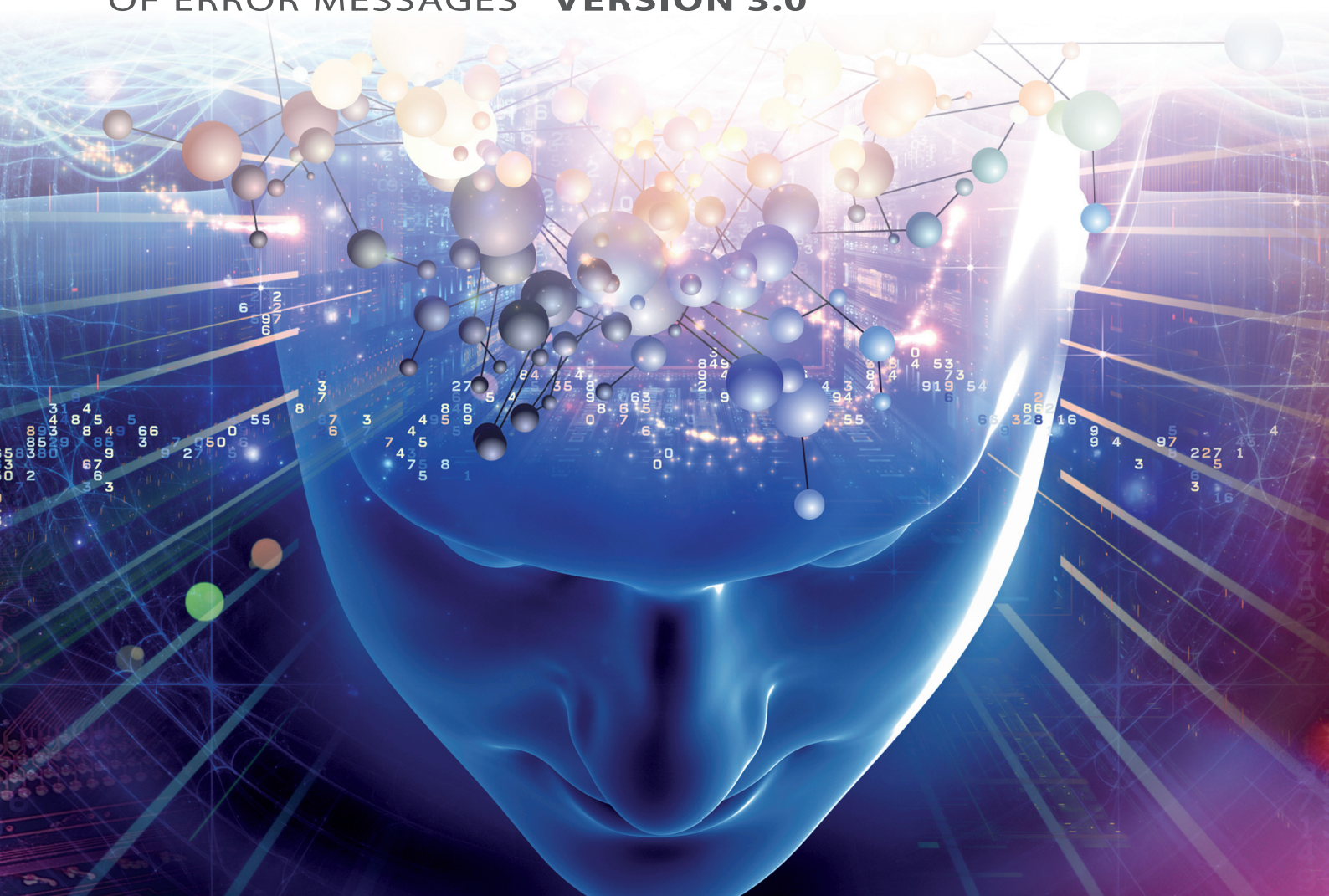


Toshibel

MANUAL FOR SERVICE AND DECODING
OF ERROR MESSAGES **VERSION 3.0**



Toshibel

MANUAL FOR SERVICE AND DECODING OF ERROR MESSAGES

Version 3.0

Summary of key data from the original Toshiba manuals.



Publisher:

AIR-COND Klimaanlagen-Handelsgesellschaft m.b.H.

Haushamer Straße 2, 8054 Graz-Seiersberg © August 2015

No liability is accepted for printing errors.

The reprinting is only permitted with the express approval of the publisher!

This manual doesn't replace the original manuals from Toshiba.

CONTENTS

RAS – RESIDENTIAL

4

TROUBLESHOOTING	4
REFRIGERATION SCHEME AND SENSOR POSITIONS	7
CHANGE OF CONTROL FROM CHANNEL A TO B	8
AUTO RESTART AFTER POWER FAILURE	9

RAV – LIGHT COMMERCIAL

13

TROUBLESHOOTING	13
REFRIGERATION SCHEME AND SENSOR POSITIONS	21
DX-KIT	22

VRF – COMMERCIAL

25

TROUBLESHOOTING MINI SMMS UNITS	25
MINI SMMS: REFRIGERATION SCHEME AND SENSOR POSITIONS	32
TROUBLESHOOTING SMMS ₂ UNITS	34
SCHEMATIC REPRESENTATION OF REFRIGERANT LINES AND SENSOR POSITION	39
TROUBLESHOOTING SHRM ₂ UNITS	41
DISABLE COMPRESSOR (BACKUP OPERATION)	56
CODES 7-SEGMENT DISPLAY	57
DX-KIT	61
HOT WATER MODUL	65
VN – AIR HANDLING UNIT WITH RECUPERATOR	68

CHECK CODES

71

DN CODES	71
CHANGING DN CODES AMT31/32 (AMS41)	74
CHANGING DN CODES AMS 51	75

CHECK CODE PRE-SERIES

76

RAV SERIE (R407C / R22)	76
MMS R407C	77
2-PIPE SUPER MULTI R407C	78
3-PIPE SUPER MULTI	79

MONITORING

80

DIGITAL INVERTER (DI) AND SUPER DIGITAL INVERTER (S-DI)	81
MINI-SMMS/SMMS/SHRM	82
SMMS ₂ / SHRM ₂	82

CONTROL OPTIONS

84

WINDOW SWITCH TCB-IFCB5-PE	84
ADDITIONAL P.C.B. TCB-PCUC1E FOR RAV-SM***7CTP-E	85
ANALOGOUS INTERFACE 0-10V RBC-FDP3-PE	89
LC/VRF DX-KIT	91
CN-CONNECTOR	100

APPENDIX

113

CURRENT PROTECTION AND WIRE SIZING OF ALL UNITS	113
OHM VALUES OF ALL SENSORS	115

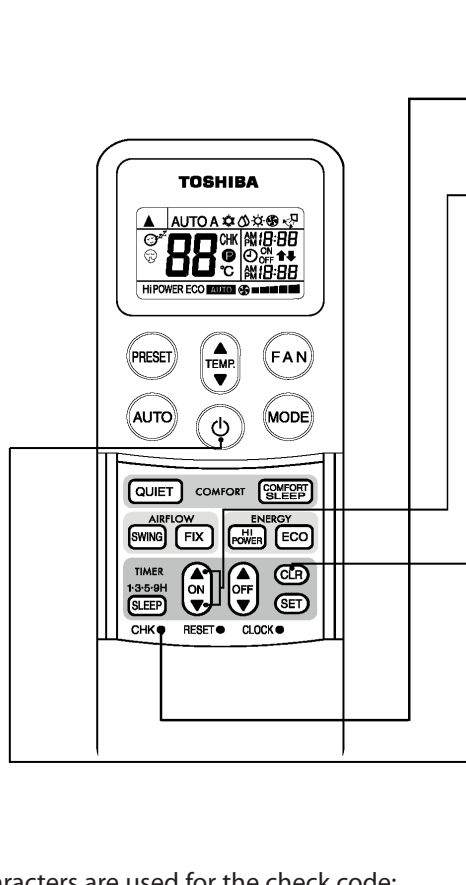
RAS - Residential

Troubleshooting RAS devices

Self-Diagnosis by Remote Control (Check Code)

1. If the LED on the indoor unit displays an error, change with help of infrared remote control to the self-diagnosis menu.
2. When the remote control is set to the service mode, the indoor controller diagnoses the operation condition and indicates the information of the self-diagnosis on the display of the remote control with the check codes. If a fault is detected, all lamps on the indoor unit will blink at 5Hz and it will beep for 10 seconds (Pi, Pi, Pi, ...).
The timer lamp usually blinks (5 Hz) during the self-diagnosis.

How to use remote control in service mode



- (1) Press [CHK] button with a tip of pencil to set the remote control to the service mode.
 - "00" is indicated on the display of the remote control
 - The timer lamp on the indoor unit blinks continuously. (5 times per 1 sec.)
- (2) Press [TIMER ▲] button
If there is no fault with a code, the indoor unit will beep once (Pi) and the display of the remote control will change as follows:

00 → 01 → 02 → ... 1d → 1E → 22

 - Check the unit with all 35 check codes (00 to 22) as shown in table 1
 - Press [TIMER ▼] button to change the check code backwards.

If there is a fault, the indoor unit will beep for 10 seconds (Pi, Pi, Pi, ...)
Note the check code on the display of the remote control.

 - 2-digis alphanumeric will be indicated on the display.
 - All lamps on the unit will blink. (5 times per 1 sec.)
- (3) Press [CLR] button. After service finish for clear service code in memory.
 - "7F" is indicated on the display of the remote control.
- (4) Press [] button to release the service mode.
 - The display of the infrared remote control switches back to normal operation.

Alphanumeric characters are used for the check code:

<i>S</i> is 5.	<i>B</i> is 6.
<i>A</i> is A.	<i>b</i> is B.
<i>C</i> is C.	<i>d</i> is D.

Error codes for RAS units

1. After servicing, push the START/STOP button to return to the normal mode.
2. After servicing by the check code, turn off breaker of the power supply, and turn on again so that memory in the microcomputer returns the initial status.
However, the check codes are not deleted even if the power supply is turned off because they are stored in the fixed memory.

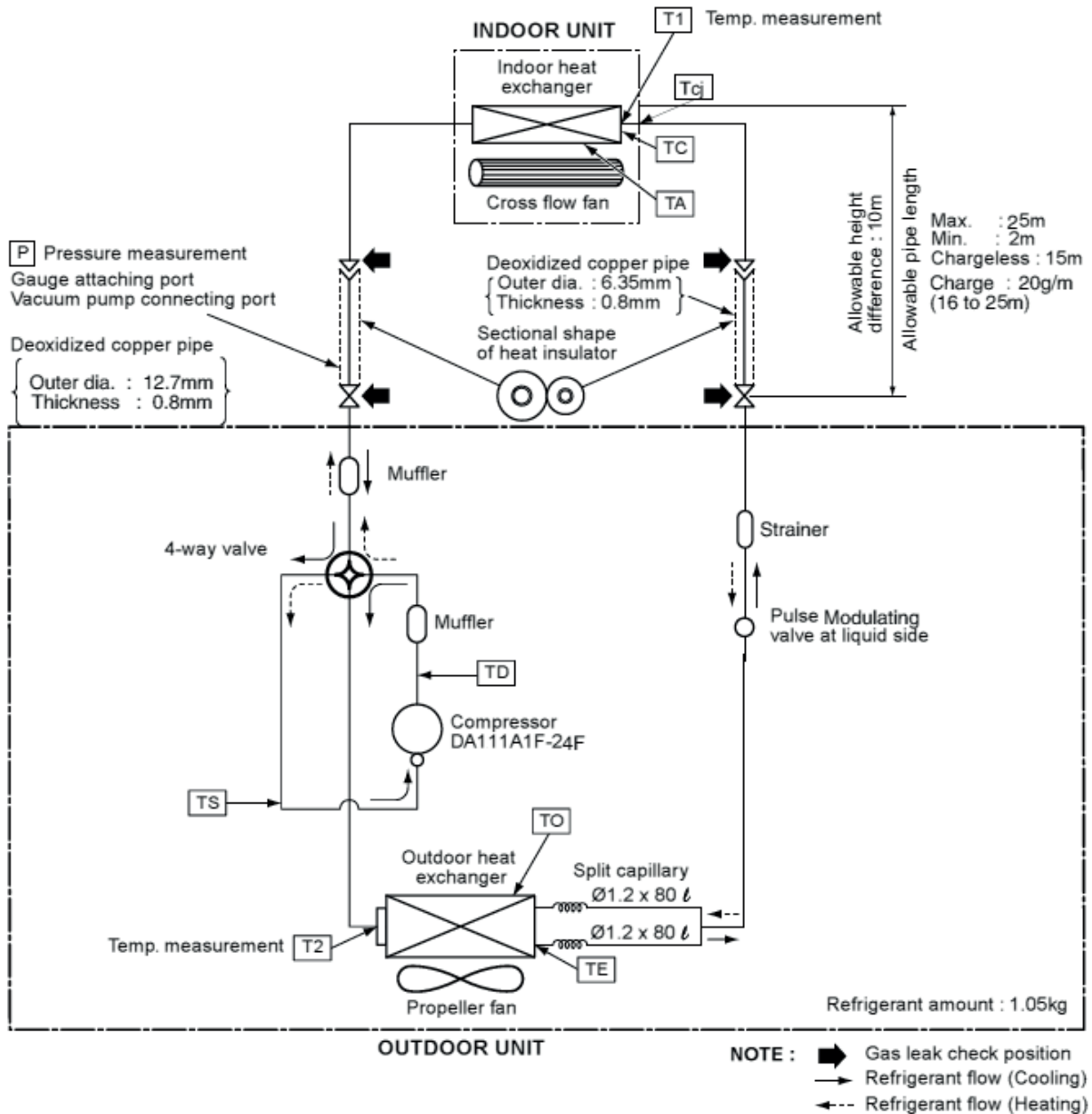
Table 1

Block distinction		Operation of diagnosis function				Judgment and action
Check code	Block	Check Code	Cause of operation	Air conditioner status	Remarks	
00	Indoor P.C. board	0C	Short circuit or disconnection of the room temperature sensor (TA sensor)	Operation continues	Displayed when error is detected	1. Check the room temperature sensor 2. When the room temperature sensor is normal, check P.C. board
		0d	Being out of place, disconnection, short circuit, or migration of heat exchanger sensor (TC sensor)	Operation continues	Displayed when error is detected	1. Check heat exchanger sensor 2. When heat exchanger sensor is normal, check P.C. board
		0F	Being out of place, disconnection, short circuit, or migration of heat exchanger sensor (TCJ sensor)	Operation continues	Displayed when error is detected	1. Check heat exchanger sensor 2. When heat exchanger sensor is normal, check P.C. board
		11	Lock of indoor fan or trouble on the indoor fan circuit	Stop	Displayed when error is detected	1. Check P.C. board 2. When P.C. board is normal, check the motor
		0b	Float SW operation	Operation continues (Outdoor units stop.)	Displayed when error is detected	1. Check the drainage 2. Float SW operation check 3. Check disconnection of connector
	Not displayed	12	Trouble on other indoor P.C. boards	Operation continues	Displayed when error is detected	Replace P.C. board
	Indoor P.C. board	13	TC-sensor-error	Stop	Displayed when error is detected	1. Check heat exchanger - sensor 2. Check P.C. board
	Wired Remote Control	30	Communication with wired remote control is error		Displayed when error is detected	Check wired remote control connection Only G3DV duct unit
	Indoor P.C. board	31	Capacity date is not set		Displayed when error is detected	Set Function code 11 correctly Only G3DV duct unit
01	Connecting cable and serial signal	04	Return serial signal is not sent to indoor side from operation started: 1. Defective wiring of connecting cable 2. Operation of compressor thermo Gas shortage Gas leak	Operation continues	Flashes when trouble is detected on operation signal, and normal status when signal is reset	1. When the outdoor unit never operates: (1) Check connecting cable and correct if defective wiring (2) Check 25A fuse of inverter P.C. board (3) Check 3.15A fuse of inverter P.C. board 2. To display [Other] block during operation, check compressor thermo operation and supply gas (check gas leak too) 3. Unit operates normally during check: If return serial signal does not stop between 2 and 3 of the indoor terminal block, replace inverter P.C. board. If signal stops between indoor terminal 2 and 3, replace indoor P.C. board.
		05	Operation command signal is not sent to outdoor side	Operation continues	Flashes when trouble is detected on operation signal, and normal status when signal is reset	If return serial signal does not stop between 2 and 3, replace inverter P.C. board. If signal stops between indoor terminal block 2 and 3, replace indoor P.C. board.

RAS – CHECK CODE

Block distinction		Operation of diagnosis function				Judgment and action
Check code	Block	Check Code	Cause of operation	Air conditioner status	Remarks	
02	Outdoor P.C. board	14	Inverter over-current protective circuit operates (Short Time)	Stop	Displayed when error is detected	Even if trying operation again, all operations stop immediately: Replace P.C. board
		16	Position-detect circuit error or short circuit between windings of compressor	Stop	Displayed when error is detected	1. Even if connecting lead wire of compressor is removed, position-detect circuit error occurred: Replace P.C. board 2. Measure resistance between wires of compressor and perform short circuit: Replace compressor
		17	Current-detect circuit error	Stop	Displayed when error is detected	Even if trying operation again, all operations stop immediately: Replace P.C. board
		18	Being out of place, disconnection or short circuit of outdoor temperature sensor	Stop	Displayed when error is detected	1. Check outdoor temperature sensor (TE, TS) 2. Check P.C. board
		19	Disconnection or short circuit of discharge temperature sensor (TD sensor)	Stop	Displayed when error is detected	1. Check discharge temperature sensor (TD) 2. Check P.C. board
		1A	Outdoor fan drive system error	Stop	Displayed when error is detected	Position-detect error, over-current protective operation of outdoor fan drive system, fan lock, etc.: Replace P.C board or fan motor
	Not displayed	1b	Outdoor heat exchanger temperature sensor error (TE sensor)	Operation continues		1. Check outdoor heat exchanger temperature sensor (TE) 2. Check P.C. board
	Outdoor P.C. board	1c	Compressor drive output error (lock missing, etc.); Break down	Stop	Displayed when error is detected	When 20 seconds passed after startup, position-detect circuit error occurred: Replace compressor
03	Others (including compressor)	07	Return serial signal has been sent when operation started, but it is not sent from halfway (1) Compressor thermo operation Gas shortage Gas leak (2) Instantaneous power failure	Operation continues	Flashes when trouble is detected on return serial signal, and normal status when signal is reset	1. Repeat Start and Stop with interval of approx. 10 to 40 minutes (Code is not displayed during operation) Supply gas (Check also gas leak) 2. Unit operates normally during check: If return serial signal does not stop between 2 and 3 replace inverter P.C. board. If signal stops between 2 and 3, replace indoor P.C. board
		1d	Compressor does not rotate (Current protective circuit does not operate when a specified time passed after compressor had been activated)	Stop	Displayed when error is detected	1. Trouble on compressor 2. Trouble on wiring of compressor (Missed phase)
		1E	Discharge temperature exceeded 117°C	Stop	Displayed when error is detected	1. Check discharge temperature sensor (TD) 2. Gas leakage 3. Trouble on PMV
		1F	Break down of compressor	Stop	Displayed when error is detected	1. Check power voltage (220-240 V +/- 10%) 2. Overload operation of refrigeration cycle. Check installation condition (Short circuit of outdoor diffuser)
		08	4-way valve inverse error (TC sensor value lowered during heating operation)	Operation continues		Check 4-way valve operation
		20	PMV error	Stop	Displayed when error is detected	1. Check lamp on inverter P.C. board 2. Check PMV wiring 3. Replace PMV

RAS – Refrigeration scheme and sensor positions



RAS – CHANGE OF CONTROL FROM CHANNEL A TO B

Change in frequency of control from channel A to B for Hi-wall units

Remote-A or B selection	Setting the remote control To separate using of remote control for each indoor unit in case of 2 air conditioner are installed nearly. Remote Control B Setup: 1. Press RESET button on the indoor unit to turn the air conditioner ON. 2. Point the remote control at the indoor unit. 3. Push and hold CHK • button on the Remote Control by the tip of the pencil. "00" will be shown on the display. 4. Press MODE • during pushing CHK •, "B" will shown on the display and "00" will disappear and the air conditioner will turn OFF. The Remote Control B is memorized. Note: 1. Repeat above step to reset Remote Control to be A. 2. Remote Control A has no „A“ on display. 3. Default setting of Remote Control from factory is A. The diagram shows a Toshiba remote control with a small LCD display. Two labels with arrows point to the display: "B" Display points to the letter 'B' and "00" Display points to the number '00'.	1. Purpose This operation is to operate only one indoor unit using one remote control. 2. Description When operating one indoor unit in a situation where two indoor units have been installed in the same room or nearby rooms, this operation prevents the remote control signal from being received simultaneously by both units, thus preventing both units from operating. 3. Operation The indoor unit on which the remote control selection has been set to B receives the signal of the remote control also set to B. (At the factory the remote control selection is set to A on all the indoor units. There is no A setting display.)
--------------------------------	--	--

Change in frequency of control from channel A to B for 4-way cassettes

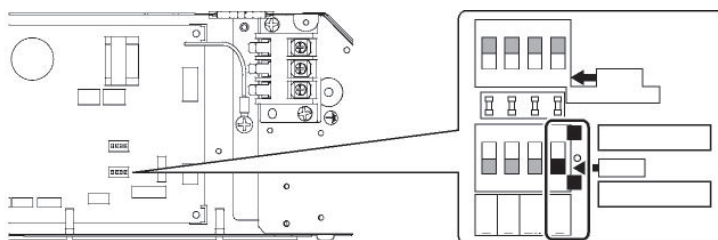
- If two indoor units are installed in the same room or adjoining rooms, when the user tries to operate only one unit, both units may receive the same remote control signal and operate. This can be prevented by changing one of the indoor units and remote controls to setting "B". (The default setting for both units is "A".)
- If the indoor unit and remote control settings are different, the remote control signal will not be accepted.

1. Setting the remote control

- Remove the cover and insert the batteries.
- Push the "CHECK" point and "MODE" button at once, for changing remote control setting from „A“ to „B“. (Priority is given to "A" setting.)

2. Setting the unit

- Remove the cover of the electric parts box by taking off the mounting crews (3 positions) and pushing the hooking section. (The cover of the electric parts box remains hanged to the hinge.)
- There are the selector switches (SW02) on the P.C. board of the electric parts box.
- No. 4 of the selector switches (SW02) is provided to select the switch of the remote control. Select ON of No. 4 of the selector switches (SW02).
- (OFF: A setting, ON: B setting)



- Check whether the changed remote control can operate the indoor unit or not.

Auto Restart Function for Hi-wall units

This indoor unit is equipped with an automatic restarting function which allows the unit to restart operating with the set operating conditions in case of a power supply being accidentally shut down.

The operation will resume without warning three minutes after power is restored.

This function is not set to work when shipped from the factory. Therefore it is necessary to set it to work.

How to Set the Auto Restart Function

To set the auto restart function, proceed as follows:

- The power supply to the unit must be on; the function will not set if the power is off.
- Press the [RESET] button located in the center of the front panel continuously for three seconds.
- The unit receives the signal and beeps three times.
- The unit then restarts operating automatically in case of power supply being accidentally shut down.

• When the unit is standby (Not operating)

Operation	Description
Press [RESET] button for more than three seconds. (Less than 10 seconds)	The unit is on standby. ↓ The unit starts to operate. The green indicator is on. ↓ After approx. three seconds. The unit beeps three times The green indicator flashes for 5 seconds. and continues to operate. If the unit is not required to operate at this time, press [RESET] button once more or use the remote control to turn it off.

• When the unit is in operation

Operation	Description
Press [RESET] button for more than three seconds. (Less than 10 seconds)	The unit is in operation. The green indicator is on. ↓ The unit stops operating. The green indicator is turned off. ↓ After approx. three seconds. The unit beeps three times. The green indicator flashes for 5 seconds. If the unit is required to operate at this time, press [RESET] button once more or use the remote control to turn it on.

- While the filter check indicator is on, the RESET button has the function of filter reset button.

Auto restart setting for 4-way cassettes

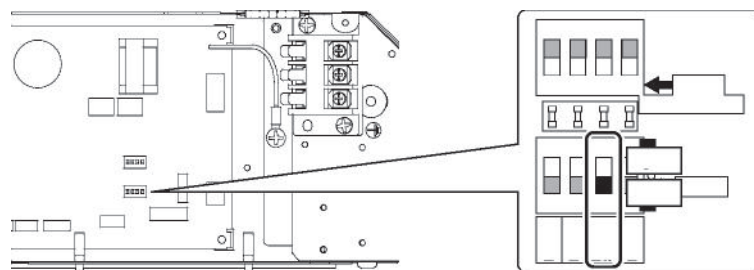
This product is designed so that, after a power failure, it can restart automatically in the same operating mode as before the power failure.

INFORMATION

The product was shipped with Auto Restart function in the OFF position. Turn it ON as required.

How to set the Auto Restart

- Remove the cover of the electric parts box by taking off the mounting screws (3 positions) and pushing the hooking section. (The cover of the electric parts box remains hanged to the hinge.)
- There are the selector switches (SW02) on the P.C. board of the electric parts box.
- No. 3 of the selector switches (SW02) is provided for the selector switch. Select ON of No. 3 of the selector switches (SW02).
- (OFF: setting without Auto Restart, ON: setting with Auto Restart)

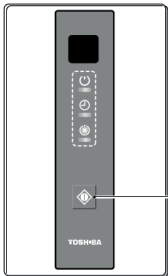


Auto Restart Function for duct unit G3DV

- To set the auto restart function, proceed as follows:
- The power supply to the unit must be on; the function will not set if the power is off.
- Press and hold the [TEMPORARY] button on the signal receiving unit for 3 seconds to set the operation (3 beep sounds and OPERATION lamp blinks 5 time/second for 5 seconds).
- The unit then restarts operating automatically in the event of power supply being accidentally shut down.
- **When the unit is standby (Not operating)**

Operation	Description
Press [TEMPORARY] button for more than three seconds. (Less than 10 seconds)	The unit is on standby. ↓ The unit starts to operate. The green indicator is on. ↓ After approx. three seconds, release [TEMPORARY] button from being pushed The unit beeps three times and The green indicator flashes for continues to operate. 5 seconds. If the unit is not required to operate all this time, press [TEMPORARY] button once more or use the remote control to turn it off.

- When the unit is in operation

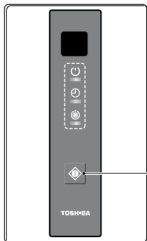
Operation	Description
Press [TEMPORARY] button for more than three seconds. (Less than 10 seconds)  TEMPORARY button	The unit is in operation. The green indicator is on. ↓ The unit stops operating. The green indicator is turned off. ↓ After approx. three seconds, release [TEMPORARY] button from being pushed. The unit beeps three times. The green indicator flashes for 5 seconds. If the unit is required to operate at this time, press [TEMPORARY] button once more or use the remote control to turn it on.

How to cancel the auto restart function for duct unit G3DV

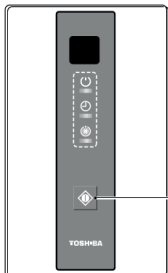
To cancel auto restart function, proceed as follows:

- Repeat the setting procedure: the unit receives the signal and beeps three times.
- The unit will be required to be turned on with the remote control after the main power supply is turned off.

- When the system is on standby (not operating)

Operation	Description
Press [TEMPORARY] button for more than three seconds. (Less than 10 seconds)  TEMPORARY button	The unit is on standby. ↓ The unit starts to operate. The green indicator is on. ↓ After approx. three seconds, release [TEMPORARY] button from being pushed. The unit beeps three times and continues to operate. If the unit is not required to operate at this time, press [TEMPORARY] button once more or use the remote control to turn it off.

- When the system is operating

Operation	Description
Press [TEMPORARY] button for more than three seconds. (Less than 10 seconds)  TEMPORARY button	The unit is in operation The green indicator is on. ↓ The unit stops operating. The green indicator is turned off. ↓ After approx. three seconds, release [TEMPORARY] button from being pushed. The unit beeps three times. If the unit required to operate at this time, press [TEMPORARY] button once more or use the remote control to turn it on.

RAS – COOLING OR HEATING ONLY SWITCH

RAS Multi-outdoor parts "Cooling only" or "Heating only" switch (only RAS-3M26, 4M27 and 5M34UAV-E; 3M26, 4M27 and 5M34S3AV-E)

The following settings are available via DIP switch setup.

Function	Setting position	Control content															
Power saving setup	SW802 1 2 3 4 ON OFF Power save function Select current limit	Turn the switch to ON, when you use the power saving function. SW802 <table><tr><td>No. 1</td><td>OFF</td><td>ON</td><td>ON</td><td>OFF</td></tr><tr><td>No. 2</td><td>ON</td><td>ON</td><td>OFF</td><td>OFF</td></tr><tr><td>Current limit</td><td>11A</td><td>8,5A</td><td>Full</td><td>Full (error)</td></tr></table>	No. 1	OFF	ON	ON	OFF	No. 2	ON	ON	OFF	OFF	Current limit	11A	8,5A	Full	Full (error)
No. 1	OFF	ON	ON	OFF													
No. 2	ON	ON	OFF	OFF													
Current limit	11A	8,5A	Full	Full (error)													
Cooling only setup		When using the air conditioner only for cooling, turn the switch to ON. (When the heating mode is selected by remote control, stops the outdoor unit. When indoor unit with cooling and heating is mixed, cools the outdoor unit.)															
Heating only setup	SW801 1 2 3 4 ON OFF Cooling only setting Heating only setting	When using the air conditioner exclusively for heating, turn the switch to ON. (If the cooling operation is selected by remote control, stops the outdoor unit. When indoor unit is mixed with cooling and heating, the outdoor unit heats.)															

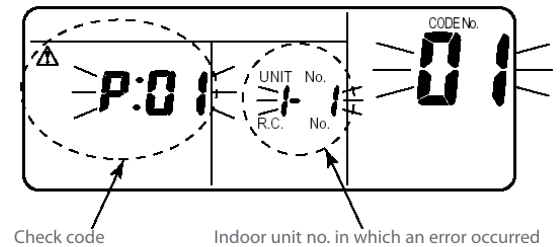
Note: Set the switch to the correct position before turning on the power.

Troubleshooting at RAV Digital Inverter and Super Digital Inverter

In case of wired remote control (RBC-AMT32E & RBC-AMS41E & RBC-AMS51E-ES)

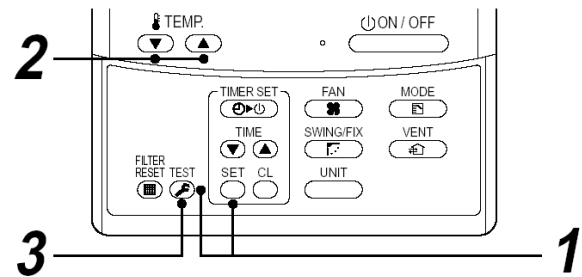
Confirmation and check

When a trouble occurs in the air conditioner, the check code and the indoor unit No. are displayed on the remote control. The check code is displayed while the air conditioner operates. If the display has disappeared, turn on the air conditioner and check the error based upon the following "Confirmation of error history".



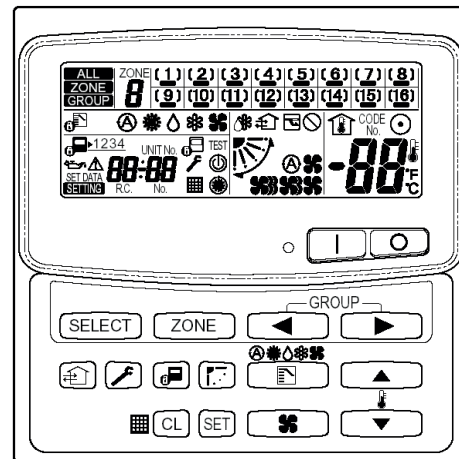
Confirmation of error history

If a trouble occurs in the air conditioner, the error history can be found with the following procedure. (Up to 4 error histories are stored in the memory.) This history can be confirmed from either operating status or stop status.



Procedure	Description
1	When pushing and buttons simultaneously for 4 seconds or more, the below display appears. If [Service Check] is displayed, the mode enters the error history mode. [01: Error history order] is displayed in code number window. [Check Code] is displayed in code number window. [Indoor unit address with error] is displayed in UNIT No.
2	Each successive push of the temperature set / buttons, the error histories stored in the memory are displayed in order. The numbers in the item code indicates item code [01] (most recent) to [04] (oldest). CAUTION: If [CL] button is pushed, all of the error histories of the indoor unit will be deleted.
3	After confirmation, push button to return of the usual display.

In case of TCC-LINK central remote control (TCB-SC642TLE)

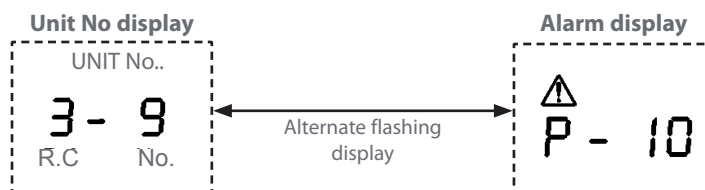


1. Confirmation and Check

When a trouble occurs on the air conditioner, the check code and the indoor unit no. are displayed on the display section of the remote control.

The check code is displayed while the air conditioner operates.

If the display disappeared, operates the air conditioner and check the error based upon the following „Confirmation of error history“.

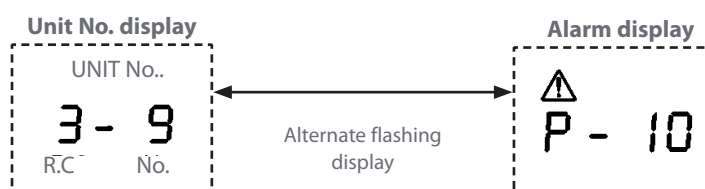


2. Confirmation of error history

When a trouble occurs on the air conditioner, the error history can be confirmed with the following procedure. (Up to 4 error histories are stored in memory.)

This history can be confirmed from either operating or stop.

1. Push and buttons in succession for 4 seconds or more.
2. SERVICE CHECK goes on and Item code 01 goes on.
3. When selecting (flash) the group number, if there is the alarm history, the UNIT number and the latest alarm history are displayed alternately. In this time, the temperature cannot be set up.
4. To confirm the alarm history other than the latest one, push temperature set / to select Item code (01 to 04).
5. To confirm the alarm in the other groups, push and / to select the group number. Do not push button because all the alarm histories of the currently selected group are deleted.
6. To finish the service check, push button.



Check Code RAV

Error mode detected by indoor and outdoor unit

○ : Go on ● : Go off ◎ : Flash

Wireless sensor lamp display			Wired mode-control	Diagnostic function			Judgment and measure
Operation	Timer	Ready	Check code	Cause of operation	Status of air conditioner	Condition	
◎	●	●	E03	No communication from remote control (including wireless) and communication adapters	Stop (Automatic Reset)	Displayed when error is detected	Check cables of remote control and communication adapters * Handy remote control LCD display OFF (Disconnection) * Central remote control [97] check code
●	●	◎	E04	No serial signal from outdoor unit * Miswiring * Defect in outdoor PCB * Defect of indoor PCB	Stop (Automatic Reset)	Displayed when error is detected	1. Failure outdoor unit * Wiring fault, klixon open * Wiring PCB; error PCB 2. Check operation of outdoor unit PCB (serial signal input / output)
◎	●	●	E08	Double indoor unit address	Stop	Displayed when error is detected	Change the remote control wiring (Group / Individual) or power failure during automatic addressing * Irregularity in group addressing after switching power supply, automatically changes to [address setup mode]
◎	●	●	E10	Communication error between indoor PCB * Error between fan driving MCU and main MCU	Stop (Automatic Reset)	Displayed when error is detected	1. Remote control wiring 2. Power supply indoor unit 3. Error internal PCB
-	-	-	E14	Communication error between the indoor PCB (MCC-1570) and the 0~10V interface PCB (DXC031 only)	-	-	No communication between the indoor PCB and the 0~10V interface PCB for more than 3 minutes (AB connection)
◎	●	●	E18	Communication error between master and follower indoor units	Stop (Automatic Reset)	Displayed when error is detected	1. Remote control wiring 2. Power supply indoor unit 3. Error internal PCB
◎	◎	●	F01	Coming off, disconnection or short of outdoor temperature sensor (TCJ)	Stop (Automatic Reset)	Displayed when error is detected	1. Check temperature sensor (TCJ) 2. Check indoor P.C. board
◎	◎	●	F02	Coming off, disconnection or short of outdoor temperature sensor (TC)	Stop (Automatic Reset)	Displayed when error is detected	1. Check temperature sensor (TC) 2. Check indoor P.C. board
◎	◎	○	F04	Coming off, disconnection or short of outdoor temperature sensor (TD)	Stop	Displayed when error is detected	1. Check outdoor temperature sensor (TD) 2. Check outdoor P.C. board
◎	◎	○	F06	Coming off, disconnection or short of outdoor temperature sensor (TE/TS)	Stop	Displayed when error is detected	1. Check outdoor temperature sensor (TE/TS) 2. Check outdoor P.C. board
◎	◎	○	F08	Coming off, disconnection or short of outdoor temperature sensor (TO)	Operation continues	Displayed when error is detected	1. Check outdoor temperature sensor (TO) 2. Check outdoor P.C. board
◎	◎	●	F10	Coming off, disconnection or short of indoor heat exchanger sensor (TA)	Stop (Automatic Reset)	Displayed when error is detected	1. Check indoor heat exchanger temperature sensor (TA) 2. Check indoor P.C. board
◎	◎	●	F29	Indoor EEPROM error * EEPROM access error	Stop (Automatic Reset)	Displayed when error is detected	1. Check indoor EEPROM (including socket insertion) 2. Check indoor P.C. board
◎	●	●	H01	Breakdown of compressor * Display when error is detected	Stop	Displayed when error is detected	1. Check power voltage 240~V +/-10% 2. Overload operation of refrigerating cycle 3. Check current detection circuit at AC side
●	◎	●	H02	Compressor does not rotate * Over-current protective circuit operates after specific time passed when compressor had been activated	Stop	Displayed when error is detected	1. Trouble of compressor (Compressor lock etc.): Replace compressor 2. Defective cabling of compressor (Phase missing) 3. Phase missing operation of power supply (3-phase model)
●	◎	●	H03	Current detection circuit error * Current value at AC side is high even during compressor OFF * Phase of power supply is missed	Stop	Displayed when error is detected	1. Compressor immediately stops even if restarted: Check IPDU 2. Phase missing operation of power supply. 3. Check 3-phase power voltage and cables
●	◎	●	H04	Case thermostat operation * Abnormal overheat of compressor	Stop	Displayed when error is detected	1. Check case thermostat and connector 2. Check gas leak, recharge 3. Check full open of service valve 4. Check PMV (Pulse Motor Valve) 5. Check broken pipe

Wireless sensor lamp display			Wired mode-control	Diagnostic function			Judgment and measure
Operation	Timer	Ready	Check code	Cause of operation	Status of air conditioner	Condition	
◎	●	◎	L03	Duplicated indoor master units	Stop	Displayed when error is detected	Check whether there is modification or remote control connection (Group/Individual) or not after power has been turned on (finish of group configuration/address check) * If group configuration and address are not normal when the power has been turned on, the mode automatically shifts to address setup mode. (Resetting of address)
◎	●	◎	L07	There is a group line in individual indoor units	Stop	Displayed when error is detected	Check whether there is modification or remote control connection (Group/Individual) or not after power has been turned on (finish of group configuration/address check) * If group configuration and address are not normal when the power has been turned on, the mode automatically shifts to address setup mode. (Resetting of address)
◎	●	◎	L08	Unsetting of indoor group address	Stop	Displayed when error is detected	Check whether there is modification or remote control connection (Group/Individual) or not after power has been turned on (finish of group configuration/address check) * If group configuration and address are not normal when the power has been turned on, the mode automatically shifts to address setup mode. (Resetting of address)
◎	●	◎	L09	Unset indoor capacity	Stop	Displayed when error is detected	Set the indoor capacity (DN=11)
●	◎	●	L29	Outdoor unit and other errors * Communication error between CDB and IPDU (coming off connector) * Heat sink temperature error (Detection of temperature over specified value)	Stop	Displayed when error is detected	1. Check cables of CDB and IPDU 2. Abnormal overload operation of refrigerating cycle
◎	○	◎	L30	Abnormal outside interlock input	Stop	Displayed when error is detected	1. Check outside devices 2. Check indoor P.C. board
◎	○	◎	L31	Phase detection protective circuit operates	Operation continues (compressor stops)	Displayed when error is detected	1. Check power phase order (reserved phase)/phase missing 2. Check outdoor P.C. board
◎	●	◎	P03	Discharge temperature error * Discharge temperature over specified value was detected	Stop	Displayed when error is detected	1. Check refrigerating cycle (gas leak) 2. Trouble of PMV 3. Check TD sensor
◎	●	◎	P04	High pressure protection error by TE sensor (Temperature over specified value was detected)	Stop	Displayed when error is detected	1. Overload operation of refrigerating cycle 2. Check outdoor temperature sensor (TE) 3. Check outdoor CDB P.C. board
●	◎	◎	P10	Float switch operation * Disconnection, coming-off, defective float switch contactor of float circuit	Stop	Displayed when error is detected	1. Defect of drain pump 2. Clogging of drain pump 3. Check float switch 4. Check indoor P.C. board
●	◎	◎	P12	Indoor DC fan error	Stop	Displayed when error is detected	1. Defective detection of position 2. Over-current protection circuit of indoor fan driving unit operates 3. Lock of indoor fan 4. Check indoor P.C. board
◎	●	◎	P19	Error in 4-way valve system * Indoor heat exchanger temperature lowered after start of heating operation	Stop (Automatic Reset)	Displayed when error is detected	1. Check 4-way valve 2. Check indoor heat exchanger TC/TCJ sensor 3. Indoor P.C. board
◎	●	◎	P22	Outdoor DC fan error	Stop	Displayed when error is detected	1. Defective detection of position 2. Over-current protection circuit of outdoor fan driving unit operates 3. Lock of outdoor fan 4. Check outdoor CDB P.C. board
◎	●	◎	P26	Inverter over-current protective circuit operates (for a short time). Short voltage of main circuit operates	Stop	Displayed when error is detected	1. Inverter immediately stops even if restored: Compressor motor rare short 2. Check IPDU: Cabeling error

⊙	●	⊙	P29	IPDU position detection circuit error	Stop	Displayed when error is detected	Position detection circuit operates even if operating compressor by removing 3P connector: Replace IPDU
⊙	●	⊙	P31	Own unit stops while warning is output to other indoor units	Stop (Sub unit) (Automatic Reset)	Displayed when error is detected	1. Judge sub unit while master unit is in [E03], [L03], [L07], [L08] 2. Check indoor P.C. board

For an error mode detected in outdoor unit, the fan operates because sub unit of a group operation does not communicate with the outdoor unit.

Error mode detected by remote control

○ : Go on ● : Go off ⊙ : Flash

Wireless sensor lamp display			Wired mode-control	Diagnostic function			Judgment and measure
Operation	Timer	Ready	Check code	Cause of operation	Status of air conditioner	Condition	
			No check code is displayed (Remote control does)	No communication with master indoor unit # Remote control cable is not correctly connected # Power of indoor unit is not turned on # Automatic address cannot be completed	Stop		Remote control power error, defective indoor EEPROM * Check remote control interunit cables * Check remote control * Check indoor power cables * Check indoor P.C. board * Check indoor EEPROM (including socket insertion): Phenomenon of automatic address repetition occurred
⊙	●	●	E01*2	No communication with indoor master unit * Disconnection of interunit cable between remote control and master indoor unit (detected at remote control side)	Stop (Automatic restart) * Operation with central control	Displayed when error is detected	Signal receiving of remote control is defective 1. Check remote control interunit cables 2. Check remote control 3. Check indoor power cables 4. Check indoor P.C. board
⊙	●	●	E02	Signal sending error to indoor unit (Detected at remote control side)	Stop (Automatic restart) * Operation with central control	Displayed when error is detected	Signal sending of remote control is defective * Check sending circuit inside of remote control: Replace remote control
⊙	●	●	E09	Multiple master remote controls are recognized (Detected at remote control side)	Stop (Sub unit continues operation)	Displayed when error is detected	Check there are multiple master units for 2 remote controls (including wireless): Master unit is one and others are sub units
⊙	○	⊙	L20	Duplicated indoor central addresses on communication of central control system (Detected by central controller side)	Stop (Automatic restart)	Displayed when error is detected	Check address setup of central control system network (DN=03)

Error mode detected by central remote control

Wireless sensor lamp display			Wired mode-control	Diagnostic function			Judgment and measure
Operation	Timer	Ready	Check code	Cause of operation	Status of air conditioner	Condition	
			C05	Sending error central remote control	Operation continues	Displayed when error is detected	1. Check communication line/ miscabling/check power of indoor unit 2. Check communication (U3, U4 terminals) 3. Check network adapter P.C. board 4. Check central controller (such as central control remote control etc.) 5. Terminal resistance check (connection interface SW01)
			C06	Receiving error in central remote control	Operation continues	Displayed when error is detected	1. Check communication line/ miscabling/check power of indoor unit 2. Check communication (U3, U4 terminals) 3. Check network adapter P.C. board 4. Check central controller (such as central control remote control etc.) 5. Terminal resistance check (connection interface SW01)
			P30	Differs according to error contents of unit with occurrence of alarm	Continuation/ Stop (based on a case)	Displayed when error is detected	Check the check code of corresponding unit by remote control

Error Mode detected by LED on Outdoor P.C. Board series 2 + 3

RAV-SMxxx3AT-E, RAV-SPxxx2AT-E

SW801: LED display in BIT 1, BIT 2 OFF

- When multiple errors are detected, the latest error is displayed.
- When LED display is ○ (Go on), there is the main cause of trouble on the objective part of control at CDB side and the unit stops.
- When LED display is ◎ (Flash), there is the main cause of trouble on the objective part of control at IPDU side and the unit stops.
- When the compressor klaxon operates, the communication is interrupted on the serial circuit. If continuing the case thermostat operation, a serial communication error occurs because serial sending to the indoor unit is interrupted.

	No.	Item	Check code		LED display			
			Type A	Type B	D800 (red)	D801 (yellow)	D802 (yellow)	D803 (yellow)
CDB Side	1	TE Sensor error	F06	18	○	●	●	●
	2	TD Sensor error	F04	19	○	○	●	●
	3	TS Sensor error	F06	18	●	●	○	●
	4	TO Sensor error	F08	1B	●	○	●	●
	5	Discharge temperature error	P03	1E	●	○	○	●
	6	DC outdoor fan error	P22	1A	○	○	○	●
	7	Communication error between IPDU (abnormal stop)	L29	1C	○	●	●	○
	8	High pressure release operation	P04	21	●	○	●	○
	9	EEPROM error			○	○	●	○
	10	Communication IPDU (no abnormal stop)			●	●	○	○
IPDU Side	11	IGBT short circuit protection	P26	14	◎	●	●	●
	12	Detection circuit error	P29	16	●	◎	●	●
	13	Current sensor error	H03	17	◎	◎	●	●
	14	Compressor lock error	H02	1D	●	●	◎	●
	15	Compressor breakdown	H01	1F	◎	●	◎	●

○: Go on ●: Go off ◎: Flash (5Hz)

Check code

The check codes are classified into Type A and Type B according to the used remote control. Be sure to check the remote control which you use.

Type A:

Neutral 2-cores type wired remote control such as RBC-AMT32E, RBC-AS41E, RBC-AMS41E, RBC-AMS51E-ES

Type B:

RBC-SR1-PE, RBC-SR2-PE, such as central control remote control RBC-CR64-PE

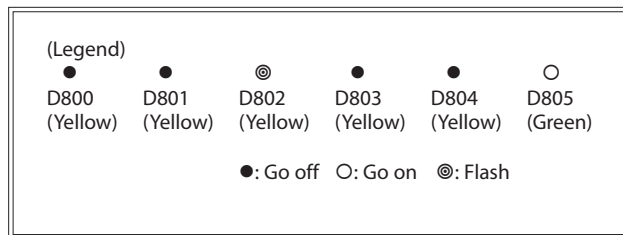
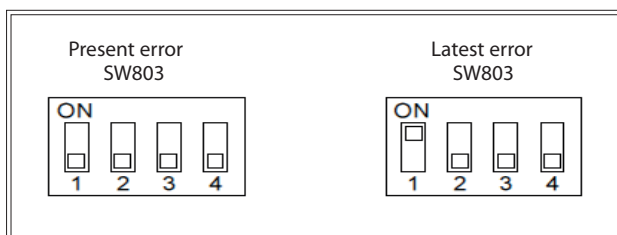
Error Mode detected by LED on Outdoor P.C. Board series 4

RAV-SPxxx4AP-E; RAV-SPxxx4AT8-E; RAV-SM2244-2804AT8-E

Error display

The error which is generating at present and the latest error (Latest error information including present) can be confirmed by lighting LED D800 to D804 on the outdoor control P.C. board.

- When all DIP switch SW803 are OFF, the status of error which is generating at present is displayed.
- <1> only of DIP switch SW803 is turned on, the error which generated before (Latest error information including present) is displayed.
- If there is an error, any of LED D800 to D804 goes on. (Display 1)
- When pushing the pushdown button switch SW800 for approx. 1 second, the display is exchanged. (Display 2)
- When pushing SW800 again or after 2 minutes, the status returns to that of Display 1.



Display 1 (Initial display)	Display 2 (SW800 operation)	Error contents	Wired remote control Error code
●●●●●○	●●●●●○	Normal	---
○○●●○○	●●●●●○	Discharge temperature sensor (TD) error	F04
	●●●●●○	Heat exchanger temperature sensor (TE) error	F06
	●●●●●○	Heat exchanger temperature sensor (TL) error	F06, F07
	●●●●●○	Outside temperature sensor (TO) error	F08
	●●●●●○	Suction temperature sensor (TS) error	F06, F12
	●●●●●○	Heat sink temperature sensor (TH) error	F13, L29
	●●●●●○	Heat exchanger sensor (TE, TS), miswiring	F06, F15
	●●●●●○	PS sensor error	F23, H06
	●●●●●○	EEPROM error	F31, L29
●●○○○○	●●●●●○	Compressor break down	H01
	●●●●●○	Compressor lock	H02
	●●●●●○	Current detection circuit error	H03
	●●●●●○	Case thermostat operation	H04, P04
	●●●●●○	Low pressure protective operation	H06
●○○○○○	●●●●●○	Model unset	L10, L29
	●●●●●○	Communication error between MCU	L29
	●●●●●○	Other error (Compressor disorder, etc.)	Error is not determined
○○○●○○	●●●●●○	Discharge temperature error	P03
	●●●●●○	High pressure SW system error	P04
	●●●●●○	Power supply error	P04, P05
	●●●●●○	Heat sink overheat error	P07, L29
	●●●●●○	Gas leak detection	PP15, L29
	●●●●●○	4-way valve reserve error	P19, L29
	●●●●●○	High pressure protective operation	P04, P20
	●●●●●○	Fan system error	P22
	●●●●●○	Driving element short circuit	P26
	●●●●●○	Position detection circuit error	P29

*As the error code displayed on the wired remote control may differ according to type of indoor model, multiple codes are described.

Error Mode detected by LED on Outdoor P.C. Board series 4 RAV-SMxxx4ATP-E

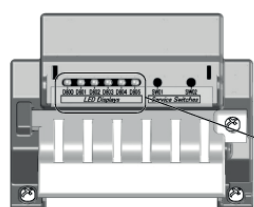
* When the errors were overlapped, the latest error is displayed.

* When D800 to D804 are slowly flashing or D805 is flashing, push and hold SW01 and hold SW02 simultaneously for 5 seconds or more. The error display changes to the error which is generated.

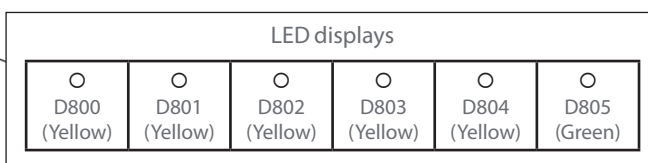
○: ON, ●: OFF, ⊗: Rapid flashing (5 times / second)

Nr.	Error	Check code (Wired remote control)	LED display					
			D800 (Yellow)	D801 (Yellow)	D802 (Yellow)	D803 (Yellow)	D804 (Yellow)	D805 (Green)
1	Normal	---	●	●	●	●	●	○
2	Discharge temperature sensor (TD) error	F04	⊗	●	●	●	●	○
3	Heat exchanger temperature sensor (TE) error	F06	●	⊗	●	●	●	○
4	Heat exchanger temperature sensor (TL) error	F07	⊗	⊗	●	●	●	○
5	Outside air temperature sensor (TO) error	F08	●	●	⊗	●	●	○
6	Suction temperature sensor (TS) error	F12	⊗	●	⊗	●	●	○
7	Heat sink temperature sensor (TH) error	F13	●	⊗	⊗	●	●	○
8	Miss-mounting of outdoor temperature sensor (TE, TS)	F15	⊗	⊗	⊗	●	●	○
9	EEPROM error	F31	●	⊗	●	⊗	●	○
10	Compressor break down	H01	⊗	⊗	●	⊗	●	○
11	Compressor lock	H02	●	●	⊗	⊗	●	○
12	Current detection circuit error	H03	⊗	●	⊗	⊗	●	○
13	Case thermostat operation	H04	●	⊗	⊗	⊗	●	○
14	Unset model type of P.C. board	L10	●	●	●	●	⊗	○
15	Discharge temperature error	P03	●	⊗	●	●	⊗	○
16	High pressure SW system error	P04	⊗	⊗	●	●	⊗	○
17	Power supply error	P05	●	●	⊗	●	⊗	○
18	Heat sink overheat error	P07	●	⊗	⊗	●	⊗	○
19	Gas leak detection	P15	⊗	⊗	⊗	●	⊗	○
20	4-way valve reserve error	P19	●	●	●	⊗	⊗	○
21	High pressure protective operation	P20	⊗	●	●	⊗	⊗	○
22	Fan system error	P22	●	⊗	●	⊗	⊗	○
23	Short circuit of compressor drive element	P26	⊗	⊗	●	⊗	⊗	○
24	Position detection circuit error	P29	●	●	⊗	⊗	⊗	○
25	Others (continuously operate)	---	⊗	●	⊗	⊗	⊗	○

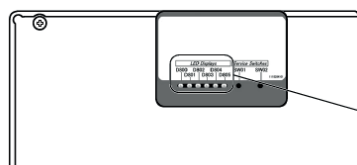
<SM56, 80>



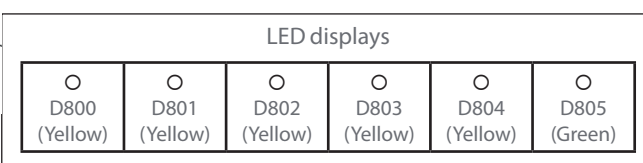
The LEDs and switches are located at the outdoor unit as shown in the figure on the left.



<SM110, 140>

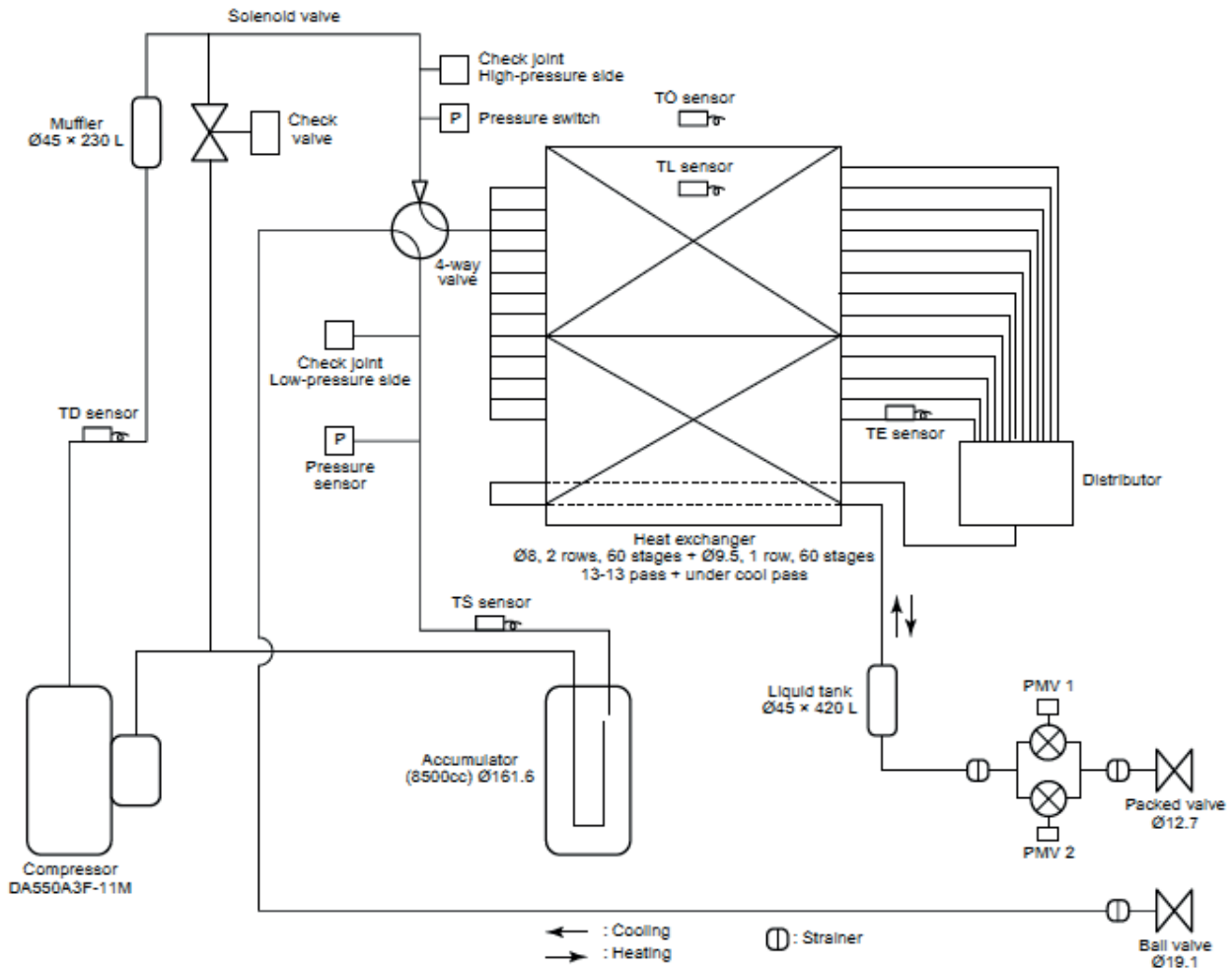


The LEDs and switches are located at the outdoor unit as shown in the figure on the left.

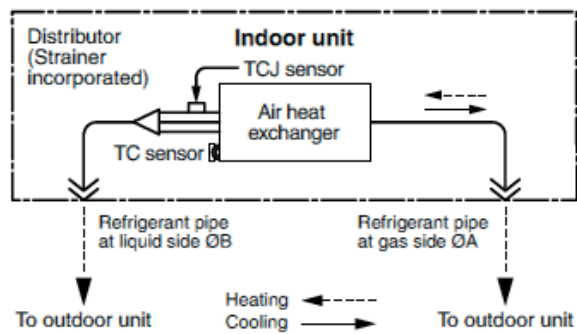


RAV – Refrigeration scheme and sensor positions

Outdoor unit:



Indoor unit:



Interface wiring of RAV DX-KITs (RAV-DXC010)

Temperature sensors

The refrigerant temperature sensors are inserted into the brazed sensor holders and secured using the supplied FIXPLATE.

The sensor cables are to be connected as follows:

TC-Sensor	BLACK 2-pin plug	BLACK 2-pin socket
TCJ-Sensor	RED 2-pin plug	RED 2-pin socket
TA Resin Bulb Sensor	YELLOW 2-pin plug	YELLOW 2-pin socket

The sensor cables cannot be extended or shortened, they are supplied at the maximum permissible length of 5m. Please coil excess length within AHU.

Inter-unit Connecting wire

Terminal 1/2/3/PE:

On the LC DX Interface should be connected to the corresponding terminals on the outdoor unit.

External On / Off

Terminal 4/5:

External On/Off command (230V AC) to relay KP4. If supply voltage, the system turns on. If the contact is de-energized, the system switches off. If the system is turned on, then switching on/off using the remote control is still possible.

Fan motor output (230V AC)

Terminal 6/7:

Fan motor output 230V AC (3A Max.) controlled by system. No output when system is defrosting outdoor unit.

Remote control BUS line (A/B)

Terminal A/B:

At these terminals an optional remote temperature sensor (TCB-TC21LE2) can be attached. Additionally one of either a second wired remote control or alternatively the RBC-FDP3-PE, 0-10V accessory can be optionally attached. Note that you cannot have both a second remote control and the BMS accessory.

Operation Output

Terminal 8/9:

During operation of the system the dry contact between 8/9 is closed.

Alarm signal from the ventilation kit

Terminal 10/11:

If there is an error at the system, this is indicated with a dry normally open contact at this terminal.

Fan Error Input

Terminal 12/13:

An operation monitor (supplied locally), of the external fan is to be attached at this terminal as a dry contact (for instance, differential pressure monitor, vane relay or similar). A closed contact generates the error message L30.

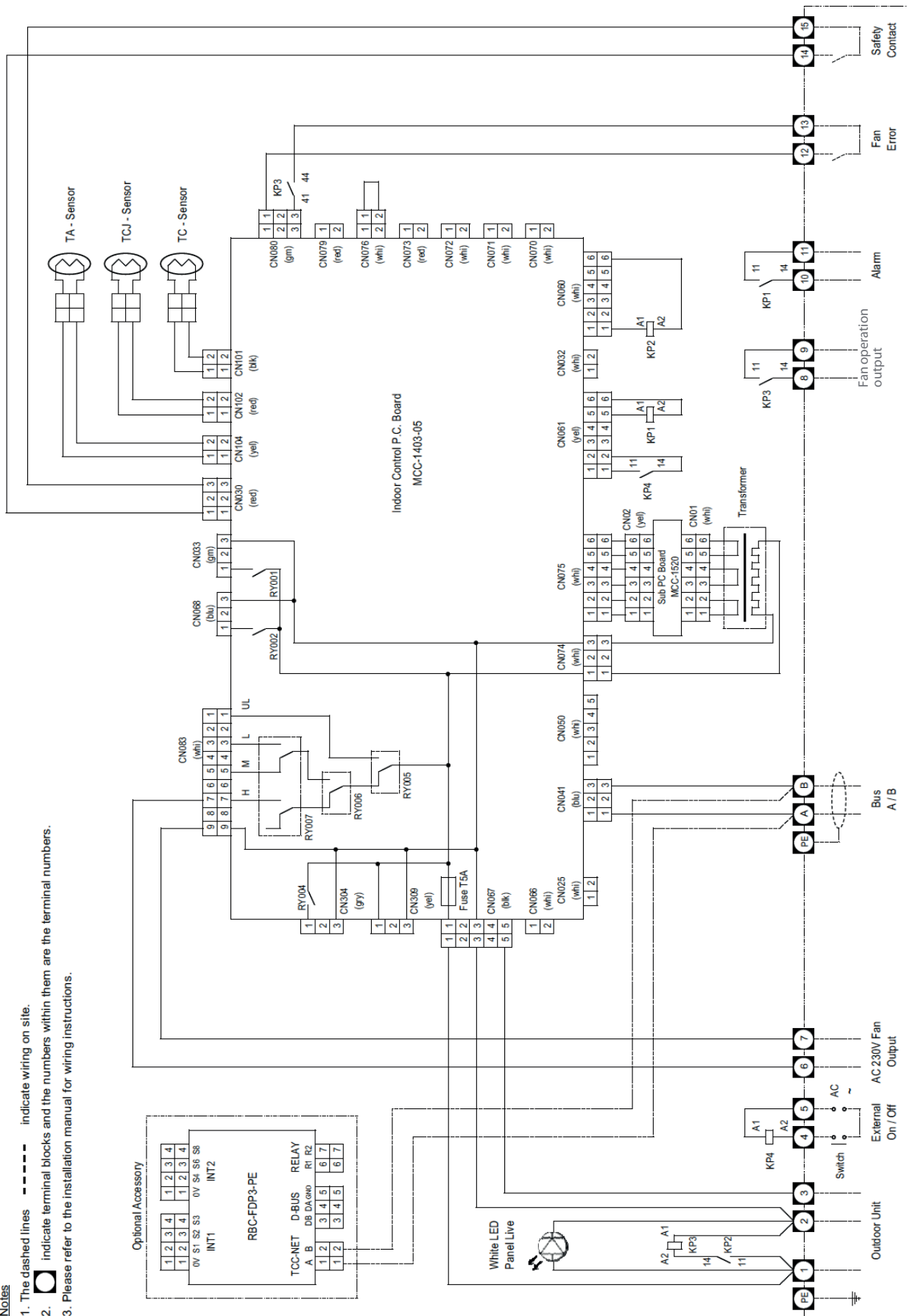
External safety contact

Terminal 14/15:

If this contact is open for more than 1 minute, the error message P10 is generated and the system switches off automatically. This contact can, for instance, be used with an onsite frost protection monitor.

If the External safety contact is not used, then the contact should be bridged.

Wiring diagram



Notes

1. The dashed lines ----- indicate wiring on site.
2. indicate terminal blocks and the numbers within them are the terminal numbers.
3. Please refer to the installation manual for wiring instructions.

LC DX Interface Configuration (RAV-DXC010)

The circuit board of the ventilation kit is not preconfigured at delivery. Some parameters must be set using the DN code menu (see DN codes page 70 - 74).

DN CODE	OUTDOOR MODEL (RAV-****-E)	SM563AT	SM803AT	SM1103AT	SM1403AT	SM1603AT	SM2244AT8	SM2804AT8
		SP564AT	SP804AT	SP1104AT(8)	SP1404AT(8)	SP1604AT8	-	-
11	CAPACITY CODE	0009	0012	0015	0017	0018	0021	0023
01	FILTER ALARM (Disabled)	0000						
03	CENTRAL CONTROL ADDRESS	0099* Default						
0d	AUTO MODE (Enabled)	0000 Default						
	AUTO MODE (Disabled)	0001						
0f	AVAILABLE MODE (Heat Pump)	0000						
	AVAILABLE MODE (Cooling Only)	0001						
10	UNIT TYPE	0006						
12	REFRIGERATION CIRCUIT ADDRESS	0099*						
13	UNIT ADDRESS	0099*						
14	GROUP ADDRESS	0099*						
28	AUTOMATIC RESTART	0000 disabled 0001 activated						

* 0099 = address not assigned (system addresses are assigned during the automatic addressing by the system. Central address (DN-03) can be assigned automatically with a central remote control or manually. Subsequent modifications may lead to malfunction.)

MINI SMMS – Commercial VRF

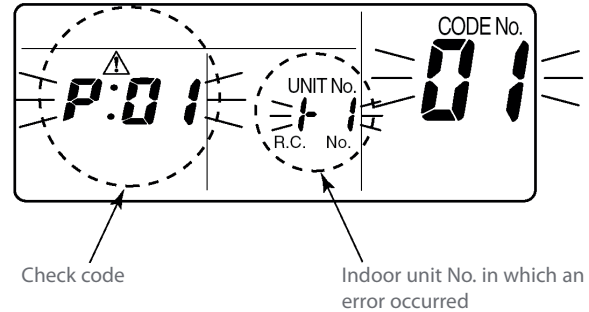
Troubleshooting at MINI SMMS units

Confirmation and check

When trouble occurred on the air conditioner, the check code and the indoor unit No. are displayed on the display section of the remote control.

The check code is displayed while the air conditioner operates.

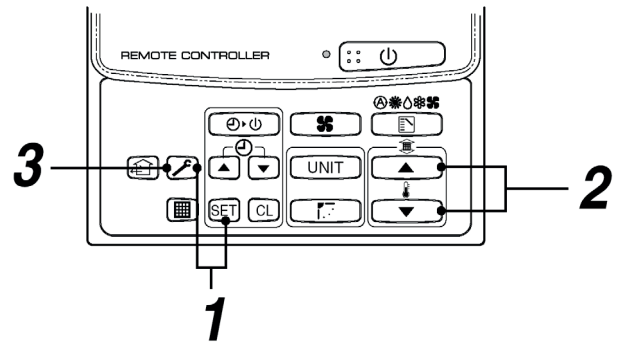
If the display has disappeared, operates the air conditioner and check the error based upon the following “Confirmation of error history”.



Confirmation of error history

When a trouble occurred on the air conditioner, the error history can be confirmed with the following procedure. (Up to 4 error histories are stored in memory.)

This history can be confirmed from either operating status or stop status.



Procedure	Description
1	When pushing SET and CL buttons simultaneously for 4 seconds or more, the below display appears. If [Service Check] is displayed, the mode enters in the error history mode. [01: Error history order] is displayed in code number window. [Check code] is displayed in check code window. [Indoor unit address with error] is displayed in UNIT No..
2	Every pushing temperature set ▲, ▼ buttons, the error histories stored in the memory are displayed in order. The numbers in item code indicates item code [01] (latest) to [04] (oldest). CAUTION: Do not push CL button because all the error histories of the indoor unit will be deleted.
3	After confirmation, push CL button to return to the usual display.

MINI SMMS: Check Code and Check Position displayed on the Remote Control and Outdoor Unit (7-Segment Display of Interface)

Check Code				Detected position	Check code name	Status	Error detection condition	Check item (position)
Wired remote control	Outdoor 7-segment display		AI-NET central remote control					
	Check code	Sub-code						
E01				Remote control	Communication error between indoor and remote control (Detected at remote control side)	Corresponding unit only stops	Communication interrupted between indoor P.C. board and remote control	* Check remote control interunit cable (A/B) * Check disconnection, connector contact error * Check indoor power supply * Check indoor P.C. board error * Check remote control address setup (When two remote controls operate) * Check remote control P.C. board
E02				Remote control	Remote control sending error	Corresponding unit only stops	Signal could not be sent from remote control to indoor unit	* Check the communication wire of remote control: Exchange remote control
E03			97	Indoor unit	Communication error between indoor and remote control (Detected at indoor side)	Corresponding unit only stops	No communication from remote control (including wireless) and communication adapter	* Check remote control and communication adapter wiring
E04			4	Indoor unit	Indoor/Outdoor communication circuit error (Detected at indoor side)	Corresponding unit only stops	Indoor unit does not receive communication from outdoor unit	* Check power-ON order of indoor/outdoor * Check indoor address setup * Check interunit cabling between indoor and outdoor * Check outdoor end terminal resistance setup (SW30-2)
E06	E06	No. of indoor units which received signal normally	4	I/F	Decreased number of indoor units	All stop	When signal is not sent for a certain period from the indoor unit which has been used to send signals, [E6] is normally displayed	* Check the power supply of indoor unit (Power-ON) * Check connection of communication line between indoor and outdoor * Check connector connection for communication in indoor P.C. board * Check connector connection for communication in outdoor P.C. board * Check indoor P.C. board failure * Check outdoor P.C. board (I/F) failure
	E07			I/F	Indoor/outdoor communication circuit error (Detected at outdoor side)	All stop	Transmission from outdoor to indoor cannot continue for 30 seconds	* Check outdoor terminator resistor setup (SW30-2) * Check the communication between indoor and outdoor
E08	E08	Duplicated indoor addresses	96	Indoor I/F	Duplicated indoor addresses	All stop	Multiple indoor unit address setup are duplicated	* Check indoor address * Check the change of remote control connection (group/individual) after setup of indoor address
E09			99	Remote control	Duplicated master remote controls	Corresponding unit only stops	In 2-remote control control (including wireless), both are setup as master (header indoor unit stops and other indoor unit is operating)	* Check remote control setup * Check remote control P.C. board
E10			CF	Indoor unit	Communication error between indoor P.C. board assembly	Corresponding unit only stop	There is any trouble in power line	Indoor P.C. board failure
E12	E12	01: Indoor/outdoor communication 02: Between outdoors communication	42	I/F	Automatic address start error	All stop	* When indoor automatic address started, other refrigerant circuit system was setting automatic address * When outdoor automatic address started, indoor automatic address was executed	Setup the address again after disconnecting communication with other refrigerant circuit system
E15	E15		42	I/F	No corresponding indoor unit during automatic address	All stop	Indoor unit is not found when indoor automatic address start was set up	* Check communication line connection between indoor and outdoor * Check electric power line error in indoor * Check noise of surrounding units * Power failure * Check indoor P.C. board error
E16	E16	00: Overcapacity 01: No. of connected units	89	I/F	No. of connected indoor units/ Capacity over	All stop	* Total capacity of indoor units exceeded 135% of total outdoor capacity Deactivating capacity control: Turn on SW09/ Bit2 on I/F	* Check the connection capacity of indoor unit * Check the HP capacity of indoor unit * Check the indoor/outdoor capacity setup * Check the No. of connected indoor units * Check the outdoor I/F P.C. board error
E18			97,99	Indoor unit	Communication error between indoor header and follower units	Corresponding unit only stops	Regular communication between indoor header and follower units	* Check cable of the remote control * Check the power cabling of indoor * Check P.C. board of indoor
E19	E19	00: No. header unit 02: Two or more header units	96	I/F	Outdoor header unit quantity error	All stop	* There are multiple outdoor header unit line 1 * There is none outdoor header unit in line 1	The outdoor unit connected with communication cable between indoor and outdoor (U1,U2) is the outdoor header unit * Check connection of communication line between indoor and outdoor * Check outdoor P.C. board (I/F) error

Check Code				Detected position	Check code name	Status	Error detection condition	Check item (position)
Wired remote control	Outdoor 7-segment display		AI-NET central remote control					
	Check code	Sub-code						
E20	E20	01: Connection of outdoor of other line 02: Connection of indoor of other line	42	I/F	Other line unit connected during automatic address	All stop	Unit of other line was connected when indoor automatic address started	Separate the cable U1/U2 - U3/U4 between lines according to automatic address setup method in „Address setup”
E23	E23		15	I/F	Communication sending error between outdoor units	All stop	Transmission of other outdoor unit was unavailable for 30 seconds or more	In this model, only one outdoor unit is provided to one refrigerant line. Be sure to check there is no communication connection with outdoor unit in the other refrigerant line
E25	E25		15	I/F	Duplicated outdoor follower address setup	All stop	Outdoor addresses manually set up are duplicated	Note: Do not set up the outdoor address manually
E31	E31	01: Comp IPDU error 02: Fan 1 IPDU error 03: Comp+Fan 1IPDU error 04: Fan 2 IPDU error 05: Comp+Fan 2 IPDU error 06: Fan1+Fan2 IPDU error 07: All IPDU error or communication error between IPDU and I/F P.C. board or outdoor I/F P.C. board error	CF	I/F	IPDU communication error	All stop	Communication of each IPDU (P.C. board) in inverter box interrupted	* Check connection of communication connector and disconnection between IPDU and I/F P.C. board * Check outdoor P.C. board (I/F, IPDU, Fan IPDU) error * Check external noise
F01			OF	Indoor unit	Indoor TCJ sensor error	Corresponding unit only stops	Resistance value of sensor is infinite or zero (Open/ Short)	* Check connection/cabling of TCJ sensor connector * Check characteristics of TCJ sensor resistance value * Check indoor P.C. board error
F02			Od	Indoor unit	Indoor TC2 sensor error	Corresponding unit only stops	Resistance value of sensor is infinite or zero (Open/ Short)	* Check connection/cabling of TC2 sensor connector * Check characteristics of TC2 sensor resistance value * Check indoor P.C. board error
F03			93	Indoor unit	Indoor TC1 Sensor error	Corresponding unit only stops	Resistance value of sensor is infinite or zero (Open/ Short)	* Check connection/cabling of TC1 sensor connector * Check characteristics of TC1 sensor resistance value * Check indoor P.C. board error
F04	F04		19	I/F	TD1 sensor error	All stop	Resistance value of sensor is infinite or zero (Open/ Short)	* Check connection of TD1 sensor connector * Check characteristics of TD1 sensor resistance value * Check indoor P.C. board I/F error
F06	F06		18	I/F	TE1 sensor error	All stop	Resistance value of sensor is infinite or zero (Open/ Short)	* Check connection of TE1 sensor connector * Check characteristics of TE1 sensor resistance value * Check indoor P.C. board I/F error
F07	F07		18	I/F	TL sensor error	All stop	Resistance value of sensor is infinite or zero (Open/ Short)	* Check connection of TL sensor connector * Check characteristics of TL sensor resistance value * Check outdoor P.C. board (I/F) error
F08	F08		1b	I/F	TO sensor error	All stop	Resistance value of sensor is infinite or zero (Open/ Short)	* Check connection of TO sensor connector * Check characteristics of TO sensor resistance value * Check outdoor P.C. board (I/F) error
F10			OC	Indoor unit	Indoor TA sensor error	Corresponding unit only stops	Resistance value of sensor is infinite or zero (Open/ Short)	* Check connection/cabling of TA sensor connector * Check characteristics of TA sensor resistance value * Check indoor P.C. board error
F12	F12	01: TS1	A2	I/F	TS1 sensor error	All stop	Resistance value of sensor is infinite or zero (Open/ Short)	* Check connection of TS1 sensor connector * Check characteristics of TS1 sensor resistance value * Check outdoor P.C. board (I/F) error
F13	F13	01: Compressor side 1	43	IPDU	TH sensor error	All stop	Resistance value of sensor is infinite or zero (Open/ Short)	* IGBT built-in temperature sensor error Exchange IPDU P.C. board
F15	F15		18	I/F	Outdoor temperature sensor miscabling (TE1, TL)	All stop	During operation of compressor in HEAT mode, the TE1 detection temperature was higher than that of TL by the specified value continued for 3 minutes or more	* Check installation of TE1 sensor and TL sensor * Check characteristics of TE1 and TL sensor resistance value * Check outdoor P.C. board (I/F) error

MINI SMMS - CHECK CODE

Check Code				Detected position	Check code name	Status	Error detection condition	Check item (position)
Wired remote control	Outdoor 7-segment display		AI-NET central remote control					
	Check code	Sub-code						
F16	F16		43	I/F	Outdoor pressure sensor miscabling (Pd, Ps)	All stop	High pressure Pd sensor and low pressure Ps sensor were exchanged, or output voltages of both sensors are zero	* Check connection of high-pressure Pd sensor connector * Check connection of low-pressure Ps sensor connector * Check pressure sensor Pd and Ps error * Check outdoor P.C. board (I/F) error * Check compression error of compressor
F23	F23		43	I/F	Ps sensor error	All stop	Output voltage of Ps sensor was zero	* Misconnection of Ps sensor and Pd sensor connectors * Check connection of Ps sensor connector * Check Ps sensor error * Check compression error of compressor * Check 4-way valve error * Check outdoor P.C. board (I/F) error * Check SV4 circuit error
F24	F24		43	I/F	Pd sensor error	All stop	Output voltage of Pd sensor was zero (Sensor Open) Pd >4.15MPa during stop of compressor	* Check connection of Pd sensor connector * Check Pd sensor error * Check outdoor P.C. board (I/F) error
F29			12	Indoor	Indoor other error	Corresponding unit only stops	Indoor P.C. board did not operate normally	* Check indoor P.C. board error (EEPROM error)
F31	F31		1C	I/F	Outdoor EEPROM error	All stop	Outdoor P.C. board (I/F) did not operate normally	* Check power voltage * Check power noise * Check outdoor P.C. board (I/F) error
H01	H01	01: Compressor side 1	1F	IPDU	Compressor breakdown	All stop	Inverter current detection circuit detected over current and stopped	* Check power voltage (AC220-240V +/- 10%) * Check compressor error * Check cause of abnormal overload operation * Check outdoor P.C. board (IPDU) error
H02	H02	01: Compressor side 1	1d	IPDU	Compressor error (lock)	All stop	Over-current was detected several seconds after header compressor had started	* Check compressor error * Check power voltage (AC380-10%, 415V+10%) * Check cable of compressor and phase-missing * Check connector/terminal connection on IPDU P.C. board * Check conduction of case heater (Check activation error due to liquid stagnation in compressor) * Check outdoor P.C. board (IPDU) error
H03	H03	01: Compressor side 1	17	IPDU	Current detection circuit system error	All stop	While header compressor stopped, current flowed more than the specified current and was detected	* Check cabling of current detection circuit system * Check outdoor P.C. board (IPDU) error
H04	H04		44	I/F	Compressor 1 case thermo operation	All stop	Compressor 1 case thermo-stat performed protective operation	* Check compressor 1 case thermo circuit (Connector, cable, P.C. board) * Check full opening of service valve (Gas and liquid side) * Check outdoor PMV clogging * Check SV4 circuit leakage * Check miscabling/misinstallation of SV4 * Check valve open status of indoor PMV * Check 4-way valve error * Check refrigerant shortage * Check SV5 leak
H06	H06		20	I/F	Low pressure protective operation	All stop	Low pressure Ps detected operation lower than 0.02MPa	* Check full opening of service valve (Gas and liquid side) * Check outdoor PMV clogging * Check SV2 circuit and SV4 circuit error * Check low-pressure Ps sensor error * Check indoor air filter clogging * Check valve open of indoor PMV * Check refrigerant pipe clogging * Check outdoor fan operating (in heating mode) * Check refrigerant shortage * Check 4-way valve error (reversed error)
L03			96	Indoor	Duplicated indoor center units	Corresponding unit only stops	There are multiple center units in a group	* Check indoor address * Check the change of remote control connection (Group/Individual) after indoor address setup
L04	L04		96	I/F	Duplicated indoor line address	All stop	Line address setup is duplicated against the outdoor unit in different refrigerant pipe system	* Check the line address
L05			96	I/F	Duplicated indoor units with priority (Displayed on indoor unit with priority)	All stop	Indoor units with priority were duplicated	* Check display of indoor unit with priority
L06	L06	No. of indoor units with priority	96	I/F	Duplicated indoor units with priority (Displayed on the unit other than indoor unit with priority)	All stop	Indoor units with priority were duplicated	* Check display of indoor unit with priority and outdoor unit

Check Code				Detected position	Check code name	Status	Error detection condition	Check item (position)
Wired remote control	Outdoor 7-segment display		AI-NET central remote control					
	Check code	Sub-code						
L07			99	Indoor	Group line in individual indoor unit	Corresponding unit only stops	At least one indoor unit connected to a group existed in the individual indoor units	* Check indoor address
L08	L08		99	Indoor	Indoor group / address unset	Corresponding unit only stops	Address was not yet set up	* Check indoor address Note: After installation, this code is displayed when the power is firstly turned on
L09			46	Indoor	Indoor capacity unset	Corresponding unit only stops	Indoor unit capacity was unset	Set up indoor capacity (DN=11)
L10	L10		88	I/F	Outdoor capacity unset	All stop	On the I/F P.C. board for service, jumper line was not cut according to the model	* Check model setup on outdoor I/F P.C. board A'ssy for service
L20			98	AI-NET, Indoor	Duplicated central control addresses	All stop	Duplicated central control addresses	* Check central control address * Check network adapter P.C. board (in case of AI-NET)
L29	L29	01:Comp IPDU1 error 02: Fan 1 IPDU error 03: Comp+Fan 1 IPDU error 04: Fan 2 IPDU error 05: Comp+Fan2 IPDU error 06: Fan 1 + Fan2 IPDU error 07: All IPDU error on communication error between IPDU and I/F P.C. board, or outdoor I/F P.C. board error	CF	I/F	IPDU quantity error	All stop	No. of IPDU units detected when power was turned on were less	* Check model setup for outdoor I/F service P.C. board * Check connection of UART communication connector * Check IPDU, fan IPDU and I/F P.C. board error Note: UART: Universal Asynchronous Receiver Transmitter
L30	L30	Detected indoor address	b6	Indoor	Interlock in indoor unit from outside	Corresponding unit only stops	Outside error input terminal detected signal to (CN80) for more 1 minute	* Outside device is connected to connector (CN80): 1) Check outside device error 2) Check indoor P.C. board * Outside device is not connected to connector (CN80) 1) Check indoor P.C. board error
	L31			I/F	Extended IC (Intergrated Circuit) error	Operation continues	P.C. board (I/F) parts error	* Check indoor (I/F) P.C. board
P01			11	Indoor	Indoor fan motor error	Corresponding unit only stops		* Check the lock of fan motor (AC fan) * Check cabling
P03	P03		1E	I/F	Discharge temperature TD1 error	All stop	Discharge temperature (TD1) exceeded 115℃	* Check full opening of outdoor service valves (Gas side, liquid side) * Check clogging of outdoor PMV * Check characteristics of TD1 sensor resistance value * Check refrigerant shortage * Check 4-way valve error * Check leakage of SV4 circuit * Check SV4 circuit (Miscabling and misinstalaion of SV4) * Check leakage of SV5 circuit
P04	P04	01: Compressor 1 side	21	I/F	Actuation of high-pressure SW	All stop	High-pressure SW actuated	* Check Pd pressure sensor error * Check full opening of outdoor service valves (Gas side, liquid side) * Check outdoor fan error * Check outdoor fan motor error * Check clogging of outdoor PMV * Check clogging of indoor/outdoor heat exchangers * Check short circuiting of outdoor suction/discharge air * Check clogging of SV2 circuit * Check outdoor P.C. board (I/F) error * Check indoor fan system error (cause of airvolume decrease) * Check opening of indoor PMV * Check miscabling of communication line between indoor and outdoor * Check operation error of check valve of discharge pipe * Check SV4 valve circuit * Check SV5 valve circuit * Check refrigerant overcharge
P07	P07	01: Compressor 1 side	1C	IPDU I/F	Heat sink overheat error	All stop	IGBT built-in temperature sensor (TH) was over-heated	* Check power voltage * Check outdoor fan system error * Check clogging of heat sink cooling duct * Check fixation between IGBT and heat sink (Check screwing and contact) * Check IPDU error (IGBT built-in temperature sensor (TH) error)

MINI SMMS - CHECK CODE

Check Code				Detected position	Check code name	Status	Error detection condition	Check item (position)
Wired remote control	Outdoor 7-segment display		AI-NET central remote control					
	Check code	Sub-code						
P10	P10	Indoor address with trouble	Ob	Indoor	Indoor overflow error	All stop	* Float switch operated * Float switch circuit disconnected or the connector came off	* Check the float switch connector * Check operation of drain pump unit * Check the drain pump circuit * Check clogging of drain pipe * Check indoor P.C. board error
P12			11	Indoor	Indoor fan motor error	Corresponding unit only stops	* The value of motor speed deviated from target value was detected for certain time * Over-current protection operated	* Check connection of fan connector and wiring * Check fan motor error * Check indoor P.C. board error * Check influence of outside air control * Check indoor type code (DN=10) and the capacity code (DN=11)
P13	P13		47	I/F	Outdoor liquid back detection error	All stop	In Heating: While the system is operating in HEAT mode, outdoor PMV of which opening degree was 100p or less for a certain time	* Check full close operation of outdoor PMV * Check Pd and Ps sensor error * Check clogging of SV2 circuit * Check clogging of 4-way valve error circuit * Check outdoor P.C. board (I/F) error * Check capillary clogging of oil return circuit from oil separator * Check TS sensor error
P15	P15	01: TS condition	AE	I/F	Gas leak detection (TS1 condition)	All stop	Suction temperature exceeded the judgement standard temperature for 10 minutes or more. TS error judgement standard temperature: In cooling operation: 60°C or higher In heating operation: 40°C or higher	* Check refrigerant shortage * Check full open of outdoor service valves (gas side, liquid side) * Check outdoor PMV clogging * Check characteristics of TS1 sensor resistance value * Check 4-way valve error * Check leakage of SV4 circuit * Check leakage of SV5 circuit
P15	P15	02: TD condition	AE	I/F	Gas leak detection (TD condition)	All stop	Discharge temperature TD1 or TD2 was continuously 108°C or higher for 10 minutes	* Check refrigerant shortage * Check outdoor PMV clogging * Check characteristics of TD1, TD2 sensor resistance value * Check indoor air filter clogging * Check pipe clogging * Check SV4 circuit (Valve leakage, misinstallation) * Check mispiping of discharge gas/suction gas main pipe
P17	P17		bb	I/F	Discharge temperature TD2 error	All stop	Discharge temperature (TD2) exceeded 115°C	* Check full opening of outdoor service valves (gas side, liquid side) * Check clogging of outdoor PMV * Check characteristics of TD2 sensor resistance value * Check 4-way valve error * Check leakage of SV4 circuit * Check SV4 circuit * Check leakage of SV5 valve circuit * Check mispiping of discharge gas/suction gas main pipe
P19	P19	Detected outdoor unit No.	8	I/F	4-way valve operation error	All stop	When abnormal refrigerating cycle data was detected in heating	* Error of 4-way valve error * Check coil error and connector connection of 4-way valve * Check characteristics of TS1/TE1 sensor resistance value * Check characteristics of Pd, Ps pressure sensor output voltage * Check misconnection of TE1 and TL sensors
P20	P20		22	I/F	High pressure protective operation	All stop	Pd Sensor 3.6MPa or more	* Check Pd pressure sensor error * Check full opening of service valves (gas side, liquid side) * Check outdoor fan error * Check outdoor fan motor error * Check clogging of outdoor PMV * Check clogging of indoor/outdoor heat exchanger * Check air short circuiting in outdoor unit * Check clogging of SV2 circuit * Check outdoor P.C. board (I/F) error * Check indoor fan system error (cause of air volume decrease) * Check valve opening of indoor PMV * Check miscabling of communication line between indoor and outdoor * Check operation error of check valve of discharge pipe * Check circuit of gas balance SV4 valve * Check mispiping of discharge gas/suction gas main pipe * Check operation error of check valve of discharge gas pipe * Check clogging of circuit at auxiliary heat exchanger side (miswiring, disconnection, wiring missing) * Check circuit of SV5 valve * Check refrigerant overcharge

Check Code				Detected position	Check code name	Status	Error detection condition	Check item (position)
Wired remote control	Outdoor 7-segment display		AI-NET central remote control					
	Check code	Sub-code						
P22	P22	* A: Motor current detection	1A	FAN-IPDU	Outdoor fan IPDU error	All stop	(Sub-code: * A) * Short circuit current was detected when 2 seconds or more passed after start time * Over-current was detected when 30 seconds or more passed after start time	* Check power supply voltage * Check fan IPDU error
P22	P22	* d: Motor lock error	1A	FAN-IPDU	G-Tr short- circuit protection error	All stop	(Sub-code: * d) * Abnormal current was detected within 30 seconds after start time	* Check fan motor (lock, phase missing) * Check cause of abnormal overload at start time * Check connection of connector to fan motor
P26	P26	01: Compressor 1 side	14	IPDU		All stop	Instantaneous overcurrent was detected when compressor started	* Check connector connection and wiring on IPDU P.C. board * Check compressor error and defect of compressor coil * Check outdoor P.C. board (IPDU) error
P29	P29	01: Compressor 1 side	16	IPDU	Compressor position detection circuit error	All stop	Position was not normally detected	* Check connector connection and wiring * Check compressor error and defect of compressor coil * Check P.C. board (IPDU) error
P31			47	Indoor	Other indoor error (Group follower unit error)	Corresponding unit only stops	E07/L07/L03/L08 was detected when other indoor unit in the group was defective	* Check indoor P.C. board

Error detected by TCC-LINK central remote control

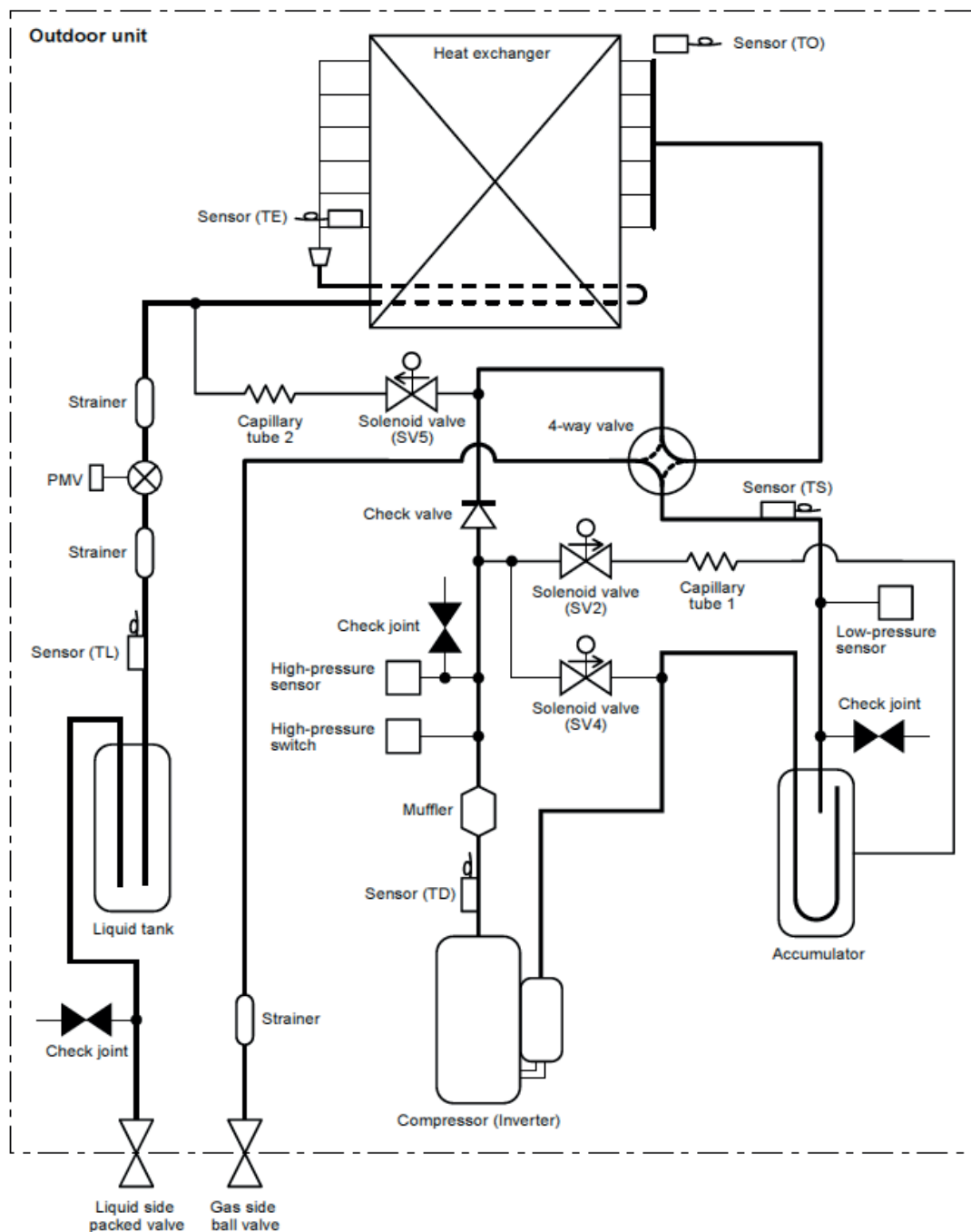
Check Code				Detected position	Check code name	Status	Error detection condition	Check item (position)
Wired remote control	Outdoor 7-segment display		AI-NET central remote control					
	Check code	Sub-code						
C05				TCC-LINK	TCC-Link central control device transmission error	Operation continued	Signal is not transmitted from central control device	* Check central control device error * Check communication line error of central control device * Check setup of terminator resistor
C06					TCC-Link central control device receiving error	Operation continued	Signal is not received from central control device	* Check central control device error * Check communication line error of central control device * Check setup of terminator resistor * Check the power of connecting destination connected device * Check P.C. board error of the connected device
C12				HA control interface	Interface batch alarm of HA control interface	Operation continued	Error was input in HA control device control interface	* Check error input
P30	Differs according to error contents of the alarm			TCC-LINK	Follower unit error of group control	Operation continued	An error occurred in follower unit of the group control. ([P30] is displayed only on the central control remote control)	* Check the check code of the unit with alarm
P30	(L20 is displayed)				Duplicate central control address	Operation continued	Central control addresses were duplicated	* Check the address setup

Error detected by AI-NET central remote control

Check Code				Detected position	Check code name	Status	Error detection condition	Check item (position)
Wired remote control	Outdoor 7-segment display		AI-NET central remote control					
	Check code	Sub-code						
			97	AI-NET	AI-NET communication system error	Operation continued	E07/L07/L03/L08 was detected when other indoor unit in the group was defective	* Check multiple network adaptors * Check wire and miscabling of remote control: only one network adaptor can be connected to communication line of remote control
			99	AI-NET	Duplicated network adaptors	Operation continued	Multiple network adaptors were connected to communication line of remote control (Detected at central controller side)	* Check communication line, miscabling, and power of indoor unit * Check communication. (X,Y terminals) * Check network adaptor P.C. board * Check the central controller (Central control remote control etc.)
			b7	AI-NET	Error in indoor group	Operation continued	Error of follower unit in the group	* Check follower unit in the group

MINI SMMS: Refrigeration scheme and sensor positions

Model: MCY-MAP0401HT, MCY-MAP0501HT, MCY-MAP0601HT,
MCY-MAP0401HT2D, MCY-MAP0501HT2D, MCY-MAP0601HT2D



MINI SMMS – REFRIGERATION SCHEME AND SENSOR POSITIONS

Functional part name		Functional outline	Connector
Solenoid valve	SV2	1) Low-pressure release function 2) High-pressure release function 3) Gas balance function during off time 4) Hot gas bypass into accumulator	CN312 (White)
	SV4	1) High-pressure release function 2) Low-pressure release function	SN311 (Blue)
	SV5	Preventive function for high-pressure rising in heating operation	CN310 (White)
Capillary tube	1	ID: ø1,5, Length: 200 mm	
	2	ID: ø2,2, Length: 100 mm	
4-way valve		1) Cooling/heating exchange 2) Reverse defrost	CN317 (Blue)
PMV (Pulse motor valve)		1) Super heat control function in all heating and majority heating operation 2) Sub-cool adjustment function in cooling operation	CN300 (White)
Temperature Sensor	TD	Protection of compressor discharge temperature. Used for release	CN502 (White)
	TS	Controls super heat in heating operation	CN504 (White)
	TE	1) Controls defrost in heating operation 2) Controls outdoor fan in heating operation	CN505 (Green)
	TL	Detects under cool in cooling operation	CN521 (White)
	TO	Detects outside temperature	CN507 (Yellow)
High-pressure sensor		1) Detects high-pressure and controls compressor capacity 2) Detects high-pressure in cooling operation and controls the fan in low ambient cooling operation	CN501 (Red)
Low-pressure sensor		1) Detects low-pressure in cooling operation and controls compressor capacity 2) Detects low-pressure in heating operation and controls the super heat	CN500 (White)
Compressor case heater		Prevents liquid accumulation to compressor	CN316 (White)
Accumulator case heater		Prevents liquid accumulation to accumulator	CN321 (Red)

SMMSi – Commercial VRF

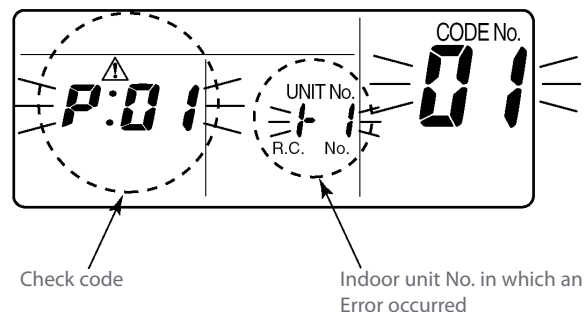
Troubleshooting S-MMSi device

Confirmation and check

When trouble occurred on the air conditioner, the check code and the indoor unit No. are displayed on the display section of the remote control.

The check code is displayed while the air conditioner operates.

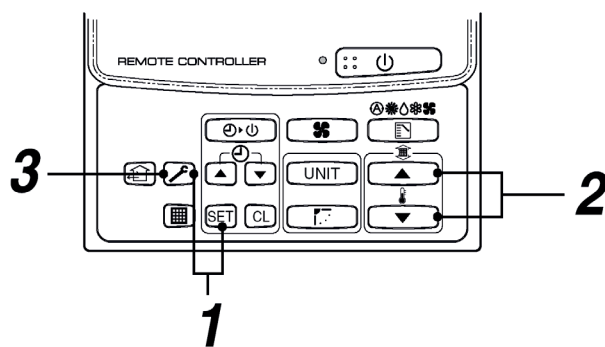
If the display has disappeared, operates the air conditioner and check the error based upon the following "Confirmation of error history".

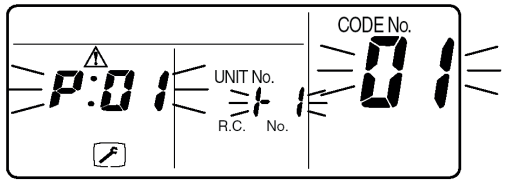


Confirmation of error history

When a trouble occurred on the air conditioner, the error history can be confirmed with the following procedure. (Up to 4 error histories are stored in memory.)

This history can be confirmed from either operating status or stop status.



Procedure	Description
1	When pushing SET and CL buttons simultaneously for 4 seconds or more, the below display appears. If [Service Check] is displayed, the mode enters in the error history mode. [01: Error history order] is displayed in code number window. [Check code] is displayed in check code window. [Indoor unit address with error] is displayed in UNIT No..  The diagram shows the remote control display in error history mode. The left section shows a check code 'P:01' with a warning triangle icon above it. The middle section shows 'UNIT No.' and 'R.C. No.' with a dashed circle around the 'UNIT No.' label. The right section shows 'CODE No.' with the code '01'. A small 'CL' button icon is shown below the check code.
2	Every pushing temperature set ▲, ▼ buttons, the error histories stored in the memory are displayed in order. The numbers in item code no. indicates item code [01] (latest) to [04] (oldest). CAUTION: Do not push CL button because all the error histories of the indoor unit will be deleted.
3	After confirmation, push CL button to return to the usual display.

Testing methods

On the remote control (Main remote control, central remote control) and the interface board of the outdoor unit (I / F) is a LCD display (remote control) or a 7-segment display (interface board) to indicate the particular function.

There you have the opportunity to check the function. With the help of self-diagnosis, problems or equipment failures can be easily found by using the following table.

List of faulty codes

The following list includes all error codes.

- Check with the remote control unit for the area: See "Main remote control display" in the list.
- Examination of outdoor unit: See "7-segment display, outdoor unit" in the list.
- Check with the central AI-NET remote control: See "AI-NET central remote control" in the list.
- Test with an infrared remote control for indoor unit: See "Sensor block display of receiving unit" in the list.

Terminology

○: permanent light ●: OFF ◎: flashing
AI-NET: Artificial intelligence
IPDU: Intelligent Power Drive Unit

ALT: Alternate flashing of two LEDs
SIM: Simultaneous flashing of two LEDs
Error due to central monitoring TCC-LINK detected

Main remote control	Check -code			Wireless sensor				Check code name	Detected position
	Outdoor 7-segment display		AI-NET-central remote control	Sensor block display on the receiver					
		Sub-code		Operation	Timer	Ready	Flash		
E01				⊙	○	○		Communication error between indoor and remote control (Detected at remote control side)	Remote control
E02				⊙	○	○		Remote control transmission error	Remote control
E03			97	⊙	○	○		Communication error between indoor and remote control (detected at indoor end)	Indoor unit
E04			04	○	○	⊙		Indoor-outdoor communication circuit error (Detected at indoor end)	Indoor unit
E06	E06	No. of indoor units which received signal normally	04	○	○	⊙		Decreased number of indoor units	I/F
	E07			○	○	⊙		Indoor/outdoor communication circuit error (detected at outdoor end)	I/F
E08	E08	Duplicated indoor address	96	⊙	○	○		Duplicated indoor address	Indoor unit / I/F
E09			99	⊙	○	○		Duplicated master remote control	Remote control
E10			CF	⊙	○	○		Communication error at indoor P.C. board assembly	Indoor unit
E12	E12	01: 02 Indoor/outdoor communication 02: Between outdoors communication	42	⊙	○	○		Automatic address start error	I/F
E14	E14	No communication between indoor PCB and 0~10V interface PCB for more than 3 minutes (AB connection)	-	-	-	-	-	Communication error between the indoor PCB (MCC-1570) and the 0~10V interface PCB	-
E15	E15		42	○	○	⊙		No corresponding indoor unit during automatic address	I/F
E16	E16	00: Over capacity 01: No. of connected units	89	○	○	⊙		No. of connected indoor units / over capacity	I/F
E18			97,99	⊙	○	○		Communication error between indoor header and follower units	Indoor unit
E19	E19	00: No header unit 02: Two or more header units	96	○	○	⊙		Outdoor header unit quantity error	I/F
E20	E20		42	○	○	⊙		Other line unit connected during automatic address	I/F
E23	E23		15	○	○	⊙		Communication sending error between outdoor units	I/F
E25	E25		15	○	○	⊙		Duplicated outdoor follower address setup	I/F
E26	E26	Address of outdoor unit from which signal is not received normally	15	○	○	⊙		Dropping out of outdoor unit	I/F
E28	E28	No. of detected outdoor units	d2	○	○	⊙		Outdoor follower unit error	I/F

Main remote control	Check-code				Wireless sensor				Check code name	Detected position																																																																																																
	Outdoor 7-segment display				AI-NET-central remote control	Sensor block display on the receiver																																																																																																				
		Sub-code				Operation	Timer	Ready			Flash																																																																																															
E31	E31	<table><tr><td></td><td>A3-IPDU 1</td><td>Fan 2</td><td>IPDU 3</td><td></td><td>A3-IPDU 1</td><td>Fan 2</td><td>IPDU 3</td></tr><tr><td>01</td><td>O</td><td></td><td></td><td></td><td>0A</td><td>O</td><td></td><td>O</td></tr><tr><td>02</td><td></td><td>O</td><td></td><td></td><td>0B</td><td>O</td><td>O</td><td></td><td>O</td></tr><tr><td>03</td><td>O</td><td>O</td><td></td><td></td><td>0C</td><td></td><td></td><td>O</td><td></td></tr><tr><td>04</td><td></td><td></td><td>O</td><td></td><td>0D</td><td>O</td><td></td><td>O</td><td></td><td>O</td></tr><tr><td>05</td><td>O</td><td></td><td>O</td><td></td><td>0E</td><td></td><td>O</td><td>O</td><td></td><td>O</td></tr><tr><td>06</td><td></td><td>O</td><td>O</td><td></td><td>0F</td><td>O</td><td>O</td><td>O</td><td></td><td>O</td></tr><tr><td>07</td><td>O</td><td>O</td><td>O</td><td></td><td colspan="4">Circle (O): Faulty IPDU</td></tr><tr><td>08</td><td></td><td></td><td></td><td>O</td><td colspan="4"></td></tr><tr><td>09</td><td>O</td><td></td><td></td><td>O</td><td colspan="4"></td></tr></table>		A3-IPDU 1	Fan 2	IPDU 3		A3-IPDU 1	Fan 2	IPDU 3	01	O				0A	O		O	02		O			0B	O	O		O	03	O	O			0C			O		04			O		0D	O		O		O	05	O		O		0E		O	O		O	06		O	O		0F	O	O	O		O	07	O	O	O		Circle (O): Faulty IPDU				08				O					09	O			O					CF	○	○	⊙		IPDU communication error	I/F
	A3-IPDU 1	Fan 2	IPDU 3		A3-IPDU 1	Fan 2	IPDU 3																																																																																																			
01	O				0A	O		O																																																																																																		
02		O			0B	O	O		O																																																																																																	
03	O	O			0C			O																																																																																																		
04			O		0D	O		O		O																																																																																																
05	O		O		0E		O	O		O																																																																																																
06		O	O		0F	O	O	O		O																																																																																																
07	O	O	O		Circle (O): Faulty IPDU																																																																																																					
08				O																																																																																																						
09	O			O																																																																																																						
F01					0F	⊙	⊙	○	ALT	Indoor TCJ sensor error	Indoor unit																																																																																															
F02					0d	⊙	⊙	○	ALT	Indoor TC2 sensor error	Indoor unit																																																																																															
F03					93	⊙	⊙	○	ALT	Indoor TC1 sensor error	Indoor unit																																																																																															
F04	F04				19	⊙	⊙	●	ALT	TD1 sensor error	I/F																																																																																															
F05	F05				A1	⊙	⊙	●	ALT	TD2 sensor error	I/F																																																																																															
F06	F06				18	⊙	⊙	●	ALT	TE1/TE2 sensor error	I/F																																																																																															
F07	F07				18	⊙	⊙	●	ALT	TL sensor error	I/F																																																																																															
F08	F08				1b	⊙	⊙	●	ALT	TO sensor error	I/F																																																																																															
F10					OC	⊙	⊙	○	ALT	Indoor TA sensor error	Indoor unit																																																																																															
F11										Indoor TF sensor error	Indoor unit																																																																																															
F12	F12				A2	⊙	⊙	●	ALT	TS1 sensor error	I/F																																																																																															
F13	F13	01: Compressor 1 02: Compressor 2 03: Compressor 3			43	⊙	⊙	●	ALT	TH sensor error	IPDU																																																																																															
F15	F15				18	⊙	⊙	●	ALT	Outdoor temperature sensor wiring error (TE1, TL)	I/F																																																																																															
F16	F16				43	⊙	⊙	●	ALT	Outdoor pressure sensor wiring error (Pd, Ps)	I/F																																																																																															
F22	F22					⊙	⊙	●	ALT	TD3 sensor error	I/F																																																																																															
F23	F23				43	⊙	⊙	●	ALT	Ps sensor error	I/F																																																																																															
F24	F24				43	⊙	⊙	●	ALT	Pd sensor error	I/F																																																																																															
F29					12	⊙	⊙	○	SIM	Other indoor error	Indoor unit																																																																																															
F31	F31				1C	⊙	⊙	●	SIM	Outdoor EEPROM error	I/F																																																																																															
H01	H01	01: Compressor 1 02: Compressor 2 03: Compressor 3			IF	○	⊙	○		Compressor breakdown	IPDU																																																																																															
H02	H02	01: Compressor 1 02: Compressor 2 03: Compressor 3			1d	○	⊙	○		Compressor error (lock) MG-SW error OCR operation	MG-switch IPDU Over current relay																																																																																															
H03	H03	01: Compressor 1 02: Compressor 2 03: Compressor 3			17	○	⊙	○		Current detection circuit system error	IPDU																																																																																															
H04	H04				44	○	⊙	○		Compressor 1 case thermo operation	I/F																																																																																															
H05	H05					○	⊙	○		TD1 sensor miswiring (incomplete insertion)	I/F																																																																																															
H06	H06				20	○	⊙	○		Activation of low pressure protection	I/F																																																																																															
H07	H07				d7	○	⊙	○		Low oil level protection	I/F																																																																																															
H08	H08	01: TK1 sensor error 02: TK2 sensor error 03: TK3 sensor error 04: TK4 sensor error 05: TK5 sensor error			d4	○	⊙	○		Error in temperature sensor for oil level detection	I/F																																																																																															
H14	H14				44	○	⊙	○		Compressor 2 case thermo operation	I/F																																																																																															
H15	H15					○	⊙	○		TD2 sensor miswiring (incomplete insertion)	I/F																																																																																															
H16	H16	01: TK1 oil circuit error 02: TK2 oil circuit error 03: TK3 oil circuit error 04: TK4 oil circuit error 05: TK5 oil circuit error			d7	○	⊙	○		Oil level detective circuit error	I/F																																																																																															

Main remote control	Check -code			Wireless sensor				Check code name	Detected position																																																																																																														
	Outdoor 7-segment display		AI-NET-central remote control	Sensor block display on the receiver																																																																																																																			
		Sub-code		Operation	Timer	Ready	Flash																																																																																																																
H25	H25			○	⊙	○		TD3 sensor miswiring (incomplete insertion)	I/F																																																																																																														
L03			96	○	⊙	○	SIM	Duplicated indoor header unit	Indoor unit																																																																																																														
L04	L04		96	⊙	●	⊙	SIM	Duplicated outdoor line address	I/F																																																																																																														
L05			96	⊙	○	⊙	SIM	Duplicated priority indoor unit (as displayed on priority indoor unit)	I/F																																																																																																														
L06	L06	No. of priority indoor units	96	⊙	○	⊙	SIM	Duplicated priority indoor unit (as displayed on indoor unit other than priority indoor unit)	I/F																																																																																																														
L07			99	⊙	○	⊙	SIM	Connection of group control cable to stand-alone indoor unit	Indoor unit																																																																																																														
L08	L08		99	⊙	○	⊙	SIM	Indoor group/addresses not set	Indoor unit																																																																																																														
L09			46	⊙	○	⊙	SIM	Indoor capacity not set	Indoor unit																																																																																																														
L10	L10		88	⊙	●	⊙	SIM	Outdoor capacity not set	I/F																																																																																																														
L20	L20		98	⊙	●	⊙	SIM	Duplicated central control addresses	AI-NET, Indoor unit																																																																																																														
L28	L28		46	⊙	●	⊙	SIM	Quantity over of connected outdoor units	I/F																																																																																																														
L29	L29	<table><tr><td></td><td colspan="3">A3-IPDU</td><td>Fan</td><td></td><td colspan="3">A3-IPDU</td><td>Fan</td></tr><tr><td></td><td>1</td><td>2</td><td>3</td><td>IPDU</td><td></td><td>1</td><td>2</td><td>3</td><td>IPDU</td></tr><tr><td>01</td><td>○</td><td></td><td></td><td></td><td>0A</td><td></td><td>○</td><td></td><td>○</td></tr><tr><td>02</td><td></td><td>○</td><td></td><td></td><td>0B</td><td>○</td><td>○</td><td></td><td>○</td></tr><tr><td>03</td><td>○</td><td>○</td><td></td><td></td><td>0C</td><td></td><td></td><td>○</td><td>○</td></tr><tr><td>04</td><td></td><td></td><td>○</td><td></td><td>0D</td><td>○</td><td></td><td>○</td><td>○</td></tr><tr><td>05</td><td>○</td><td>○</td><td></td><td></td><td>0E</td><td></td><td>○</td><td>○</td><td>○</td></tr><tr><td>06</td><td></td><td>○</td><td>○</td><td></td><td>0F</td><td>○</td><td>○</td><td>○</td><td>○</td></tr><tr><td>07</td><td>○</td><td>○</td><td>○</td><td></td><td colspan="5">Circle (○): Faulty IPDU</td></tr><tr><td>08</td><td></td><td></td><td></td><td>○</td><td colspan="5"></td></tr><tr><td>09</td><td>○</td><td></td><td></td><td>○</td><td colspan="5"></td></tr></table>		A3-IPDU			Fan		A3-IPDU			Fan		1	2	3	IPDU		1	2	3	IPDU	01	○				0A		○		○	02		○			0B	○	○		○	03	○	○			0C			○	○	04			○		0D	○		○	○	05	○	○			0E		○	○	○	06		○	○		0F	○	○	○	○	07	○	○	○		Circle (○): Faulty IPDU					08				○						09	○			○						CF	⊙	●	⊙	SIM	Error in No. of IPDUs	I/F
	A3-IPDU			Fan		A3-IPDU			Fan																																																																																																														
	1	2	3	IPDU		1	2	3	IPDU																																																																																																														
01	○				0A		○		○																																																																																																														
02		○			0B	○	○		○																																																																																																														
03	○	○			0C			○	○																																																																																																														
04			○		0D	○		○	○																																																																																																														
05	○	○			0E		○	○	○																																																																																																														
06		○	○		0F	○	○	○	○																																																																																																														
07	○	○	○		Circle (○): Faulty IPDU																																																																																																																		
08				○																																																																																																																			
09	○			○																																																																																																																			
L30	L30	Detected indoor address	b6	⊙	●	⊙	SIM	Interlock in indoor unit from outside	Indoor unit																																																																																																														
	L31							Extended IC (Integrated Circuit) error	I/F																																																																																																														
P01	P01		11	○	⊙	⊙	ALT	Indoor fan motor error	Indoor unit																																																																																																														
P03	P03		1E	⊙	○	⊙	ALT	Discharge temperature TD1 error	I/F																																																																																																														
P04	P04	01: Compressor 1 02: Compressor 2 03: Compressor 3	21	⊙	○	⊙	ALT	Activation of high-pressure SW	IPDU																																																																																																														
P05	P05	00: Open phase detected 01: Compressor 1 02: Compressor 2 03: Compressor 3	AF	⊙	○	⊙	ALT	Open phase/power failure Inverter DC voltage (Vdc) error (compressor) MG-CTT error	I/F																																																																																																														
P07	P07	01: Compressor1 02: Compressor 2 03: Compressor 3	IC	⊙	○	⊙	ALT	Heat sink overheating error	IPDU, I/F																																																																																																														
P10	P10	Detected indoor address	Ob	○	⊙	⊙	ALT	Indoor overflow error	Indoor unit																																																																																																														
P12	P12		11	○	⊙	⊙	ALT	Indoor fan motor error	Indoor unit																																																																																																														
P13	P13		47	○	⊙	⊙	ALT	Outdoor liquid back detection error	I/F																																																																																																														
P15	P15	01: TS-condition 02: TD-condition	AE	⊙	○	⊙	ALT	Gas leak detection	I/F																																																																																																														
P17	P17		bb	⊙	○	⊙	ALT	Discharge temperature TD2 error	I/F																																																																																																														
P18	P18			⊙	○	⊙	ALT	Discharge temperature TD3 error	I/F																																																																																																														
P19	P19	Detected outdoor unit No.	O8	⊙	○	⊙	ALT	4-way valve reversing error	I/F																																																																																																														
P20	P20		22	⊙	○	⊙	ALT	Activation of high-pressure protection	I/F																																																																																																														
P22	P22	0*: IGBT circuit 1*: Position detecting circuit error 3*: Motor lockup error 4*: Motor current detection C*: TH sensor temperature error D*: TH sensor error E*: Inverter DC voltage error (outdoor fan) Note: Although letters 0 to F appear at locations indicated by "*", please ignore them	1A	⊙	○	⊙	ALT	Outdoor fan IPDU error	IPDU																																																																																																														

Main remote control	Check-code			Wireless sensor				Check code name	Detected position
	Outdoor 7-segment display		AI-NET-central remote control	Sensor block display on the receiver					
		Sub-code		Operation	Timer	Ready	Flash		
P26	P26	01: Compressor 1 02: Compressor 2 03: Compressor 3	14	☉	○	☉	ALT	G-Tr short circuit protection error	IPDU
P29	P29	01: Compressor 1 02: Compressor 2 03: Compressor 3	16	☉	○	☉	ALT	Compressor position detection circuit error	IPDU
P31	P31		47	☉	○	☉	ALT	Other indoor error (Group follower unit error)	Indoor unit

Error detected by TCC-LINK central control device

Main remote control	Check-code			Wireless sensor				Check code name	Detected position
	Outdoor 7-segment display		AI-NET-central remote control	Sensor block display on the receiver					
		Sub-code		Operation	Timer	Ready	Flash		
C05								TCC-LINK central control device transmission error	TCC-LINK
C06								TCC-LINK central control device receiving error	
C12								Blanket alarm for general-purpose device control interface	Gernal purpose device I/F
P30	Differs according to nature of alarm-causing error							Group control follower unit error	TCC-LINK
P30			(L20 is displayed)				Duplicated central control address		

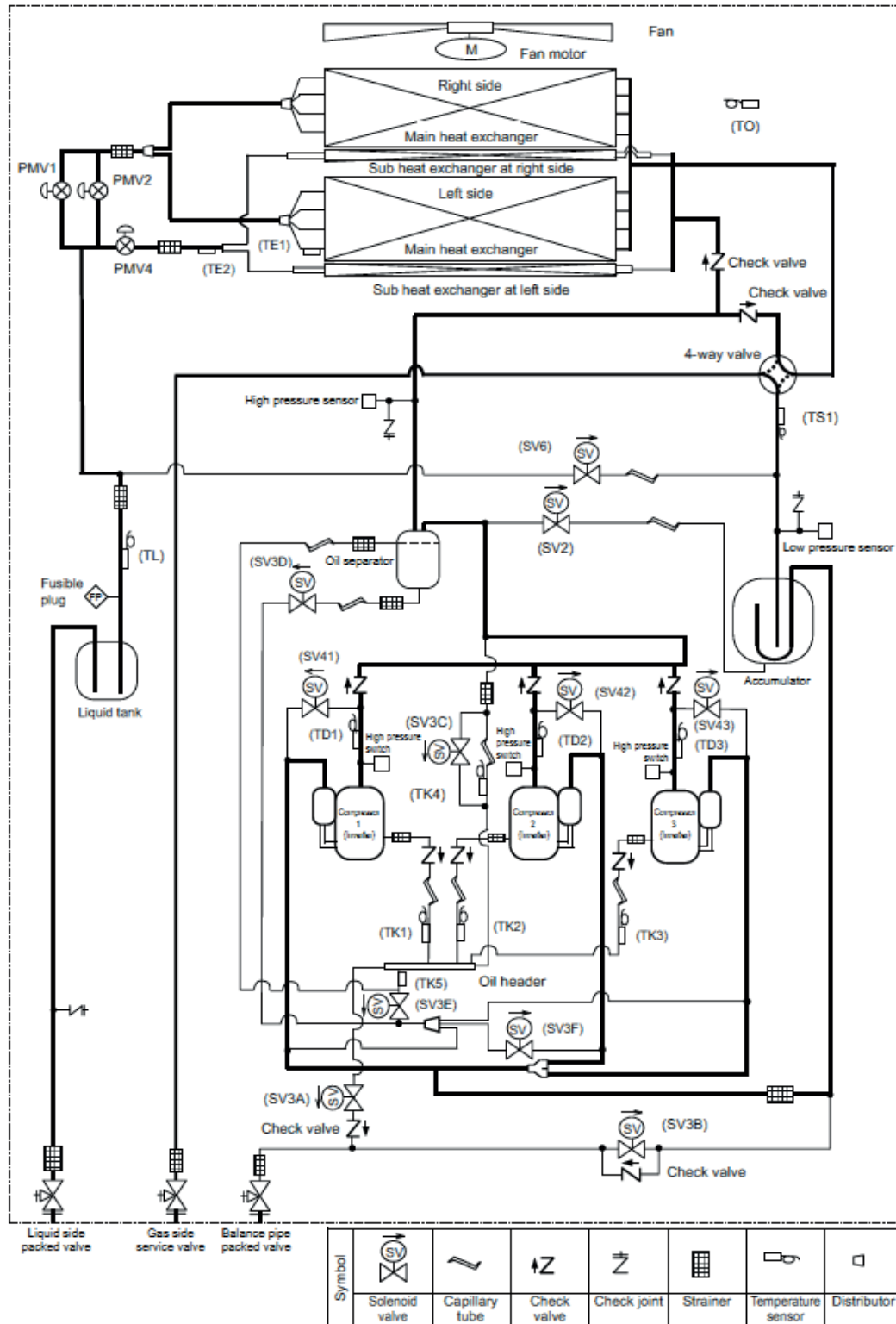
Terminology

TCC-LINK: TOSHIBA Carrier Communication Link

Schematic representation of the refrigerant pipes and sensor positions

Outdoor Unit (14, 16HP)

Model: MMY-MAP1404*, MMY-MAP1604*



Explanation of Functional Parts

Functional part name		Functional outline
Solenoid valve	SV3A	(Connector CN321: White) Supplies oil reserved in the oil header during ON time
	SV3B	(Connector CN321: White) Returns oil supplied in the balance pipe to the compressor
	SV3C	(Connector CN321: White) Pressurizes oil reserved in the oil header during ON time
	SV3D	(Connector CN322: White) 1) Reserves oil in the oil separator during OFF time 2) Returns oil reserved in the oil separator to the compressor during ON time
	SV3E	(Connector CN322: White) Turns on during operation and balances oil between compressors
	SV3F	(Connector CN323: White) Controls oil level balances between compressors
	SV2	(Hot gas bypass) (Connector CN311: White) 1) Low pressure release function 2) High pressure release function 3) Gas balance function during stop time
	SV41 SV42 SV43	(Start compensation valve of compressor) (SV41 Connector CN312: Blue, SV42 Connector CN312: Blue, SV43 Connector CN313: Red) 1) For gas balance start 2) High pressure release function 3) Low pressure release function
	SV5	(Connector CN314: White) Preventive function for high-pressure rising in heating operation
	SV6	(Connector CN315: White) Liquid bypass function for discharge temperature release (cooling bypass function)
4-way valve		(Connector CN317: Blue) 1) Cooling/heating exchange 2) Reverse defrost
Pulse motor valve PMV4	PMV1, 2	(Connector CN300, 301: White) 1) Super heat control function in heating operation 2) Liquid line shut-down function while follower unit stops 3) Under cool adjustment function in cooling operation 4) Exchange function between main and sub exchangers in cooling operation
	PMV4	(Connector CN303: Rot) 1) Exchange function between main and sub exchangers in cooling operation 2) Preventive function for high-pressure rising in heating operation
Oil separator		1) Prevention for rapid decreasing of oil (Decreases oil flowing to the cycle) 2) Reserve function of surplus oil
Temperature sensor	TD1 TD2 TD3	(TD1 Connector CN502: White, TD2 Connector CN503: Pink, TD3 Connector CN504: Blue) 1) Protection of compressor discharge temperature 2) Used for discharge temperature release
	TS1	(Connector CN505: White) Controls PMV super heat in heating operation
	TE1	(Connector CN520: Green) 1) Controls defrost in heating operation 2) Controls outdoor fan in heating operation
	TE2	(Connector CN521: Red) Controls exchange function between main and sub exchangers
	TK1, TK2 TK3, TK4 TK5	(TK1 Connector CN531: Black, TK2 Connector CN532: Green, TK3 Connector CN533: Red, TK4 Connector CN534: Yellow, TK5 Connector CN535: Red) Judges oil level of the compressor
	TL	(Connector CN523: White) Detects under cool in cooling operation
	TO	(Connector CN507: Yellow) Detects outside temperature
Pressure sensor	High pressure sensor	(Connector CN501: Red) 1) Detects high pressure and controls compressor capacity 2) Detects high pressure in cooling operation and controls the fan in low ambient cooling operation 3) Detects under cool in indoor unit in heating operation
	Low pressure sensor	(Connector CN500: White) 1) Detects low pressure in cooling operation and controls compressor capacity 2) Detects low pressure in heating operation and controls the super heat
Heater	Compressor case heater	(Compressor 1 Connector CN331: White, Compressor 2 Connector CN332: Blue, Compressor 3 Connector CN333: Black) Prevents liquid accumulation to compressor
	Accumulator Case heater	(Connector CN334: Red) Prevents liquid accumulation to accumulator
Balance pipe		Oil balancing in each outdoor unit

SHRMi – Commercial VRF

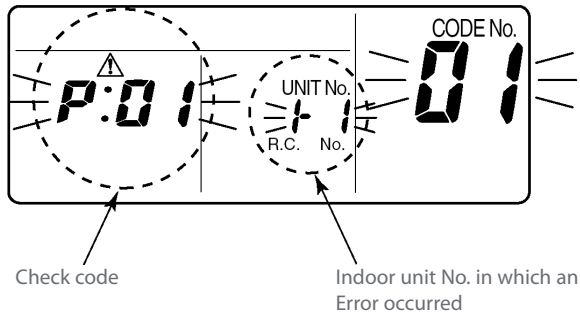
Troubleshooting SHRMi units

Confirmation and check

When trouble occurred on the air conditioner, the check code and the indoor unit No. are displayed on the display section of the remote control.

The check code is displayed while the air conditioner operates.

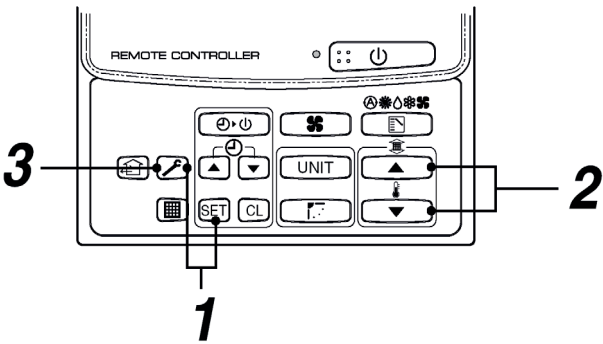
If the display has disappeared, operates the air conditioner and check the error based upon the following “Confirmation of error history”.

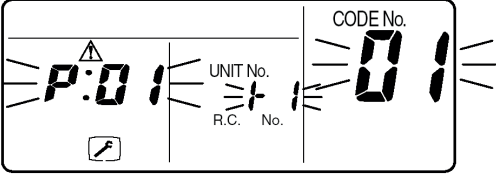


Confirmation of error history

When a trouble occurred on the air conditioner, the error history can be confirmed with the following procedure. (Up to 4 error histories are stored in memory.)

This history can be confirmed from either operating status or stop status.



Procedure	Description	
1	When pushing SET and  buttons simultaneously for 4 seconds or more, the below display appears. If [Service Check] is displayed, the mode enters in the error history mode. [01: Error history order] is displayed in code number window. [Check code] is displayed in check code window. [Indoor unit address with error] is displayed in UNIT No.	
2	Every pushing temperature set  ,  buttons, the error histories stored in the memory are displayed in order. The numbers in item code indicates item code [01] (latest) to [04] (oldest). CAUTION: Do not push CL button because all the error histories of the indoor unit will be deleted.	
3	After confirmation, push  button to return to the usual display.	

SHRMi Check codes

Check code			Detected position	Check code name	Status	Error detection condition	Check item (position)
Wired remote control	Outdoor 7-segment display						
	Check code	Sub-code					
E01			Remote control	Communication error between indoor and remote control (detected at remote control end)	Corresponding unit only stops	Communication interrupted between indoor P.C. board and remote control	* Check remote control interunit cable (A/B) * Check disconnection, connector contact error * Check indoor power supply * Check indoor P.C. board error * Check remote control address setup. (When two remote controls operate) * Check remote control P.C. board
E02			Remote control	Remote control sending error	Corresponding unit only stops	Signal could not be sent from remote control to indoor unit	* Check the communication wire of remote control: Exchange remote control
E03			Indoor unit	Communication error between indoor and remote control (Detected at indoor end)	Corresponding unit only stops	No communication from remote control (including wireless) or network adapter	* Check remote control and network adaptor wiring
E04			Indoor unit	Indoor/Outdoor communication circuit error (Detected at indoor end)	Corresponding unit only stops	Indoor unit does not receive communication from outdoor unit	* Check power-ON order of indoor/outdoor * Check indoor address setup * Check inter unit cabling between indoor and outdoor * Check outdoor end terminal resistance setup (SW30-2)
E06	E06	No. of indoor units from which signal is received normally	I/F	Dropping out of the indoor unit	All stop	Indoor unit initially communicating normally fails to return signal for specified length of time.	* Check the power supply of indoor unit (Power-ON) * Check connection of communication line between indoor and outdoor * Check connector connection for communication in indoor P.C. board * Check connector connection for communication in outdoor P.C. board * Check indoor P.C. board failure * Check outdoor P.C. board (I/F) failure
	E07		I/F	Indoor/outdoor communication circuit error (Detected at outdoor side)	All stop	Transmission from outdoor to indoor cannot continue for 30 seconds	* Check outdoor terminator resistor setup (SW30-2) * Check the communication between indoor and outdoor
E08	E08	Duplicated indoor addresses	Indoor I/F	Duplicated indoor addresses	All stop	More than one indoor unit is assigned same address	* Check indoor address * Check the change of remote control connection (group/individual) after setup of indoor address
E09			Remote control	Duplicated master remote control	Corresponding unit only stops	In two remote control configuration (including wireless), both are setup as master (header indoor unit stops and other indoor unit is operating)	* Check remote control setup * Check remote control P.C. board
E10			Indoor unit	Indoor inter-MCU communication error	Corresponding unit only stop	Communication cannot be established/maintained upon turning on of power or during communication	Indoor P.C. board failure
E12	E12	01: Indoor/outdoor communication 02: Between outdoors communication	I/F	Error during automatic address assignment	All stop	* Indoor automatic address setting is started while automatic address setting for equipment in other refrigerant line is in progress * Outdoor automatic address setting is started while automatic address setting for indoor units is inprogress	* Automatic addressing after separation of connection cable to the refrigerant line
E15	E15		I/F	No corresponding indoor unit during automatic address	All stop	Indoor unit cannot be detected after indoor automatic address setting is started	* Check communication line connection between indoor and outdoor * Check electric power line error in indoor * Check noise of surrounding units * Power failure * Check indoor P.C. board error
E16	E16	00: Overloading 01: No. of connected units	I/F	Too many connected indoor units	All stop	* Total capacity of indoor units exceeded 135% of total outdoor capacity * No. of connected indoor units are more than 48 units [Note] If this code appears after backup setup of outdoor unit trouble, set up "No overloading detected". Setup method of "No overloading detected": Turn on SW09/Bit2 on I/F P.C. board of outdoor header unit	* Check the connection capacity of indoor unit * Check the HP capacity of indoor unit * Check the indoor/outdoor capacity setup * Check the No. of connected indoor units * Check the outdoor I/F P.C. board error
E18			Indoor unit	Communication error between header and follower indoor units	Corresponding unit only stops	Regular communication between header and follower indoor unit can not be maintained	* Check cable of the remote control * Check the power cabling of indoor * Check P.C. board of indoor

Check code			Detected position	Check code name	Status	Error detection condition	Check item (position)																																																																																																												
Wired remote control	Outdoor 7-segment display																																																																																																																		
	Check code	Sub-code																																																																																																																	
E19	E19	00: No. header unit 02: Two or more header units	I/F	Outdoor header unit quantity error	All stop	* There are multiple outdoor header units in one line * There is no outdoor header unit in one line	The outdoor unit connected with communication cable between indoor and outdoor (U1.U2) is the outdoor header unit * Check connection of communication line between indoor and outdoor * Check outdoor P.C. board (I/F) error																																																																																																												
E20	E20	01: Connection of outdoor unit from other line 02: Connection of indoor unit from other line	I/F	Other line unit connected during automatic address	All stop	Unit of other line was connected when indoor automatic address started	Separate the cable between lines U1/U2 - U3/U4 according to automatic address setup method in „Address setup”																																																																																																												
E23	E23		I/F	Communication sending error between outdoor units	All stop	Signal cannot be transmitted to other units for at least 30 seconds continuously	* Power supply to outdoor units * Cabling * Connect the outdoor PCBs * Outside PCB (I / F) * Terminator setting for communication between outdoor units																																																																																																												
E25	E25		I/F	Duplicated follower outdoor address	All stop	Outdoor addresses manually set up are duplicated	Note: Do not set outdoor addresses manually																																																																																																												
E26	E26	Address of outdoor unit from which signal is not received normally	I/F	Dropping out of outdoor unit	All stop	After a certain time without signal feedback from the outdoor unit [E26] is displayed	* Backup setting is used for outdoor units * Power supply outdoor unit * Cabling * Connect the external PCBs * Communication connectors of or defect in outdoor PCB (I / F)																																																																																																												
E28	E28	Detected outdoor unit No.	I/F	Error in follower outdoor unit	All stop	Header outdoor unit receives error code from the follower outdoor unit	* Check code is displayed on the follower outdoor unit. <Comfort functions> - When SW04 is pressed for more than one second while [E28] is displayed on 7-segment display of the header outdoor unit, the outdoor unit fan, which was shut down due to the error, turns on. - When SW04 and SW05 are pressed simultaneously, the fans of the normal outdoor units turn on. To stop fan(s), press only SW05.																																																																																																												
E31	E31	<table><tr><th></th><th colspan="3">A3-IPDU</th><th>Inverter</th><th>Sub</th></tr><tr><th></th><th>1</th><th>2</th><th>3</th><th>IPDU</th><th>MCU</th></tr><tr><td>01</td><td>0</td><td></td><td></td><td></td><td></td></tr><tr><td>02</td><td>0</td><td></td><td></td><td></td><td></td></tr><tr><td>03</td><td>0</td><td>0</td><td></td><td></td><td></td></tr><tr><td>04</td><td></td><td></td><td>0</td><td></td><td></td></tr><tr><td>05</td><td>0</td><td>0</td><td></td><td></td><td></td></tr><tr><td>06</td><td>0</td><td>0</td><td></td><td></td><td></td></tr><tr><td>07</td><td>0</td><td>0</td><td>0</td><td></td><td></td></tr><tr><td>08</td><td></td><td></td><td></td><td>0</td><td></td></tr><tr><td>09</td><td>0</td><td></td><td></td><td>0</td><td></td></tr><tr><td>0A</td><td>0</td><td></td><td></td><td>0</td><td></td></tr><tr><td>0B</td><td>0</td><td>0</td><td></td><td>0</td><td></td></tr><tr><td>0C</td><td></td><td>0</td><td>0</td><td></td><td></td></tr><tr><td>0D</td><td>0</td><td></td><td>0</td><td>0</td><td></td></tr><tr><td>0E</td><td>0</td><td>0</td><td>0</td><td></td><td></td></tr><tr><td>0F</td><td>0</td><td>0</td><td>0</td><td>0</td><td></td></tr><tr><td>80</td><td></td><td></td><td></td><td></td><td>0</td></tr></table> Symbol 0 signifies site of IPDU error		A3-IPDU			Inverter	Sub		1	2	3	IPDU	MCU	01	0					02	0					03	0	0				04			0			05	0	0				06	0	0				07	0	0	0			08				0		09	0			0		0A	0			0		0B	0	0		0		0C		0	0			0D	0		0	0		0E	0	0	0			0F	0	0	0	0		80					0	I/F	IPDU communication error Sub MCU communication error	All stop	Communication of each IPDU (P.C. board) in inverter box interrupted	* Check connection of communication connector and disconnection between IPDU and I/F P.C. board * Check outdoor P.C. board (I/F, IPDU, Fan IPDU) error * Check external noise
			A3-IPDU			Inverter	Sub																																																																																																												
	1	2	3	IPDU	MCU																																																																																																														
01	0																																																																																																																		
02	0																																																																																																																		
03	0	0																																																																																																																	
04			0																																																																																																																
05	0	0																																																																																																																	
06	0	0																																																																																																																	
07	0	0	0																																																																																																																
08				0																																																																																																															
09	0			0																																																																																																															
0A	0			0																																																																																																															
0B	0	0		0																																																																																																															
0C		0	0																																																																																																																
0D	0		0	0																																																																																																															
0E	0	0	0																																																																																																																
0F	0	0	0	0																																																																																																															
80					0																																																																																																														
		80		Communication error between MCU and sub MCU	All stop	Interrupted communication between MCU and sub MCU	* Operation of the power supply group (OFF for 60 seconds or more) * External I / F PCB failure																																																																																																												
F01			Indoor unit	Indoor TCJ sensor error	Corresponding unit only stops	* Resistance value of sensor is infinite or zero (Open/Short circuit)	* Check connection/cabling of TCJ sensor connector * Check characteristics of TCJ sensor resistance value * Check indoor P.C. board error																																																																																																												
F02			Indoor unit	Indoor TC2 sensor error	Corresponding unit only stops	* Resistance value of sensor is infinite or zero (Open/Short circuit)	* Check connection/cabling of TC2 sensor connector * Check characteristics of TC2 sensor resistance value * Check indoor P.C. board error																																																																																																												
F03			Indoor unit	Indoor TC1 Sensor error	Corresponding unit only stops	* Resistance value of sensor is infinite or zero (Open/Short circuit)	* Check connection/cabling of TC1 sensor connector * Check characteristics of TC1 sensor resistance value * Check indoor P.C. board error																																																																																																												

Check code			Detected position	Check code name	Status	Error detection condition	Check item (position)
Wired remote control	Outdoor 7-segment display						
	Check code	Sub-code					
F04	F04		I/F	TD1 sensor error	All stop	* Resistance value of sensor is infinite or zero (Open/ Short circuit)	* Check connection of TD1 sensor connector * Check characteristics of TD1 sensor resistance value * Check indoor P.C. board I/F error
F05	F05		I/F	TD2 sensor error	All stop	* Resistance value of sensor is infinite or zero (Open/ Short circuit)	* Check connection of TD2 sensor connector * Check characteristics of TD2 sensor resistance value * Check indoor P.C. board I/F error
F06	F06	01: TE1 sensor error 02: TE2 sensor error	I/F	TE1/TE2 sensor error	All stop	* Resistance value of sensor is infinite or zero (Open/ Short circuit)	* Check connection of TE1/TE2 sensor connector * Check characteristics of TE1/TE2 sensor resistance value * Check indoor P.C. board I/F error
F07	F07		I/F	TL sensor error	All stop	* Resistance value of sensor is infinite or zero (Open/ Short circuit)	* Check connection of TL sensor connector * Check characteristics of TL sensor resistance value * Check outdoor P.C. board (I/F) error
F08	F08		I/F	TO sensor error	All stop	* Resistance value of sensor is infinite or zero (Open/ Short circuit)	* Check connection of TO sensor connector * Check characteristics of TO sensor resistance value * Check outdoor P.C. board (I/F) error
F10			Indoor unit	Indoor TA, TSA sensor error	Corresponding unit only stops	* Resistance value of sensor is infinite or zero (Open/ Short circuit)	* Check connection/cabling of TA sensor connector * Check characteristics of TA sensor resistance value * Check indoor P.C. board error
F11			Indoor unit	Indoor TF sensor error	Corresponding unit only stops	* Resistance value of sensor is infinite or zero (Open/ Short circuit)	* Check connection/cabling of TF sensor connector * Check characteristics of TF sensor resistance value * Check indoor P.C. board error
F12	F12		I/F	TS1 sensor error	All stop	* Resistance value of sensor is infinite or zero (Open/ Short circuit)	* Check connection of TS1 sensor connector * Check characteristics of TS1 sensor resistance value * Check outdoor P.C. board (I/F) error
F13	F13	01: Compressor 1 02: Compressor 2 03: Compressor 3	IPDU	TH sensor error	All stop	* Resistance value of sensor is infinite or zero (Open/ Short circuit)	* IGBT built-in temperature sensor error ->Replace IPDU P.C. board
F15	F15		I/F	Outdoor temperature sensor miscabling (TE1, TL)	All stop	During operation of compressor in HEAT mode, the TE1 detection temperature was higher than that of TL by the specified value continued for 3 minutes or more	* Check installation of TE1 and TL sensor * Check characteristics of TE1 and TL sensor resistance value * Check outdoor P.C. board (I/F) error
F16	F16		I/F	Outdoor pressure sensor miscabling (Pd, Ps)	All stop	High pressure Pd sensor and low pressure Ps sensor were switched, or output voltages of both sensors are zero	* Check connection of high-pressure Pd sensor connector * Check connection of low-pressure Ps sensor connector * Check pressure sensor Pd and Ps error * Check outdoor P.C. board (I/F) error * Check compression error of compressor
F17	F17		Indoor unit	TOA sensor error	Corresponding unit only stops	* Resistance value of sensor is infinite or zero (Open/ Short circuit)	* Check connection/cabling of TOA sensor connector * Check characteristics of TOA sensor resistance value * Check indoor P.C. board error
F18	F18		Indoor unit	TRA sensor error	Corresponding unit only stops	* Resistance value of sensor is infinite or zero (Open/ Short circuit)	* Check connection/cabling of TRA sensor connector * Check characteristics of TRA sensor resistance value * Check indoor P.C. board error
F22	F22		I/F	TD3 sensor error	All stop	* Resistance value of sensor is infinite or zero (Open/ Short circuit)	* Check connection/cabling of TD3 sensor connector * Check characteristics of TD3 sensor resistance value * Check indoor P.C. board error
F23	F23		I/F	Ps sensor error	All stop	Output voltage of Ps sensor was zero	* Disconnection of Ps sensor and Pd sensor connectors * Check connection of Ps sensor connector * Check Ps sensor error * Check compression error of compressor * Check 4-way valve error * Check outdoor P.C. board (I/F) error * Check for defect in SV4, SV5 circuit
F24	F24		I/F	Pd sensor error	Pd sensor error	Output voltage of Pd sensor was zero (Sensor open-circuited) Pd >4.15MPa during stop of compressor	* Check connection of Pd sensor connector * Check Pd sensor error * Check outdoor P.C. board (I/F) error

Check code			Detected position	Check code name	Status	Error detection condition	Check item (position)
Wired remote control	Outdoor 7-segment display						
	Check code	Sub-code					
F29			Indoor unit	Other indoor error	Corresponding unit only stops	Indoor P.C. board did not operate normally	* Check indoor P.C. board error (EEPROM error)
F31	F31		I/F	Outdoor EEPROM error	All stop	Outdoor P.C. board (I/F) did not operate normally	* Check power supply voltage * Check power supply noise * Check outdoor P.C. board (I/F) error
H01	H01	01: Compressor 1 02: Compressor 2 03: Compressor 3	IPDU	Compressor breakdown	All stop	Inverter current detection circuit detected overcurrent and stopped	* Check power supply voltage (AC220-240V +/- 10%) * Check compressor error * Check cause of abnormal overloading * Check outdoor P.C. board (IPDU) error
H02	H02	01: Compressor 1 02: Compressor 2 03: Compressor 3	IPDU	Compressor error (lockup) MG-CTT error	All stop	Overcurrent was detected several seconds after start-up of inverter compressor	* Check compressor error * Check power supply voltage (AC380-10%, 415V+10%) * Check cable of compressor and phase-missing * Check connection of connectors/ terminals on IPDU P.C. board * Check conduction of case heater (Check for refrigerant entrapment inside compressor) * Check outdoor P.C. board (IPDU) error * Outdoor MG-CTT
H03	H03	01: Compressor 1 02: Compressor 2 03: Compressor 3	IPDU	Current detection circuit error	All stop	While header compressor stopped, current flowed more than the specified current and was detected	* Check cabling of current detection circuit system * Check outdoor P.C. board (IPDU) error
H05	H05		I/F	TD1 sensor miswiring (incomplete)	All stop	Discharge temperature of the compressor 1 (TD1) does not increase despite compressor being in operation	* Installation of TD1, TK1, TK2, TK3, TK4, TK5 sensor * Connection of TD1, TK1, TK2, TK3, TK4, TK5 sensor connection and wiring * Resistance characteristics of TD1 sensor * Error of outdoor PCB (I / F)
H06	H06		I/F	Low pressure protective operation	All stop	Low pressure Ps detected operation lower than 0.02MPa	* Check full opening of service valves (Gas and liquid side) * Check outdoor PMV clogging * Check SV2 circuit and SV4 circuit error * Check low-pressure Ps sensor error * Check indoor filter for clogging * Valve opening status of indoor PMV * Clogged refrigerant line * Problem outdoor fan (HEAT) * Lack of refrigerant * Clogged circuit of the auxiliary heat exchanger liquid side * 4-way valve error (Reversal error) * Miswiring of discharge / suction gas main pipe * Cooling / heating unit FS * The pipe connecting the discharge / suction gas supply to cooling / heating unit FS * Piping between cooling / heating FS unit and room * Miswiring of SVD / SVS valve and errors in mounting the coil * Open state of SVS valve * SV14 circuit error
H07	H07	Detected outdoor unit No. Display of center unit only	I/F	Low oil level protection	All stop	Compressor (operating) recognizes continuous state of low oil level for about 2 hours	<To examine all outdoor units in the corresponding line> * Equalizing tube service valve to confirm full opening * Connection and installation of TK1, TK2, TK3, TK4 and TK5 sensors * Resistance characteristics of TK1, TK2, TK3, TK4 and TK5 sensors * Gas or oil leak in the same line * Refrigerant entrapment inside compressor casing * Error in SV3A, SV3B, SV3C, SV3D, SV3E and SV3F valves * Blockage of oil return circuit from oil separator * Clogging of oil equalization circuit * SV6 circuit leakage
H08	H08	01: TK1 sensor error 02: TK2 sensor error 03: TK3 sensor error 04: TK4 sensor error 05: TK5 Sensor error	I/F	Error with temperature for oil level detection	All stop	Resistance value of sensor is infinite or zero (Open/Short)	* Check connection/cabling of TK1-TK5 sensors connector * Check characteristics of TK1-TK5 sensor resistance value * Check outdoor P.C. board error
H15	H15		I/F	Miswiring of TD2 sensor (incomplete)	All stop	Discharge temperature of (TD2) does not increase, even though the compressor 2 is in operation	* Installation of TD2, TK1, TK2, TK3 sensor * Connection of TD2, TK4, TK5 sensor connection and wiring * Resistance characteristics of TD2 sensor * Error of outdoor PCB (I / F)

Check code			Detected position	Check code name	Status	Error detection condition	Check item (position)
Wired remote control	Outdoor 7-segment display						
	Check code	Sub-code					
H16	H16	01: Error oil circuit TK1 02: Error oil circuit TK2 03: Error oil circuit TK3 04: Error oil circuit TK4 05: Error oil circuit TK5	I/F	Error oil level detection	All stop	No change in temperature at TK1, although compressor 1 has started	* Connection interruption of TK1 sensor * Resistance of TK1 sensor * Connection error of TD1, TD2, TD3, TK1, TK2, TK3, TK4 and TK5 sensor * Incorrect operation at SV3E or SV3F valve * Constipation in oil equalization circuit, capillary and incorrect operation when the check valve * Refrigerant containment in compressor
						No change in temperature at TK2, although compressor 2 has started	* Connection interruption of TK2 sensor * Resistance of TK2 sensor * Connection error of TD1, TD2, TD3, TK1, TK2, TK3, TK4 and TK5 sensor * Incorrect operation at SV3E or SV3F valve * Constipation in oil equalization circuit, capillary and incorrect operation when the check valve * Refrigerant containment in compressor
						No change in temperature at TK3, although compressor 3 has started	* Connection interruption of TK3 sensor * Resistance of TK3 sensor * Connection error of TD1, TD2, TD3, TK1, TK2, TK3, TK4 and TK5 sensor * Incorrect operation at SV3E or SV3F valve * Constipation in oil equalization circuit capillary and incorrect operation when the check valve * Refrigerant containment in compressor
						No change in temperature at TK4, although compressor 4 has started	* Connection interruption of TK4 sensor * Resistance of TK4 sensor * Connection error of TD1, TD2, TD3, TK1, TK2, TK3, TK4 and TK5 sensor * Incorrect operation at SV3E or SV3F valve * Constipation in oil equalization circuit capillary and incorrect operation when the check valve * Refrigerant containment in compressor
						No change in temperature at TK5, although compressor 5 has started. Or difference from other TK sensor changes in the specified range only over the specified period	* Connection interruption of TK5 sensor * Resistance of TK5 sensor * Connection error of TD1, TD2, TD3, TK1, TK2, TK3, TK4 and TK5 sensor * Incorrect operation at SV3E or SV3F valve * Constipation in oil equalization circuit capillary and incorrect operation when the check valve * Refrigerant containment in compressor
H25	H25		I/F	Miswiring of TD3 sensor (incomplete)	All stop	Discharge temperature of (TD3) does not increase, even though compressor 3 is in operation	* Installation of TD3, TK1, TK2, TK3, TK4, TK5 sensor * Connection of TD3, TK1, TK2, TK3, TK4, TK5 sensor connection and wiring * Resistance characteristics of TD3 sensor * Error outdoor PCB (I / F)
L02	L02		Indoor unit	Disagreement between outdoor unit models	Corresponding unit only stops	In case of different outdoor unit (not equivalent to air-air heat exchanger type)	* Check outdoor unit (Check whether the outdoor unit corresponds to air-to-air heat exchanger type or not)
L03			Indoor unit	Duplicated indoor header units	Corresponding unit only stops	There is more than one header unit in a group	* Check indoor addresses * Check the change of remote control connection (Group/Individual) after indoor address setup
L04	L04		I/F	Duplicated outdoor line address	All stop	Line address setup is duplicated against the outdoor unit in different refrigerant pipe system	* Check the line addresses
L05			I/F	Duplicated priority indoor units (as displayed on priority indoor unit)	All stop	More than one indoor unit has been set up as priority indoor unit	* Check display on priority indoor unit
L06	L06	No. of priority indoor units	I/F	Duplicated priority indoor unit (as displayed on indoor unit other than priority indoor unit)	All stop	More than one indoor unit has been set up as priority indoor unit	* Check display on priority indoor unit and outdoor unit
L07			Indoor unit	Connection of group control cable to stand-alone indoor unit	Corresponding unit only stops	There is at least one stand-alone indoor unit to which group control cable is connected	* Check indoor addresses
L08	L08		Indoor unit	Indoor group / address unset	Corresponding unit only stops	Address was not yet set up	* Check indoor address Note: After installation, this code is displayed when the power is turned on for the first time
L09			Indoor unit	Indoor capacity unset	Corresponding unit only stops	Indoor unit capacity was unset	Set up indoor capacity (DN=11)
L10	L10		I/F	Outdoor capacity unset	All stop	Jumper wire provided on P.C. board for servicing I/F P.C. board has not been removed as required for given model	* Check model setup on outdoor I/F P.C. board assy for service
L17	L17			Old model outdoor unit (prior to 4 series) has been conneted		Incompatibility with the outdoor unit	

Check code			Detected position	Check code name	Status	Error detection condition	Check item (position)																																																																																				
Wired remote control	Outdoor 7-segment display																																																																																										
	Check code	Sub-code																																																																																									
L18	L18			Flow box error		Request cooling and heating at the same time for several indoor units with only one flow box																																																																																					
L20			Indoor unit	Duplicated central control addresses	All stop	Duplicated central control addresses	* Check central control address																																																																																				
L28	L28		I/F	Too many outdoor units connected	All stop	There were more than 3 outdoor units	* Check No. of connected outdoor units (Max. 3 units per 1 system) * Check communication line between outdoor units * Check outdoor P.C. board (I/F) error																																																																																				
L29	L29	<table><tr><td></td><td colspan="3">A3-IPDU</td><td>Ventilator IPDU</td></tr><tr><td></td><td>1</td><td>2</td><td>3</td><td></td></tr><tr><td>01</td><td>0</td><td></td><td></td><td></td></tr><tr><td>02</td><td></td><td>0</td><td></td><td></td></tr><tr><td>03</td><td>0</td><td>0</td><td></td><td></td></tr><tr><td>04</td><td></td><td></td><td>0</td><td></td></tr><tr><td>05</td><td>0</td><td></td><td>0</td><td></td></tr><tr><td>06</td><td></td><td>0</td><td>0</td><td></td></tr><tr><td>07</td><td>0</td><td>0</td><td>0</td><td></td></tr><tr><td>08</td><td></td><td></td><td></td><td>0</td></tr><tr><td>09</td><td>0</td><td></td><td></td><td>0</td></tr><tr><td>0A</td><td></td><td>0</td><td></td><td>0</td></tr><tr><td>0B</td><td>0</td><td>0</td><td></td><td>0</td></tr><tr><td>0C</td><td></td><td></td><td>0</td><td>0</td></tr><tr><td>0D</td><td>0</td><td></td><td>0</td><td>0</td></tr><tr><td>0E</td><td></td><td>0</td><td>0</td><td>0</td></tr><tr><td>0F</td><td>0</td><td>0</td><td>0</td><td>0</td></tr></table> Symbol O signifies site of IPDU error		A3-IPDU			Ventilator IPDU		1	2	3		01	0				02		0			03	0	0			04			0		05	0		0		06		0	0		07	0	0	0		08				0	09	0			0	0A		0		0	0B	0	0		0	0C			0	0	0D	0		0	0	0E		0	0	0	0F	0	0	0	0	I/F	Error in No. of IPDUs	All stop	Insufficient number of IPDUs detected when power was turned on * Check model setup for outdoor I/F service P.C. board * Check connection of UART communication connector * Check A3-IPDU, fan IPDU and I/F P.C. board error Note: UART: Universal Asynchronous Receiver Transmitter
	A3-IPDU			Ventilator IPDU																																																																																							
	1	2	3																																																																																								
01	0																																																																																										
02		0																																																																																									
03	0	0																																																																																									
04			0																																																																																								
05	0		0																																																																																								
06		0	0																																																																																								
07	0	0	0																																																																																								
08				0																																																																																							
09	0			0																																																																																							
0A		0		0																																																																																							
0B	0	0		0																																																																																							
0C			0	0																																																																																							
0D	0		0	0																																																																																							
0E		0	0	0																																																																																							
0F	0	0	0	0																																																																																							
L30	L30	Detected indoor address	Indoor unit	External interlock in indoor unit	Corresponding unit only stops	Signal is present at external error input terminal (CN80) for 1 minute	Outside device is connected to connector (CN80): 1) Check external device error 2) Check indoor P.C. board Outside device is not connected to connector (CN80): 1) Check indoor P.C. board error																																																																																				
	L31		I/F	Extended IC (Intergrated Circuit) error	Operation continues	P.C. board (I/F) parts error	* Check outdoor (I/F) P.C. board																																																																																				
P01			Indoor unit	Indoor fan motor error	Corresponding unit only stops		* Check the lock of fan motor (AC fan) * Check cabling																																																																																				
P03	P03		I/F	Discharge temperature TD1 error	All stop	Discharge temperature (TD1) exceeds 115°C	* Service valves open (gas and liquid) * Clogged outdoor PMV (PMV1, 2, 4) * TD1 sensor resistance * Lack of refrigerant * Error 4-way valve * Leakage at SV4 circuit * Error SV4 circuit (wiring / installation SV41, SV42 or SV43) * Leakage at SV5 circuit * Leakage at SV6 circuit (clogged capillary, valve operation) * Pipe connection of main gas pipelines * Cooling / Heating FS: – SVD valve, leakage of SVS valve (SVDD valve, valve leakage SVSS) – Pipe connection of FS connection line (gas) – Combination of connections between FS and indoor unit – Miswiring between SVS and SVD valve																																																																																				

Check code			Detected position	Check code name	Status	Error detection condition	Check item (position)
Wired remote control	Outdoor 7-segment display						
	Check code	Sub-code					
P04	P04	01: Compressor 1 02: Compressor 2 03: Compressor 3	IPDU	Activation of high-pressure SW	All stop	High-pressure SW actuated	* Connection of high pressure SW connection * Error pressure sensor Pd * Service valves open (gas and liquid) * Error outdoor fan * Error outdoor fan motor * Clogging outdoor PMV (PMV1, 2, 4) * Heat exchanger clogging (Indoor/ Outdoor) * Short circuiting of outdoor suction/ discharge air flows * Error 4 -way valve * Circuit SV11 blocked (valve operation) * Valve of the hot gas line * Clogged SV2 circuit * Error outdoor PCB (I/F) * Error indoor fan (air flow rate is insufficient) * Error indoor PMV * Incorrect wiring between indoor and outdoor units * Error check valve hot gas line * Error gas balancing SV4 valve circuit * Error SV5 valve circuit * Refrigerant overcharging * Pipe connection of main gas pipelines * Constipation of auxiliary heat exchanger liquid end (PMV4 , checked valve) * FS unit: – Clogging of SVD valve and operation failure – Wiring inside FS unit (Wiring error SVD / SVS coil , etc.) – Check wiring between FS and indoor unit (Lost connection error, wiring)
P05	P05	00 01: Compressor 1 02: Compressor 2 03: Compressor 3	I/F	Detecting open phases / phase sequence Error inverter DC voltage (compressor) MG-CTT error	All stop	* Open phase is detected when power is turned on * Inverter DC voltage is too high (overvoltage) or too low (undervoltage)	* Error in outdoor PCB (I/F) * Wiring of outdoor power supply
P07	P07	01: Compressor 1 02: Compressor 2 03: Compressor 3	IPDU I/F	Heat sink overheat error	All stop	IGBT built-in temperature sensor (TH) is overheated	* Check power supply voltage * Check outdoor fan system error * Check clogging of heat sink cooling duct * Check IGBT and heat sink for thermal performance for faulty installation (e.g. mounting screws and thermal conductivity) * Check A3-IPDU error (IGBT built-in temperature sensor (TH) error)
P10	P10	Detected indoor address	Indoor unit	Indoor overflow error	All stop	* Float switch operates * Float switch circuit is open-circuited or disconnected at connector	* Check float switch connector * Check operation of drain pump * Check drain pump circuit * Check clogging of drain pipe * Check indoor P.C. board error
P12			Indoor unit	Indoor fan motor error	Corresponding unit only stops	* Motor speed measurements continuously deviate from target value * Over-current protection is activated	* Check connection of fan connector and wiring * Check fan motor error * Check indoor P.C. board error * Check influence of outside air control
P13	P13		I/F	Outdoor liquid backflow detection error	All stop	In cooling mode at high pressure is detected in follower unit that has been turned off. In heating mode, outdoor PMV1 or 2 continuously registers opening of 100p or less while under SH control	* Totally closed operation of outdoor PMV (1, 2, 4) * Error Pd and Ps sensor * Clogging gas balancing SV2 circuit * Balance pipe * Clogging SV3B circuit * Error 4-way valve * Error outdoor PCB (I/F) * Clogging capillary of oil separator return circuit * Leakage of check valve in discharge pipe convergent section * Error TS1, TS2 sensor (miswiring and installation)

Check code			Detected position	Check code name	Status	Error detection condition	Check item (position)
Wired remote control	Outdoor 7-segment display						
	Check code	Sub-code					
P15	P15	01: TS condition	I/F	Gas leak detection (TS1 condition)	All stop	Protective shutdown due to sustained suction temperature at or above judgment criterion for at least 10 minutes is repeated four times or more TS error judgement criterion: In cooling operation: 60°C In heating operation: 40°C	* Lack of refrigerant * Service valves open (gas and liquid) * Clogging of PMVs (PMV1, 2, 4) * TS1 sensor resistance characteristics * Error 4-way valve * Leakage SV4 circuit * Leakage SV5 circuit * Pipe connection of main pipes * Cooling / Heating FS – SVD valve, leakage of SVS valve (SVDD valve, valve leakage SVSS) – Connecting piping to FS unit Mispingip of (gas)
		02: TD condition	I/F	Gas leak detection (TD condition)	All stop	Protection shutdown due to sustained discharge temperature (TD1, TD2 or TD3) at or above 108 °C for at least 10 minutes is repeated four times or more	* Lack of refrigerant * Clogging of PMVs (PMV1, 2, 4) * Resistance characteristics of TD1, TD2and TD3 sensor * Clogging filter * Clogging pipes * Error SV4 circuit (leakage, coil installation) * Pipe connection of main gas pipes * Cooling / Heating FS – SVD valve, leakage of SVS valve (SVDD valve, valve leakage SVSS) – Pipe connection of FS connection line (gas) – Wiring and connection of connetors between FS and indoor unit – Miswiring of SVS/SVD valve
P17	P17		I/F	Discharge temperature TD2 error	All stop	Discharge temperature (TD2) exceeds 115°C	* Service valves open (gas and liquid) * Clogging outdoor PMVs (PMV1, 2, 4) * TD2 sensor resistance characteristics * Error 4-way valve * Leakage SV4 circuit * Error SV4 circuit (wiring or installation error with SV41, SV42 and SV43) * Leakage SV5 valve circuit * Error SV6 circuit (clogging, valve operation) * Pipe connection of main gas pipes * Cooling / Heating FS – SVD valve, leakage of SVS valve (SVDD valve, valve leakage SVSS) – Pipe connection of FS connecting line (gas) – Wiring between FS unit and indoor unit, connection of connectors –Miswiring between SVS/SVD valve
P18	P18		I/F	Discharge temperature TD3 error	All stop	Discharge temperature (TD3) exceeds 115°C	* Service valves open (gas and liquid) * Clogging outdoor PMVs (PMV1, 2, 4) * Resistance characteristics TD3 sensor * Error 4-way valve * Leakage SV4 circuit * Error SV4 circuit (wiring or installation error involving SV41, SV42 and SV43) * Leakage SV5 valve circuit * Error SV6 circuit (clogging, valve operation) * Pipe connection of main gas pipes * Cooling / Heating FS – SVD valve, leakage of SVS valve (SVDD valve, valve leakage SVSS) – Pipe connection of FS connecting line (gas) – Wiring between FS unti and indoor unit, connection of connectors – Miswiring between SVS/SVD valve

Check code			Detected position	Check code name	Status	Error detection condition	Check item (position)
Wired remote control	Outdoor 7-segment display						
	Check code	Sub-code					
P19	P19	Detected outdoor unit No. * Display only on the header unit	I/F	4-way valve operation error	All stop	When abnormal refrigerating cycle data was detected during heating operation	* It is necessary to check all outdoor units in the identical refrigerant line * Error 4-way valve * Coil defect in 4-way valve and connection * Clogging in 4-way valve capillary * Resistance characteristics of TS1/TE1 sensor * Output voltage characteristics of Pd, Ps pressure sensor * Miswiring TE1 and TL sensor * Cooling / Heating FS: – SVD valve, leakage of SVS valve (SVDD valve, valve leakage SVSS) – Pipe connection of FS connection line (gas) – Error SV14 valve body (in heating mode) – Error SV14 valve coil, connector connection (in heating mode)
P20	P20		I/F	High pressure protective operation	All stop	Pd sensor detects pressure equal to or greater than 3.6MPa	* Error Pd pressure sensor * Service valves open (gas and liquid) * Error outdoor fan * Error outdoor fan motor * Blocking outdoor PMV (PMV 1, 2 , 4) * Clogging indoor / outdoor heat exchanger * Short circuiting of outdoor suction/ discharge air flows * Clogging SV2 circuit * Error 4 -way valve * Error outdoor PCB (I/F) * Error indoor fan (air flow reduction) * Opening status indoor PMV * Miswiring indoor / outdoor units * Error check valve discharge pipe * Error gas balancingSV4 valve circuit * Mispiping of gas main pipes * Discharge gas pipe checked valve operation error * Error SV11 valve circuit (clogging, OFF at one side only) * Clogging of circuit at auxiliary heat exchanger liquid side (miswiring, disconnection, forget wiring) * Cooling / Heating FS: – Clogging SVD valve , check operation error – Wiring in FS (miswiring SVD / SVS coil etc.) – Check wiring between FS and inside of room (miswiring , disconnection, wiring forgotten) * Error SV5 valve circuit * Refrigerant overcharging

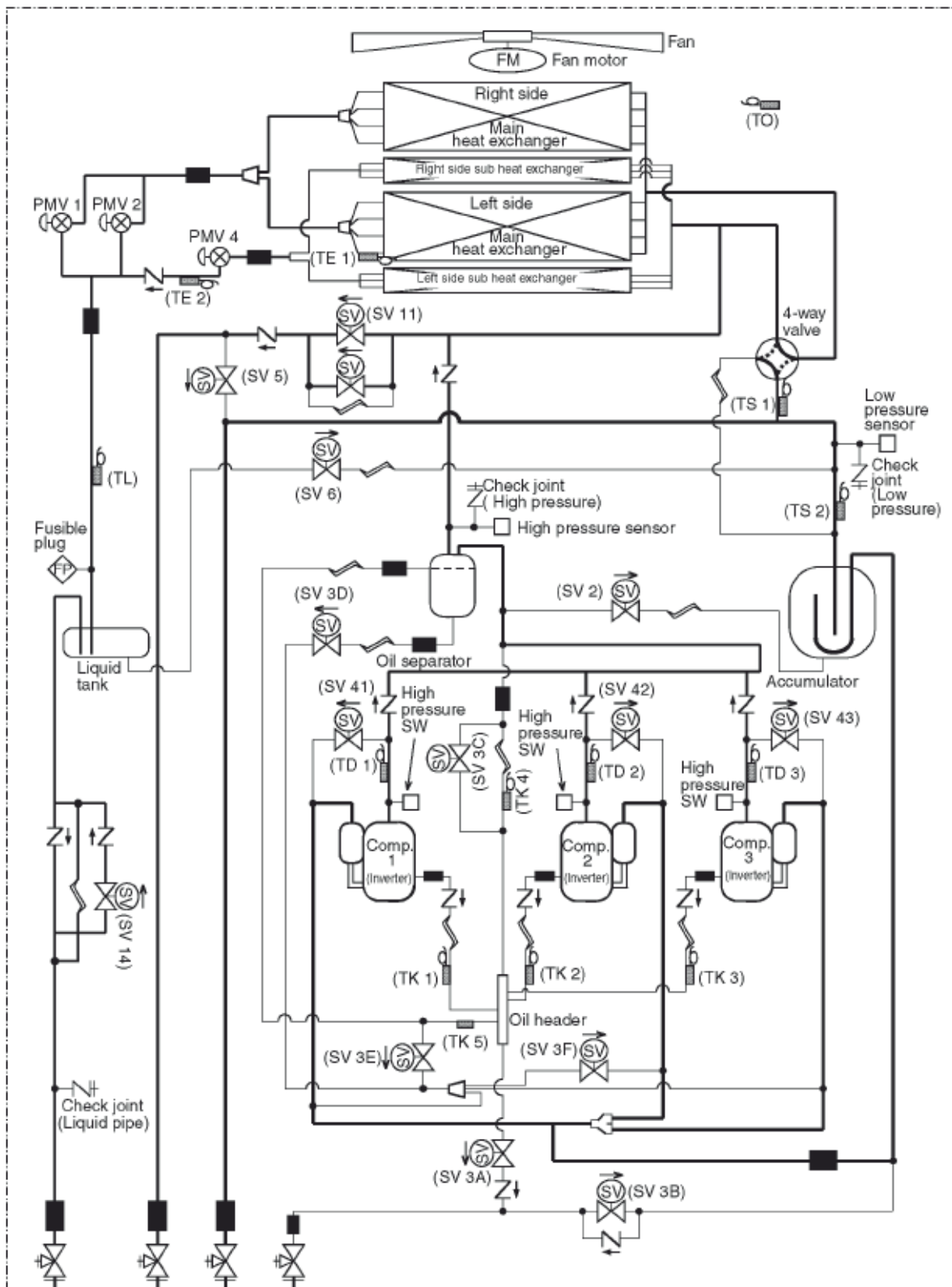
Check code			Detected position	Check code name	Status	Error detection condition	Check item (position)
Wired remote control	Outdoor 7-segment display						
	Check code	Sub-code					
P22	P22	0*: IGBT circuit 1*: Error position detecting circuit 3*: Motor lockup 4*: Error motor current detection C*: Error TH sensor temperature D*: TH sensor error E*: Error inverter DC voltage (outdoor fan) Note: Although letters 0 to F appear at locations indicated by "*", please ignore them	IPDU	Outdoor fan IPDU error	All stop	(Sub code: 0*) Fan IPDU overcurrent protection circuit Status that current flows over fixed amount when the fan is turned on	* Check fan motor error * Check fan IPDU error
					All stop	(Sub code: 1*) Fan IPDU position detective circuit Position detection was not normally performed	* Check fan motor error * Connection to fan motor connector * Check fan IPDU error
					All stop	(Sub code: 3*) External elements by gust, obstacles, etc. The speed estimation is not performed correctly	* Check fan motor error * Check fan IPDU error
					All stop	(Sub code: 4*) Fan IPDU overcurrent protection circuit Status that current flows over a fixed amount when fan is in operation	* Check fan motor error * Connection to fan motor connector * Check fan IPDU error
					All stop	(Sub code: C*) Temperature of TH sensor over the fixed value during fan is in operation	* Check fan motor error * Check fan IPDU error
					All stop	(Sub code: D*) The resistance value of the sensor is unlimited or 0 (at open / short circuit)	* Check fan IPDU error
					All stop	(Sub code: E*) Protection for fan IPDU DC voltage DC voltage is above or below a fixed value	* Power supply voltage * Check fan IPDU error * Connection to fan IPDU connector
P26	P26	01: Compressor 1 02: Compressor 2 03: Compressor 3	IPDU	G-TR short circuit protection	All stop	Instantaneous overcurrent was detected when compressor started	* Check connector connection and wiring on A3-IPDU P.C. board * Check compressor error (layer shortcircuit) * Check outdoor P.C. board (A3-IPDU) error
P29	P29	01: Compressor 1 02: Compressor 2 03: Compressor 3	IPDU	Compressor position detection circuit error	All stop	Position detection is not going on normally	* Check connector connection and wiring * Check compressor layer short circuit * Check P.C. board (A3-IPDU) error
P31			Indoor unit	Other indoor error (Group follower unit error)	Corresponding unit only stops	E07/L07/L03/L08 was detected when other indoor unit in the group was defective	* Check indoor P.C. board

Error detected by TCC-LINK central control unit

Check code			Detected position	Check code name	Status	Error detection condition	Check item (position)
Wired remote control	Outdoor 7-segment display						
	Check code	Sub-code					
C05			TCC-LINK	TCC-Link central control device transmission error	Operation continued	Signal is not transmitted from central control device	* Check central control device error * Check communication line error of central control * Check setup of terminator resistor
C06				TCC-Link central control device receiving error	Operation continued	Signal is not received from central control device	* Check central control device error * Check communication line error of central control * Check setup of terminator resistor * Check the power supply for units at other end of central control communication line * Check P.C. board error of the connected device
C12			General purpose unit I/F	Blanket alarm for general-purpose device control interface	Operation continued	Error signal is input to control interface for general-purpose devices	* Check error input
P30	Differs according to error contents of the alarm		TCC-Link	Follower unit error of group control	Operation continued	Error occurs in follower unit under group control. ([P30] is displayed on central control remote control)	* Check the check code of the unit with alarm
	L20 is displayed			Duplicate central control address	Operation continued	Central control addresses were duplicated	* Check the address setup

Outdoor unit (12, 14 PS)

Type: MMY-MAP1204*, MMY-MAP1404*



Symbol							
	Solenoid valve	Capillary tube	Check valve	Check joint	Strainer	Tempe. sensor	Distributor

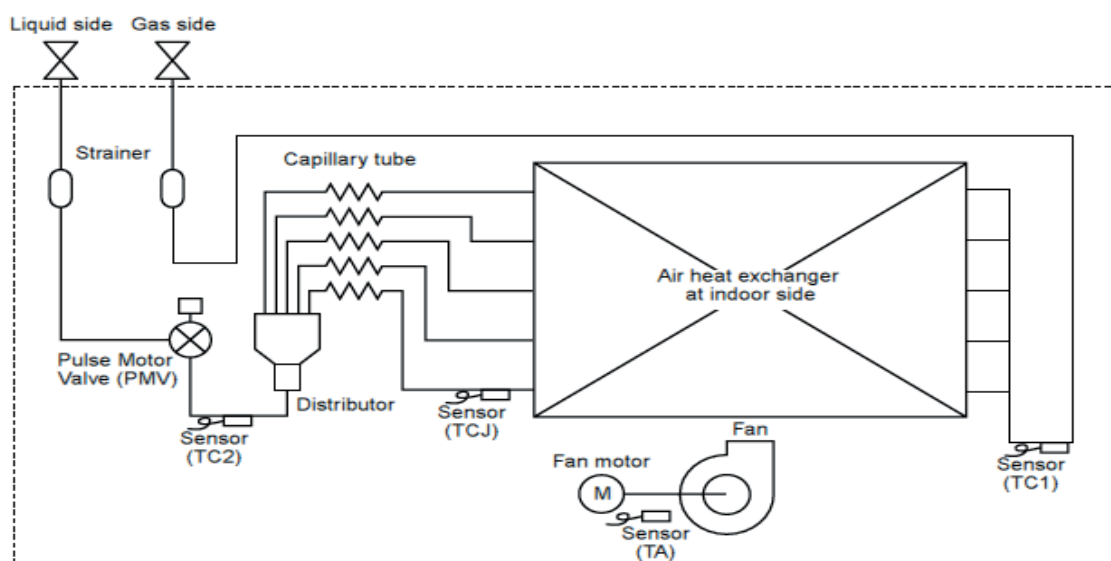
SHRM – SCHEMATIC REPRESENTATION OF REFRIGERANT LINES AND SENSOR POSITION

Explanation of Functional Parts

Functional part name		Functional outline
Solenoid valve	SV3A	(Connector CN321: White) Supplies oil reserved in the oil header during ON time
	SV3B	(Connector CN321: White) Returns oil supplied in the balance pipe to the compressor
	SV3C	(Connector CN321: White) Pressurizes oil reserved in the oil header during ON time
	SV3D	(Connector CN322: White) 1) Reserves oil in the oil separator during OFF time 2) Returns oil reserved in the oil separator to the compressor during ON time
	SV3E	(Connector CN322: White) Turns on during operation and balances oil between compressors
	SV3F	(Connector CN323: White) Controls oil level balances between compressors
	SV2	(Hot gas bypass) (Connector CN311: White) 1) Low pressure release function 2) High pressure release function 3) Gas balance function during stop time
	SV41 SV42 SV43	(Start compensation valve of compressor) (SV41 Connector CN312: Blue, SV42 Connector CN312: Blue, SV43 Connector CN313: Red) 1) For gas balance start 2) High pressure release function 3) Low pressure release function
	SV5	(Connector CN314: White) 1) Gas balance function at defrost operation when the number of heating indoor units increased/decreased 2) Gas recovery function in the discharge gas pipes when the single cooling operation
	SV6	(Connector CN315: White) 1) Liquid bypass function for discharge temperature release (cooling bypass function) 2) Refrigerant recovery function of the stopped follower units
	SV11	(Connector CN319: White) To block discharge gas pipe (at single cooling or defrost operation)
	SV14	(Connector CN336: Yellow) To block the liquid line
4-way valve		(Connector CN317: Blue) 1) Cooling/heating exchange 2) Reverse defrost 3) Exchange of main heat exchanger with auxiliary heat exchanger
Pulse motor valve PMV4	PMV1, 2	(Connector CN300, 301: White) 1) Super heat control function at single heating, collective heating operation. 2) Under cool control function in single cooling operation.
	PMV4	(Connector CN303: Red) 1) Controls flow volume of the auxiliary heat exchanger at collective operation 2) Preventive function for high-pressure rising in single heating operation
Oil separator		1) Prevention for rapid decreasing of oil (Decreases oil flowing to the cycle) 2) Reserve function of surplus oil
Temperature Sensor	TD1, TD2, TD3	(TD1 Connector CN502: White, TD2 Connector CN503: Pink, TD3 Connector CN504: Blue) Protection of compressor discharge temperature
	TS1	(Connector CN505: White) Controls PMV1, 2 super heat in single heating / collective heating
	TS2	(Connector CN506: Black) 1) Controls indoor oil recovery at single cooling, collective cooling operation 2) Detects overheat of the cycle
	TE1	(Connector CN520: Green) 1) Controls defrost in single / collective heating operation 2) Controls outdoor fan in single / collective heating operation
	TE2	(Connector CN521: Red) Controls flow volume of the auxiliary heat exchanger at collective operation
	TK1, TK2 TK3, TK4 TK5	(TK1 Connector CN531: Black, TK2 Connector CN532: Green, TK3 Connector CN533: Red, TK4 Connector CN534: Yellow, TK5 Connector CN535: Red) Judges oil level of the compressor
	TL	(Connector CN523: White) Detects under cool at single operation / collective cooling operation
	TO	(Connector CN507: Yellow) Detects outside temperature
Pressure sensor	High pressure sensor	(Connector CN501: Red) 1) Detects high pressure and controls compressor capacity 2) Detects high pressure at single operation / collective cooling operation, and controls the fan in low ambient cooling operation 3) Detects under cool in indoor unit at single operation / collective heating operation 4) Controls rps outdoor fan at collective cooling operation
	Low pressure sensor	(Connector CN500: White) 1) Detects low pressure at single / collective cooling operation and controls compressor capacity 2) Detects low pressure at single / collective heating operation and controls the super heat

Functional part name		Functional outline
Heater	Compressor case heater	(Compressor 1 Connector CN331: White, Compressor 2 Connector CN332: Blue, Compressor 3 Connector CN333: Black) Prevents liquid accumulation to compressor.
	Accumulator case heater	(Connector CN334: Red) Prevents liquid accumulation to accumulator.
Balance pipe		Oil balancing in each outdoor unit.

Indoor unit

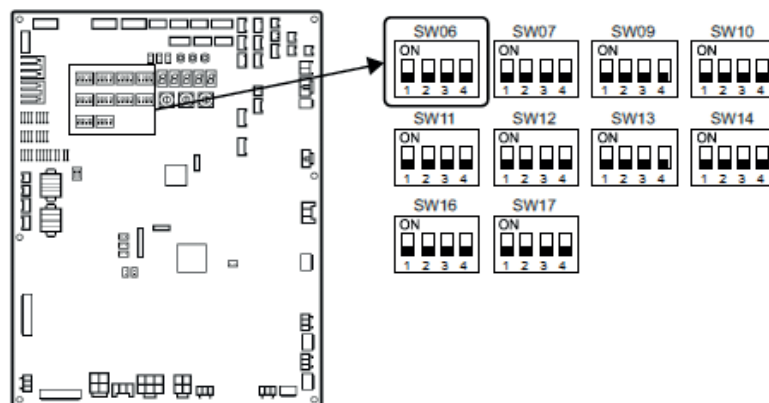


CAUTION: MMU-AP0071YH, AP0121YH type air conditioners have no TC2 sensor.

Functional part name		Functional outline
Pulse Motor Valve		(Connector CN082 (6P): Blue) 1) Controls super heat in cooling operation 2) Controls under cool in heating operation 3) Recovers refrigerant oil in cooling operation 4) Recovers refrigerant oil in heating operation
Temperature sensor	TA	(Connector CN104 (2P): Yellow) Detects indoor suction temperature
	TC1	(Connector CN100 (3P): Brown) Controls PMV super heat in cooling operation
	TC2	(Connector CN101 (2P): Black) Controls PMV under cool in heating operation
	TCJ	(Connector CN102 (2P): Red) 1) Controls PMV super heat in cooling operation 2) [MMU-AP007YH to AP012YH only] Controls PMV under cool in heating operation

Disable Compressor (Backup Operation)

1. Turn off the power supply to all the outdoor units connected to the system.
2. Set the DIP switches of SW06, provided on the interface P.C. board of the outdoor unit with the faulty compressor, as shown in the table below.



<i>Three-compressor model</i>	<i>SW06</i>			
	<i>Bit 1</i>	<i>Bit 2</i>	<i>Bit 3</i>	<i>Bit 4</i>
Factory default setting	OFF	OFF	OFF	OFF
When compressor No. 1 (front left) is faulty	ON	OFF	OFF	OFF
When compressor No. 2 (front center) is faulty	OFF	ON	OFF	OFF
When compressor No. 3 (front right) is faulty	OFF	OFF	ON	OFF

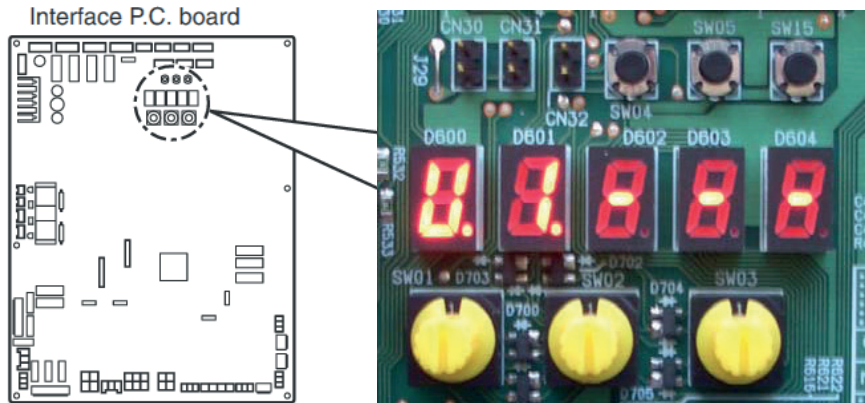
<i>Two-compressor model</i>	<i>SW06</i>			
	<i>Bit 1</i>	<i>Bit 2</i>	<i>Bit 3</i>	<i>Bit 4</i>
Factory default setting	OFF	OFF	OFF	OFF
When compressor No. 1 (front left) is faulty	ON	OFF	OFF	OFF
When compressor No. 2 (front right) is faulty	OFF	ON	OFF	OFF

3. Turn on the power supply to all the units connected to the system.

Codes 7-segment display

MINI SMMS – SMMSi - SHRMi

The interface control board has a 7-segment LED display to check the operating state or specific programming information on the outdoor unit. By adjusting the Rotary Switch SW01/SW02/SW03 of the numerical value of 1-16 leads to the different parameter lists.



SW01	SW02	SW03	
1	1	1	Press SW15 > for 5 seconds = automatic address setting
1	1	1	Error data
1	2	3	System capacity in HP
1	3	3	Number of outdoor units
1	4	3	A: Number of indoor units B: Number of indoor units connected in cooling mode
1	5	3	A: Number of indoor units B: Number of indoor units connected in heating mode
2	1	2	Clear System / indoor unit / group address (DN 12, 13, 14): Confirm that the 7-segment display indicates "A.d.buS" and turn SW04 ON for more than 5 seconds
2	2	2	Clear central control address (DN 03): "A.d.nEt" > and turn SW04 ON for more than 5 seconds.
2	3	1	Open all PMV of indoor units Display: „P“ „FF“ > Press SW04 for 5 seconds After 2 minutes all PMV close automatically
2	5	1	Display: „C“ Cooling test operation > press SW04 5 seconds = „-C“
2	6	1	Display: „H“ Heating test operation > press SW04 5 seconds= „-H“
2	11	1	Display: „rd FF“ Pump-down function (refrigerant vacuum)> press SW04 5 seconds
2	16	1	Clear error: „Er“ > press SW04 5 seconds > „CL“=cleared
2	14	2	Add new indoor units to existing refrigeration cycle : Turn off power supply of existing units -> relay connector U1/U2 and U3/U4 separate on main outdoor unit -> Turn on power supply again -> set 2/14/2 Display: „In. At“ > press SW04 5 seconds -> power off -> Reconnect relay connectors U1/U2 and U3/U4 -> power on -> operation ok

Sensor data on the outdoor unit to read out of VRF systems

Data display from the outdoor unit Mini-SMMS

SW01	SW02	SW03	Display detail					
1	1	2	Pd pressure data		Pd pressure (MPaG) is displayed in decimal format (MPaG: 1/10 scale kg / cm ² G)		A	B
					P d.	* . **		
	2		Ps pressure data		Ps pressure (MPaG) is displayed in decimal format		P S.	* . **
	3		PL pressure reversal data		Assumed pressure of the liquid line (MPaG) is displayed in decimal format		P L.	* . **
	4		TD sensor data		Temperature sensor probe (° C) is displayed in decimal format • Icon and data are alternating, 1 and 3 seconds, displayed • Data is displayed in [*] • Negative-value data are displayed: [- ****]	sign icon	t d	
			data	*		** .		
	5		TS sensor data			sign icon	t S	
			data	*		** . *		
	6		TE sensor data			sign icon	t E	
			data	*		** . *		
	7		TL sensor data			sign icon	t L	
			data	*		** . *		
	8		TO sensor data			sign icon	t O	
			data					
	9				sign icon			
			data	*	** . *			
	10				sign icon			
			data	*	** . *			
	11				sign icon			
			data	*	** . *			
	12				sign icon			
			data	*	** . *			
	13				sign icon			
			data	*	** . *			
	14				sign icon			
			data	*	** . *			
15			A					
		B						
16			A					
		B						



Pd = High pressure sensor
 Ps = Low pressure sensor
 TD = Hot gas sensor
 TS = controls overheating in heating mode
 TE = controls defrosting and outdoor fan in heating mode
 TL = supercooling sensor in cooling mode
 TO = Outdoor temperature sensor

Data display from the outdoor unit SMMSi

SW01	SW02	SW03	Display detail			
1	1	2	Pd pressure data	Pd pressure (MPaG) is displayed in decimal format (MPaG: about 10 times magnitude kg / cm ² G)	A	B
	2		Ps pressure data	Ps pressure (MPaG) is displayed in decimal format	PS.	*. **
	3		PL pressure reversal data	Converted PL pressure (MPaG) is displayed in decimal format	PL.	*. **
	4		TD1 sensor data	Temperature sensor probe (°C) is displayed in decimal format • Icon and data are alternating, 1 and 3 seconds, displayed • Negative-value data are displayed: [- *] [***]	sign icon	t d
					data	* . **
	5		TD2 sensor data		sign icon	t d
					data	* . **
	6		TD3 sensor data		sign icon	t d
					data	* . **
	7		TS sensor data		sign icon	t S
					data	* . **
	8		TE1 sensor data		sign icon	t E
					data	* . **
	9		TE2 sensor data		sign icon	t E
					data	* . **
	10		TL sensor data		sign icon	t L
					data	* . **
	11		TO sensor data		sign icon	t o
					data	* . **
	12		TK1 sensor data		sign icon	F 1
					data	* . **
	13		TK2 sensor data		sign icon	F 2
					data	* . **
	14		TK3 sensor data		sign icon	F 3
					data	* . **
	15		TK4 sensor data		sign icon	F 4
					data	* . **
	16		TK5 sensor data		sign icon	F 5
					data	* . **



- Pd = High pressure sensor
- Ps = Low pressure sensor
- TD 1-3 = Hot gas sensor compressor 1-3
- TS = controls overheating in heating mode
- TE1 = controls defrosting and outdoor fan in heating mode
- TE2 = controls exchange function between primary and secondary exchanger
- TL = Supercooling sensor in cooling mode
- TO = Outdoor temperature sensor
- TK 1-5 = Oil level check sensors of compressors

Data display from the outdoor unit SHRMi

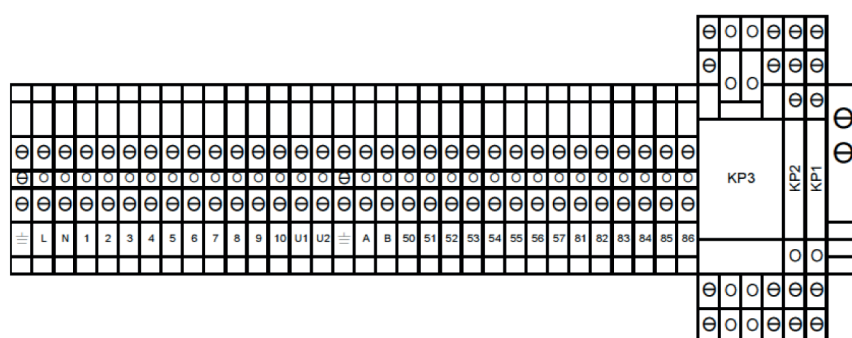
SW01	SW02	SW03	Display detail				
1	1	2	Pd pressure data	Pd pressure (MPaG) is displayed in decimal format (MPaG: about 10 times magnitude kg / cm ² G)	A	B	
				P d.	* . **		
	2		Ps pressure data	Ps pressure (MPaG) is displayed in decimal format	PS.	* . **	
	3		PL pressure reversal data	Converted PL pressure (MPaG) is displayed in decimal format	PL.	* . **	
	4		TD1 sensor data	Temperature sensor probe (°C) is displayed in decimal format • Icon and data are alternating, 1 and 3 seconds, displayed • Negative-value data are displayed: [- *] [***]	sign icon	t d	1
					data	*	** . *
	5		TD2 sensor data		sign icon	t d	2
					data	*	** . *
	6		TD3 sensor data		sign icon	t d	3
					data	*	** . *
	7		TS1sensor data		sign icon	t S	1
					data	*	** . *
	8		TS2 sensor data		sign icon	t S	2
					data	*	** . *
	9		TE1 sensor data		sign icon	t E	1
					data	*	** . *
	10		TE2 sensor data		sign icon	t E	2
					data	*	** . *
	11		TL sensor data		sign icon	t L	
					data	*	** . *
	12		TO sensor data		sign icon	t o	
		data	*		** . *		

SW01	SW02	SW03	Display detail				
1	1	5	TK1 sensor data	Temperature sensor probe (°C) is displayed in decimal format • Icon and data are alternating, 1 and 3 seconds, displayed • Negative-value data are displayed: [- *] [***]		A	B
					sign icon	F 1	
	2		TK2 sensor data		data	*	** . *
					sign icon	F 2	
	3		TK3 sensor data		data	*	** . *
					sign icon	F 3	
	4		TK4 sensor data		data	*	** . *
					sign icon	F 4	
	5		TK5 sensor data		data	*	** . *
					sign icon	F 5	
					data	*	** . *



- Pd = High pressure sensor
 Ps = Low pressure sensor
 TD 1-3 = Hot gas sensor compressor 1-3
 TS1 = controls overheating in heating mode
 TS2 = 1) controls oil return from the outdoor unit in cooling mode
 2) detects overheating of the refrigerant circuit
 TE1 = controls defrosting and outdoor fan in heating mode
 TE2 = controls exchange function between primary and secondary exchanger
 TL = Supercooling sensor in cooling mode
 TO = Outdoor temperature sensor
 TK 1-5 = Oil level check sensors of compressors

ELECTRICAL CONNECTIONS of VRF DX-Kit (MM-DXC010 and MM-DXC012)



Supply

Terminal $\frac{\text{L}}{\text{N}}$:

The controller should be connected to the main power supply by means of a switch with a contact separation of at least 3mm.

External on/off

Terminal 1/2:

On/off over an external dry contact. If the contact is closed, the system switches on. If the contact is opened, the system switches off. If the system is switched using an external contact, then switching on/off using the remote control is still possible.

Fan Error input

Terminal 3/4:

An AHU fan operation monitor (supplied locally), could be attached at this dry contact terminal (for instance, differential pressure monitor, vane relay or similar). A closed contact generates the error message L30 (Rating 12VDC).

Alarm signal from the ventilation kit

Alarm signal from the ventilation kit (optional)

Terminal 5/6:

If there is an error at the ventilation kit, this is indicated with a dry normally open contact at this terminal (Contact Rating 250VAC 8A).

Operation notification from the ventilation kit

Terminal 7/8:

During operation of the ventilation kit the dry contact between 7/8 is closed (Contact Rating 250VAC 8A).

External safety contact

Terminal 9/10:

If this contact is open for more than 1 minute, the error message P10 is generated and the ventilation kit switches off automatically (Rating 12VDC). This contact can, for instance, be used with an on-site frost protection monitor.

If the External safety contact is not used, then the contact should be bridged.

Inside device BUS line (U1/U2/ $\frac{\text{A}}{\text{B}}$)

Terminal U1/U2/ $\frac{\text{A}}{\text{B}}$:

Details regarding the wiring of the inside device BUS can be found in the installation manual of the VRF outdoor unit.

Remote control BUS line (A/B)

Terminal A/B:

At these terminals a second wired remote control can be optionally attached. The AB connection is used for GROUP control.

Temperature sensors

The refrigerant temperature sensors are inserted into the brazed sensor holders (There are 2 sizes of refrigerant sensors: Ø4 & Ø6) and secured using the supplied FIX-PLATE (There are 2 sizes of FIX-PLATE).

The sensor cables are to be attached as follows:

Terminal 50/51	TC1 Sensor Ø4 (BRN)	Terminal 54/55	TCJ Sensor Ø6 (RED)
Terminal 52/53	TC2 Sensor Ø6 (BLK)	Terminal 56/57	TA Resin Bulb Sensor / P-CLAMP (YEL)

The sensor cables cannot be extended, they are supplied at the maximum permissible length of 5m.

Pulse modulation valve (PMV)

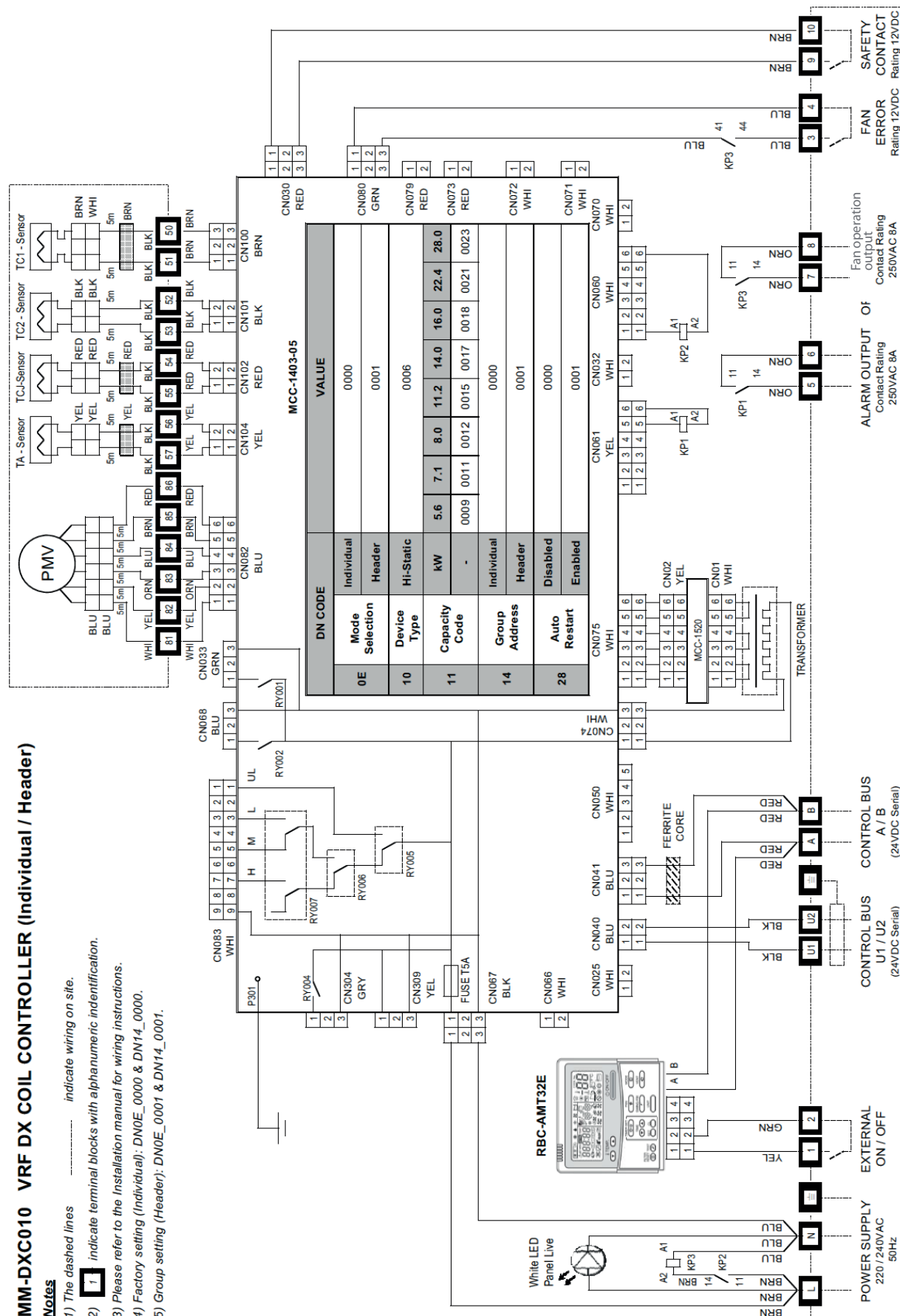
The connecting cable of the PMV is to be attached as follows:

Terminal 81	WHITE	Terminal 84	BLUE
Terminal 82	YELLOW	Terminal 85	BROWN
Terminal 83	ORANGE	Terminal 86	RED

Wiring diagram MM-DXC010

Notes

- 1) The dashed lines indicate wiring on site.
- 2)  indicate terminal blocks with alphanumeric identification.
- 3) Please refer to the Installation manual for wiring instructions.
- 4) Factory setting (Individual): DNOE_0000 & DN14_0000.
- 5) Group setting (Header): DNOE_0007 & DN14_0001.



MM-DXC012 VRF DX COIL CONTROLLER (Follower)

1) The dashed lines ----- indicate wiring on site.

- 1) 1 indicate terminal blocks with alphanumeric identification.
- 2)
- 3) Please refer to the Installation manual for wiring instructions.
- 4) Factory setting (Follower): DN0E_0001 & DN14_0002.



Interface Configuration of VRF-DX-KIT

The circuit board of the DX controller is preconfigured during production. However DN 11 (Capacity Code) needs to be set by the installer. If the MM-DXC010 is used as a header then DN 0E and DN 14 also need to be changed. (see DN-Codes page 71 - 75).

<i>MODEL</i>	<i>MM-DXC010 MM-DXV080</i>			<i>MM-DXC010 MM-DXV140</i>			<i>MM-DXC010 MM-DXV280</i>	
Mode Selection (DN 0E)	0000* Individual			0000* Individual			0000* Individual	
	0001 Header			0001 Header			0001 Header	
Unit type (DN 10)	0006*			0006*			0006*	
Cooling Capacity (kW)	5,6	7,1	8,0	11,2	14,0	16,0	22,4	28,0
Capacity Code (DN 11) **	0009	0011	0012	0015	0017	0018	0021	0023
Group address (DN 14)	0000* Individual			0000* Individual			0000* Individual	
	0001 Header			0001 Header			0001 Header	
Auto Restart (DN 28)	0000* Disabled			0000* Disabled			0000* Disabled	
	0001 Enabled			0001 Enabled			0001 Enabled	

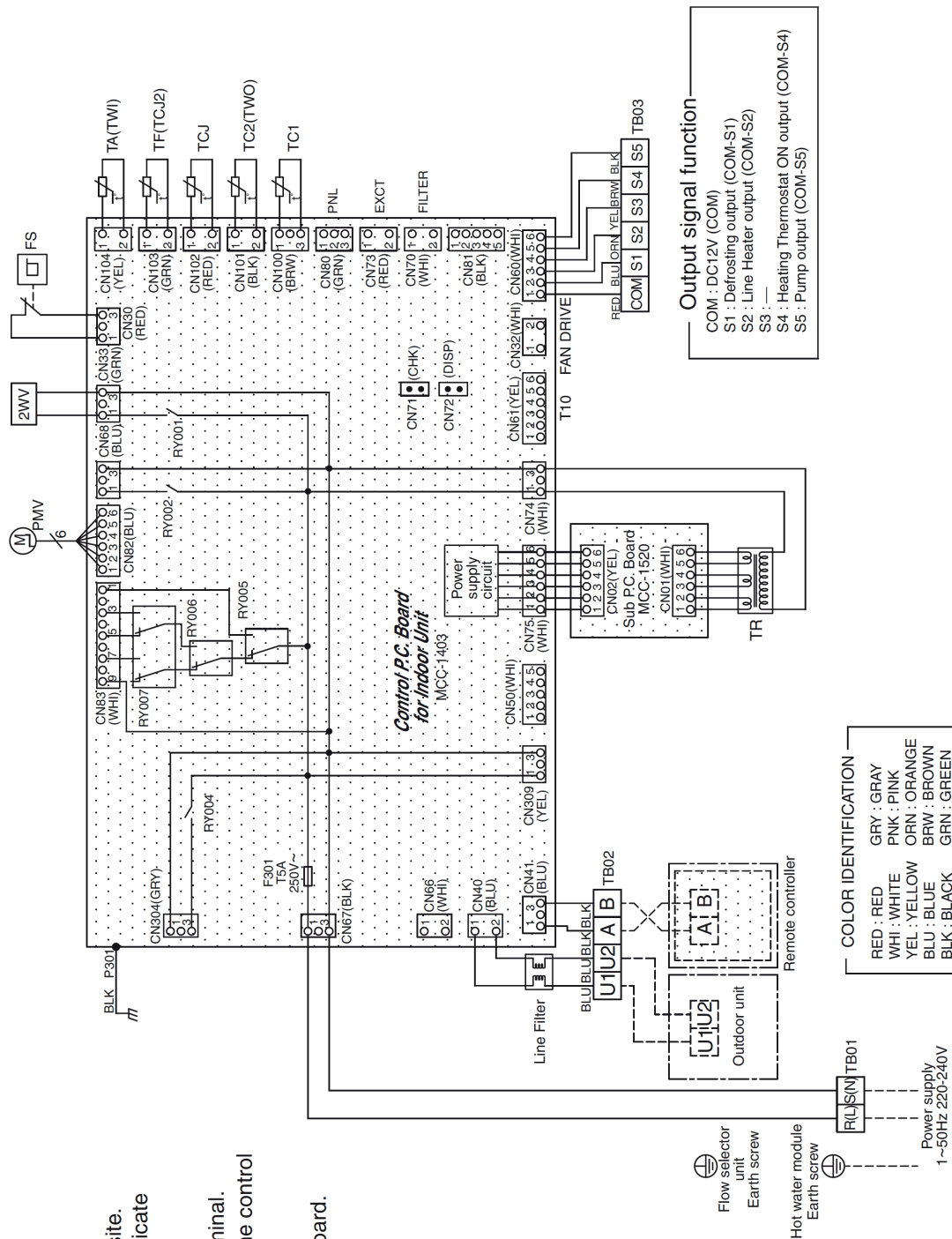
<i>MODEL</i>	<i>MM-DXC012 MM-DXV080</i>			<i>MM-DXC012 MM-DXV140</i>			<i>MM-DXC012 MM-DXV280</i>	
Mode Selection (DN 0E)	0001*			0001*			0001*	
Unit type (DN 10)	0006*			0006*			0006*	
Cooling Capacity (kW)	5,6	7,1	8,0	11,2	14,0	16,0	22,4	28,0
Capacity Code (DN 11) **	0009	0011	0012	0015	0017	0018	0021	0023
Group address (DN 14)	0002*			0002*			0002*	
Auto Restart (DN 28)	0000* Disabled			0000* Disabled			0000* Disabled	
	0001 Enabled			0001 Enabled			0001 Enabled	

* Default value (factory set).

** During production all DX controllers are set to DN11_0009 for functional test.

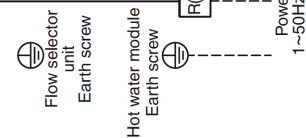
HOT WATER Module

Wiring diagram of Hot Water Module

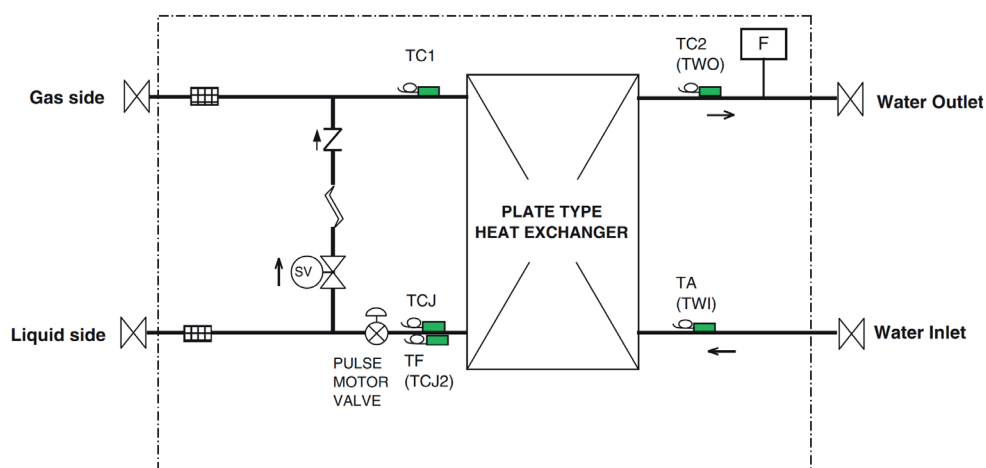


1. Broken line indicate the wiring at site.
Long dashed short dashed line indicate the accessories.
2. indicates the terminal block.
 indicates the connection terminal.
 indicates the connector on the control P.C. board.
3. indicates the protection ground.
4. indicates the control P.C. board.

Symbol	Parts Name
CN**	Connector
RY001	2Way Valve Relay
F301	Fuse
PMV	Pulse Motor Valve
TB01,02,03	Terminal Block
TC1,TCJ,TF	Temp sensor
TC2,TA	Temp sensor
TR	Transformer
2WV	2Way Valve
FS	Flow Switch



Refrigerant cycle diagram of Hot Water Module



Symbol						
	Solenoid valve	Capillary tube	Check valve	Strainer	Tempe. sensor	Flow switch

Optional connector specifications of hot water module P.C. board

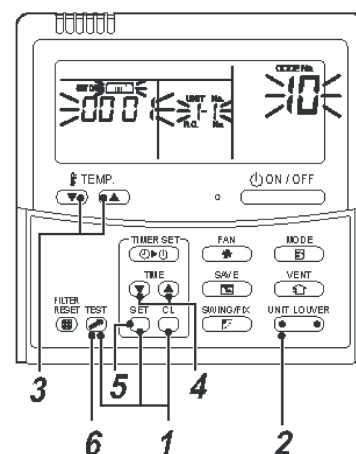
Function	Connector No.	Pin No.	Specification	Remarks
HA	CN61	1	On / Off input	External On / Off J01: Disconnected = Switch contact closed = Pulse input (factory default)
		2	0 V (COM)	---
		3	Remote control disabling On / Off	On / Off with lock signal Central 1
		4	In-operation output	
		5	DC12 V (COM)	Operating message, when remote control is on
		6	Alarm output	Alarm
Option output	CN60	1	DC12 V (COM)	---
		2	Defrosting output	Defrosting mode
		3	Heater output	---
		4	---	---
		5	Heating mode output	Compressor ON message
		6	Pump output	Pump in operation
External error input	CN80	1	DC12 V (COM)	Generates test code L30 and turns off hot water module, if contact is closed for 1 minute
		2	DC12 V (COM)	
		3	External error input	
CHK Operation check	CN71	1	Check mode input	Used for hot water module operation check (to be generated without communication of outdoor unit with hot water module)
		2	0V	
DISP Display mode	CN72	1	Display mode input	Display mode - communication just between hot water module and remote control
		2	Display mode input	

Configuration of hot water module

(When performing this task, be sure to use a wired remote control)

To be performed only when system at rest.

- 1 Push the **TEST** + **SET** + **CL** buttons simultaneously and hold for at least 4 seconds.
The unit No. displayed first is the address of the header indoor unit (including Hot Water Module) in group control.
- 2 Each time the "Select unit" side of the **UNIT LOUVER** button is pushed, one of the indoor unit (including Hot Water Module) No. under group control is displayed in turn.
- 3 Use the **TEMP.** button to select the CODE No. (DN code) of the desired function.
- 4 Use the **TIME** button to select the desired SET DATA associated with the selected function.
- 5 Push the **SET** button. (The display changes from flashing to steady.)
• To change the selected hot water module, go back to step 2.
• To change the selected function, go back to step 3.
- 6 When the **SET** button is pushed, the system returns to normal off state.



NOTE: In case of the hot water module, remove the front panel so that P.C. board is visible and then check the D02 LED at the center of P.C. board goes on to judge whether DN is being set or not.
The LED goes on while DN code is being set.

Function CODE No. (DN Code) table (includes all functions needed to perform applied control on site)

DN	Item	Description	At shipment
03	Central control address	0001: No.1 unit to 0064: No.64 unit 0099: Unfixed	0099: Unfixed
10	Type	0060: Hot Water Module * refer to Type CODE No. [10]	Depending on model type
11	Indoor unit capacity	0000: Unfixed to 0001 to 0040	According to capacity type
12	Refrigeration circuit address	0001: No.1 unit to 0030: No.30 unit	0099: Unfixed
13	Indoor unit address	0001: No.1 unit to 0064: No.64 unit	0099: Unfixed
14	Group address	0000: Individual 0002: Follower unit of group	0001: Header unit of group 0099: Unfixed
28	Automatic restart of power failure	0000: None 0001: Restart	0000: None
2E	HA terminal (CN61) select	0000: Usual 0002: Fire alarm input	0001: Leaving-ON prevention control 0000: Usual (HA terminal)
60	Timer setting (wired remote control)	0000: Available (can be performed) 0001: Unavailable (cannot be performed)	0000: Available

Type DN Code "10"

Value	Type	Model
0060*	Hot Water Module	MMW-AP***LQ

* Default value stored in EEPROM mounted on service P.C. board

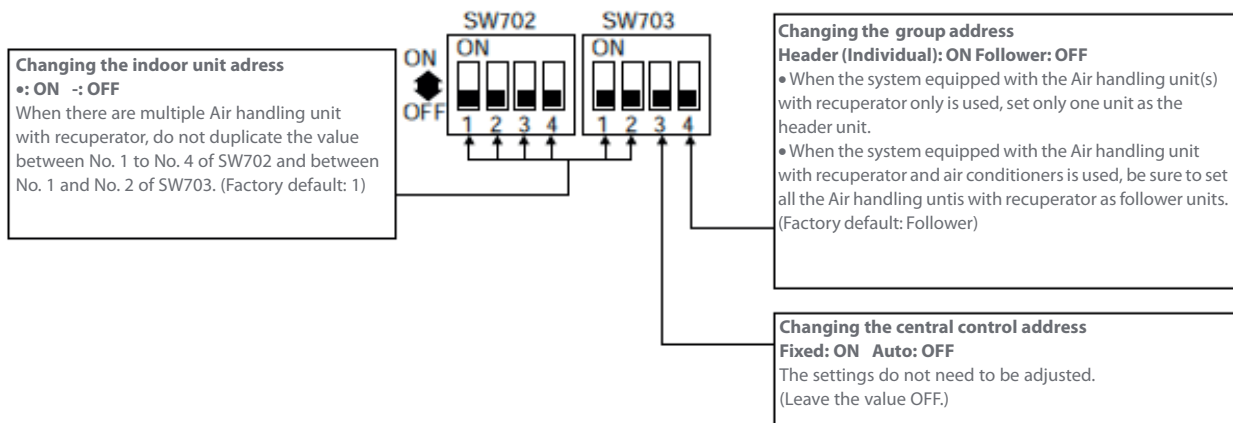
Indoor Unit Capacity DN Code "11"

Value	Capacity
0000*	Invalid
0011	027 type
0017	056 type

*1 Default value stored in EEPROM mounted on service P.C. board

VN – Airhandling unit with recuperator for "stand alone" application

About the switches on the circuit board of the Air handling unit with recuperator.



SW703 Bit 4 to „on“ when VN unit is used as „stand alone“ device.

VN - AIR HANDLING UNIT WITH RECUPARATOR

		Air handling unit with recuperator system		Air handling unit with recuperator system linked with air conditioners	
System example		A	B	--	C
Central control		None			
No. of Air handling unit with recuperator		1	Multiple	1	Multiple
Operation together with the air conditioners		No		Yes	
Remote control inter-unit wiring		Not necessary	Necessary		
Central control wiring		Not necessary			
Circuit board of the Air handling unit with recuperator	1. Line (system) address	Fixed The line (system) address is fixed as 31 for the Air handling unit with recuperator			
	2. Changing the indoor unit address No. 1 to 4 of SW702 No. 1 and 2 of SW703	Not necessary Factory default: 1	Necessary No duplication Factory default: 1	Not necessary Factory default: 1	Necessary No duplication Factory default: 1
	3. Changing the group address No. 4 of SW703	Necessary Header (Individual): ON	Necessary Header: ON (1 unit) Follower: OFF (the other units) • Settings of the header unit reflect the indications of the remote control	Not necessary Follower: OFF (all units) • Settings of the follower unit with the smallest indoor unit address number reflect the indication of the remote control	
	4. Fix/Automatic changeover of the central control address No. 3 of SW703	Not necessary			
	5. Changing the terminator No. 1 of SW301	Not necessary None: OFF			
Checking before turning on the power		Complete the settings of the Air handling unit with recuperator and wiring		- Complete the settings of the Air handling unit with recuperator and wiring - Refer to the Installation Manual of the air conditioner for the settings and wiring	
Turning on the power		Turn on the breaker of all the Air handling units with recuperator		Turn on the Air handling unit with recuperator first. Refer to the Installation Manual of the air conditioner for its power supply	
Central control address setting		Not necessary			

VN - AIR HANDLING UNIT WITH RECUPARATOR

		Central control system				
System example		D	--	E	--	F
Central control		One Air handling unit with recuperator is used	When controlling the air conditioner and the Air handling unit with recuperator separately		When controlling the air conditioner and Air handling unit with recuperator together	
No. of Air handling unit with recuperator		Multiple	1	Multiple	1	Multiple
Operation together with the air conditioner		No			Yes	
Remote control inter-unit wiring		Necessary	Not necessary	Necessary		
Central control wiring		Necessary (Header unit only)			Not necessary	
Circuit board of the Air to Air Heat Exchanger	1. Line (system) address	Fixed The line (system) address is fixed as 31 for the Air handling unit with recuperator				
	2. Changing the indoor unit address No. 1 to 4 of SW702 No. 1 and 2 of SW703	Necessary No duplication Factory default: 1	Not necessary Factory default: 1	Necessary No duplication Factory default: 1	Not necessary Factory default: 1	Necessary No duplication Factory default: 1
	3. Changing the group address No. 4 of SW703	Necessary Header: ON (1 unit) Follower: OFF (the other units) • Settings of the header unit reflect the indications of the remote control	Necessary Header (Individual): ON	Necessary Header: ON (1 unit) Follower: OFF (the other units) • Settings of the header unit reflect the indications of the remote control	Not necessary Follower: OFF (all units) • Settings of the follower unit with the smallest indoor unit address number reflect the indication of the remote control	
	4. Fix/Automatic changeover of the central control address No. 3 of SW703	Not necessary Auto: OFF • Refer to the Installation Manual of the central control device				
	5. Changing the terminator No. 1 of SW301	Necessary 100Ω: ON (1 header unit only)	Not necessary OFF • Adjust settings on the air conditioner			
Checking before turning on the power		Complete the settings of the Air handling unit with recuperator and wiring	• Complete the settings of the Air handling unit with recuperator and wiring • Refer to the Installation Manual of the air conditioner for the settings and wiring			
Turning on the power		Turn on the breaker of all the Air handling units with recuperator	Turn on the Air handling unit with recuperator first. Refer to the Installation Manual of the air conditioner for its power supply			
Central control address setting		Refer to the Installation Manual of the central control device				

DN CODES

DN (device) Code Chart

DN-Code	Name	Description	
01	Intervall filter alarm time	Filter sign displayed after selected time has elapsed -or by external pressure switch (CN70)	0000=Inactive 0001=150 hours 0002=2500 hours 0003=5000 hours 0004=10000 hours 0005=Ext. switch (CN70)
02	Protection intensity	Halved the values of DN01	0000=Standard 0001=High pollution in space
03	Network address	In conjunction with the central control unit Adjustment: 0-64 (0000-0064)	0001=Address 1, etc. 0099=Undefined
04	Priority of a specific indoor unit	On the outer part SW11 Bit 1+2 on = Priority specific indoor unit	0000=No priority 0001=Priority
06	Change of heating temperature (setpoint value)	Adaptation to space heating temperature conditions Adjustment: 0-10°C (0000-0010)	0001=+1°C, etc. 0002=+2°C (default) 0010=+10°C
0d	AUTO Mode	Deactivating of Auto mode	0000=Available 0001=Not available
0F	Only cooling	Deactivating of HEAT & AUTO mode	0000=Heat pump 0001=Cooling only
2d	Only heating	Deactivating of COOL & DRY	0008=Heating only
10	Indoor unit type	Set according to design of the unit	0000=1-way cassette (Series SH) 0001=4-way cassette (Series H) 0002=2-way cassette (Series WH) 0003=1-way cassette (Series YH) 0004=Series duct (Series BH) 0005=Slim duct (SPH, SH) 0006=DX Kit + high pressure duct (Series H) 0007=Ceiling Type (Series H) 0008=High-wall Type (Serie H + MH) 0010=Floor Standing Cabinet Type 0011=Floor Standing Concealed Type 0012=Floor Standing Type (14-16 kW) 0013=Floor Standing Type (4,5-11,2 kW) 0014=4-way cassette (Serie MH) 0016=Fresh Air Intake Indoor Unit (HFE) 0050=VN-Air to Air Heat Exchanger 0055=DXC031, 0-10V P.C. board 0060=Hot Water Module (HWM)
11	Indoor unit capacity	Set according to the type of the device (Power reduction NOT possible!)	0040=1,7kW 0013=8,5kW 0001=2,2kW 0015=9,0kW 0003=2,8kW 0017=14,0kW 0005=3,6kW 0018=16,0kW 0007=4,5kW 0021=22,4kW 0009=5,6kW 0023=28,0kW 0011=7,1kW 0099=Unfixd 0012=8,0kW
12	Refrigerant cycle address	Adjustment: 0-30 (0000-0030)	0001=System 1, etc. 0099=Unfixd
13	Indoor unit address	Adjustment: 0-64 (0000-0064)	0001=Address 1, etc. 0099=Unfixd
14	Group master/ follower	Multiple indoor units to a remote control	0099=Factory setting 0000=Single indoor unit 0001=Group master 0002=Group follower
19	Louver type (air direction adjustment)	According to type	0000=No louver 0001=Swing only 0002=1-way cassette type, ceiling type 0003=2-way cassette type 0004=4-way cassette type
1b	Minimum requirement of HEAT or COOL	Minimum time to the execution of the operating mode	0000=5 minutes 0001=4 minutes
1C	Cooling temperature change (nominal)	Adaptation of the cooling temperature at ambient conditions Adjustment: 0-10°C (0000-0010)	0000=0°C 0004=4°C 0005=5°C 0010=10°C
1E	Neutral zone in auto mode	Switching temperature difference between COOL and HEAT (Accuracy = data value / 2) Adjustment: 0-10 (0000-0010)	0003=3°C (TS +/- 1,5 °C) 0010=10°C
1F	Max. temperature COOL	Cooling mode maximum temperature setting	0029=29°C, etc.
20	Min. temperature COOL	Cooling mode minimum temperature setting	0018=18°C, etc.

DN-Code	Name	Description									
21	Max. temperature HEAT	Heating mode maximum temperature setting	0029=29°C, etc.								
22	Min. temperature HEAT	Heating mode minimum temperature setting	0018=18°C, etc.								
23	Max. temperature DRY	Dry mode maximum temperature setting	0029=29°C, etc.								
24	Min. temperature DRY	Dry mode minimum temperature setting	0018=18°C, etc.								
25	Max. temperature AUTO	Auto mode maximum temperature setting	0029=29°C, etc.								
26	Min. temperature AUTO	Auto mode minimum temperature setting	0018=18°C, etc.								
28	Auto restart enable	Selective restart after power failure	0000=Off 0001=On								
2A	Ext. error input (CN70)	Function assignment contact CN70 (Series 2 wall unit -> condensate pump)	0000=Ext. filter input 0001=Ext. alarm input 0002=Ext. humidifier input (factory setting)								
2E	HA connector(CN61)	Function assignment contact CN61 (HA terminal)	0000=Off 0001=Restart in the same mode, such as when switching off 0002=Fire alarm input								
31	Ext. fan control (CN32)	Activating of „FAN“ button on the remote control	0000=Off (factory setting) 0001=CN32 ON/OFF								
32	Selection TA sensor	Temperature measurement	0000=Sensor on air conditioner 0001=Remote sensor								
33	Temperature unit	Display TS on remote control	0000=°C 0001=°F (Fahrenheit)								
36	Actual display on remote control	Current actual temperature is displayed on remote control display	0000=Setpoint temperature 0001=Actual temperature								
5d	Airflow adjustment	For very large room heights, when using a special filter or if called for stronger external pressure	High-ceiling adjustment (Air flow selection) 1-way cassette (SH) 0000=Standard (factory default) till 3,8 m 0001=High-ceiling till 4,0 m 0003=High-ceiling from 4,0 m Compact 4-way cassette 0000=Standard (factory default) till 3,2 m 0002=High-ceiling till 3,4 m 0003=High-ceiling from 3,4 m Ceiling 0000=Standard (factory default) till 3,5 m 0001=High-ceilings from 3,5 m Concealed duct standard 0000=Standard filter (factory default) 0001=High performance filter (65%, 90%) Static pressure selection Concealed duct standard 0000=Standard (factory default) 0001=High static pressure 1 0003=High static pressure 2 0006=Low static pressure Slim duct 0000=Standard (factory default) 0001=High static pressure 1 0003=High static pressure 2 0006=High static pressure 3								
			Static pressure selection	Concealed duct type							
				External static pressure	0000 40 Pa	0001 30 Pa	0002 65 Pa	0003 50 Pa	0004 80 Pa	0005 100 Pa	0006 120 Pa
				The list approve is when SW501-1 and SE501-2 is OFF.							
		Slim duct type									
		External static pressure (No filter)	0000 10 Pa	0001 20 Pa	0003 30 Pa/35 Pa	0006 50 Pa					
60	Timer-lock	Activation timer operation in wired remote control	0000=On 0001=Off								
7A	Setpoint change	Setpoint changes in 0,5 ° C increments only at RBC-AMS51E-ES and series 4 indoor units	0000=Standard (in 1°C steps) 0001=Activated (in 0,5°C steps)								
8c	Forced defrost	After activation it resets automatically	0000=Deactivated 0001=Activated								

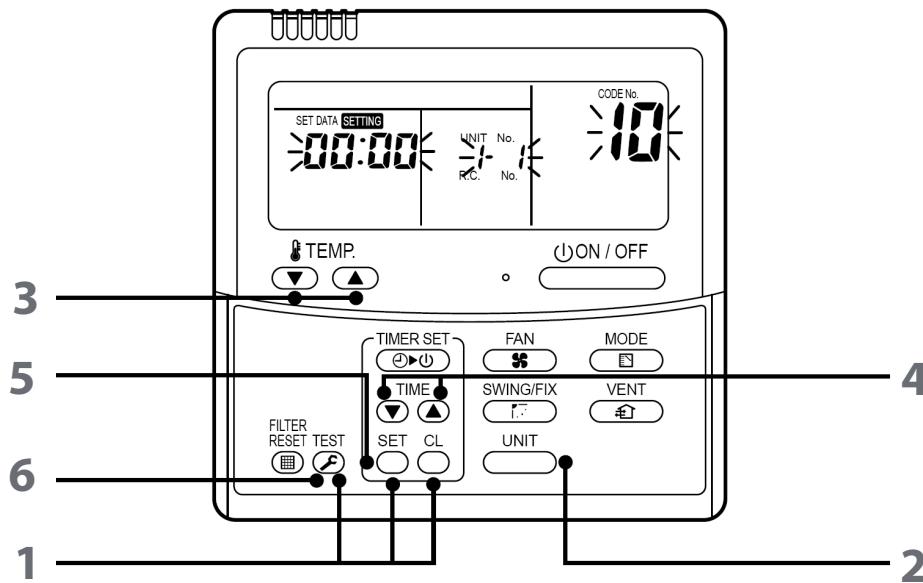
DN-Code	Name	Description	
F0	Swing mode	Louver setting	0001=Standard 0002=Dual swing 0003=Cycle swing
F1	Louver fixed position (Louver No. 1)		0000=Release 0001=Horizontal discharge position 0005=Downward discharge position
F2	Louver fixed position (Louver No. 2)		0000=Release 0001=Horizontal discharge position 0005=Downward discharge position
F3	Louver fixed position (Louver No. 3)		0000=Release 0001=Horizontal discharge position 0005=Downward discharge position
F4	Louver fixed position (Louver No. 4)		0000=Release 0001=Horizontal discharge position 0005=Downward discharge position
F6	Activating additional P.C. board TCB-PCUC1E	Only for RAV-ceilings SM-xxx7CTP-E	0000=Disabled 0001=Enabled
42	Self clean operation time	Self-cleaning function with fan overrun	0000=None 0001=0,5h ~ 0012=6,0h Set when compressor-ON time is 10 to 60 minutes When ON-time is 60 minutes or more, the double of this operation time setting is set
C2	Current demand X% to outdoor unit	Requirement limiting	0050=50% to 0100=100%
Cd	Self-clean operation stop function when [ON / OFF] operation is prohibited	If central control unit (Central 1,2) Restriction [ON / OFF] is selected	0000=Valid (Clean operation) 0001=Invalid (No clean operation)
d0	Activation of energy saving function	Energy saving function	0000=Invalid (Impossible) 0001=Valid (Possible)
d1	Existence of 8°C heating operation function	For cold ambient temperature Pre-heat is activated	0000=Invalid (Impossible) 0001=Valid (Possible)
d3	Rotational speed of self clean operation	Fan motor rpm is set	0000=Invalid (Self clean operation is not carried out) 0015=Valid (Self clean function is practiced with 350 rpm)
d4	Display / No display of [Dry operation] during self clean operation		0000=Display 0001=No display
69	Louver position constraints (cooling mode)		0000=Horizontal surface mounting only 0001=Without restrictions
9C	Louver position after turn off		0000=Closed 0001 to 0005=Position 0006=Closed

Changing DN Codes AMT31/32 (AMS41)

Valid: for all Toshiba RAV Digital and Super Digital Inverter (except Flexi) and all Mini SMMS and S-MMS devices!

Method:

- 1** Press simultaneously **SET + CL + TEST button** for 4 seconds or more.
(In a control group is the first digit indicated the address of the master device.)
- 2** When you select a control group with the **UNIT button** you select the indoor unit, on which the value should be changed.
(The selected fan of the indoor unit turns ON.)
- 3** Use the button for the **temperature setting** for the **DN Code**.
- 4** Change with the **time setting button** the value of the **DN Code**.
- 5** Press **SET button** to confirm.
- 6** To save and to finish press **TEST button** to return to the usual display.



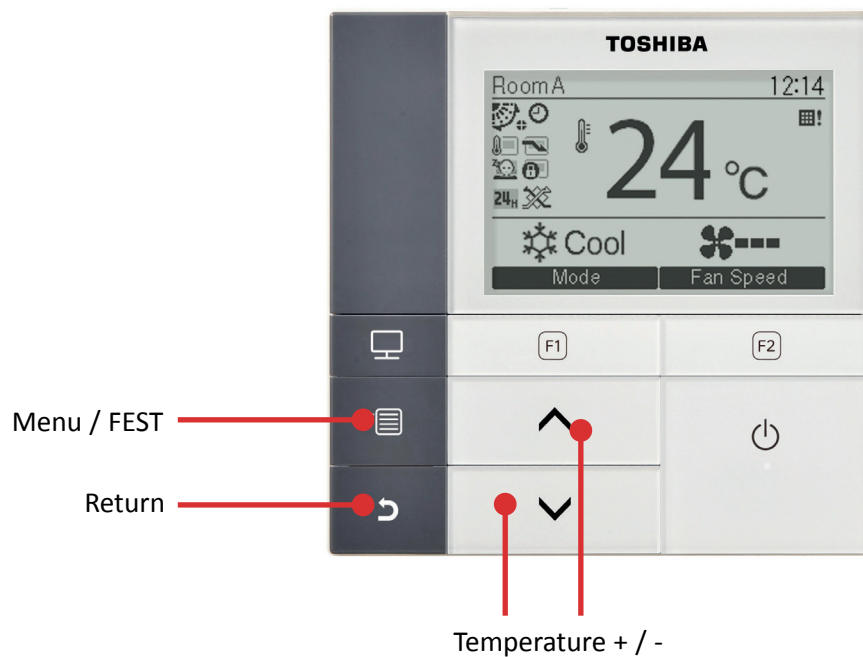
Changing DN Codes AMS 51

Valid: for all Toshiba RAV Digital and Super Digital Inverter (except Flexi) and all Mini SMMS **DN Codes AMS 51**

Valid: for all Toshiba RAV Digital and Super Digital Inverter (except Flexi) and all Mini SMMS and S-MMS as well S-MMSi devices!

Method:

- 1** Press the **Menu button** to reach the Menu.
- 2** Press the **Menu button** and the **temperature down button** simultaneously for 5 seconds to reach the next submenu.
- 3** Press the **temperature up/down button** to point **DN setting** and confirm with **F2**.
- 4** To select the changing code use the **arrow keys** and change between both fields with the **F1** and **F2** button.
- 5** After changed the code press **FEST** button to save.
- 6** To finish press the **return button**.



CHECK CODE PRE-SERIES

RAV Series (R407C / R22)

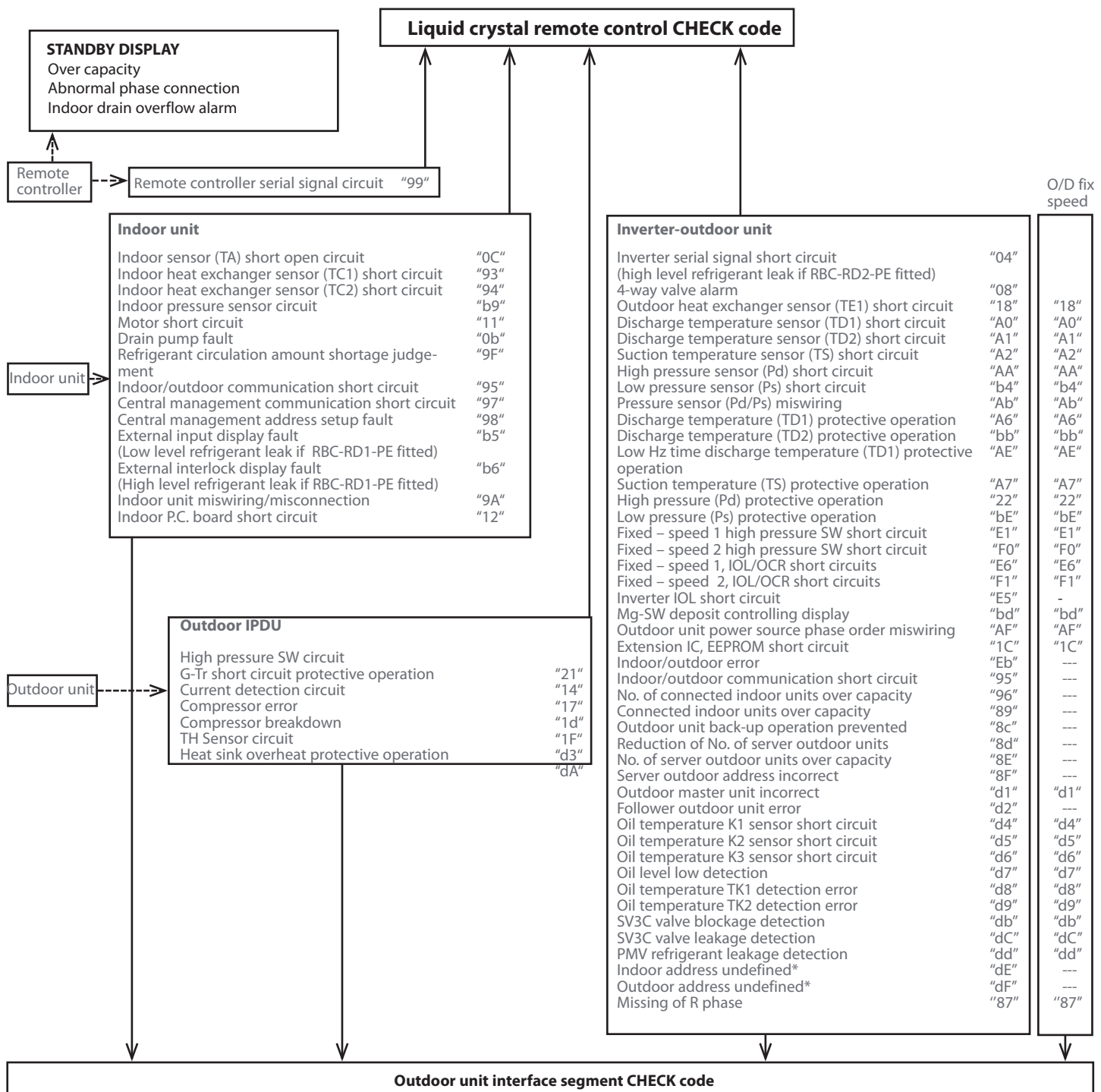
Do not turn off the power supply before reading the fault codes, doing so may clear the diagnostic memory. Caution must be taken when removing the access covers, as high voltages are present. Fault diagnostics is available by pressing the check button on the remote control.

Note: The first number displayed is a code for the number of compressor starts the indoor unit has requested. This number is displayed using the hexadecimal format.

Numbers displayed after the start number are fault codes.

CODE	FAULT	SYSTEM STATUS	CHECK
0C	TA Sensor open circuit	No cooling operation (Heating operation continuously – heat pumps)	Sensor resistance 20°C=12.5 k 25°C=10 k
	TA Sensor short circuit	No heating operation – heat pumps (Cooling operation continuously)	Sensor resistance 20°C=12.5 k 25°C=10 k
0d	TC Sensor open circuit	Indoor fan stays off in the heating mode	Sensor resistance 20°C=12.5 k 25°C=10 k
	TC Sensor short circuit	Outdoor unit simulates high temperature release continually	Sensor resistance 20°C=12.5 k 25°C=10 k
04	No communication outdoor to indoor	Indoor unit operates – outdoor unit does not	Interconnecting cables / isolator Outdoor transformer (240/12vac) P.C. board
08	Reverse change temperature	Cooling in heat mode or heating in cool mode	Operation of 4-way valve, energized For heating / TC sensor
09	No change in temperature of indoor unit	Indoor unit operates	Compressor running not pumping / Klixon tripped / for cross wiring
	Frost condition	Indoor fan low speed, no outdoor unit operation	Gas charge / pipe blockage Indoor air flow TC sensor / for cross wiring
0B	Indoor water level	Indoor unit operates – outdoor unit does not	Lift pump operation / Condensed drain for blockage / Floats switch operation – break on rise
99	No communication indoor to remote control	System stops	Interconnecting cables / Indoor is set up as a master / Only one master in a group
18	TE Sensor open circuit	System stops	Sensor resistance 20°C=12.5 k 25°C=10 k
	TE Sensor short circuit	System stops	Sensor resistance 20°C=12.5 k 25°C=10 k
19	TL or TD sensor open circuit	System stops	Sensor resistance TL 20°C=12.5 k TD 23 °C =53 k 25°C=10 k
	TL or TD sensor short circuit	System stops	Sensor resistance TL 20°C=12.5 k TD 23 °C =53 k 25°C=10 k
21	High pressure trip	System stops	Gas charge – quantity & quality Pipe blockages Air flows
1E	High discharge temperature	System stops	Gas charge – quantity & quality TE sensor Indoor unit air flow

MMS R407C



*: No display on the remote control

NOTE: To retrieve fault codes, ensure rotary switches 1, 2 and 3 on the outdoor interface PCB (MCC-1343-01) are all set to 1 (factory default setting).

2-Pipe Super Multi R407C

Do not turn off the power supply before reading the fault codes, doing so will clear the diagnostic memory. Caution must be taken when removing the access covers, as high voltages are present.

Fault diagnosis is available at three locations within the Air Conditioning system:

1. Remote control – press the check button
2. Multi controller – rotate the display switch to position 1
3. Outdoor unit – see following chart

Remote control press CHECK			Multi controller switch position 1			Outdoor unit switch position 0		
04	No communication interface to inverter	→	04	No communication interface to inverter		LED 5 off LED 6 on	No communication interface to inverter	
04	No communication multi controller to outdoor unit	→	04	No communication multi controller to outdoor unit				
04	No communication indoor to multi controller							
0b	ID water level							
0C	TA sensor fault		88	M/C doesn't recognize outdoor capacity		Display switch set to 8 (If lit...)		
0d	TC sensor fault		80	Th(A) sensor fault	←	LED 1	Th(A) sensor fault	
08	Reverse change temperature		81	Th(B) sensor fault	←	LED 2	Th(B) sensor fault	
09	Frost or no temperature change		82	Th(C) sensor fault	←	LED 3	Th(C) sensor fault	
99	No communication indoor to remote control		83	Th(D) sensor fault	←	LED 4	Th(D) sensor fault	
15	Refer to multi controller	→	84	Th(X) sensor fault	←	LED 5	Th(X) sensor fault	
	Preheat/defrost flashes	→	0b	M/C water level	←		M/C water level	
			89	ID codes set too high	←	LED 6	IG codes set too high	
				ID codes set to zero		LED 7	M/C 1 sensor fault	
						LED 8	M/C 2 sensor fault	
						Display switch set to 3 (If lit)		
IC	Refer to outdoor unit	→	IC	Refer to outdoor unit	→	LED 1	ThD1 sensor fault	
						LED 2	ThD2 sensor fault	
						LED 3	ThS sensor fault	
						LED 4	HP trip, by sensor	
						LED 5	Pd sensor fault	
						LED 6	Discharge pipe > 130°C	
						LED 7	Suction pipe > 40°C	
						LED 8	Low pressure switch	
14	Refer to outdoor unit	→	14	Refer to outdoor unit	→	●○○○	Low inverter voltage	
1d	Refer to outdoor unit	→	1d	Refer to outdoor unit	→	○●○○	High inverter DC current	
1F	Refer to outdoor unit	→	1F	Refer to outdoor unit	→	○○●○	High inverter AC current	
18	Refer to outdoor unit	→	18	Refer to outdoor unit	→		ThE sensor fault	
21	Refer to outdoor unit	→	21	Refer to outdoor unit	→	○○○●	Inverter HP trip inverter compressor overheat	
					→		Phase rotation / DOL HP trip / overload trip / DOL comp. over- heat	

● = LED flashing ○ = LED lit

3-Pipe Super Multi

Do not turn off the power supply before reading the fault codes, doing so will clear the diagnostic memory. Caution must be taken when removing the access covers, as high voltages are present.

Fault diagnosis is available at three locations within the Air Conditioning system:

1. Remote control – Press the check button
2. Multi controller – rotate the display switch to position 1
3. Outdoor Unit – see following chart

Remote control press CHECK			Multi controller switch position 1			Outdoor unit switch position 2 & 0	
04	No communication interface to inverter	→	04	No communication interface to inverter	→	04	No communication interface to inverter
04	No communication multi controller to outdoor unit	→	04	No communication multi controller to outdoor			
04	No communication indoor to multi controller						
0b	ID water level						
0C	TA sensor fault		88	M/C doesn't recognize outdoor capacity			
0d	TC sensor fault		80	Th(A) sensor fault	←	80	Th(A) sensor fault
08	Reverse change temperature		81	Th(B) sensor fault	←	81	Th(B) sensor fault
09	Frost or no temperature change		82	Th(C) sensor fault	←	82	Th(C) sensor fault
99	No communication indoor to remote control		83	Th(D) sensor fault	←	83	Th(D) sensor fault
15	Refer to multi controller	→	84	Th(X) sensor fault	←	84	Th(X) sensor fault
	Preheat/defrost flashes	↘	0b	M/C water level	←	0b	M/C water level
			89	ID codes set too high	←	89	ID codes set too high
				ID codes set to zero			
IC	Refer to outdoor unit	→	IC	Refer to outdoor unit	→	A0	ThD1 sensor fault
					→	A1	ThD2 sensor fault
					→	A2	ThS sensor fault
					→	A3	ThO sensor fault
					→	A5	ThE sensor fault
					→	A6	Discharge pipe > 130°C
					→	A7	Suction pipe > 40°C
					→	AA	Pressure sensor fault
					→	AE	Low pressure sensor
14	Refer to outdoor unit	→	14	Refer to outdoor unit	→	14	Low inverter voltage
1d	Refer to outdoor unit	→	1d	Refer to outdoor unit	→	1d	High inverter DC current
1F	Refer to outdoor unit	→	1F	Refer to outdoor unit	→	1F	High inverter AC current
21	Refer to outdoor unit	→	21	Refer to outdoor unit	→	21	Inverter HP trip Inverter compressor overheat
						Ad	Phase rotation / DOL HP trip / overload trip / DOL compressor overheat

MONITORING

Monitor functions – Display of:

- Temperature values
(Indoor – and outdoor temperature, TO, TA, TC, Td, TS)
- Pressure values (Pd, Ps)
- PMV Status
- Compressor status (on/off) and power
- Total capacity of indoor and outdoor units
- Number of indoor and outdoor units

Function – available through:

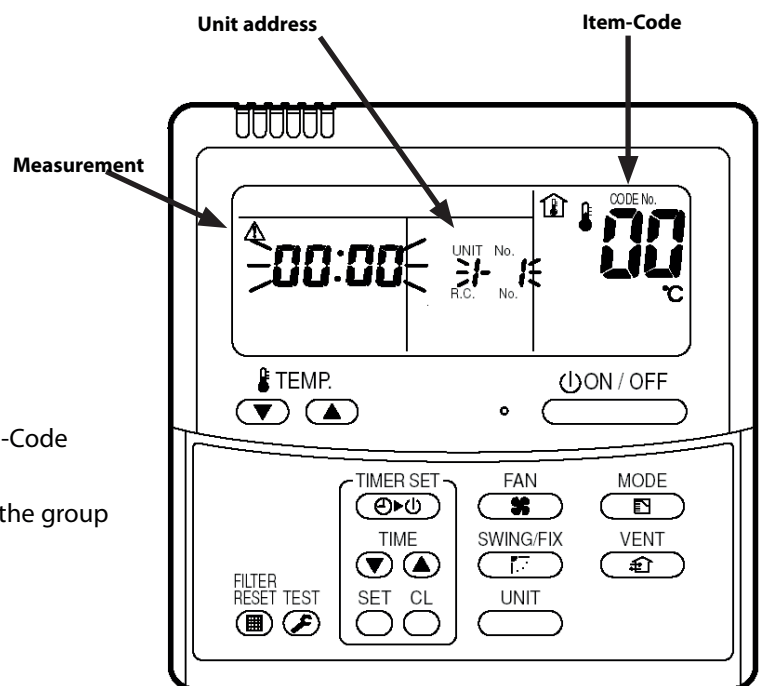
Wired remote control RBC-AMT32E (and previous model RBC-AMT21E, RBC-AMT41E)

Available for:

- Digital Inverter
- Super Digital Inverter
- MiNi SMMS
- S-MMSi
- S-HRMI

Function

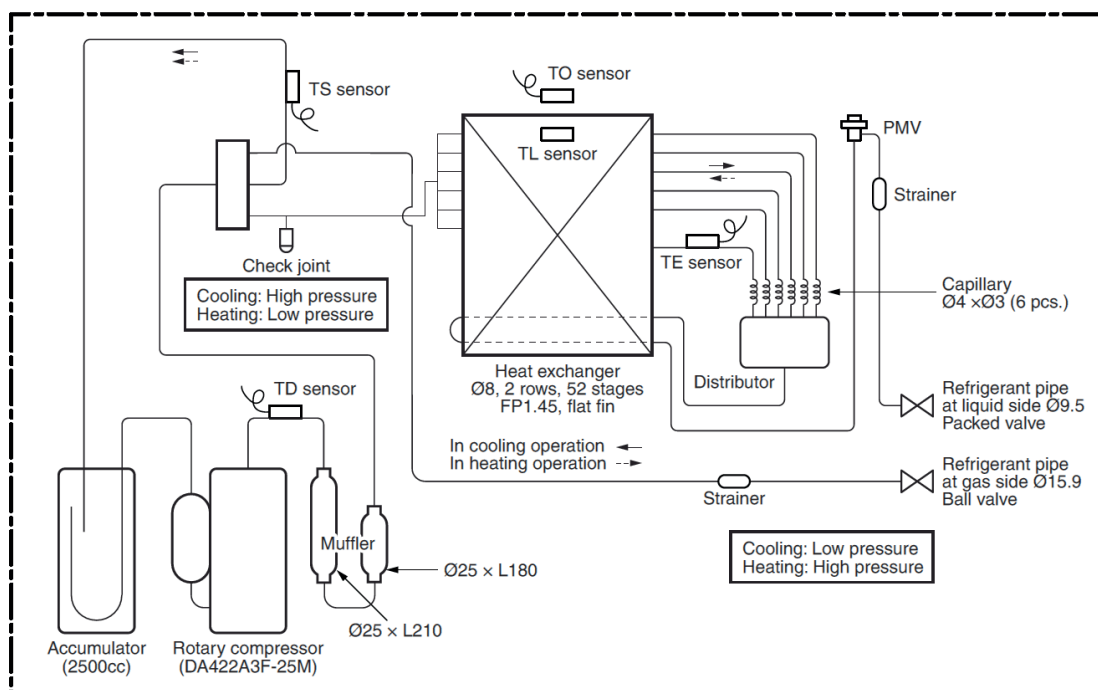
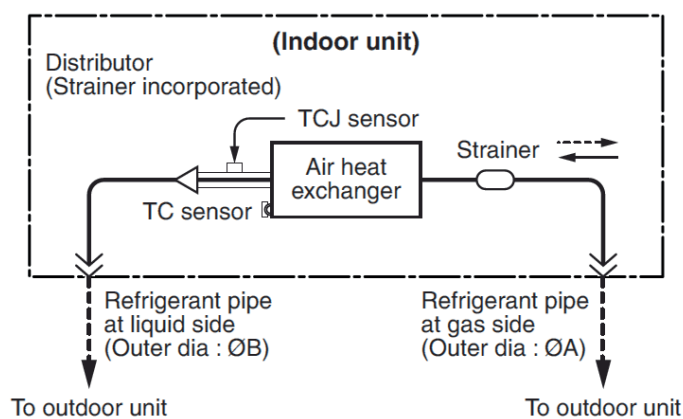
1. Press  +  button for 4 seconds
2. Press  to switch to the second Item-Code (etc.)
Press  button to select the unit from the group
3. To finish press  button



Digital Inverter (DI) and Super Digital Inverter (S-DI)

	Item Code	Data name	Unit
Indoor unit data	01	Room temperature (Remote control)	°C
	02	Indoor suction temperature (TA)	°C
	03	Indoor heat exchanger (Coil) temperature (TCJ)	°C
	04	Indoor heat exchanger (Coil) temperature (TC)	°C
	07	Indoor fan revolution frequency	rpm
	F2	Indoor fan calculated operation time	X100h
	F3	Filter sign time	X1h
	F8	Indoor discharge temperature (TC or TCJ)	°C

	Item Code	Data name	Unit
Outdoor unit data	61	Outside temperature (TO)	°C
	62	Compressor discharge temperature (TD)	°C
	63	Compressor suction temperature (TS)	°C
	65	Heat sink temperature (THS)	°C
	6A	Operation current	A
	6D	Outdoor heat exchanger (Coil) temperature (TL)	°C
	70	Compressor operation frequency	rps
	72	Outdoor fan revolution frequency (Lower)	rpm
	73	Outdoor fan revolution frequency (Upper)	rpm
	F1	Compressor calculated operation time	X100h
	60	Outdoor heat exchanger (Coil) temperature (TE)	°C



MINI-SMMS/SMMS/SHRM

	Code	System data	Unit	Display-output		Code	System data	Unit	Display-output
Data of indoor unit (*2)	00	Indoor temperature (control temperature)	°C		Outdoor unit individual data	10	Compressor 1 hot gas temperature (Td1)	°C	x 1
	01	Indoor temperature (remote control)	°C			(11)	Compressor 2 hot gas temperature (Td2)	°C	x 1
	02	Inner part of intake (TA)	°C	x 1		12	High pressure sensor (Pd)	MPa	x 100
	03	Inner part of register temperature (TCJ)	°C	x 1		13	Low pressure sensor (Ps)	MPa	x 100
	04	Inner part of register temperature (TC2)	°C	x 1		14	Suction temperature (TS)	°C	x 1
	05	Inner part of register temperature (TC1)	°C	x 1		15	Outdoor heat exchanger temperature (TE)	°C	x 1
	06	Inner part of hot gas temperature (Tf) (*1)	°C	x 1		16	Temperature liquid line (TL)	°C	x 1
	08	Inner part PMV angle of aperture	Pulse	x 1/10		17	Ambiente temperature (TO)	°C	x 1
System data	0A	Number of connected indoor units	units			18	Overheating temperature (TU)	°C	x 1
	0b	HP capacity of connected indoor units	HP	x 10		19	Compressor 1 power (I1)	A	x 10
	0C	Number of connected outdoor unit	units			(1A)	Compressor 2 power (I2)	A	x 10
	0d	HP capacity of connected outdoor units	HP	x 10		1b	PMV 1 + 2 aperture	Pulse	x 1/10
						1d	Compressor 1 – 2, ON/OFF		(*3)
						1E	Outdoor fan speed		0 to 31
						1F	Capacity outdoor unit	HP	x 1

*1: Only a part of the indoor units were installed with a high pressure temperature sensor. This temperature is not displayed on other types.

*2: When the units are connected to a group, only the data of the main indoor unit is displayed.

*3: Only compressor 1 is ON. 10: Only compressor 2 is ON
11: Both compressors (1 and 2) are ON.

SMMSi/ SHRMi

	Code	System data	Unit	Display-output	Remote control display example
Data indoor unit (*2)	00	Room temperature (During control)	°C	x 1	[0024]=24 °C
	01	Room temperature (Remote control)	°C	x 1	[0024]=24°C
	02	Indoor suction temperature (TA)	°C	x 1	[0024]=24°C
	03	Indoor coil temperature (TCJ)	°C	x 1	[0024]=24°C
	04	Indoor coil temperature (TC2)	°C	x 1	[0024]=24°C
	05	Indoor coil temperature (TC1)	°C	x 1	[0024]=24°C
	06	Indoor discharge temperature (TF) (* 1)	°C	x 1	[0024]=24°C
	08	Indoor PMV opening	Pulse	x 1/10	[0150]=1500 Pulse
System data	0A	No. of connected indoor units	units	x 1	[0048]=48 units
	0B	Total horsepower of connected indoor units	HP	x 10	[0415]=41,5 HP
	0C	No. of connected outdoor units	units	x 1	[0004]=4 units
	0D	Total HP of outdoor units	HP	x 10	[0420]=42 HP

*1 Only a part of indoor unit types is installed with the discharge temperature sensor. This temperature is not displayed for other types.

*2 When the units are connected to a group, data of the header indoor unit only can be displayed.

	CODE				System data	Display-output	Unit	Remote control display example
	U1	U2	U3	U4				
Outdoor unit individual data 1 (*3)	10	20	30	40	High-pressure sensor detention pressure (Pd)	x 100	MPa	[0123]=1,23MPa
	11	21	31	41	Low-pressure sensor detention pressure (Ps)	x 100	MPa	[0123]=1,23MPa
	12	22	32	42	Compressor 1 discharge temperature (Td1)	x 1	°C	[0024]=24°C
	13	23	33	43	Compressor 2 discharge temperature (Td2)	x 1	°C	[0024]=24°C
	14	24	34		Compressor 3 discharge temperature (Td3)	x 1	°C	[0024]=24°C
	15	25	35	45	Suction temperature (TS)	x 1	°C	[0024]=24°C
	16	26	36	46	Outdoor coil temperature 1 (TE1)	x 1	°C	[0024]=24°C
	17	27	37		Outdoor coil temperature 2 (TE2)	x 1	°C	[0024]=24°C
	18	28	38	48	Temperature at liquid side (TL)	x 1	°C	[0024]=24°C
	19	29	39	49	Outside ambient temperature (TO)	x 1	°C	[0024]=24°C
	1A	2A	3A	4A	PMV1 + 2 opening	x 1	Pulse	[0500]=500 Pulse
	1B	2B	3B		PMV4 opening	x 1	Pulse	[0500]=500 Pulse
	1C	2C	3C	4C	Compressor 1 current (I1)	x 10	A	[0135]=13,5A
	1D	2D	3D	4D	Compressor 2 current (I2)	x 10	A	[0135]=13,5A
	1E	2E	3E		Compressor 3 current (I3)	x 10	A	[0135]=13,5A
	1F	2F	3F	4F	Outdoor fan current (IFan)	x 10	A	[0135]=13,5A

	CODE				System data	Display-output	Unit	Remote control display example
	U1	U2	U3	U4				
Outdoor unit individual data 2 (*4)	50	60	70	80	Compressor 1 revolutions	x 10	rps	[0123]=1,23MPa
	51	61	71	81	Compressor 2 revolutions	x 10	rps	[0123]=1,23MPa
	52	62	72		Compressor 3 revolutions	x 10	rps	[0123]=1,23MPa
	53	63	73	83	Outdoor fan mode	x 1	Mode	[0058]=58 mode
	54	64	74	84	Compressor IPDU 1 heat sink temperature	x 1	°C	[0024]=24°C
	55	65	75	85	Compressor IPDU 2 heat sink temperature	x 1	°C	[0024]=24°C
	56	66	76		Compressor IPDU 3 heat sink temperature	x 1	°C	[0024]=24°C
	57	67	77	87	Outdoor fan IPDU heat sink temperature	x 1	°C	[0024]=24°C
	58				Heating/cooling recovery controlled *5	0: Normal 1: Recovery controlled		[0010]=Heating recovery controlled [0001]=Cooling recovery controlled
	59				Pressure release *5	0: Normal 1: Release controlled		[[0010]=Pressure release controlled
	5A				Discharge temperature release			[0001]=Discharge temperature release controlled
	5B				Follower unit release (02/U2/U4 outdoor units)			[0100]=U2 outdoor unit release controlled
	5F	6F	7F	8F	Outdoor unit HP	x 1	HP	[0016]=16 HP

*3 The first digit of an CODE No. indicates the outdoor unit number.

*4 The upper digit of an CODE No. -4 indicates the outdoor unit number.

1*, 5* ... U1 outdoor unit (Header unit)

2*, 6* ... U2 outdoor unit (Follower unit 1)

3*, 7* ... U3 outdoor unit (Follower unit 2)

4*, 8* ... U4 outdoor unit (Follower unit 3)

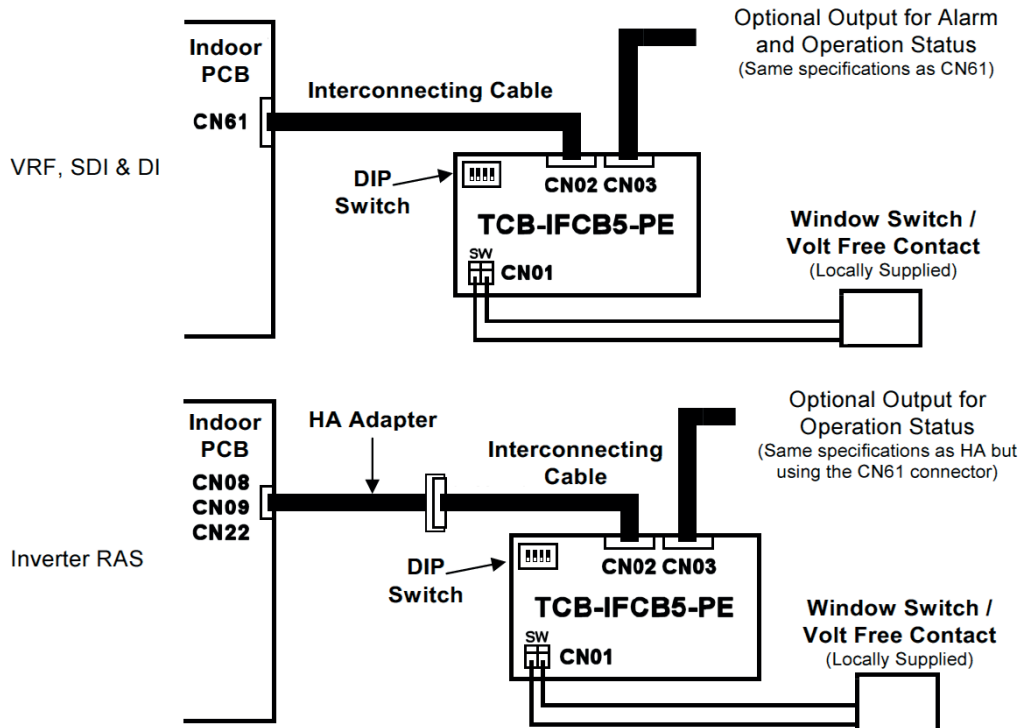
5 Only the CODE No. 5 of U1 outdoor unit (Header unit) is displayed.

WINDOW SWITCH TCB-IFCB5-PE

The remote switch or window switch will need to provide a volt-free contact for this accessory.

An additional connector is provided (CN03) which can be used to access the additional features (Operation and alarm outputs). However the locking feature is not available as it will adversely effect the operation of this window switch / remote On-Off controller.

Connection Schematic:



Optional Parts:

There are two optional enclosures which can be used to mount the window switch / remote On-Off controller PCB.

TCB-PX100-PE: A plastic enclosure for mounting outside of the indoor unit, where there is no room within the unit. It comes supplied with PCB mounts and 1.5m interconnecting cable.

TCB-PX30MUE: A metal enclosure for mounting inside the 4 Series Split 4-Way Cassettes, the 2 Series VRF 4-Way Cassettes and the Compact 4-Way Cassettes (Split, Multi Split and VRF).

INSTALLATION & SETUP

Using the table below please set the DIP switch to the required setting depending on the function you require.

Function Required:	DIP Switch Setting	Mode / Description
Remote On-Off controller application	All = OFF	#1: Remote On-Off signal has full priority
	Bit 1 = On ~ 2, 3 & 4 = Off	#2: Priority is given to the remote ON signal
	Bit 2 = On ~ 1, 3 & 4 = Off	#3: Priority is given to the remote OFF signal
	Bit 1 & 2 = On ~ 3 & 4 = Off	#4: Last touch priority
Window switch application	Bit 3 = On ~ 1, 2 & 4 = Off	#5: With return back to previous operation
	Bit 4 = On ~ 1, 2 & 3 = Off	#6: With no return back function (see #5)

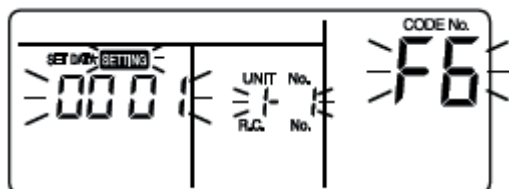
The fitting method of this accessory differs depending on the type of indoor unit it will be fitted to. Please refer to the correct type of indoor unit for the appropriate instructions!

Installation Manual additional P.C. board TCB-PCUC1E

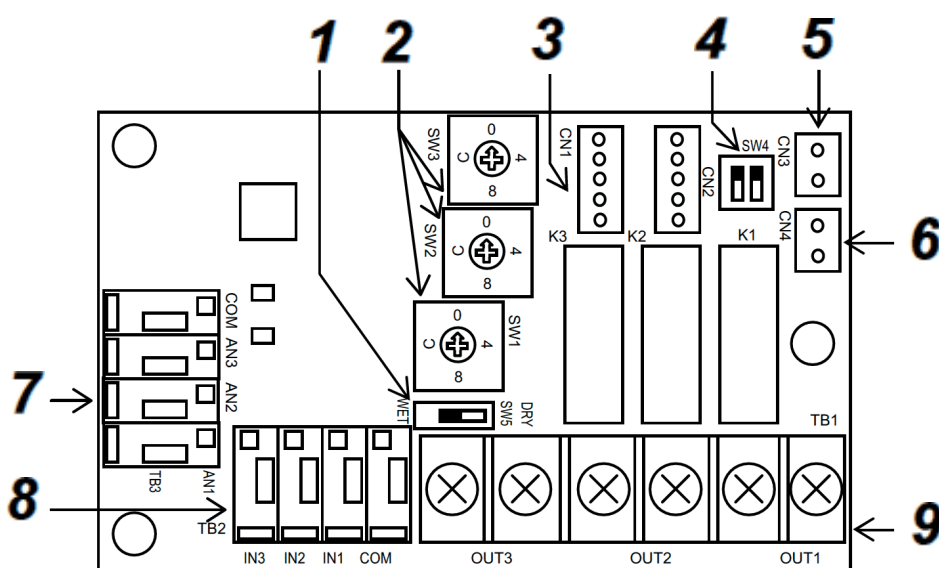
Nomenclature and Functions

Code no. (DN) setting

Wired remote control setting (see page 73 + 74)



To activate the P.C. board set the DN-Code F6 to "0001"



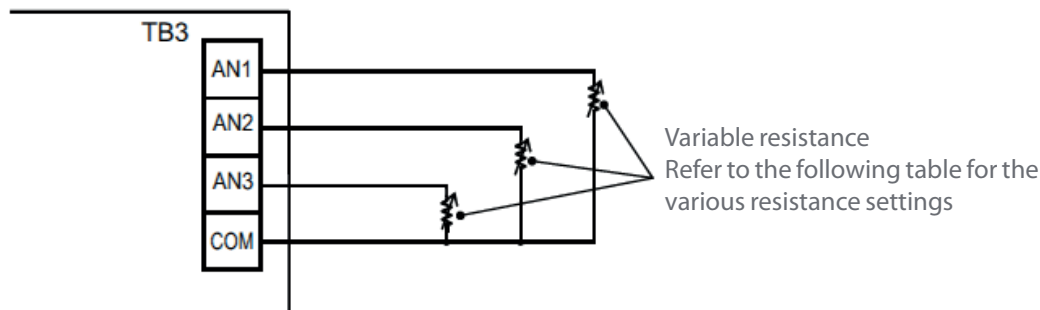
- 1 External digital input**
Switch (SW6) for voltage ON (Wet) and voltage OFF (Dry)
(Factory default: Voltage OFF = DRY)
- 2 Switch for setting signal output**
(Factory default: 0)
Switch to select the function which should be displayed (in connection with TB1)
- 3 Connector for connecting to indoor circuit board (CN1)**
Use the transmission cable provided with this connector to connect to the circuit board in the indoor unit.
(Indoor unit side: Red (CN521). On this control kit: Red (CN1).)
- 4 Switch for function select (SW4)**
(Factory default: OFF)
Bit 1: Switches inversion of output logic of signal output 3 (OUT3)
Bit 2: Not used (do not set)
- 5 FILTER connector (CN3)**
Short circuit CN3 with a jumper when you connect a humidifier to the TB1 terminals.
- 6 EXCT connector (CN4)**
If it is short circuited by jumper SN4, Thermo is off (compressor off).

7

External analog input terminal (TB3)

It is possible to change the indoor unit's operation mode (AN1), set temperature (AN2), and blower setting (AN3) by connecting a variable resistor to the analog input terminal.

- When both the wired remote control and the central control are used, the most recent setting has priority.



Do not apply voltage or current to AN1, AN2, AN3 or COM.

Operation mode: AN1

Operation switching	External resistance (Ω)
Stop	30
Fan only	60
Cool	90
Heat	120

Set temperature: AN2

Set temperature ($^{\circ}\text{C}$)	External resistance (Ω)
17	10
18	20
19	30
20	40
21	50
22	60
23	70
24	80
25	90
26	100
27	110
28	120
29	130
30	140

Fan setting: AN3

Fan setting	External resistance (Ω)
Auto	30
High	60
Medium	90
Low	120

8

External digital input terminal (TB2)

The following controls can be done by inputting signals to the external digital input terminal.

▼ IN1: External error input

The air conditioner stops and check code L30 is displayed on the wired remote control.

▼ IN2: Prohibition of local input

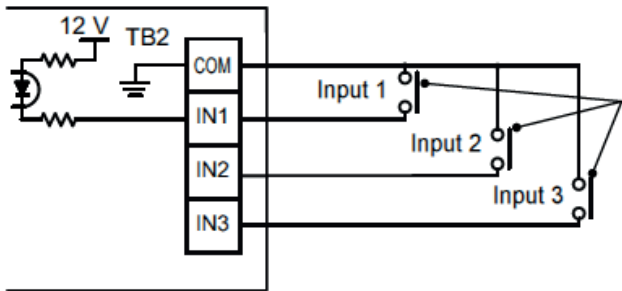
 is displayed on the wired remote control. With the local wired remote control, the unit can not be switched. With a central remote control the unit can be controlled.

▼ IN3: Not used

- Do the wiring as shown below. Set either "Voltage ON: WET" or "Voltage OFF: DRY", depending on use.

"Voltage OFF" input

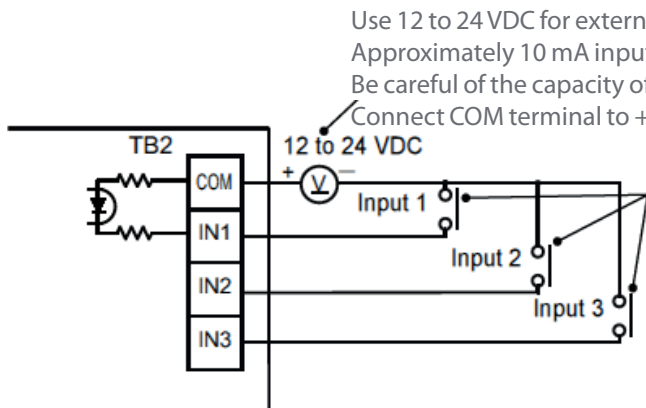
Set the input switch (SW5) to "Voltage OFF (DRY)".
(Factory default: Voltage OFF = DRY)



Use contacts for micro-currents.
(Use ones that have minimum applications loads of 12 VDC and 1 mA or less.)

"Voltage ON" input

Set the input switch (SW5) to "Voltage ON (WET)".
(Factory default: Voltage OFF = DRY)



Use 12 to 24 VDC for external power source.
Approximately 10 mA input current is required for each contact.
Be careful of the capacity of the power source. (Do not apply 220-240 VAC)
Connect COM terminal to + side of the power supply.

Use contacts for micro-currents.
(Use ones that have minimum applications loads of 12 VDC and 1 mA or less.)

9

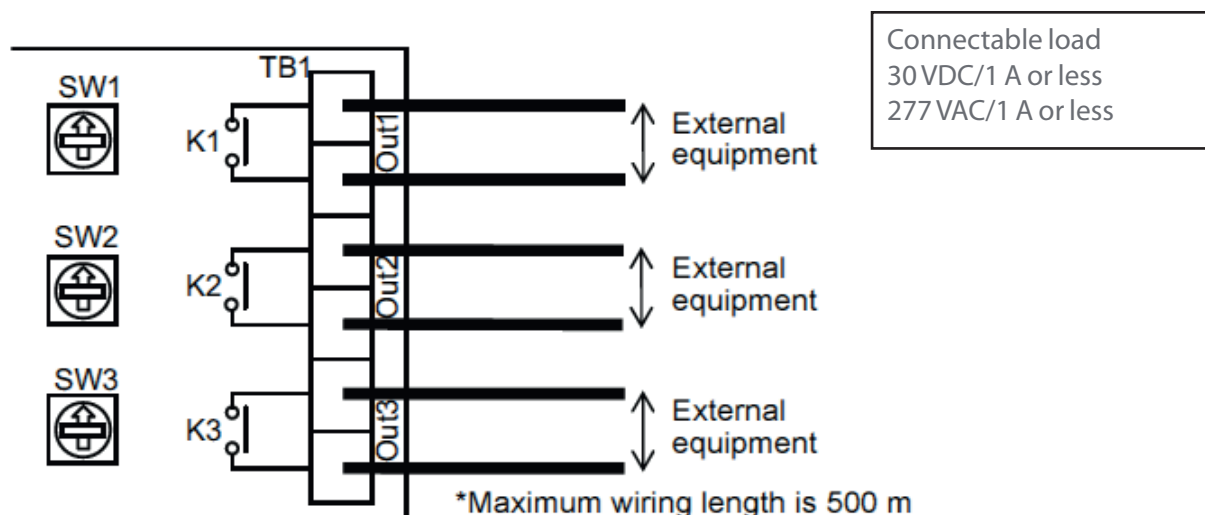
Signal output terminal (TB1)

The following signal outputs are extracted from "OUT1", "OUT2" and "OUT3".

It is possible to change the signal outputs with SW1, SW2 and SW3.

* **Always turn off the power to the indoor unit before setting the signal outputs.**

Note that even if you set the signal outputs, the settings do not change if the power to the indoor unit is ON.



SW1, 2 and 3 settings	Signal output
0	No output (default)
1	Cool, dry output
2	Heat output
3	Defrost output
4	Fan output (indoor unit fan ON)
5	Thermo. ON output
6	Ventilation output
7	Operation output
8	Alarm output
9	Humidify output *1
A	Heater output
B	Actual compressor on output
C	Actual fan status output
D	Filter sign output
E	Demand response output
F	Not used

*1 Attach the short plug provided to CN3 if using humidify output

*2 Only signal output 3 (OUT3) can change relay (K3) contacts from A contact to B contact by switching the relay output reverse switch SW4-bit1 from OFF to ON.

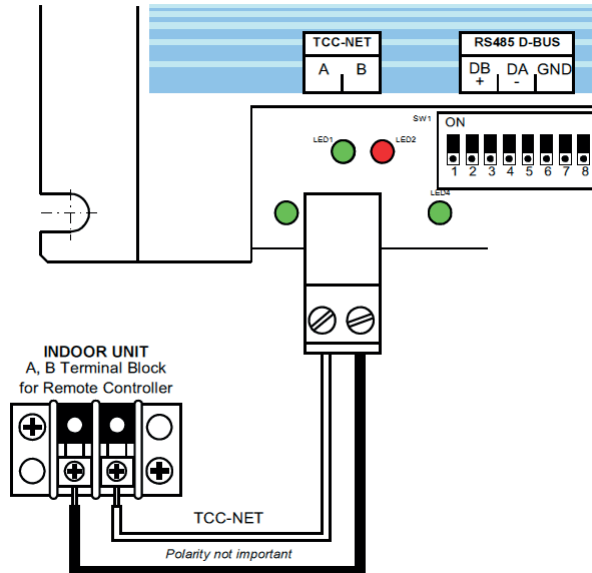
- A contact: Relay is ON when there is signal output
- B contact: Relay is OFF when there is signal output
(Relay is ON when there is no signal output)

Always turn off the power to the air conditioner before doing the settings because the SW4 settings also are not changed even if the settings are changed while the power is ON.

RBC-FDP3-PE Analoges Interface 0-10V

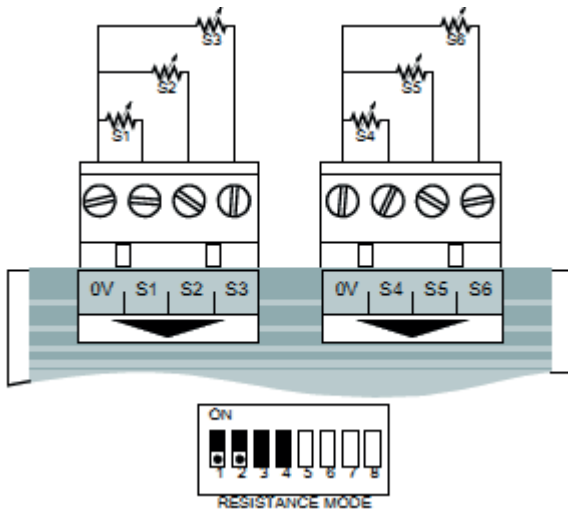
TCC-NET Network

Via TCC-NET terminals A, B (indoor unit) and TCC-NET on FDP3, it is supplied with voltage and communicates with the indoor unit. The FDP3 can be connected together with a Toshiba remote control.



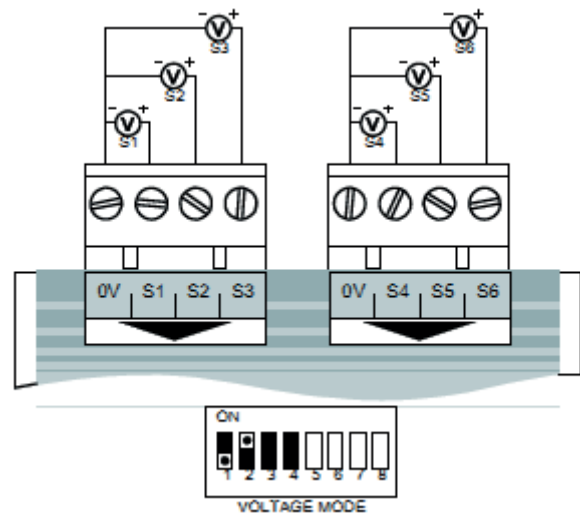
The configurations switch SW1.2 changes the inputs S1 to S6 between Resistance and Voltage modes.

Resistance Mode



With SW1.2 OFF the inputs S1 to S6 operate in Resistance mode, unit operation can be controlled by connecting fixed or variable resistors to inputs S1 to S6.

Voltage Mode



With SW1.2 ON inputs S1 to S6 operate in Voltage mode. Voltage ranges between 1V and 10V can be used to modulate each input.

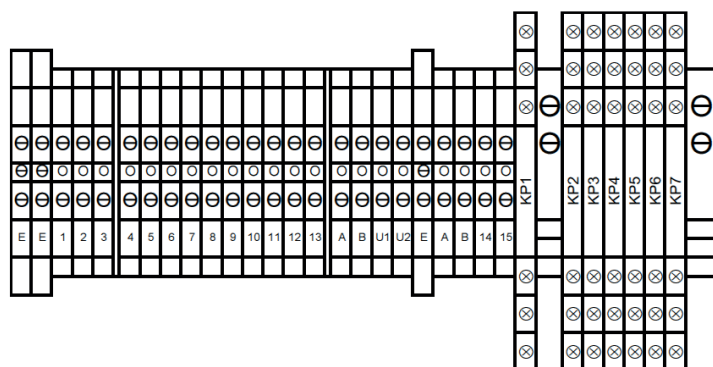
ANALOG INTERFACE 0-10V RBC-FDP3-PE

Each control input has a defined control range under voltage and resistance mode as outlined in the following tables. Default settings are applied if the input remains unconnected. These are indicated in the table by the symbol ●.

Resistance kΩ	≤0,4	1,1	1,8	2,5	3,2	3,9	4,6	5,4	6,1	6,8	7,5	8,2	8,9	9,6	>200k
Voltage V	1,3	2,0	2,6	3,3	3,9	4,5	5,2	5,8	6,5	7,1	7,8	8,4	9,0	9,7	>1
S1 Setpoint	18	19	20	21	22	23	24	25	26	27	28	29	30	31	●21

<i>S2 Fanspeed</i>	<i>S3 Mode</i>	<i>S4 Louvre</i>	<i>S6 Lock</i>	<i>Resistance kΩ</i>	<i>Voltage V</i>
AUTO	AUTO	Stop	All	≤1,1kΩ	1 - 1,75V
LOW	HEAT	Swing	S1, S3, S5	2,2kΩ	3,25V
MED	FAN	0°	S3, S5	3,3kΩ	4,75V
HIGH	COOL	15°	S5	4,7kΩ	6,25V
HIGH	DRY	45°	Local	6,8kΩ	7,75V
HIGH	DRY	75°	Unlock	9,6kΩ	9,25V
HIGH	DRY	90°	Unlock	15kΩ	10,00V
● AUTO	● AUTO	● Swing	● Unlock	>200kΩ	<1,00

<i>S5 On/Off</i>	<i>Resistance kΩ</i>	<i>Voltage V</i>
● OFF	>5.Ω	<3,5V
ON	<1kΩ	>6,5V

CONNECTION of LC/VRF DX-Kit (RBC-DXC031)**LC: Indoor / Outdoor Connection**

Terminal E & 1 & 2 & 3: The DX CONTROLLER should be connected to the corresponding terminals on the outdoor unit.

VRF: Supply

Terminal E & 1 & 2 (3 Not used for VRF): The DX CONTROLLER should be connected to the main power supply by means of a switch with a contact separation of at least 3mm.

Analogue Input 1 (0-10V Capacity Control)

Terminal 4 & 5: See BMS section for details.

Digital Input 1 (ON / OFF)

Terminal 6 & 7: ON / OFF over a dry contact. If the contact is closed, the system switches on. If the contact is opened, the system switches off. If the system is switched using the external contact, then switching ON / OFF using the remote control is still possible. Note that an appropriate capacity control demand (AI_1) is additionally required for the system to start.

Digital Input 2 (Mode)

Terminal 8 & 9: HEAT / COOL mode selection over a dry contact. If the contact is closed, the system changes to HEAT mode. If the contact is opened, the system changes to COOL mode. Mode changes can also be made using a wired remote control (if fitted). Note only COOL mode and HEAT mode are available.

Digital Output 1 (User Defined)

Terminal 10 & 11: See BMS section for details.

Digital Output 2 (User Defined)

Terminal 12 & 13: See BMS section for details.

Remote control BUS line (A / B)

Terminal A & B: At these terminals an optional wired remote control can be attached (useful for installation and maintenance).

LC: Inside device BUS line (U1 / U2 / E)

Terminal U1 & U2 & E: Details regarding the wiring of the Central Control BUS can be found in the installation manual of the Central Control devices (Optional).

VRF: Inside device BUS line (U1 / U2 / E)

Terminal U1 & U2 & E: Details regarding the wiring of the Central Control BUS can be found in the installation manual of the VRF outdoor unit.

External safety Input

Terminal 14 & 15: If this contact is open for more than 1 minute, the error message P10 is generated and the ventilation kit switches off automatically (Rating 12VDC). This contact can, for instance, be used with an on-site frost protection monitor. If the External safety contact is not used, then the contact should be bridged.

Fan Error Input

Terminal 16 & KP1.14_NO: An operation monitor (supplied locally) of the Air Flow is to be attached at this terminal as a dry contact (for instance, differential pressure monitor, vane relay or similar). A closed contact generates the error message L30.

Fan Operation Output

Terminal KP2.11 & KP2.12_NC / KP2.14_NO: The installer chooses NC or NO operation by wiring directly to relay. During Fan Motor operation NO / NC signal is active (Contact Rating 250VAC 6A).

Alarm signal Output

Terminal KP3.11 & KP3.12_NC / KP3.14_NO: The installer chooses NC or NO operation by wiring directly to relay. During Alarm Operation NO / NC signal is active (Contact Rating 250VAC 6A).

Defrost Operation Output

Terminal KP4.11 & KP4.12_NC / KP4.14_NO: The installer chooses NC or NO operation by wiring. During Defrost operation NO / NC signal is active (Contact Rating 250VAC 6A).

Startup Control Output (VRF Only)

Terminal KP5.11 & KP5.12_NC / KP5.14_NO: The installer chooses NC or NO operation by wiring. During Startup Control NO / NC signal is active (Contact Rating 250VAC 6A). On Start up the VRF system overrides the 0-10V Capacity Command which can lasts for up to 20mins.

Pre-Defrost Signal Output (VRF Only)

Terminal KP6.11 & KP6.12_NC / KP6.14_NO: The installer chooses NC or NO operation by wiring. Five minutes before the scheduled start of a Defrost NC / NO signal is active (Contact Rating 250VAC 6A).

Cool / Heat Model Output

Terminal KP6.11 & KP6.12_NC / KP6.14_NO: The installer chooses NC or NO operation by wiring. Heat (NC) / Cool (NO) (Contact Rating 250VAC 6A).

LC: Temperature sensors

The refrigerant temperature sensors are inserted into the brazed sensor. The sensor cables are to be attached as follows:

CN101	TC2 Sensor Ø6mm (BLK Plug / BLK Vinyl Tube)	Factory fitted to DX controller
CN102	TCJ Sensor Ø6mm (RED Plug / RED Vinyl Tube)	Factory fitted to DX controller
CN104	TA Sensor Resin (YEL Plug / BLK Vinyl Tube)	Factory fitted to DX controller

The sensor cables cannot be extended; they are supplied at the maximum permissible length of 5m.

VRF: Temperature sensors

The refrigerant temperature sensors are inserted into the brazed sensor holders (There are 2 sizes of refrigerant Sensors: Ø4 & Ø6) and secured using the supplied FIX-PLATE (There are 2 sizes of FIX-PLATE).

The sensor cables are to be attached as follows:

CN101	TC2 Sensor Ø6 (BLK Plug / BLK Vinyl Tube)	Factory fitted to DX controller
CN102	TCJ Sensor Ø6 (RED Plug / RED Vinyl Tube)	Factory fitted to DX controller
CN104	TA Sensor Resin (YEL Plug / BLK Vinyl Tube)	Factory fitted to DX controller
CN100	TC1 Sensor Ø4 (BRN Plug / BLU Vinyl Tube)	MM-DXV141 / MM-DXV281

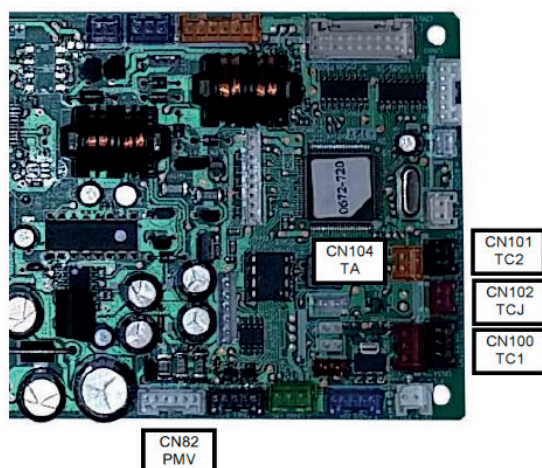
The sensor cables cannot be extended; they are supplied at the maximum permissible length of 5m.

VRF: Pulse modulation valve (PMV)

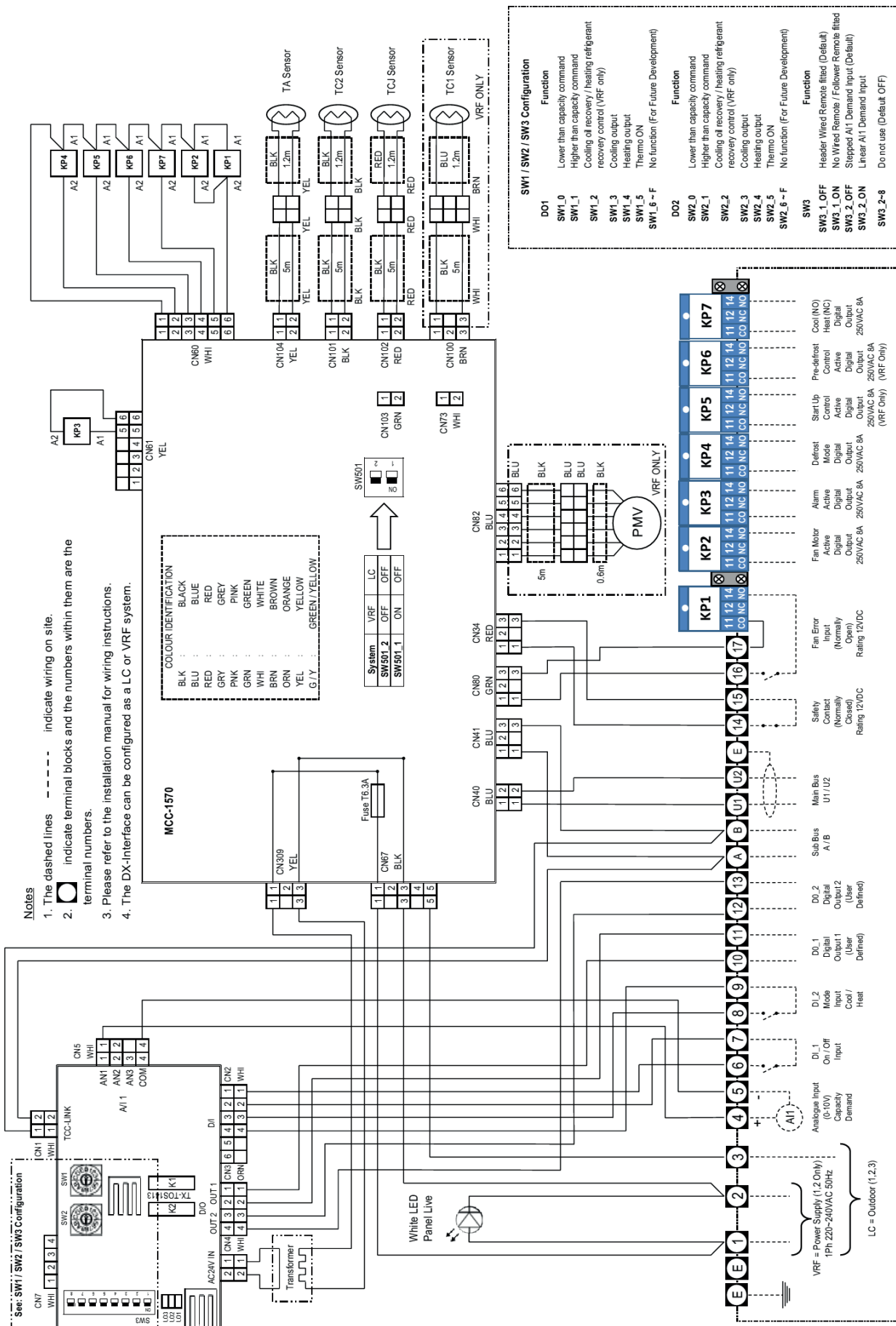
The connecting cable of the PMV is to be attached as follows:

CN82 PMV Extension Cable MM-DXV141 / MM-DXV281

The PMV cable cannot be extended; it is supplied at the maximum permissible length of 5m.

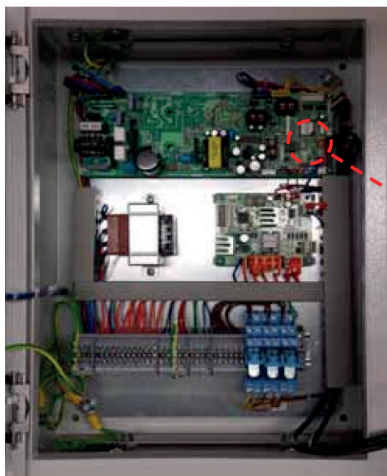


WIRING DIAGRAM RBC-DXC031

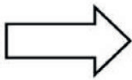
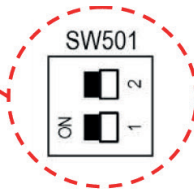


Configuration of DX-KIT

LC / VRF Configuration

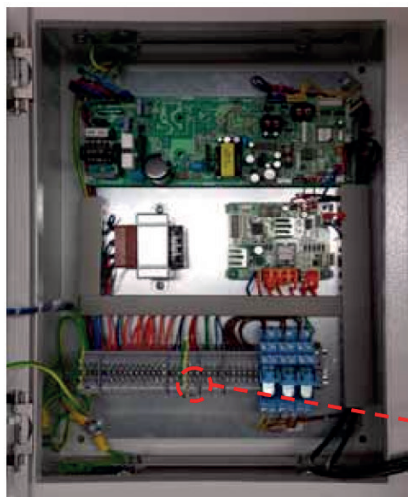


- The DX-KIT (RBC-DXC031) is common for both LC & VRF systems.
- As default this is configured as a LC model (changed by DIP-SW501 on MCC-1570 for use with a VRF system).

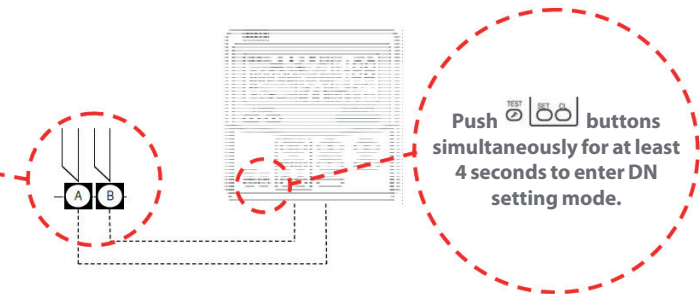


System	VRF	LC
SW501_2	OFF	OFF
SW501_1	ON	OFF

Unit Type / Capacity DN Code setting (Requires wired remote control)

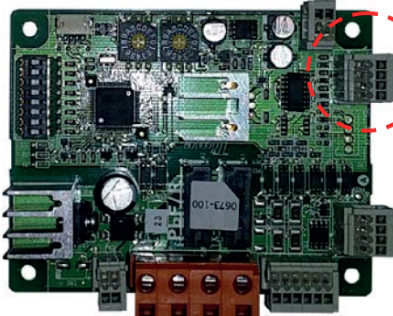


- Follow the basic operation procedure (see DN-code settings page 73 / 74).
- The interface uses a new unit Type DN Code 10_55. This is set at the factory.
- The installer must set Capacity Code (DN Code 11). As default this is configured as a 10HP model at the factory (DN 10_23). See table on next page.



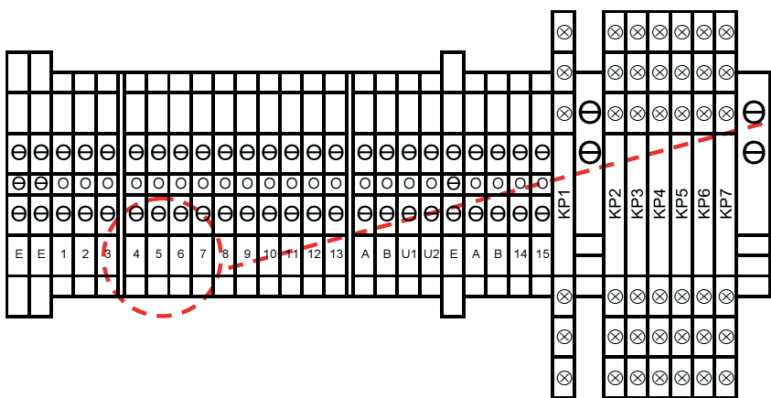
Capacity (HP)	1	1,5	2	3	4	5	6	8	10
Capacity Code (DN11)	3	6	9	12	15	17	18	21	23
Cool Capacity (kW)	2,5	3,6	5,6	8	11,2	14	16	22,4	28
Heat Capacity (kW)	3,4	4	6,3	9	12,5	16	18	25	31,5
LC	•	•	•	•	•	•	•	•	•
VRF (MM-DXV***)	-	-	-	-	-	-	141	281	281

0-10V PCB Specification: Analogue Input 1

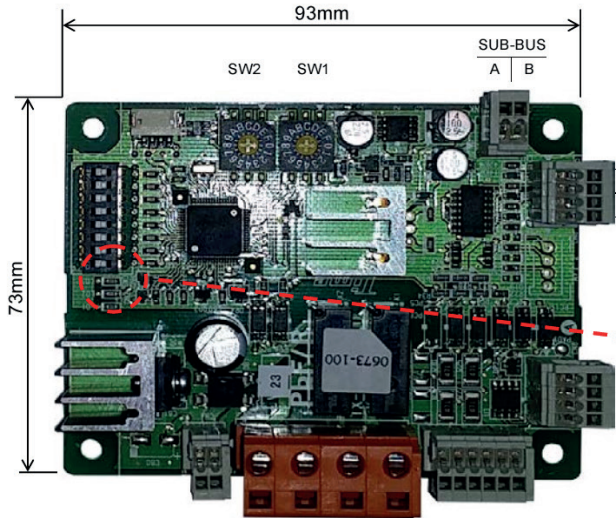


1: AI 1 = Capacity control
2: - = Not Used
3: - = Not Used
4: COM = Common

* Be sure NOT to input more than DC10V in analogue input terminal



0-10V PCB Specification: Building Management System



93mm

73mm

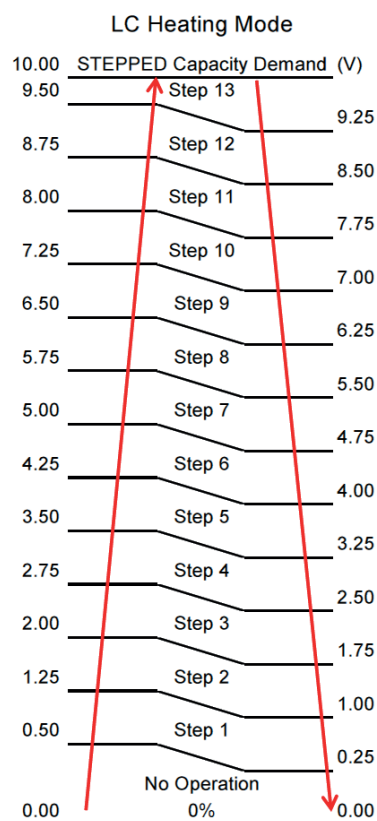
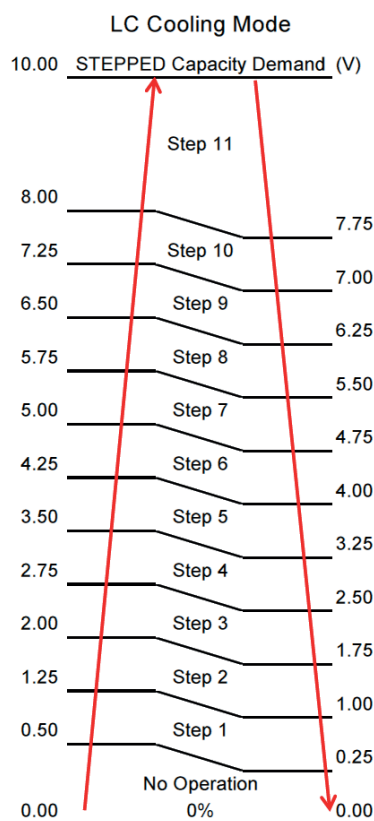
SW2 SW1 SUB-BUS A B

AI 1 AI 2 - COM ANALOGUE INPUT

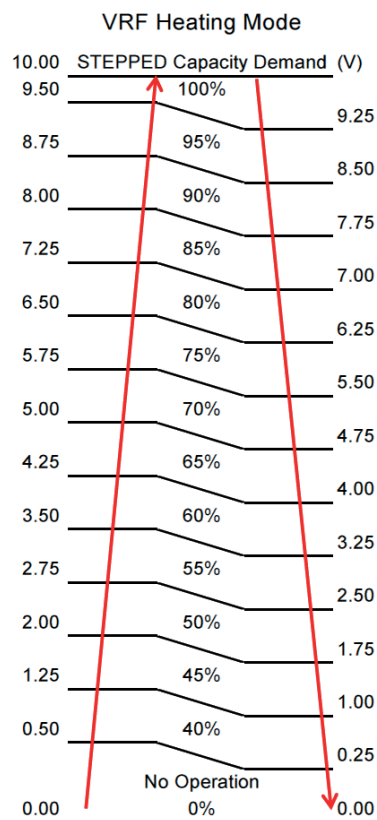
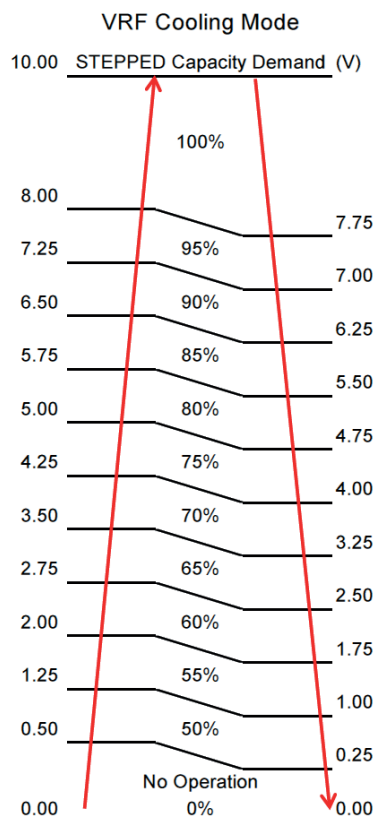
2 1 OUT 2 OUT 1 - IN 2 IN 1 24VAC DIGITAL OUTPUT DIGITAL INPUT

Function	Description
Power supply	Sub bus connection (AB): 15V ~ 24VDC 24VAC (supplied from DX CONTROLLER)
LED display	LD1 (GRN ON): Power Supply OK LD3 (RED FLASH): Communication Error LD3 (RED ON): Alarm Active

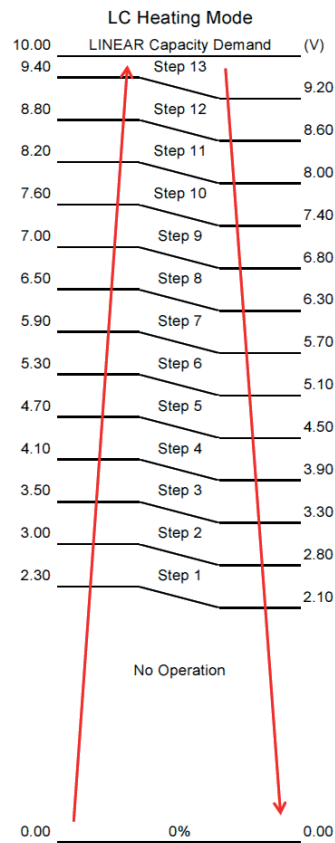
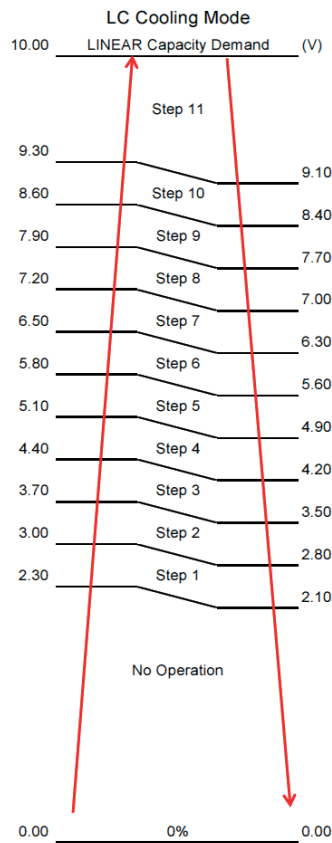
■ AI_1 Demand 0~10V Stepped Control (SW3_2 OFF – Default)



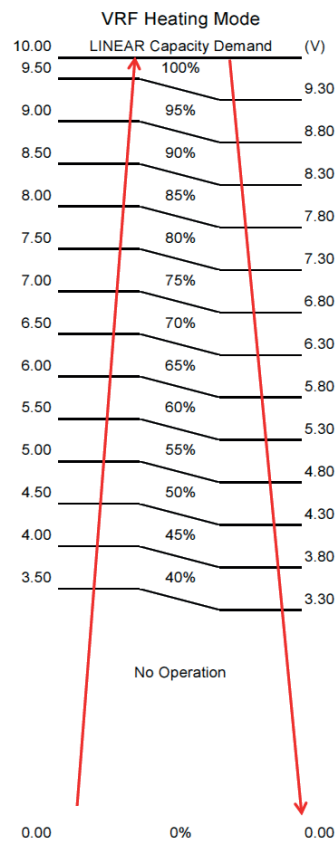
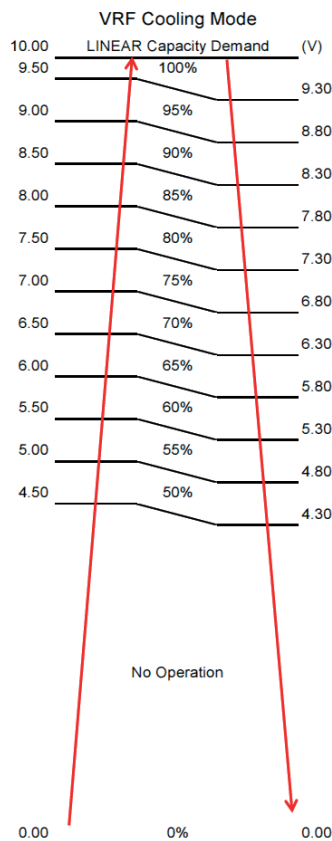
Note: For LC models the control steps are equally spaced between minimum and maximum compressor speed (actual limits vary by outdoor unit)



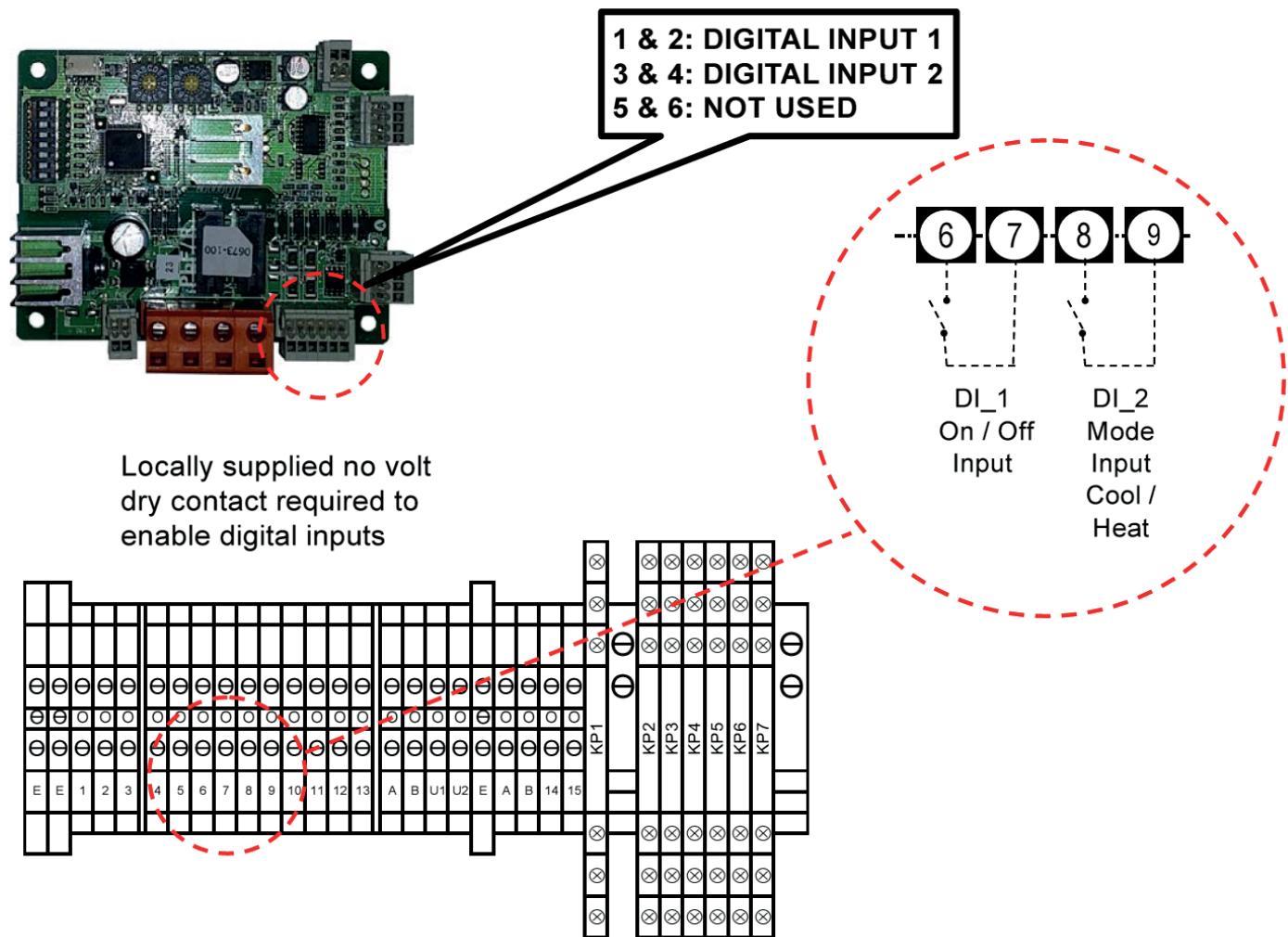
■ AI_1 Demand 0~10V Linear Control (SW3_2 ON)



Note: For LC models the control steps are equally spaced between minimum and maximum compressor speed (actual limits vary by outdoor unit)



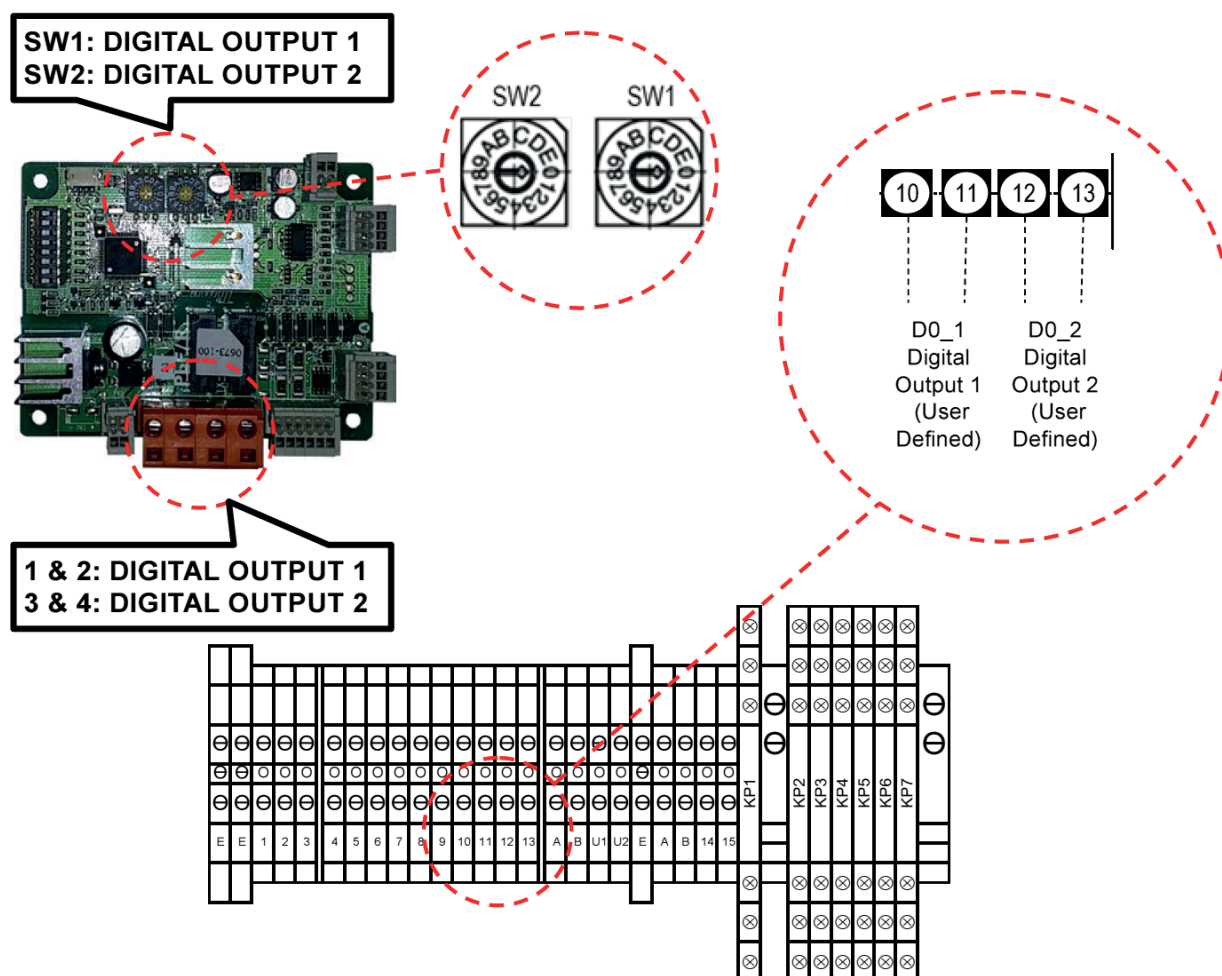
BMS Specification: Digital Inputs



Function	DI OPEN	DI SHORT
DI1	Operation OFF	Operation ON
DI2	COOL mode active	HEAT mode active

- Digital Input terminal supply voltage (12VDC) from PCB.

0-10V PCB Specification: Digital Outputs



Output function selected using rotary switches on PCB

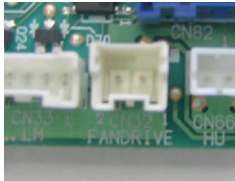
Rotary switch Position	Output Function
0	Lower than capacity command
1	Higher than capacity demand
2	Cooling oil recovery control / heating refrigerant recovery control (VRF only)
3	Cooling output
4	Heating output
5	Thermo ON
6 ~ F	No Function (for future use)
Relay contact rating	250VAC: 5A (max) 30VDC: 5 A (max)

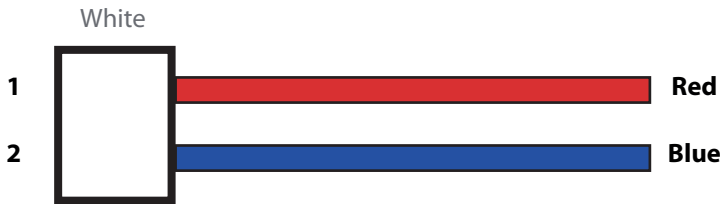
CN-Connector



Function	Connector	Pin No.	Outline	Model name
Fan output	CN32	1,2	Ventilation control from RC	TCB-KBCN32VEE
Option output	CN60	1,2,3,4,5,6	Operation status signal output (Cooling, heating, fan, defrost, thermo-ON)	TCB-KBCN60OPE
HA Terminal	CN61	1,2,3,4,5,6	External ON/OFF, operation output, alarm output	TCB-KBCN61HAE
Option error input	CN70	1,2	Alarm display	TCB-KBCN70OAE
Demand input	CN73	1,2	Forced thermo-off control	TCB-KBCN73DEE
Outside error input	CN80	1,2,3	Alarm input (L30) & forced OFF	TCB-KBCN80EXE

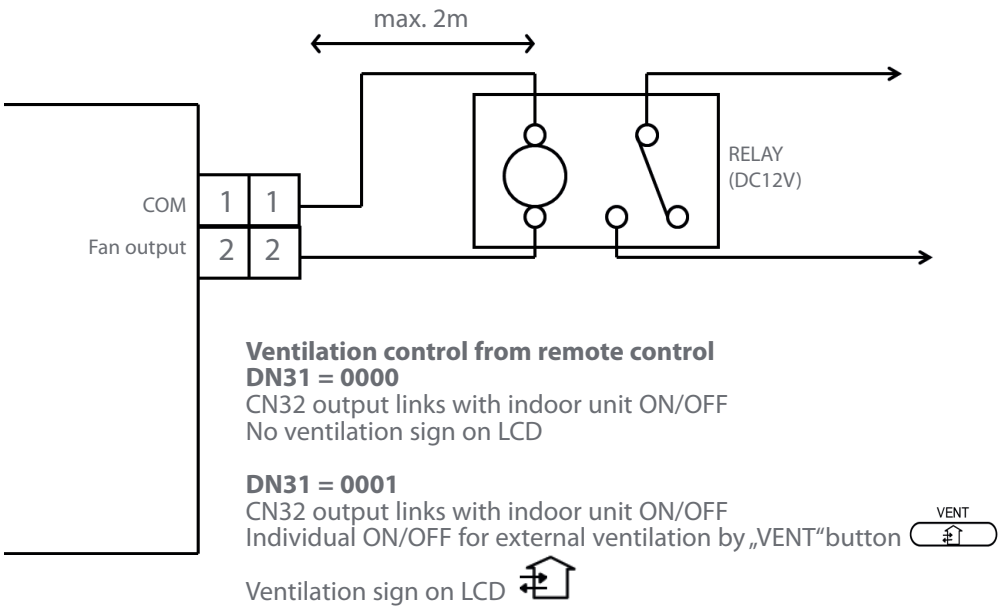
CN32: TCB-KBCN32VEE

1	Common (0V)	
2	Fan output (12VDC)	- Shipment setup (DN31 =0000) CN32 output links with indoor unit ON/OFF -Ventilation control (DN31 =0001) CN32 output links with indoor unit ON/OFF Individual ON/OFF for external ventilation by "VENT" button of remote control



CN32: Ventilation control

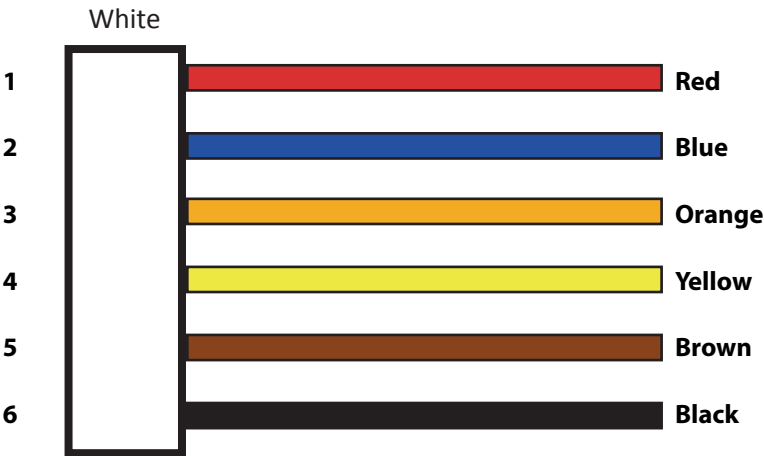
Indoor P.C. Board



CN60: TCB-KBCN60OPE

Note! Not available for VRF-console MML-AP***NH-E

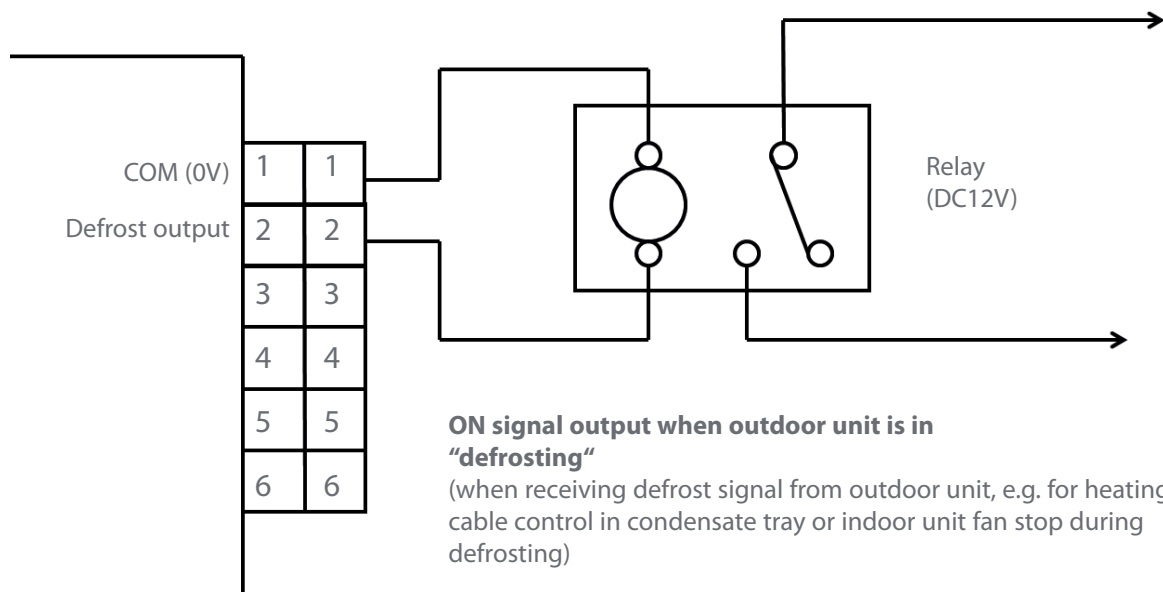
1	COM (0V)	Common for Pin. 2 to 6
2	Defrost output	ON signal when outdoor unit is in defrosting (when receiving defrost signal from outdoor unit)
3	Thermo ON output	ON signal when indoor unit is „thermo-ON“
4	Cooling output	ON when operation mode is cooling (Cooling, Dry, Cooling in Auto mode)
5	Heating output	ON when operation mode is heating (Heating, Heating in Auto mode)
6	Fan output	ON when indoor fan is ON (ex. Interlock cabling)



CN60: Defrost output

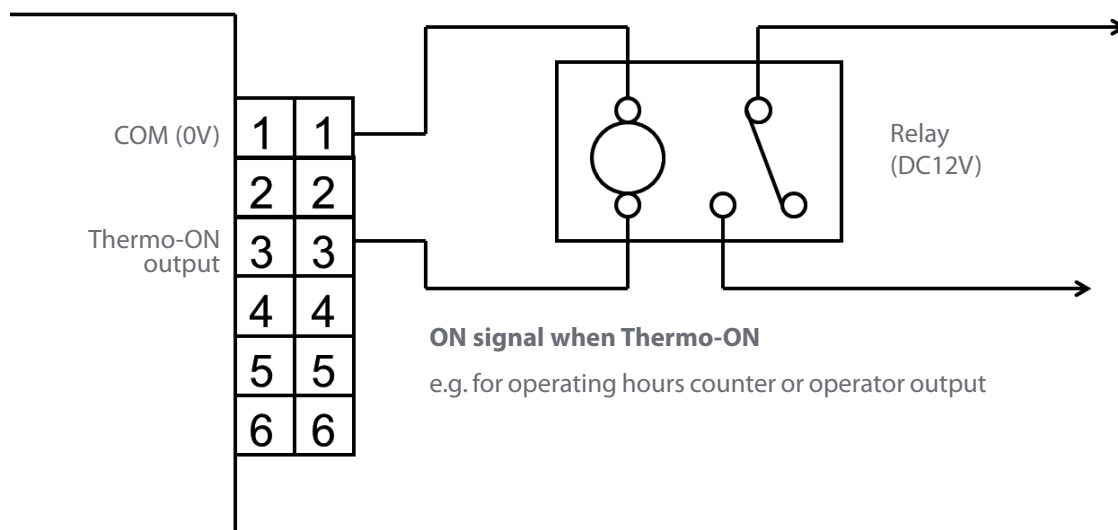
Indoor P.C.Board

max. 2m

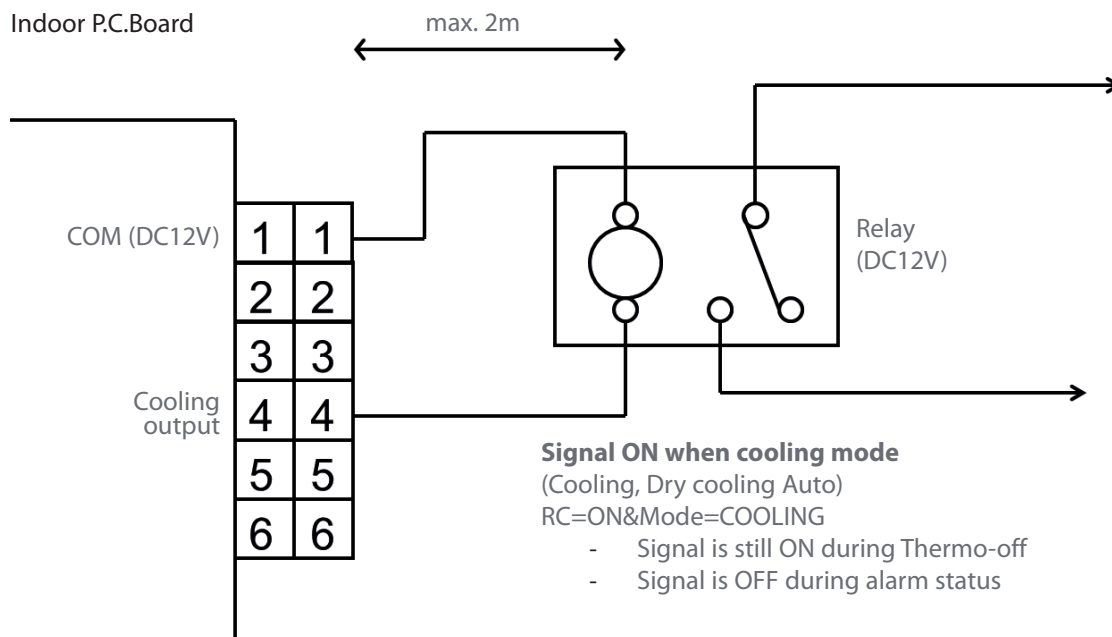
**CN60: Thermo-ON output**

Indoor P.C.Board

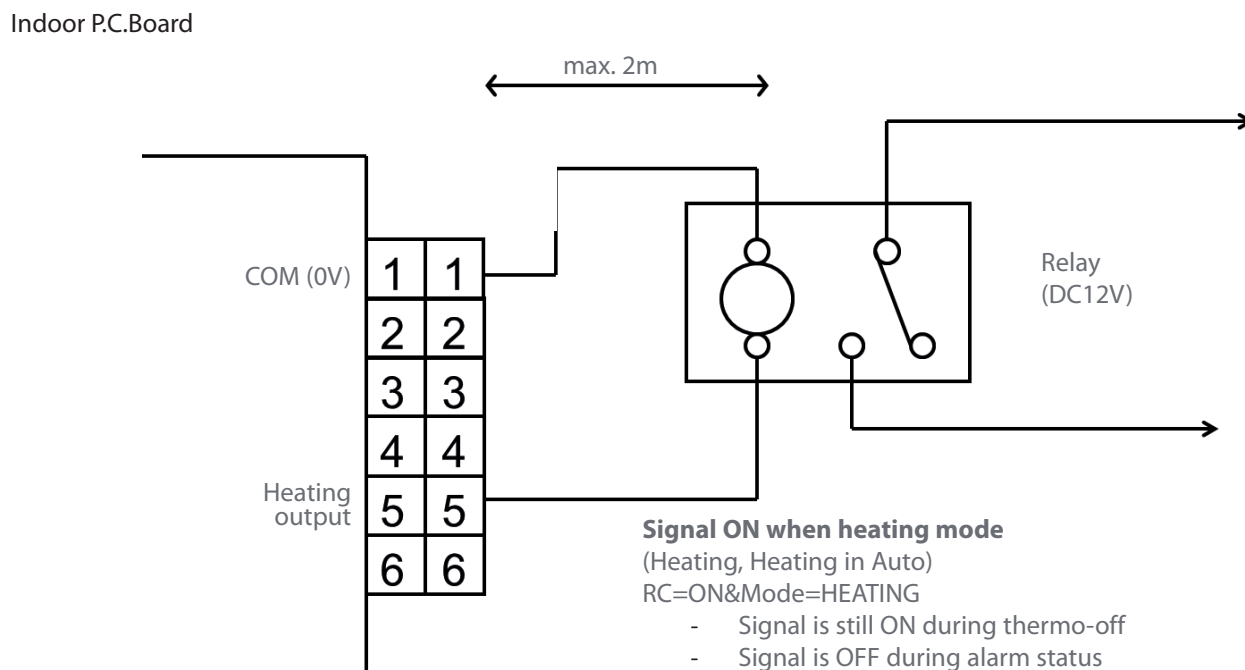
max. 2m



CN60: Cooling output



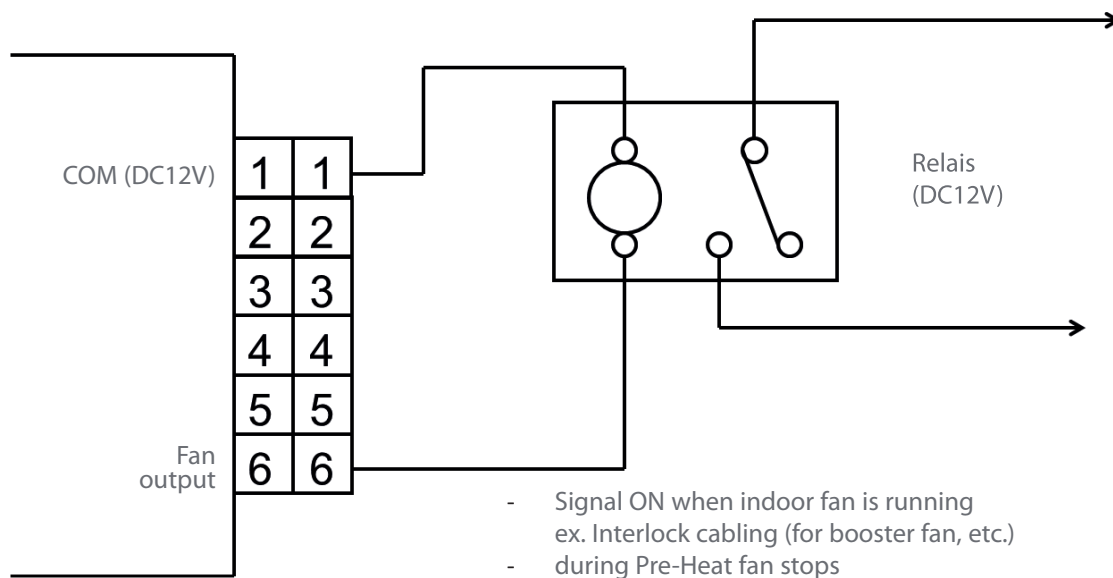
CN60: Heating output



CN60: Fan output

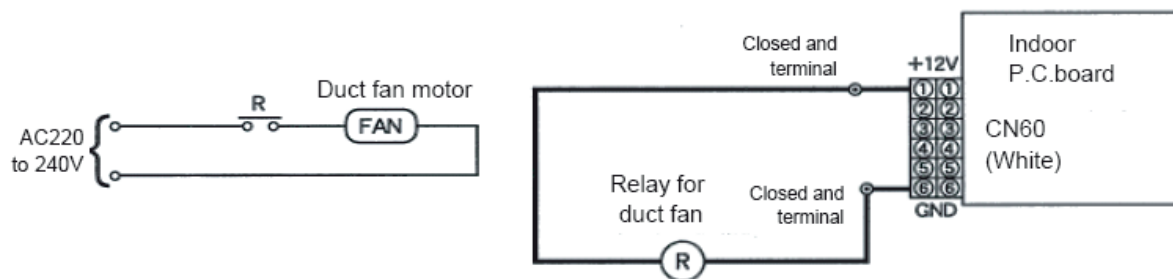
Indoor P.C.Board

max. 2m



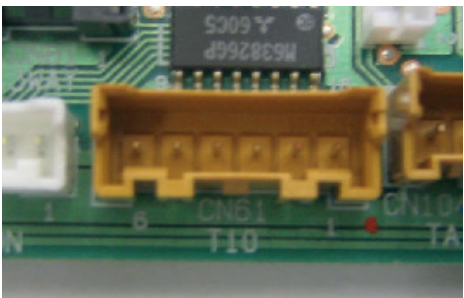
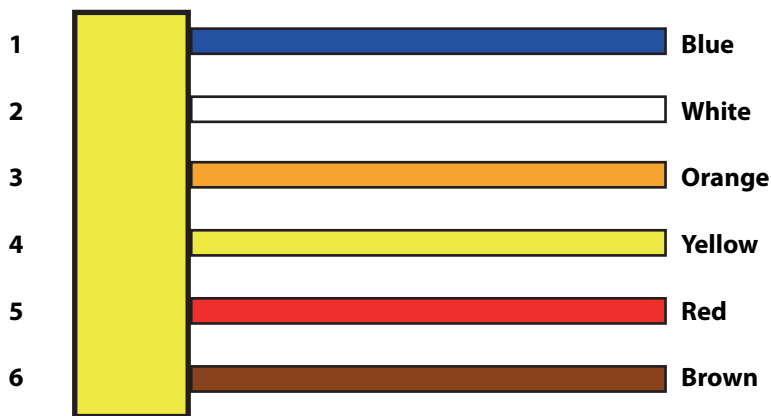
Signal ON when indoor fan is running

➔ Interlock cabling (with booster fan for fresh air intake, etc)

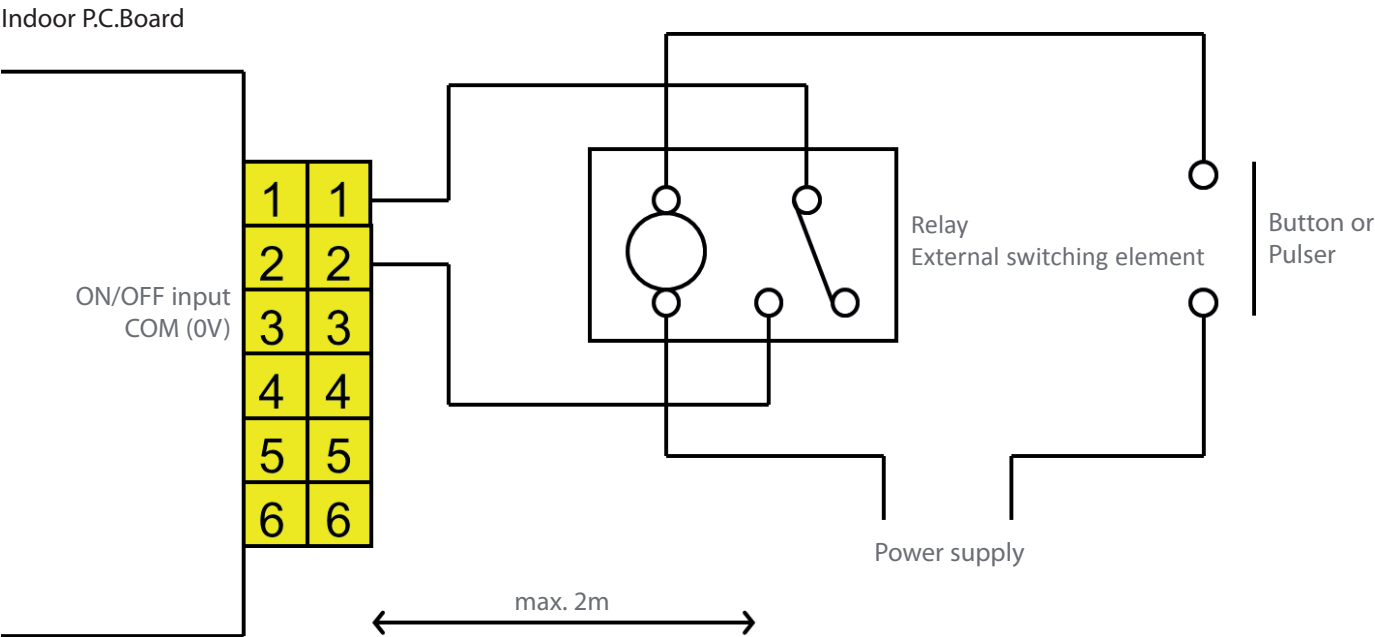


CN61: TCB-KBCN61HAE

1	External ON/OFF	External ON/OFF control (DN code 2E, J01)
2	0V (Common for Pin 1, 3)	
3	ON/OFF prohibition input	Remote control ON/OFF prohibition is permitted / prohibited by input signal
4	Operation output	ON signal during „remote control ON & No alarm“
5	0V (Common for Pin 4, 6)	
6	Alarm output	ON signal during alarm output



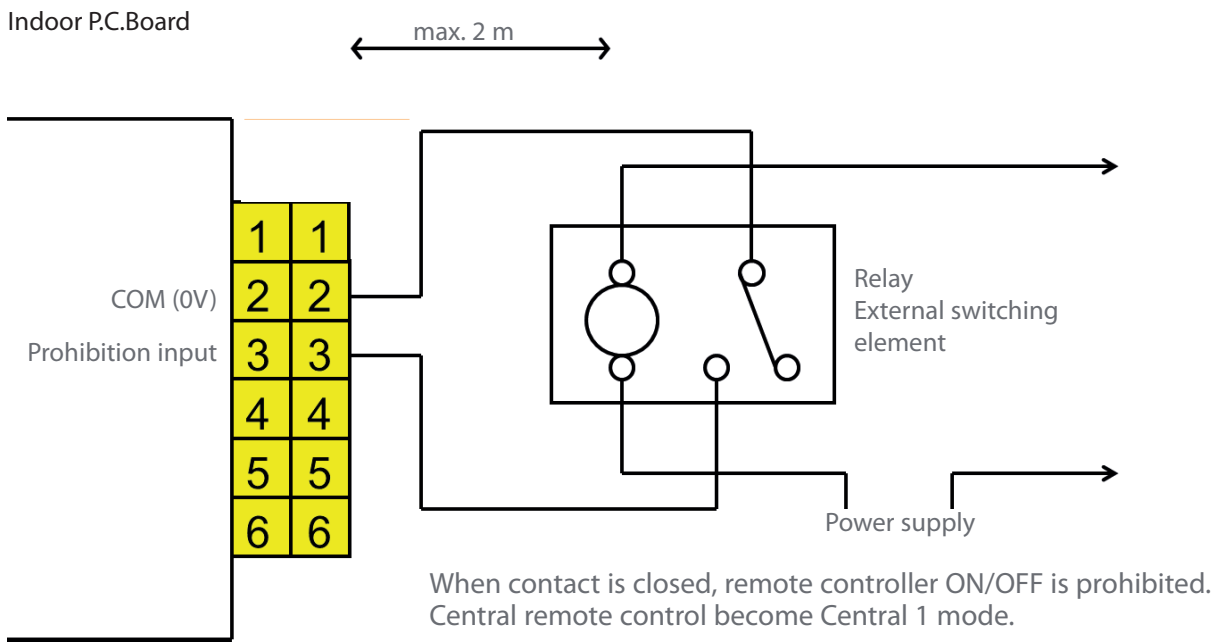
CN61: External ON/OFF



Logic

DN2E	J01	Action
0000 (Factory setting)	 connect	Pulse input Pulse width 200 to 300 mS, Pulse interval 200 mS or more 
	 cut	Static input 
0001	 connect	e.g. keycard in hotel with same setting as turn off 
	 cut	e.g. keycard in hotel however, no setting, user decides what happens  Heat = Lowest set point (18°C) COOL/DRY = Highest set point (29°C) AUTO/FAN = Neglect

CN61: Prohibition Input



Reference

Central remote control prohibition mode
(Central 1)



➔
CN61
Prohibition

CENTRAL	ON/OFF	MODE	SET POINT
1	X	free	free
2	X	X	X
3	free	X	X
4	free	X	free

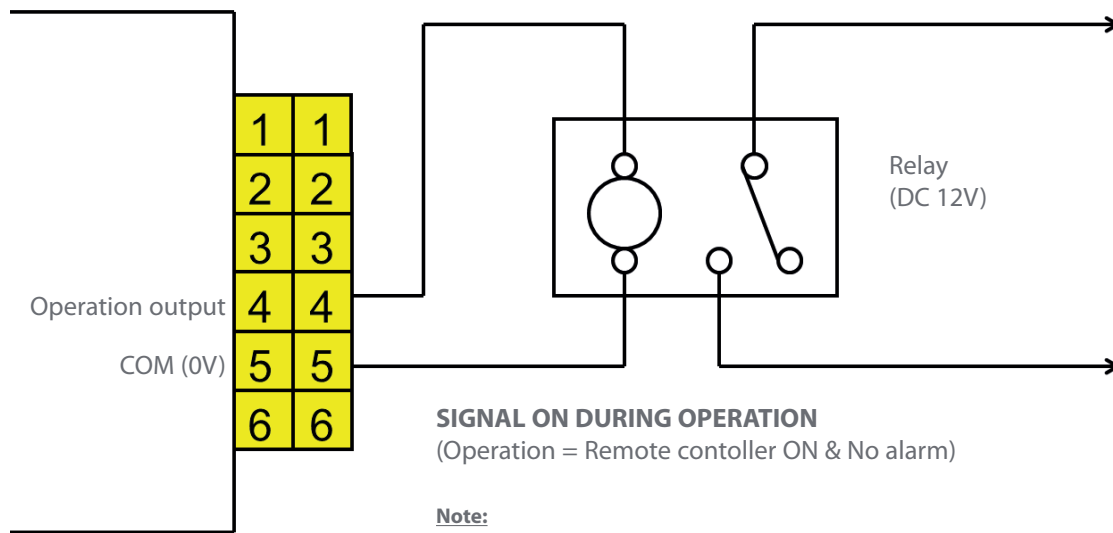
x: Function prohibited
free: not prohibited

This prohibition can be released from central remote control.

CN61: Operation output

Indoor P.C.Board

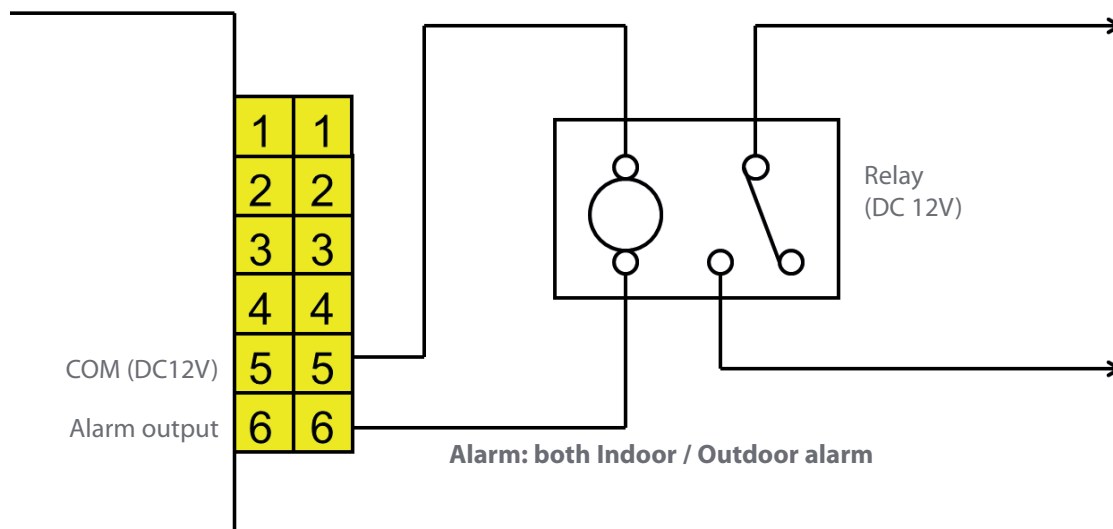
← max. 2 m →



CN61: Alarm output

Indoor P.C.Board

← max. 2 m →



CN70: TCB-KBCN70OAE

1	Error input	Default: DN2A =0002 (at shipment) DN2A=0001 (External error input) When signal is present, error symbol is displayed. (Indoor unit does not stop)
2	Com (0V)	Dry contact

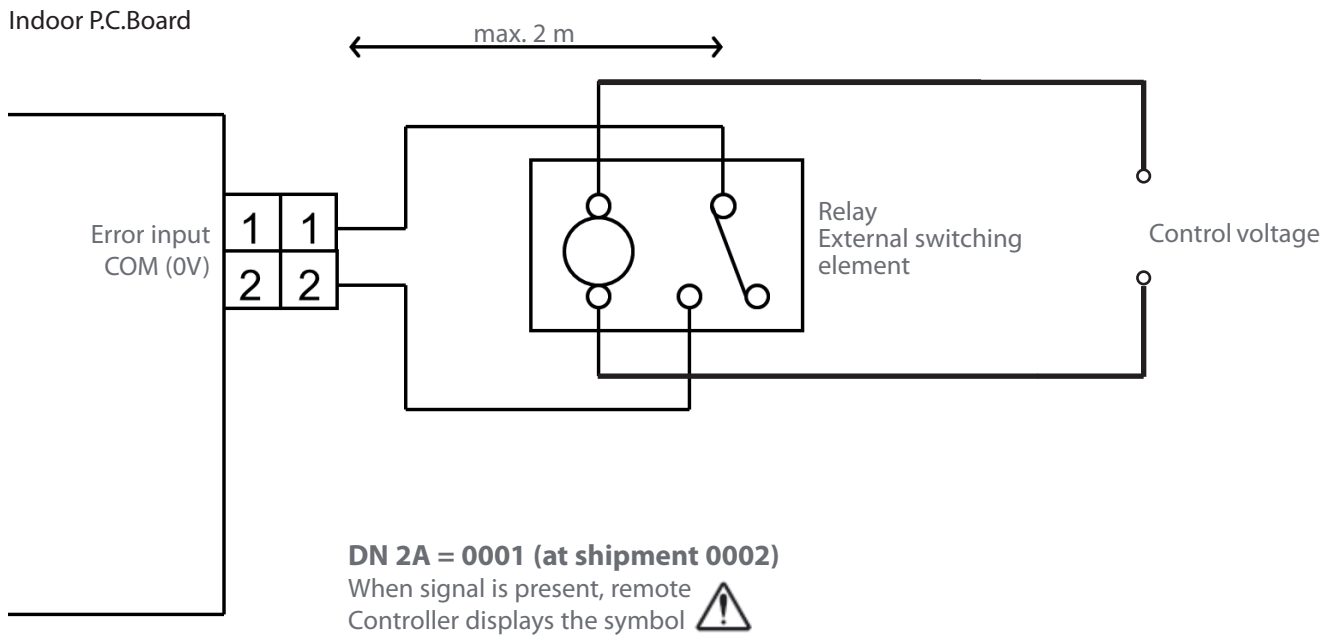


NOTE:

No CN70 connector in RAV-SM**KRT/ MMK-AP**2H



CN70: Option error input



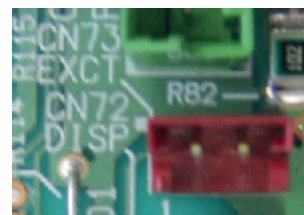
DN 2A = 0001 (at shipment 0002)

When signal is present, remote
Controller displays the symbol

Air conditioner does not stop (soft alarm).

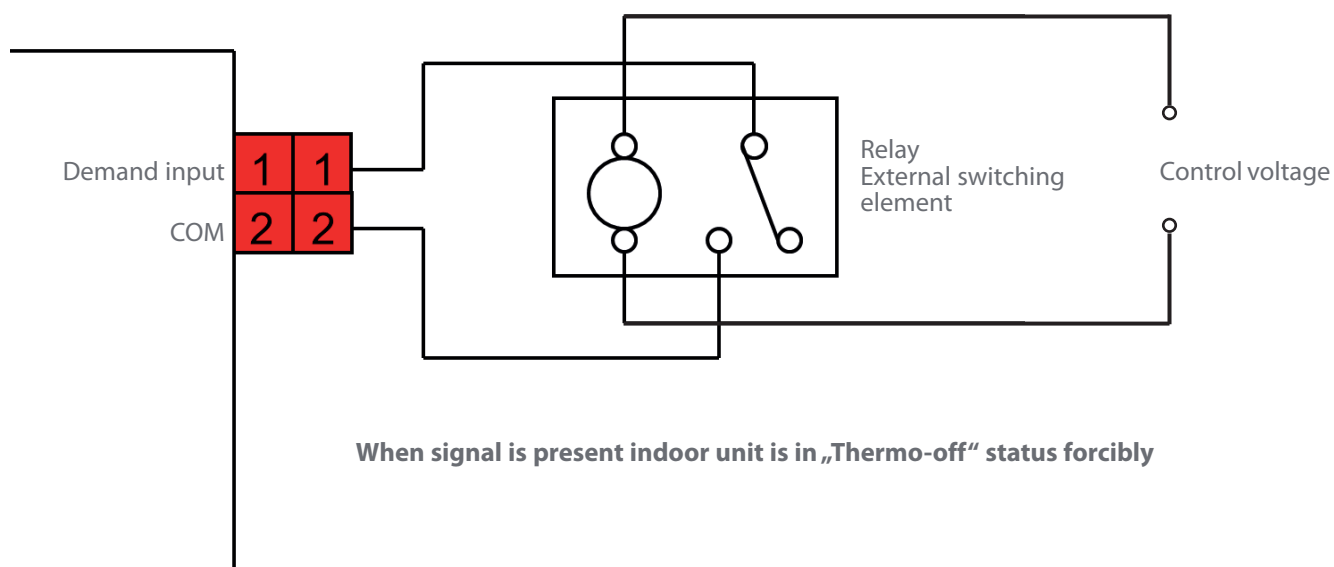
CN73: TCB-KBCN73DEE

1	Demand input	Indoor Unit forced thermo-OFF
2	Com (0V)	Dry contact

**CN73: Demand input**

Indoor P.C.Board

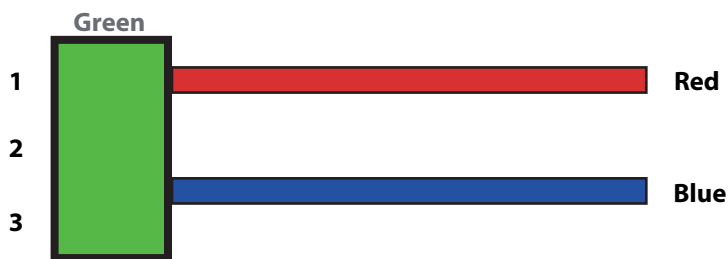
max. 2 m



When signal is present indoor unit is in „Thermo-off“ status forcibly

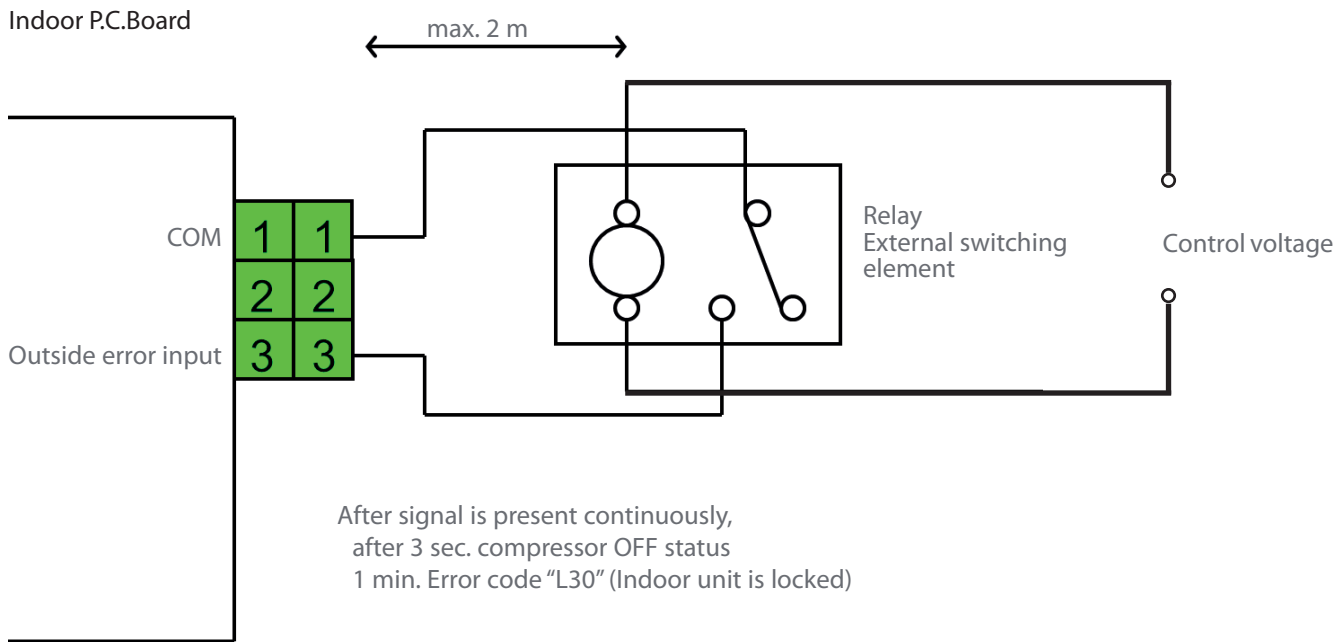
CN80: TCB-KBCN80EXE

1	COM (0V)	Dry contact
2	--	
3	Outside error input	After signal is present continuously, 3 sec. Forced thermo-off 1 min. Error code "L30" (Interlock form outside) and stop the operation (This unit only)



e.g. Alarm output of drain pump (hi-wall unit)

CN80: Outside error input



Current consumption + protection

Outdoor unit:

	Current consumption maximum (A)	Current consumption nominal (A) cooling/heating	Power consumption nominal (kW)	Recommended protection (A)	Supply voltage	*Recommended cable type power supply H07RN-F*G**2	Communication cable H07RN-F*G**2
RAS:							
AvAnt							
RAS-077SAV-E5	8	2,66/2,80	0,550	10	220-240V/1Ph+N/50Hz	3G1,5	4G1,5
RAS-107SAV-E6	8	3,67/3,95	0,800	10	220-240V/1Ph+N/50Hz	3G1,5	4G1,5
RAS-137SAV-E6	8	5,16/4,46	1,065	10	220-240V/1Ph+N/50Hz	3G1,5	4G1,5
RAS-167SAV-E5	10	7,13/6,91	1,530	13	220-240V/1Ph+N/50Hz	3G1,5	4G1,5
Suzumi Plus + Console							
RAS-10N3AV2-E	8,5	2,81/3,43	0,710	10	220-240V/1Ph+N/50Hz	3G1,5	4G1,5
RAS-13N3AV2-E	9,1	4,57/4,93	1,040	10	220-240V/1Ph+N/50Hz	3G1,5	4G1,5
RAS-16N3AV2-E	11	6,33/6,86	1,458	13	220-240V/1Ph+N/50Hz	3G1,5	4G1,5
RAS-18N3AV2-E	10	6,35/6,98	1,520	13	220-240V/1Ph+N/50Hz	3G1,5	4G1,5
RAS-22N3AV2-E	13,5	9,31/9,56	2,000	16	220-240V/1Ph+N/50Hz	3G1,5	4G1,5
Super Daiseikai 6.5							
RAS-10N3AVP-E	11	2,35/2,94	0,595	13	220-240V/1Ph+N/50Hz	3G1,5	4G1,5
RAS-13N3AVP-E	11	3,8/4,3	0,915	13	220-240V/1Ph+N/50Hz	3G1,5	4G1,5
RAS-16N3AVP-E	11	6,13/6,64	1,435	13	220-240V/1Ph+N/50Hz	3G1,5	4G1,5
Super Daiseikai 8							
RAS-10G2AVP-E	11	2,58/3,10	0,580	13	220-240V/1Ph+N/50Hz	3G1,5	4G1,5
RAS-13G2AVP-E	11	4,03/3,84	0,800	13	220-240V/1Ph+N/50Hz	3G1,5	4G1,5
RAS-16G2AVP-E	11	6,24/6,41	1,370	13	220-240V/1Ph+N/50Hz	3G1,5	4G1,5
Multi split							
RAS-M14GAV-E	13,2	4,87/4,43	1,020	16	220-240V/1Ph+N/50Hz	3G1,5	4G1,5
RAS-M18UAV-E	14,4	7,12/8,28	1,790	16	220-240V/1Ph+N/50Hz	3G1,5	4G1,5
RAS-3M26UAV-E	16,5	9,57/10,53	2,200	16	220-240V/1Ph+N/50Hz	3G1,5	4G1,5
RAS-4M27UAV-E	17,1	10,94/9,22	2,286	20	220-240V/1Ph+N/50Hz	3G2,5	4G1,5
RAS-5M34UAV-E1	19,5	13,99/13,56	2,833	20	220-240V/1Ph+N/50Hz	3G2,5	4G1,5
RAV:							
Digital Inverter							
RAV-SM564ATP-E	12,3	7,31/6,37	1,56	13	220-240V/1Ph+N/50Hz	3G1,5	4G1,5
RAV-SM804ATP-E	14,3	10,40/9,98	2,22	16	220-240V/1Ph+N/50Hz	3G1,5	4G1,5
RAV-SM1104ATP-E	20,8	14,60/14,17	3,02	20	220-240V/1Ph+N/50Hz	3G2,5	4G1,5
RAV-SM1404ATP-E	22,8	20,74/16,44	3,57	25	220-240V/1Ph+N/50Hz	3G2,5	4G1,5
RAV-SM1603AT-E	29,7	21,48/21,20	4,49	25	220-240V/1Ph+N/50Hz	3G2,5	4G1,5
Super Digital Inverter							
RAV-SP564ATP-E	15,0	6,82/5,61	1,47	16	220-240V/1Ph+N/50Hz	3G1,5	4G1,5
RAV-SP804ATP-E	20,8	8,72/8,95	1,86	16	220-240V/1Ph+N/50Hz	3G1,5	4G1,5
RAV-SP1104AT-E	22,8	10,36/10,96	2,34	20	220-240V/1Ph+N/50Hz	3G2,5	4G1,5
RAV-SP1104AT8-E	16,4	4,45/4,52	2,42	16	380-415V/3Ph+N/50Hz	3G1,5	4G1,5
RAV-SP1404AT-E	22,8	14,66/14,89	3,21	20	220-240V/1Ph+N/50Hz	3G2,5	4G1,5
RAV-SP1404AT8-E	16,4	6,03/5,97	3,46	16	380-415V/3Ph+N/50Hz	3G1,5	4G1,5
RAV-SP1604AT8-E	16,4	7,55/7,26	4,49	16	380-415V/3Ph+N/50Hz	3G1,5	4G1,5
Digital Inverter Big							
RAV-SM2244AT8-E	18,0	10,09/9,41	6,24	20	380-415V/3Ph+N/50Hz	5G2,5	4G1,5
RAV-SM2804AT8-E	22,0	13,24/12,09	8,19	25	380-415V/3Ph+N/50Hz	5G2,5	4G1,5

CURRENT CONSUMPTION + PROTECTION

	Current consumption maximum (A)	Current consumption nominal (A) cooling/heating	Power consumption nominal (kW)	Recommended protection (A)	Supply voltage	*Recommended cable type power supply H07RN-F**2	Communication-cable H07RN-F**2
Estia:							
HWS-804H-E	19,2	8,50/7,97	1,88	20	220-240V/1Ph/50Hz	3G2,5	4G1,5
HWS-1104H-E	22,8	14,71/10,08	3,17	20	220-240V/1Ph/50Hz	3G2,5	4G1,5
HWS-1404H-E	22,8	17,19/13,74	3,72	20	220-240V/1Ph/50Hz	3G2,5	4G1,5
HWS-1104H8-E	14,6	5,08/3,73	3,17	16	380-415V/3Ph+N/50Hz	3G1,5	4G1,5
HWS-1404H8-E	14,6	5,71/5,01	3,72	16	380-415V/3Ph+N/50Hz	3G1,5	4G1,5
HWS-1604H8-E	14,6	7,51/5,94	4,71	16	380-415V/3Ph+N/50Hz	3G1,5	4G1,5
Hi-Power							
HWS-P804HR-E	19,2	7,39/7,57	1,94	20	220-240V/1Ph/50Hz	3G2,5	4G1,5
HWS-P1104HR-E	22,8	14,99/10,33	3,26	25	220-240V/1Ph/50Hz	3G2,5	4G1,5
VRF:							
Mini-SMMS							BUS cable:
MCY-MAP0401HT	25	13,8/13,1	2,820	20	220-240V/1Ph/50Hz	3G2,5	**
MCY-MAP0501HT	28	16,8/16,1	3,470	20	220-240V/1Ph/50Hz	3G2,5	**
MCY-MAP0601HT	31	22,4/23,2	4,630	25	220-240V/1Ph/50Hz	3G4,0	**
SMMSi							
MMY-MAP0804HT8P-E	23,5	8,5/8,8	5,530	20	380-415V/3Ph+N/50Hz	5G2,5	**
MMY-MAP1004HT8P-E	25,5	11,4/11,8	7,500	20	380-415V/3Ph+N/50Hz	5G2,5	**
MMY-MAP1204HT8P-E	28,5	14,7/16,0	10,200	25	380-415V/3Ph+N/50Hz	5G4,0	**
MMY-MAP1404HT8P-E	33,2	17,7/17,6	11,500	25	380-415V/3Ph+N/50Hz	5G4,0	**
MMY-MAP1604HT8P-E	36,5	20,8/22,0	13,700	32	380-415V/3Ph+N/50Hz	5G6,0	**
SHRMi							
MMY-MAP0804FT8-E	24,5	8,3/9,1	5,680	20	380-415V/3Ph+N/50Hz	5G2,5	**
MMY-MAP01004FT8-E	27,1	11,4/12,0	7,500	20	380-415V/3Ph+N/50Hz	5G2,5	**
MMY-MAP01204FT8-E	31,2	13,4/14,5	9,050	25	380-415V/3Ph+N/50Hz	5G4,0	**
MMY-MAP01404FT8-E	36,4	17,8/19,9	12,700	32	380-415V/3Ph+N/50Hz	5G6,0	**

*The correct cable cross-section calculation is up the responsibility of the executive electric installation company

**2-wire flexible / shielded <500m= 0,75mm²; >500m= 1,5mm²

Resistance table RAS

Description for RAS and RAV

TD : Discharge temperature sensor

TA : Room temperature sensor

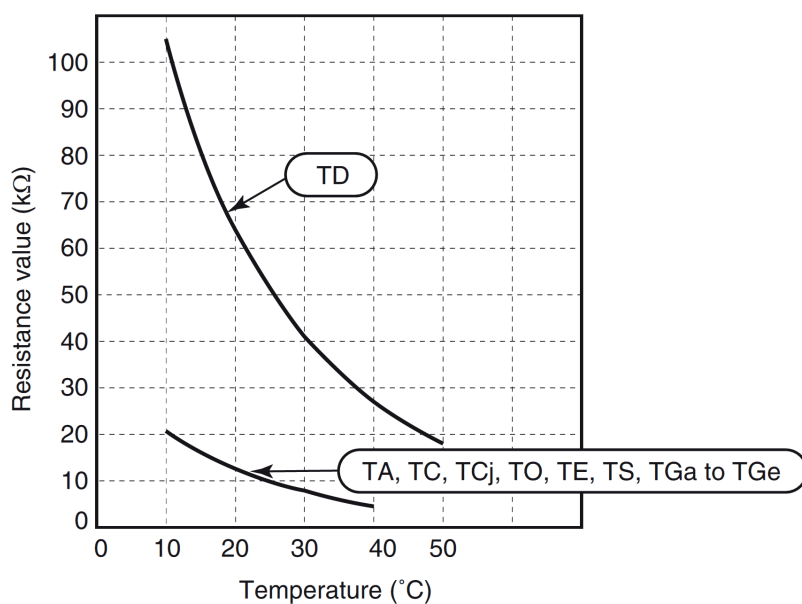
TC, TCj : Heat exchanger temperature sensor

TO : Outdoor temperature sensor

TE : Outdoor heat exchanger temperature sensor

TS : Suction temperature sensor

TGa to TGe : Gas side temperature sensor



Sensor	Temperature				
	10°C	20°C	25°C	30°C	40°C
TA, TC, TCj (kΩ)	20.7	12.6	10.0	7.9	4.5

Sensor	Temperature				
	10°C	20°C	25°C	40°C	50°C
TD (kΩ)	105	64	51	27	18
TO, TE, TS (kΩ)	20.6	12.6	10.0	5.1	3.4
TGa to TGe (kΩ)	20.0	12.5	10.0	5.3	3.6

Resistance table RAV

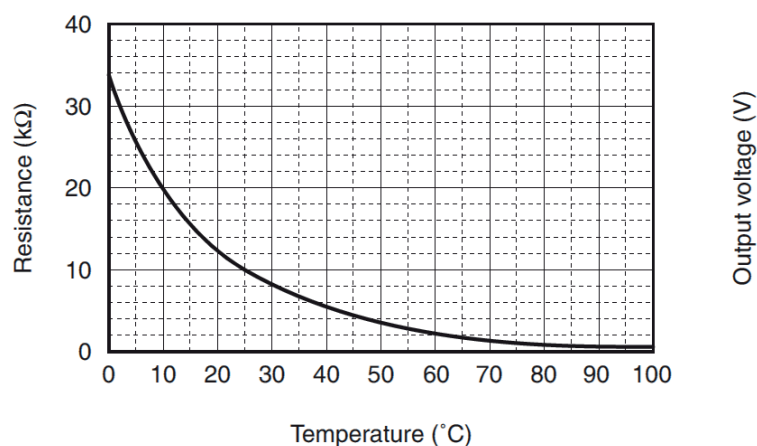
TA, TC, TCJ, TE, TS, TO sensors

Temperature (°C)	Resistance value (kΩ)		
	Minimum value	Standard value	Maximum value
0	32,33	33,80	35,30
10	19,63	20,35	21,09
20	12,23	12,59	12,95
25	9,75	10,00	10,25
30	7,764	7,990	8,218
40	5,013	5,192	5,375
50	3,312	3,451	3,594
60	2,236	2,343	2,454
70	1,540	1,623	1,709
80	1,082	1,146	1,213
90	0,7740	0,8237	0,8761
100	0,5634	0,6023	0,6434

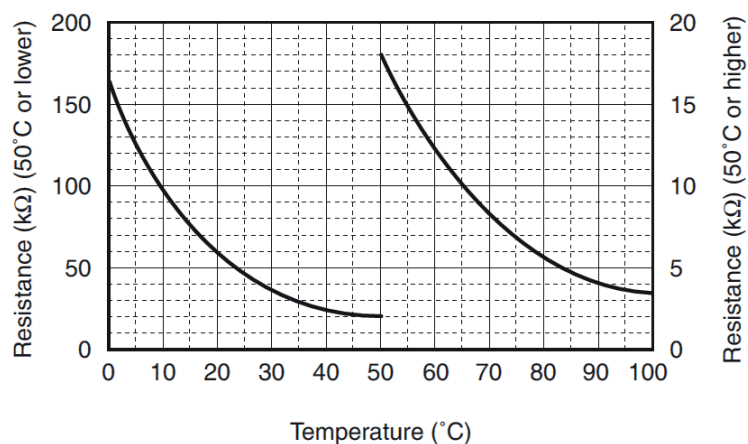
TD, TL sensors

Temperature (°C)	Resistance value (kΩ)		
	Minimum value	Standard value	Maximum value
0	150,5	161,3	172,7
10	92,76	99,05	105,6
20	58,61	62,36	66,26
25	47,01	49,93	52,97
30	37,93	40,22	42,59
40	25,12	26,55	28,03
50	17,00	17,92	18,86
60	11,74	12,34	12,95
70	8,269	8,668	9,074
80	5,925	6,195	6,470
90	4,321	4,507	4,696
100	3,205	3,336	3,468

TA, TC, TCJ, TE, TS, TO sensors



TD, TL sensors



As TH sensor (outdoor unit heat sink temperature sensor) is incorporated in the outdoor control P.C. board, the resistance value cannot be measured.

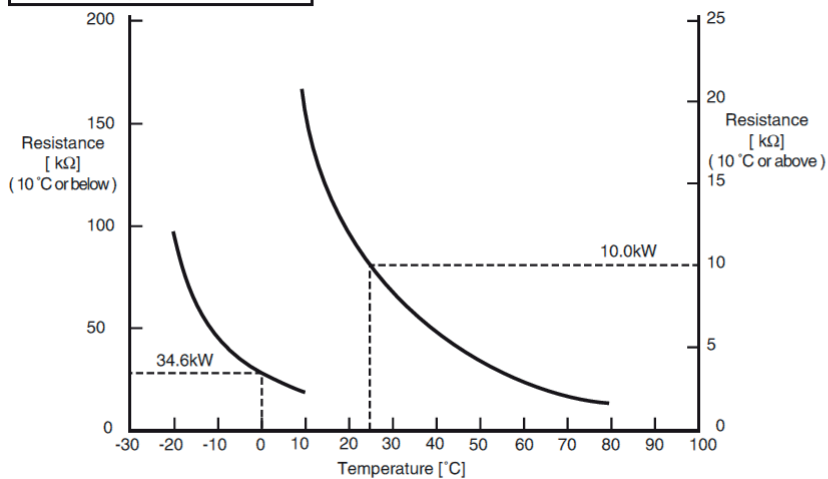
Resistance table VRF

Description for VRF:

- TS1: Controls PMV overheating in heating mode
- TS2: Detects overheating of the refrigerant circuit
- TL: Detects supercooling in cooling mode
- TE1: Controls defrosting and outdoor fan in heating mode
- TO (TO A): Detects outdoor temperature
- TD1-3: Controls discharge temperature
- TK1-5: Controls oil level of compressors
- TA: Detects room temperature
- TC1: Controls PMV overheating in cooling mode
- TC2: Controls PMV supercooling in heating mode
- TCJ: Controls PMV overheating in cooling mode
- TSA: Detecting air suction temperature of direct expansion coil
- TFA: For discharge temperature detection
- TRA: Detecting return air temperature

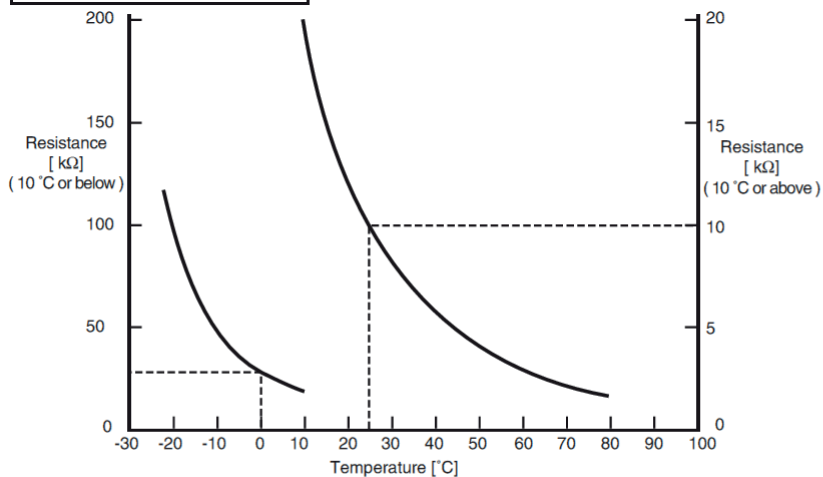
Outdoor unit

Outdoor TS1, TS2 and TL sensor



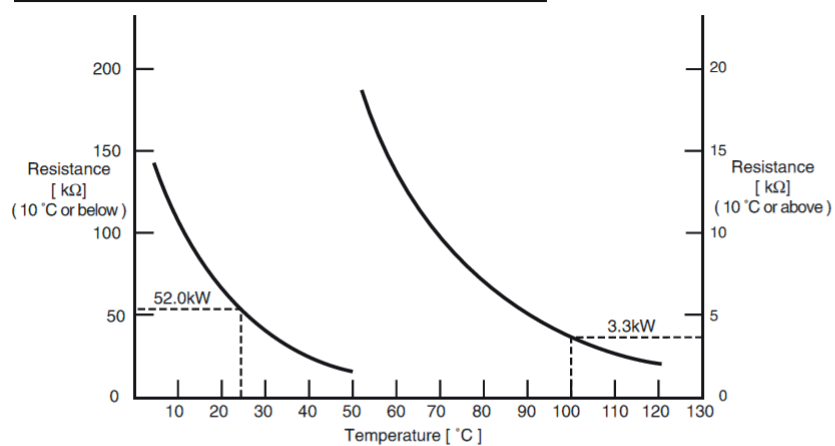
Temperature [°C]	Resistance [kΩ]
-20	108.1
-15	80.0
-10	59.8
-5	45.3
0	34.6
5	26.6
10	20.6
15	16.1
20	12.7
25	10.0
30	8.0
35	6.4
40	5.2
45	4.2
50	3.4
55	2.8
60	2.3
65	1.9
70	1.6
75	1.3
80	1.1

Outdoor TE1, TE2 and TO sensor



Temperature [°C]	Resistance [kΩ]
-20	102.9
-15	76.6
-10	57.8
-5	44.0
0	33.8
5	26.1
10	20.4
15	16.0
20	13.0
25	10.0
30	8.0
35	6.4
40	5.2
45	4.2
50	3.5
55	2.8
60	2.3
65	1.9
70	1.6
75	1.4
80	1.1

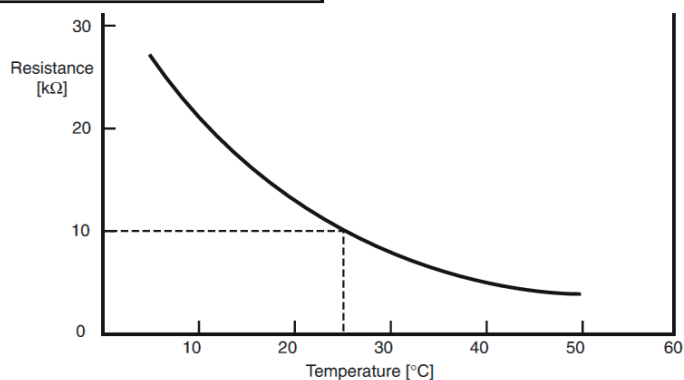
Outdoor TD1,TD2,TD3,TK1,TK2,TK3,TK4 and TK5 sensor



Temperature [°C]	Resistance [kΩ]
0	159.2
5	124.5
10	98.1
15	77.8
20	62.1
25	49.9
30	40.3
35	32.7
40	26.7
45	21.9
50	18.1
55	15.0
60	12.5
65	10.4
70	8.8
75	7.4
80	6.3
85	5.3
90	4.5
95	3.9
100	3.4
105	2.9
110	2.5
115	2.2
120	1.9

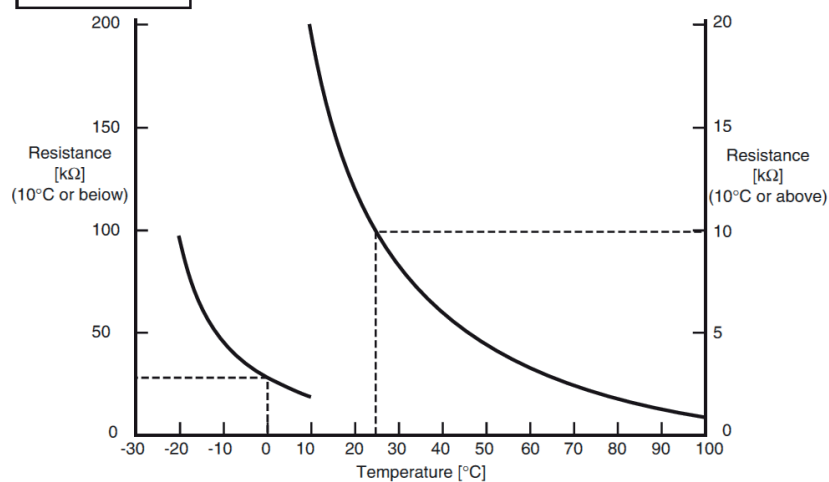
Indoor unit

Indoor TA(TSA), TRA,TF(TFA) sensor



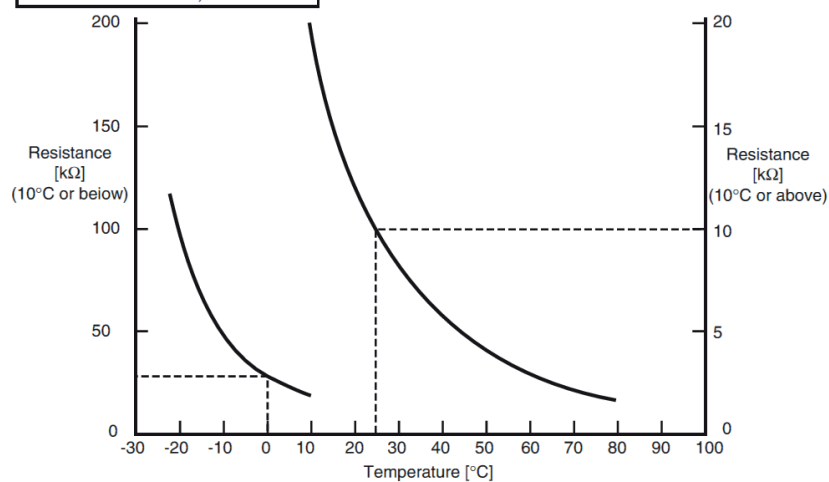
Temperature [°C]	Resistance [kΩ]
0	33.8
5	26.1
10	20.4
15	16.0
20	12.6
25	10.0
30	8.0
35	6.4
40	5.2
45	4.2
50	3.5
55	2.8
60	2.3

Indoor TC1 sensor



Temperature [°C]	Resistance [kΩ]
-20	98.3
-15	73.7
-10	55.8
-5	42.6
0	32.8
5	25.5
10	20.0
15	15.7
20	12.5
25	10.0
30	8.1
35	6.5
40	5.3
45	4.4
50	3.6
55	3.0
60	2.5
65	2.1
70	1.7
75	1.5
80	1.2
85	1.1
90	0.9
95	0.8
100	0.7

Indoor TC2 and TCJ, TOA sensor



Temperature [°C]	Resistance [kΩ]
-20	102.9
-15	76.6
-10	57.7
-5	44.0
0	38.8
5	26.1
10	20.4
15	16.0
20	12.6
25	10.0
30	8.0
35	6.4
40	5.2
45	4.2
50	3.5
55	2.8
60	2.3
65	1.9
70	1.6
75	1.4
80	1.2

TOSHIBA AIR CONDITIONING

Advancing the **eco**-evolution

TOSHIBEL

MANUAL FOR SERVICE AND DECODING OF ERROR MESSAGES

Version 3.0

Subject to typographical and other errors!

Printed: June 2015