



1. Functional parts and safety devices

Item	Code	Name	RVMC050CBM0	RVMC060GAM0 RVMC060GAM1	RVMC060GDM0	
Compressor	-	Motor output	ZRD49KC-PFV 3.7kW	ZRD72KC-TFD 4.5kW	ZRD72KCE-TFD 4.5kW	
	-	Compressor safety OLP	open temp.	120°C	145°C	145°C
			trip current	37A	48A	48A
CCH		Crank case heater	90W	90W	90W	
Safety devices	Motor	Fan motor	model	-	OSME1284SRC	OSME1284SRC
			output	128W + 128W	128W + 128W	128W + 128W
	Safety thermostat	on	135°C	150°C	150°C	
		off	90°C	100°C	100°C	
	HPS	High pressure switch	OFF : 33(±1)kg/cm ² ON : 24(±1)kg/cm ²			
	LPS	Low pressure switch	OFF : 1.2(±0.2)kg/cm ² ON : 2.2(±0.2)kg/cm ²			
	HPSO	High pressure sensor	-	-	-	
LPSO	Low pressure sensor	-	-	-		
Temperature sensor	DTS	Thermistor (discharge)	Model : 0166-01, Rt=150°C, 25°C=86Ω			
	CMS	Thermistor (condenser center)	103AT (25°C=10kΩ)			
	COS	Thermistor (condenser outlet)	103AT (25°C=10kΩ)			
	OATS	Thermistor (outdoor temperature)	103AT (25°C=10kΩ)			
	SUC.S	Suction sensor	-	-	-	
	OIL.S	Oil sensor	-	-	-	
	FDTS	Thermistor (fixed discharge)	-	-	-	
Functional parts	PWM	Solenoid valve (for compressor operation)	Coil : Copeland (Part # 023-0028-03) Body : EPV-1530D			
	HGBV	Solenoid valve (for bypass of high temperature gas)	Coil : Saginomiya Body : NEV-603D			
	LBV	Solenoid valve (liquid injection)	Coil : Saginomiya Body : NEV-202D			
	VBV	Solenoid valve (for exhaust air)				
	BV1	Solenoid valve (for capacity control)	-	-	-	
	BV2	Solenoid valve (for capacity control)	-	-	-	
	4-W/V	4-way valve	-	-	-	
	C/V	Check valve	-	-	-	
EEV	Electronic expansion valve (for heating)	-	-	-		

Item	Code	Name	RVMC070FAM0	RVMC100GAM0	RVMC100FAM0	
Compressor	-	Motor output	ZRD72KC-TF5 5.5kW	ZRDT14MC-TFD 4.2kW + 4.2kW	ZRDU13MC-TF5 5.5kW + 4.3kW	
	-	Compressor safety OLP	open temp.	175°C	120°C/145°C	175°C/160°C
			trip current	110A	60A/48A	110A/80A
	CCH	Crank case heater	90W	90W	90W	
Safety devices	Motor	Fan motor	model	OSM1076SRC	OSM4506SRC	OSM4508SRC
			output	106W + 106W	450W	450W
		Safety thermostat	on	150°C	150°C	150°C
			off	100°C	100°C	100°C
	HPS	High pressure switch	OFF : 30(±1)kg/cm ² ON : 22(±1)kg/cm ²			
	LPS	Low pressure switch	OFF : 1.2(±0.2)kg/cm ² ON : 2.2(±0.2)kg/cm ²	-	-	
	HPSO	High pressure sensor	-	PS8030A (NH4-H) (0-30kg/cm ²)		
LPSO	Low pressure sensor	-	PS8030A (NH4-L) (0-10kg/cm ²)			
Temperature sensor	DTS	Thermistor (discharge)	Model : 0166-01, Rt=150°C, 25°C=86Ω			
	CMS	Thermistor (condenser center)	103AT (25°C=10kΩ)	-	-	
	COS	Thermistor (condenser outlet)	103AT (25°C=10kΩ)			
	OATS	Thermistor (outdoor temperature)	103AT (25°C=10kΩ)			
	SUC.S	Suction sensor	-	-	-	
	OIL.S	Oil sensor	-	-	-	
	FDTS	Thermistor (fixed discharge)	-	204CTB (25°C=200kΩ)		
Functional parts	PWM	Solenoid valve (for compressor operation)	Coil : Copeland (Part # 023-0028-03) Body : EPV-1530D			
	HGBV	Solenoid valve (for bypass of high temperature gas)	Coil : Saginomiya Body : NEV-603D			
	LBV	Solenoid valve (liquid injection)	Coil : Saginomiya Body : NEV-202D			
	VBV	Solenoid valve (for exhaust air)				
	BV1	Solenoid valve (for capacity control)	-	-	-	
	BV2	Solenoid valve (for capacity control)	-	-	-	
	4-W/V	4-way valve	-	-	-	
	C/V	Check valve	-	-	-	
EEV	Electronic expansion valve (for heating)	-	-	-		



1. Functional parts and safety devices

Item	Code	Name	RVMH050CBM0	RVMH060GBM0	RVMH060GDM0	RVMH080GAM0	
Compressor	-	Motor output	ZRD49KC-PFV 3.7kW	ZRD72KC-TFD 4.5kW	ZRD72KCE-TFD 4.5kW	ZRDU13MC-TFD 4.2kW + 3.5kW	
	-	Compressor safety OLP	open temp.	120°C	145°C	145°C	155°C
			trip current	37A	48A	48A	70A
	CCH	Crank case heater	90W	90W	90W	90W	
Safety devices	Motor	Fan motor	model	-	OSME1596SRC	OSME1596SRC	OSME4506SRC
			output	128W + 128W	128W + 128W	128W + 128W	450W
	Safety thermostat	on	135°C	150°C	150°C	150°C	
		off	90°C	100°C	100°C	100°C	
	HPS	High pressure switch	OFF : 33(±1)kg/cm ² ON : 24(±1)kg/cm ²			OFF : 30(±1)kg/cm ² ON : 22(±1)kg/cm ²	
	LPS	Low pressure switch	-				
	HPSO	High pressure sensor	PS8030A (NH4-H) (0~30kg/cm ²)				
LPSO	Low pressure sensor	PS8030A (NH4-L) (0~10kg/cm ²)					
Temperature sensor	DTS	Thermistor (discharge)	Model : 0166-01, Rt=150°C, 25°C=86Ω				
	CMS	Thermistor (condenser center)	103AT (25°C=10kΩ)			-	
	COS	Thermistor (condenser outlet)	103AT (25°C=10kΩ)				
	OATS	Thermistor (outdoor temperature)	103AT (25°C=10kΩ)				
	SUC.S	Suction sensor	103AT (25°C=10kΩ)				
	OIL.S	Oil sensor	103AT (25°C=10kΩ)				
	FDTS	Thermistor (fixed discharge)	-	-	-	204CTB (25°C=200kΩ)	
Functional parts	PWM	Solenoid valve (for compressor operation)	Coil : Copeland (Part # 023-0028-03) Body : EPV-1530D				
	HGBV	Solenoid valve (for bypass of high temperature gas)	Coil : Saginomiya Body : NEV-603D				
	LBV	Solenoid valve (liquid injection)	Coil : Saginomiya				
	VBV	Solenoid valve (for exhaust air)	Body : NEV-202D				
	BV1	Solenoid valve (for capacity control)	-	-	-	-	
	BV2	Solenoid valve (for capacity control)	-	-	-	-	
	4-W/V	4-way valve	Ranco, VH49000	Saginomiya CHV-0401	Ranco, VH40100	Saginomiya CHV-0712	
	C/V	Check valve	Fujikoki (30kg/cm ²)				
EEV	Electronic expansion valve (for heating)	EDM-60YH (Fujikoki)		EDM-60YP (Fujikoki)	EDM-AOYH (Fujikoki)		

Item	Code	Name	RVMH100GAM0	RVMH100FAM0	
Compressor	-	Motor output	ZRDT14MC-TFD 4.2kW + 4.2kW	ZRDU13MC-TF5 5.5kW + 4.3kW	
	-	Compressor safety OLP	open temp.	155°C	155°C
			trip current	70A	70A
	CCH	Crank case heater	90W	90W	
Safety devices	Motor	Fan motor	model	OSME4506SRC	OSME4508SRC
			output	450W	450W
	Safety thermostat	on	150°C	150°C	
		off	100°C	100°C	
	HPS	High pressure switch	OFF : 30(±1)kg/cm ² ON : 22(±1)kg/cm ²		
	LPS	Low pressure switch	-		
	HPSO	High pressure sensor	PS8030A (NH4-H) (0-30kg/cm ²)		
LPSO	Low pressure sensor	PS8030A (NH4-L) (0-10kg/cm ²)			
Temperature sensor	DTS	Thermistor (discharge)	Model : 0166-01, Rt=150°C, 25°C=86Ω		
	CMS	Thermistor (condenser center)	-		
	COS	Thermistor (condenser outlet)	103AT (25°C=10kΩ)		
	OATS	Thermistor (outdoor temperature)	103AT (25°C=10kΩ)		
	SUC.S	Suction sensor	103AT (25°C=10kΩ)		
	OIL.S	Oil sensor	103AT (25°C=10kΩ)		
	FDTS	Thermistor (fixed discharge)	204CTB (25°C=200kΩ)		
Functional parts	PWM	Solenoid valve (for compressor operation)	Coil : Copeland (Part # 023-0028-03) Body : EPV-1530D		
	HGBV	Solenoid valve (for bypass of high temperature gas)	Coil : Saginomiya Body : NEV-603D		
	LBV	Solenoid valve (liquid injection)	Coil : Saginomiya		
	VBV	Solenoid valve (for exhaust air)	Body : NEV-202D		
	BV1	Solenoid valve (for capacity control)	-		
	BV2	Solenoid valve (for capacity control)	-		
	4-W/V	4-way valve	Coil & Body : CHV-0712 (Saginomiya)		
	C/V	Check valve	Fujikoki (30kg/cm ²)		
EEV	Electronic expansion valve (for heating)	EDM-AOYH (Fujikoki)			



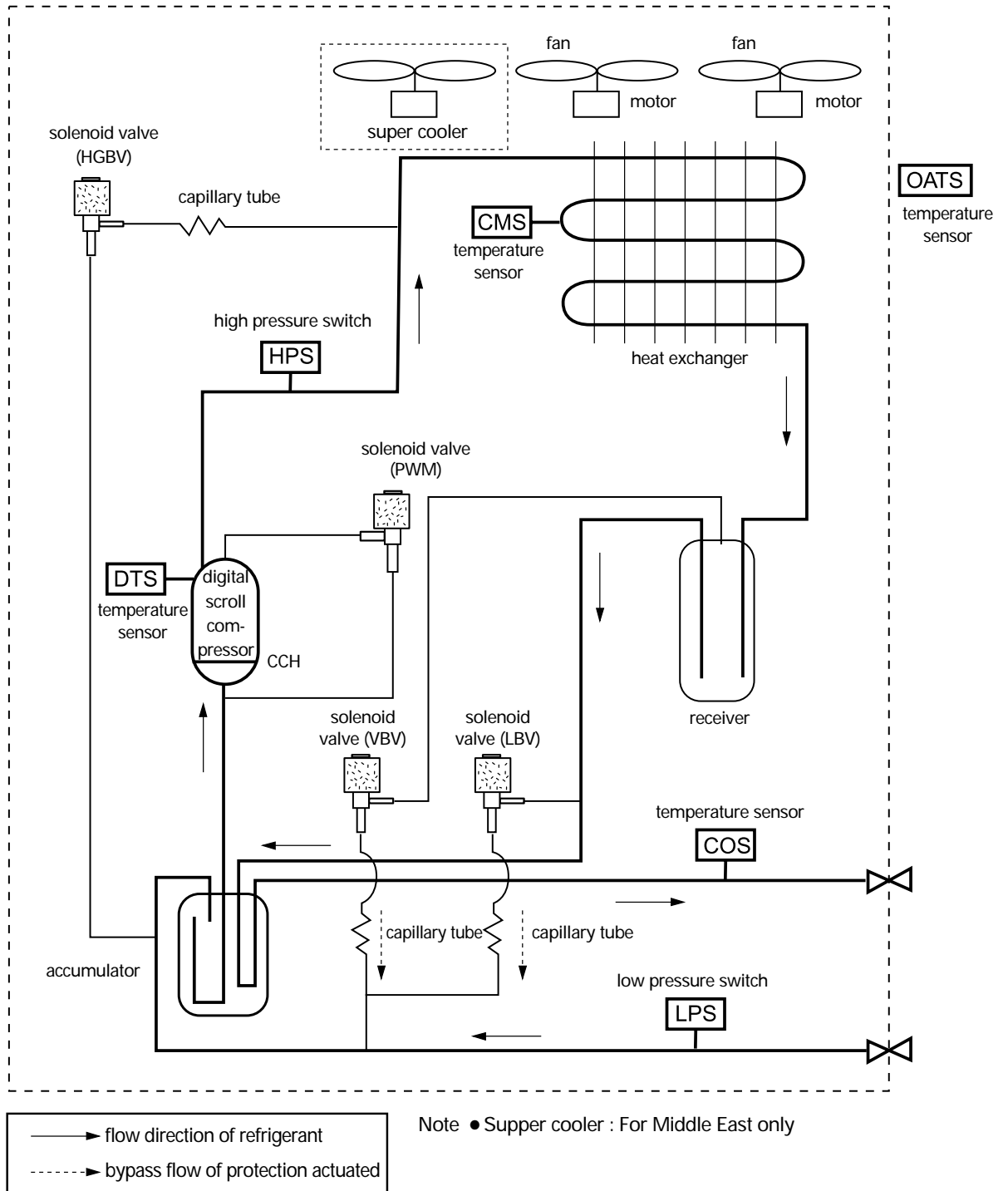
1. Functional parts and safety devices

Item	Code	Name	RVMH100GCM0	
Compressor	-	Motor output		
		ZRDT14MCE-TFD 4.2kW + 4.2kW		
	-	Compressor safety OLP	open temp.	155°C
			trip current	70A
	CCH	Crank case heater	90W	
Safety devices	Motor	Fan motor	model	OSME4506SRC
			output	450W
		Safety thermostat	on	150°C
			off	100°C
	HPS	High pressure switch	OFF : 33(±1)kg/cm ² ON : 24(±1)kg/cm ²	
	LPS	Low pressure switch	-	
	HPSO	High pressure sensor	PS8030A (NH4-H) (0-30kg/cm ²) (TOYOTA)	
LPSO	Low pressure sensor	PS8030A (NH4-L) (0-10kg/cm ²) (TOYOTA)		
Temperature sensor	DTS	Thermistor (discharge)	Model : 0166-01, Rt=150°C, 25°C=86Ω	
	CMS	Thermistor (condenser center)	-	
	COS	Thermistor (condenser outlet)	103AT (25°C=10kΩ)	
	OATS	Thermistor (outdoor temperature)	103AT (25°C=10kΩ)	
	SUC.S	Suction sensor	103AT (25°C=10kΩ)	
	OIL.S	Oil sensor	103AT (25°C=10kΩ)	
	FDTS	Thermistor (fixed discharge)	204CTB (25°C=200kΩ)	
Functional parts	PWM	Solenoid valve (for compressor operation)	Coil : Copeland (Part # 023-0028-03) Body : EPV-1530D	
	HGBV	Solenoid valve (for bypass of high temperature gas)	Coil : Saginomiya Body : NEV-603D	
	LBV	Solenoid valve (liquid injection)	Coil : Saginomiya	
	VBV	Solenoid valve (for exhaust air)	Body : NEV-202D	
	BV1	Solenoid valve (for capacity control)	-	
	BV2	Solenoid valve (for capacity control)	-	
	4-W/V	4-way valve	Coil & Body : Ranco VH-60100	
	C/V	Check valve	Fujikoki (30kg/cm ²)	
EEV	Electronic expansion valve (for heating)	EDM-AOYP (Fujikoki)		

2. Refrigerant system diagram

2-1. Cooling only

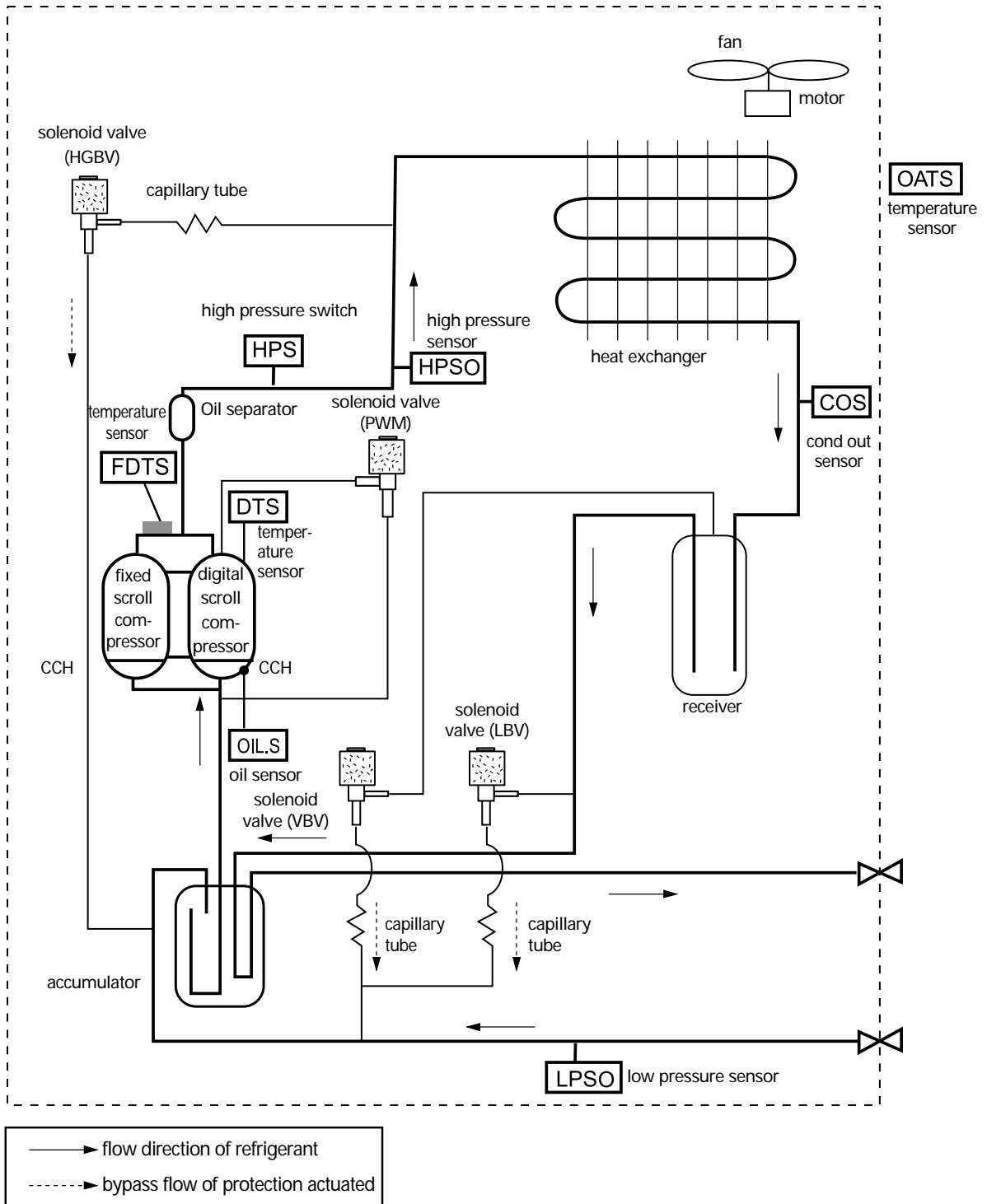
(1) **050/060/070/720**





2. Refrigerant system diagram

(2) **080/100**



(3) Main parts status

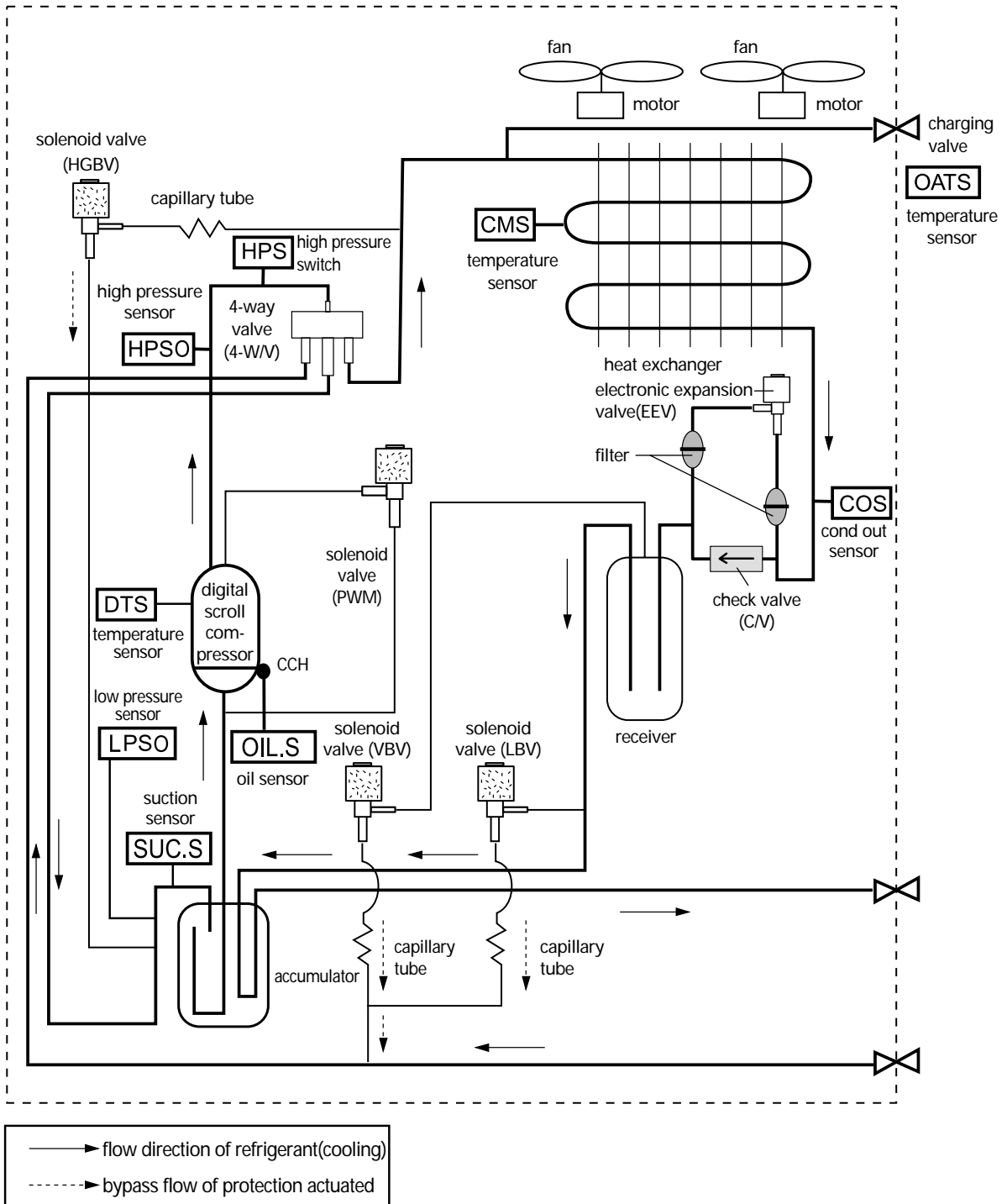
- 1) **Digital scroll compressor**
The variable capacity type compressor to control the capacity up to 10 ~ 100% with 19 steps.
- 2) **Accumulator**
To prevent the incoming of the liquid refrigerant to the compressor (prevention of liquid back).
- 3) **Receiver**
To reduce the noise by flowing the high pressure liquid refrigerant to the high pressure pipe and to control the amount of refrigerant during the individual operation of indoor unit.
- 4) **Solenoid valve (PWM)**
It is installed at the top of digital scroll compressor and at the low pressure pipe, which is used for operating the digital scroll compressor. When the valve is open, the digital scroll compressor keeps the state of unloading.
- 5) **Solenoid valve (HGBV)**
When the low pressure gets lower, the valve is open by the low pressure safety device. The valve is open in order to reduce the load at the start of compressor and when the system stops and then keep the balance of low pressure.
- 6) **Solenoid valve (LBV)**
When the compressor is overheated, it actuates to lower the temperature of compressor for stable operation.
- 7) **Solenoid valve (VBV)**
The valve is open in order to reduce the load at the start of compressor and when the system stops and then keeps the balance of low pressure.
- 8) **High pressure switch**
To stop the system for the system protection when the high pressure exceeds the set value.
- 9) **Low pressure switch**
To stop the system for the system protection when the low pressure falls below the set value.
- 10) **Temperature sensor (DTS, Discharge Temperature Sensor)**
It is the means to measure the refrigerant temperature of compressor outlet which is used as the data for control of compressor.
- 11) **Temperature sensor (CMS, Condenser Mid Sensor)**
It is the detection means to do the optimum control of outdoor fan, which is used as the data for each protection or initial startup.
- 12) **Temperature sensor (COS, Condenser Out Sensor)**
It is used as the detection for calculation of over-cooling at the condenser outlet which is referred for the adjustment of refrigerant during refrigerant charging.
- 13) **Temperature sensor (OATS, Outdoor Air Temperature Sensor)**
To measure the outdoor temperature which is used for the determination of start method.
- 14) **Fixed scroll compressor**
The fixed capacity type compressor.
- 15) **Temperature sensor (FDTS, Fixed Discharge Temperature Sensor)**
It is the means to measure the refrigerant temperature of compressor outlet which is used as the data for control of fixed compressor.
- 16) **Low pressure sensor (LPSO)**
By measuring the low pressure, any abnormal system status is determined and the low-pressure protection control is performed.
- 17) **High pressure sensor (HPSO)**
By measuring the high pressure, any abnormal system status is determined and the high-pressure protection control is performed.
- 18) **Oil separator**
This device recovers oils emitted from the compressor and returns it to the compressor again.
- 19) **Oil sensor (OIL.S)**
To control EEV against liquid back and low dilution of oil to protect the compressor by measuring the temperature of oil used for controlling SUMP at low temperature in cooling / heating mode.



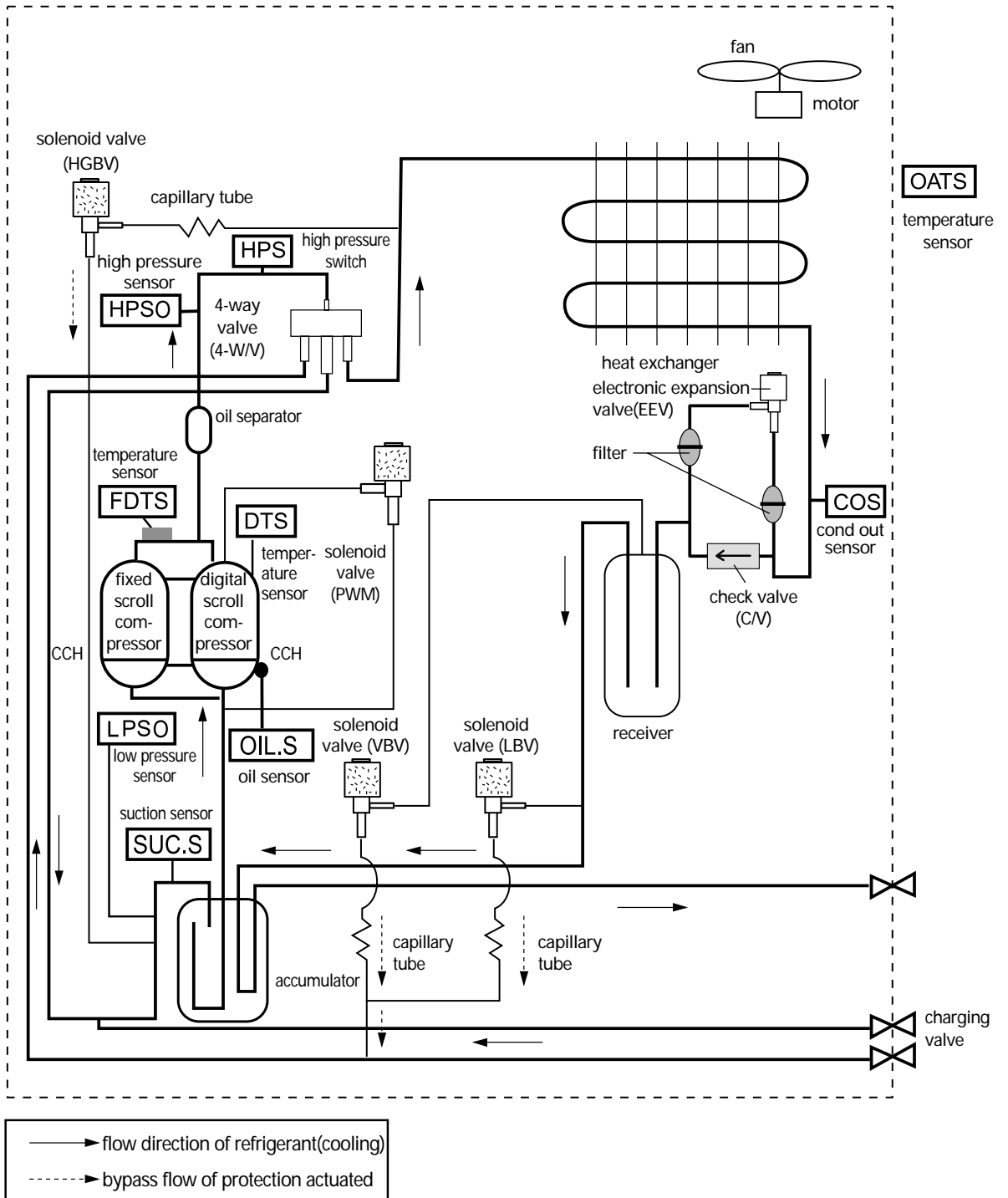
2. Refrigerant system diagram

2-2. Heat pump

(1) **050/060**



(2) **080/100**





2. Refrigerant system diagram

(3) Main parts status

1) Digital scroll compressor

The variable capacity type compressor to control the capacity up to 10 ~ 100% with 19 steps

2) Accumulator

To prevent the incoming of the liquid refrigerant to the compressor (prevention of liquid back).

3) Receiver

To reduce the noise by flowing the high pressure liquid refrigerant to the high pressure pipe and to control the amount of refrigerant during the individual operation of indoor unit.

4) Solenoid valve (PWM)

It is installed at the top of digital scroll compressor and at the low pressure pipe, which is used for operating the digital scroll compressor. When the valve is open, the digital scroll compressor keeps the state of unloading.

5) Solenoid valve (HGBV)

When the low pressure gets lower, the valve is open by the low pressure safety device. The valve is open in order to reduce the load at the start of compressor and when the system stops and then keep the balance of low pressure.

6) Solenoid valve (LBV)

When the compressor is overheated, it actuates to lower the temperature of compressor for stable operation.

7) Solenoid valve (VBV)

The valve is open in order to reduce the load at the start of compressor and when the system stops and then keeps the balance of low pressure.

8) High pressure switch (HPS)

To stop the system for the system protection when the high pressure exceeds the set value.

9) Temperature sensor (DTS, Discharge Temperature Sensor)

It is the means to measure the refrigerant temperature of compressor outlet which is used as the data for control of compressor.

10) Temperature sensor (COS, Condenser Out Sensor)

When heating, used for defrost control by sensing outdoor heat exchanger temperature.

11) Temperature sensor (OATS, Outdoor Air Temperature Sensor)

To measure the outdoor temperature which is used for the determination of start method.

12) Fixed scroll compressor

The fixed capacity type compressor.

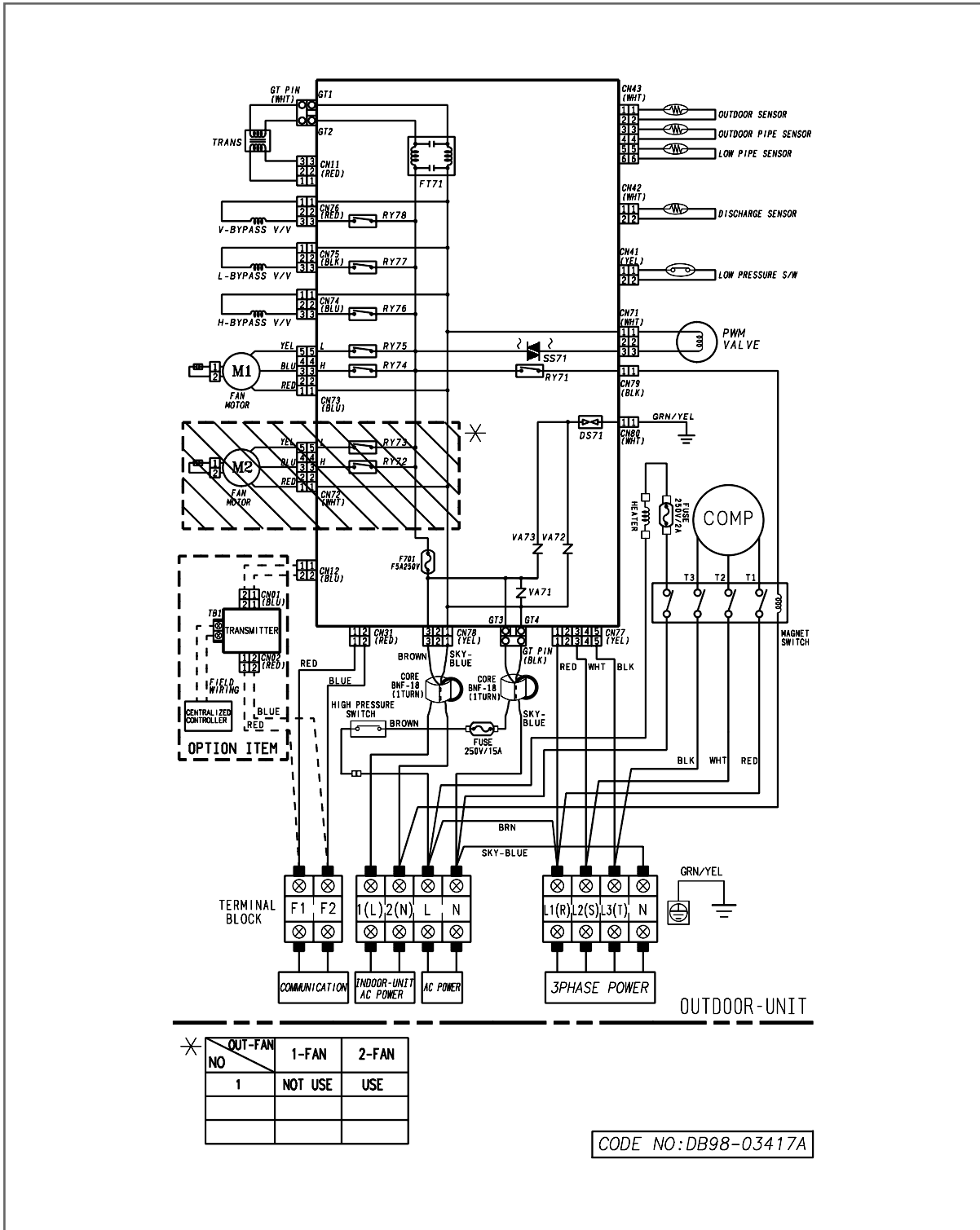
- 13) 4-way valve (4-W/V)
It enables the change between cooling and heating by reversing the flow direction of refrigerant.
- 14) Electronic expansion valve (EEV)
By sensing suction temperature and low pressure, controls the suction super heat and mass flow of refrigerant.
- 15) Check valve (C/V)
To reduce the loss of pressure at the electronic expansion valve while cooling and to prevent the over-load of the compressor.
- 16) Suction sensor (SUC.S)
To control EEV for optimized suction super heat to control over-heating at the electronic expansion valve by the temperature of the compressor suction part when heating.
- 17) Oil sensor (OIL.S)
To control EEV against liquid back and low dilution of oil to protect the compressor by measuring the temperature of oil used for controlling SUMP at low temperature in cooling / heating mode.
- 18) Temperature sensor (FDTS, Fixed Discharge Temperature Sensor)
It is the means to measure the refrigerant temperature of compressor outlet which is used as the data for control of fixed compressor.
- 19) Low pressure sensor (LPSO)
By measuring the low pressure, any abnormal system status is determined and the low-pressure protection control is performed.
- 20) High pressure sensor (HPSO)
By measuring the high pressure, any abnormal system status is determined and the high-pressure protection control is performed.
- 21) Oil separator
This device recovers oils emitted from the compressor and returns it to the compressor again.



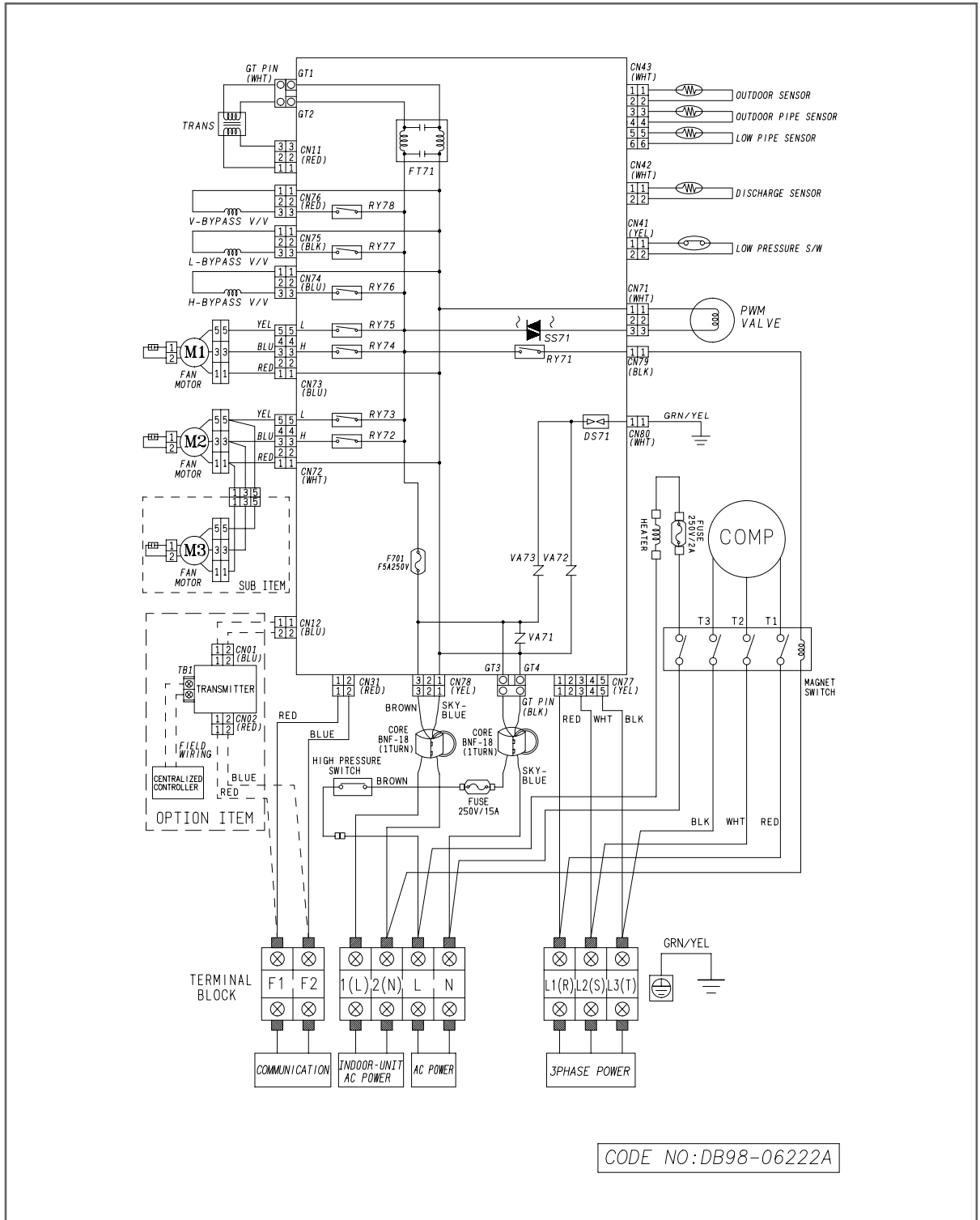
3. Electric circuit diagram

3-1. Cooling only

(1) **050/060/072**



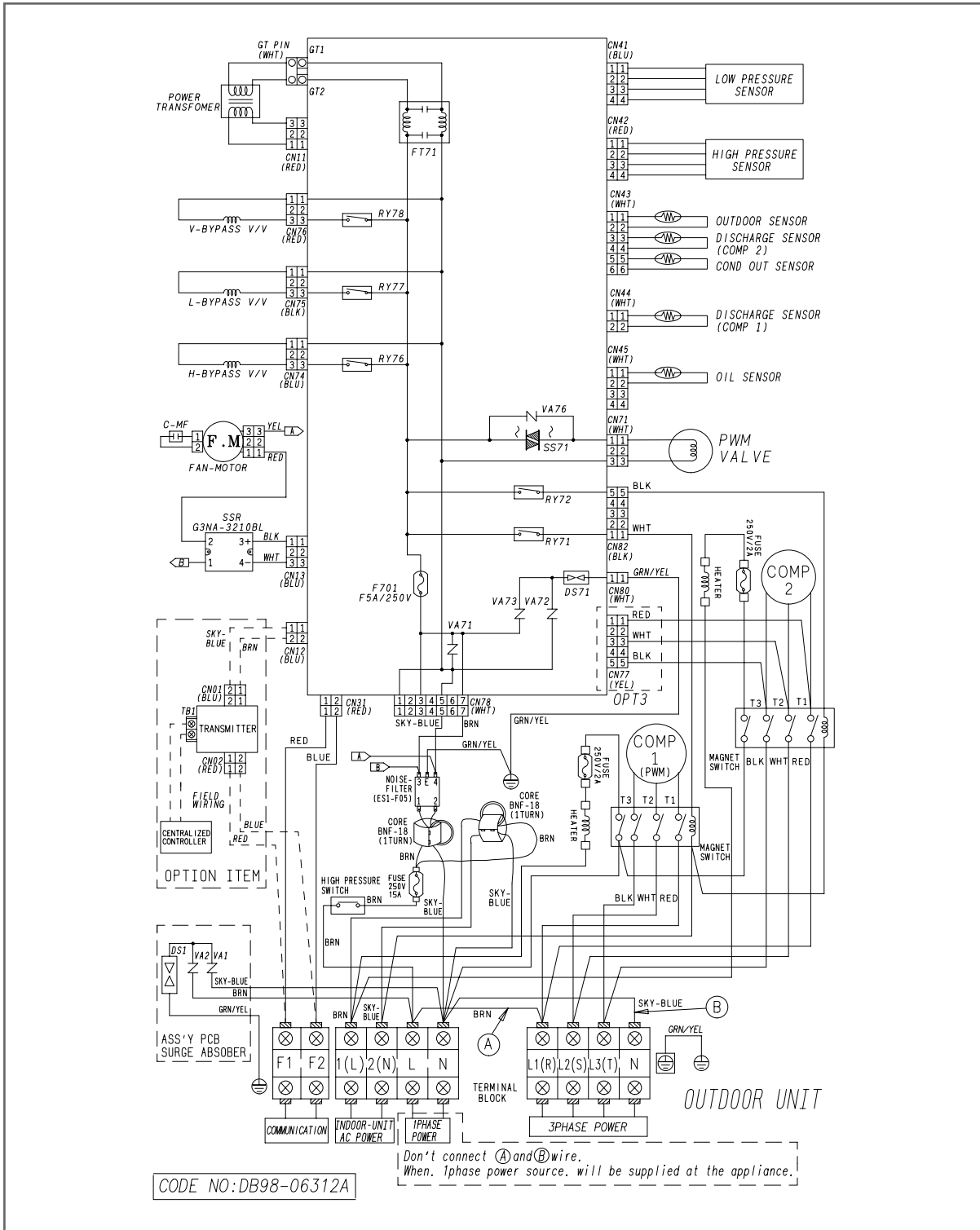
(2) **070F**



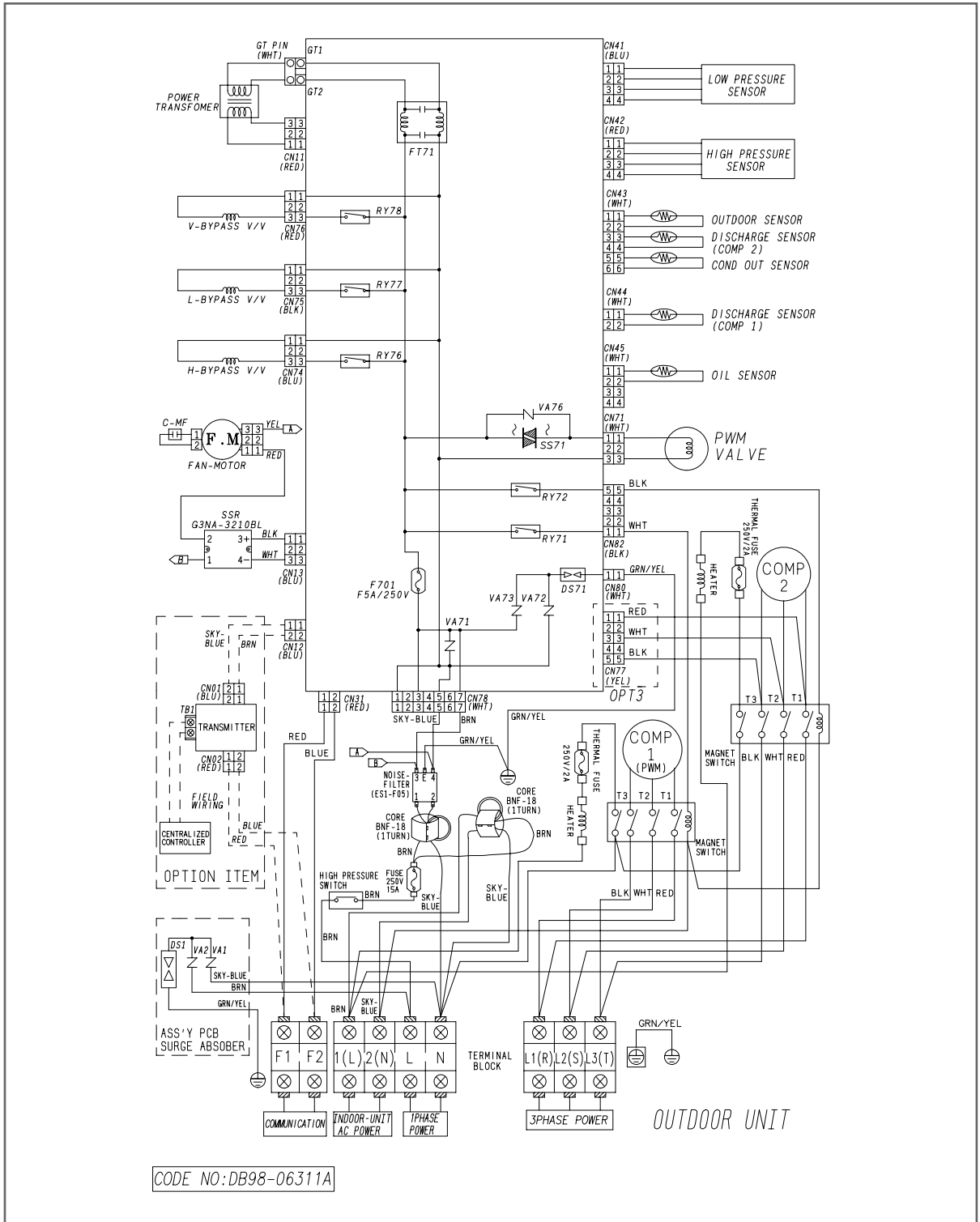


3. Electric circuit diagram

(3) **080/100**



(4) **100F**

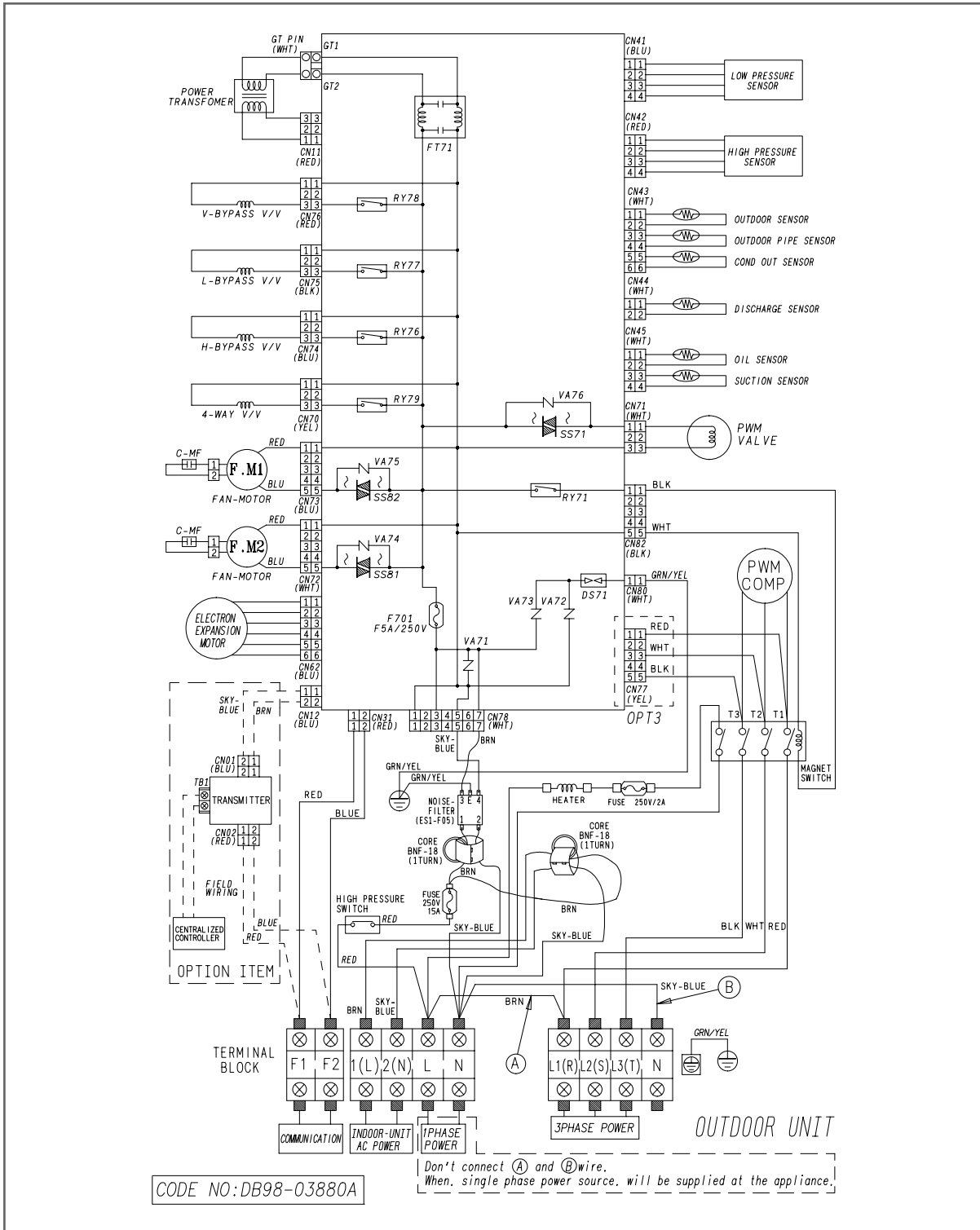




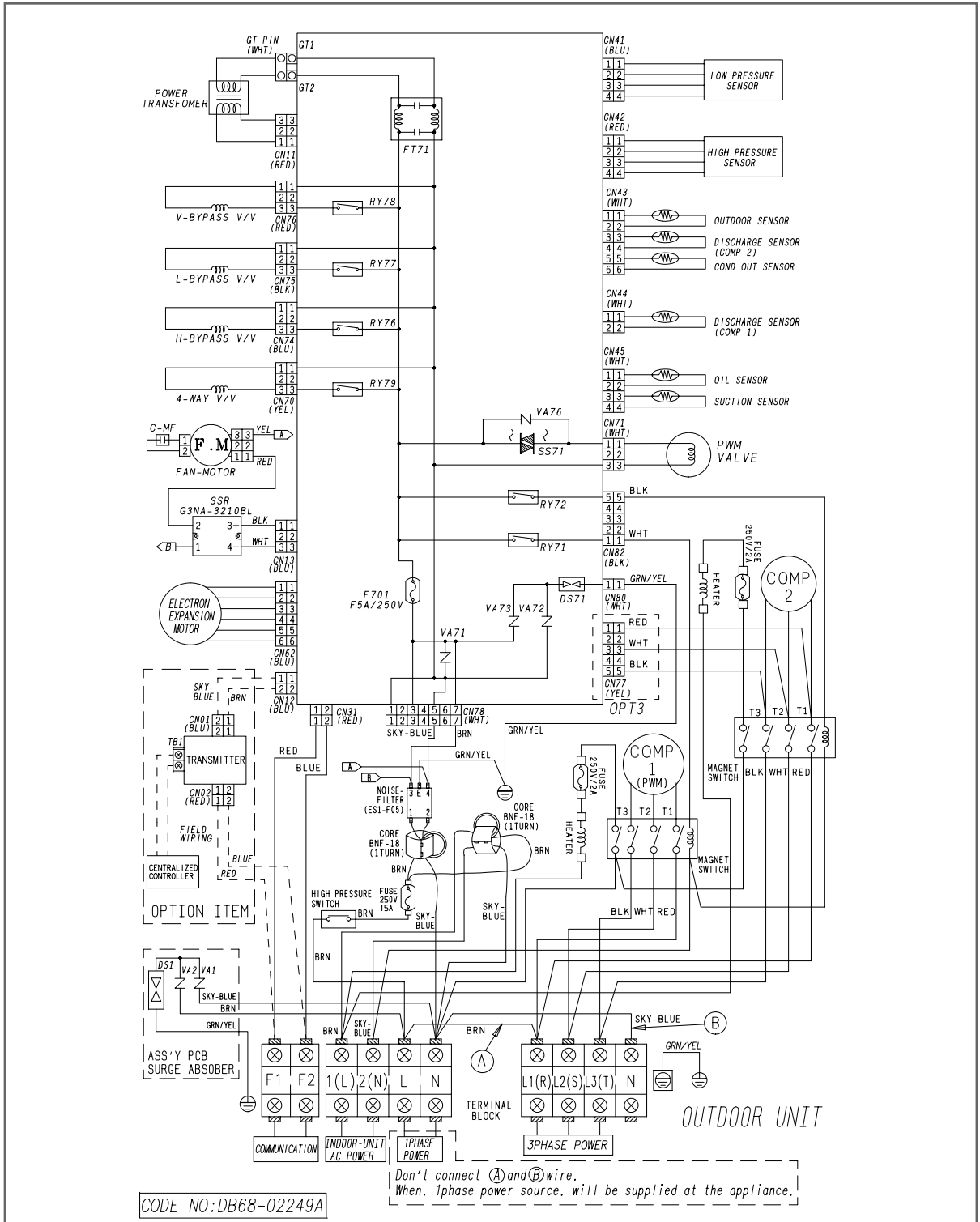
3. Electric circuit diagram

3-2. Heat pump

(1) **050/060**



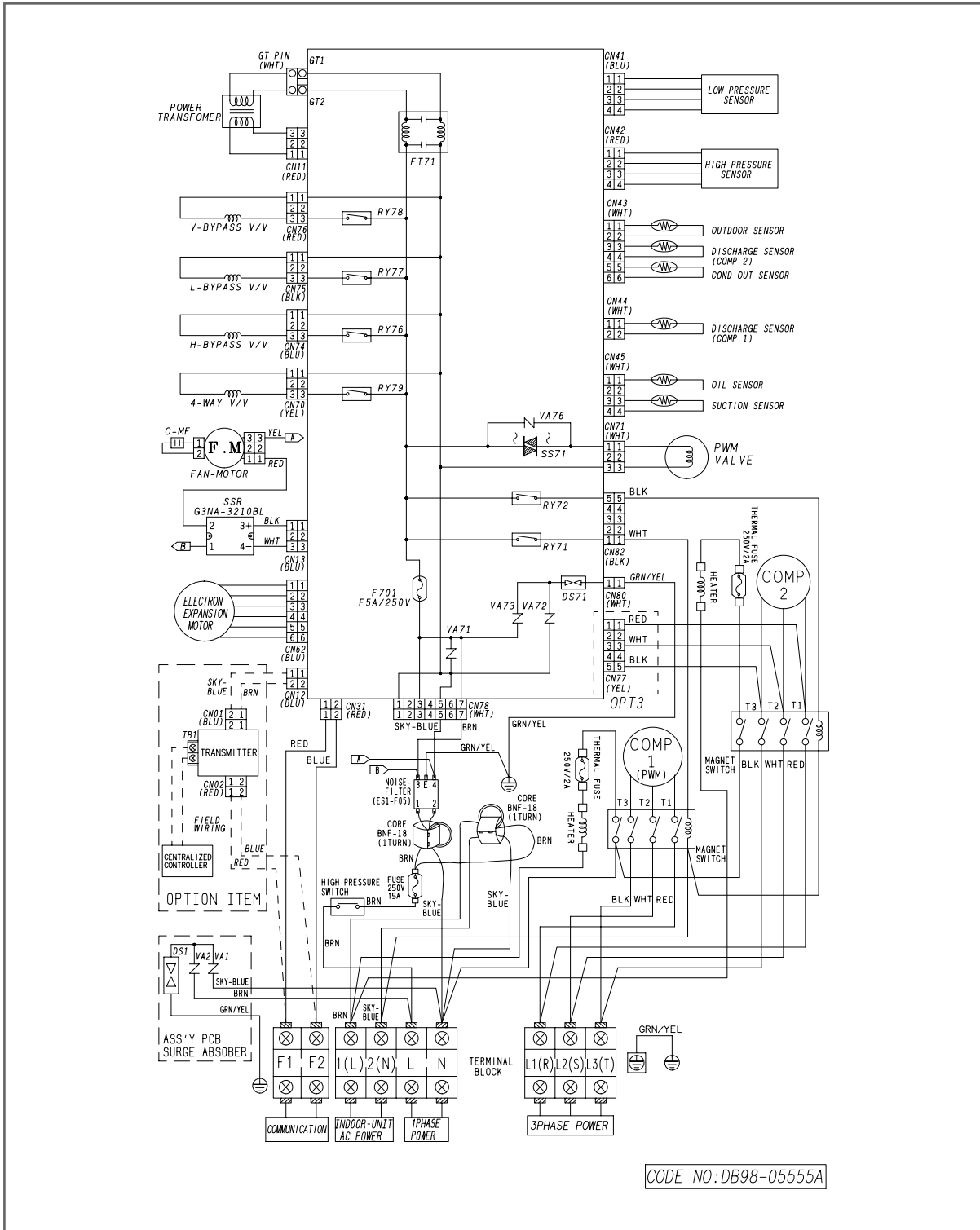
(2) **080/100**








3. Electric circuit diagram

(3) **100F**



4. Options

Design	Capacity (HP)	Optional Items				
		Discharge duct	Interface module	Centralized controller	Function controller	Refnet joint
	6.0 ~ 7.5	MDF-45A (2 FAN)	MIM-B00	MCM-A200	MCM-A100	
	5.0 ~ 6.0	MDF-46A (2 FAN)	MIM-B00	MCM-A200	MCM-A100	MXJ-0906A MXJ-1206A MXJ-2212A MXJ-3112A
	8.0 ~ 10.0	??? (1 FAN)	MIM-B00	MCM-A200	MCM-A100	
	7.5 ~ 10 (Supper cooler)	MDF-45A (1 FAN)	-	-	-	-

* The discharge duct shall be bought suitable for the quantities of Fan.

* These models are based on 9 languages and °C display. For other languages or temperature display, refer to "Numbering system of model" at chapter 1.

V

Installation

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