MDV07U-021BW

OWNER'S   MANUAL

BUILDING GATEWAYS CCMO7

CATALOGUE

1 CONNECTION ILLUSTRATION

1-1 CCMO7 Terminals Illustration
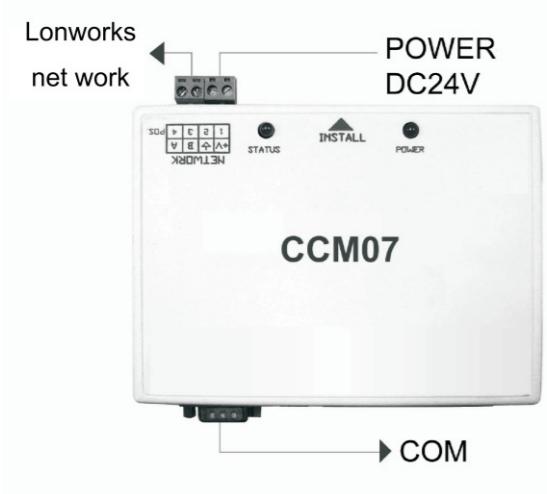
1-2 System Connection Illustration
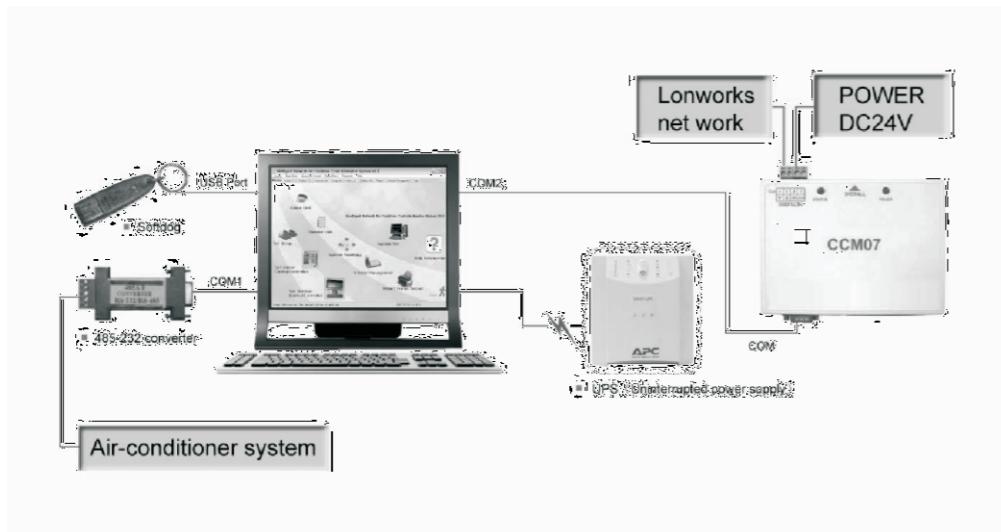
- USB Port: PC USB Port
- COM1/COM2: PC Serial Terminal
- COM: The Gateways CCMO7 Serial Terminal

# 4 NETWORK VARIABLE CHARTS

Annexed table 2: Outdoor model inforation

1) A/C models' information are composed by 2 bytes, which stand for A/C types and functions distinction. For each byte, please refer to the following table.

Annexed table 2

The first byte	Bit7	Partition cords for outdoor unit 1111B	1111B
	Bit6		
	Bit5		
	Bit4		
	Bit3	Three phases option	1 : Three phases , 0 : Single phase
	Bit2	Main model (A/C great type)	000 : Fix-rate , 001 : Conversion 010 : Digital , 011 : Water unit 0100~1111 : Conservesion
	Bit1		
	Bit0		
The second byte		Horsepower of outdoor unit	11 - 250 stand for 1~250MPa

2) 00H stand for unknown model.

4-2 Table of Operation Status Setting

No	Meaning	Type	Name	Description
1	Set ting the main unit address	SNVT_count	nviMainAddr	Indoor unit address 0~63, Outdoor unit address 0~31
2	Setting network address (Integrating controller No.)	SNVT_count	nviNetAddr	Indoor integrating controller address 0~15 Outdoor integrating controller address 16~31
3	Setting operation mode	SNVT_hvac_mode	nviSetWorkMode	= HVAC_NUL = -1 Mode have not been set =HVAC_AUTO = 0 Auto mode =HVAC_COOL = 3 Cooling mode =HVAC_HEAT = 1Heating mode =HVAC_DEHUMID = 14Dehumidified mode =HVAC_FAN_ONLY = 9Fan only mode =HVAC_OFF = 6Off mode
4	Setting indoor fan	SNVT_lev_disc	nviSetFanSpeed	=ST_LOW = 1 Low speed =ST_MED = 2 Medium speed =ST_HIGH = 3 High speed =ST_ON = 4 Auto
5	Setting temperature Ts	SNVT_temp_p	nviSetTemp	16~32 stand for 16~32℃ The other datas would not change the original setting.
6	Setting On time	SNVT_time_hour	nviSetOnTime	0~96 stand for without time fixed~24 hours time fixed OFFh stand for no effective data
7	Setting Off time	SNVT_time_hour	nviSetOffTime	0~96 stand for without time fixed~24 hour time fixed OFFh stand for no effective data
8	Setting auxiliary function	SNVT_state (bit0-bit15)	nviSetAsstFunt	Bhit15~Bit4 — Reservation Set 0 Bit3 — Refresh 1：On，0：Off Bit2 — Sway 1：On，0：Off Bit1 — Auxiliary electrical heating1：On，0：Off Bit0 — Economic operation 1：On，0：Off

Note:**LonWorks**[®] ,**LonMaker**[®]are the registered trademarks have been registered by Echelon Corporation in United State and other countries.

2. FEATURES DESCRIPTION

This unit shall be installed as a medium between in Building Management System (BMS) which provide with **LonWorks**[®] interfaces, and the central A/C system, associating these two systems to realize the systems integration.

BMS is allowed to access any online A/C in the central A/C system for information collection and operation control, after proper installation the A/C, the 3-Generation Central A/C Monitored Control System and this unit.

2-1 Information Collection

This unit is provided a function that collecting information from the central A/C by BMS, which operation states' data of indoor units and outdoor units within A/C system could be obtained by modify the corresponding **LonWorks**[®] network variables. Refer to "Operation Instances" for detail operation examples, and see "Network Variables charts "for specific information variables.

2-2 Operation Control

The unit provides BMS control the central A/C, with six setting functions to control the indoor units in which of the system. Setting functions included "Operation mode setting", "Open time setting", "Close time setting" and "Auxiliary function setting". By modify the corresponding **LonWorks**[®] network variables to set the unit's operation status. Refer to "Operation Instances" for detail operation examples, and see "Network Variables charts "for specific information variables.

⚠ CAUTION

		Equipment specifications	Recommendation	Note
Hardware	PC	CPU: Pentium 4, above 2G main frequency hard disk, not less than 40G; Intenal storage: More than 512M; Communication terminal: Not less than 2 items of RS-232 terminal, and 3 items of USB terminal.	Lenovo, Dell products	
	Electric meter (WHM)	Functions: The meter can alter electric address as per to convention dynamic state, and can read the reading data from electric meter according to dynamic address input by main board.	Chint DTS634 or relevant model	
	The 3-generation network external assembly	Includes: Installation manual,soft lock dog, and 485-232 transition port		
	Uninterrupted power supply (UPS)	Capacity: 200~250 W/20min; Voltage: As per practical operation; Control signal: Power cut signal.	APC Su700 series	Recommending to use
	Other	With 3-cord shielded twisted pair line		
Software	Operation system	WIN2000/WINXP		XP system shall be installed Sp4 or above, otherwise SQL Server could not be installed properly.
	Suited software	The 3-generation moniter software		
	DataBase	Mircosoft SQLServer 2000 Personal edition (Personal Edition)		
	Compa-tibility	Compatible building management system that canadopt the LonMaker software as LonWorks[®]networkbuildup tool		

3 OPERATION INSTANCES

3-1 Reading Operation Data from Indoor Unit:

BMS read data from indoor unit which main unit address is 6, network address is 1, process as following:
1) Modify the network variable nviMainAddr=6, therefore, set the A/C main unit address as 6;
2) Modify the network variable nviMainAddr=1, therefore, set the A/C NET network address as 1;
3) Modify the network variable nviGetLasValue=100.0 1, convey the latest information of which set equipment to LonWorks.

⚠ **CAUTION**

Needs to renew the system once only, the system return all information from the appointed A/C at a time, of which corresponding network variable would be refreshed automatically.

3-2 Setting Operation Modes for Indoor Unit

BMS read data from indoor unit which main unit address is 8, network address is 2, process as following:
1) Modify the network variable nviMainAddr=8, therefore, set the A/C main unit address as 8;
2) Modify the network variable nviMainAddr=2, therefore, set the A/C NET network address as 2;
1) Modify the network variable nviSetWorkMode= HVAC_COOL, therefore set the appointed equipment service at cooling mode.

⚠ **CAUTION**

Enactments include: "Operation mode setting", "Air speed setting", "Temperature setting", "open time setting", "close time setting" and "auxiliary function setting", each time with only one kind of enactments by "Data set" to control A/C equipment. Combination operate setting shall be set time after time. Readable variables and writable variables is individually in **LonWorks** network, thus the amendment of the network variable nviSetWorkMode would not reflect at network variable nvoWorkMode at once, unless the network variable nvoWorkMode have been renew by BMS.

3-3 Reading Operation Data from Outdoor Unit

BMS read data from indoor unit which main unit address is 9, network address is 16, process as following:
1.Modify the network variable nviMainAddr=9, therefore, set the A/C main unit address as 9;
2.Modify the network variable nviMainAddr=16, therefore, set the A/C NET network address as 16;
3.Modify the network variable nviGetLastValue=100.0 1, convey the latest information of which set equipment to LonWorks.

⚠ **CAUTION**

Needs to renew the system once only, the system return all information from the appointed A/C at a time, of which corresponding network variable would be refreshed automatically.

4 NETWORK VARIABLE CHARTS

3) Table of Outdoor Water Unit network Variables(Continued 4.12 table)

Table 4.13

No	Maning	Type	Name	Despriction	
20	Alarm states	SNVT_state (bit0-bit15)	nvoACAlarmStats	Bit15	Other malfunctions
				Bit14	Reservation Set 0
				Bit13	Malfunction of outdoor unit qty. Increase (Effect on main unit)
				Bit12	Malfunction of outdoor unit qty. Decrease (Effect on main unit)
				Bit11	Malfunction of network communication
				Bit10	Reservation Set 0
				Bit9	Reservation Set 0
				Bit8	Reservation Set 0
				Bit7	Reservation Set 0
				Bit6	T5 Tempeerature sensor malfunction
				Bit5	T3B Tempeerature sensor malfunction
				Bit4	T4 Tempeerature sensor malfunction
				Bit3	T3A Tempeerature sensor malfunction
				Bit2	Indoor units communication malfunction
				Bit1	Phases' sequence error or default
				Bit0	Outdoor units communication malfunction
21	Protection states	SNVT_state (bit0-bit15)	nvoACProtStats	Bit15	Other protection (effective Set)
				Bit14	Oil average
				Bit13	Oil return
				Bit12	Reservation Set 0
				Bit11	Reservation Set 0
				Bit10	Defrost protection
				Bit9	Reservation Set 0
				Bit8	Reservation Set 0
				Bit7	Compressor current protection 2
				Bit6	Reservation Set 0
				Bit5	Condensate high pressure protection
				Bit4	Air exhaust pipe temperature protection
				Bit3	Compressor current protection 21
				Bit2	Air exhaust low pressor protection
				Bit1	Air exhaust high pressor protection
				Bit0	Temperature protection for compressor upper enclosure
22	Outdoor unit operation capability demand	SNVT_power	nvoElecPower	Unit 1 PMa , 0~250 stand for 0~250 Pma	

3) Table of Outdoor water unit network variable (Continued 4.11 table)

Table: 4.12

No	Meaning	Type	Name	Description	
12	Compressor 1 current	SNVT_amp	nvoCpr1Current	0~200 stand for current 0A~200A	
13	Compressor 2 current	SNVT_amp	nvoCpr2Current	0~200 stand for current 0A~200A	
14	Compressor 3 current	SNVT_amp	nvoCpr3Current	0~200 stand for current 0A~200A	
15	Adjust digital compressor	SNVT_lev_cont	nvoCprVol	0~250 stand for 0~250Hz	
16	Electrical expanding valve 1 opening angle	SNVT_lev_cont	nvoValve1	00h~07Dh stand for close opening angle of ~1000 steps，resolution is 8 steps，0FF stand for no this data.	
17	Electrical expanding valve 2 opening angle	SNVT_lev_cont	nvoValve2	00h~07Dh stand for close opening angle of ~1000 steps，resolution is 8 steps，0FF stand for no this data.	
18	States of Outdoor unit solenoid valve	SNVT_state (bit0-bit15)	nvoOutDevStats	Bhit15～Bit8	Unused，set 0
				Bit7	Reservation Set 0
				Bit6	Reservation Set 0
				Bit5	Reservation Set 0
				Bit4	Reservation Set 0
				Bit3	Reservation Set 0
				Bit2	Reservation Set 0
				Bit1	Four-way valve B ST2 1：On，0：Off
				Bit0	Four-way valve A ST1 1：On，0：Off
19	States of Compressor and auxiliary functions	SNVT_state (bit0-bit15)	nvoAsstFuntStats	Bhit15～Bit8	Unused，set 0
				Bit7	Reservation Set 0
				Bit6	Reservation Set 0
				Bit5	Auxiliary electric heating 1：On，0：Off
				Bit4	Water pump 1：On，0：Off
				Bit3	Reservation Set 0
				Bit2	Compress 3 1：On，0：Off
				Bit1	Compress 2 1：On，0：Off
				Bit0	Compress 1 1：On，0：Off

⚠ **CAUTION**

This system adopts the manner of shared network variable to manage A/C system, which cannot access the appointed A/C within central A/C system, until the main unit address nviMainAddr and network address nviNetAddr are modified to the one that is intended to access, such main unit address variable is nviMainAddr, network address variable is nviNetAddr, refresh variable is nviGetLastValue, and the rest parameters refer the following table.

4-1 Table of Operation Data Reading

4-1-1 Table of Indoor Unit Network Variables

Table 4.1

No	Meaning	Type	Name	Description
1	Model information	SNVT_count	nvoDeviceInfo	See annexed table for detail1
2	Operation mode	SNVT_hvac_mode	nvoWorkMode	= HVAC_NUL = -1 Mode have not been set =HVAC_AUTO = 0 Auto mode =HVAC_COOL = 3 Cooling mode =HVAC_HEAT = 1 Heating mode =HVAC_DEHUMID = 14 Dehumidified mode =HVAC_FAN_ONLY = 9 Fan only mode =HVAC_OFF = 6 Off mode
3	Mode locking state	SNVT_hvac_mode	nvoModeLock	= HVAC_NUL = -1 Mode have not been locked =HVAC_AUTO = 0Lock on auto mode =HVAC_COOL = 3Lock on cooling mode =HVAC_HEAT = 1Lock on heating mode =HVAC_DEHUMID = 14 Lock on dehumidified =HVAC_FAN_ONLY = 9Lock on fan only
4	Indoor fan state	SNVT_lev_disc	nvoFanSpeed	=ST_LOW = 1 Low speed =ST_MED = 2 Medium speed =ST_HIGH = 3 High speed =ST_ON = 4 Auto
5	Setting temperature Ts	SNVT_temp_p	nvoSetTemp	16~32 stand for 16~32℃
6	Setting temperature T1	SNVT_temp_p	nvoIndoorTemp	0~240 stand for -20~100℃
7	Evaporator pipe temperature T2A	SNVT_temp_p	nvoEvprtrTemp	0~240 stand for -20~100℃
8	Mid-part of evaporator pipe temperature T2B	SNVT_temp_p	nvoEvprtrMidTemp	0~240 stand for -20~100℃
9	Condenser pipe temperature T3	SNVT_temp_p	nvoCdrTemp	0~240 stand for -20~100℃
10	Compressor current	SNVT_amp_ac	nvocprCurrent	0~200 stand for current 0A~200A
11	Humidity	SNVT_lev_cont	nvoHumidity	0~100 stand for relative humidity 0%～100%

4-1-1 Table of indoor unit network variables(Continued 4.1 table)

Table: 4.2

No	Meaning	Type	Name	Description	
12	Set on time	SNVT_time_min	nvoSetOnTime	0~96 stand for no time fixed~24 hours timing	
13	Set off time	SNVT_time_min	NvoSetOffTime	0~96 stand for no time fixed~24 hours timing	
14	Outdoor unit states	SNVT_state (bit0-bit15)	nvoOdrDevStats	Bhit15~Bit6	Reservation Set 0
				Bit5	Oil return 1: On，0: Off
				Bit4	Crankcase 1: On，0: Off
				Bit3	Four-way valve 1: On，0: Off
				Bit2	Outside fan at low speed 1: On，0: Off
				Bit1	Outside fan at high speed 1: On，0: Off
				Bit15	Compressor 1: On，0: Off
15	Auxiliary function states	SNVT_state (bit0-bit15)	nvoAsstFuntStats	Bit0	Remote controller locked 1: On，0: Off
				Bit14	Integrated controller locked 1: On，0: Off
				Bit13 Bit12	00: Lock-on shut down or unlocking 01: Lock-on cooling， 10: Lock-on heating， 11: Lock-on fan only mode
				Bit11	Reservation Set 0
				Bit10	Water drainage pump 1: On，0: Off
				Bit9	Water added 1: On，0: Off
				Bit8	Humidifying 1: On，0: Off
				Bit7	Horizontal air supply 1: On，0: Off
				Bit6	Drying function 1: On，0: Off
				Bit5	Oxygen added 1: On，0: Off
				Bit4	Air renewal 1: On，0: Off
				Bit3	Ventilation 1: On，0: Off
				Bit2	Sway 1: On，0: Off
				Bit1	Auxiliary electrical heating 1: On，0: Off
				Bit0	Economic operation 1: On，0: Off

3) Table of Outdoor Water Unit network Variables

Table:4.11

No	Meaning	Type	Name	Description
1	Model information	SNVT_count	nvoDeviceInfo	See annexed table 2 for detail
2	Operation mode	SNVT_hvac_mode	nvoWorkMode	= HVAC_NUL = -1 Mode have not been set = 20 Pump mode = HVAC_COOL = 3 Cooling mode = HVAC_HEAT = 1Heating mode = HVAC_OFF = 6 Off mode
3	Mode locking state	SNVT_hvac_mode	nvoModeLock	= HVAC_NUL = -1Mode have not been set = 20 Pump mode = HVAC_COOL = 3 Cooling mode = HVAC_HEAT = 1Heating mode = HVAC_OFF = 6 Off mode
4	Indoor fan state	SNVT_lev_disc	nvoFanSpeed	= ST_LOW = 1 Low speed = ST_MED = 2 Medium speed = ST_HIGH = 3 High speed
5	Setting temperature Ts	SNVT_temp_p	nvoOutdoorTemp	0~240 stand for -20~100℃
6	Setting temperature T1	SNVT_temp_p	nvoCdsOutTemp	0~240 stand for -20~100℃
7	Temperature at the inlet of outdoor condensate T3	SNVT_temp_p	nvoCdsInTemp	0~240 stand for -20~100℃
8	Plate exchange outlet temperature TW	SNVT_temp_p	nvoBHOutTemp	0~240 stand for -20~100℃
9	Total water outlet temperature AW	SNVT_temp_p	nvoZCSTemp	0~240 stand for -20~100℃
10	Plate exchanger temperature TB	SNVT_temp_p	nvoBHTemp	0~240 stand for-20~100℃
11	Indoor unit Qty.	SNVT_count	nvoInDevCt	0~250 stand for0~250 items

2) Table of digital indoor unit network variables(Continued 4.9 table)

Table: 4.10

No	Maning	Type	Name	Despriction	
20	Alarm states	SNVT_state (bit0-bit15)	nvoACAlarmStats	Bit15	Other malfunctions
				Bit14	Reservation Set 0
				Bit13	Malfunction of outdoor unit qty. Increase (Effect on main unit)
				Bit12	Malfunction of outdoor unit qty. Decrease (Effect on main unit)
				Bit11	Malfunction of network communication
				Bit10	Reservation Set 0
				Bit9	Reservation Set 0
				Bit8	Reservation Set 0
				Bit7	Reservation Set 0
				Bit6	T5 Tempeerature sensor malfunction
				Bit5	T3B Tempeerature sensor malfunction
				Bit4	T4 Tempeerature sensor malfunction
				Bit3	T3A Tempeerature sensor malfunction
				Bit2	Indoor units communication malfunction
				Bit1	Phases' sequence error or default
				Bit0	Outdoor units communication malfunction
21	Protection states	SNVT_state (bit0-bit15)	nvoACProtStats	Bit15	Other protection
				Bit14	Oil average
				Bit13	Oil return
				Bit12	Reservation Set 0
				Bit11	Reservation Set 0
				Bit10	Defrost protection
				Bit9	Reservation Set 0
				Bit8	Reservation Set 0
				Bit7	Compressor current protection 2
				Bit6	Reservation Set 0
				Bit5	Condensate high pressure protection
				Bit4	Air exhaust pipe temperature protection
				Bit3	Compressor current protection 21
				Bit2	Air exhaust low pressor protection
				Bit1	Air exhaust high pressor protection
				Bit0	Temperature protection for compressor upper enclosure
22	Outdoor unit operation capability demand	SNVT_power	nvoElecPower	Unit 1 PMa , 0~250 stand for 0~250 Pma	

4-1-1 Table of indoor unit network variables(Continued 4.2 table)

Table: 4.3

No	Meaning	Type	Name	Description	
16	Alarm states	SNVT_state (bit0-bit15)	nvoACAlarmStats	Bit15	Other malfunctions（Set 1）
				Bit14	Water level detection malfunction
				Bit13	Outdoor malfunction protection
				Bit12	Refresh malfunction
				Bit11	Converter module protection
				Bit10	Compressor overcurrent (4 times)
				Bit9	Communication malfunction between main board & display screen
				Bit8	Air speed detection out of control
				Bit7	EEPROM error
				Bit6	Zero-crossing detection error
				Bit5	Malfunction in air discharge temperature sensor of T3, T4 or digital compressor.
				Bit4	T2B Sensor malfunction
				Bit3	T2A Sensor malfunction
				Bit2	T1 Sensor malfunction
				Bit1	Communication malfunction
				Bit0	Phases' sequence error or default
17	Protection states	SNVT_state (bit0-bit15)	nvoACProtStats	Bit15	Other protection （effective Set）
				Bit14	Unused
				Bit13	Unused
				Bit12	Unused
				Bit11	Unused
				Bit10	Unused
				Bit9	Unused
				Bit8	Compressor overcurrent
				Bit7	Power supply over-under voltage protection
				Bit6	Air exhaust low pressure protection
				Bit5	Air exhaust high pressure protection
				Bit4	Air exhaust temperature protection
				Bit3	Compressor temperature protection
				Bit2	Condensate high temperature protection
				Bit1	Anti-cool air or defrost protection
				Bit0	Evaporator temperature protection

4-1-1 1) Table of indoor unit network variable:(Continued 4.3 table)

Table: 4.4

No	Meaning	Type	Name	Description	
18	Network device alarm	SNVT_state (bit0-bit15)	nvoNetDevAlarm	Bhit15～Bit8	Reservation Set 0
				Bit7	Error command（Set 1）
				Bit6	Target address nonentity
				Bit5	Not be performed when command time-out
				Bit4	Command limits performance
				Bit3	Communication malfunction between in integrating monitor and PC (Gateways)
				Bit2	Communication malfunction between in integrating monitor and function module.
				Bit1	Communication malfunction betweenin integrating monitor and network interface.
				Bit0	Communication malfunction between in network interface and main control board.
19	Electric Power	SNVT_power	nvoElecPower	Unit 0.1 MPa，0Ffh stand for no effective data	

Annexed table 1   Model information of Indoor unit

A/C models' information are composed by 2 bytes, which stand for A/C types and functions distinction. For each byte, please refer to the following table.

Annexed table 1

The first byte	Bit7	Main model （A/C Great type ）	0001：Wall mounted type，0010：Floor type，0011：Embedded type，0100：Duct type，0101：Floor and ceiling type，0110：1001：Auxiliary machine for A/C，1010：Digital mutil-connection，1100：Conversion，1110：Digital rotation
	Bit6		
	Bit5		
	Bit4		
	Bit3	Auxiliary model （A/C Small type）	Divide into 4 types 00~11
	Bit2		
	Bit1	Alternate version	00 stand for original version，01~11stand for alternate version sequence
	Bit0		
The second byte	Bit7	Extended temperature setting	1：Yes(16℃~32℃) , 0：No (17℃~30℃)
	Bit6	Oxygen added function	1：Yes，0：No
	Bit5	Refresh function	1：Yes，0：No
	Bit4	Wind sway function	1：Yes，0：No
	Bit3	Air exchange function	1：Yes，0：No
	Bit2	Auxiliary electric heating	1：Yes，0：No
	Bit1	Reserve	Set 0
	Bit0	Heating only/ Both cooling and heating	1：cool only，0：Both cooling and heating

4-1-2 Table of indoor unit network variables

⚠ CAUTION

For a whole A/C system share the network variable of BMS CCM07, thus a same network variable would be employed, represent for indoor unit and outdoor unit, which could be distinguished by model information.

2) Table of digital outdoor network variable:(Continued 4.8 table)

Table: 4.9

No	Meaning	Type	Name	Description	
12	Compressor 1 current	SNVT_amp	nvoCpr1Current	0~200 stand for current 0A~200A	
13	Compressor 2 current	SNVT_amp	nvoCpr2Current	0~200 stand for current 0A~200A	
14	Compressor 3 current	SNVT_amp	nvoCpr3Current	0~200 stand for current 0A~200A	
15	Converter compressor frequency		nvoCpVo1	00~100 stand for the adjustment of 0%~100%	
16	Electrical expanding valve 1 opening angle	SNVT_lev_cont	nvoValve1	00h~07Dh stand for close opening angle of ~1000 steps ，resolution is 8 steps，0FF stand for no this data.	
17	Electrical expanding valve 2 opening angle	SNVT_lev_cont SNVT_lev_cont		00h~07Dh stand for close opening angle of ~1000 steps ，resolution is 8 steps，0FF stand for no this data.	
18	States of Outdoor unit solenoid valve	SNVT_state (bit0-bit15)	nvoValve2 NvoOutDevStats	Bhit15～Bit8	Unused，set 0
				Bit7	Solenoid valve SV8 1：On，0：Off
				Bit6	Solenoid valve Sv7 1：On，0：Off
				Bit5	Solenoid valve Sv6 1：On，0：Off
				Bit4	Solenoid valve Sv5 1：On，0：Off
				Bit3	Solenoid valve Sv4 1：On，0：Off
				Bit2	Spray cooling solenoid valve SV3 1：On，0：Off
				Bit1	Auxiliary four-way valve ST2 1：On，0：Off
				Bit0	Four-way valve ST1 1：On，0：Off
19	States of Compressor and auxiliary functions	SNVT_state (bit0-bit15)		Bhit15～Bit8	Unused，set 0
				Bit7	Reservation Set 0
				Bit6	Reservation Set 0
				Bit5	Reservation Set 0
				Bit4	Reservation Set 0
				Bit3	Reservation Set 0
				Bit2	Compressor 3 1：On，0：Off
				Bit1	Compressor 2 1：On，0：Off
				Bit0	Compressor 1 1：On，0：Off

nvoAsstFuntStats

4 NETWORK VARIABLE CHARTS

2) Table of digital indoor unit network variables(Continued 4.7 table)

Table: 4.8

No	Meaning	Type	Name	Description
1	Model information	SNVT_count	nvoDeviceInfo	See annexed table 1 fo detail
2	Operation mode	SNVT_hvac_mode	nvoWorkMode	= HVAC_NUL = -1 Mode have not been set = HVAC_COOL = 3 Cooling mode = HVAC_HEAT = 1 Heating mode = HVAC_OFF = 6 Off mode
3	Mode locking state	SNVT_hvac_mode	nvoModeLock	= HVAC_NUL = -1 Mode have not been locked = HVAC_COOL = 3 Lock on cooling mode = HVAC_HEAT = 1 Lock on heating mode
4	Indoor fan state	SNVT_lev_disc	nvoFanSpeed	=ST_LOW = 1 Low speed =ST_MED = 2 Medium speed =ST_HIGH = 3 High speed
5	Outdoor temperature T4	SNVT_temp_p	nvoOutdoorTemp	0~240 stand for -20~100℃
6	Temperature at the inlet of outdoor condensate T3	SNVT_temp_p	nvoCdsOutTemp	0~240 stand for -20~100℃
7	Temperature at the inlet of outdoor condensate T6	SNVT_temp_p	nvoCdsInTemp	0~240 stand for -20~100℃
8	Compressor 1 ventilated temperature	SNVT_temp_p	nvoCpr1Temp	0~200 stand for -20~180℃
9	Compressor 2 ventilated temperature	SNVT_temp_p	nvoCpr2Temp	0~200 stand for -20~180℃
10	Compressor 3 ventilated temperature	SNVT_temp_p	nvoCpr3Temp	0~200 stand for -20~180℃
11	Indoor unit qty.	SNVT_count	nvoInDevCt	0~250 stand for 0~250 unit

4 NETWORK VARIABLE CHARTS

1) Network variabletable of conversion outdoor unit:

Table: 4.5

No	Meaning	Type	Name	Description
1	Model information	SNVT_count	nvoDeviceInfo	See annexed table 1 for detail
2	Operation mode	SNVT_hvac_mode	nvoWorkMode	= HVAC_NUL = -1 Mode have not been set = HVAC_COOL = 3 Cooling mode = HVAC_HEAT = 1 Heating mode = HVAC_OFF = 6 Off mode
3	Mode locked state	SNVT_hvac_mode	nvoModeLock	= HVAC_NUL = -1 Mode have not been locked = HVAC_COOL = 3 Lock on cooling mode = HVAC_HEAT = 1 Lock on heating mode
4	Indoor fan state	SNVT_lev_disc	nvoFanSpeed	=ST_LOW = 1 Low speed =ST_MED = 2 Medium speed =ST_HIGH = 3 High speed
5	Outdoor temperature T4	SNVT_temp_p	nvoOutdoorTemp	0~240 stand for -20~100℃
6	Temperature at the inlet of outdoor condensate T3	SNVT_temp_p	nvoCdsOutTemp	0~240 stand for -20~100℃
7	Temperature at the inlet of outdoor condensate T6	SNVT_temp_p	nvoCdsInTemp	0~240 stand for -20~100℃
8	Compressor 1 ventilated temperature	SNVT_temp_p	nvoCpr1Temp	0~200 stand for -20~180℃
9	Compressor 2 ventilated temperature	SNVT_temp_p	nvoCpr2Temp	0~200 stand for -20~180℃
10	Compressor 3 ventilated temperature	SNVT_temp_p	nvoCpr3Temp	0~200 stand for -20~180℃
11	Indoor unit qty.	SNVT_count	nvoInDevCt	0~250 stand for 0~250 items

1) Network variabletable of conversion outdoor unit:(Continued 4.5 table)

Table: 4.6

No	Meaning	Type	Name	Description		
12	Compressor 1 current	SNVT_amp	nvoCpr1Current	0~200 stand for current 0A~200A		
13	Compressor 2 current	SNVT_amp	nvoCpr2Current	0~200 stand for current 0A~200A		
14	Compressor 3 current	SNVT_amp	nvoCpr3Current	0~200 stand for current 0A~200A		
15	Converter compressor frequency	SNVT_freq_hz	nvoCprHz	0~250 stand for t0~250Hz		
16	Electrical expanding valve 1 opening angle		nvoValve1	00h~07Dh stand for close opening angle of ~1000 steps，resolution is 8 steps，0FF stand for no this data.		
17	Electrical expanding valve 2 opening angle	SNVT_lev_cont SNVT_lev_cont		00h~07Dh stand for close opening angle of ~1000 steps，resolution is 8 steps，0FF stand for no this data.		
18	States of outdoor unit solenoid valve	SNVT_state (bit0-bit15)	nvoValve2 nvoodrDevStats	Bhit15 ~ Bit8	Unused, set to 0	
				Bit7	Solenoid valve SV8 1：On，0：Off	
				Bit6	Solenoid valve Sv7 1：On，0：Off	
				Bit5	Solenoid valve Sv6 1：On，0：Off	
				Bit4	Solenoid valve Sv5 1：On，0：Off	
				Bit3	Solenoid valve Sv4 1：On，0：Off	
				Bit2	Spray cooling solenoid valve SV3 1：On，0：Off	
				Bit1	Auxiliary four-way valve ST2 1：On，0：Off	
				Bit0	Four-way valve ST1 1：On，0：Off	
19	States of compressor and auxiliary functions	SNVT_state (bit0-bit15)	nvoAsstFuntStats	Bhit15 ~ Bit8	Unused, set to 0	
				Bit7	Reservation Set 0	
				Bit6	Reservation Set 0	
				Bit5	Reservation Set 0	
				Bit4	Reservation Set 0	
				Bit3	Reservation Set 0	
				Bit2	Compressor 3 1：On，0：Off	
				Bit1	Compressor 2 1：On，0：Off	
				Bit0	Compressor 1 1：On，0：Off	

1) Network variabletable of conversion outdoor unit:(Continued 4.6 table)

Table: 4.7

No	Meaning	Type	Name	Description	
20	Alarm states	SNVT_state (bit0-bit15)	nvoACAlarmStats	Bit15	Other malfunctions (Set 1)
				Bit14	Reservation Set 0
				Bit13	Malfunction of outdoor unit qty. Increase (Effect on main unit)
				Bit12	Malfunction of outdoor unit qty. Decrease (Effect on main unit)
				Bit11	Network communication malfunction
				Bit10	DSP communication malfunction
				Bit9	Voltage malfunction
				Bit8	Reservation Set 0
				Bit7	Reservation Set 0
				Bit6	T6 Sensor malfunction
				Bit5	Reservation Set 0
				Bit4	Reservation Set 0
				Bit3	Malfunction in air discharge temperature sensor of T3, T4 or digital compressor.
				Bit2	Outdoor /indoor unit communication malfunction
				Bit1	Phases' sequence error or default
				Bit0	Outdoor unit communication malfunction
21	Protection states	SNVT_state (bit0-bit15)	nvoACProtStats	Bit15	Other protection（(Set 1)）
				Bit14	Oil average
				Bit13	Oil return
				Bit12	Reservation Set 0
				Bit11	Reservation Set 0
				Bit10	Defrost protection
				Bit9	Power supply over under-voltage protection
				Bit8	Compressor current protection 3
				Bit7	Compressor current protection 2
				Bit6	Conversion mould protenction
				Bit5	Condensate high temperature protection
				Bit4	Air exhaust pipe temperature protection
				Bit3	Compressor current protection 1
				Bit2	Low pressureair exhaust protection
				Bit1	High pressureair exhaust protection
				Bit0	Temperature protection for compressor upper enclosure
22	Outdoor unit operation capability demand	SNVT_power	nvoElecPower	Unit 0.1 MPa，0Ffh stand for no effective data	