

INTERFACE SPECIFICATION (Functional Profile)

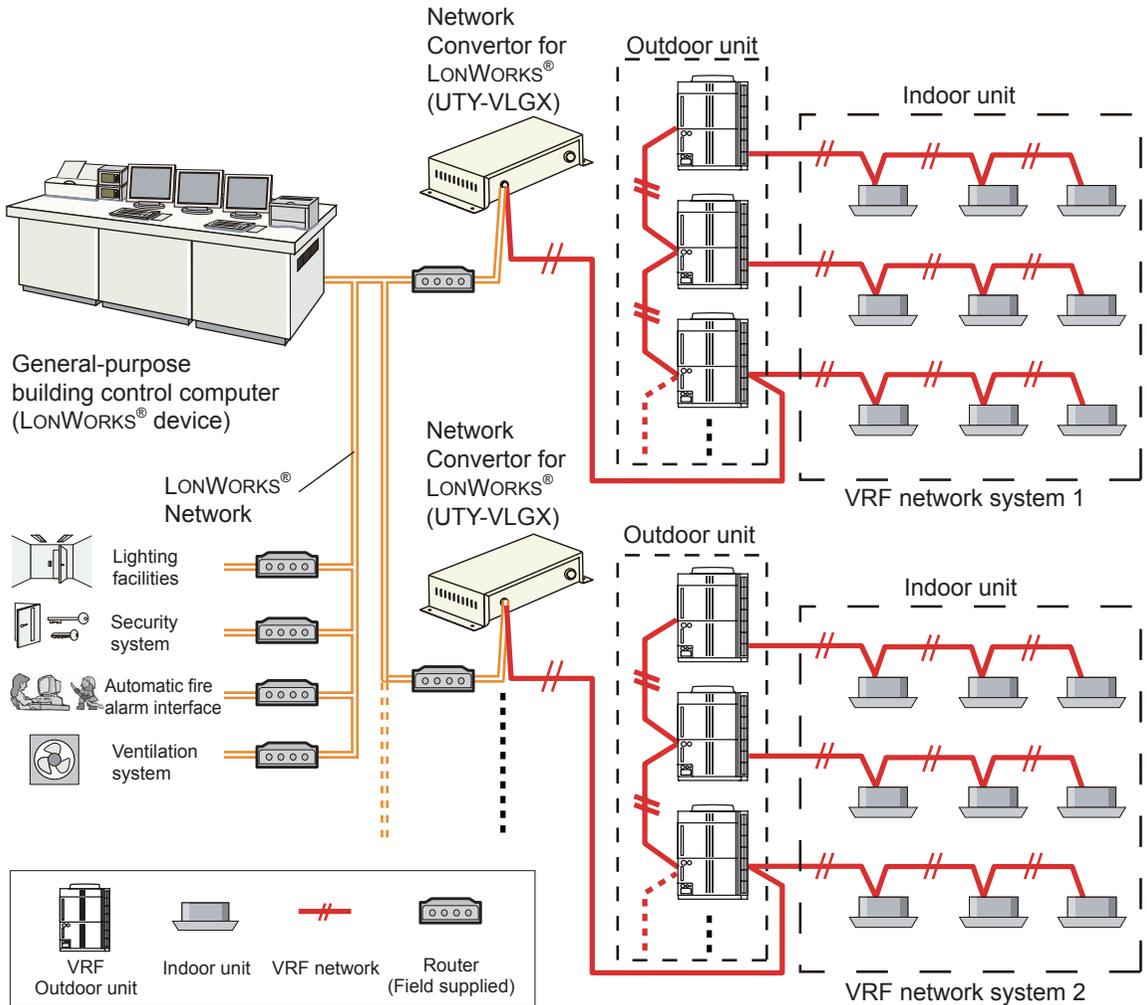
NETWORK CONVERTOR
UTY-VLGX

P/N 9708438023

FUJITSU GENERAL LIMITED

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Note: Router should be needed by the number of controlling items in the BMS.

(1) What is the Network Converter ?

The converter for connecting our VRF Network System to the system built by LONWORKS®^{*1}, an open network, to manage mutually between BMS and VRF system.

(2) Maximum Controlled number per 1 Network Converter.

Indoor Unit	128
Outdoor Unit	100

(3) Maximum connectable number per 1 BMS.

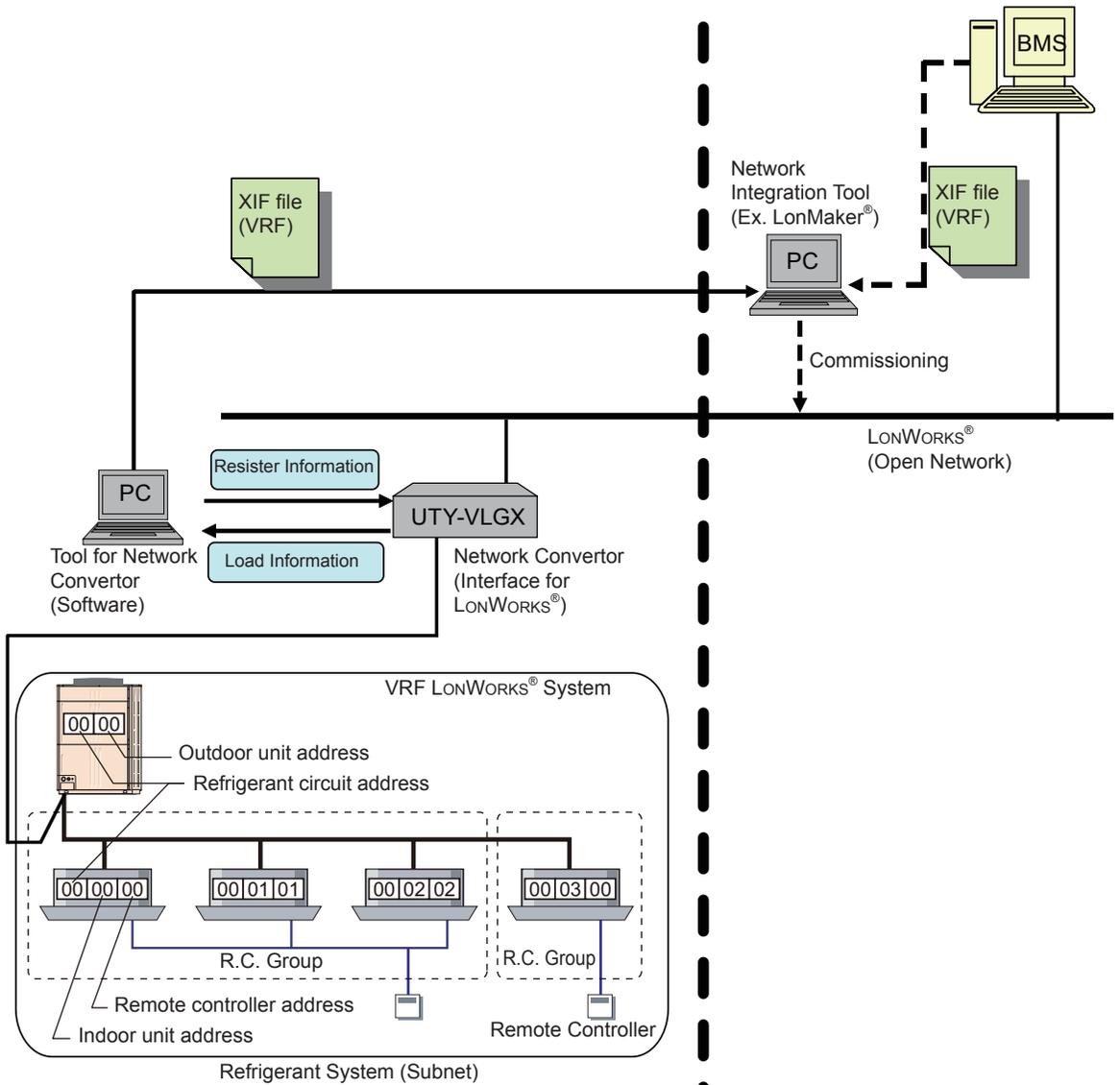
Network Converter	4
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(4) Maximum connectable number per 1 VRF Network System.

Network Converter	1
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^{*1} LONWORKS® is registered trademarks of Echelon Corporation in the United States and other countries.

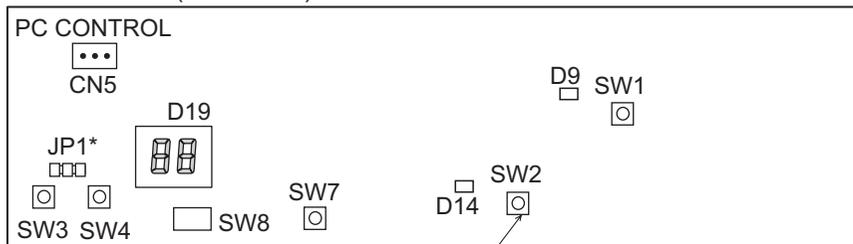
(1) Total System Configuration Layout



Making XIF of VRF using an Tool for Network Converter (Software) provided by Fujitsu General. (Job is done by Network Integrator)

Binding VRF with BMS (By Network Integrator)

Switch Position (Service Pin) for Network Converter



Refrigerant System

This is a system that is composed of indoor units, outdoor unit as well as those of relevant controller. All of the units and the equipment are connected with the same refrigerant circuit.

R.C. Group

This is the control unit of indoor units that have been connected with 1 remote controller cable, or single indoor unit.

These 2 kinds of control units are the smallest unit controlled.

Up to 16 indoor units in same group is connectable to 1 controller unit.

Refrigerant Circuit Address (0 ... 99)

This is the ID individually assigned to each refrigerant system and is used for control.

Outdoor Unit Address (0 ...3)

This is the ID individually assigned to each outdoor unit and used for control.

* The address of the present VRF system is only 0 to 2.

Indoor Unit Address (0 ...63)

This is the ID individually assigned to each indoor unit and used for control.

* The address of the present VRF system is from 0 to 47.

Remote Controller Address (0 ...15)

This is the ID individually assigned to the indoor units forming each Remote Controller Group and is used for control.

When you control the indoor unit in a remote controller group, please give control instructions to the indoor unit of a remote controller address "00."

Therefore, bind the indoor unit address that has a remote controllers address of "00".

The unit will not operate if an address other than the remote controller address is bound.

Network Convertor Address

This is the Address individually assigned to the Network Convertor for VRF Network System. It is a necessary address for exchanging information with BMS.

When setting address, please be sure that the address of Network Convertor is not overlap the address of other controller like, Touch Panel Controller & Network Convertor for Group Remote Controller.

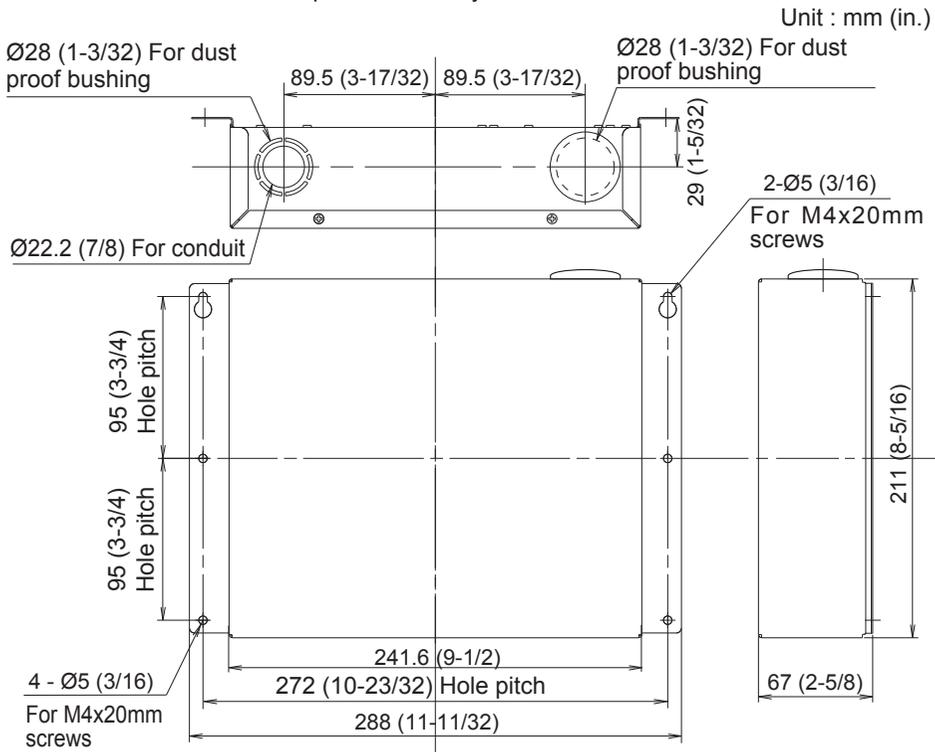
The above-mentioned addresses are addresses on the VRF network work system side.

ID Number (0 ...3)

ID Number is required to identify Network Convertor from BMS.

A maximum of 4 Network Convertors can be connected to 1 BMS, and ID Number allocation is like 00, 01, and so on.

The network converter is comprised of a body and cover.



(1) Operating Environment

Power supply	1Ø AC208–240V 50/60Hz	
Power consumption (W)	4.5	
Temperature °C (°F)	Operating	0–46 (32–114)
	Packaged	-10–60 (14–140)
Humidity (%)	Packaged	0–95 (RH); No condensation
Dimensions H × W × D mm(in.)	67 x 288 x 211 (2-5/8 x 11-11/32 x 8-5/16)	
Weight g (oz.)	1500 (53)	

(2) Transmission (Hardware)

LONWORKS® Network	
Transmission speed	78 kbps
Transceiver	FT-X1 (Echelon® Corporation)
Transmission way form	Free topology
Cable	Twisted pair cable (shield)
	22AWG Equivalent
Network connector	1 terminal
Terminal resistor	None attachment (It attaches at the terminal of a network)

(3) Function

Item	Control ^{*1}		Monitor Information ^{*2}			Configuration Property
	Individual	Batch	Indoor Unit	Outdoor Unit	Convertor	
Start/Stop ^{*5}	●	●	●			
Operation mode setting	●	●	●			
Room temp. setting	●	●	●			
Fan speed setting	●	●	●			
Central control (All)	●	●	●			
Central control (Timer)	●	●	●			
Central control (Set temp.)	●	●	●			
Central control (Start/Stop)	●	●	●			
Central control (Start)	●	●	●			
Central control (Operation mode)	●	●	●			
Central control (Filter rest)	●	●	●			
Thermostat Off setting ^{*5 *6}	●	●	●			
Anti freeze	●		●			
Economy mode	●		●			
Filter reset	●		●			
Room temp.			●			
Operation mode Limitation			●			
Emergency stop setting		●	● ^{*3}			
Set Point Limit setting	●	●	●			
Bus Priority mode setting			● ^{*4}			
Maintenance mode setting			● ^{*3}			
System Time setting		●				
Error code			●	●	●	
Transmission interval and timing setting						●
Transmission mode setting						●
Send delay at Power On						●
Send Condition of Room temp NV setting						●

^{*1} LONWORKS[®] network → VRF network system

^{*2} VRF network system → LONWORKS[®] network

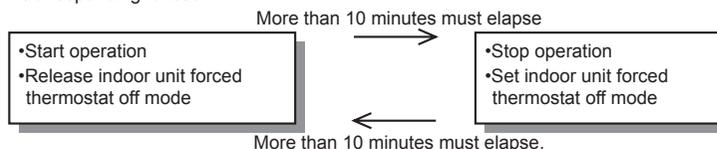
^{*3} For any indoor unit registered on Convertor and the indoor unit within the same refrigerant system.

^{*4} These functions are set to the entire system.

^{*5} To protect the compressor of the outdoor unit, please carefully read and understand the following cautions that may affect the operation of the compressor before executing the setting.

- When performing periodical settings like schedule settings for the following functions, perform the setting to all the indoor units in the same refrigerant system simultaneously, conforming to the timing restriction described below.

<Corresponding function>



^{*6} Forced thermostat OFF instruction

- Only one equipment can send these instructions for each refrigerant system.
- When these instructions are sent by multiple equipments, the system may not respond as instructed or may malfunction.

Individual: For any indoor unit registered on Convertor with Tool for Network Convertor and corresponding to the address.

Batch: For all indoor units registered on Convertor with Tool for Network Convertor and corresponding to the address.

(4) Communication(Input)

The communication specification of the network variable for an input is as follows.

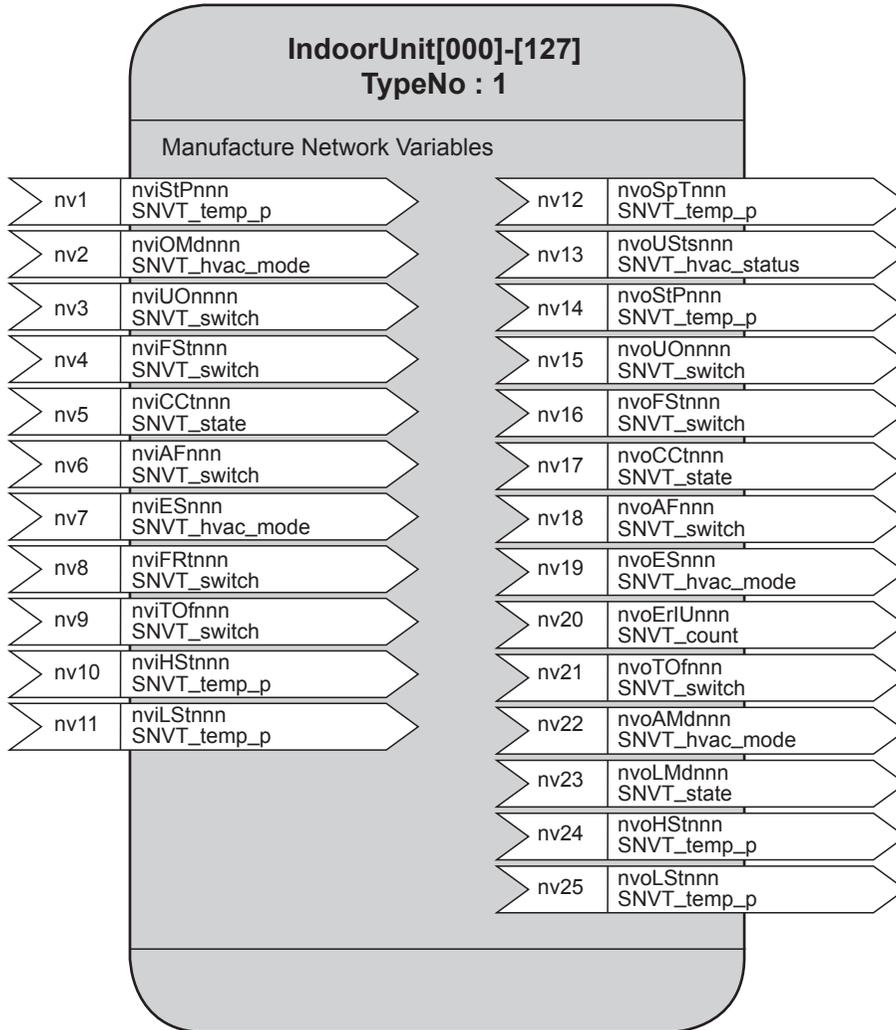
Standard input interval	10 SNVT/sec
Peak input interval	20 SNVT/sec

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OBJECT COMPOSITION

(1) Object Details

Indoor Unit



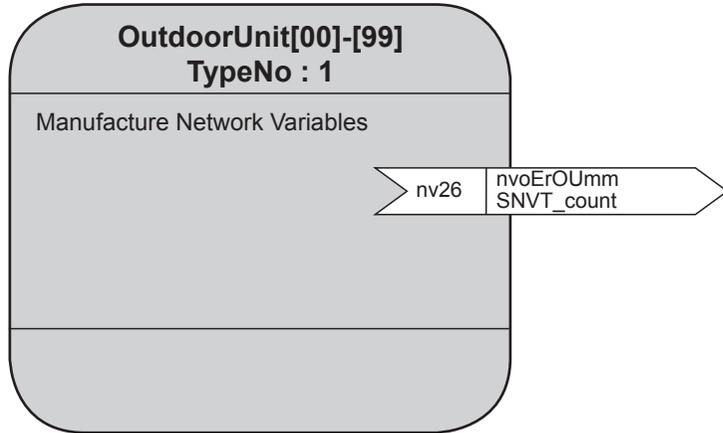
* This object is defined by each indoor unit

* nnn:Functional Block Number(000-127)

nv #	Name	In/Out	Type	Description
1	nviStPnnn	In	SNVT_temp_p	Room temperature setting
2	nviOMdnnn	In	SNVT_hvac_mode	Operation mode setting
3	nviUOnnnn	In	SNVT_switch	Start/Stop setting
4	nviFStnnn	In	SNVT_switch	Fan speed setting
5	nviCCtnnn	In	SNVT_state	Central control setting
6	nviAFnnn	In	SNVT_switch	Anti freeze setting
7	nviESnnn	In	SNVT_hvac_mode	Economy mode setting
8	nviFRtnnn	In	SNVT_switch	Filter reset
9	nviTOfnnn	In	SNVT_switch	Forced Thermostat Off setting
10	nviHStnnn	In	SNVT_temp_p	Set Point limitation setting at Heat Mode
11	nviLStnnn	In	SNVT_temp_p	Set Point limitation setting at Cool/Dry Mode
12	nvoSpTnnn	Out	SNVT_temp_p	Room temperature value
13	nvoUSTsnnn	Out	SNVT_hvac_status	Operation mode value
14	nvoStPnnn	Out	SNVT_temp_p	Room temperature setting value
15	nvoUOnnnn	Out	SNVT_switch	Start/Stop value
16	nvoFStnnn	Out	SNVT_switch	Fan speed value
17	nvoCCtnnn	Out	SNVT_state	Central control setting value
18	nvoAFnnn	Out	SNVT_switch	Anti freeze On/Off setting value
19	nvoESnnn	Out	SNVT_hvac_mode	Economy mode setting value
20	nvoErIUnnn	Out	SNVT_count	Error code value
21	nvoTOfnnn	Out	SNVT_switch	Forced Thermostat Off setting value
22	nvoAMdnnn	Out	SNVT_hvac_mode	Auto mode value
23	nvoLMdnnn	Out	SNVT_state	Mode Limitation
24	nvoHStnnn	Out	SNVT_temp_p	Set Point limitation setting value at Heat Mode
25	nvoLStnnn	Out	SNVT_temp_p	Set Point limitation setting value at Cool/Dry Mode

For the nv number, please refer to "7. DIRECTIONS FOR ASSIGNING THE NV (NETWORK VARIABLE) NUMBER".

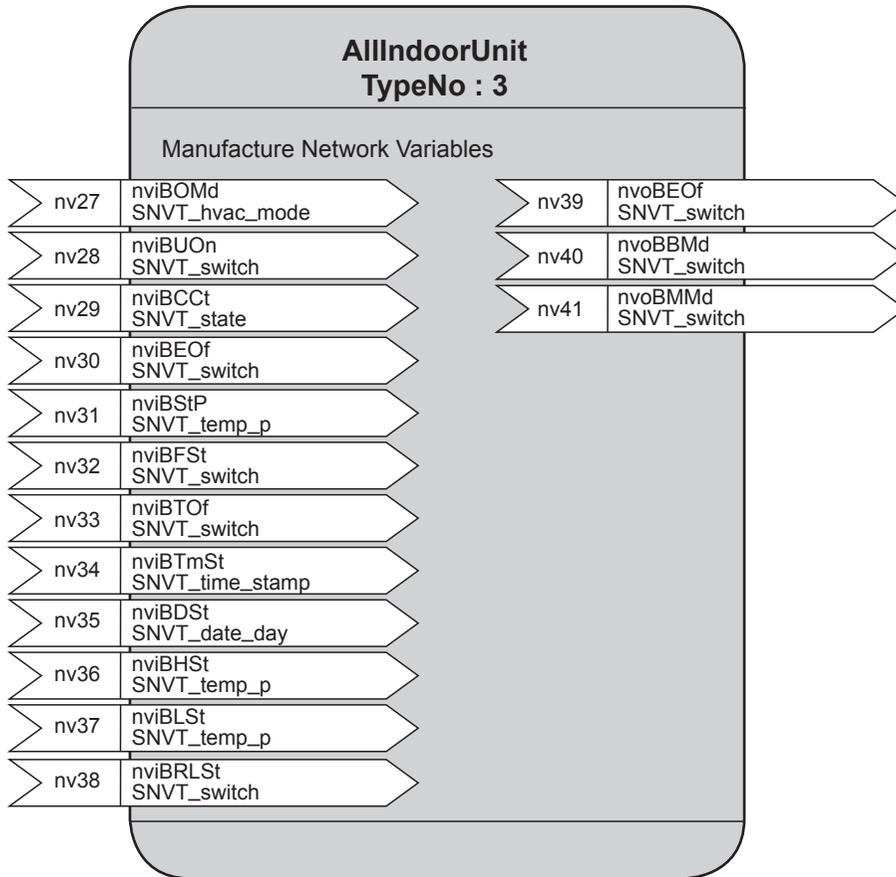
Outdoor Unit



- * This object is defined by each outdoor unit
- * mm: Functional Block Number.(00~99)

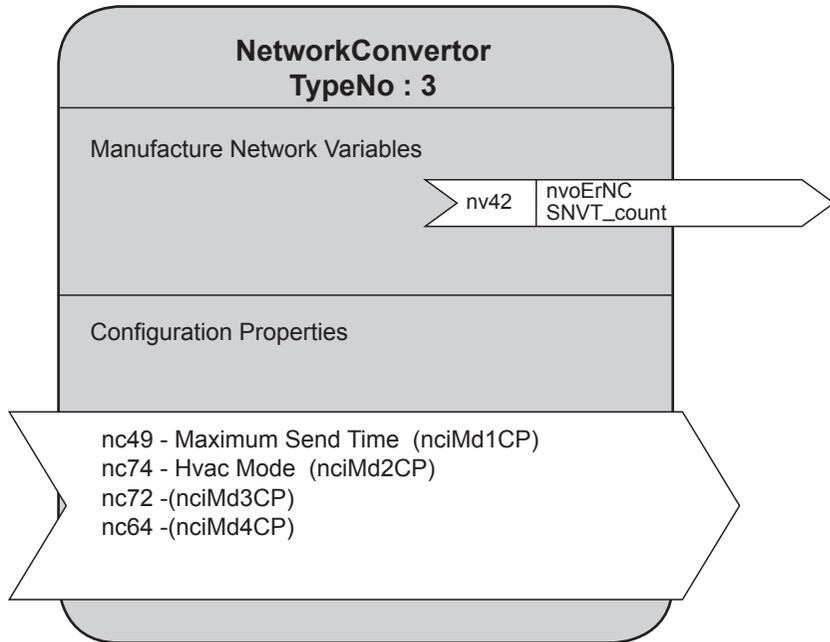
nv #	Name	In/Out	Type	Description
26	nvoErOUmm	Out	SNVT_count	Error code value

All Indoor Unit Control



nv #	Name	In/Out	Type	Description
27	nviBOMd	In	SNVT_hvac_mode	Batch operation mode setting
28	nviBUOn	In	SNVT_switch	Batch Start/Stop setting
29	nviBCCt	In	SNVT_state	Batch Central control setting
30	nviBEOf	In	SNVT_switch	Batch Emergency Off setting
31	nviBStP	In	SNVT_temp_p	Batch Room temperature setting
32	nviBFSt	In	SNVT_switch	Batch Fan speed setting
33	nviBTOf	In	SNVT_switch	Batch Forced Thermostat Off setting
34	nviBTmSt	In	SNVT_time_stamp	System Time setting
35	nviBDSt	In	SNVT_date_day	System Day of week setting
36	nviBHSt	In	SNVT_temp_p	Batch Set Point Limit setting at Heat Mode
37	nviBLSt	In	SNVT_temp_p	Batch Set Point Limit setting at Cool/Dry Mode
38	nviBRLSt	In	SNVT_switch	Batch Set Point Limit setting value Request
39	nvoBEOf	Out	SNVT_switch	VRF System Emergency Stop setting value
40	nvoBBMd	Out	SNVT_switch	VRF system mode (Network Priority Mode) setting value
41	nvoBMMd	Out	SNVT_switch	VRF system mode(Maintenance) setting value

Network Convertor



nv #	Name	In/Out	Type	Description
42	nvoErNC	Out	SNVT_count	Error code value
43	nciMd1CP	In	SNVT_time_sec	Transmission interval and timing setting
44	nciMd2CP	In	SNVT_hvac_mode	Transmission mode setting
45	nciMd3CP	In	SNVT_time_sec	Transmission start delay time setting
46	nciMd4CP	In	SNVT_temp_p	Minimum Room Temperature changed setting

(2) Network Variables*

* The service type default of all network variables is Acked.

1. Indoor unit

Input network variables

Room temperature setting

network input SNVT_temp_p nviStPnnn;

Room temperature of indoor unit is set. Temperature range is different by operation mode.

Member (Structure)	Valid Range***		Default**
	Operation mode	temperature	
-	Heat	0.0°C...63.5°C	26.0°C (78.8°F)
	Auto	(0.5°C step)	
	Cool	(32°F ... 146.3°F	
	Dry	(1°F step))	
	Fan	Not used	

** This is the default of an indoor unit.

*** The value of 0.4 or less is omitted.

Operation mode setting

network input SNVT_hvac_mode nviOMdnnn;

Operation mode of indoor unit is set.

Member (Structure)	Valid Range		Default****
	Operation mode	Identifier (hvac_t)	
-	Auto**	(0) HVAC_AUTO	(3) HVAC_COOL
	Heat***	(1) HVAC_HEAT	
	Cool	(3) HVAC_COOL	
	Fan**	(9) HVAC_FAN_ONLY	
	Dry	(14) HVAC_DEHUMID	

** Outdoor unit can not be used in case of Heat Pump model.

*** Outdoor unit can not be used in case of Cooling Only model.

**** This is the default of an indoor unit.

Start/Stop setting**network input SNVT_switch nviUOnnnn;**

Indoor unit is Operation Start or Stop status of an indoor unit is set.

Member (Structure)	Valid Range		Default*
	Mode	Value	
State	OFF	0	0
	ON	1	
Value	Not used	127.5	127.5 (invalid)

* This is the default of an indoor unit.

Fan speed setting**network input SNVT_switch nviFStnnn;**

Indoor unit is fan speed mode of indoor unit is set.

Member (Structure)	Valid Range		Default*
	Mode	Value	
State	Not used	0	0
Value	Auto	0.5	2.5
	SuperLow	1.0 (Reserved)	
	Low	1.5	
	Medium	2.0	
	High	2.5	
	Not used	0, 3 to 127.5	

* This is the default of an indoor unit.

**Centrally controlling
network input SNVT_state nviCCtnnn;**

Some indoor unit models may not support this function.
RC* prohibition setting.

* target – Wired remote controller / Simple remote controller /
Wireless remote controller / Group remote controller

Bit	Valid Range			Default
	Prohibition item	Mode	Value	
bit0	All operation setting **	Not inhibit	0	0
		Inhibit	1	
bit1	All timer setting	Not inhibit	0	0
		Inhibit	1	
bit2	Room temperature setting	Not inhibit	0	0
		Inhibit	1	
bit3	Operation mode setting	Not inhibit	0	0
		Inhibit	1	
bit4	Start/Stop operation setting	Not inhibit	0	0
		Inhibit	1	
bit5	Filter reset Operation	Not inhibit	0	0
		Inhibit	1	
bit6	Start operation setting	Not inhibit	0	0
		Inhibit	1	
bit7	Not used	-	0	0
⋮				
bit15	Not used	-	0	0

** This includes all prohibition from [bit1] to [bit7].

Anti freeze setting**network input SNVT_switch nviAFnnn;**

Some indoor unit models may not support this function.

Anti Freeze is a function which performs low temperature heating operation to prevent trouble due to freezing of the water line and equipment when air conditioning operation was stopped in cold regions.

Member (Structure)	Valid Range		Default
	Setting	Value	
State	OFF	0	0
	ON	1	
Value	Not used	127.5	127.5 (invalid)

Economy setting**network input SNVT_hvac_mode nviESnnn;**

Some indoor unit models may not support this function.

Economy operation can be set by remote controller.

The temperature setting is offset automatically over a certain period of time.

Based on temperature set in remote control unit, temperature of indoor unit varies little by little. However in this case, temperature indication of remote control unit does not vary as it continues to indicate the temperature when ECONOMY Operation was set.

Member (Structure)	Valid Range		Default
	Setting	Value	
-	OFF	(6) HVAC_OFF	(6) HVAC_OFF
	ON	(13) HVAC_ECONOMY	

Filter reset**network input SNVT_switch nviFRtnnn;**

Some indoor unit models may not support this function.

When cleaning the air filter of the indoor unit, reset the display that indicates the schedule for filter cleaning.

Member (Structure)	Valid Range		Default
	Mode	Value	
State	Reset	1	0
Value	Not used	127.5	127.5 (invalid)

Forced Thermostat Off setting**network input SNVT_switch nviTOfnnn;**

Some indoor unit models may not support this function.

A Thermostat of indoor unit is Off state.

Only one equipment can send these instructions for each refrigerant system.

When these instructions are sent by multiple equipments, the system may not respond as instructed or may malfunction.

Member (Structure)	Valid Range*		Default
	Mode	Value	
State	Reset	0	0
	Thermostat Off	1	
Value	Not used	127.5	127.5(invalid)

* The value outside the range mentioned above is annulled.

Set Point Limitation setting**network input SNVT_temp_p nviHStnnn;**

Some indoor unit models may not support this function.

A Hi Level Limitation of setting room temperature at Operation Heat Mode is set.

Please do not make temperature limitation settings on this machine if temperature limitation settings are made on other controller (touch panel controller and system controller, etc.) within the VRF network system. The settings may not be set correctly.

Member (Structure)	Valid Range*	Default
-	0.0°C ... 63.5°C (0.5°C step) (32°F ... 146.3°F (1°F step)) 0xFFFF (Invalidate all Set Point Limit functions)	30.0°C (86°F)

* The value of 0.4 or less is omitted.

Set Point Limitation setting**network input SNVT_temp_p nviLStnnn;**

Some indoor unit models may not support this function.

A Low Level Limitation of setting room temperature at Operation Cool/Dry Mode is set.

Please do not make temperature limitation settings on this machine if temperature limitation settings are made on other controller (touch panel controller and system controller, etc.) within the VRF network system. The settings may not be set correctly.

Member (Structure)	Valid Range*	Default
-	0.0°C ... 63.5°C (0.5°C step) (32°F ... 146.3°F (1°F step)) 0xFFFF (Invalidate all Set Point Limit functions)	18.0°C (64.4°F)

* The value of 0.4 or less is omitted.

Room temperature

network output SNVT_temp_p nvoSpTnnn;

Room temperature detected from indoor unit is reported.

Some indoor unit models may not support this function.

This is used to monitor the room temperature detected the air conditioner.

The room temperature monitored by the air conditioner fluctuates to a certain extent according to the place where the sensor is installed.

Data sent as "Room temperature" is a data used for controlling units.

They may have values different from the actual room temperature in some cases like when the operation mode is changed.

When using this data for operation control as in setting operation mode and temperature, beware of the above and use it at the discretion of the user.

Member (Structure)	Valid Range	Default
-	-50.0°C ... 150.0°C (0.5°C step) (-58°F ... 302°F (1°F step))	0.0°C (32°F)

Operation mode setting

network output SNVT_hvac_status nvoUStsnnn;

Operation mode of indoor unit is reported.

Member (Structure)	Valid Range		Default
	State	Identifier (hvac_t)	
Mode	Heat	(1) HVAC_HEAT	0xFF:HVAC_NUL (invalid)
	Cool	(3) HVAC_COOL	
	Fan	(9) HVAC_FAN_ONLY	
	Dry	(14) HVAC_DEHUMID	
heat_output_primary	Not used	-0.005	-0.005
heat_output_secondary	Not used	-0.005	-0.005
Cool_output	Not used	-0.005	-0.005
Cool_output	Not used	-0.005	-0.005
Fan_output	Not used	-0.005	-0.005
in_alarm	Not filter indicator	0	0
	Filter indicator	1	

Setting status of room temperature

network output SNVT_temp_p nvoStPnnn;

Room temperature setting of indoor unit is reported.

Member (Structure)	Valid Range	Default
-	0.0°C ... 63.5°C (0.5°C step) (32°F ... 146.3°F (1°F step))	0.0°C (32°F)

Setting status of Operation (Start/Stop)
network output SNVT_switch nvoUOnnnn;

Operating mode of indoor unit is reported.

Member (Structure)	Valid Range		Default
	Mode	Value	
State	Stop	0	0
	Start	1	
Value	Not used	127.5	127.5 (invalid)

Setting status of Operation (fan speed)
network output SNVT_switch nvoFStnnn;

Fan speed status of indoor unit is reported.

Member (Structure)	Valid Range		Default
	Mode	Value	
State	Not used	0	0
Value	Auto	0.5	2.5
	SuperLow	1.0 (Reserved)	
	Low	1.5	
	Medium	2.0	
	High	2.5	
	Not used	0, 3 to 127.5	

**Setting status of Central control
network output SNVT_state nvoCCtnnn;**

Status of remote controller is reported. Inhibit or not is distinguish by this status.

Bit	Valid Range			Default
	Prohibition item	Mode	Value	
bit0	All operation setting	Not inhibit	0	0
		Inhibit	1	
bit1	Timer setting	Not inhibit	0	0
		Inhibit	1	
bit2	Room temperature setting	Not inhibit	0	0
		Inhibit	1	
bit3	Operation mode setting	Not inhibit	0	0
		Inhibit	1	
bit4	Start/Stop operation	Not inhibit	0	0
		Inhibit	1	
bit5	Filter reset Operation	Not inhibit	0	0
		Inhibit	1	
bit6	Start operation setting	Not inhibit	0	0
		Inhibit	1	
bit7	Not used	-	0	0
⋮				
bit15	Not used	-	0	0

**Setting status of anti freeze
network output SNVT_switch nvoAFnnn;**

Setting status of Anti freeze of indoor unit is reported.

Member (Structure)	Valid Range		Default
	Setting	Value	
State	OFF	0	0
	ON	1	
Value	Not used	127.5	127.5(invalid)

**Setting status of Economy mode
network output SNVT_hvac_mode nvoESnnn;**

Setting status of economy mode of indoor unit is reported.

Member (Structure)	Valid Range		Default
	Setting	Value	
-	OFF	(6) HVAC_OFF	(6) HVAC_OFF
	ON	(13) HVAC_ECONOMY	

Error status**network output SNVT_count nvoErlUnnn;**

Error status of indoor unit is reported.

These Value are shown by a 2-character ASCII Code

These a 2-character ASCII Code specified by FGL show these error code.

Member (Structure)	Valid Range		Default
	Alarm contents	Value	
-	Normal	00 (0x3030)	0
	Error code	Other *	

* When 2 or more errors occur, the most important error is displayed.

* In this case, please refer to the Error code of the Installation Manual of Indoors Unit.

Setting status of Forced Thermostat Off**network output SNVT_switch nvoTOfnnn;**

A Thermostat state of indoor unit is reported.

Member (Structure)	Valid Range		Default
	Mode	Value	
State	Reset	0	0
	Off	1	
Value	Not used	127.5	127.5(invalid)

Auto change over**network output SNVT_hvac_mode nvoAMdnnn;**

Auto change over mode of indoor unit is reported.

This is Auto of operation mode.

Member (Structure)	Valid Range		Default
	Mode	Identifier (hvac_t)	
-	OFF	(6) HVAC_OFF	(6) HVAC_OFF
	ON	(0) HVAC_AUTO	

Mode Limitation mode

network output SNVT_state nvoLMdnnn;

Mode Limitation mode is reported.

It doesn't operate when the Value is "1". It is also invalid when an instruction is given out by an Indoor Unit.

Bit	Valid Range			Default
	Prohibition item	Mode	Value	
bit0	All Mode setting	Valid	0	0
		Invalid	1	
bit1	Cool Mode setting	Valid	0	0
		Invalid	1	
bit2	Heat Mode setting	Valid	0	0
		Invalid	1	
bit3	Dry Mode setting	Valid	0	0
		Invalid	1	
bit4	Fan Mode setting	Valid	0	0
		Invalid	1	
bit5	Auto Mode setting	Valid	0	0
		Invalid	1	
bit6	Temp setting	Valid	0	0
		Invalid	1	
bit7	Fan Speed setting	Valid	0	0
		Invalid	1	
bit8	Not used	-	0	0
⋮				
bit15	Not used	-	0	0

Set Point Limitation setting

network output SNVT_temp_p nvoHStnnn;

A Hi Level Limitation of setting room temperature at Heat Mode is reported.

Please do not make temperature limitation settings on this machine if temperature limitation settings are made on other controller (touch panel controller and system controller, etc.) within the VRF network system. The settings may not be set correctly.

Member (Structure)	Valid Range	Default
-	0.0°C ... 63.5°C (0.5°C step) (32°F ... 146.3°F (1°F step)) 0xFFFF (invalid state of setting up function)	30.0°C (86°F)

Set Point Limitation setting

network output SNVT_temp_p nvoLStnnn;

A Low Level Limitation of setting room temperature at Cool/Dry Mode is reported.

Please do not make temperature limitation settings on this machine if temperature limitation settings are made on other controller (touch panel controller and system controller, etc.) within the VRF network system. The settings may not be set correctly.

Member (Structure)	Valid Range	Default
-	0.0°C ... 63.5°C (0.5°C step) (32°F ... 146.3°F (1°F step)) 0xFFFF (invalid state of setting up function)	18.0°C (64.4°F)

2. Outdoor unit

Output network variables

Error status

network output SNVT_count nvoErOUmm;

Error status of outdoor unit is reported.

These Value are shown by a 2-character ASCII Code

These a 2-character ASCII Code specified by FGL show these error code.

Member (Structure)	Valid Range		Default
	Alarm contents	Value	
-	Normal	00 (0x3030)	0
	Error code	Other *	

* When 2 or more errors occur, the most important error is displayed.

* In this case, please refer to the Error code of the Installation Manual of Outdoor unit.
Send the code of the upper 2 digits of the 3 digits Error Code of an Outdoor Unit by ASCII.

Error Code (Outdoor Unit)

E	X	X	X
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3. All indoor unit control

Input network variables

Operation mode setting

network input SNVT_hvac_mode nviBOMd;

Batch indoor units is set to operation mode.

Member (Structure)	Valid Range		Default
	Operation mode	Identifier (hvac_t)	
-	Auto*	(0) HVAC_AUTO	0xFF:HVAC_NUL (invalid)
	Heat**	(1) HVAC_HEAT	
	Cool	(3) HVAC_COOL	
	Fan*	(9) HVAC_FAN_ONLY	
	Dry	(14) HVAC_DEHUMID	

* Outdoor unit or Indoor unit can not be used in case of Heat Pump model.

** Outdoor unit or Indoor unit can not be used in case of Cool Only model.

Operation (Start/Stop) setting

network input SNVT_switch nviBUOn;

Batch indoor units is set to Start or Stop status.

Member (Structure)	Valid Range		Default
	Mode	Value	
State	Stop	0	0
	Start	1	
Value	Not used	127.5	127.5 (invalid)

Central control

network input SNVT_state nviBCct;

Some indoor unit models may not support this function.

Remote controller of Batch indoor units is inhibited.

Bit	Valid Range			Default
	Prohibition item	Mode	Value	
bit0	All operation setting	Not inhibit	0	0
		Inhibit	1	
bit1	Timer setting	Not inhibit	0	0
		Inhibit	1	
bit2	Room temperature setting	Not inhibit	0	0
		Inhibit	1	
bit3	Operation mode setting	Not inhibit	0	0
		Inhibit	1	
bit4	Start/Stop operation setting	Not inhibit	0	0
		Inhibit	1	
bit5	Filter reset operation	Not inhibit	0	0
		Inhibit	1	
bit6	Start operation setting	Not inhibit	0	0
		Inhibit	1	
bit7	Not used	-	0	0
⋮				
bit15	Not used	-	0	0

Emergency Stop setting

network input SNVT_switch nviBEOf;

All indoor units is set to Forced Off status.

Member (Structure)	Valid Range*		Default
	Mode	Value	
State	Normal	0	0
	Emergency Stop	1	
Value	Not used	127.5	127.5 (invalid)

* For any indoor unit registered on Converter and the indoor unit within the same refrigerant system.

Room temperature setting**network input SNVT_temp_p nviBStP;**

Room temperature of Batch all indoor units is set. Setting range is different by operation mode.

Member (Structure)	Valid Range		Default*
	Operation mode	temperature	
-	Heat Auto Cool Dry	0.0°C...63.5°C (0.5°C step) (32°F ... 146.3°F (1°F step))	26.0°C (78.8°F)
	Fan	Not used	

* The value of 0.4 or less is omitted.

Operation fan speed mode (Fan speed) setting**network input SNVT_switch nviBFSt;**

Fan speed mode of Batch indoor units is set.

Member (Structure)	Valid Range		Default
	Mode	Value	
State	Not used	0	0 (invalid)
Value	Auto	0.5	2.5
	SuperLow	1.0 (Reserved)	
	Low	1.5	
	Medium	2.0	
	High	2.5	
	Not used	0, 3 to 127.5	

Forced Thermostat Off setting**network input SNVT_switch nviBTOF;**

Some indoor unit models may not support this function.

A Thermostat of Batch indoor units is Off state.

Only one equipment can send these instructions for each refrigerant system.

When these instructions are sent by multiple equipments, the system may not respond as instructed or may malfunction.

Member (Structure)	Valid Range		Default
	Mode	Value	
State	Reset	0	0
	Off	1	
Value	Not used	127.5	127.5 (invalid)

System Time setting

network input SNVT_time_stamp nviBTmSt;

A Time (Year,Month,Day,Hour,Minute,Second)of some control units is set.

Member (Structure)	Valid Range	Default
	Value	
Year	0* – 3000	2000**
Month	0* – 12	1
Day	0* – 31	1
Hour	0 – 23	0
Minute	0 – 59	0
Second	0 – 59	0

*0 : Invalid

** In the VRF Network System, only the last 2 digits of the year A.D. (4 digits) are effective. Therefore, please transmit only the last 2 digits of the year A.D. (4 digits).

System Date of week setting

network input SNVT_date_day nviBDSt;

A Date of some control units is set.

Member (Structure)	Valid Range		Default
	Mode	Value (days of week it_t)	
Value	Not used	-1 (Invalid)	0
	Sunday	0	
	Monday	1	
	Tuesday	2	
	Wednesday	3	
	Thursday	4	
	Friday	5	
	Saturday	6	

Please transmit nviBTmSt and nviBDSt within 1 second continuously.
Please be sure to transmit information of “nviBTmSt” and “nviBDSt”.

Set Point Limitation setting

network input SNVT_temp_p nviBHSt;

Some indoor unit models may not support this function.

Batch indoor units is set to a Hi Level Limitation of setting room temperature at Heat Mode.

Please do not make temperature limitation settings on this machine if temperature limitation settings are made on other controller (touch panel controller and system controller, etc.) within the VRF network system. The settings may not be set correctly.

Member (Structure)	Valid Range	Default
-	0.0°C ... 63.5°C (0.5°C step) (32°F ... 146.3°F (1°F step)) 0xFFFF (Invalidate all Set Point Limit functions)	0.0°C (32°F)

Set Point Limitation setting**network input SNVT_temp_p nviBLSt;**

Some indoor unit models may not support this function.

Batch indoor units is set to a Low Level Limitation of setting room temperature at Cool/Dry Mode.

Please do not make temperature limitation settings on this machine if temperature limitation settings are made on other controller (touch panel controller and system controller, etc.) within the VRF network system. The settings may not be set correctly.

Member (Structure)	Valid Range	Default
-	0.0°C ... 63.5°C (0.5°C step) (32°F ... 146.3°F (1°F step)) 0xFFFF (Invalidate all Set Point Limit functions)	0.0°C (32°F)

Set Point Limitation setting**network input SNVT_switich nviBRLSt;**

The setting value for upper/lower limitation temperature of all registered indoor units is required.

The setting value of each indoor unit is notified by nvoHStnnn, nvoLStnnn.

Member (Structure)	Valid Range		Default
	Mode	Value	
State	Null	0	0
	Request	1	
Value	Not used	127.5	127.5 (invalid)

Output network variables**Setting status of Emergency operation (Stop)****network output SNVT_switch nvoBEOf;**

Operation Status (Emergency Stop) of Batch indoor units is reported.

Member (Structure)	Valid Range		Default
	Mode	Value	
State	Normal ²	0	0
	Emergency Stop ¹	1	
Value	Not used	127.5	127.5 (invalid)

¹ Converter will notify the BMS of the emergency state, even if 1 indoor unit registered on Converter is in emergency state.² Converter will notify the BMS of the normality, when the emergency state for all indoor units registered on Converter is released.**Setting status of Network Priority Mode (VRF system)****network output SNVT_switch nvoBBMd;**

Network Priority Mode Status of VRF system is reported.

Indicates that the priority is given to the communication network in the VRF system.

The operation from BMS is disabled while the communication network is given priority.

Member (Structure)	Valid Range		Default
	Mode	Value	
State	Normal	0	0
	Network Priority Mode	1	
Value	Not used	127.5	127.5 (invalid)

Setting status of Maintenance Mode (VRF system)
network output SNVT_switch nvoBMMd;

Maintenance Mode Status of VRF system is reported.
 Indicates that an arbitrary refrigerant system or whole system in the VRF system is making maintenance mode. The operation from BMS is disabled during the maintenance mode.

Member (Structure)	Valid Range		Default
	Mode	Value	
State	Normal ²	0	0
	Maintenance Mode ^{*1}	1	
Value	Not used	127.5	127.5 (invalid)

^{*1} Converter will notify the BMS of the maintenance state, even if 1 indoor unit registered on Converter is in maintenance state.

^{*2} Converter will notify the BMS of the normality, when the maintenance state for all indoor units registered on Converter is released.

4.Network Converter

Output network variables

Error code

network output SNVT_count nvoErNC;

Error code of Network Converter is reported.
 These Value are shown by a 2-character ASCII Code.
 These a 2-character ASCII Code specified by FGL show these error code.

Member (Structure)	Valid Range		Default
	Contents	Value	
-	Normal	00 (0x3030)	0
	Error code	Other *	

* When 2 or more errors occur, the most important error is displayed.

* In this case, please refer to the Error code of the Installation Manual of Network Converter.

(3) Configuration Properties

Maximum Send Time (to LonWorks® network)

config network input SNVT_time_sec nciMd1CP;

This configuration property defines the output timing of an output network variable.
 All output network variables are applicable.

Member (Structure)	Valid Range		Default
	Timing	Value	
-	Event driven*	0	3 min. (Cyclic)
	Cyclic**	2 - 30 min. At an interval of 1 minute.	

* Whenever data is inputted from a VRF system, it is a candidate for an output.
 Each indoor unit and outdoor unit is outputted at intervals of 90 seconds.

** The newest data of a VRF system is a candidate of an output for every interval (sec) specified arbitrarily.

** As a standard, the output time of 1 functional block (indoor unit) is about 1 second. (Service type: Acked)

In case of the "Cyclic" of sending information to BMS in a timing of certain time is set, it will be lack of real time property when "Cycle Time" is set at a long time. Moreover, the traffic amount of information will increase when setting at a short time.

Hvac Mode

config network input SNVT_hvac_mode nciMd2CP;

This configuration property defines the communication conditions of an output network variable. All output network variables are applicable.

Member (Structure)	Valid Range		Default
	Communication condition	Value	
-	Only change network variables*	(13) HVAC_ECONOMY	13 (Only change network variables)
	All network variables**	(14) HVAC_DEHUMID	

* When the data received from VRF system is changing from the last time, it is a candidate for an output.

** All the data received from the VRF system is a candidate for an output.

It is possible to decrease the traffic amount of information sends to BMS compare with the "All Data" situation because only the changed information is selected, when the "Only Changed Data" is set.

Transmission start delay time setting

config network input SNVT_time_sec nciMd3CP;

This configuration property defines the time to start the output of network variable at the Converter power on.

Member (Structure)	Valid Range*	Default
	Value	
-	1-30 min. (1 min. per unit)	3 min.

* The range of the beginning time for sending information can be set from 1min. to 30 minutes. (the interval is 1 minute.)

Minimum Temperature change setting

config network input SNVT_temp_p nciMd4CP;

This configuration property defines an output network variable to be transmitted when there is a change in temperature that is greater than the specified value.

This is effective in the state of the following network variable.

nvoSpTnnn

Member (Structure)	Valid Range*	Default
	Value	
-	0.5-10 °C (0.5 °C per unit) (1 ... 50°F (1°F per unit))	1.0 °C (33.8°F)

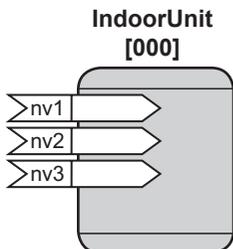
* The value of 0.4 or less is omitted.

The changing range of the sending room temperature data can be set at 0.5°C to 10.0°C (the interval is 0.5°C). Moreover, in case of it is displayed in Fahrenheit, the changing range can be set at 1°F to 20°F (the interval is 1°F). The traffic amount of information increases when the changing range is set small. Information can not be uploaded if the changing range is set big. The difference is generated in the operation condition of VRF and the monitoring situation on the BMS side.

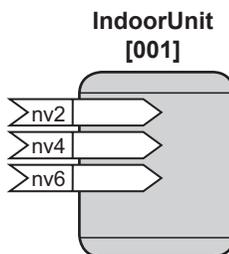
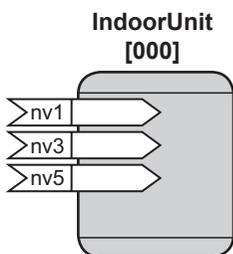
- (1) Prepare XIF files using the 'Tool for Network Convertor' according to the number of outdoor units and indoor units to be controlled.
- (2) Register the 'Functional Block Number' and the information assigned to the address(es) of the indoor and outdoor units to the 'Network Convertor' using the 'Tool for Network Convertor.'
Refer to the 'Application Manual' for detail.
- (3) ID Number (0 to 3) that doesn't repeated is allocated in each Network Convertor by using Tool for Network Convertor, when 2 or more Network Convertor is connected with BMS.
- (4) The ID Number should be in consistent with the ID Number Registered in the Network Convertor, when the XIF file is made.

Directions for assigning the “nv” number.

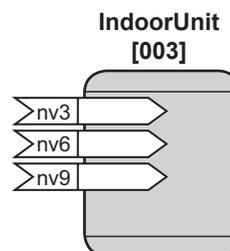
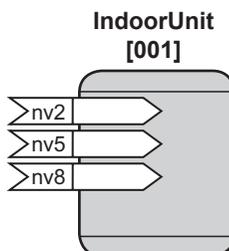
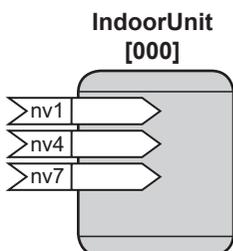
- In the case of 1 Indoor Unit _____



- In the case of 2 Indoor Units _____



- In the case of 3 Indoor Units _____



1. When the number of Indoor Units (maximum 128 units) and number of Outdoor Units (maximum 100 units) changes, assignment of the “nv” number will change as in the example, and as for between 1 and 3 Indoor Units. The changed “nv” number will result in a change in the “nv” number for ‘All Indoor Unit’ and the ‘Configuration Property.’

2. “nv” refers to Network Variable.