct.

Otherwise effects of noise or surge induction are likely to occur. Keep a safe distance of more than 100mm away from these wires.

- Operate switches on the panel by hand.

DO NOT use excessive force, or attempt to operate them with hard or pointed objects.

The tip of a screw driver, pen or similar objects for example may break the screen.

Further information can be found in OP920 series Hardware Manual [Connection]

2. Specification

1) General specification

Items	Specification
Operating Temperature	0 ~ 50 °C (32 ~ 122 °F)
Storage Temperature	-20 ~ 60 °C (-4 ~ 140 °F)
Humidity	35 ~ 85% Relative Humidity, No condensation
Vibration Resistance - intermittent vibration	Conforms to IEC61131-2 10 ~ 57 Hz: 0.075 mm Half Amplitude 57 ~ 150 Hz: 9.8 m/s ² Acceleration Sweep Count for X, Y, Z: 10 times (80 min. in each direction)
Vibration Resistance - Continuous vibration	Conforms to IEC61131-2 10 ~ 57 Hz: 0.035 mm Half Amplitude 57 ~ 150 Hz: 4.9 m/s ² Acceleration Sweep Count for X, Y, Z: 10 times (80 min in each direction)
Shock resistance	Conforms to IEC61131-2 147m/s ² Acceleration, 3 times in each direction X, Y, and Z
Noise Immunity	1000 Vp-p, 1µsecond, 30 ~ 100 Hz, tested by noise simulator
Dielectric Withstand Voltage	500 V AC > 1 min, tested between power terminals and ground
Insulation Resistance	5 MΩ > at 500 V DC, tested between power terminals and ground
Protection	IP65F level (Front panel only)

2) Power supply specification

Model Name	Specifications
OP920-5V	Supply voltage : 5V DC ±5% (supplied from PLC through communication cable) Current consumption : 220mA/5V DC while backlight is ON, 180mA/5V DC while backlight is OFF

3) Screen Hardware Specifications

Items	Specifications	
Display Device	STN monochrome liquid crystal display	
Resolution	128 ×64 (dot), 16 characters ×4 lines	
Dot Pitch	0.47 mm (0.019") Horizontal ×0.47 mm (0.019") Vertical	
Effective Display Size	60 mm (2.36") ×30 mm (1.18") 3(2.64" inch) type	
Number of Colors	Grey	
Life of liquid crystal display	Approximately 50,000 hours (Operating temperature: 25 °C/77°F)	
Backlight	LED	
Keypad	26 keys (0 to 9 keys, Cursor keys, Function keys, SET key, DEV key, ESC key, ENT key)	
Interface	RS-422	RS-422 (COM0)
	RS-232C	RS-232C (COM1)
Number of Screens	User screen: 500 screens or less System screen: Allocated screens No. 1001-1030	
User Memory	Flash memory 128 KB (built-in)	

3. Installation



Note

• Do not mount the OP920 in an environment that contains dust, corrosive soot, conductive dust, corrosive or flammable gas, or expose the unit to high temperatures, dew condensation, direct sunlight, rain and wind or impact and vibration.

If the OP920 is used in such a place, electrical shock, fire, malfunction, damages or deterioration may occur.

• Never drop cutting chips or electric wire chips into the ventilation window of the OP920 when drilling screw holes or performing wiring. Such chips may cause fire, failure or malfunction.

• Make sure that the power is turned off, before securely connecting any cables. Poor connection may cause malfunction.

The OP920 is designed to be mounted in a panel. Install it using the following procedure:

Illustrations of the OP920-5V are used in the explanation for this manual.

1) Preparing the panel surface. (See Figure A)

On the panel surface, cut a rectangular mounting slot with the dimensions shown below.

A space of 10 mm is required for the right and left sides of the slot and inside the panel for metal fixtures as shown in "5) Inner panel installation dimensions".

Note: Make sure that the thickness of the panel surface is no more than 5 mm (0.20")

2) Inserting the OP920 into the panel surface (See Figure B)

Attach the packing seal to the OP920, and insert the OP920 from the front face of the panel surface.

- a) Packing seal
- b) OP920
- c) Mounting slot

3) Fixing the OP920 (See Figure C)

Attach the hooks of the mounting brackets (supplied) in to the mounting holes of the OP920. Tighten mounting bolts (also supplied) until the OP920 is securely fixed.

Fix mounting bolts in all four positions, right and left of the OP920.

- a) Clamping bolt
- b) Mounting bracket

Note: Tighten the clamping bolts with a torque of 0.18 to 0.22 N·m.

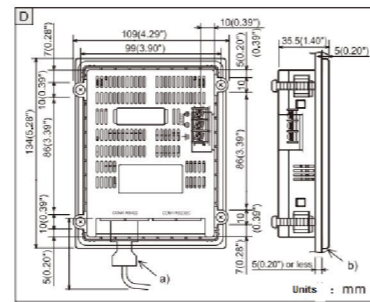
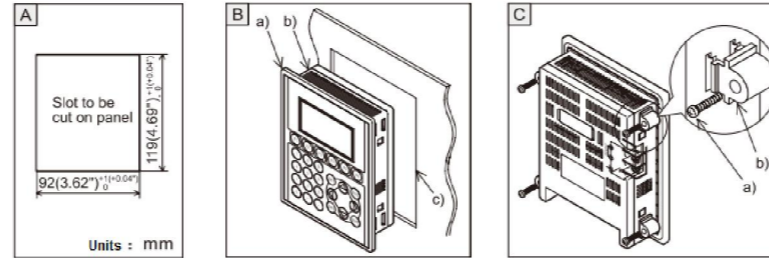
4) Peeling of the protective sheet

Peel off the protective sheet on the surface of the product before use.

5) Inner panel installation dimensions (See figure D)

When installing the OP920, make sure the inner dimensions shown below are available.

- a) PLC connection cable
- b) Packing seal



4. Power Supply Wiring

Wiring precaution



CAUTION

• Cut OFF all external phases of the power supply before installation or wiring to avoid electric shock or serious damage to the product.



NOTE

• Wire the DC power supply to the dedicated terminals as described in this manual. Wiring an AC power supply will cause serious damage to the product.

• Attach a 2A fuse to the 24V DC power supply. Correctly connect the + and - terminals of the DC power supply as described in this manual.

Reverse connection of the power supply may cause failure.

• Perform grounding (resistance: 100 Ω or less) with an electric wire of 1.25 mm² or more to the ground terminal of the OP920

Never perform common grounding of the OP920 and a strong power system.

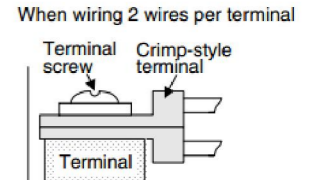
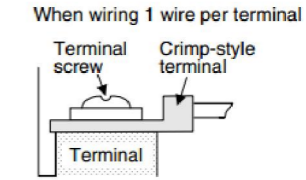
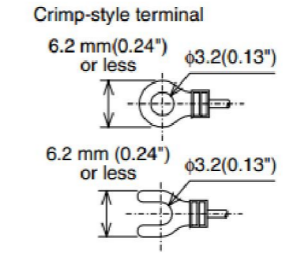
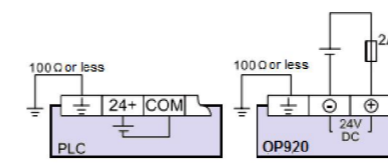
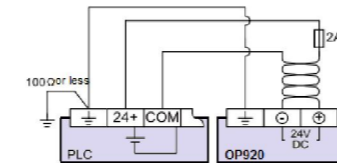
The power for the OP920-5V is supplied from the PLC through a communication cable.

The power of the OP920 is supplied from the PLC or an external power supply.

• Connection example

1) When supplying the power from the TX/LX Series PLC
Connect the power terminals provided on the rear face of the OP920 to the 24V DC service power supply of the PLC base or extension unit.

2) When supplying the power from an external power supply
Connect the power terminals provided on the rear face of the OP920 to the 24V DC terminals of the external power supply



Cautions on connection

The current consumption of the OP920 is 80mA/24V DC (while the backlight is ON). When supplying power from the 24VDC service power supply of the TX/LX Series PLC main unit or extension unit, consider the capacity of the service power supply of the base or extension unit and the total current supplied to proximity switches, extension blocks and special blocks. If the total current including the power supplied to the OP920 exceeds the capacity of the service power supply, supply the power to the OP920 from the external power supply.

• Even if instantaneous power interruption of less than 5ms occurs, the OP920 continues to operate. When power interruption for a considerable period of time or voltage drop occurs, the OP920 stops its operation. However, when the power supply is recovered, the OP920 automatically restarts its operation. (The screen displayed just after recovery is determined by the working environment originally set.

• When wiring the power supply, use electric wires of 0.75 mm² or more to avoid voltage drop. Use crimp-style terminals for M3, and securely tighten them with a tightening torque of 0.5 to 0.8 N·m to avoid troubles.

5. Maintenance



CAUTION

Never disassemble or modify the OP920. Disassembly or modification may cause failure, malfunction or fire.

For repair, please, contact a service representative.



NOTE

Make sure to turn OFF the power, before connecting/disconnecting cables.

If you connect/disconnect cables while the power is turned on, failure or malfunction may be caused.

A backlight lithium battery is not supplied with the OP920. The Liquid Crystal Display has a service life of approximately 50,000 hours.

When repairing the Liquid Crystal Display, please, contact a service representative.