

# **NEW SUPERLINK SYSTEM LON GATEWAY PRODUCT SPECIFICATION**

**MODEL : SC-LGWN-A**

Product Drawing No. : PSZ006A014AA

XIF File : Lgw\_aa.xif

**Ver. 1.0**

**April 1, 2008**

**MITSUBISHI HEAVY INDUSTRIES, LTD.  
AIR-CONDITIONING & REFRIGERATION  
SYSTEMS HEADQUARTERS**

## **1. INTRODUCTION**

### **1.1 SCOPE**

This product specification is applied to the LON Gateway SC-LGWN-A which connects the LON\*<sup>1</sup> network with the MITSUBISHI HEAVY INDUSTRIES' "SUPERLINK" networks. This document describes the specifications of the product as for April 1, 2008. Any contents of this document may be changed without prior notification.

\*<sup>1</sup> LON is a widely used control network by Echelon Co. "LON" is Echelon's registered trade name.

### **1.2 OUTLINE OF PRODUCT**

- Number of SUPERLINK networks : 2 networks
- Number of indoor units : Max.48 x 2 networks = Max.96 indoor units
- Number of LON nodes : 1 node for this gateway
- Number of network variables : 1250 (implemented as 97 Functional Blocks)
- LON transceiver : FTT-10A

### **1.3 LONMARK**

This LON Gateway is not LONMARK approved product. There is no LONMARK Functional Profile for packaged air-conditioners.

### **1.4 ENGINEERING WORK**

"Engineering work" means technical service work such as dispatching engineers to the site, the address allocation planning work, configuration of this gateway, trial operation of the system and so on. These engineering works may be paid services.

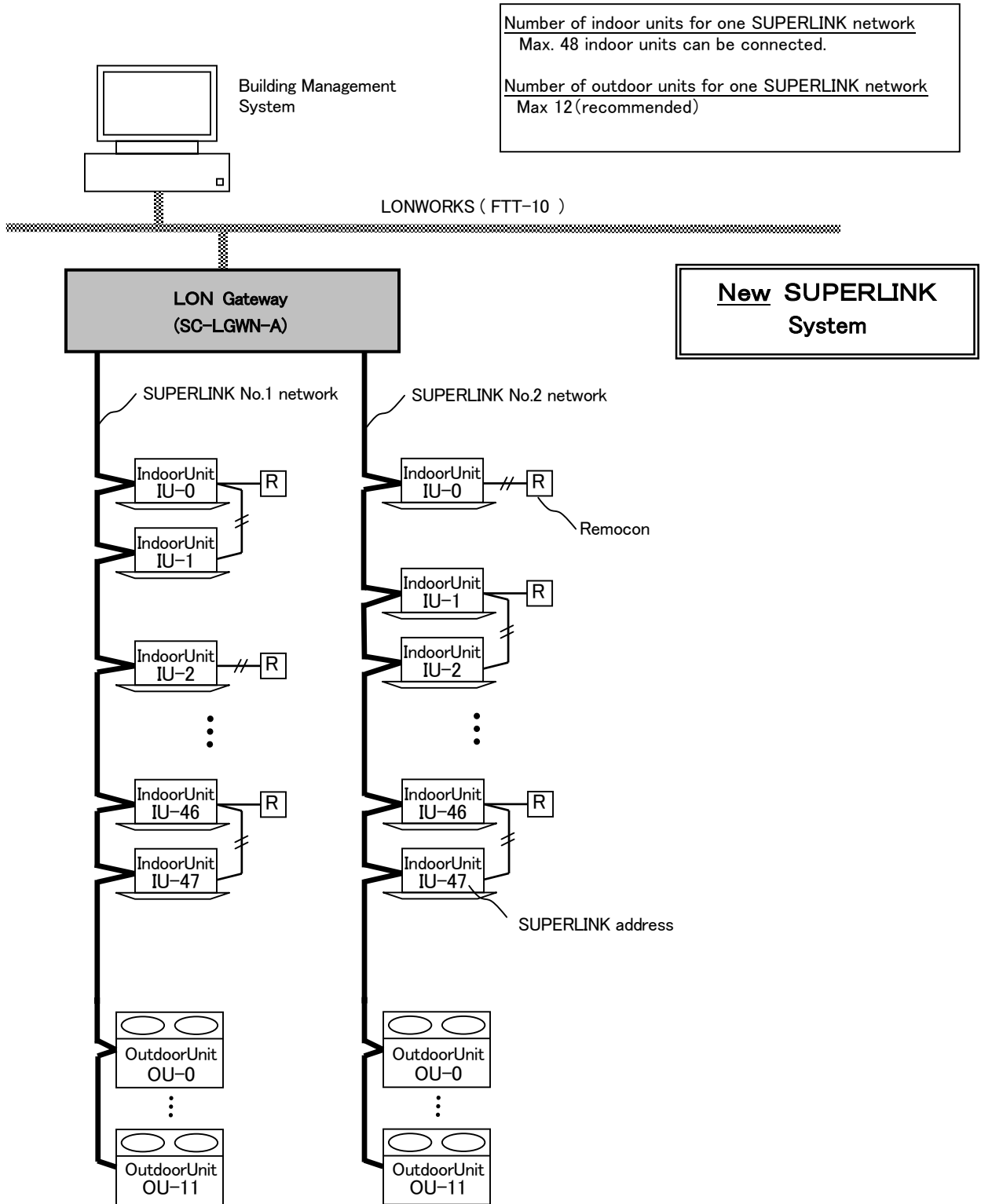
### **1.5 CUSTOMIZE WORK**

This LON Gateway is a kind of ready-made product. Customization of the functions of this gateway cannot be supplied.

## 2. SYSTEM ARCHITECTURE

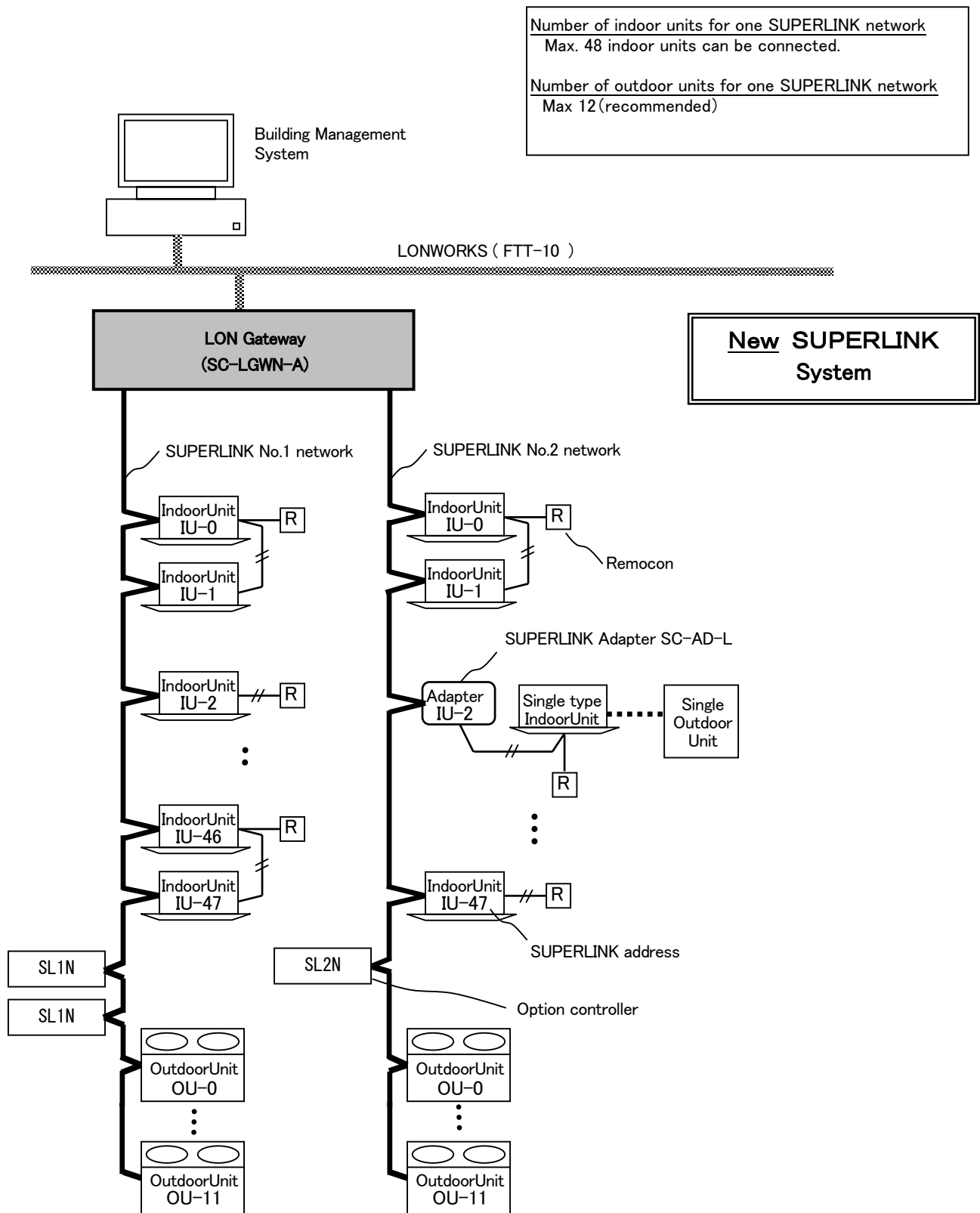
### 2.1 SYSTEM DIAGRAM

Fig.2.1.1 shows a basic case of the system diagram of connection between the building management system host computer, the LON Gateway and the new SUPERLINK control networks.



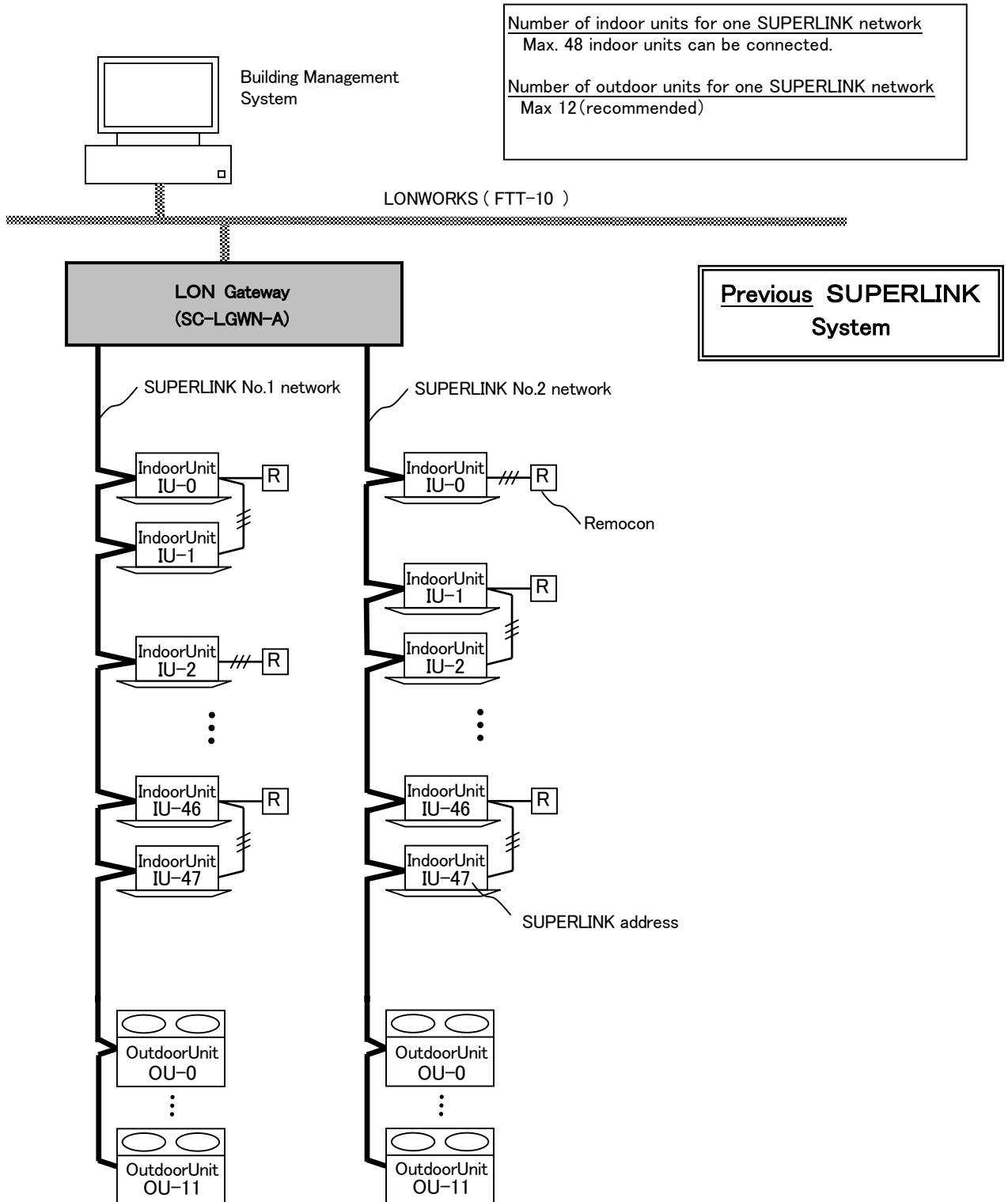
**Fig. 2.1.1 System Diagram (Basic case of the new SUPERLINK)**

Fig.2.1.2 shows a case of the system diagram of connection between the building management system host computer, the LON Gateway, and the new SUPERLINK control networks along with SUPERLINK option controllers such as SL1N, SL2N or SL3N. The SC-ADN adapter should be used for connection of MHI's single packaged air-conditioners models.



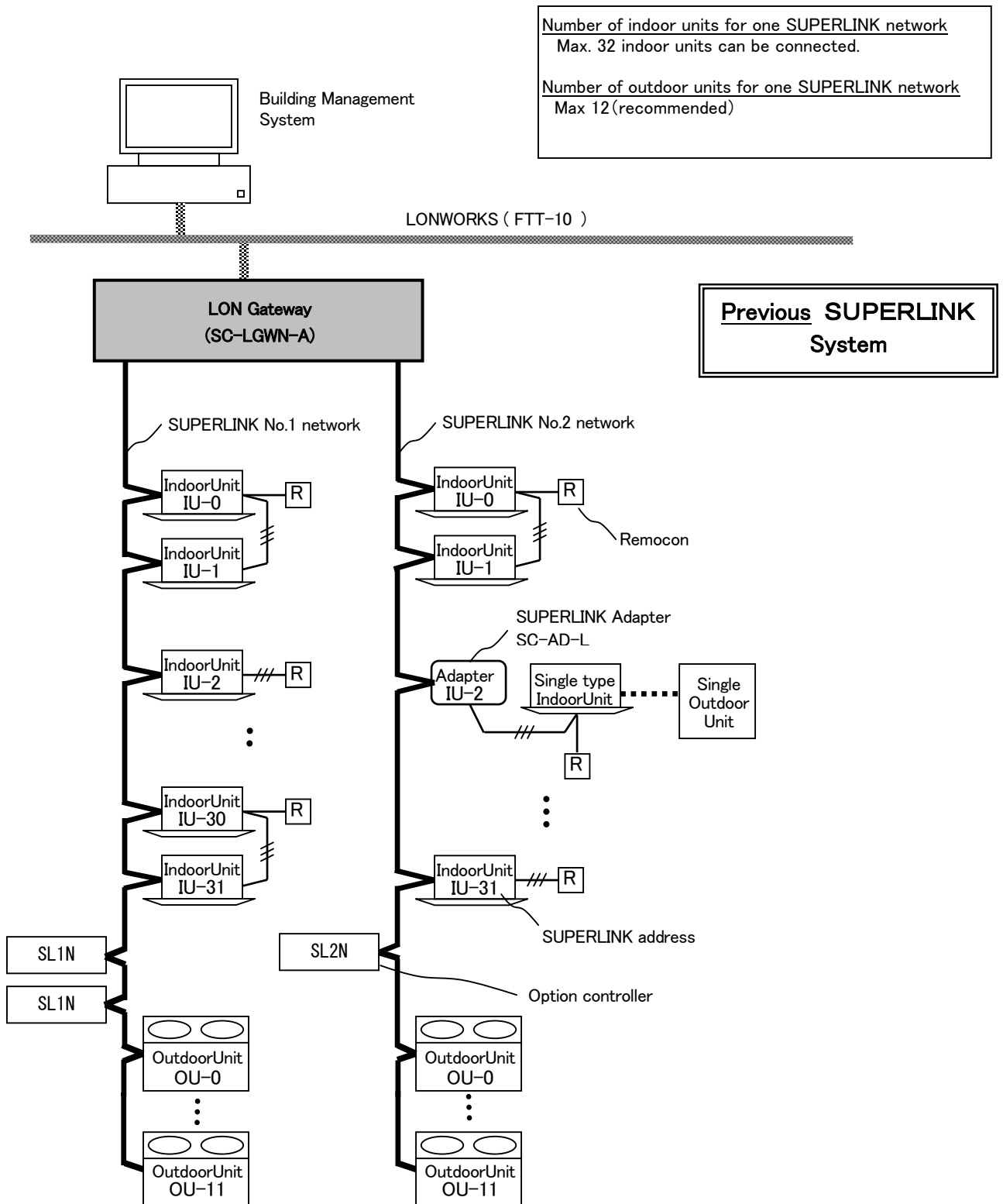
**Fig. 2.1.2 System Diagram (Option controller connected case of the new SUPERLINK communication system)**

Fig.2.1.3 shows a basic case of the system diagram of connection between the building management system host computer, the LON Gateway and the previous SUPERLINK control networks.



**Fig. 2.1.3 System Diagram (Basic case of the previous SUPERLINK communication system)**

Fig.2.1.4 shows a case of the system diagram of connection between the building management system host computer, the LON Gateway, and the previous SUPERLINK control networks along with SUPERLINK option controllers such as SL1N(SLA-1) or SL2N(SLA-2A). The SC-ADN(SC-AD-L) adapter should be used for connection of MHT's single packaged air-conditioners models.



**Fig. 2.1.4 System Diagram (Option controller connected case of the previous SUPERLINK communication system)**

## 2.2 AIR-CONDITIONER CONNECTION

### (1) Packaged Air-Conditioner Models

- MHI's Multi KX series
- MHI's Multi GHP series
- SC-ADN adapter + Separate PAC series

When the SC-ADNs are used, some functions will become invalid. The detail explanation of the limitations for the SC-ADN will appear in the later version of this document.

### (2) Max number of indoor units and option controller

#### (2.1) New SUPERLINK communication system

The maximum number of indoor units connected is shown in the Table 2.4.1 depending on connection of the SUPERLINK option controller such as SL1N, SL2N and SL3N.

	Without option controller	With option controller(*)
Number of SUPERLINK networks	2 networks	2 networks
Number of indoor units	Max48 units x 2 = Max 96	Max48 units x 2 = Max 96

(\*)The maximum number of option controllers are max. 4 of SL1N, one of SL2N and one of SL3N for one SUPERLINK network. In the case of SL2N or SL3N, it is necessary to erase registration of non-connected inside unit. For SL2N and SL3N, change is required for the setup deprived of the right of instruction of Remocon control Lock/Unlock.

#### (2.2) Previous SUPERLINK communication system

The maximum number of indoor units connected is shown in the Table 2.4.2 depending on connection of the SUPERLINK option controller such as SL1N(SLA-1) or SL2N(SLA-2A). The reason why the number of indoor units connectable is reduced in the case of option controller connection is for communication traffic limitation.

	Without option controller	With option controller(*)
Number of SUPERLINK networks	2 networks	2 networks
Number of indoor units	Max48 units x 2 = Max 96	Max32 units x 2 = Max 64

(\*) Option controllers should be max. 2 of SL1N(SLA-1) or only one of SL2N(SLA-2A) for one SUPERLINK network.

## 2.3 LON COMMUNICATION

### (1) COMPATIBLE LON NETWORK

- Communication Protocol : LonTalk
- Transceiver Type : FTT-10A
- Transmission Speed : 78.1kbps

### (2) LON Node

This LON gateway has only one LON node. The node has 1250 network variables for 96 indoor units of air-conditioners. In other words, 13 network variables for every indoor units make 1250 network variables for 96 indoor units for this gateway.

### 3. FUNCTION OVERVIEW

#### 3.1 LON NETWORK MANAGEMENT FUNCTIONS

Since this LON gateway is not LONMARK approved products, some LON network management functions are not supported by this gateway.

Table 3.1 List of the LON Network Management Functions

Function	Support	Explanation
Service PIN	Yes	Broadcasts Neuron ID by pressing Service PIN on the case
Wink	No	No response when receiving Wink message
Object Request	No	No response when receiving Object Request message
Object Status	No	No response when receiving Object Request message
Send HeatBeat	Yes	For Only output network variables for air-con On/Off status
Receive HeatBeat	No	Cannot be configured
Minimum Send Time	No	Cannot be configured
Delay Time	No	Cannot be configured

#### 3.2 CONTROL & MONITOR FUNCTION OVERVIEW

The control and monitor functions mean categories of jobs from an air-conditioning system's point of view. The Table 3.2 shows the control and monitor functions of the SC-LGWN-A Gateway.

Table 3.2 List of Control & Monitor Functions

	Function	Explanation
C O N T R O L	On/Off command	Send On/Off command to an indoor unit
	Mode command	Send Operation Mode command (Auto, Cooling, Heating, Fan) to an indoor unit.
	Setpoint command	Send Temperature Setpoint command to an indoor unit. The range is from 18 to 30 degrees Celsius.
	Fanspeed command	Send Fanspeed select command (Hi, Me, Lo) to an indoor unit.
	Filter Sign Reset command	Send Reset command for Filter Sign on the remocon of an indoor unit.
	Remocon Lock/Unlock command	Send the Remocon operation Lock or Unlock command to an indoor unit.
	System Stop command	Send Forced Off commands to all indoor units and set all remocons Lock mode simultaneously.
M O N I T O R	On/Off status	Monitor On/Off status of an indoor unit.
	Mode status	Monitor Operation Mode status of an indoor unit.
	Setpoint status	Monitor Temperature Setpoint status of an indoor unit.
	Fan Speed status	Monitor Fanspeed select status of an indoor unit.
	Room Temperature Status	Monitor Inlet air temperature sensor data of an indoor unit.
	Failure status	Monitor Failure status and Error Code of an indoor unit.
	Filter Sign status	Monitor Filter Sign status of an indoor unit.
	System Stop status	Monitor All air-conditioner Forced Off status.



#### **4. HARDWARE SPECIFICATIONS**

(1) Power Supply

- AC single phase 100V - 240V +10%, -15% 50/60Hz

(2) Operation Temperature

- Ambient Temperature : 0 to 40 degrees Celsius
- Relative Humidity : Max 85 %RH (without dewing)

(3) Storage Temperature

- Ambient Temperature : -10 to 50 degrees Celsius
- Relative Humidity : Max 85 %RH (After 48 hours from out of storage, dewing should not exists)

(4) Power Blackout Compensation

- This gateway does not have a battery circuit for power blackout recovery.
- If blackout or manual power-off occurs for more than 30 msec, the monitoring data and the setting of each indoor unit, such as the operation mode or set point temperature, may disappear.
- This gateway does not store and recover the On/Off control settings. However, depending on the setting of the remocon, indoor units will restart when the power supplies to the whole air-conditioner system resume to normal state.

(5) Appearance

- Outline drawing : Fig 4.1 on the following page
- Outline dimensions : 260(W) x 200(H) x 79(D) mm
- Color : Cream

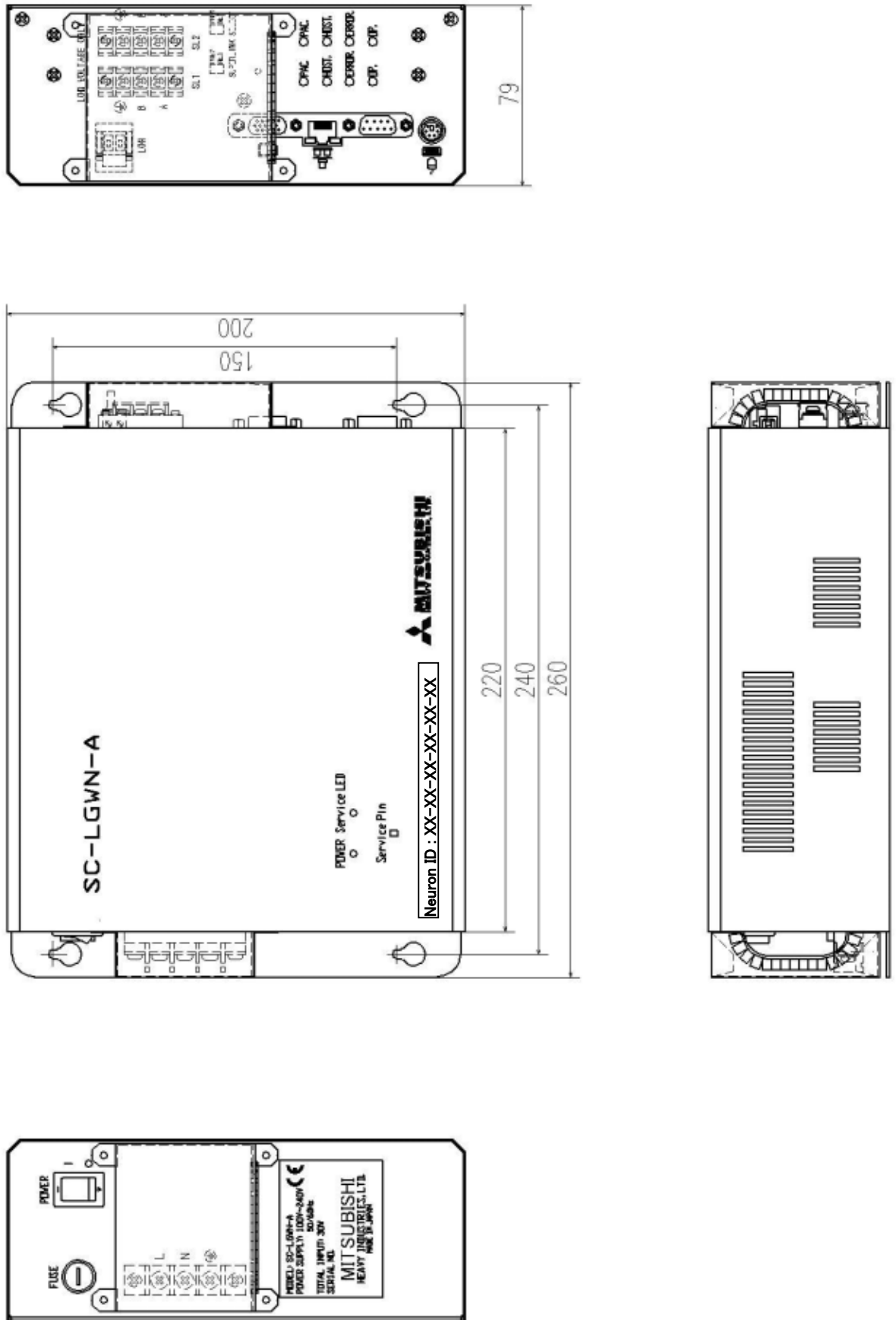


Fig. 4.1 Outline Drawing of the SC-LGWN-A

## 5. INSTALLATION

### 5.1 INSTALLATION CONDITIONS

This gateway SC-LGWN-A has a terminal block for the AC power supply on the outside surface of the casing.

For avoiding electrical shock injury, the SC-LGWN-A should be installed inside a cabinet with a lock

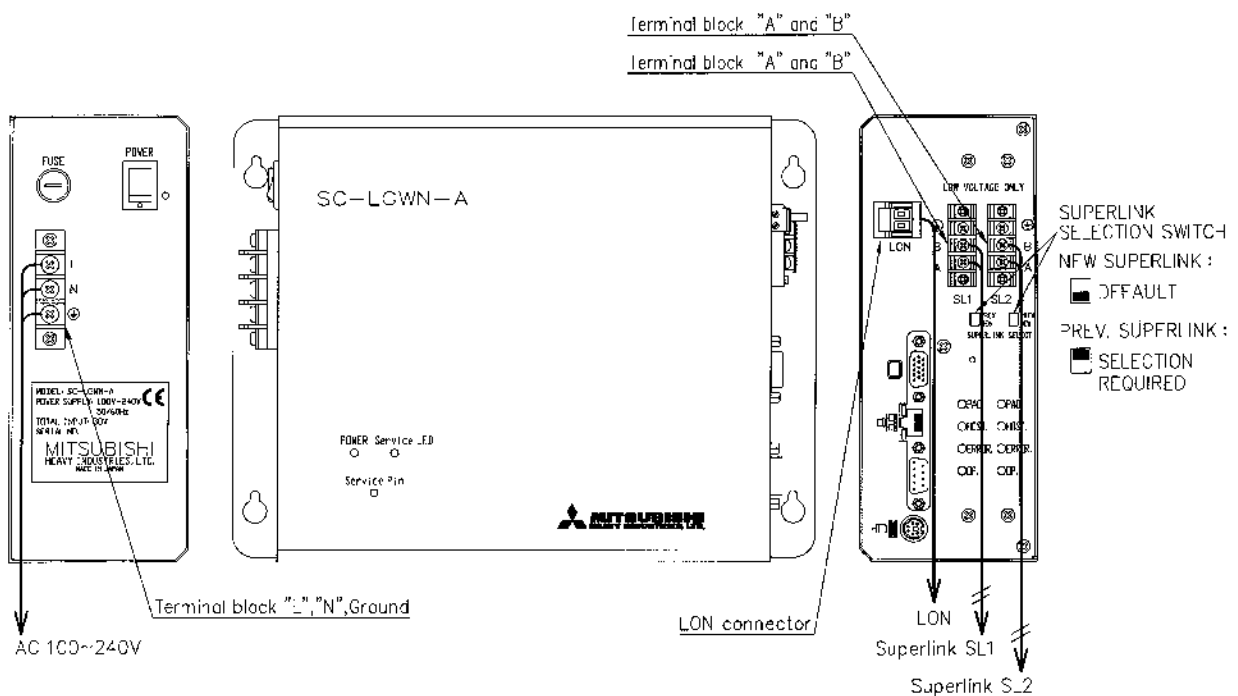
The direction of placement of this Gateway when installation should be such a way that the front panel is vertical and the lettering of the front panel is right direction because of air-cooling. The recommended service space surrounding this Gateway is as follows:

- Upper clearance : Minimum 30 mm
- Lower clearance : Minimum 30 mm
- Right side clearance : Minimum 50 mm (more than 100 mm is recommended)
- Left side clearance : Minimum 50 mm (more than 200 mm is recommended)

The side clearance is for wiring workspace.

### 5.2 WIRING

The Fig 5.1 shows the wiring of this Gateway. After wiring to the LON Gateway, the terminal covers, which are included in this Gateway's product package, should be installed by screws.



**Fig. 5.1 SC-LGWN-A Wiring**

**\*\*** : If the previous SUPERLINK communication system is to be used, Change selection switch to "PREV."(previous SUPERLINK) side.

### 5.3 LON CABLE


This gateway supports the LON FTT-10A twisted-pair transmission line which is the most popular network line type of LONWORKS. Follow the Building Management System vender's the LON cable selection.

This gateway has both plug and receptacle for the LON connector on the side panel. Connect the end of the twisted-pair cable to the connector plug's screw.

### 5.4 SUPERLINK CABLE

Shielded wire(double-core,  $0.75\text{mm}^2\sim 1.25\text{mm}^2$ ).

Max. 1000m per line (Max. distance: 1000m, Total wire length: 1000m)

Note 1: When this Gateway is used, use a shielded wire for the SUPERLINK signal wire. Ground both ends of the shielded wire. (Please wire the ground of the Gateway at  Ground position.)

Note 2: If the indoor and outdoor units connected to the network are all compatible units with New SUPERLINK, a total wire length of 1500m per line is possible (maximum distance: 1000m). However, be sure to use a  $0.75\text{mm}^2$  wire diameter if the total wire length exceeds 1000m.

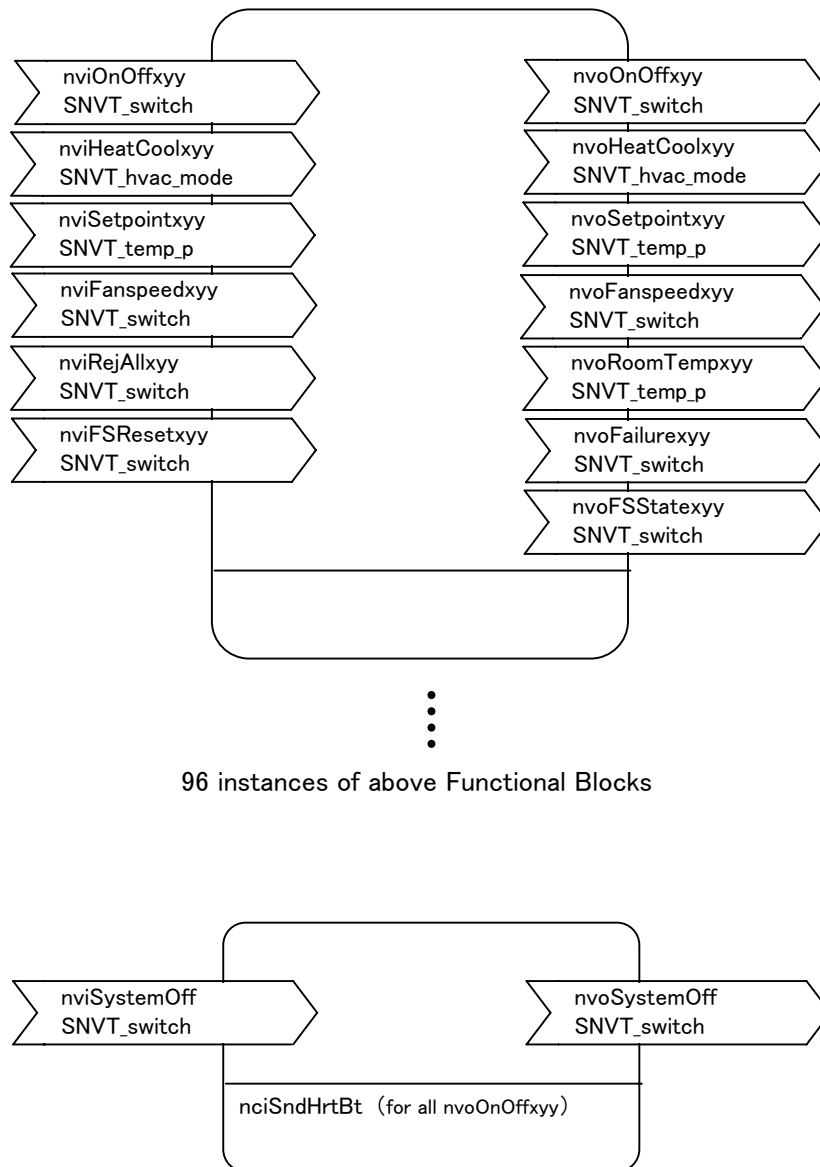
For further information, please contact your sales representative or dealer.

## 6. FUNCTIONAL PROFILE

Although this gateway is not LONMARK approved product, this section explains the corresponding contents for LONMARK's Functional Profile.

### 6.1 OBJECT DIAGRAM

Fig. 6.1 shows the object diagrams of the Functional Blocks of this gateway. This gateway has two classes of Functional Blocks, that is, the indoor unit Functional Block class and the system Functional Block. There are 96 instances of the indoor unit Functional Blocks for control and monitor of each indoor unit and one system Functional Block for a configuration property and the air-conditioner system off function.



Note1: The suffix of each network variable corresponds to each indoor unit. The one digit number "x" indicates the network number of the SUPERLINK, and the two digit number "yy" indicates the SUPERLINK address of the indoor unit. For example, a network variable nvoOnOff for the indoor unit of the address 20 of the SUPERLINK No.1 becomes "nvoOnOff120".

Note2: There is only one configuration property "nciSendhrtBt" in this gateway. The configuration property sets the sending interval of the nvoOnOff<sub>xyy</sub>.

**Fig. 6.1 Object Diagram**

## 6.2 NETWORK VARIABLE LIST

The following table shows the list of the network variables and the configuration property of this gateway.

Table 6.2 List of Network Variables

IN OUT	Network Variable Name	SNVT	Quantity	Function
IN	<b>nviOnOffxxy</b>	SNVT_switch	96	On/Off command for an indoor unit
IN	<b>nviHeatCoolxxy</b>	SNVT_hvac_mode	96	Operation mode command for an indoor unit
IN	<b>nviSetpointxxy</b>	SNVT_temp_p	96	Setpoint command for an indoor unit
IN	<b>nviFanspeedxxy</b>	SNVT_switch	96	Fanspeed select command for an indoor unit
IN	<b>nviFSResetxxy</b>	SNVT_switch	96	Filter Sign Reset command for an indoor unit
IN	<b>nviRejAllxxy</b>	SNVT_switch	96	Remocon Lock/Unlock command for an indoor unit
IN	<b>nviSystemOff</b>	SNVT_switch	1	All air-conditioner stop command
OUT	<b>nvoOnOffxxy</b>	SNVT_switch	96	Monitor On/Off status of an indoor unit
OUT	<b>nvoHeatCoolxxy</b>	SNVT_hvac_mode	96	Monitor Operation mode status of an indoor unit
OUT	<b>nvoSetpointxxy</b>	SNVT_temp_p	96	Monitor Setpoint status of an indoor unit
OUT	<b>nvoFanspeedxxy</b>	SNVT_switch	96	Monitor Fanspeed select status of an indoor unit
OUT	<b>nvoRoomTempxxy</b>	SNVT_temp_p	96	Monitor Inlet-air temperature of an indoor unit
OUT	<b>nvoFailurexxy</b>	SNVT_switch	96	Monitor Failure status and Error code of an indoor unit
OUT	<b>nvoFSStatexxy</b>	SNVT_switch	96	Monitor Filter Sign status of an indoor unit
OUT	<b>nvoSystemOff</b>	SNVT_switch	1	Monitor All air-conditioner stop status
IN	<b>nciSndHrtBt</b>	SNVT_time_sec	(1)	Send data of bound nvoOnOffxxy periodically
			合計*2 1250	

\*1 The surfix number "xxy" of each network variable specifies each indoor unit.

- x : The SUPERLINK network number. (1 or 2)
- yy : The SUPERLINK address of the indoor unit. (00 to 47)

\*2 If "nciSndHrtBt" is included, the total number of the network variables becomes 1251.

6.3 FUNCTION OF NETWORK VARIABLE

(1) ON/OFF COMMAND ( **nviOnOffxyy** )

Type : **SNVT\_switch**

Destination: **Indoor unit of address yy of SUPERLINK No. x**

This input network variable sends the On/Off command to switch an indoor unit On and Off. The result of this command is same as the operation from a remocon of the indoor units. In case of remocon group connection, this command should be sent to every indoor unit of the group.

If this Off command is sent to an indoor unit which is in the failure status with the red LED on the remocon blinking ( **nvoFailurexyy** should be "Failure" status), the Off command by this **nviOnOffxyy** turns off the red LED on the remocon ( **nvoFailurexyy** becomes "Normal" status) regardless of the actual failure of the unit. Then, if the On command is sent to the indoor unit in this situation, the indoor unit would be switched On in case that the internal failure is removed, or the indoor unit would go Failure indication again with the red LED On in case that the internal failure has not be removed.

Valid range :

<b>nviOnOffxyy</b>		content
state	value	
1 (1)*	0~255 (0.0~127.5)*	<b>On</b>
0 (0)*	0~255 (0.0~127.5)*	<b>Off</b>

value is not used (Don't care)

Initial : state = 0xFF (-1)\*, value = 0xFF (127.5)\*

( )\* indicates data appeared in the LonMaker

(2) MODE COMMAND ( **nviHeatCoolxyy** )

Type : **SNVT\_hvac\_mode**

Destination: **Indoor unit of address yy of SUPERLINK No. x**

This input network variable sends the operation mode command to set Automatic, Cooling, Fan, or Heating mode. The result of this command is same as the operation from a remocon of the indoor units. In case of remocon group connection, this command should be sent to every indoor unit of the group. Since the Dry mode is not covered by the standard network variable types, Dry mode can not be set.

Valid range :

<b>nviHeatCoolxyy</b>	content
0 (HVAC_AUTO)*	<b>Auto</b>
1 (HVAC_HEAT)*	<b>Heat</b>
3 (HVAC_COOL)*	<b>Cool</b>
9 (HVAC_FAN_ONLY)*	<b>Fan</b>

Initial : 0xFF (HVAC\_NULL)\*

( )\* indicates data appeared in the LonMaker

(3) SETPOINT COMMAND ( **nviSetpointxyy** )

Type : **SNVT\_temp\_p**

Destination: **Indoor unit of address yy of SUPERLINK No. x**

This input network variable sends the temperature setpoint command. The result of this command is same as the operation from a remocon of the indoor units. In case of remocon group connection, this command should be sent to every indoor unit of the group. The range of the setting is from 18 to 30 degrees Celsius by 1 degree step. If value with decimal point is input, it will be set to the rounded number. Input value less than 1800 or larger than 3000 will be set as 18 deg. or 30 deg. respectively.

Valid range :

<b>nviSetpintxyy</b>	content
1800 (18.00)*	<b>18 deg</b>
1900 (19.00)*	<b>19 deg</b>
:	
3000 (30.00)*	<b>30 deg</b>

Initial : 0x7FFF (327.67)\*

( )\* indicates data appeared in the LonMaker

(4) FANSPEED COMMAND ( **nviFanspeedxy** )

Type : **SNVT\_switch**

Destination: **Indoor unit of address yy of SUPERLINK No. x**

This input network variable sends the Fanspeed setting command to set Hi, Me, or Lo. The result of this command is same as the operation from a remocon of the indoor units. In case of remocon group connection, this command should be sent to every indoor unit of the group. This command can not switch off the fan of the indoor unit.

Valid range :

<b>nviFanspeedxy</b>		content
state	value	
0 (0)*	0~255 (0.0~127.5)*	<b>No Operation</b>
1 (1)*	0~ 66 (0.0~33.0)*	<b>Lo</b>
1 (1)*	67~133 (33.5~66.5)*	<b>Me</b>
1 (1)*	134~200 ( 67~100)*	<b>Hi</b>
1 (1)*	200~255 (100.5~127.5)*	<b>Hi</b>

Initial : state = 0xFF (-1)\*, value = 0xFF (127.5)\*

( )\* indicates data appeared in the LonMaker

(5) FILTER SIGN RESET COMMAND ( **nviFSResetxy** )

Type : **SNVT\_switch**

Destination: **Indoor unit of address yy of SUPERLINK No. x**

This input network variable sends the Filter Sign Reset command to turn off the Filter Sign LED on the remocon. The Fliter Sign LED indicates recommendation that the intake air filter of the indoor unit to be cleaned. The result of this command is same as the operation from a remocon of the indoor units. In case of remocon group connection, this command should be sent to every indoor unit of the group.

Valid range :

<b>nviFSResetxy</b>		content
state	value	
1 (1)*	0~255 (0.0~127.5)*	<b>Reset</b>
0 (0)*	0~255 (0.0~127.5)*	<b>No Operation</b>

value is not used (Don't care)

Initial : state = 0xFF (-1)\*, value = 0xFF (127.5)\*

( )\* indicates data appeared in the LonMaker

(6) REMOCON LOCK/UNLOCK COMMAND ( **nviRejAllxy** )

Type : **SNVT\_switch**

Destination: **Indoor unit of address yy of SUPERLINK No. x**

This input network variable sends the Remocon Lock/Unlock command to prohibit/allow the remocon operation. The all function of the remocon will be Lock/Unlock all together. In case of remocon group connection, this command should be sent to every indoor unit of the group. In case that SLA-1 or SLA-2A is connected, this command should be set as "Unlock" and SLA-1/SLA-2A should be set as also remocon Unlock.

Valid range :

<b>nviRejAllxy</b>		content
state	value	
1 (1)*	0~255 (0.0~127.5)*	<b>Lock</b>
0 (0)*	0~255 (0.0~127.5)*	<b>Unlock</b>

value is not used (Don't care)

Initial : state = 0xFF (-1)\*, value = 0xFF (127.5)\*

( )\* indicates data appeared in the LonMaker



(7) SYSTEM STOP COMMAND ( **nviSystemOff** )

Type : **SNVT\_switch**

Destination: **All indoor units**

This input network variable sends the Off and the Remocon Lock command for all indoor units to stop all air-conditioners and prohibit all the remocon operation.

After the System Stop command is sent, the operation from the remocon becomes possible if the Remocon **Unlock** command is sent to **nviRejAllyy** of the specified indoor unit. Even in the System Stop state, each indoor unit can be operated from the LON BMS computer by sending commands to the **nviOnOffxyy** network variable. When System Stoop **Release** command is sent to the **nviSystemOff**, all remocon becomes **Unlock** simultaneously but any indoor unit does not becomes **On** automatically.

Valid range :

<b>nviSystemOff</b>		content
state	value	
1 (1)*	0~255 (0.0~127.5)*	<b>Stop</b>
0 (0)*	0~255 (0.0~127.5)*	<b>Release</b>

value is not used (Don't care)

Initial : **Release**

( )\* indicates data appeared in the LonMaker

(8) ON/OFF STATUS ( **nvoOnOffxyy** )

Type : **SNVT\_switch**

Source: **Indoor unit of address yy of SUPERLINK No. x**

This output network variable indicates an indoor unit's On/Off status. The indication of this network variable is same as the indication on the remocon of the indoor units. In case of remocon group connection, this network variable indicates each indoor unit's status.

In rare cases that this gateway fails to receive the change of status broadcast from an indoor unit, the change of status indication would delay for about 1 minute at the worst case. If this gateway cannot communicate with the indoor unit for 3 minutes, the network variable becomes the Initial status.

Valid range :

<b>nvoOnOffxyy</b>		content
state	value	
1 (1)*	200 (100.0)*	<b>On</b>
0 (0)*	0 (0.0)*	<b>Off</b>

value is not used (Don't care)

Initial : state = 0xFF (-1)\*, value = 0xFF (127.5)\*

( )\* indicates data appeared in the LonMaker

(9) MODE STATUS ( **nvoHeatCoolxyy** )

Type : **SNVT\_hvac\_mode**

Source: **Indoor unit of address yy of SUPERLINK No. x**

This output network variable indicates an indoor unit's Operation mode. The indication of this network variable is same as the indication on the remocon of the indoor units. In case of remocon group connection, this network variable indicates each indoor unit's status.

In rare cases that this gateway fails to receive the change of status broadcast from an indoor unit, the change of status indication would delay for about 1 minute at the worst case. If this gateway cannot communicate with the indoor unit for 3 minutes, the network variable becomes the Initial status.

Valid range :

<b>nvoHeatCoolxyy</b>		content
0 (HVAC_AUTO)*		<b>Auto</b>
1 (HVAC_HEAT)*		<b>Heat</b>
3 (HVAC_COOL)*		<b>Cool/Dry</b>
9 (HVAC_FAN_ONLY)*		<b>Fan</b>

Initial : 0xFF (HVAC\_NULL)\*

( )\* indicates data appeared in the LonMaker

(10) SET POINT STATUS ( **nvoSetpointxyy** )

Type : **SNVT\_temp\_p**

Source: **Indoor unit of address yy of SUPERLINK No. x**

This output network variable indicates an indoor unit's Room Temperature Set Point status. The indication of this network variable is same as the indication on the remocon of the indoor units. In case of remocon group connection, this network variable indicates each indoor unit's status.

In rare cases that this gateway fails to receive the change of status broadcast from an indoor unit, the change of status indication would delay for about 1 minute at the worst case. If this gateway cannot communicate with the indoor unit for 3 minutes, the network variable becomes the Initial status.

Valid range :

<b>nvoSetpointxyy</b>		content
1800 (18.00)*		<b>18 deg</b>
1900 (19.00)*		<b>19 deg</b>
:		
3000 (30.00)*		<b>30 deg</b>

Initial : 0x7FFF (327.67)\*

( )\* indicates data appeared in the LonMaker

(11) FANSPEED STATUS ( **nvoFanspeedxyy** )

Type : **SNVT\_switch**

Source: **Indoor unit of address yy of SUPERLINK No. x**

This output network variable sends the Fanspeed setting command to set Hi, Me, or Lo. The result of this command is same as the operation from a remocon of the indoor units. In case of remocon group connection, this command should be sent to every indoor unit of the group. This command can not switch off the fan of the indoor unit.

In rare cases that this gateway fails to receive the change of status broadcast from an indoor unit, the change of status indication would delay for about 1 minute at the worst case. If this gateway cannot communicate with the indoor unit for 3 minutes, the network variable becomes the Initial status.

Valid range :

<b>nvoFanspeedxyy</b>		content
state	value	
1 (1)*	66 (33.0)*	<b>Lo</b>
1 (1)*	133 (66.5)*	<b>Me</b>
1 (1)*	200 (100.0)*	<b>Hi</b>

Initial : state = 0xFF (-1)\*, value = 0xFF (127.5)\*

( )\* indicates data appeared in the LonMaker

(12) ROOM TEMPERATURE STATUS ( **nvoRoomTempxyy** )

Type : **SNVT\_temp\_p**

Source: **Indoor unit of address yy of SUPERLINK No. x**

This output network variable indicates an indoor unit's Inlet air temperature status by 0.25 deg. step. When the temperature data is less than 0.0 deg or larger than 35.0 deg, the output data of this network variable becomes 0.0 or 35.0 respectively. The indication of this network variable is same as the indication on the remocon of the indoor units. In case of remocon group connection, this network variable indicates each indoor unit's status.

In rare cases that this gateway fails to receive the change of status broadcast from an indoor unit, the change of status indication would delay for about 1 minute at the worst case. If this gateway cannot communicate with the indoor unit for 3 minutes, the network variable becomes the Initial status.

Valid range :

<b>nvoRoomTempxyy</b>		content
0000 (0.00)*		<b>0 deg</b>
0025 (0.25)*		<b>0.25 deg</b>
0050 (0.50)*		<b>0.5 deg</b>
:		:
:		:
3450 (34.50)*		<b>34.5 deg</b>
3475 (34.75)*		<b>34.75 deg</b>
3500 (35.00)*		<b>35 deg</b>

Initial : 0x7FFF (327.67)\*

( )\* indicates data appeared in the LonMaker

(13) FAILURE STATUS ( **nvoFailurexy** )

Type : **SNVT\_switch**

Source: **Indoor unit of address yy of SUPERLINK No. x**

This output network variable indicates an indoor unit's Failure status. The indication of this network variable is same as the indication on the remocon of the indoor units. In case of remocon group connection, this network variable indicates each indoor unit's status.

In rare cases that this gateway fails to receive the change of status broadcast from an indoor unit, the change of status indication would delay for about 1 minute at the worst case. If this gateway cannot communicate with the indoor unit for 3 minutes, the network variable becomes the Initial status.

Valid range :

<b>nvoFailurexy</b>		content
state	value	
0 (0)*	0 (0.0)*	<b>Normal</b>
1 (1)*	2 (1.0)*	<b>Failure E1</b>
1 (1)*	4 (2.0)*	<b>Failure E2</b>
:	:	:
:	:	:
1 (1)*	196 (98.0)*	<b>Failure E98</b>
1 (1)*	198 (99.0)*	<b>Failure E99</b>

value is not used (Don't care)

Initial : state = 0xFF (-1)\*, value = 0xFF (127.5)\*

( )\* indicates data appeared in the LonMaker

(14) FILTER SIGN STATUS ( **nvoFSStatexy** )

Type : **SNVT\_switch**

Source: **Indoor unit of address yy of SUPERLINK No. x**

This output network variable indicates the Filter Sign status to report the Filter Sign LED on the remocon. The indication of this network variable is same as the indication on the remocon of the indoor units. In case of remocon group connection, this network variable indicates each indoor unit's status.

In rare cases that this gateway fails to receive the change of status broadcast from an indoor unit, the change of status indication would delay for about 1 minute at the worst case. If this gateway cannot communicate with the indoor unit for 3 minutes, the network variable becomes the Initial status.

Valid range :

<b>nvoFSStatexy</b>		content
state	value	
1 (1)*	200 (100.0)*	<b>FilterSignOn</b>
0 (0)*	0 (0.0)*	<b>FilterSignOff</b>

Initial : state = 0xFF (-1)\*, value = 0xFF (127.5)\*

( )\* indicates data appeared in the LonMaker

(15) SYSTEM STOP STATUS ( **nvoSystemOff** )

Type : **SNVT\_switch**

Source: **All indoor units**

This output network variable indicates the System Stop Status of the all air-conditioners as a system. This status does not necessarily represent each indoor unit's On/Off status nor Remocon Lock/Unlock status.

Valid range :

<b>nvoSystemOff</b>		content
state	value	
1 (1)*	200 (100.0)*	<b>Stop</b>
0 (0)*	0 (0.0)*	<b>Release</b>

Initial : **Release**

( )\* indicates data appeared in the LonMaker

6.4 CONFIGURATION PROPERTY

(1) SEND HEARTBEAT (nciSndHrtBt)

Type : **SNVT\_time\_sec**

Target Network Variables : **All nvoOnOfxyy**

This configuration property is used to control SendHeartBeat period for the one class of network variable **nvoOn/Offxyy**. There are no configuration properties for other classes of network variables. The period can be set by 0.1 sec step from 60 sec to 6553.4 sec. This does not mean 0.1 sec precision of actual sending period.

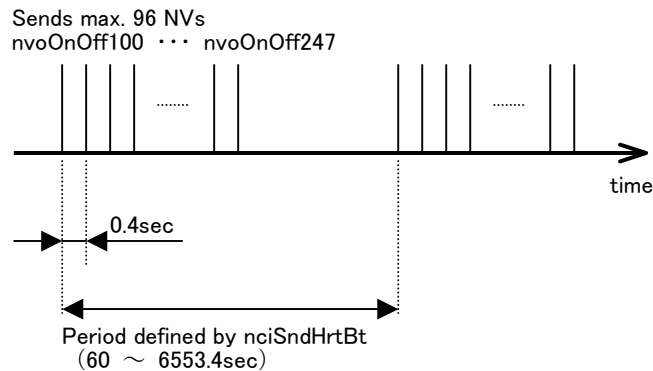
Within a period, every instance of **nvoOn/Offxyy** transmits by interval of 0.4 sec in order to avoid communication traffic congestion. If all **nvoOn/Offxyy**'s are bound, 96 network variables of **nvoOn/Off100** to **nvoOn/Off247** will be transmitted in a SendHeartBeat period. For this reason, the SendHeartBeat period will be automatically set as 60.0 sec for the cases of configuration value from 0.1 to 60.0.

Valid range :

nciSndHrtBt	content
0x0000 (0.0)*	<b>HeartBeatOff</b>
0x0001 (0.1)*	<b>60 sec</b>
0x0002 (0.2)*	
:	
:	
0x0258 (60.0)*	
0x0259 (60.1)*	<b>60.1 sec</b>
0x025A (60.2)*	<b>60.2 sec</b>
:	:
:	:
0xFFFFD (6553.3)*	<b>6553.3 sec</b>
0xFFFFE (6553.4)*	<b>6553.4 sec</b>

Initial : 0x0000 (0.0)\*

( )\* indicates data appeared in the LonMaker



**Fig. 6.4 Timing Chart of SendHeartBeat**

(2) OTHER CONFIGURATION PROPERTIES

Other configuration properties such as MinimumSendTime, ReceiveHeartBeat, or DelayTime are not supported in this gateway.

### End of Document ###