

*Intelligent Server*  
**SERVICE MANUAL**

Model name:

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**Intelligent Server**

**BMS-LSV9E**

**BMS-LSV6UL**

**Intelligent Server Software**

**BMS-STBN10E**

**BMS-STBN10UL**



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  - BMS-LSV6UL
- Installation Manual of TCS-NET Relay Interface
  - BMS-IFLSV4E
  - BMS-IFLSV4UL

# Safety Precautions




Important safety-related information is described on the product and in this Service Guide. Read the following description on labels and symbols carefully and follow their directions.

## [Explanation of labels]



Label	Explanation
 <b>DANGER</b>	Indicates that the repair engineer and other third-party individuals in the vicinity may be exposed to immediate risk of death or serious injury if operation is not performed correctly.
 <b>WARNING</b>	Indicates that the repair engineer and other third-party individuals in the vicinity may be exposed to a risk of death or serious injury if operation is not performed correctly.
 <b>CAUTION</b>	Indicates that the repair engineer and other third-party individuals in the vicinity may be exposed to a risk of injury or that property damage (*) may result if operation is not performed correctly or from failure of product after operation.

(\*): Property damage means expanded damages to assets, furniture, livestock and / or pets.




## [Explanation of symbols]


Symbol	Explanation
	Indicates prohibited activity Specific prohibited actions are described in statements near the symbol.
	Indicates enforced action Specific enforced actions are described in statements near the symbol.
	Indicates caution (includes danger alert and warning) Specific content of caution is indicated in a picture or statement near the symbol.








## **DANGER**

 Turn off breaker	<b>Turn off breaker before performing work.</b> Otherwise, one may receive electric shock from the high-voltage electricity, resulting in death or injury.
 Prohibition	<b>Do not turn on the breaker when the cover of the unit is removed.</b> Otherwise, one may receive electric shock from the high-voltage electricity, resulting in death or injury.

## **WARNING**

 Check for ground wire	<b>Before fault diagnosis or beginning repair work, make sure that the ground wire is connected to the ground terminal of the unit.</b> If not, ground leakage may result in electric shock hazard.
 No alteration	<b>Do not alter the product.</b> Components of the unit should also not be taken apart or altered. Otherwise, it may result in fire, electric shock or injury.
 Use designated parts	<b>Use designated parts for replacement.</b> Using parts other than those designated may cause fire or electric shock.

 **WARNING**

 Restricted area	<p><b>Do not allow unauthorized personnel other than repair engineers to enter areas where fault diagnosis and repair work is conducted.</b>          Unauthorized persons may suffer injury from tools and disassembled parts.</p>
 Insulation	<p><b>Connect lead wires with crimping terminals and turn the closed end upwards to avoid exposure to water.</b>          Failure to perform this post-connection treatment may cause disasters, such as electricity leakage and fire, on the client's premises.</p>
 Assembly wiring caution	<p><b>After repair, ensure that the assembly of disassembled parts and the connection and wiring of removed wires are completed so as to restore them to their former state. Be careful not to have the internal wires caught in the cover or other closures.</b>          A defect in assembly or wire connection may cause disasters in the client premise, such as electricity leakage and fire.</p>
 Insulation check	<p><b>After repair, check for insulation between the charged part and non-charged metal part (ground terminal) using an insulation resistance tester (500 V) and ensure at least 2 MΩ resistance.</b>          If the insulation resistance value is low, it indicates the risk of disasters, such as electricity leakage and electric shock, on the client's premises.</p>
 Electric shock caution	<p><b>In case of performing circuit inspection while the circuit is connected to a power source (if such condition is necessary), use rubber gloves and other measures to prevent contact with the charged part.</b>          Otherwise, one will risk electric shock from contacting the charged part.</p>
 Check after repair	<p><b>Upon completion of repair, ensure that there are no abnormalities.</b>          Risks of fire, electric shock or injury may be prevented by inspection.          Turn off the breaker before performing inspection.</p> <p><b>Test run the system after repair and make sure that there are no abnormalities including smoke.</b>          Risks of fire and electric shock may be prevented by inspection.</p>
 Repair and Reinstall	<p><b>Repair and reinstallation must be performed by qualified professional.</b></p>

# Before Installation

## NOTE

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Before using Intelligent Server, prepare the following software (sold separately):

**Software that can be used**

Intelligent Server Software BMS-STBN10E or 10UL

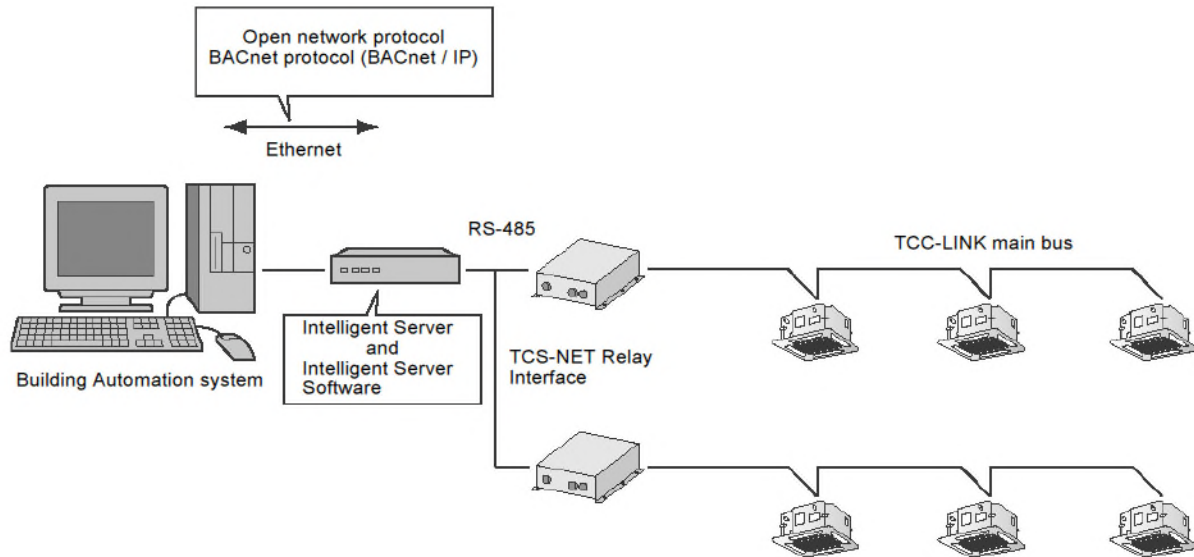
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# 1 Overview

## 1-1. Overview

The Intelligent Server (Intelligent Server and Intelligent Server Software) is a product that relays the communication between the Building Automation system and multi air conditioner to monitor / control a multi air conditioner for building from the building Building Automation system. A protocol of communications between the Intelligent Server and Building Automation system is BACnet<sup>®</sup>, an open network protocol for building automation.



### CAUTION

The Intelligent Server consists of a hardware product, a box of the system, and a software product built in the system. Prepare the Intelligent Server Software for each of the system.

Product name	Model name		Description
Intelligent Server	BMS-LSV9E	BMS-LSV6UL	Hardware product for Intelligent Server
Intelligent Server Software	BMS-STBN10E	BMS-STBN10UL	Software product built in Intelligent Server (CF card)

### CAUTION

- Data is recorded on a CF card of Intelligent Server Software in image format including software compatible with the operating system BACnet Protocol. It is not a Windows format, so files in the CF card cannot be viewed even if it is inserted into a laptop slot. In addition, an error may occur on the CF card. In this case, replace the CF card.
- It is required to register the device information on the air-conditioner. To configure the settings, use the Setting File Creation Software. (Refer to page 12.)
- For specifications on communications and variables, see the annexes Protocol Implementation Conformance Statement and Intelligent Server Software Specifications.

## 1-2. Trademarks

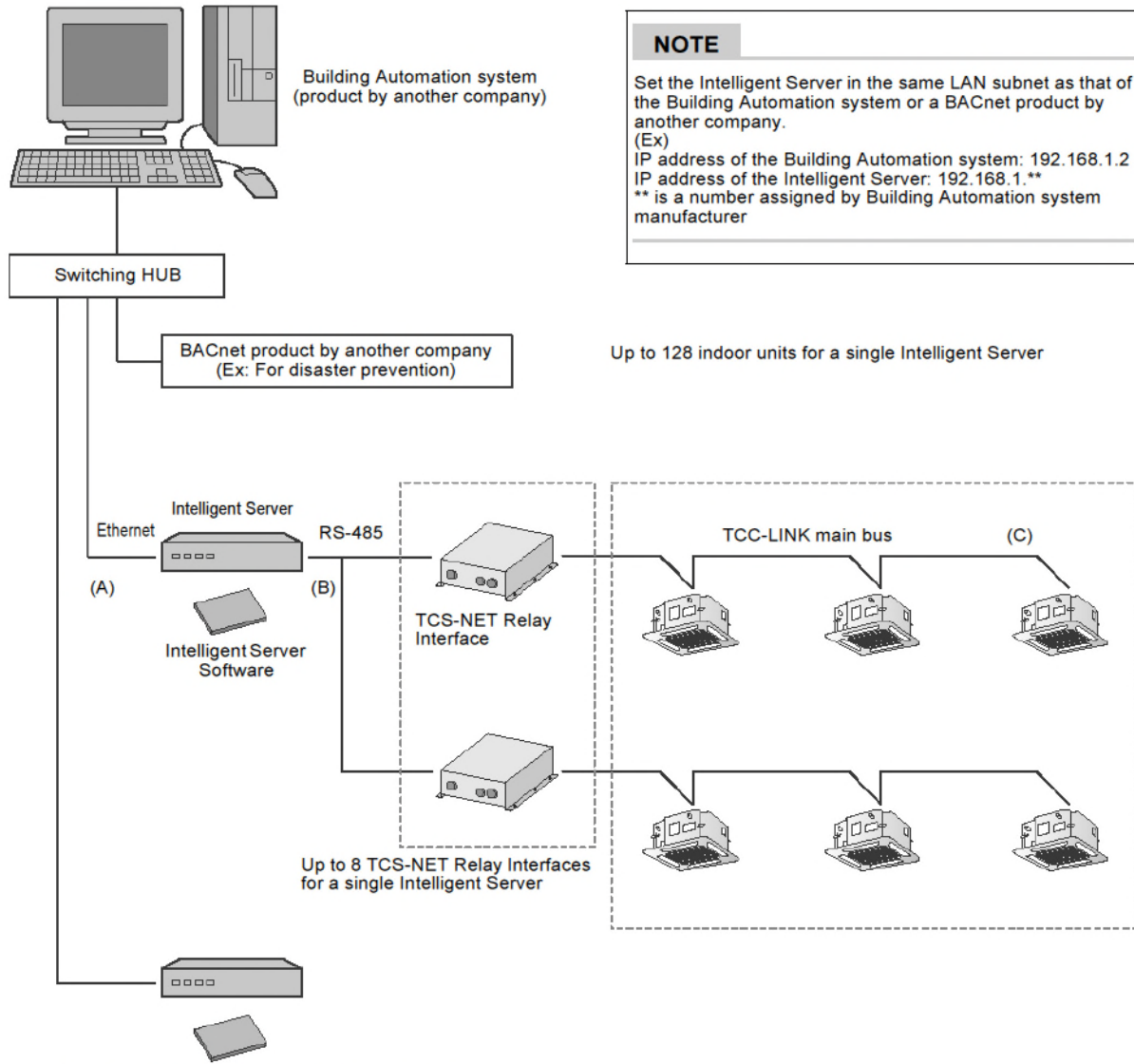
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- BACnet® is a registered trademark of ASHRAE.
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# 2 System Configuration

## 2-1. System configuration diagram



**NOTE**

Set the Intelligent Server in the same LAN subnet as that of the Building Automation system or a BACnet product by another company.  
 (Ex)  
 IP address of the Building Automation system: 192.168.1.2  
 IP address of the Intelligent Server: 192.168.1.\*\*  
 \*\* is a number assigned by Building Automation system manufacturer

Up to 128 indoor units for a single Intelligent Server

Up to 8 TCS-NET Relay Interfaces for a single Intelligent Server

There is no upper limit for the number of Intelligent Servers.

**NOTE**

The IP addresses need to be changed.



# 3 Starting / Ending a Intelligent Server

## CAUTION

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### **Cautions on starting a Intelligent Server**

The Intelligent Server initializes the TCS-NET Relay Interface when the Intelligent Server is started. Confirm the following before turning on the Intelligent Server.

1. The RS-485 Cable is correctly connected between the Intelligent Server and TCS-NET Relay Interface.
2. The TCS-NET Relay Interface is electrified.
3. The power source of the Intelligent Server is electrified.

### **Cautions on ending a Intelligent Server**

1. When turning off the Intelligent Server, perform the shutdown operation.

- The shutdown operation saves the information stored in the memory to a file in a CF card.
- If the Intelligent Server is turned off without the shutdown operation performed, the following errors may occur:
  - The server cannot be restarted.
  - The BACnet communication function does not work properly.

2. When the Intelligent Server is turned off, an alarm may be given on the Building Automation system. In this case, contact the administrator of the Building Automation system.

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### 3-1. Activation and LED change

1. Confirm that the TCS-NET Relay Interface is electrified.
2. Confirm that a CF card (Intelligent Server Software) is attached to the Intelligent Server.
3. Turn off the Intelligent Server.

The following page describes the LED status change from turning on the Intelligent Server to activating the BACnet communication function normally.

It takes approximately 10 minutes from turning on the Intelligent Server to activating the BACnet communication function normally. The time varies depending on the number of air-conditioners or the communication status to the Building Automation system.

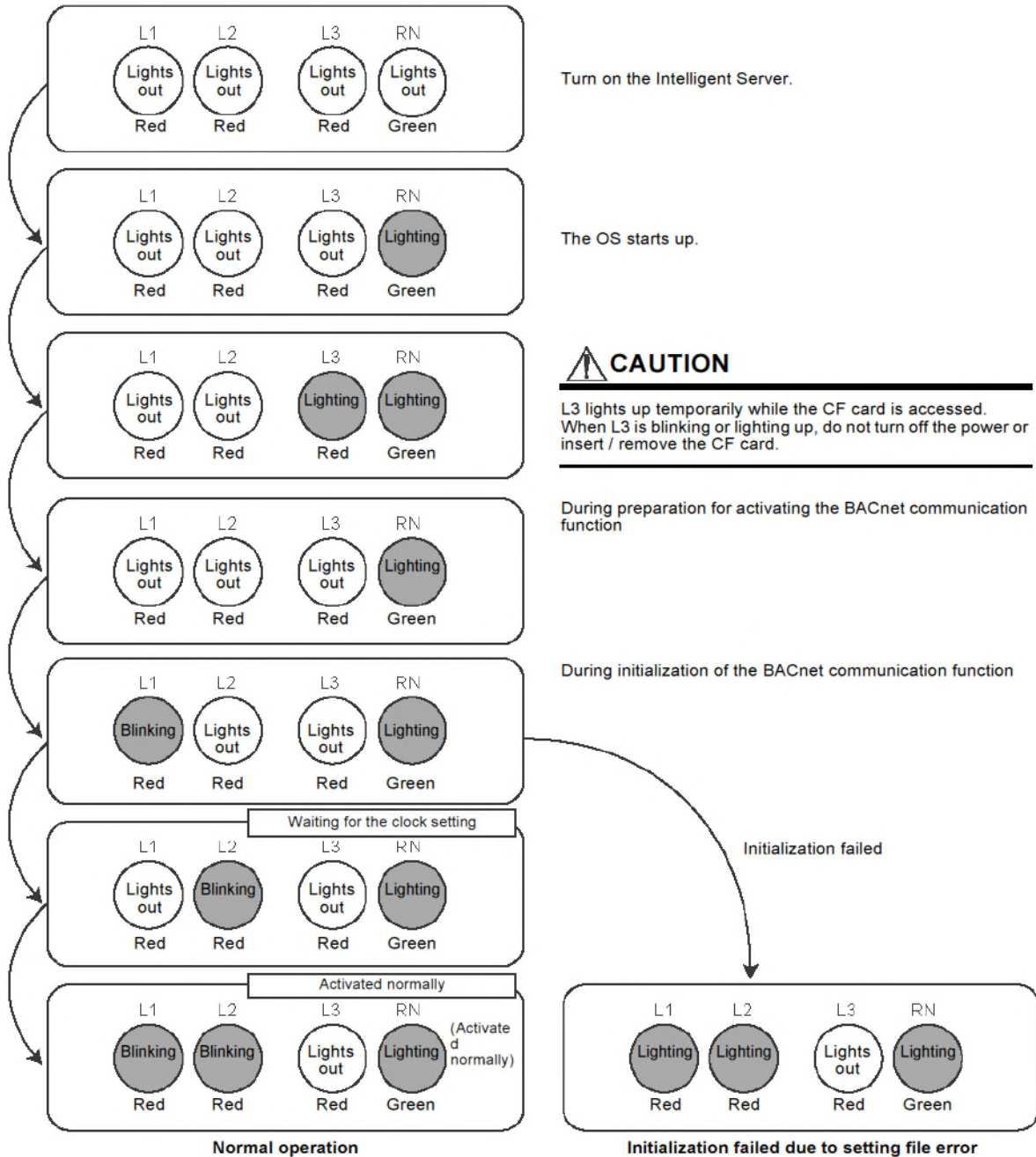


Figure 1. LED change during activation

## 3-2. Termination and LED change

1. Press the SDR button of the Intelligent Server, and wait until the shutdown is complete.
2. Turn off the Intelligent Server.

The following page describes the LED status change from pressing the SDR button of the Intelligent Server to the shutdown completion.

It takes approximately 5 minutes from pressing the SDR button of the Intelligent Server to the shutdown completion. The time varies depending on the number of air-conditioners or the communication status to the Building Automation system.

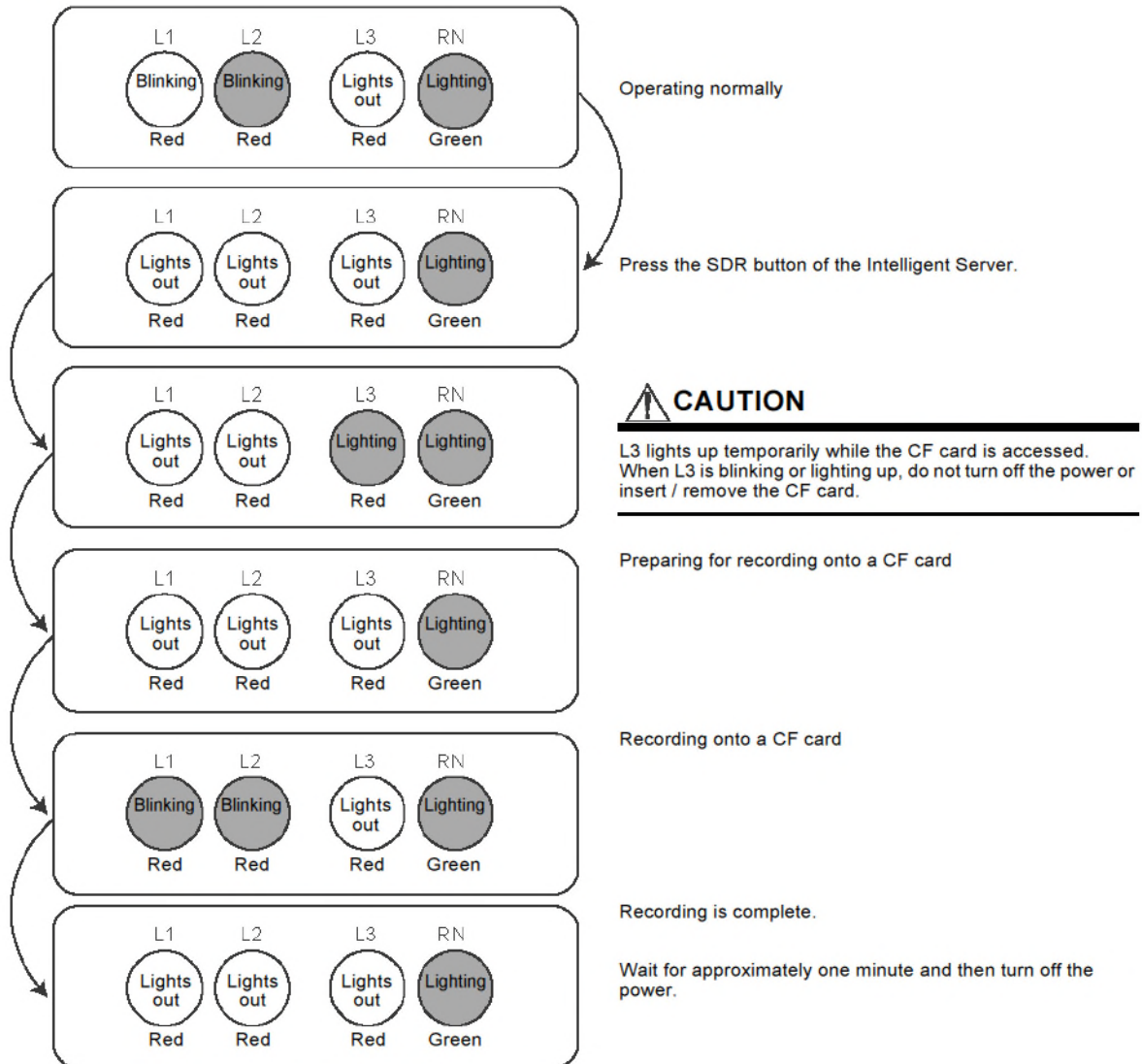


Figure 2. LED change during termination

# 4 Procedure and Checks Until The Test Operation

## 4-1. Preparation

### 4-1-1. Installing the device

For how to install the device, see the Installation Manual.

- Installation Manual of Intelligent Server
- Installation Manual of TCS-NET Relay Interface

### 4-1-2. Server settings

	Item	Description
1	Create a setting file with the Setting File Creation Software.	Create a setting file. <ul style="list-style-type: none"><li>• Air-conditioner data</li><li>• Intelligent Server data</li><li>• IP address of LAN1</li></ul>
2	Change the laptop's IP address	Change the laptop's IP address to "192.168.0.98".
3	Connect to LAN2	Connect a LAN cable between the laptop and LAN2. IP address of LAN2: 192.168.0.99
4	Upload a setting file with the Setting File Creation Software.	Upload the setting file data.

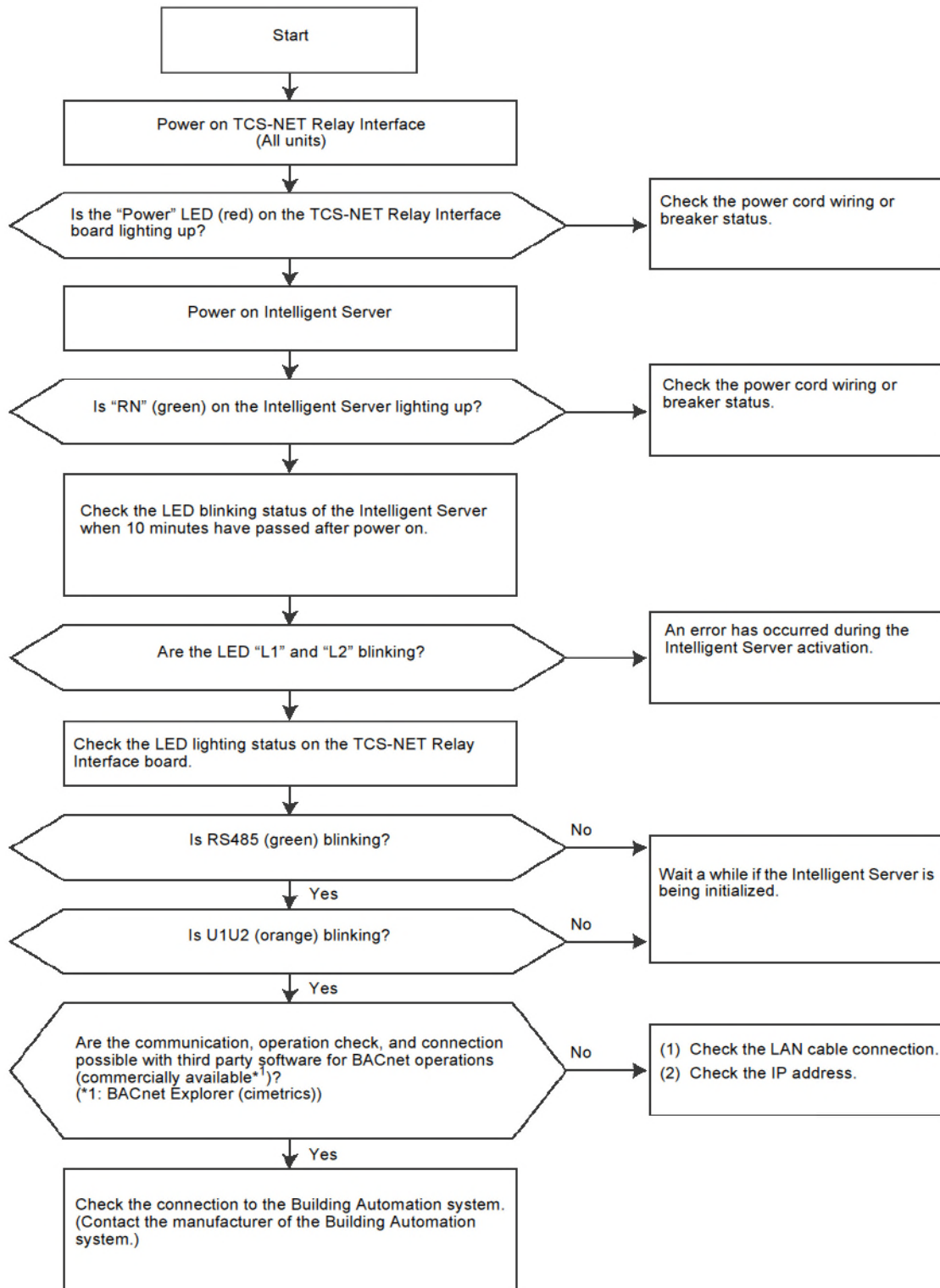
Please use the following Setting File Creation Software.

Model name	Setting File Creation Software
BMS-STBN10E	Setting File Creation Software for BMS System
BMS-STBN10UL	Setting File Creation Software for North America



## 4-2. Test operation procedure

Follow the procedure below to perform the test operation. If an error occurs in each step, see the failure diagnosis.





# 5 Troubleshooting

No.	Failure	Cause	Check and action
1	The "L1" LED (red) does not blink even when 10 minutes have passed after powering on the Intelligent Server.	1.The CF card is not attached properly. 2.The CF card is broken. 3.The OS does not start up.	<ul style="list-style-type: none"> <li>• Check whether the OS of the Intelligent Server is starting.</li> <li>• Send the PING command from a laptop and check whether the Intelligent Server responds.</li> </ul>
2	Both the "L1" LED (red) and "L2" LED (red) light up when 10 minutes have passed after powering on the Intelligent Server.	The content in the setting file of the Intelligent Server is not correct.	Check the content in the setting file.
3	The "RS485" LED (green) of the TCS-NET Relay Interface does not blink.	The RS485 communication is not established from the Intelligent Server.	Check whether the OS of the Intelligent Server is starting. Check the connection between the Intelligent Server and TCS-NET Relay Interface. <ul style="list-style-type: none"> <li>• Pole of RS485</li> <li>• Communication cable disconnection</li> <li>• Terminating resistance setting of RS485</li> </ul>
		The address of the TCS-NET Relay Interface is not described in the setting file of the Intelligent Server.	<ul style="list-style-type: none"> <li>• Check the content in the setting file.</li> <li>• Check the address setting of the TCS-NET Relay Interface.</li> </ul>
4	The "U1U2" LED (orange) of the TCS-NET Relay Interface does not blink.	The content in the setting file of the Intelligent Server is not correct. (Wrong address information on the indoor unit)	Check the content in the setting file.
5	The Intelligent Server cannot be detected from the Building Automation system.	The Intelligent Server is not currently activating.	<ul style="list-style-type: none"> <li>• Check whether the "L1" LED and "L2" LED of the Intelligent Server are blinking.</li> <li>• Check whether the Intelligent Server is sending I-am frames of BACnet.</li> </ul>
		<ul style="list-style-type: none"> <li>• Wrong LAN cable wiring</li> <li>• Wrong IP address setting</li> <li>• Wrong Subnet address setting</li> </ul>	<ul style="list-style-type: none"> <li>• Check whether communications can be established between the Building Automation system and Intelligent Server. (PING)</li> <li>• Check the IP address of the Intelligent Server.</li> </ul>
6	The Intelligent Server does not respond to requests from the Building Automation system.	Wrong IP address setting of the communicating party	Check whether the IP address of the other party is registered as an IP address of another system in the setting file of the Intelligent Server.

# 6 Product Replacement Procedure In Case of Malfunction

## 6-1. Service components

There is no service component for this product.  
Send a malfunctioning product.

Product name	Model name		Description
Intelligent Server	BMS-LSV9E	BMS-LSV6UL	Hardware product for Intelligent Server
Intelligent Server Software	BMS-STBN10E	BMS-STBN10UL	Software product built in Intelligent Server (CF card)

## 6-2. Replacement procedure

Follow the procedure below to replace the hardware and software (CF card) of the Intelligent Server.

- 1** Power off the Intelligent Server.
- 2** Remove the LAN cable, RS485 communication cable, and power cord from their connectors on the box of the malfunctioning Intelligent Server.
- 3** Remove the malfunctioning Intelligent Server.
- 4** Attach a new CF card to a new Intelligent Server.
- 5** Install a new Intelligent Server.
- 6** See Chapter 4. "Procedure and Checks Until The Test Operation" to check the performance after replacement.

### CAUTION

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