LEADER

# LV 7290

REMOTE CONTROLLER

INSTRUCTION MANUAL

LEADER
ELECTRONIC MEASURING INSTRUMENTS

# TABLE OF CONTENTS

# GENERAL SAFETY SUMMARY

## ■ Read This before Using the Instrument

This instrument should only be used by persons with sufficient knowledge of electronics who thoroughly understand the contents of this manual.

This instrument is not designed or manufactured for households or ordinary consumers.
If unqualified personnel are to use the instrument, be sure the instrument is handled under the supervision of qualified personnel (those who have electrical knowledge). This is to prevent the possibility of personal injury or damage to the instrument.

## ■ Note about Reading This Manual

The contents of this manual contain specialized terminology and may be difficult to understand. If you have any questions about the contents of this manual, please contact your local LEADER agent.

## ■ Symbols and Terms

The following symbols and terms are used in this instruction manual and on the instrument to indicate important warnings and notes.

| | |
|---|---|
| <Symbol>  | This symbol appears in this instruction manual and on the instrument to indicate an area where improper handling could result in personal injury, damage to the instrument, or malfunction of the instrument or devices connected to it.<br>When you encounter this symbol on the instrument, be sure to refer to the information in this instruction manual that corresponds to the area that the symbol marks. |
| <Term>   | Ignoring the precautions that this term indicates could lead to death or serious injury. |
| <Term>   | Ignoring the precautions that this term indicates could lead to personal injury or damage to the instrument. |

# GENERAL SAFETY SUMMARY

Read the warnings and information below thoroughly to avoid death, personal injury, and damage and deterioration of the instrument.


■ Warnings Concerning the Case and Panels

Do not remove the instrument's case or panels for any reason. Touching the internal components of the instrument could lead to fire or electric shock.
Also, do not allow foreign materials, such as liquids, combustible matter, and metal, to enter the instrument. Turning the instrument on when such materials are inside it could lead to fire, electric shock, damage to the instrument, or some other accident.

■ Installation Environment

● Operating Temperature Range

Use this instrument in a 0 to 40 °C environment. Using the instrument with its vents blocked or in a high temperature environment could lead to fire.
Drastic changes in temperature, such as might be caused by moving the instrument between two rooms with different temperatures, can damage the instrument by causing condensation to form within it. If there is a possibility that the instrument has condensation within it, wait for approximately 30 minutes before turning on the power.

● Operating Humidity Range

Use this instrument in an environment whose relative humidity is 85 % or less where there is no threat of condensation forming.
Also, do not operate this instrument with wet hands. Doing so could lead to electric shock or fire.

● Do Not Operate in an Explosive Atmosphere

Using this instrument in an environment where flammable gases, explosive gazes, or steam is emitted or stored could lead to an explosion or fire. Do not use the instrument in such an environment.

● Do Not Insert Foreign Materials

Do not insert foreign materials, such as metal and flammable objects, through the vents or allow liquid to enter the instrument. Such acts can lead to fire, electric shock, damage to the instrument, or some other accident.

■ If You Notice Something Wrong during Operation

If you notice smoke, fire, a strange smell, or something else that is wrong with the instrument while you are operating it, stop operation immediately. Failing to do so could lead to fire. Remove the power cord from the outlet. After making sure that fire has not spread anywhere, contact your local LEADER agent.

# GENERAL SAFETY SUMMARY


■ Warnings Concerning the Power Source

Do not use a power source with a voltage other than the rated power source voltage for the instrument. Doing so could lead to fire.
Confirm the voltage of the power source before you connect the power cord to it.
Only use a power source whose frequency is 50/60 Hz.

Use a power cord that is appropriate for the voltage of the power source. Also, use a power cord that meets the safety standards of the country that you are using it in.
Using a power cord that does not meet the standards could lead to fire. If the power cord is damaged, stop using it, and contact your local LEADER agent. Using a damaged power cord could lead to electrical shock or fire.
When removing the power cord from the power outlet, do not pull on the cord. Pull from the plug.

■ Warnings Concerning Grounding

The instrument has a ground terminal to protect the user and the instrument from electric shock. Ensure that the product is properly grounded for safe operation.


■ Cautions Concerning the Ethernet Port

When you are connecting the instrument to the communication provider's equipment, connect to the Ethernet port through a hub that is authorized for use in the country that you are using the instrument in.

# GENERAL SAFETY SUMMARY

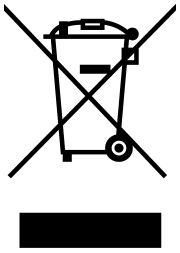
■ Calibration and Repairs

This instrument has been carefully examined at the factory to ensure that its performance is in accordance with the standards. However, because of factors such as parts wearing out over time, the performance of the instrument may degrade. To ensure stable performance, we recommend that you have the instrument calibrated regularly. Also, if the instrument malfunctions, repairs are necessary. For repairs and calibration, contact your local LEADER agent.

■ Routine Maintenance

When you clean the instrument, remove the power plug from the outlet.
Do not use thinner or benzene when you clean the instrument's case, panels, or knobs. Doing so could lead to paint chipping and the corrosion of plastic components. To clean the case, panels, and knobs, use a soft cloth with mild detergent, and wipe gently. While cleaning, make sure that foreign materials, such as water and detergent, do not enter the product. If liquid or a metal object enters into the instrument, fire or electric shock may result.

■ About the European WEEE Directive



This instrument and its accessories are subject to the European WEEE Directive.
Follow the applicable regulations of your country or region when discarding this instrument or its accessories. Follow the EU Battery Directive when discarding the batteries that you removed from this instrument.
(WEEE stands for Waste Electrical and Electronic Equipment.)

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Follow the warnings and precautions that have been listed in this section to use the instrument correctly and safely. Precautions are also contained in various other sections of this instruction manual. To use the instrument correctly, be sure to follow those precautions as well.

If you have any questions or comments about this instruction manual, please contact your local LEADER agent.

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# 1. INTRODUCTION

Thank you for purchasing this LEADER instrument. To use this instrument safely, read this instruction manual thoroughly, and make sure that you know how to use the instrument properly.

If some point about the operation of this instrument is still unclear after you have read this instruction manual, refer to the contact information on the back cover of the manual to contact LEADER, or contact your local LEADER agent.
After you have finished reading this manual, keep it in a convenient place so that you can refer to it when necessary.

## 1.1 Scope of Warranty

This LEADER instrument has been manufactured under the strictest quality control guidelines.

LEADER shall not be obligated to furnish the following free services during the warranty period.

1. Repair of malfunction or damages resulting from fire, natural calamity, or improper voltage applied by the user.
2. Repair of an instrument that has been improperly repaired, adjusted, or modified by personnel other than a factory-trained LEADER representative.
3. Repair of malfunctions or damages resulting from improper use.
4. Repair of malfunctions caused by devices other than this instrument.
5. Repair of malfunctions or damages without the presentation of a proof of purchase or receipt bill for the instrument.

This Warranty is valid only in Japan.

## 1.2 Operating Precautions

### 1.2.1 Power Supply Voltage


Confirm the voltage of the commercial power source before you connect the power plug to it. The operating supply voltage range of this instrument is 90 to 250 V. Only use a power source that supplies a voltage within the operating voltage range and has a frequency of 50/60 Hz.

### 1.2.2 Electrostatic Damage

Electronic components can be damaged by static discharge. Static electricity can build up in the core wire of a coaxial cable. Before connecting a coaxial cable to an I/O connector of the instrument, short the core wire of the cable with the external conductor.

### 1.2.3 Mechanical Shock

This instrument contains sensitive components, so it may be damaged if it is dropped or otherwise exposed to a strong shock.

### 1.2.4 About Trademarks and Licenses

The company and product names in this document are trademarks or registered trademarks of their respective holders.

# 2. SPECIFICATIONS

## 2.1 General

This instrument is designed to be connected to the Ethernet port on the rear panel of the LV 7390 and used to remotely control the LV 7390. It enables remote control using panel controls similar to those of the LV 7390.

## 2.2 Features

**● Control via Ethernet**

This instrument enables long-distance remote control using Ethernet.

**● Similar Controls Synchronized to the LV 7390**

This instrument provides controls similar to the LV 7390 panel. It can be used as though you are using the LV 7390 panel. Changes to the LV 7390 controls are immediately reflected to this instrument.

**● Multiple Connections (Up to 8 units)**

The LV 7290 can connect to multiple LV 7390s and control them exclusively.

* The TELNET features of the LV 7290 and LV 7390 cannot be used simultaneously.

## 2.3 Specifications

### 2.3.1 Control

| | |
|---|---|
| Compatible Model | LV 7390 (firmware version 2.0 or later) |
| Connection System | Telnet communication over Ethernet<br>(DHCP is not supported)<br>Control a single LV 7390 from multiple LV 7290s simultaneously<br>Control up to eight LV 7390s exclusively from a single LV 7290 |
| Operation Description | LV 7390 control through control code transmission<br>Panel LED indication by receiving LED data from the LV 7390 |
| Connection Configuration Settings | IP Address<br>Subnet Mask<br>Default Gateway<br>IP Address of the connection destination 1 to 8 |
| Configuration Method | Configure from the PC app (included)<br>Configure from the connected LV 7390 |

### 2.3.2 Panel

| | |
|---|---|
| Key LEDs | All key LEDs are dimly lit.<br>The selected key LED is brightly lit.<br>(All key LEDs are off when the LV 7390 is turned off.) |
| Unit key LEDs | The key LEDs for units with which communication is possible are dimly lit.<br>The key LEDs for units with which communication is not possible are turned off.<br>The selected unit key LED is brightly lit. |
| Power LED | Lights when power is supplied to this instrument. |
| Ethernet LED | Lights when connection to the corresponding LV 7390 is established |

### 2.3.3 Rear Panel Connectors

| | |
|---|---|
| Ethernet Port | |
| Compliant Standard | IEEE802.3 |
| I/O Connector | RJ-45 |
| Functions | Key code transmission, LED data reception |
| Type | 10Base-T/100Base-TX |
| USB Port | Type B |
| Specifications | USB 2.0 |
| Functions | Setting the IP Address |

### 2.3.4 General Specifications

| | |
|---|---|
| Environmental Conditions | |
| Operating Temperature | 0 to 40°C |
| Operating Humidity Range | 85 %RH or less (no condensation) |
| Operating Environment | Indoors |
| Elevation | Up to 2,000 m |
| Overvoltage Category | Ⅱ |
| Pollution Degree | 2 |
| Power Requirements | |
| Voltage | 90 to 250 VAC |
| Frequency | 50/60Hz |
| Power Consumption | 8W max. |
| Dimensions | 482 (W) × 44 (H) × 110 (D) mm (excluding protrusions) |
| Weight | 1.2kg |
| Accessories | Power cord .....1<br>Cover/Inlet stopper .....1<br>CD-ROM (PC app, instruction manual) .....1 |

# 3. NAMES AND FUNCTIONS OF PARTS

For an explanation of keys, see the LV 7390 instruction manual. Be careful because the key arrangement is different from the LV 7390.

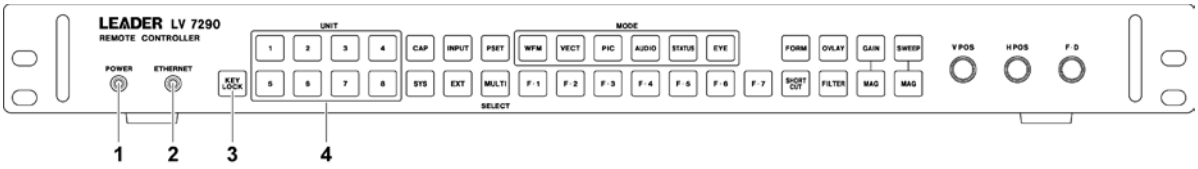



Figure 3-1 Front panel


Figure 3-2 Rear panel

Table 3-1 Names and functions of parts

| No. | Name | Function |
|---|---|---|
| 1 | POWER LED | Lights when this instrument is on. |
| 2 | ETHERNET LED | Lights when connection to the LV 7390 is established. |
| 3 | KEYLOCK | Locks the key controls of this instrument. Holding down this key locks the keys or releases the key lock. |
| 4 | UNIT | Selects the connection destination. |
| 5 | ETHERNET | Connected to the LV 7390. The LV 7390 is remotely controlled from this instrument through this port. It also allows LV 7390 key operations to be reflected to this instrument. |
| 6 | USB | Connected to a PC. The IP address and other parameters of this instrument are set from the PC through this port. The included PC app (IpAddressWriter2.exe) is used to set the parameters. |
| 7 | Serial label | The serial number is printed on this label. |
| 8 | Ground terminal | Connect to an external ground. |
| 9 | AC inlet | An inlet for receiving AC power. Attach the included cover/inlet stopper to the AC inlet.<br>[See also] 4.1, “Attaching the Cover Inlet Stopper” |

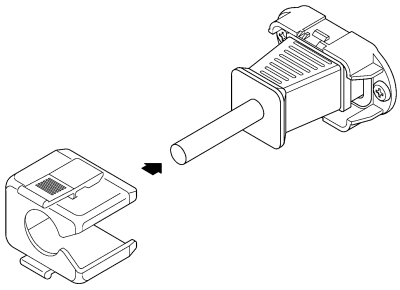
# 4. BEFORE YOU BEGIN MEASURING

## 4.1 Attaching the Cover Inlet Stopper

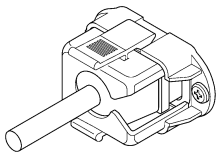
A cover/inlet stopper is included with the LV 7390. Use this device to prevent the power cord from being pulled free of the AC inlet. To attach the cover/inlet stopper, follow the procedure below.

**● Attaching the Cover/Inlet Stopper**

1. Cover the power cord with the cover/inlet stopper.



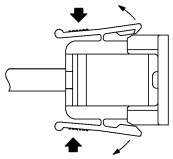
2. Push the cover/inlet stopper, until you hear a click, to attach it to the AC inlet.



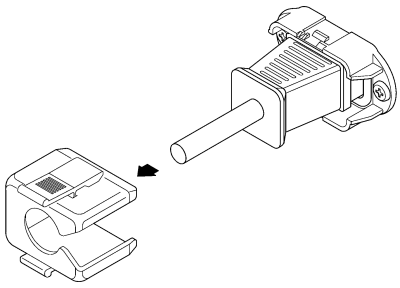
3. Check that the cover/inlet stopper is securely attached to the AC inlet.

**● Removing the Cover/Inlet Stopper**

1. Release the lock by using two fingers to press the cover/inlet stopper levers.



2. Pull the cover/inlet stopper away from the AC inlet.



# 5. HOW TO USE

## 5.1 Configuring the LV 7390

### 5.1.1 Viewing the Version Information

To control the LV 7390 from this instrument, the LV 7390 firmware version must be 2.0 or later.

You can view the firmware version on the INFORMATION screen or the startup screen. If the firmware version is earlier than 2.0, remote control is not possible. For more information, contact your nearest LEADER agent.

SYS → F•3 SYSTEM INFO →

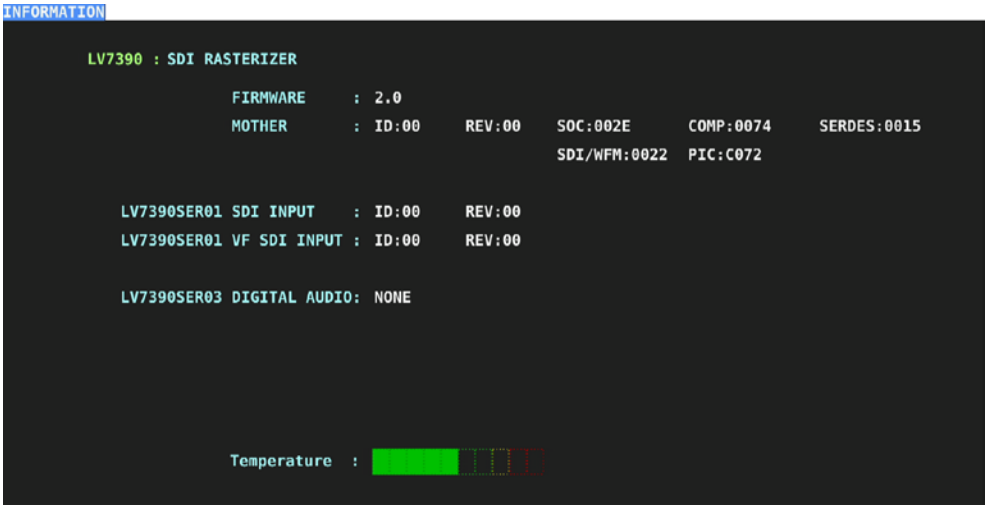



Figure 5-1 INFORMATION screen

### 5.1.2 Configuring the IP Address and TELNET Settings

Set the LV 7390 IP address on the ETHERNET screen. Follow the procedure below.

1. Press SYS, F•2 SYSTEM SETUP, and then F•3 NEXT TAB.

   The ETHERNET SETUP screen appears.

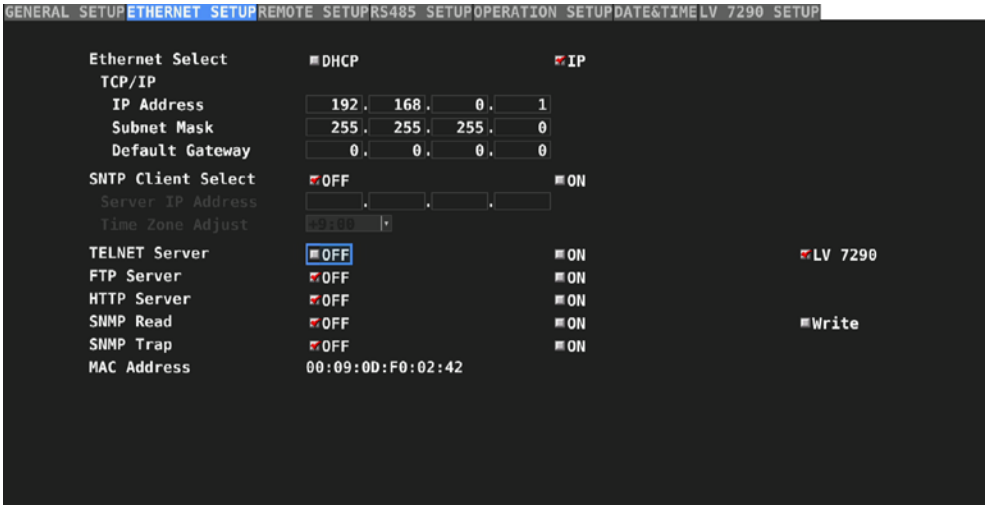



Figure 5-2 ETHERNET SETUP screen

2. Set Ethernet Select to IP, and then set the IP address.

   By factory default, the LV 7390 IP address is set to 192.168.0.1. If you use the factory default setting, you will not need to carry out the procedure in section 5.2, “Configuring the LV 7290.” If you are going to connect the LV 7390 and LV 7290 in a one-to-one configuration, use this setting as-is.
   If you want to switch connections and control several LV 7390s or if you want to use a specific IP address, change the value here.

3. Set TELNET Server to LV7290.

   The TELNET features of the LV 7290 and LV 7390 cannot be used simultaneously.

4. Press F•1 COMPLETE.

   The setting is confirmed, and the system menu appears.

## 5.2 Configuring the LV 7290

Before connecting this instrument to the LV 7390, you need to set the following parameters.

- IP address
- Subnet mask
- Default gateway
- IP Address of the connection destination 1 to 8

You can set these parameters from a PC using the included PC app, but if the connection between this instrument and the LV 7390 is established, you can also set these parameters from the LV 7390.

Note that if the LV 7390 IP address is 192.168.0.1, the IP address of this instrument is set to the factory default value, and a one-to-one connection is used, you do not have to perform the configuration in this chapter. If this is the case, proceed to section 5.3, “Control.”

### 5.2.1 Factory Default Settings

The factory default settings of this instrument are as follows:

Table 5-1 Factory default settings

| Parameter | Factory default value |
|---|---|
| IP Address | 192.168. 0. 2 |
| Subnet Mask | 255.255.255. 0 |
| Default Gateway | 0. 0. 0. 0 |
| IP Address of the connection destination 1 | 192.168. 0. 1 |
| IP Address of the connection destination 2 | 0. 0. 0. 0 |
| IP Address of the connection destination 3 | 0. 0. 0. 0 |
| IP Address of the connection destination 4 | 0. 0. 0. 0 |
| IP Address of the connection destination 5 | 0. 0. 0. 0 |
| IP Address of the connection destination 6 | 0. 0. 0. 0 |
| IP Address of the connection destination 7 | 0. 0. 0. 0 |
| IP Address of the connection destination 8 | 0. 0. 0. 0 |

If you want to reset this instrument’s settings to factory default, turn on the power while holding down V POS and H POS.

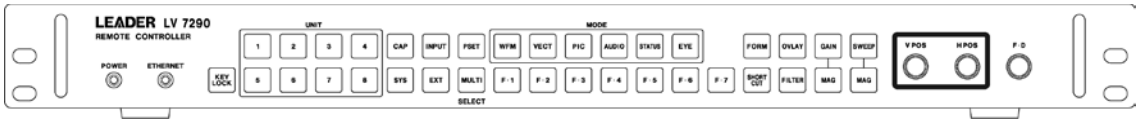



Figure 5-3 V POS and H POS

### 5.2.2 Configuration from a PC

To set this instrument's IP address from a PC, follow the procedure below.
Note that the following items are required. You will need to provide these yourself.

Table 5-2 Items required for configuration

| Item | Notes |
|---|---|
| LV 7290 | - |
| PC app | Accessories |
| PC | Windows XP, Vista, Windows7/8/10<br>USB2.0, CD-ROM drive |
| USB cable | USB (A) male-USB (B) male |

1. Connect this instrument's USB port to the PC's USB port using a USB cable.
2. Turn on this instrument.
   This instrument does not have a power switch. Simply connect the power cord.
3. Load the included CD into the PC's CD-ROM drive, and run IpAddressWriter2.exe.
   The PC app "IP Address Writer" will start.

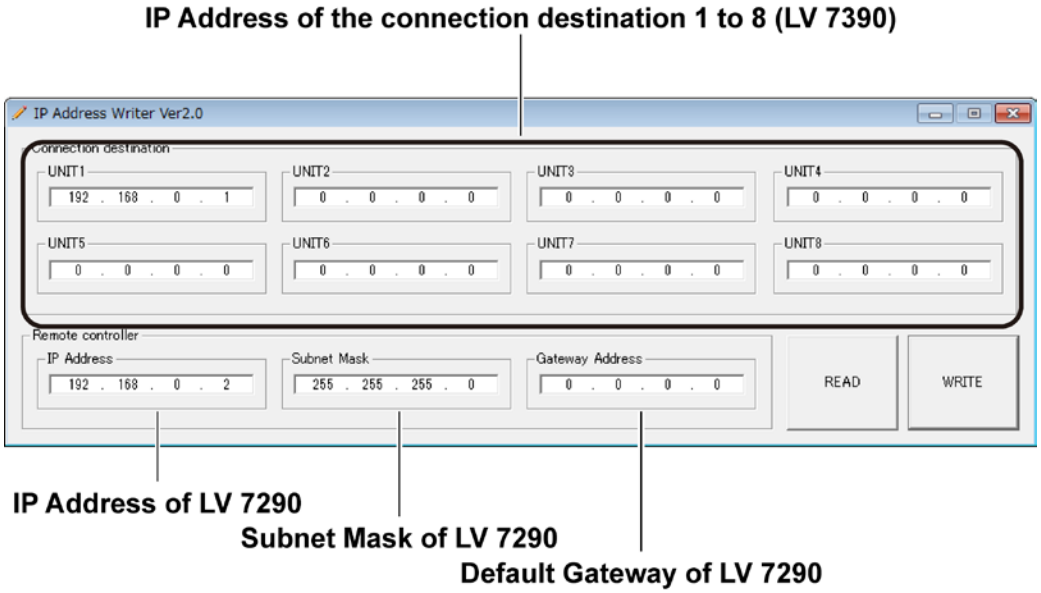



Figure 5-4 IP Address Writer

4. Enter the values, and press WRITE.
   You can press READ to read the this instrument's current settings.

### 5.2.3 Configuring from the LV 7390

If the connection between this instrument and the LV 7390 is established, this instrument's IP address can be set from the LV 7390. However, if you do, the connection between them will be disconnected as soon as you change the settings.
To set this instrument's IP address from the LV 7390, follow the procedure below when this instrument's ETHERNET LED is lit.

1. Press SYS, F•2 SYSTEM SETUP, and then F•2 PREV TAB.

   The LV7290 SETUP screen appears. This screen appears only when the connection between this instrument and the LV 7390 is established.

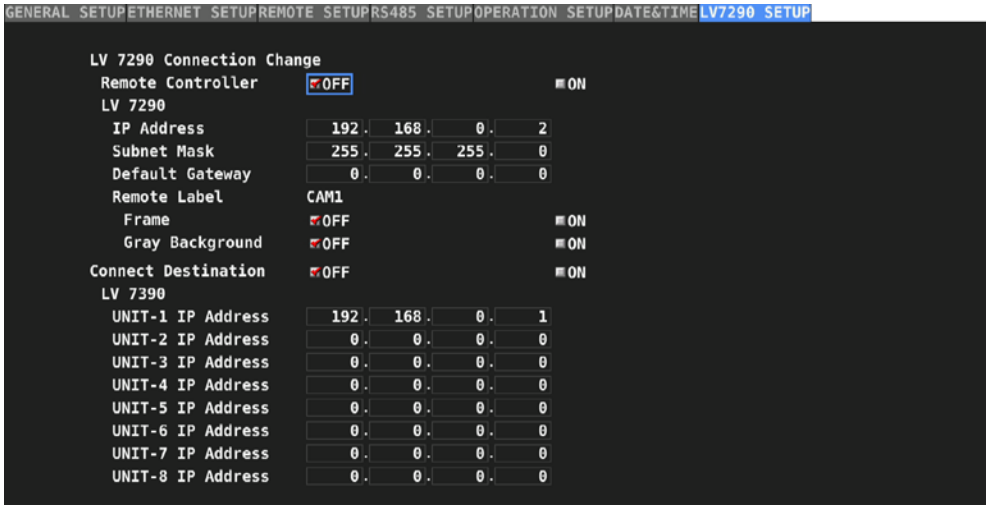



Figure 5-5 LV7290 screen SETUP

2. Enter the values.

   This instrument's settings are shown under Remote Controller, and the connection Destination (LV 7390) setting under Connect Destination 1 to 8 (LV 7390). If set to OFF, data is not transmitted. If you want to change the settings of one side, set the other side to OFF. By factory default, both sides are set to OFF.

3. Press F•1 COMPLETE.

   The settings are applied when you press F•1 COMPLETE. You cannot change the settings from the LV 7390 again if there is no LV 7290 that the LV 7390 to connect to at the newly specified address. If you specify wrong values, you have to set the LV 7290 from a PC.

## 5.3 Control

To remotely control the LV 7390 from this instrument, follow the procedure below.

1. **Turn on this instrument and the LV 7390.**

   This instrument does not have a power switch. Simply connect the power cord. When this instrument turns on, the POWER LED will light.

2. **Connect this instrument's Ethernet port to the LV 7390 Ethernet port using an Ethernet cable.**

   The Ethernet cable is not included. You will need to provide it yourself. You can use a straight cable or a crossover cable.
   When the connection between this instrument and the LV 7390 is established, the ETHERNET LED lights. If it doesn't, check section 5.1, "Configuring the LV 7390" and 5.2, "Configuring the LV 7290" again.
   Note that the ETHERNET LED remains lit for a while even after the Ethernet cable is removed.

- **Control**

  When the ETHERNET LED is lit, the LV 7390 selected with the unit key can be remotely controlled from this instrument.
  You can also control the LV 7390 directly. If you do, the key operation performed on the LV 7390 selected with the unit key is reflected to this instrument.

- **Notes**

  - Multiple LV 7390s cannot be controlled simultaneously from this instrument.
    (It is possible to connect several of this instrument to an LV 7390 and control it simultaneously.)
  - USB memory devices and headphones cannot be connected to this instrument.
  - The LV 7390 cannot be turned on and off from this instrument.

Following information is for Chinese RoHS only

# 所含有毒有害物质信息

## 部件号码：LV 7290

此标志适用于在中国销售的电子信息产品，依据2006年2月28日公布的《电子信息产品污染控制管理办法》以及SJ/T11364-2006《电子信息产品污染控制标识要求》，表示该产品在使用完结后可再利用。数字表示的是环境保护使用期限，只要遵守与本产品有关的安全和使用上的注意事项，从制造日算起在数字所表示的年限内，产品不会产生环境污染和对人体、财产的影响。
产品适当使用后报废的方法请遵从电子信息产品的回收、再利用相关法令。
详细请咨询各级政府主管部门。

产品中有毒有害物质或元素的名称及含量

| 部件名称 Parts | 有毒有害物质或元素 Hazardous Substances in each Part | | | | | |
|---|---|---|---|---|---|---|
| | 铅 (Pb) | 汞 (Hg) | 镉 (Cd) | 六价铬 (Cr(VI)) | 多溴联苯 (PBB) | 多溴二苯醚 (PBDE) |
| 实装基板 | × | ○ | ○ | ○ | ○ | ○ |
| 主体部 | × | ○ | ○ | ○ | ○ | ○ |
| 开关电源 | × | ○ | ○ | ○ | ○ | ○ |
| 外筐 | ○ | ○ | ○ | ○ | ○ | ○ |
| 线材料一套 | ○ | ○ | ○ | ○ | ○ | ○ |
| 附件 | ○ | ○ | ○ | ○ | ○ | ○ |
| 包装材 | ○ | ○ | ○ | ○ | ○ | ○ |
| | | | | | | |
| | | | | | | |
| | | | | | | |

**备注）**

○：表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11363-2006 规定的限量要求以下。

×：表示该有毒有害物质或元素至少在该部件的某一均质材料中的含量超出SJ/T11363-2006 标准规定的限量要求。

Ver.1