Flow Logic III

Service Manual

SYJS-03-2017 REV.A Edition: 2017-03

CONTENTS

1. General Information

1.1 Feature

1.1.1 Full DC inverter technology, high efficiency

• DC fan motor, efficiency 40% enhanced

• Full DC INVERTER scroll compressor, efficiency 5% enhanced

•180° vector inverter,efficiency 5% enhanced

•Zigzag fan, to reduce the air vibration

•Two pieces condenser; Two –stage sub-cooling, added sub cooler in condenser

1.1.2 High reliable

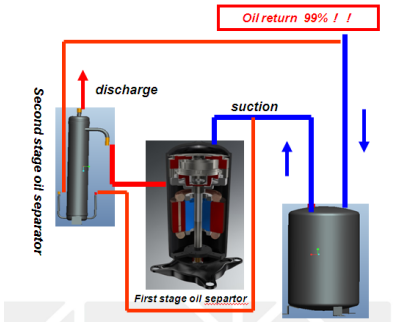
• Back up running: Back up running available not only in combination system but also in single module system(with 2 compressors)

Back up running with different compressors in same system

Back up running in different system

• Recycling operation,more long life of compressor

• 2 stage oil separator



• Compressor double protection

Base on the basic air discharge sensor, Flow Logic III add the oil temperature sensor at the bottom of compressor.

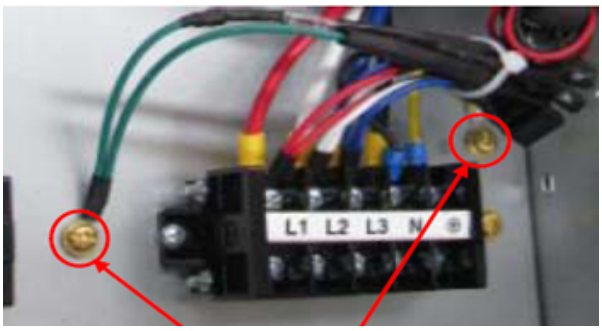
(1) Control the on/off of heater of compressor, preventing from the liquid shock of compressor

(2) Judge if the liquid refrigerant enters into the compressor

(3) Compressor oil sub heating protection.

• Thunder protection

There are electricity discharge wires in the terminal block, to lead the abnormal voltage into the earth, then to prevent the thunder design



• Optimal temperature control

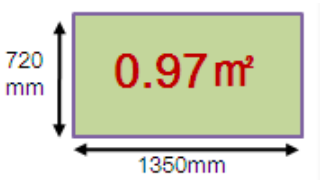
(1) When a multiple number of indoor units are connected, an insufficient or excess amount of refrigerant may be supplied to indoor units depending on the difference in length of the piping connection from outdoor units.

(2) Optimal refrigerant control uses the indoor coil temperature to detect the air conditioning status of each indoor unit and control the capacity(refrigerant amounts) very precisely.

1.1.3 Easy installation

• Largest capacity: Single module reaches 24HP, max 3 modules combination capacity can reach 72HP

• All the outdoor with same bottom size, 0.97 ㎡ . Footprint of 72HP only 2.92 ㎡ ,50% size reduced.



• Up to 82 Pa outdoor ESP , longer air duct connecting available

1.2 Products lineup

Outdoor units

Appearance	Power supply (Ph, V, Hz)	Model	Capacity(kW)	Refrigerant
	3Ph,380V 50/60Hz	AWAU-YDV250-H13	25.2	R410A
		AWAU-YDV280-H13	28	
		AWAU-YDV335-H13 (DROP ONLY)(DROP ONLY)	33.5	
		AWAU-YDV400-H13	40	
		AWAU-YDV450-H13	45	
		AWAU-YDV504-H13	50.4	
		AWAU-YDV560-H13	56	
		AWAU-YDV615-H13 (DROP ONLY) (DROP ONLY)	61.5	
		AWAU-YDV680-H13	68	
		AWAU-YDV730-H13 (DROP ONLY) (DROP ONLY)	80	
		AWAU-YDV800-H13	85	
		AWAU-YDV850-H13	90.4	
		AWAU-YDV904-H13	95.4	
		AWAU-YDV954-H13	101	
		AWAU-YDV1010-H13	106.4	
		AWAU-YDV1064-H13	112	
		AWAU-YDV1120-H13	117.5	
		AWAU-YDV1175-H13 (DROP ONLY) (DROP ONLY)	124	
		AWAU-YDV1240-H13	129.5	
		AWAU-YDV1295-H13(DROP ONLY) (DROP ONLY)	136	

Appearance	Power supply (Ph, V, Hz)	AWAU-YDV1360-H13	Capacity(kW)	Refrigerant
	3Ph,380V 50/60Hz	AWAU-YDV1408-H13	140.8	R410A
		AWAU-YDV1460-H13	146	
		AWAU-YDV1514-H13	151.4	
		AWAU-YDV1570-H13	157	
		AWAU-YDV1624-H13	162.4	
		AWAU-YDV1680-H13	168	
		AWAU-YDV1735-H13 (DROP ONLY) (DROP ONLY)	173.5	
		AWAU-YDV1800-H13	180	
		AWAU-YDV1855-H13 (DROP ONLY)	185.5	
		AWAU-YDV1920-H13	192	
		AWAU-YDV1975-H13 (DROP ONLY) (DROP ONLY) (DROP ONLY)	197.5	
		AWAU-YDV2040-H13	204	

Note:

The single module capacity range of Flow Logic III is from 8HP to 24 HP. In one system too much difference of capacity will cause of bad oil return.

To protect the unit, adding the following limit in the PCB program of the outdoor unit:

In one system the difference of capacity between any two outdoor units can't be more than 4HP.

If in one system the difference of capacity is more than 4HP, the outdoor PCB will display "80" failure code and can't run.

2. Specification

Model			AWAU-YDV250-H13	AWAU-YDV280-H13
Combination			/	/
Power supply		Ph/V/Hz	3/380~400/50/60	3/380~400/50/60
Cooling	Rated capacity	kW	25.2	28
	Rated capacity	kBtu/h	86.0	95.5
	Rated power input	kW	5.79	7.00
	Max. power input	kW	14.02	14.38
	EER		4.35	4.00
	Rated current	A	9.57	11.56
	Max. current	A	23.09	23.68
Heating	Rated capacity	kW	27.3	31.5
	Rated capacity	kBtu/h	93.15	107.48
	Rated power input	kW	6.00	7.08
	Max. power input	kW	12.72	13.23
	COP		4.55	4.45
	Rated current	A	9.91	11.69
	Max. current	A	20.95	21.79
	Capacity at low temperature	kW	21	25.6
Compressor	Brand		MITSUBISH ELECTRIC	
	Model		ANB52F	ANB52F
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		1	1
	Capacity	W	17200	17200
	Power input	W	5250	5250
	Rated current (RLA)	A	18.5	18.5
	Speed	rps	60	60
	Crankcase heater	W	38	38
	Refrigerant oil brand		IDEMITSUKOSAN CO., LTD	
	Refrigerant oil type		FV50S	FV50S
	Refrigerant oil charge	ml	2300+1000	2300+1000
Outdoor fan motor	Brand		SHIBAURA	SHIBAURA
	Model		UGBTEF-12MMHI	UGBTEF-12MMHI
	Voltage		DC339	DC339
	IP class		IP44	IP44
	Type/quantity		DC/2	DC/2
	Insulation class		E	E
	Safe class		I	I
	Power input	W	471*2	471*2
	Output	W	386×2	386×2
	Rated current	A	2.5*2	2.5*2
	Capacitor	μF	/	/
	Speed	rpm	200~1080	200~1080
Outdoor fan	Brand		MHI Haier	MHI Haier
	Model		/	/
	Material		AS+20%GF	AS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ570×2	Φ570×2
	Height	mm	202×2	202×2

Model			AWAU-YDV250-H13	AWAU-YDV280-H13
Outdoor coil	Number of rows		2	2
	Tube pitch (a)×row pitch (b)	mm	25.4×19.05	25.4×19.05
	Fin spacing	mm	1.3	1.3
	Fin type (code)		Hydrophilic aluminum	
	Fin coating type	Optional	Clear lacquer	Clear lacquer
	Salt spray test duration	Hour	168	168
	Tube outside dia. and type		INNERGROOVE TUBE	
		mm	Φ8	Φ8
	Coil length×height	mm	(1648.2×.812.8)*2	(1648.2×.812.8)*2
	Number of circuits		10*2	10*2
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt spray test duration	Hour	72	72
	Sheet metal material		Hot zinc plate	Hot zinc plate
	Sheet metal thickness	mm	0.8	0.8
Control panel enclosure IP class		Standard	IP24	IP24
Outdoor air flow (cooling/heating)		m^3/h	15000 / 13200	15000 / 13200
External static pressure		Pa	82	82
Outdoor sound level (sound pressure level) (H)		dB (A)	57	57
Outdoor sound level (sound power level) (H)		dB (A)	73	73
Outdoor unit	Dimension (W*H*D)	mm	1350×720×1690	1350×720×1690
	Packing (W*H*D)	mm	1450×826×1885	1450×826×1885
	Net weight	kg	276	276
	Gross weight	kg	301	301
Refrigerant	Type		R410A	R410A
	Charged volume*3	kg	9.7	9.7
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	φ9.52	φ9.52
	Gas pipe	mm	φ19.05	φ22.22
	Oil pipe	mm	φ9.52	φ9.52
	Total pipe length	m	1000	1000
	Max. pipe length (Equivalent / actual)	m	190/165	190/165
	Max. Diff. indoor/outdoor unit*1		90 (Outdoor higher than indoor) 110 (Indoor higher than outdoor)	
	Standard Diff. indoor/outdoor unit	m	50 (Outdoor higher than indoor) 40 (Indoor higher than outdoor)	
	Max. / standard Diff. indoor/indoor unit*1	m	30 / 18	30 / 18
Connectable indoor unit ratio*1		%	50%~160%	50%~160%
Maximum indoor units		Piece	18	20
Connection wiring	Max. fuse current	A	40	40
	Min. wiring current	A	25.1	25.1
	Power wiring	mm^2	10	10
	Signal wiring	mm^2	2	
Operation range		°C	Cooling: -5~50 Heating: -23~21	

Norminal condition: indoor temperature (cooling): 27DB (°C)/19WB (°C), indoor temperature (heating): 20DB (°C)/14.5WB (°C). Outdoor temperature (cooling): 35DB (°C)/24WB (°C), outdoor temperature (heating): 7DB (°C)/6WB (°C) The data is measured with 7.5m equivalent pipe and 0m height difference.

The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.

*1 If the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m or the connectable indoor unit ratio is from 130% to 160%, you Must contact your local distributor/dealer for individual design and production.

Model			AWAU-YDV335-H13 (DROP ONLY)	AWAU-YDV400-H13
Combination			/	/
Power supply		Ph/V/Hz	3/380~400/50/60	3/380~400/50/60
Cooling	Rated capacity	kW	33.5	40
	Rated capacity	kBtu/h	114.3	136.5
	Rated power input	kW	8.59	10.26
	Max. power input	kW	14.73	16.91
	EER		3.90	3.90
	Rated current	A	14.19	16.94
	Max. current	A	25.1	28.4
Heating	Rated capacity	kW	37.5	45
	Rated capacity	kBtu/h	127.95	153.54
	Rated power input	kW	8.72	10.71
	Max. power input	kW	13.68	15.60
	COP		4.30	4.20
	Rated current	A	14.40	17.69
	Max. current	A	22.1	25.2
	Capacity at low temperature	kW	29	38
Compressor	Brand		MITSUBISH ELECTRIC	
	Model		ANB52F	ANB66F
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		1	1
	Capacity	W	17200	22000
	Power input	W	5250	6500
	Rated current (RLA)	A	18.5	23.7
	Speed	rps	60	60
	Crankcase heater	W	38	38
	Refrigerant oil brand		IDEMITSUKOSAN CO., LTD	
	Refrigerant oil type		FV50S	FV50S
	Refrigerant oil charge	ml	2300+1000	2300+1000
Outdoor fan motor	Brand		SHIBAURA	SHIBAURA
	Model		UGBTEF-12MMHI	UGBTEF-12MMHI
	Voltage		DC339	DC339
	IP class		IP44	IP44
	Type/quantity		DC/2	DC/2
	Insulation class		E	E
	Safe class		I	I
	Power input	W	471*2	471*2
	Output	W	386×2	386×2
	Rated current	A	2.5*2	2.5*2
	Capacitor	μF	/	/
	Speed	rpm	200~1080	200~1080
Outdoor fan	Brand		MHI Haier	MHI Haier
	Model		/	/
	Material		AS+20%GF	AS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ570×2	Φ570×2
	Height	mm	202×2	202×2

Model			AWAU-YDV335-H13 (DROP ONLY)	AWAU-YDV400-H13
Outdoor coil	Number of rows		2	2
	Tube pitch (a)×row pitch (b)	mm	25.4×19.05	25.4×19.05
	Fin spacing	mm	1.3	1.3
	Fin type (code)		Hydrophilic aluminum	
	Fin coating type	Optional	Clear lacquer	Clear lacquer
	Salt spray test duration	Hour	168	168
	Tube outside dia. and type		INNERGROOVE TUBE	
		mm	Φ8	Φ8
	Coil length×height	mm	(1648.2×.812.8)*2	(1648.2×.812.8)*2
	Number of circuits		10*2	10*2
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt spray test duration	Hour	72	72
	Sheet metal material		Hot zinc plate	Hot zinc plate
	Sheet metal thickness	mm	0.8	0.8
Control panel enclosure IP class		Standard	IP24	IP24
Outdoor air flow (cooling/heating)		m^3/h	15000 / 13200	15000 / 13200
External static pressure		Pa	82	82
Outdoor sound level (sound pressure level) (H)		dB (A)	59	59.5
Outdoor sound level (sound power level) (H)		dB (A)	75	76
Outdoor unit	Dimension (W*H*D)	mm	1350×720×1690	1350×720×1690
	Packing (W*H*D)	mm	1450×826×1885	1450×826×1885
	Net weight	kg	276	279
	Gross weight	kg	301	304
Refrigerant	Type		R410A	R410A
	Charged volume*3	kg	9.7	10
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	φ12.7	φ12.7
	Gas pipe	mm	φ25.4	φ25.4
	Oil pipe	mm	φ9.52	φ9.52
	Total pipe length	m	1000	1000
	Max. pipe length (Equivalent / actual)	m	190/165	190/165
	Max. Diff. indoor/outdoor unit*1		90 (Outdoor higher than indoor) 110 (Indoor higher than outdoor)	
	110 (Indoor higher than outdoor)	m	50 (Outdoor higher than indoor) 40 (Indoor higher than outdoor)	
	Standard Diff. indoor/outdoor unit	m	50 (Outdoor higher than indoor)	30 / 18
Connectable indoor unit ratio*1		40 (Indoor higher than outdoor)	50%~160%	50%~160%
Maximum indoor units		Piece	24	29
Connection wiring	Max. fuse current	A	40	50
	Min. wiring current	A	26.4	29.9
	Power wiring	mm^2	10	16
	Signal wiring	mm^2	2	
Operation range		°C	Cooling: -5~50 Heating: -23~21	

Norminal condition: indoor temperature (cooling): 27DB (°C)/19WB (°C), indoor temperature (heating): 20DB (°C)/14.5WB (°C). Outdoor temperature (cooling): 35DB (°C)/24WB (°C), outdoor temperature (heating): 7DB (°C)/6WB (°C) The data is measured with 7.5m equivalent pipe and 0m height difference.

The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.

*1 If the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m or the connectable indoor unit ratio is from 130% to 160%, you Must contact your local distributor/dealer for individual design and production.

Model			AWAU-YDV450-H13	AWAU-YDV504-H13
Combination			/	/
Power supply		Ph/V/Hz	3/380~400/50/60	3/380~400/50/60
Cooling	Rated capacity	kW	45	50.4
	Rated capacity	kBtu/h	153.5	172.0
	Rated power input	kW	11.90	13.62
	Max. power input	kW	22.68	22.10
	EER		3.78	3.70
	Rated current	A	19.66	22.50
	Max. current	A	36.8	36.15
Heating	Rated capacity	kW	50	56.5
	Rated capacity	kBtu/h	170.60	192.78
	Rated power input	kW	12.05	13.95
	Max. power input	kW	17.20	22.68
	COP		4.15	4.05
	Rated current	A	19.90	23.04
	Max. current	A	27.88	37.8
	Capacity at low temperature	kW	41.5	43.7
Compressor	Brand		MITSUBISH ELECTRIC	
	Model		ANB42F×2	ANB52F×2
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		2	2
	Capacity	W	13900+13900	17200+17200
	Power input	W	4160+4160	5250+5250
	Rated current (RLA)	A	15.2+15.2	18.5+18.5
	Speed	rps	60	60
	Crankcase heater	W	38+38	38+38
	Refrigerant oil brand		IDEMITSUKOSAN CO., LTD	
	Refrigerant oil type		FV50S	FV50S
	Refrigerant oil charge	ml	1700+1700+2000	2300+2300+2000
Outdoor fan motor	Brand		SHIBAURA	SHIBAURA
	Model		UGBTEF-12MMHI	UGBTEF-12MMHI
	Voltage		DC339	DC339
	IP class		IP44	IP44
	Type/quantity		DC/2	DC/2
	Insulation class		E	E
	Safe class		I	I
	Power input	W	471*2	471*2
	Output	W	386×2	386×2
	Rated current	A	2.5*2	2.5*2
	Capacitor	μF	/	/
	Speed	rpm	200~1140	200~1180
Outdoor fan	Brand		MHI Haier	MHI Haier
	Model		/	/
	Material		AS+20%GF	AS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ570×2	Φ570×2
	Height	mm	202×2	202×2

Model			AWAU-YDV450-H13	AWAU-YDV504-H13
Outdoor coil	Number of rows		2	2
	Tube pitch (a)×row pitch (b)	mm	25.4×19.05	25.4×19.05
	Fin spacing	mm	1.3	1.3
	Fin type (code)		Hydrophilic aluminum	
	Fin coating type	Optional	Clear lacquer	Clear lacquer
	Salt spray test duration	Hour	168	168
	Tube outside dia. and type		INNERGROOVE TUBE	
		mm	Φ8	Φ8
	Coil length×height	mm	(1648.2×.812.8)*2	(1648.2×.1168.4)*2
	Number of circuits		10*2	15*2
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt spray test duration	Hour	72	72
	Sheet metal material		Hot zinc plate	Hot zinc plate
	Sheet metal thickness	mm	0.8	0.8
Control panel enclosure IP class		Standard	IP24	IP24
Outdoor air flow (cooling/heating)		m^3/h	15600 / 14400	16200 / 15000
External static pressure		Pa	82	82
Outdoor sound level (sound pressure level) (H)		dB (A)	61	62
Outdoor sound level (sound power level) (H)		dB (A)	77	79
Outdoor unit	Dimension (W*H*D)	mm	1350×720×1690	1350×720×2048
	Packing (W*H*D)	mm	1450×826×1885	1450×826×2225
	Net weight	kg	321	335
	Gross weight	kg	346	360
Refrigerant	Type		R410A	R410A
	Charged volume*3	kg	10	10
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	φ12.7	φ15.88
	Gas pipe	mm	φ28.58	φ28.58
	Oil pipe	mm	φ9.52	φ9.52
	Total pipe length	m	1000	1000
	Max. pipe length (Equivalent / actual)	m	190/165	190/165
	Max. Diff. indoor/outdoor unit*1		90 (Outdoor higher than indoor) 110 (Indoor higher than outdoor)	
	Standard Diff. indoor/outdoor unit	m	50 (Outdoor higher than indoor) 40 (Indoor higher than outdoor)	
	Max. / standard Diff. indoor/indoor unit*1	m	30 / 18	30 / 18
Connectable indoor unit ratio*1		%	50%~160%	50%~160%
Maximum indoor units		Piece	33	37
Connection wiring	Max. fuse current	A	60	70
	Min. wiring current	A	38.7	39.8
	Power wiring	mm^2	16	16
	Signal wiring	mm^2	2	
Operation range		°C	Cooling: -5~50 Heating: -23~21	

Norminal condition: indoor temperature (cooling): 27DB (°C)/19WB (°C), indoor temperature (heating): 20DB (°C)/14.5WB (°C). Outdoor temperature (cooling): 35DB (°C)/24WB (°C), outdoor temperature (heating): 7DB (°C)/6WB (°C) The data is measured with 7.5m equivalent pipe and 0m height difference.

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Model			AWAU-YDV560-H13	AWAU-YDV615-H13 (DROP ONLY)
Combination			/	/
Power supply		Ph/V/Hz	3/380~400/50/60	3/380~400/50/60
Cooling	Rated capacity	kW	56	61.5
	Rated capacity	kBtu/h	191.1	209.8
	Rated power input	kW	15.56	17.57
	Max. power input	kW	25.19	30.56
	EER		3.60	3.50
	Rated current	A	25.69	29.02
	Max. current	A	41.1	49.65
Heating	Rated capacity	kW	63	69
	Rated capacity	kBtu/h	214.96	235.43
	Rated power input	kW	15.95	18.16
	Max. power input	kW	25.19	27.72
	COP		3.95	3.80
	Rated current	A	26.34	29.99
	Max. current	A	42	46.05
	Capacity at low temperature	kW	48.7	53.3
Compressor	Brand		MITSUBISH ELECTRIC	
	Model		ANB52F×2	ANB66F×2
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		2	2
	Capacity	W	17200+17200	22000+22000
	Power input	W	5250+5250	6500+6500
	Rated current (RLA)	A	18.5+18.5	23.7+23.7
	Speed	rps	60	60
	Crankcase heater	W	38+38	38+38
	Refrigerant oil brand		IDEMITSUKOSAN CO., LTD	
	Refrigerant oil type		FV50S	FV50S
	Refrigerant oil charge	ml	2300+2300+2000	2300+2300+2000
Outdoor fan motor	Brand		SHIBAURA	SHIBAURA
	Model		UGBTEF-12MMHI	UGBTEF-12MMHI
	Voltage		DC339	DC339
	IP class		IP44	IP44
	Type/quantity		DC/2	DC/2
	Insulation class		E	E
	Safe class		I	I
	Power input	W	471*2	471*2
	Output	W	386×2	386×2
	Rated current	A	2.5*2	2.5*2
	Capacitor	μF	/	/
	Speed	rpm	200~1180	200~1180
Outdoor fan	Brand		MHI Haier	MHI Haier
	Model		/	/
	Material		AS+20%GF	AS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ570×2	Φ570×2
	Height	mm	202×2	202×2

Model			AWAU-YDV560-H13	AWAU-YDV615-H13 (DROP ONLY)
Outdoor coil	Number of rows		2	2
	Tube pitch (a)×row pitch (b)	mm	25.4×19.05	25.4×19.05
	Fin spacing	mm	1.3	1.3
	Fin type (code)		Hydrophilic aluminum	
	Fin coating type	Optional	Clear lacquer	Clear lacquer
	Salt spray test duration	Hour	168	168
	Tube outside dia. and type		INNERGROOVE TUBE	
		mm	Φ8	Φ8
	Coil length×height	mm	(1648.2×.1168.4)*2	(1648.2×.1168.4+ 1648.2×.812.)*2
	Number of circuits		15*2	15*2
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt spray test duration	Hour	72	72
	Sheet metal material		Hot zinc plate	Hot zinc plate
	Sheet metal thickness	mm	0.8	0.8
Control panel enclosure IP class		Standard	IP24	IP24
Outdoor air flow (cooling/heating)		m^3/h	16200 / 15000	16200 / 15000
External static pressure		Pa	82	82
Outdoor sound level (sound pressure level) (H)		dB (A)	62	62
Outdoor sound level (sound power level) (H)		dB (A)	79	79
Outdoor unit	Dimension (W*H*D)	mm	1350×720×2048	1350×720×2048
	Packing (W*H*D)	mm	1450×826×2225	1450×826×2225
	Net weight	kg	335	359
	Gross weight	kg	360	384
Refrigerant	Type		R410A	R410A
	Charged volume*3	kg	10	10
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	φ15.88	φ15.88
	Gas pipe	mm	φ28.58	φ28.58
	Oil pipe	mm	φ9.52	φ9.52
	Total pipe length	m	1000	1000
	Max. pipe length (Equivalent / actual)	m	190/165	190/165
	Max. Diff. indoor/outdoor unit*1		90 (Outdoor higher than indoor) 110 (Indoor higher than outdoor)	
	Standard Diff. indoor/outdoor unit	m	50 (Outdoor higher than indoor) 40 (Indoor higher than outdoor)	
	Max. / standard Diff. indoor/indoor unit*1	m	30 / 18	30 / 18
Connectable indoor unit ratio*1		%	50%~160%	50%~160%
Maximum indoor units		Piece	41	45
Connection wiring	Max. fuse current	A	70	80
	Min. wiring current	A	44.2	52.3
	Power wiring	mm^2	16	25
	Signal wiring	mm^2	2	
Operation range		°C	Cooling: -5~50 Heating: -23~21	

Norminal condition: indoor temperature (cooling): 27DB (°C)/19WB (°C), indoor temperature (heating): 20DB (°C)/14.5WB (°C). Outdoor temperature (cooling): 35DB (°C)/24WB (°C), outdoor temperature (heating): 7DB (°C)/6WB (°C) The data is measured with 7.5m equivalent pipe and 0m height difference.

The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.

*1 If the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m or the connectable indoor unit ratio is from 130% to 160%, you Must contact your local distributor/dealer for individual design and production.

Model			AWAU-YDV680-H13	AWAU-YDV730-H13 (DROP ONLY)
Combination			/	12+14
Power supply		Ph/V/Hz	3/380~400/50/60	3/380~400/50/60
Cooling	Rated capacity	kW	68	73.5
	Rated capacity	kBtu/h	232.0	250.8
	Rated power input	kW	19.71	18.85
	Max. power input	kW	37.47	31.64
	EER		3.45	3.90
	Rated current	A	32.55	31.12
	Max. current	A	60.45	53.5
Heating	Rated capacity	kW	73	82.5
	Rated capacity	kBtu/h	249.08	281.49
	Rated power input	kW	19.47	19.44
	Max. power input	kW	28.62	29.28
	COP		3.75	4.24
	Rated current	A	32.15	32.10
	Max. current	A	47.4	47.3
	Capacity at low temperature	kW	56.4	67
Compressor	Brand		MITSUBISH ELECTRIC	
	Model		ANB66F×2	ANB52F+ANB66F
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		2	2
	Capacity	W	22000+22000	17200+22000
	Power input	W	6500+6500	5250+6500
	Rated current (RLA)	A	23.7+23.7	18.5+23.7
	Speed	rps	60	60
	Crankcase heater	W	38+38	38+38
	Refrigerant oil brand		IDEMITSUKOSAN CO., LTD	
	Refrigerant oil type		FV50S	FV50S
	Refrigerant oil charge	ml	2300+2300+2000	(2300+1000)+(2300+1000)
Outdoor fan motor	Brand		SHIBAURA	SHIBAURA
	Model		UGBTEF-12MMHI	UGBTEF-13MMHI
	Voltage		DC339	DC339
	IP class		IP44	IP44
	Type/quantity		DC/2	DC/4
	Insulation class		E	E
	Safe class		I	I
	Power input	W	471*2	471*2+471*2
	Output	W	386×2	386×4
	Rated current	A	2.5*2	2.5*2+2.5*2
	Capacitor	μF	/	/
	Speed	rpm	200~1180	200~1080+200~1080
Outdoor fan	Brand		MHI Haier	MHI Haier
	Model		/	/
	Material		AS+20%GF	AS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ570×2	Φ570×4
	Height	mm	202×2	202×4

Model			AWAU-YDV680-H13	AWAU-YDV730-H13 (DROP ONLY)
Outdoor coil	Number of rows		2	2+2
	Tube pitch (a)×row pitch (b)	mm	25.4×19.05	25.4×19.05
	Fin spacing	mm	1.3	1.3
	Fin type (code)		Hydrophilic aluminum	
	Fin coating type	Optional	Clear lacquer	Clear lacquer
	Salt spray test duration	Hour	168	168
	Tube outside dia. and type		INNERGROOVE TUBE	
		mm	Φ8	Φ8
	Coil length×height	mm	(1648.2×.1168.4+ 1648.2×.812.)*2	(1648.2×.812.8)*2+ (1648.2×.812.8)*2
	Number of circuits		15*2	10*2+10*2
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt spray test duration	Hour	72	72
	Sheet metal material		Hot zinc plate	Hot zinc plate
	Sheet metal thickness	mm	0.8	0.8
Control panel enclosure IP class		Standard	IP24	IP24
Outdoor air flow (cooling/heating)		m^3/h	16200 / 15000	30000 / 26400
External static pressure		Pa	82	82
Outdoor sound level (sound pressure level) (H)		dB (A)	63	62
Outdoor sound level (sound power level) (H)		dB (A)	80	79
Outdoor unit	Dimension (W*H*D)	mm	1350×720×2048	(1350×720×1690)*2
	Packing (W*H*D)	mm	1450×826×2225	(1450×826×1885)*2
	Net weight	kg	359	555
	Gross weight	kg	384	605
Refrigerant	Type		R410A	R410A
	Charged volume*3	kg	10	19.7
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	φ15.88	φ19.05
	Gas pipe	mm	φ28.58	φ31.8
	Oil pipe	mm	φ9.52	φ9.52
	Total pipe length	m	1000	1000
	Max. pipe length (Equivalent / actual)	m	190/165	190/165
	Max. Diff. indoor/outdoor unit*1		90 (Outdoor higher than indoor) 110 (Indoor higher than outdoor)	
	Standard Diff. indoor/outdoor unit	m	50 (Outdoor higher than indoor) 40 (Indoor higher than outdoor)	
	Max. / standard Diff. indoor/indoor unit*1	m	30 / 18	30 / 18
Connectable indoor unit ratio*1		%	50%~160%	50%~160%
Maximum indoor units		Piece	49	53
Connection wiring	Max. fuse current	A	80	90
	Min. wiring current	A	63.6	56.3
	Power wiring	mm^2	25	/
	Signal wiring	mm^2	2	
Operation range		°C	Cooling: -5~50 Heating: -23~21	

Norminal condition: indoor temperature (cooling): 27DB (°C)/19WB (°C), indoor temperature (heating): 20DB (°C)/14.5WB (°C). Outdoor temperature (cooling): 35DB (°C)/24WB (°C), outdoor temperature (heating): 7DB (°C)/6WB (°C) The data is measured with 7.5m equivalent pipe and 0m height difference.

The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.

*1 If the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m or the connectable indoor unit ratio is from 130% to 160%, you Must contact your local distributor/dealer for individual design and production.

Model			AWAU-YDV800-H13	AWAU-YDV850-H13
Combination			14+14	14+16
Power supply		Ph/V/Hz	3/380~400/50/60	3/380~400/50/60
Cooling	Rated capacity	kW	80	85
	Rated capacity	kBtu/h	273.0	290.0
	Rated power input	kW	20.51	22.16
	Max. power input	kW	33.81	39.59
	EER		3.90	3.84
	Rated current	A	33.88	36.60
	Max. current	A	56.8	65.2
Heating	Rated capacity	kW	90	95
	Rated capacity	kBtu/h	307.08	324.14
	Rated power input	kW	21.43	22.76
	Max. power input	kW	31.20	32.80
	COP		4.20	4.17
	Rated current	A	35.39	37.59
	Max. current	A	50.4	53.08
	Capacity at low temperature	kW	76	79.5
Compressor	Brand		MITSUBISH ELECTRIC	
	Model		ANB66F+ANB66F	ANB66F+ANB42F×2
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		2	3
	Capacity	W	22000*2	22000+(13900+13900)
	Power input	W	6500*2	6500+(4160+4160)
	Rated current (RLA)	A	23.7*2	23.7+(15.2+15.2)
	Speed	rps	60	60
	Crankcase heater	W	38*2	38+(38+38)
	Refrigerant oil brand		IDEMITSUKOSAN CO., LTD	
	Refrigerant oil type		FV50S	FV50S
	Refrigerant oil charge	ml	(2300+1000)*2	2300+1000+(1700+1700+2000)
Outdoor fan motor	Brand		SHIBAURA	SHIBAURA
	Model		UGBTEF-14MMHI	UGBTEF-15MMHI
	Voltage		DC339	DC339
	IP class		IP44	IP44
	Type/quantity		DC/4	DC/4
	Insulation class		E	E
	Safe class		I	I
	Power input	W	471*2*2	471*2+471*2
	Output	W	386×4	386×4
	Rated current	A	2.5*2*2	2.5*2+2.5*2
	Capacitor	μF	/	/
	Speed	rpm	200~1080+200~1080	200~1080+200~1140
Outdoor fan	Brand		MHI Haier	MHI Haier
	Model		/	/
	Material		AS+20%GF	AS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ570×4	Φ570×4
	Height	mm	202×4	202×4

Model			AWAU-YDV800-H13	AWAU-YDV850-H13
Outdoor coil	Number of rows		2+2	2+2
	Tube pitch (a)×row pitch (b)	mm	25.4×19.05	25.4×19.05
	Fin spacing	mm	1.3	1.3
	Fin type (code)		Hydrophilic aluminum	
	Fin coating type	Optional	Clear lacquer	Clear lacquer
	Salt spray test duration	Hour	168	168
	Tube outside dia. and type		INNERGROOVE TUBE	
		mm	Φ8	Φ8
	Coil length×height	mm	(1648.2×.812.8)*2*2	(1648.2×.812.8)*2+ (1648.2×.812.8)*2
	Number of circuits		10*2*2	10*2+10*2
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt spray test duration	Hour	72	72
	Sheet metal material		Hot zinc plate	Hot zinc plate
	Sheet metal thickness	mm	0.8	0.8
Control panel enclosure IP class		Standard	IP24	IP24
Outdoor air flow (cooling/heating)		m^3/h	30000 / 26400	30600 / 27600
External static pressure		Pa	82	82
Outdoor sound level (sound pressure level) (H)		dB (A)	62.5	63
Outdoor sound level (sound power level) (H)		dB (A)	80	80
Outdoor unit	Dimension (W*H*D)	mm	(1350×720×1690)*2	(1350×720×1690)*2
	Packing (W*H*D)	mm	(1450×826×1885)*2	(1450×826×1885)*2
	Net weight	kg	558	600
	Gross weight	kg	608	650
Refrigerant	Type		R410A	R410A
	Charged volume*3	kg	20	20
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	φ19.05	φ19.05
	Gas pipe	mm	φ31.8	φ31.8
	Oil pipe	mm	φ9.52	φ9.52
	Total pipe length	m	1000	1000
	Max. pipe length (Equivalent / actual)	m	190/165	190/165
	Max. Diff. indoor/outdoor unit*1		90 (Outdoor higher than indoor) 110 (Indoor higher than outdoor)	
	Standard Diff. indoor/outdoor unit	m	50 (Outdoor higher than indoor) 40 (Indoor higher than outdoor)	
	Max. / standard Diff. indoor/indoor unit*1	m	30 / 18	30 / 18
Connectable indoor unit ratio*1		%	50%~160%	50%~160%
Maximum indoor units		Piece	58	62
Connection wiring	Max. fuse current	A	100	110
	Min. wiring current	A	59.8	68.6
	Power wiring	mm^2	/	/
	Signal wiring	mm^2	2	
Operation range		°C	Cooling: -5~50 Heating: -23~21	

Norminal condition: indoor temperature (cooling): 27DB (°C)/19WB (°C), indoor temperature (heating): 20DB (°C)/14.5WB (°C). Outdoor temperature (cooling): 35DB (°C)/24WB (°C), outdoor temperature (heating): 7DB (°C)/6WB (°C) The data is measured with 7.5m equivalent pipe and 0m height difference.

The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.

*1 If the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m or the connectable indoor unit ratio is from 130% to 160%, you Must contact your local distributor/dealer for individual design and production.

Model			AWAU-YDV904-H13	AWAU-YDV954-H13
Combination			14+18	16+18
Power supply		Ph/V/Hz	3/380~400/50/60	3/380~400/50/60
Cooling	Rated capacity	kW	90.4	95.4
	Rated capacity	kBtu/h	308.4	325.5
	Rated power input	kW	23.88	25.53
	Max. power input	kW	39.00	44.78
	EER		3.79	3.74
	Rated current	A	39.43	42.16
	Max. current	A	64.55	72.95
Heating	Rated capacity	kW	101.5	106.5
	Rated capacity	kBtu/h	346.32	363.38
	Rated power input	kW	24.66	26.00
	Max. power input	kW	38.28	39.88
	COP		4.12	4.10
	Rated current	A	40.73	42.94
	Max. current	A	63	65.68
	Capacity at low temperature	kW	81.7	85.2
Compressor	Brand		MITSUBISH ELECTRIC	
	Model		ANB66F+ANB52F×2	ANB42F×2+ANB52F×2
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		3	4
	Capacity	W	22000+(17200+17200)	(13900+13900)+(17200+17200)
	Power input	W	6500+(5250+5250)	(4160+4160)+(5250+5250)
	Rated current (RLA)	A	23.7+(18.5+18.5)	(15.2+15.2)+(18.5+18.5)
	Speed	rps	60	60
	Crankcase heater	W	38+(38+38)	(38+38)+(38+38)
	Refrigerant oil brand		IDEMITSUKOSAN CO., LTD	
	Refrigerant oil type		FV50S	FV50S
	Refrigerant oil charge	ml	(2300+1000)+ (2300+2300+2000)	(1700+1700+2000)+ (2300+2300+2000)
Outdoor fan motor	Brand		SHIBAURA	SHIBAURA
	Model		UGBTEF-16MMHI	UGBTEF-17MMHI
	Voltage		DC339	DC339
	IP class		IP44	IP44
	Type/quantity		DC/4	DC/4
	Insulation class		E	E
	Safe class		I	I
	Power input	W	471*2+471*2	471*2+471*2
	Output	W	386×4	386×4
	Rated current	A	2.5*2+2.5*2	2.5*2+2.5*2
	Capacitor	μF	/	/
	Speed	rpm	200~1080+200~1180	200~1140+200~1180
Outdoor fan	Brand		MHI Haier	MHI Haier
	Model		/	/
	Material		AS+20%GF	AS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ570×4	Φ570×4
	Height	mm	202×4	202×4

Model			AWAU-YDV904-H13	AWAU-YDV954-H13
Outdoor coil	Number of rows		2+2	2+2
	Tube pitch (a)×row pitch (b)	mm	25.4×19.05	25.4×19.05
	Fin spacing	mm	1.3	1.3
	Fin type (code)		Hydrophilic aluminum	
	Fin coating type	Optional	Clear lacquer	Clear lacquer
	Salt spray test duration	Hour	168	168
	Tube outside dia. and type		INNERGROOVE TUBE	
		mm	Φ8	Φ8
	Coil length×height	mm	(1648.2×.812.8)*2+(1648.2×.1168.4)*2	
	Number of circuits		10*2+15*2	10*2+15*2
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt spray test duration	Hour	72	72
	Sheet metal material		Hot zinc plate	Hot zinc plate
	Sheet metal thickness	mm	0.8	0.8
Control panel enclosure IP class		Standard	IP24	IP24
Outdoor air flow (cooling/heating)		m^3/h	31200 / 28200	31800 / 29400
External static pressure		Pa	82	82
Outdoor sound level (sound pressure level) (H)		dB (A)	64	64.5
Outdoor sound level (sound power level) (H)		dB (A)	81	82
Outdoor unit	Dimension (W*H*D)	mm	(1350×720×1690)+ (1350×720×2048)	(1350×720×1690)+ (1350×720×2048)
	Packing (W*H*D)	mm	(1450×826×1885)+ (1450×826×2225)	(1450×826×1885)+ (1450×826×2225)
	Net weight	kg	614	656
	Gross weight	kg	664	706
Refrigerant	Type		R410A	R410A
	Charged volume*3	kg	20	20
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	φ19.05	φ19.05
	Gas pipe	mm	φ31.8	φ31.8
	Oil pipe	mm	φ9.52	φ9.52
	Total pipe length	m	1000	1000
	Max. pipe length (Equivalent / actual)	m	190/165	190/165
	Max. Diff. indoor/outdoor unit*1		90 (Outdoor higher than indoor) 110 (Indoor higher than outdoor)	
	Standard Diff. indoor/outdoor unit	m	50 (Outdoor higher than indoor) 40 (Indoor higher than outdoor)	
	Max. / standard Diff. indoor/indoor unit*1	m	30 / 18	30 / 18
Connectable indoor unit ratio*1		%	50%~160%	50%~160%
Maximum indoor units		Piece	64	64
Connection wiring	Max. fuse current	A	120	130
	Min. wiring current	A	67.9	76.8
	Power wiring	mm^2	/	/
	Signal wiring	mm^2	2	
Operation range		°C	Cooling: -5~50 Heating: -23~21	

Norminal condition: indoor temperature (cooling): 27DB (°C)/19WB (°C), indoor temperature (heating): 20DB (°C)/14.5WB (°C). Outdoor temperature (cooling): 35DB (°C)/24WB (°C), outdoor temperature (heating): 7DB (°C)/6WB (°C) The data is measured with 7.5m equivalent pipe and 0m height difference.

The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.

*1 If the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m or the connectable indoor unit ratio is from 130% to 160%, you Must contact your local distributor/dealer for individual design and production.

Model			AWAU-YDV1010-H13	AWAU-YDV1064-H13
Combination			16+20	18+20
Power supply		Ph/V/Hz	3/380~400/50/60	3/380~400/50/60
Cooling	Rated capacity	kW	101	106.4
	Rated capacity	kBtu/h	344.6	363.0
	Rated power input	kW	27.46	29.18
	Max. power input	kW	47.87	47.28
	EER		3.68	3.65
	Rated current	A	45.35	48.19
	Max. current	A	77.9	77.25
Heating	Rated capacity	kW	113	119.5
	Rated capacity	kBtu/h	385.56	407.73
	Rated power input	kW	28.00	29.90
	Max. power input	kW	42.39	47.87
	COP		4.04	4.00
	Rated current	A	46.24	49.38
	Max. current	A	69.88	79.8
	Capacity at low temperature	kW	90.2	92.4
Compressor	Brand		MITSUBISH ELECTRIC	
	Model		ANB42F×2+ANB52F×2	ANB52F×2+ANB52F×2
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		4	4
	Capacity	W	(13900+13900)+(17200+17200)	(17200+17200)+(17200+17200)
	Power input	W	(4160+4160)+(5250+5250)	(5250+5250)+(5250+5250)
	Rated current (RLA)	A	(15.2+15.2)+(18.5+18.5)	(18.5+18.5)+(18.5+18.5)
	Speed	rps	60	60
	Crankcase heater	W	(38+38)+(38+38)	(38+38)+(38+38)
	Refrigerant oil brand		IDEMITSUKOSAN CO., LTD	
	Refrigerant oil type		FV50S	FV50S
	Refrigerant oil charge	ml	(1700+1700+2000)+ (2300+2300+2000)	(2300+2300+2000)+ (2300+2300+2000)
Outdoor fan motor	Brand		SHIBAURA	SHIBAURA
	Model		UGBTEF-18MMHI	UGBTEF-19MMHI
	Voltage		DC339	DC339
	IP class		IP44	IP44
	Type/quantity		DC/4	DC/4
	Insulation class		E	E
	Safe class		I	I
	Power input	W	471*2+471*2	471*2+471*2
	Output	W	386×4	386×4
	Rated current	A	2.5*2+2.5*2	2.5*2+2.5*2
	Capacitor	μF	/	/
	Speed	rpm	200~1140+200~1180	200~1180+200~1180
Outdoor fan	Brand		MHI Haier	MHI Haier
	Model		/	/
	Material		AS+20%GF	AS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ570×4	Φ570×4
	Height	mm	202×4	202×4

Model			AWAU-YDV1010-H13	AWAU-YDV1064-H13
Outdoor coil	Number of rows		2+2	2+2
	Tube pitch (a)×row pitch (b)	mm	25.4×19.05	25.4×19.05
	Fin spacing	mm	1.3	1.3
	Fin type (code)		Hydrophilic aluminum	
	Fin coating type	Optional	Clear lacquer	Clear lacquer
	Salt spray test duration	Hour	168	168
	Tube outside dia. and type		INNERGROOVE TUBE	
		mm	Φ8	Φ8
	Coil length×height	mm	(1648.2×.812.8)*2+ (1648.2×.1168.4)*2	(1648.2×.1168.4)*2+ (1648.2×.1168.4)*2
	Number of circuits		10*2+15*2	15*2+15*2
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt spray test duration	Hour	72	72
	Sheet metal material		Hot zinc plate	Hot zinc plate
	Sheet metal thickness	mm	0.8	0.8
Control panel enclosure IP class		Standard	IP24	IP24
Outdoor air flow (cooling/heating)		m^3/h	31800 / 29400	32400 / 30000
External static pressure		Pa	82	82
Outdoor sound level (sound pressure level) (H)		dB (A)	64.5	65
Outdoor sound level (sound power level) (H)		dB (A)	82	83
Outdoor unit	Dimension (W*H*D)	mm	(1350×720×1690)+ (1350×720×2048)	(1350×720×2048)*2
	Packing (W*H*D)	mm	(1450×826×1885)+ (1450×826×2225)	(1450×826×2225)*2
	Net weight	kg	656	670
	Gross weight	kg	706	720
Refrigerant	Type		R410A	R410A
	Charged volume*3	kg	20	20
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	φ19.05	φ19.05
	Gas pipe	mm	φ38.1	φ38.1
	Oil pipe	mm	φ9.52	φ9.52
	Total pipe length	m	1000	1000
	Max. pipe length (Equivalent / actual)	m	190/165	190/165
	Max. Diff. indoor/outdoor unit*1		90 (Outdoor higher than indoor) 110 (Indoor higher than outdoor)	
	Standard Diff. indoor/outdoor unit	m	50 (Outdoor higher than indoor) 40 (Indoor higher than outdoor)	
	Max. / standard Diff. indoor/indoor unit*1	m	30 / 18	30 / 18
Connectable indoor unit ratio*1		%	50%~160%	50%~160%
Maximum indoor units		Piece	64	64
Connection wiring	Max. fuse current	A	130	140
	Min. wiring current	A	82	84
	Power wiring	mm^2	/	/
	Signal wiring	mm^2	2	
Operation range		°C	Cooling: -5~50 Heating: -23~21	

Norminal condition: indoor temperature (cooling): 27DB (°C)/19WB (°C), indoor temperature (heating): 20DB (°C)/14.5WB (°C). Outdoor temperature (cooling): 35DB (°C)/24WB (°C), outdoor temperature (heating): 7DB (°C)/6WB (°C) The data is measured with 7.5m equivalent pipe and 0m height difference.

The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.

*1 If the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m or the connectable indoor unit ratio is from 130% to 160%, you Must contact your local distributor/dealer for individual design and production.

Model			AWAU-YDV1120-H13	AWAU-YDV1175-H13 (DROP ONLY)
Combination			20+20	20+22
Power supply		Ph/V/Hz	3/380~400/50/60	3/380~400/50/60
Cooling	Rated capacity	kW	112	117.5
	Rated capacity	kBtu/h	382.1	400.9
	Rated power input	kW	31.11	33.13
	Max. power input	kW	50.37	55.75
	EER		3.60	3.55
	Rated current	A	51.38	54.71
	Max. current	A	82.2	90.75
Heating	Rated capacity	kW	126	132
	Rated capacity	kBtu/h	429.91	450.38
	Rated power input	kW	31.90	34.11
	Max. power input	kW	50.37	52.91
	COP		3.95	3.87
	Rated current	A	52.68	56.33
	Max. current	A	84	88.05
	Capacity at low temperature	kW	97.4	102
Compressor	Brand		MITSUBISH ELECTRIC	
	Model		ANB52F×2+ANB52F×2	ANB52F×2+ANB66F×2
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		4	4
	Capacity	W	(17200+17200)*2	(17200+17200)+(22000+22000)
	Power input	W	(5250+5250)*2	(5250+5250)+(6500+6500)
	Rated current (RLA)	A	(18.5+18.5)*2	(18.5+18.5)+(23.7+23.7)
	Speed	rps	60	60
	Crankcase heater	W	(38+38)*2	(38+38)+(38+38)
	Refrigerant oil brand		IDEMITSUKOSAN CO., LTD	
	Refrigerant oil type		FV50S	FV50S
	Refrigerant oil charge	ml	(2300+2300+2000)*2	(2300+2300+2000)+(2300+2300+2000)
Outdoor fan motor	Brand		SHIBAURA	SHIBAURA
	Model		UGBTEF-20MMHI	UGBTEF-21MMHI
	Voltage		DC339	DC339
	IP class		IP44	IP44
	Type/quantity		DC/4	DC/4
	Insulation class		E	E
	Safe class		I	I
	Power input	W	471*2*2	471*2+471*2
	Output	W	386×4	386×4
	Rated current	A	2.5*2*2	2.5*2+2.5*2
	Capacitor	μF	/	/
	Speed	rpm	200~1180+200~1180	200~1180+200~1180
Outdoor fan	Brand		MHI Haier	MHI Haier
	Model		/	/
	Material		AS+20%GF	AS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ570×4	Φ570×4
	Height	mm	202×4	202×4

Model			AWAU-YDV1120-H13	AWAU-YDV1175-H13 (DROP ONLY)
Outdoor coil	Number of rows		2+2	2+3
	Tube pitch (a)×row pitch (b)	mm	25.4×19.05	25.4×19.05
	Fin spacing	mm	1.3	1.3
	Fin type (code)		Hydrophilic aluminum	
	Fin coating type	Optional	Clear lacquer	Clear lacquer
	Salt spray test duration	Hour	168	168
	Tube outside dia. and type		INNERGROOVE TUBE	
		mm	Φ8	Φ8
	Coil length×height	mm	(1648.2×.1168.4)*2*2	(1648.2×.1168.4)*2+(1648.2×1168.4+1648.2×.812.)*2
	Number of circuits		15*2*2	15*2+15*2
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt spray test duration	Hour	72	72
	Sheet metal material		Hot zinc plate	Hot zinc plate
	Sheet metal thickness	mm	0.8	0.8
Control panel enclosure IP class		Standard	IP24	IP24
Outdoor air flow (cooling/heating)		m^3/h	32400 / 30000	32400 / 30000
External static pressure		Pa	82	82
Outdoor sound level (sound pressure level) (H)		dB (A)	65	65
Outdoor sound level (sound power level) (H)		dB (A)	83	83
Outdoor unit	Dimension (W*H*D)	mm	(1350×720×2048)*2	(1350×720×2048)*2
	Packing (W*H*D)	mm	(1450×826×2225)*2	(1450×826×2225)*2
	Net weight	kg	670	694
	Gross weight	kg	720	744
Refrigerant	Type		R410A	R410A
	Charged volume*3	kg	20	20
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	φ19.05	φ19.05
	Gas pipe	mm	φ38.1	φ38.1
	Oil pipe	mm	φ9.52	φ9.52
	Total pipe length	m	1000	1000
	Max. pipe length (Equivalent / actual)	m	190/165	190/165
	Max. Diff. indoor/outdoor unit*1		90 (Outdoor higher than indoor) 110 (Indoor higher than outdoor)	
	Standard Diff. indoor/outdoor unit	m	50 (Outdoor higher than indoor) 40 (Indoor higher than outdoor)	
	Max. / standard Diff. indoor/indoor unit*1	m	30 / 18	30 / 18
Connectable indoor unit ratio*1		%	50%~160%	50%~160%
Maximum indoor units		Piece	64	64
Connection wiring	Max. fuse current	A	140	150
	Min. wiring current	A	88.4	95.5
	Power wiring	mm^2	/	/
	Signal wiring	mm^2	2	
Operation range		°C	Cooling: -5~50 Heating: -23~21	

Norminal condition: indoor temperature (cooling): 27DB (°C)/19WB (°C), indoor temperature (heating): 20DB (°C)/14.5WB (°C). Outdoor temperature (cooling): 35DB (°C)/24WB (°C), outdoor temperature (heating): 7DB (°C)/6WB (°C) The data is measured with 7.5m equivalent pipe and 0m height difference.

The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.

*1 If the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m or the connectable indoor unit ratio is from 130% to 160%, you Must contact your local distributor/dealer for individual design and production.

Model			AWAU-YDV1240-H13	AWAU-YDV1295-H13(DROP ONLY)
Combination			20+24	22+24
Power supply		Ph/V/Hz	3/380~400/50/60	3/380~400/50/60
Cooling	Rated capacity	kW	124	129.5
	Rated capacity	kBtu/h	423.1	441.9
	Rated power input	kW	35.27	37.28
	Max. power input	kW	62.66	68.03
	EER		3.52	3.47
	Rated current	A	58.24	61.57
	Max. current	A	101.55	110.1
Heating	Rated capacity	kW	136	142
	Rated capacity	kBtu/h	464.03	484.50
	Rated power input	kW	35.42	37.62
	Max. power input	kW	53.81	56.34
	COP		3.84	3.77
	Rated current	A	58.49	62.14
	Max. current	A	89.4	93.45
	Capacity at low temperature	kW	105.1	109.7
Compressor	Brand		MITSUBISH ELECTRIC	
	Model		ANB52F×2+ANB66F×2	ANB66F×2+ANB66F×2
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		4	4
	Capacity	W	(17200+17200)+(22000+22000)	(22000+22000)+(22000+22000)
	Power input	W	(5250+5250)+(6500+6500)	(6500+6500)+(6500+6500)
	Rated current (RLA)	A	(18.5+18.5)+(23.7+23.7)	(23.7+23.7)+(23.7+23.7)
	Speed	rps	60	60
	Crankcase heater	W	(38+38)+(38+38)	(38+38)+(38+38)
	Refrigerant oil brand		IDEMITSUKOSAN CO., LTD	
	Refrigerant oil type		FV50S	FV50S
	Refrigerant oil charge	ml	(2300+2300+2000)+ (2300+2300+2000)	(2300+2300+2000)+ (2300+2300+2000)
Outdoor fan motor	Brand		SHIBAURA	SHIBAURA
	Model		UGBTEF-22MMHI	UGBTEF-23MMHI
	Voltage		DC339	DC339
	IP class		IP44	IP44
	Type/quantity		DC/4	DC/4
	Insulation class		E	E
	Safe class		I	I
	Power input	W	471*2+471*2	471*2+471*2
	Output	W	386×4	386×4
	Rated current	A	2.5*2+2.5*2	2.5*2+2.5*2
	Capacitor	μF	/	/
	Speed	rpm	200~1180+200~1180	200~1180+200~1180
Outdoor fan	Brand		MHI Haier	MHI Haier
	Model		/	/
	Material		AS+20%GF	AS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ570×4	Φ570×4
	Height	mm	202×4	202×4

Model			AWAU-YDV1240-H13	AWAU-YDV1295-H13(DROP ONLY)
Outdoor coil	Number of rows		2+3	3+3
	Tube pitch (a)×row pitch (b)	mm	25.4×19.05	25.4×19.05
	Fin spacing	mm	1.3	1.3
	Fin type (code)		Hydrophilic aluminum	
	Fin coating type	Optional	Clear lacquer	Clear lacquer
	Salt spray test duration	Hour	168	168
	Tube outside dia. and type		INNERGROOVE TUBE	
		mm	Φ8	Φ8
	Coil length×height	mm	(1648.2×1168.4)*2+(1648.2×1168.4+1648.2×812)*2	(1648.2×1168.4+1648.2×812.)*2+(1648.2×1168.4+1648.2×812.)*2
	Number of circuits		15*2+15*2	15*2+15*2
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt spray test duration	Hour	72	72
	Sheet metal material		Hot zinc plate	Hot zinc plate
	Sheet metal thickness	mm	0.8	0.8
Control panel enclosure IP class		Standard	IP24	IP24
Outdoor air flow (cooling/heating)		m^3/h	32400 / 30000	32400 / 30000
External static pressure		Pa	82	82
Outdoor sound level (sound pressure level) (H)		dB (A)	65.5	65.5
Outdoor sound level (sound power level) (H)		dB (A)	83	83
Outdoor unit	Dimension (W*H*D)	mm	(1350×720×2048)*2	(1350×720×2048)*2
	Packing (W*H*D)	mm	(1450×826×2225)*2	(1450×826×2225)*2
	Net weight	kg	694	718
	Gross weight	kg	744	768
Refrigerant	Type		R410A	R410A
	Charged volume*3	kg	20	20
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	φ19.05	φ19.05
	Gas pipe	mm	φ38.1	φ38.1
	Oil pipe	mm	φ9.52	φ9.52
	Total pipe length	m	1000	1000
	Max. pipe length (Equivalent / actual)	m	190/165	190/165
	Max. Diff. indoor/outdoor unit*1		90 (Outdoor higher than indoor) 110 (Indoor higher than outdoor)	
	Standard Diff. indoor/outdoor unit	m	50 (Outdoor higher than indoor) 40 (Indoor higher than outdoor)	
	Max. / standard Diff. indoor/indoor unit*1	m	30 / 18	30 / 18
Connectable indoor unit ratio*1		%	50%~160%	50%~160%
Maximum indoor units		Piece	64	64
Connection wiring	Max. fuse current	A	150	160
	Min. wiring current	A	106.9	115.9
	Power wiring	mm^2	/	/
	Signal wiring	mm^2	2	
Operation range		°C	Cooling: -5~50 Heating: -23~21	

Norminal condition: indoor temperature (cooling): 27DB (°C)/19WB (°C), indoor temperature (heating): 20DB (°C)/14.5WB (°C). Outdoor temperature (cooling): 35DB (°C)/24WB (°C), outdoor temperature (heating): 7DB (°C)/6WB (°C) The data is measured with 7.5m equivalent pipe and 0m height difference.

The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.

*1 If the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m or the connectable indoor unit ratio is from 130% to 160%, you Must contact your local distributor/dealer for individual design and production.

Model			AWAU-YDV1360-H13	AWAU-YDV1408-H13
Combination			24+24	14+18+18
Power supply		Ph/V/Hz	3/380~400/50/60	3/380~400/50/60
Cooling	Rated capacity	kW	136	140.8
	Rated capacity	kBtu/h	464.0	480.4
	Rated power input	kW	39.42	37.50
	Max. power input	kW	74.94	61.10
	EER		3.45	3.75
	Rated current	A	65.10	61.93
	Max. current	A	120.9	100.7
Heating	Rated capacity	kW	146	158
	Rated capacity	kBtu/h	498.15	539.10
	Rated power input	kW	38.93	38.62
	Max. power input	kW	57.24	60.96
	COP		3.75	4.09
	Rated current	A	64.30	63.77
	Max. current	A	94.8	100.8
	Capacity at low temperature	kW	112.8	125.4
Compressor	Brand		MITSUBISH ELECTRIC	
	Model		ANB66F×2+ANB66F×2	ANB66F+ANB52F×2+ANB52F×2
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		4	5
	Capacity	W	(22000+22000)*2	22000+(17200+17200)*2
	Power input	W	(6500+6500)*2	6500+(5250+5250)*2
	Rated current (RLA)	A	(23.7+23.7)*2	23.7+(18.5+18.5)*2
	Speed	rps	60	60
	Crankcase heater	W	(38+38)*2	38+(38+38)*2
	Refrigerant oil brand		IDEMITSUKOSAN CO., LTD	
	Refrigerant oil type		FV50S	FV50S
	Refrigerant oil charge	ml	(2300+2300+2000)*2	2300+1000+(2300+2300+2000)*2
Outdoor fan motor	Brand		SHIBAURA	SHIBAURA
	Model		UGBTEF-24MMHI	UGBTEF-25MMHI
	Voltage		DC339	DC339
	IP class		IP44	IP44
	Type/quantity		DC/4	DC/6
	Insulation class		E	E
	Safe class		I	I
	Power input	W	471*2+471*2	471*2+471*2+471*2
	Output	W	386×4	386×6
	Rated current	A	2.5*2+2.5*2	2.5*2+2.5*2+2.5*2
	Capacitor	μF	/	/
	Speed	rpm	200~1180+200~1180	200~1080+200~1180+200~1180
Outdoor fan	Brand		MHI Haier	MHI Haier
	Model		/	/
	Material		AS+20%GF	AS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ570×4	Φ570×6
	Height	mm	202×4	202×6

Model			AWAU-YDV1360-H13	AWAU-YDV1408-H13
Outdoor coil	Number of rows		3+3	2+2+2
	Tube pitch (a)×row pitch (b)	mm	25.4×19.05	25.4×19.05
	Fin spacing	mm	1.3	1.3
	Fin type (code)		Hydrophilic aluminum	
	Fin coating type	Optional	Clear lacquer	Clear lacquer
	Salt spray test duration	Hour	168	168
	Tube outside dia. and type		INNERGROOVE TUBE	
		mm	Φ8	Φ8
	Coil length×height	mm	(1648.2×.1168.4+ 1648.2×.812.)*2*2	(1648.2×.812.8)*2+ (1648.2×.1168.4)*2*2
	Number of circuits		15*2*2	10*2+15*2*2
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt spray test duration	Hour	72	72
	Sheet metal material		Hot zinc plate	Hot zinc plate
	Sheet metal thickness	mm	0.8	0.8
Control panel enclosure IP class		Standard	IP24	IP24
Outdoor air flow (cooling/heating)		m^3/h	32400 / 30000	47400 / 43200
External static pressure		Pa	82	82
Outdoor sound level (sound pressure level) (H)		dB (A)	66	66
Outdoor sound level (sound power level) (H)		dB (A)	84	84
Outdoor unit	Dimension (W*H*D)	mm	(1350×720×2048)*2	(1350×720×1690)+ (1350×720×2048)*2
	Packing (W*H*D)	mm	(1450×826×2225)*2	(1450×826×1885)+ (1450×826×2225)*2
	Net weight	kg	718	949
	Gross weight	kg	768	1024
Refrigerant	Type		R410A	R410A
	Charged volume*3	kg	20	30
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	φ19.05	φ19.05
	Gas pipe	mm	φ38.1	φ38.1
	Oil pipe	mm	φ9.52	φ9.52
	Total pipe length	m	1000	1000
	Max. pipe length (Equivalent / actual)	m	190/165	190/165
	Max. Diff. indoor/outdoor unit*1		90 (Outdoor higher than indoor) 110 (Indoor higher than outdoor)	
	Standard Diff. indoor/outdoor unit	m	50 (Outdoor higher than indoor) 40 (Indoor higher than outdoor)	
	Max. / standard Diff. indoor/indoor unit*1	m	30 / 18	30 / 18
Connectable indoor unit ratio*1		%	50%~160%	50%~160%
Maximum indoor units		Piece	64	64
Connection wiring	Max. fuse current	A	160	190
	Min. wiring current	A	127.2	106.1
	Power wiring	mm^2	/	/
	Signal wiring	mm^2	2	
Operation range		°C	Cooling: -5~50 Heating: -23~21	

Norminal condition: indoor temperature (cooling): 27DB (°C)/19WB (°C), indoor temperature (heating): 20DB (°C)/14.5WB (°C). Outdoor temperature (cooling): 35DB (°C)/24WB (°C), outdoor temperature (heating): 7DB (°C)/6WB (°C) The data is measured with 7.5m equivalent pipe and 0m height difference.

The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.

*1 If the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m or the connectable indoor unit ratio is from 130% to 160%, you Must contact your local distributor/dealer for individual design and production.

Model			AWAU-YDV1460-H13	AWAU-YDV1514-H13
Combination			16+16+20	16+18+20
Power supply		Ph/V/Hz	3/380~400/50/60	3/380~400/50/60
Cooling	Rated capacity	kW	146	151.4
	Rated capacity	kBtu/h	498.2	516.6
	Rated power input	kW	39.37	41.08
	Max. power input	kW	70.55	69.96
	EER		3.71	3.69
	Rated current	A	65.01	67.85
	Max. current	A	114.7	114.05
Heating	Rated capacity	kW	163	169.5
	Rated capacity	kBtu/h	556.16	578.33
	Rated power input	kW	40.05	41.95
	Max. power input	kW	59.59	65.07
	COP		4.07	4.04
	Rated current	A	66.14	69.28
	Max. current	A	97.76	107.68
	Capacity at low temperature	kW	131.7	133.9
Compressor	Brand		MITSUBISH ELECTRIC	
	Model		ANB42F×2+ANB42F×2 +ANB52F×2	ANB42F×2+ANB52F×2 +ANB52F×2
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		6	6
	Capacity	W	(13900+13900)*2+(17200+17200)	(13900+13900)+(17200+17200)+(17200+17200)
	Power input	W	(4160+4160)*2+(5250+5250)	(4160+4160)+(5250+5250)+(5250+5250)
	Rated current (RLA)	A	(15.2+15.2)*2+(18.5+18.5)	(15.2+15.2)+(18.5+18.5)+(18.5+18.5)
	Speed	rps	60	60
	Crankcase heater	W	(38+38)*2+(38+38)	(38+38)+(38+38)+(38+38)
	Refrigerant oil brand		IDEMITSUKOSAN CO., LTD	
	Refrigerant oil type		FV50S	FV50S
	Refrigerant oil charge	ml	(1700+1700+2000)*2+ (2300+2300+2000)	(1700+1700+2000)+(2300+2300+2000)+(2300+2300+2000)
Outdoor fan motor	Brand		SHIBAURA	SHIBAURA
	Model		UGBTEF-26MMHI	UGBTEF-27MMHI
	Voltage		DC339	DC339
	IP class		IP44	IP44
	Type/quantity		DC/6	DC/6
	Insulation class		E	E
	Safe class		I	I
	Power input	W	471*2+471*2+471*2	471*2+471*2+471*2
	Output	W	386×6	386×6
	Rated current	A	2.5*2+2.5*2+2.5*2	2.5*2+2.5*2+2.5*2
	Capacitor	μF	/	/
	Speed	rpm	200~1140+200~1140+200~1180	200~1140+200~1180+200~1180
Outdoor fan	Brand		MHI Haier	MHI Haier
	Model		/	/
	Material		AS+20%GF	AS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ570×6	Φ570×6
	Height	mm	202×6	202×6

Model			AWAU-YDV1460-H13	AWAU-YDV1514-H13
Outdoor coil	Number of rows		2+2+2	2+2+2
	Tube pitch (a)×row pitch (b)	mm	25.4×19.05	25.4×19.05
	Fin spacing	mm	1.3	1.3
	Fin type (code)		Hydrophilic aluminum	
	Fin coating type	Optional	Clear lacquer	Clear lacquer
	Salt spray test duration	Hour	168	168
	Tube outside dia. and type		INNERGROOVE TUBE	
		mm	Φ8	Φ8
	Coil length×height	mm	(1648.2×.812.8)*2*2+(1648.2×.1168.4)*2	(1648.2×.812.8)*2+(1648.2×1168.4)*2+(1648.2×1168.4)*2
	Number of circuits		10*2*2+15*2	10*2+15*2+15*2
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt spray test duration	Hour	72	72
	Sheet metal material		Hot zinc plate	Hot zinc plate
	Sheet metal thickness	mm	0.8	0.8
Control panel enclosure IP class		Standard	IP24	IP24
Outdoor air flow (cooling/heating)		m^3/h	47400 / 43800	48000 / 44400
External static pressure		Pa	82	82
Outdoor sound level (sound pressure level) (H)		dB (A)	66	66.5
Outdoor sound level (sound power level) (H)		dB (A)	84	85
Outdoor unit	Dimension (W*H*D)	mm	(1350×720×1690)*2+(1350×720×2048)	(1350×720×1690)+(1350×720×2048)*2
	Packing (W*H*D)	mm	(1450×826×1885)*2+(1450×826×2225)	(1450×826×1885)+(1450×826×2225)*2
	Net weight	kg	977	991
	Gross weight	kg	1052	1066
Refrigerant	Type		R410A	R410A
	Charged volume*3	kg	30	30
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	φ19.05	φ19.05
	Gas pipe	mm	φ38.1	φ38.1
	Oil pipe	mm	φ9.52	φ9.52
	Total pipe length	m	1000	1000
	Max. pipe length (Equivalent / actual)	m	190/165	190/165
	Max. Diff. indoor/outdoor unit*1		90 (Outdoor higher than indoor) 110 (Indoor higher than outdoor)	
	Standard Diff. indoor/outdoor unit	m	50 (Outdoor higher than indoor) 40 (Indoor higher than outdoor)	
	Max. / standard Diff. indoor/indoor unit*1	m	30 / 18	30 / 18
Connectable indoor unit ratio*1		%	50%~160%	50%~160%
Maximum indoor units		Piece	64	64
Connection wiring	Max. fuse current	A	190	200
	Min. wiring current	A	120.7	120.05
	Power wiring	mm^2	/	/
	Signal wiring	mm^2	2	
Operation range		°C	Cooling: -5~50 Heating: -23~21	

Norminal condition: indoor temperature (cooling): 27DB (°C)/19WB (°C), indoor temperature (heating): 20DB (°C)/14.5WB (°C). Outdoor temperature (cooling): 35DB (°C)/24WB (°C), outdoor temperature (heating): 7DB (°C)/6WB (°C) The data is measured with 7.5m equivalent pipe and 0m height difference.

The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.

*1 If the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m or the connectable indoor unit ratio is from 130% to 160%, you Must contact your local distributor/dealer for individual design and production.

Model			AWAU-YDV1570-H13	AWAU-YDV1624-H13
Combination			16+20+20	18+20+20
Power supply		Ph/V/Hz	3/380~400/50/60	3/380~400/50/60
Cooling	Rated capacity	kW	157	162.4
	Rated capacity	kBtu/h	535.7	554.1
	Rated power input	kW	43.02	44.73
	Max. power input	kW	73.05	72.47
	EER		3.65	3.63
	Rated current	A	71.04	73.88
	Max. current	A	119	118.35
Heating	Rated capacity	kW	176	182.5
	Rated capacity	kBtu/h	600.51	622.69
	Rated power input	kW	43.95	45.85
	Max. power input	kW	67.57	73.05
	COP		4.00	3.98
	Rated current	A	72.58	75.72
	Max. current	A	111.88	121.8
	Capacity at low temperature	kW	138.9	141.1
Compressor	Brand		MITSUBISH ELECTRIC	
	Model		ANB42F×2+ANB52F×2 +ANB52F×2	ANB52F×2+ANB52F×2 +ANB52F×2
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		6	6
	Capacity	W	(13900+13900)+(17200+17200)*2	(17200+17200)+(17200+17200)*2
	Power input	W	(4160+4160)+(5250+5250)*2	(5250+5250)+(5250+5250)*2
	Rated current (RLA)	A	(15.2+15.2)+(18.5+18.5)*2	(18.5+18.5)+(18.5+18.5)*2
	Speed	rps	60	60
	Crankcase heater	W	(38+38)+(38+38)*2	(38+38)+(38+38)*2
	Refrigerant oil brand		IDEMITSUKOSAN CO., LTD	
	Refrigerant oil type		FV50S	FV50S
	Refrigerant oil charge	ml	(1700+1700+2000)+ (2300+2300+2000)*2	(2300+2300+2000)+ (2300+2300+2000)*2
Outdoor fan motor	Brand		SHIBAURA	SHIBAURA
	Model		UGBTEF-28MMHI	UGBTEF-29MMHI
	Voltage		DC339	DC339
	IP class		IP44	IP44
	Type/quantity		DC/6	DC/6
	Insulation class		E	E
	Safe class		I	I
	Power input	W	471*2+471*2+471*2	471*2+471*2+471*2
	Output	W	386×6	386×6
	Rated current	A	2.5*2+2.5*2+2.5*2	2.5*2+2.5*2+2.5*2
	Capacitor	μF	/	/
	Speed	rpm	200~1140+200~1180+200~1180	200~1180+200~1180+200~1180
Outdoor fan	Brand		MHI Haier	MHI Haier
	Model		/	/
	Material		AS+20%GF	AS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ570×6	Φ570×6
	Height	mm	202×6	202×6

Model			AWAU-YDV1570-H13	AWAU-YDV1624-H13
Outdoor coil	Number of rows		2+2+2	2+2+2
	Tube pitch (a)×row pitch (b)	mm	25.4×19.05	25.4×19.05
	Fin spacing	mm	1.3	1.3
	Fin type (code)		Hydrophilic aluminum	
	Fin coating type	Optional	Clear lacquer	Clear lacquer
	Salt spray test duration	Hour	168	168
	Tube outside dia. and type		INNERGROOVE TUBE	
		mm	Φ8	Φ8
	Coil length×height	mm	(1648.2×812.8)*2+ (1648.2×1168.4)*2*2	(1648.2×1168.4)*2+ (1648.2×1168.4)*2*2
	Number of circuits		10*2+15*2*2	15*2+15*2*2
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt spray test duration	Hour	72	72
	Sheet metal material		Hot zinc plate	Hot zinc plate
	Sheet metal thickness	mm	0.8	0.8
Control panel enclosure IP class		Standard	IP24	IP24
Outdoor air flow (cooling/heating)		m^3/h	48000 / 44400	48600 / 45000
External static pressure		Pa	82	82
Outdoor sound level (sound pressure level) (H)		dB (A)	66.5	67
Outdoor sound level (sound power level) (H)		dB (A)	85	85
Outdoor unit	Dimension (W*H*D)	mm	(1350×720×1690)+ (1350×720×2048)*2	(1350×720×2048)*3
	Packing (W*H*D)	mm	(1450×826×1885)+ (1450×826×2225)*2	(1450×826×2225)*3
	Net weight	kg	991	1005
	Gross weight	kg	1066	1080
Refrigerant	Type		R410A	R410A
	Charged volume*3	kg	30	30
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	φ19.05	φ19.05
	Gas pipe	mm	φ41.3	φ41.3
	Oil pipe	mm	φ9.52	φ9.52
	Total pipe length	m	1000	1000
	Max. pipe length (Equivalent / actual)	m	190/165	190/165
	Max. Diff. indoor/outdoor unit*1		90 (Outdoor higher than indoor) 110 (Indoor higher than outdoor)	
	Standard Diff. indoor/outdoor unit	m	50 (Outdoor higher than indoor) 40 (Indoor higher than outdoor)	
	Max. / standard Diff. indoor/indoor unit*1	m	30 / 18	30 / 18
Connectable indoor unit ratio*1		%	50%~160%	50%~160%
Maximum indoor units		Piece	64	64
Connection wiring	Max. fuse current	A	200	210
	Min. wiring current	A	125.3	128.2
	Power wiring	mm^2	/	/
	Signal wiring	mm^2	2	
Operation range		°C	Cooling: -5~50 Heating: -23~21	

Norminal condition: indoor temperature (cooling): 27DB (°C)/19WB (°C), indoor temperature (heating): 20DB (°C)/14.5WB (°C). Outdoor temperature (cooling): 35DB (°C)/24WB (°C), outdoor temperature (heating): 7DB (°C)/6WB (°C) The data is measured with 7.5m equivalent pipe and 0m height difference.

The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.

*1 If the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m or the connectable indoor unit ratio is from 130% to 160%, you Must contact your local distributor/dealer for individual design and production.

Model			AWAU-YDV1680-H13	AWAU-YDV1680-H13
Combination			20+20+20	20+20+22
Power supply		Ph/V/Hz	3/380~400/50/60	3/380~400/50/60
Cooling	Rated capacity	kW	168	173.5
	Rated capacity	kBtu/h	573.2	592.0
	Rated power input	kW	46.67	48.68
	Max. power input	kW	75.56	80.93
	EER		3.60	3.56
	Rated current	A	77.07	80.40
	Max. current	A	123.3	131.85
Heating	Rated capacity	kW	189	195
	Rated capacity	kBtu/h	644.87	665.34
	Rated power input	kW	47.85	50.06
	Max. power input	kW	75.56	78.09
	COP		3.95	3.90
	Rated current	A	79.02	82.67
	Max. current	A	126	130.05
	Capacity at low temperature	kW	146.1	150.7
Compressor	Brand		MITSUBISH ELECTRIC	
	Model		ANB52F×2+ANB52F×2+ ANB52F×2	ANB52F×2+ANB52F×2+ ANB66F×2
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		6	6
	Capacity	W	(17200+17200)*3	(17200+17200)*2+(22000+22000)
	Power input	W	(5250+5250)*3	(5250+5250)*2+(6500+6500)
	Rated current (RLA)	A	(18.5+18.5)*3	(18.5+18.5)*2+(23.7+23.7)
	Speed	rps	60	60
	Crankcase heater	W	(38+38)*3	(38+38)*2+(38+38)
	Refrigerant oil brand		IDEMITSUKOSAN CO., LTD	
	Refrigerant oil type		FV50S	FV50S
	Refrigerant oil charge	ml	(2300+2300+2000)*3	(2300+2300+2000)*2+ (2300+2300+2000)
Outdoor fan motor	Brand		SHIBAURA	SHIBAURA
	Model		UGBTEF-30MMHI	UGBTEF-31MMHI
	Voltage		DC339	DC339
	IP class		IP44	IP44
	Type/quantity		DC/6	DC/6
	Insulation class		E	E
	Safe class		I	I
	Power input	W	471*2*3	471*2*2+471*2
	Output	W	386×6	386×6
	Rated current	A	2.5*2*3	2.5*2*2+2.5*2
	Capacitor	μF	/	/
	Speed	rpm	200~1180+200~1180+200~1180	200~1180+200~1180+200~1180
Outdoor fan	Brand		MHI Haier	MHI Haier
	Model		/	/
	Material		AS+20%GF	AS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ570×6	Φ570×6
	Height	mm	202×6	202×6

Model			AWAU-YDV1680-H13	AWAU-YDV1680-H13
Outdoor coil	Number of rows		2+2+2	2+2+3
	Tube pitch (a)×row pitch (b)	mm	25.4×19.05	25.4×19.05
	Fin spacing	mm	1.3	1.3
	Fin type (code)		Hydrophilic aluminum	
	Fin coating type	Optional	Clear lacquer	Clear lacquer
	Salt spray test duration	Hour	168	168
	Tube outside dia. and type		INNERGROOVE TUBE	
		mm	Φ8	Φ8
	Coil length×height	mm	(1648.2×.1168.4)*2*3	(1648.2×1168.4)*2*2+ (1648.2×1168.4+1648.2×812.)*2
	Number of circuits		15*2*3	15*2*2+15*2
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt spray test duration	Hour	72	72
	Sheet metal material		Hot zinc plate	Hot zinc plate
	Sheet metal thickness	mm	0.8	0.8
Control panel enclosure IP class		Standard	IP24	IP24
Outdoor air flow (cooling/heating)		m^3/h	48600 / 45000	48600 / 45000
External static pressure		Pa	82	82
Outdoor sound level (sound pressure level) (H)		dB (A)	67	67
Outdoor sound level (sound power level) (H)		dB (A)	85	85
Outdoor unit	Dimension (W*H*D)	mm	(1350×720×2048)*3	(1350×720×2048)*3
	Packing (W*H*D)	mm	(1450×826×2225)*3	(1450×826×2225)*3
	Net weight	kg	1005	1029
	Gross weight	kg	1080	1104
Refrigerant	Type		R410A	R410A
	Charged volume*3	kg	30	30
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	φ19.05	φ19.05
	Gas pipe	mm	φ41.3	φ41.3
	Oil pipe	mm	φ9.52	φ9.52
	Total pipe length	m	1000	1000
	Max. pipe length (Equivalent / actual)	m	190/165	190/165
	Max. Diff. indoor/outdoor unit*1		90 (Outdoor higher than indoor) 110 (Indoor higher than outdoor)	
	Standard Diff. indoor/outdoor unit	m	50 (Outdoor higher than indoor) 40 (Indoor higher than outdoor)	
	Max. / standard Diff. indoor/indoor unit*1	m	30 / 18	30 / 18
Connectable indoor unit ratio*1		%	50%~160%	50%~160%
Maximum indoor units		Piece	64	64
Connection wiring	Max. fuse current	A	210	220
	Min. wiring current	A	132.6	138.8
	Power wiring	mm^2	/	/
	Signal wiring	mm^2	2	
Operation range		°C	Cooling: -5~50 Heating: -23~21	

Norminal condition: indoor temperature (cooling): 27DB (°C)/19WB (°C), indoor temperature (heating): 20DB (°C)/14.5WB (°C). Outdoor temperature (cooling): 35DB (°C)/24WB (°C), outdoor temperature (heating): 7DB (°C)/6WB (°C) The data is measured with 7.5m equivalent pipe and 0m height difference.

The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.

*1 If the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m or the connectable indoor unit ratio is from 130% to 160%, you Must contact your local distributor/dealer for individual design and production.

Model			AWAU-YDV1800-H13	AWAU-YDV1855-H13
Combination			20+20+24	20+22+24
Power supply		Ph/V/Hz	3/380~400/50/60	3/380~400/50/60
Cooling	Rated capacity	kW	180	185.5
	Rated capacity	kBtu/h	614.2	632.9
	Rated power input	kW	50.82	52.84
	Max. power input	kW	87.84	93.22
	EER		3.54	3.51
	Rated current	A	83.93	87.26
	Max. current	A	142.65	151.2
Heating	Rated capacity	kW	199	205
	Rated capacity	kBtu/h	678.99	699.46
	Rated power input	kW	51.37	53.57
	Max. power input	kW	78.99	81.53
	COP		3.87	3.83
	Rated current	A	84.83	88.48
	Max. current	A	131.4	135.45
	Capacity at low temperature	kW	153.8	158.4
Compressor	Brand		MITSUBISH ELECTRIC	
	Model		ANB52F×2+ANB52F×2+ ANB66F×2	ANB52F×2+ANB66F×2+ ANB66F×2
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		6	6
	Capacity	W	(17200+17200)*2+ (22000+22000)	(17200+17200)+(22000+ 22000)+(22000+22000)
	Power input	W	(5250+5250)*2+(6500+6500)	(5250+5250)+(6500+6500) +(6500+6500)
	Rated current (RLA)	A	(18.5+18.5)*2+(23.7+23.7)	(18.5+18.5)+(23.7+23.7) +(23.7+23.7)
	Speed	rps	60	60
	Crankcase heater	W	(38+38)*2+(38+38)	(38+38)+(38+38)+(38+38)
	Refrigerant oil brand		IDEMITSUKOSAN CO., LTD	
	Refrigerant oil type		FV50S	FV50S
	Refrigerant oil charge	ml	(2300+2300+2000)*2+ (2300+2300+2000)	(2300+2300+2000)+(2300+2300+2000)+(2300+2300+2000)
Outdoor fan motor	Brand		SHIBAURA	SHIBAURA
	Model		UGBTEF-32MMHI	UGBTEF-33MMHI
	Voltage		DC339	DC339
	IP class		IP44	IP44
	Type/quantity		DC/6	DC/6
	Insulation class		E	E
	Safe class		I	I
	Power input	W	471*2*2+471*2	471*2+471*2+471*2
	Output	W	386×6	386×6
	Rated current	A	2.5*2*2+2.5*2	2.5*2+2.5*2+2.5*2
	Capacitor	μF	/	/
	Speed	rpm	200~1180+200~1180+200~1180	200~1180+200~1180+200~1180
Outdoor fan	Brand		MHI Haier	MHI Haier
	Model		/	/
	Material		AS+20%GF	AS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ570×6	Φ570×6
	Height	mm	202×6	202×6

Model			AWAU-YDV1800-H13	AWAU-YDV1855-H13
Outdoor coil	Number of rows		2+2+3	2+3+3
	Tube pitch (a)×row pitch (b)	mm	25.4×19.05	25.4×19.05
	Fin spacing	mm	1.3	1.3
	Fin type (code)		Hydrophilic aluminum	
	Fin coating type	Optional	Clear lacquer	Clear lacquer
	Salt spray test duration	Hour	168	168
	Tube outside dia. and type		INNERGROOVE TUBE	
		mm	Φ8	Φ8
	Coil length×height	mm	(1648.2×1168.4)*2*2+ (1648.2×1168.4+ 1648.2×812.)*2	(1648.2×1168.4)*2+ (1648.2×1168.4+1648.2×812.) *2+(1648.2×.1168.4+1648.2× 812.)*2
	Number of circuits		15*2*2+15*2	15*2+15*2+15*2
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt spray test duration	Hour	72	72
	Sheet metal material		Hot zinc plate	Hot zinc plate
	Sheet metal thickness	mm	0.8	0.8
Control panel enclosure IP class		Standard	IP24	IP24
Outdoor air flow (cooling/heating)		m^3/h	48600 / 45000	48600 / 45000
External static pressure		Pa	82	82
Outdoor sound level (sound pressure level) (H)		dB (A)	67	67
Outdoor sound level (sound power level) (H)		dB (A)	85	85
Outdoor unit	Dimension (W*H*D)	mm	(1350×720×2048)*3	(1350×720×2048)*3
	Packing (W*H*D)	mm	(1450×826×2225)*3	(1450×826×2225)*3
	Net weight	kg	1029	1053
	Gross weight	kg	1104	1128
Refrigerant	Type		R410A	R410A
	Charged volume*3	kg	30	30
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	φ19.05	φ22.22
	Gas pipe	mm	φ41.3	φ44.5
	Oil pipe	mm	φ9.52	φ9.52
	Total pipe length	m	1000	1000
	Max. pipe length (Equivalent / actual)	m	190/165	190/165
	Max. Diff. indoor/outdoor unit*1		90 (Outdoor higher than indoor) 110 (Indoor higher than outdoor)	
	Standard Diff. indoor/outdoor unit	m	50 (Outdoor higher than indoor) 40 (Indoor higher than outdoor)	
	Max. / standard Diff. indoor/indoor unit*1	m	30 / 18	30 / 18
Connectable indoor unit ratio*1		%	50%~160%	50%~160%
Maximum indoor units		Piece	64	64
Connection wiring	Max. fuse current	A	220	230
	Min. wiring current	A	150.2	159.2
	Power wiring	mm^2	/	/
	Signal wiring	mm^2	2	
Operation range		°C	Cooling: -5~50 Heating: -23~21	

Norminal condition: indoor temperature (cooling): 27DB (°C)/19WB (°C), indoor temperature (heating): 20DB (°C)/14.5WB (°C). Outdoor temperature (cooling): 35DB (°C)/24WB (°C), outdoor temperature (heating): 7DB (°C)/6WB (°C) The data is measured with 7.5m equivalent pipe and 0m height difference.

The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.

*1 If the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m or the connectable indoor unit ratio is from 130% to 160%, you Must contact your local distributor/dealer for individual design and production.

Model			AWAU-YDV1920-H13	AWAU-YDV1975-H13 (DROP ONLY)
Combination			20+24+24	22+24+24
Power supply		Ph/V/Hz	3/380~400/50/60	3/380~400/50/60
Cooling	Rated capacity	kW	192	197.5
	Rated capacity	kBtu/h	655.1	673.9
	Rated power input	kW	54.98	56.99
	Max. power input	kW	100.13	105.50
	EER		3.49	3.47
	Rated current	A	90.79	94.12
	Max. current	A	162	170.55
Heating	Rated capacity	kW	209	215
	Rated capacity	kBtu/h	713.11	733.58
	Rated power input	kW	54.88	57.09
	Max. power input	kW	82.43	84.96
	COP		3.81	3.77
	Rated current	A	90.64	94.29
	Max. current	A	136.8	140.85
	Capacity at low temperature	kW	161.5	166.1
Compressor	Brand		MITSUBISH ELECTRIC	
	Model		ANB52F×2+ANB66F×2+ ANB66F×2	ANB66F×2+ANB66F×2+ ANB66F×2
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		6	6
	Capacity	W	(17200+17200)+ (22000+22000)*2	(22000+22000)+ (22000+22000)*2
	Power input	W	(5250+5250)+(6500+6500)*2	(6500+6500)+(6500+6500)+ (6500+6500)
	Rated current (RLA)	A	(18.5+18.5)+(23.7+23.7)*2	(23.7+23.7)+(23.7+23.7)+ (23.7+23.7)
	Speed	rps	60	60
	Crankcase heater	W	(38+38)+(38+38)*2	(38+38)+(38+38)*2
	Refrigerant oil brand		IDEMITSUKOSAN CO., LTD	
	Refrigerant oil type		FV50S	FV50S
	Refrigerant oil charge	ml	(2300+2300+2000)+ (2300+2300+2000)*2	(2300+2300+2000)+(2300+2300+2000)*2
Outdoor fan motor	Brand		SHIBAURA	SHIBAURA
	Model		UGBTEF-34MMHI	UGBTEF-35MMHI
	Voltage		DC339	DC339
	IP class		IP44	IP44
	Type/quantity		DC/6	DC/6
	Insulation class		E	E
	Safe class		I	I
	Power input	W	471*2+471*2*2	471*2+471*2*2
	Output	W	386×6	386×6
	Rated current	A	2.5*2+2.5*2*2	2.5*2+2.5*2*2
	Capacitor	μF	/	/
	Speed	rpm	200~1180+200~1180+200~1180	200~1180+200~1180+200~1180
Outdoor fan	Brand		MHI Haier	MHI Haier
	Model		/	/
	Material		AS+20%GF	AS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ570×6	Φ570×6
	Height	mm	202×6	202×6

Model			AWAU-YDV1920-H13	AWAU-YDV1975-H13 (DROP ONLY)
Outdoor coil	Number of rows		2+3+3	3+3+3
	Tube pitch (a)×row pitch (b)	mm	25.4×19.05	25.4×19.05
	Fin spacing	mm	1.3	1.3
	Fin type (code)		Hydrophilic aluminum	
	Fin coating type	Optional	Clear lacquer	Clear lacquer
	Salt spray test duration	Hour	168	168
	Tube outside dia. and type		INNERGROOVE TUBE	
		mm	Φ8	Φ8
	Coil length×height	mm	(1648.2×1168.4)*2+(1648.2×1168.4 +1648.2×812.)*2*2	(1648.2×.1168.4+1648.2×812.)* 2+(1648.2×1168.4+1648.2×812.)*2*2
	Number of circuits		15*2+15*2*2	15*2+15*2*2
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt spray test duration	Hour	72	72
	Sheet metal material		Hot zinc plate	Hot zinc plate
	Sheet metal thickness	mm	0.8	0.8
Control panel enclosure IP class		Standard	IP24	IP24
Outdoor air flow (cooling/heating)		m^3/h	48600 / 45000	48600 / 45000
External static pressure		Pa	82	82
Outdoor sound level (sound pressure level) (H)		dB (A)	67.5	67.5
Outdoor sound level (sound power level) (H)		dB (A)	86	86
Outdoor unit	Dimension (W*H*D)	mm	(1350×720×2048)*3	(1350×720×2048)*3
	Packing (W*H*D)	mm	(1450×826×2225)*3	(1450×826×2225)*3
	Net weight	kg	1053	1077
	Gross weight	kg	1128	1152
Refrigerant	Type		R410A	R410A
	Charged volume*3	kg	30	30
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	φ22.22	φ22.22
	Gas pipe	mm	φ44.5	φ44.5
	Oil pipe	mm	φ9.52	φ9.52
	Total pipe length	m	1000	1000
	Max. pipe length (Equivalent / actual)	m	190/165	190/165
	Max. Diff. indoor/outdoor unit*1		90 (Outdoor higher than indoor) 110 (Indoor higher than outdoor)	
	Standard Diff. indoor/outdoor unit	m	50 (Outdoor higher than indoor) 40 (Indoor higher than outdoor)	
	Max. / standard Diff. indoor/indoor unit*1	m	30 / 18	30 / 18
Connectable indoor unit ratio*1		%	50%~160%	50%~160%
Maximum indoor units		Piece	64	64
Connection wiring	Max. fuse current	A	230	240
	Min. wiring current	A	170.5	179.5
	Power wiring	mm^2	/	/
	Signal wiring	mm^2	2	
Operation range		°C	Cooling: -5~50 Heating: -23~21	

Norminal condition: indoor temperature (cooling): 27DB (°C)/19WB (°C), indoor temperature (heating): 20DB (°C)/14.5WB (°C). Outdoor temperature (cooling): 35DB (°C)/24WB (°C), outdoor temperature (heating): 7DB (°C)/6WB (°C) The data is measured with 7.5m equivalent pipe and 0m height difference.
The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.
*1 If the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m or the connectable indoor unit ratio is from 130% to 160%, you Must contact your local distributor/dealer for individual design and production.

Model			AWAU-YDV2040-H13
Combination			24+24+24
Power supply		Ph/V/Hz	3/380~400/50/60
Cooling	Rated capacity	kW	204
	Rated capacity	kBtu/h	696.0
	Rated power input	kW	59.13
	Max. power input	kW	112.41
	EER		3.45
	Rated current	A	97.65
	Max. current	A	181.35
Heating	Rated capacity	kW	219
	Rated capacity	kBtu/h	747.23
	Rated power input	kW	58.40
	Max. power input	kW	85.86
	COP		3.75
	Rated current	A	96.45
	Max. current	A	142.2
	Capacity at low temperature	kW	169.2
Compressor	Brand		MITSUBISH ELECTRIC
	Model		ANB66F×2+ANB66F×2+ANB66F×2
	Type		DC INV. SCROLL
	Compressor quantity		6
	Capacity	W	(22000+22000)*3
	Power input	W	(6500+6500)*3
	Rated current (RLA)	A	(23.7+23.7)*3
	Speed	rps	60
	Crankcase heater	W	(38+38)*3
	Refrigerant oil brand		IDEMITSUKOSAN CO., LTD
	Refrigerant oil type		FV50S
	Refrigerant oil charge	ml	(2300+2300+2000)*3
Outdoor fan motor	Brand		SHIBAURA
	Model		UGBTEF-36MMHI
	Voltage		DC339
	IP class		IP44
	Type/quantity		DC/6
	Insulation class		E
	Safe class		I
	Power input	W	471*2*3
	Output	W	386×6
	Rated current	A	2.5*2*3
	Capacitor	μF	/
	Speed	rpm	200~1180+200~1180+200~1180
Outdoor fan	Brand		MHI Haier
	Model		/
	Material		AS+20%GF
	Type		Axial
	Diameter	mm	Φ570×6
	Height	mm	202×6

Model			AWAU-YDV2040-H13
Outdoor coil	Number of rows		3+3+3
	Tube pitch (a)×row pitch (b)	mm	25.4×19.05
	Fin spacing	mm	1.3
	Fin type (code)		Hydrophilic aluminum
	Fin coating type	Optional	Clear lacquer
	Salt spray test duration	Hour	168
	Tube outside dia. and type		INNERGROOVE TUBE
		mm	Φ8
	Coil length×height	mm	(1648.2×1168.4+1648.2×812)*2*3
	Number of circuits		15*2*3
Cabinet coating	Coating type		Powder Coating
	Salt spray test duration	Hour	72
	Sheet metal material		Hot zinc plate
	Sheet metal thickness	mm	0.8
Control panel enclosure IP class		Standard	IP24
Outdoor air flow (cooling/heating)		m^3/h	48600 / 45000
External static pressure		Pa	82
Outdoor sound level (sound pressure level) (H)		dB (A)	68
Outdoor sound level (sound power level) (H)		dB (A)	86
Outdoor unit	Dimension (W*H*D)	mm	(1350×720×2048)*3
	Packing (W*H*D)	mm	(1450×826×2225)*3
	Net weight	kg	1077
	Gross weight	kg	1152
Refrigerant	Type		R410A
	Charged volume*3	kg	30
Throttle type			EXV
Design pressure		MPa	4.15
Refrigerant piping	Liquid pipe	mm	φ22.22
	Gas pipe	mm	φ44.5
	Oil pipe	mm	φ9.52
	Total pipe length	m	1000
	Max. pipe length (Equivalent / actual)	m	190/165
	Max. Diff. indoor/outdoor unit*1		90 (Outdoor higher than indoor) 110 (Indoor higher than outdoor)
	Standard Diff. indoor/outdoor unit	m	50(Outdoor higher than indoor) 40(Indoor higher than outdoor)
	Max. / standard Diff. indoor/indoor unit*1	m	30 / 18
Connectable indoor unit ratio*1		%	50%~160%
Maximum indoor units		Piece	64
Connection wiring	Max. fuse current	A	240
	Min. wiring current	A	190.9
	Power wiring	mm^2	/
	Signal wiring	mm^2	2
Operation range		°C	Cooling: -5~50 Heating: -23~21

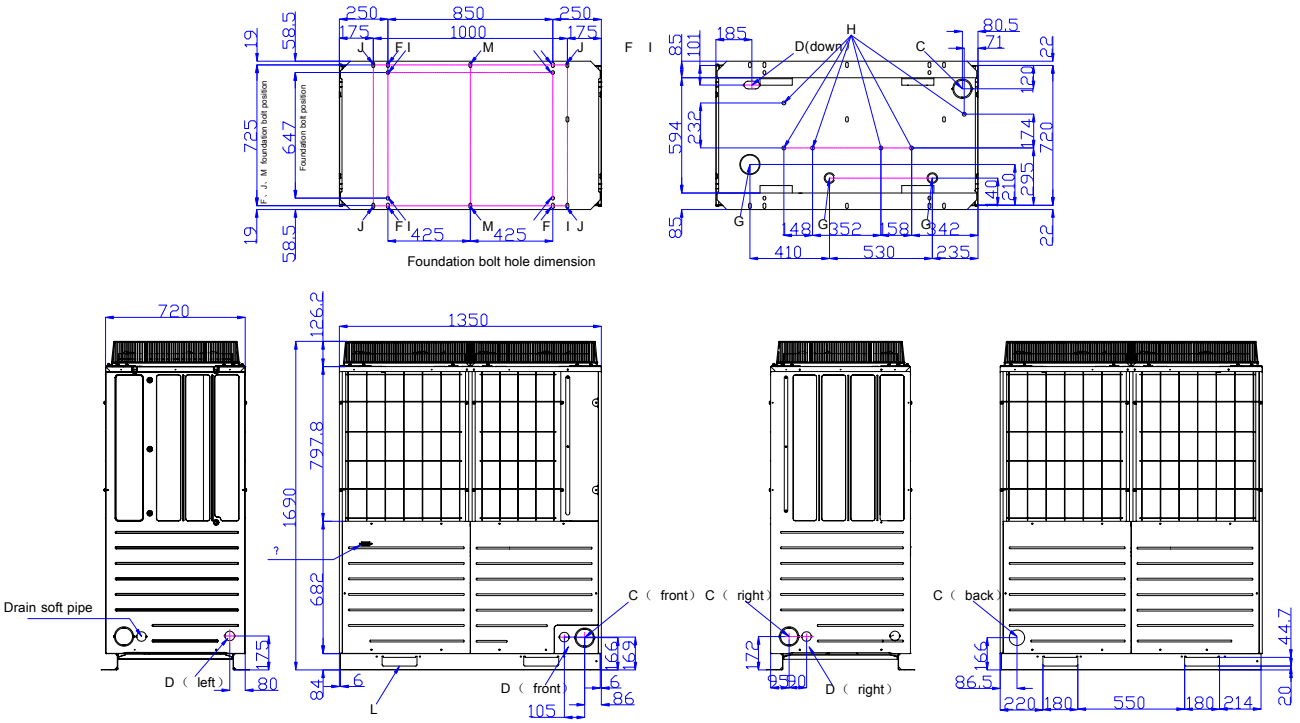
Norminal condition: indoor temperature (cooling): 27DB (°C)/19WB (°C), indoor temperature (heating): 20DB (°C)/14.5WB (°C). Outdoor temperature (cooling): 35DB (°C)/24WB (°C), outdoor temperature (heating): 7DB (°C)/6WB (°C) The data is measured with 7.5m equivalent pipe and 0m height difference.

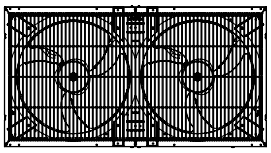
The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.

*1 If the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m or the connectable indoor unit ratio is from 130% to 160%, you Must contact your local distributor/dealer for individual design and production.

3. Dimension

AWAU-YDV250-H13 AWAU-YDV280-H13 AWAU-YDV335-H13 (DROP ONLY) AWAU-YDV400-H13 AWAU-YDV450-H13

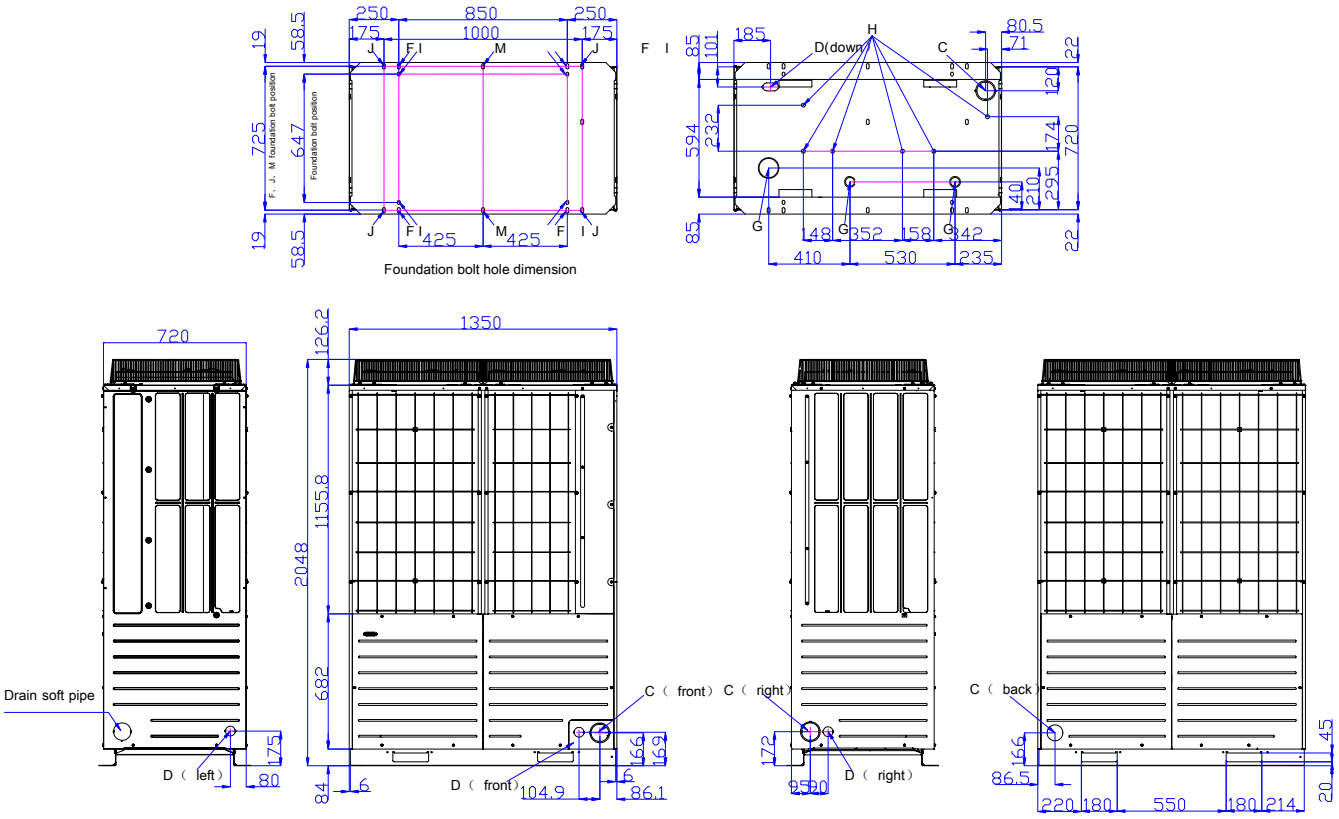


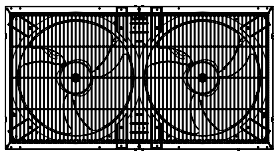


Note: when install air duct, the air duct inside is rectangle: length × width≥1300㎜×660㎜。

Code	Content	
C	Refrigerant pipe outlet	
D	Power line entrance	
F	Foundation bolt hole	M10（4）
G	Drain soft pipe hole	Φ45（3）
H	Drain pipe hole	Φ20（6）
L	Installation and hoisting hole	180×44.7

AWAU-YDV504-H13 AWAU-YDV560-H13 AWAU-YDV615-H13 (DROP ONLY) AWAU-YDV680-H13



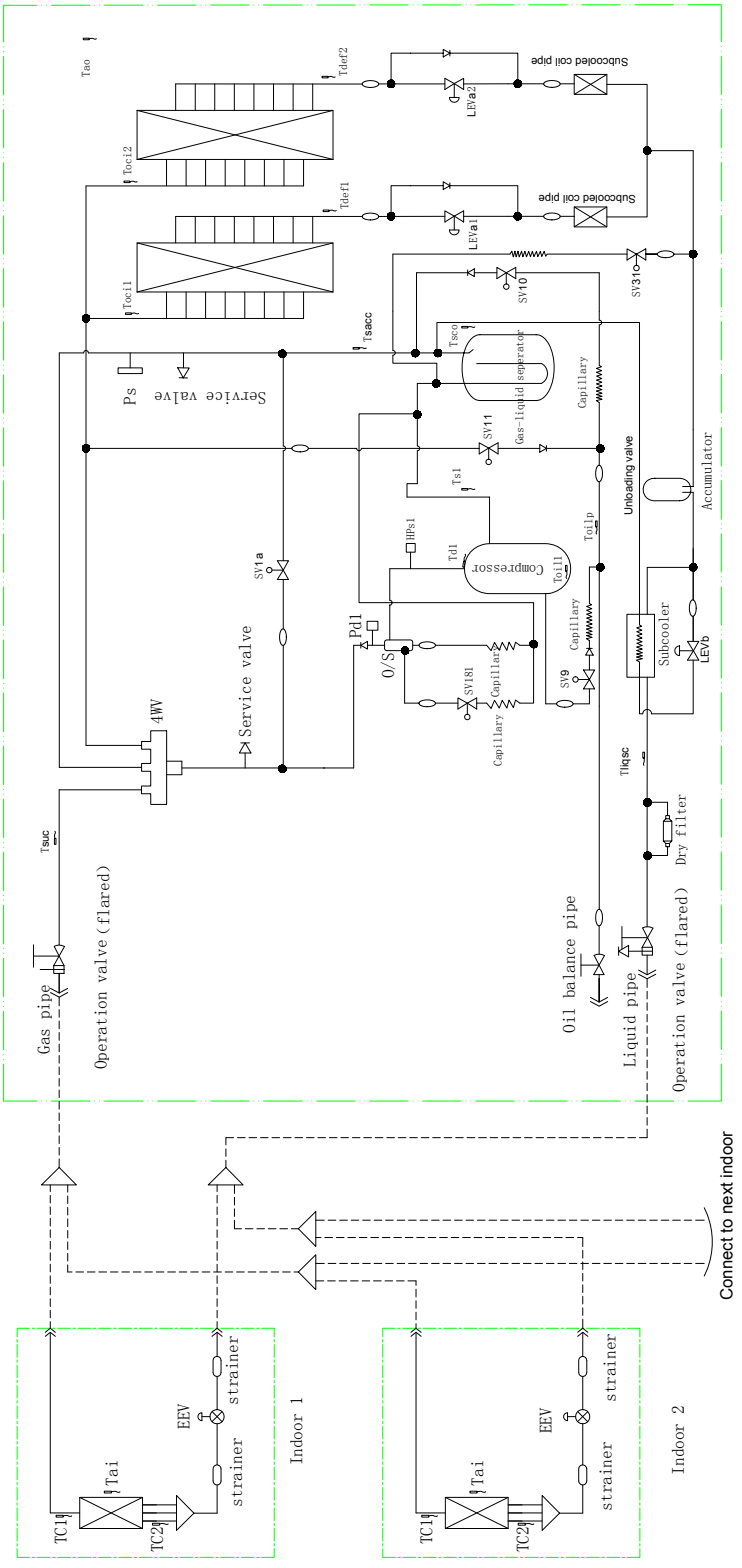


Note: when install air duct, the air duct inside is rectangle: length × width≥1300㎜×660㎜。

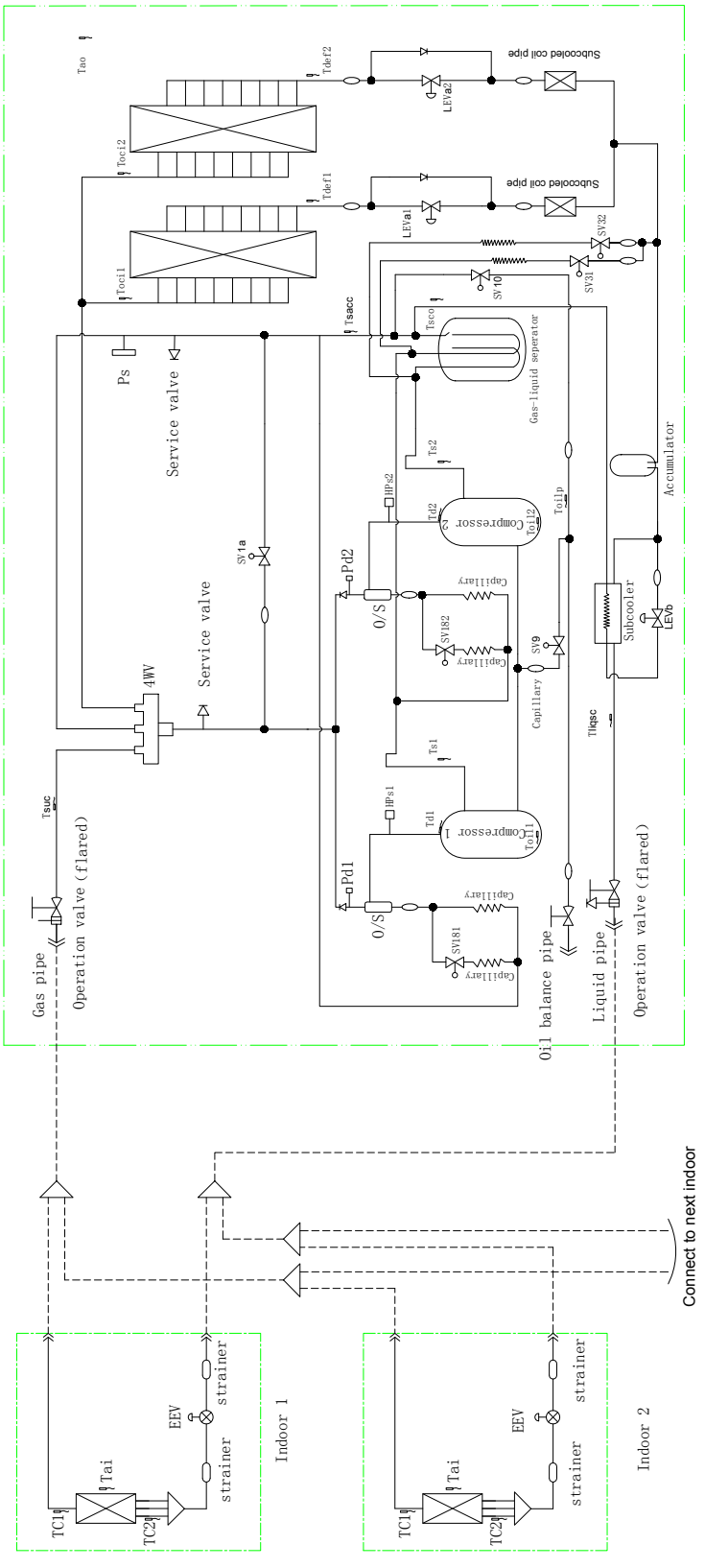
Code	Content	
C	Refrigerant pipe outlet	
D	Power line entrance	
F	Foundation bolt hole	M10（4）
G	Drain soft pipe hole	Φ45（3）
H	Drain pipe hole	Φ20（6）
L	Installation and hoisting hole	180×44.7

4. Piping diagram

AWAU-YDV250-H13 AWAU-YDV280-H13 AWAU-YDV335-H13 (DROP ONLY) AWAU-YDV400-H13

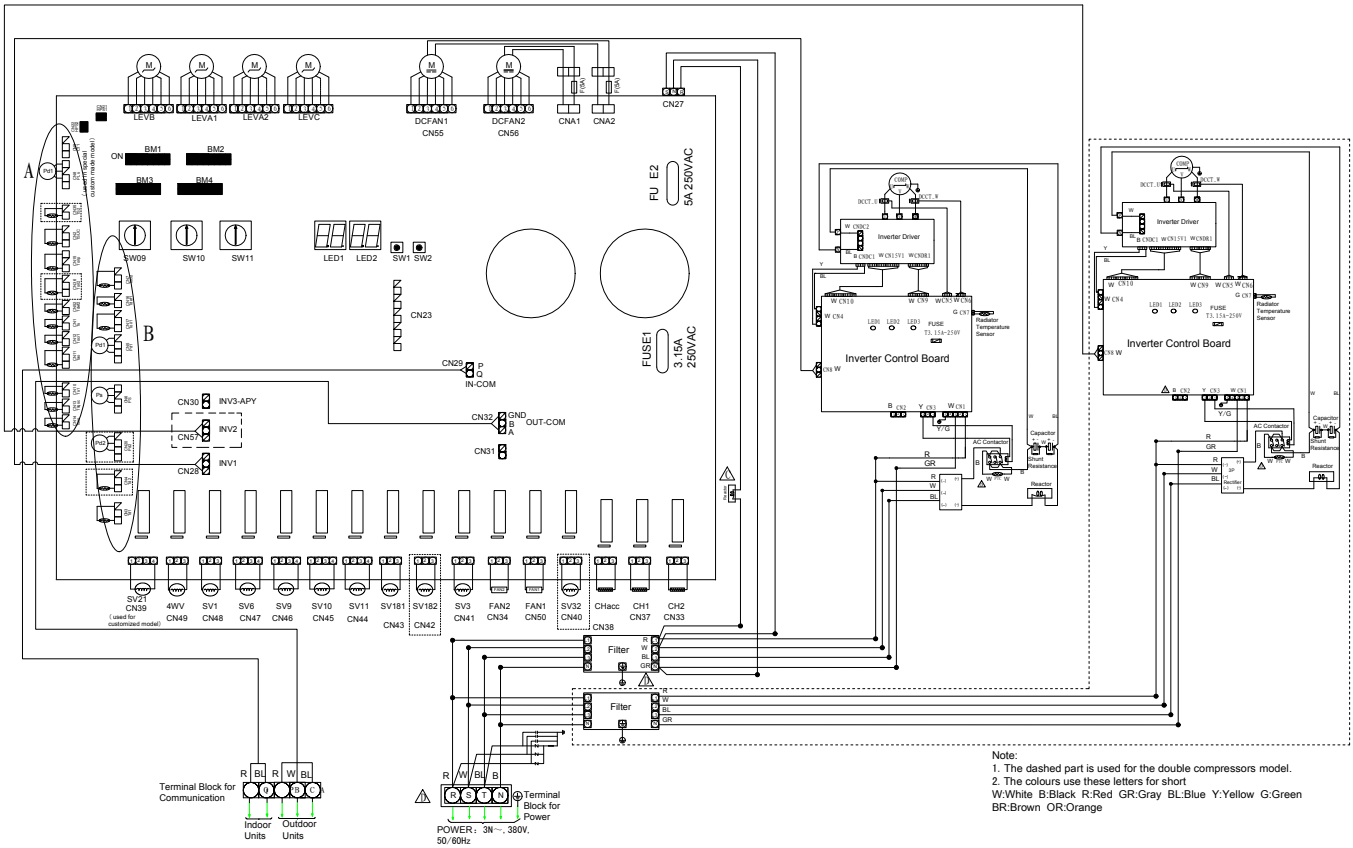


AWAU-YDV450-H13 AWAU-YDV504-H13 AWAU-YDV560-H13 AWAU-YDV615-H13 (DROP ONLY)
AWAU-YDV680-H13



Part name	Sign	Function	Data	Remark
Compressor	/	Capacity control, to meet indoor load through frequency adjustment.	ANB42: 0.302Ω ANB52: 0.302Ω ANB66: 0.23Ω	20℃
Pressure switch	HPs1/2	Protection control for high pressure	4.15Mpa, OFF setting	
Pressure sensor	Pd1/Pd2	In heating , compressor frequency adjustment and protection control for abnormal pressure	0~4.15MPa	
	Ps	In cooling , compressor frequency adjustment and protection control for abnormal pressure	0~1.7MPa	
Electronic expansion valve	LEVa1, 2	Refrigerant flow control in heating	HAM-BD30SM-2	
	LEVb	According to the liquid pipe super-cooled degree control in cooling	HAM-B50YGSM-1	
Solenoid valve	SV1a	1. Balance between high and low pressures when the compressor starts and stops; 2. Protection to prevent high and low pressures.	AC220V	2A
	SV181/ SV182	Auxiliary oil return capillary to return oil when the compressor operates under high frequency.	AC220V	2A
	SV31/SV32	Started when the compressor discharging temperature and oil temperature are too high to carry out temperature reduction by refrigerant spraying.	AC220V	2A
	SV10	Outdoor unit SV10 for oil suction starts during oil balance; for pressure relief to prevent explosion of pipe group.	AC220V	2A
	SV11	The stopped outdoor unit starts during heating to realize gas balance of the low pressure side together with the operating outdoor unit to prevent liquid return.	AC220V	2A
	SV9	The outdoor unit for oil discharging starts SV9 for oil balancing during oil balance among modules.	AC220V	2A
Four-way valve	4WV	Switch between cooling and heating	AC220V Power on during heating and power off during cooling or defrosting.	
Temperature sensor	Toil1/2	To detect the temperature of refrigeration lubricant at the compressor bottom.	R (80℃) = 50K B (25/80℃)=4450K	
	Tsuc	To detect the temperature of gas return pipe so as to judge whether the switch of four-way valve succeeds.		
	Tsacc	To detect the inlet temperature of gas-liquied seperator		
	Td1/Td2	To detect the top temperature of inverter/ON-OFF compressor.		
	Toilp	To detect oil pipe temperature during oil balancing.		
	Tdef1/Tdef2	To detect the frosting of outdoor heat exchanger.	R(25℃)=10K, B(25℃ /50℃) =3700 K	
	Ts1/Ts2	To detect the suction temperature of compressor.		
	Tsco	To detect the temperature of regenerator outlet pipe to control LEVb during cooling.		
	Toci1/2	To detect the temperature of condenser main gas pipe to control LEVa1, 2 during heating.		
	Tao	To detect ambient temperature and control the initial air speed and defrosting conditions.		
	Tliqsc	To detect the temperature of regenerator main outlet pipe to control LEVb during cooling.		
Heater	CHa	Used to heat the liquid refrigerant in the gas-liquid separator.	40W, 220V	
	CH1/2	Used to heat the compressor oil in the inverter compressor.	33W, 220V, 2 pieces/compressor	

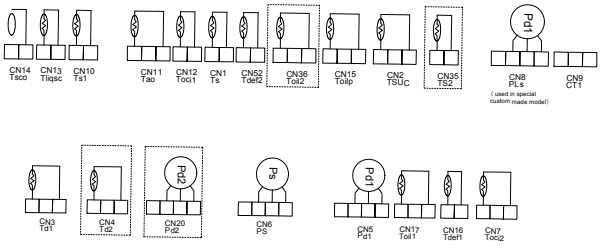
5. Wiring diagram



Note:
1. The dashed part is used for the double compressors model.
2. The colours use these letters for short
W:White B:Black R:Red GR:Gray BL:Blue Y:Yellow G:Green
BR:Brown OR:Orange

Symbol definition

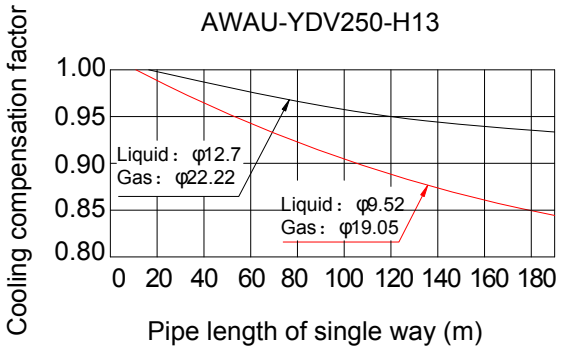
Sensor	Terminal	Description	Sensor	Terminal	Description	Sensor	Terminal	Description
Tsco	CN14	Detect SH temp. during sub-cooler control	Tdef2	CN52	Detect the defrosting temp.	Td2	CN4	Detect discharging temp. of INV compressor
Tliqsc	CN13	Dectect liquid pipe temp. SC during sub-cooler control	TSUC	CN2	Detect the outdoor gas pipe temp.	Pd2	CN20	High pressure sensor
Ts1	CN10	Detect suction temp. of INV compressor	TS2	CN35	Detect suction temp. of INV compressor	Pd1	CN5	High pressure sensor
Tao	CN11	Detect ambient temp.	PLs	CN8	Liquid pipe pressure sensor (used for customized model)	Toil1	CN17	Detect the oil temp. of compressor
Tocl1	CN12	Detect SH temp. in heating	CT1	CN9	Current detector	Tdef1	CN16	Detect the defrosting temp.
Ts	CN1	Detect the suction temp. of gas-liquid seperator	HPS1	CN21	High pressure switch	LEVB	CN24	SH control in sub-cooler control
Toil2	CN36	Detect the oil temp. of the comprssor	Td1	CN3	Detect discharging temp. of INV compressor	LEVA1	CN25	SH control in heating
Tocl2	CN7	Detect SH temp. in heating	PS	CN6	Low pressure sensor	LEVA2	CN26	SH control in heating
HPS2	CN22	High pressure switch	Toilp	CN15	Detect the oil balance pipe temp.	LEVC	CN58	Liquid pipe pressure sensor (used for customized model)

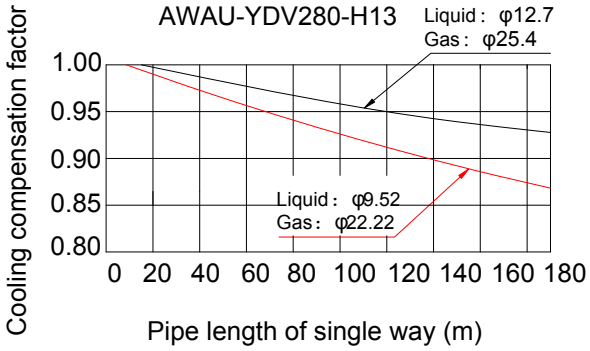


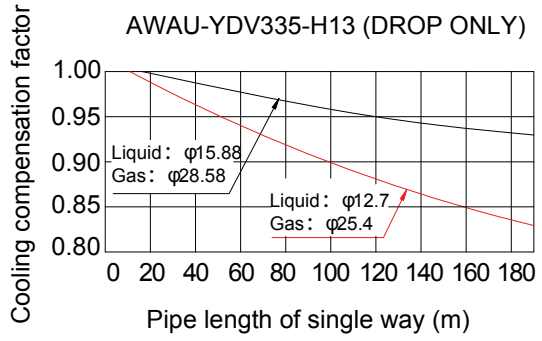
6. Capacity calculation due to capacity modification coefficient

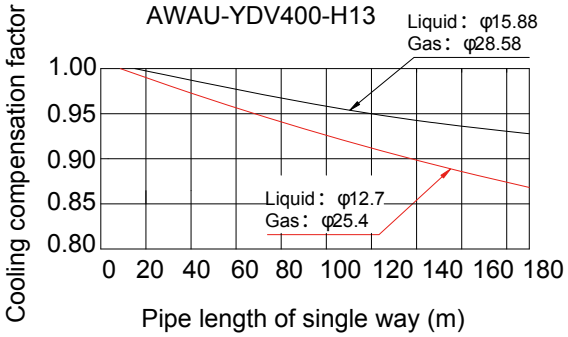
6.1 Capacity compensation value only for cooling

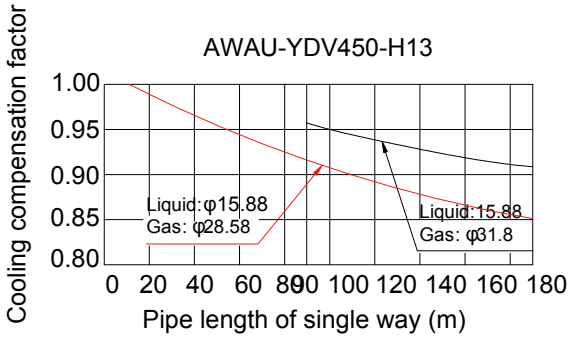
A. Capacity compensation value at different piping length and drop

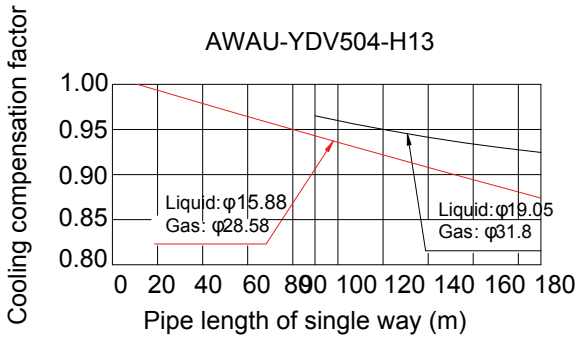


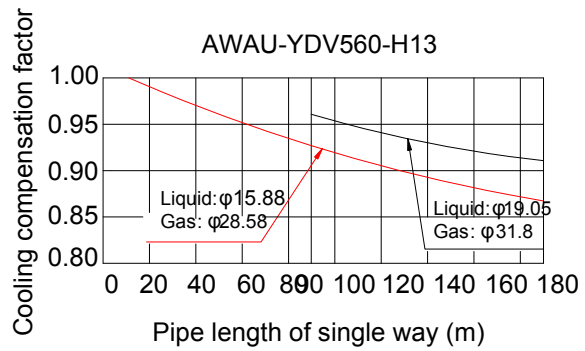


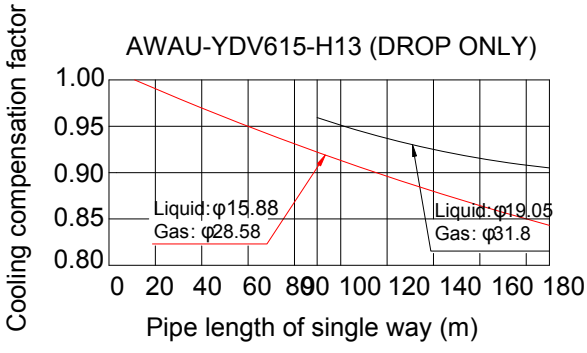


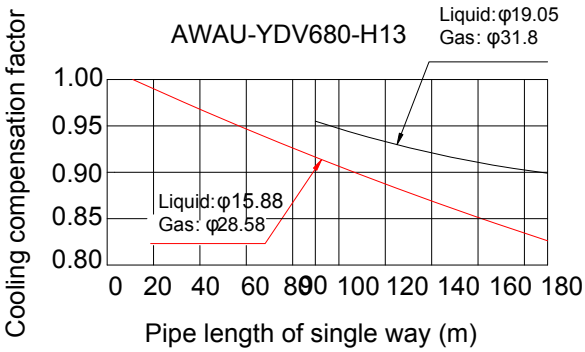


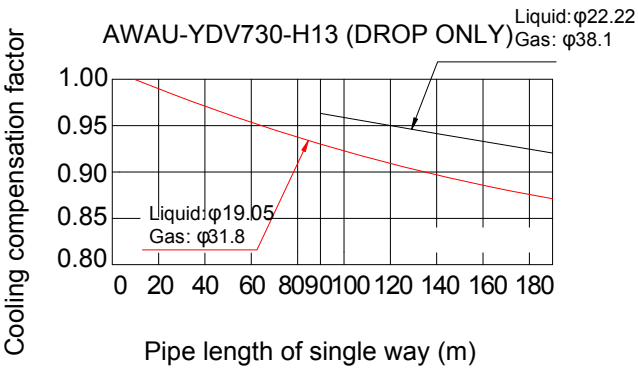


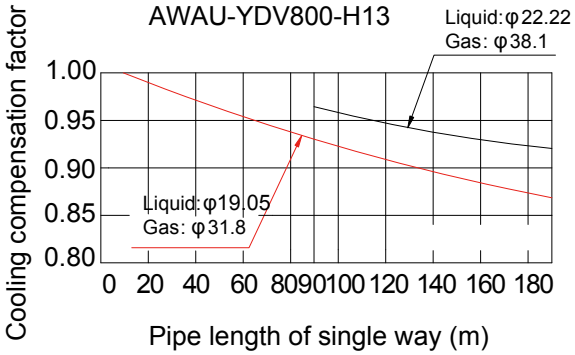


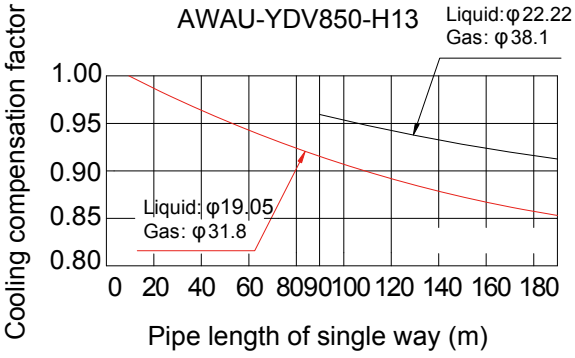

AWAU-YDV560-H13
Cooling compensation factor
1.00
0.95
0.90
0.85
0.80
Liquid:φ15.88
Gas: φ28.58
Liquid:φ19.05
Gas: φ31.8
0 20 40 60 80 100 120 140 160 180
Pipe length of single way (m)

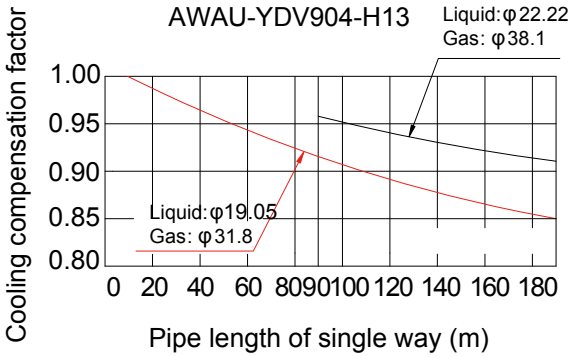

AWAU-YDV615-H13 (DROP ONLY)
Cooling compensation factor
1.00
0.95
0.90
0.85
0.80
Liquid:φ15.88
Gas: φ28.58
Liquid:φ19.05
Gas: φ31.8
0 20 40 60 80 100 120 140 160 180
Pipe length of single way (m)

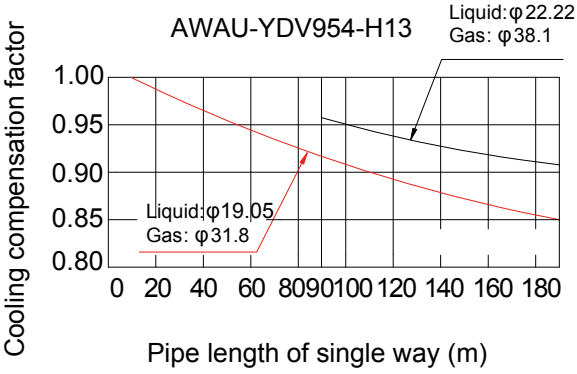

AWAU-YDV680-H13
Liquid:φ19.05
Gas: φ31.8
Cooling compensation factor
1.00
0.95
0.90
0.85
0.80
Liquid:φ15.88
Gas: φ28.58
0 20 40 60 80 100 120 140 160 180
Pipe length of single way (m)

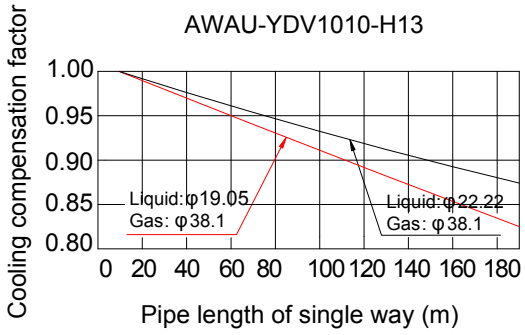

AWAU-YDV730-H13 (DROP ONLY)
Liquid:φ22.22
Gas: φ38.1
Cooling compensation factor
1.00
0.95
0.90
0.85
0.80
Liquid:φ19.05
Gas: φ31.8
0 20 40 60 80 90 100 120 140 160 180
Pipe length of single way (m)

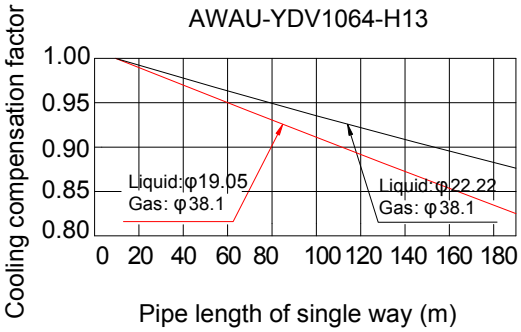

AWAU-YDV800-H13
Liquid:φ22.22
Gas: φ38.1
Cooling compensation factor
1.00
0.95
0.90
0.85
0.80
Liquid:φ19.05
Gas: φ31.8
0 20 40 60 80 90 100 120 140 160 180
Pipe length of single way (m)

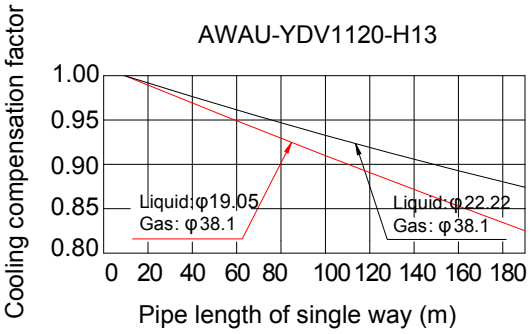

AWAU-YDV850-H13
Liquid:φ22.22
Gas: φ38.1
Cooling compensation factor
1.00
0.95
0.90
0.85
0.80
Liquid:φ19.05
Gas: φ31.8
0 20 40 60 80 90 100 120 140 160 180
Pipe length of single way (m)

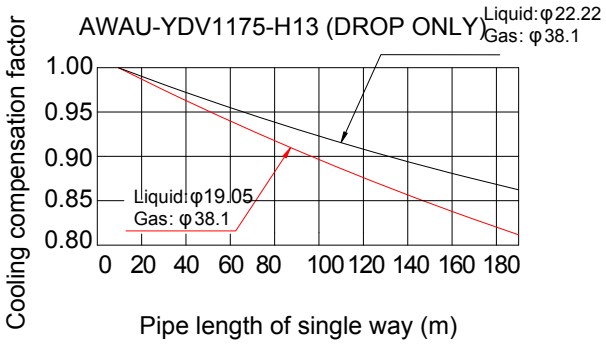

AWAU-YDV904-H13
Liquid:φ22.22
Gas: φ38.1
Cooling compensation factor
1.00
0.95
0.90
0.85
0.80
Liquid:φ19.05
Gas: φ31.8
0 20 40 60 80 90 100 120 140 160 180
Pipe length of single way (m)

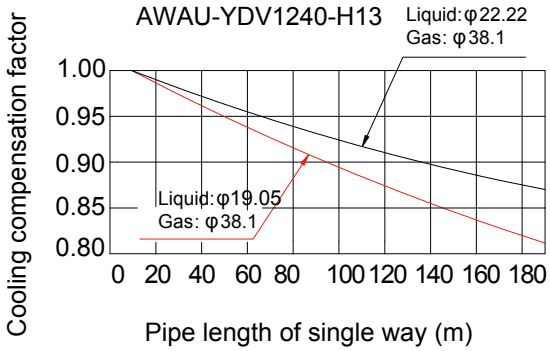

AWAU-YDV954-H13
Liquid:φ22.22
Gas: φ38.1
Cooling compensation factor
1.00
0.95
0.90
0.85
0.80
Liquid:φ19.05
Gas: φ31.8
0 20 40 60 80 90 100 120 140 160 180
Pipe length of single way (m)

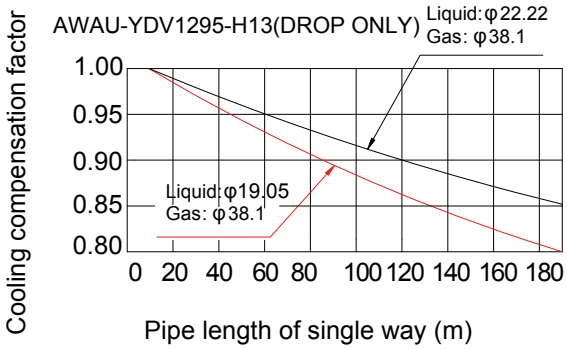

AWAU-YDV1010-H13
Cooling compensation factor
1.00
0.95
0.90
0.85
0.80
0 20 40 60 80 100 120 140 160 180
Pipe length of single way (m)
Liquid:φ19.05
Gas: φ38.1
Liquid:φ22.22
Gas: φ38.1

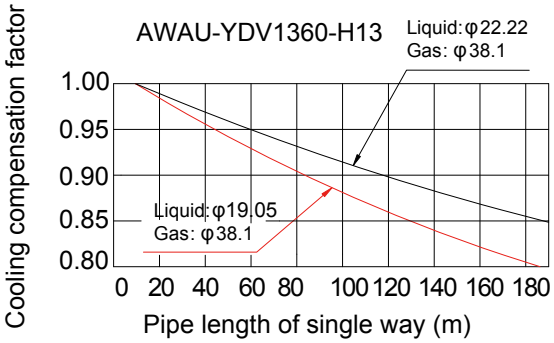

AWAU-YDV1064-H13
Cooling compensation factor
1.00
0.95
0.90
0.85
0.80
0 20 40 60 80 100 120 140 160 180
Pipe length of single way (m)
Liquid:φ19.05
Gas: φ38.1
Liquid:φ22.22
Gas: φ38.1

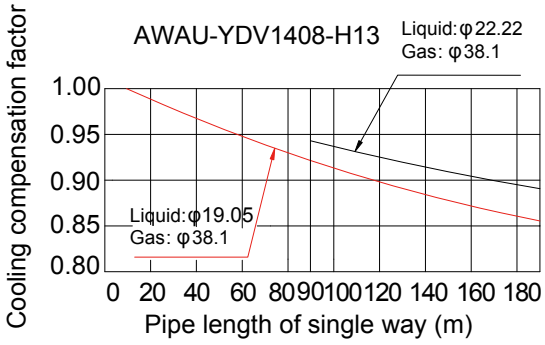

AWAU-YDV1120-H13
Cooling compensation factor
1.00
0.95
0.90
0.85
0.80
0 20 40 60 80 100 120 140 160 180
Pipe length of single way (m)
Liquid:φ19.05
Gas: φ38.1
Liquid:φ22.22
Gas: φ38.1

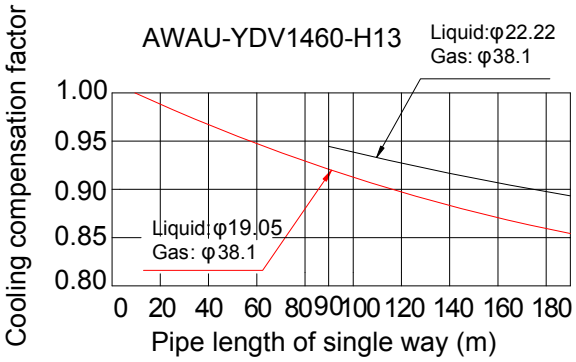

AWAU-YDV1175-H13 (DROP ONLY)
Liquid:φ22.22
Gas: φ38.1
Cooling compensation factor
1.00
0.95
0.90
0.85
0.80
0 20 40 60 80 100 120 140 160 180
Pipe length of single way (m)
Liquid:φ19.05
Gas: φ38.1

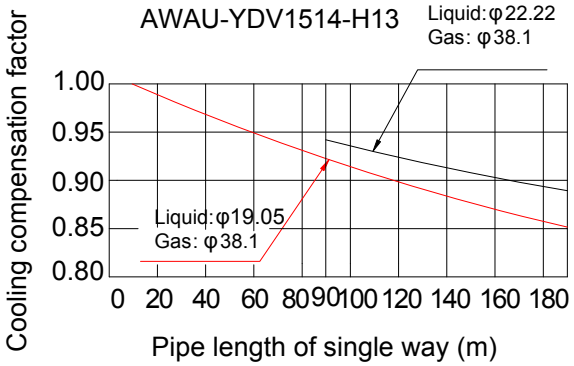

AWAU-YDV1240-H13
Liquid:φ22.22
Gas: φ38.1
Cooling compensation factor
1.00
0.95
0.90
0.85
0.80
0 20 40 60 80 100 120 140 160 180
Pipe length of single way (m)
Liquid:φ19.05
Gas: φ38.1

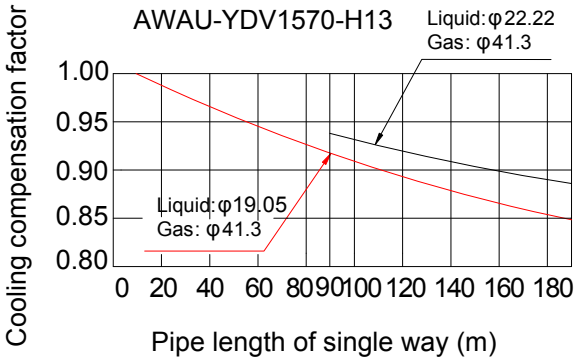

AWAU-YDV1295-H13(DROP ONLY)
Liquid:φ22.22
Gas: φ38.1
Cooling compensation factor
1.00
0.95
0.90
0.85
0.80
0 20 40 60 80 100 120 140 160 180
Pipe length of single way (m)
Liquid:φ19.05
Gas: φ38.1

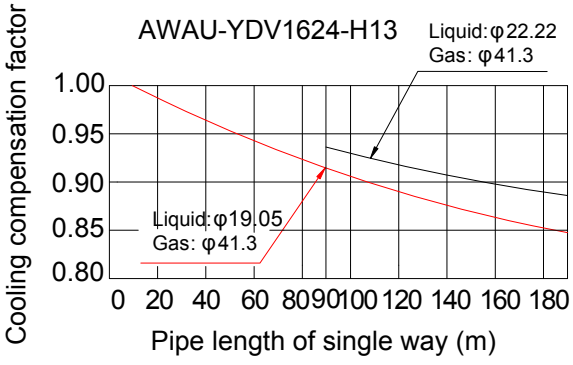

AWAU-YDV1360-H13
Liquid:φ22.22
Gas: φ38.1
Cooling compensation factor
1.00
0.95
0.90
0.85
0.80
0 20 40 60 80 100 120 140 160 180
Pipe length of single way (m)
Liquid:φ19.05
Gas: φ38.1

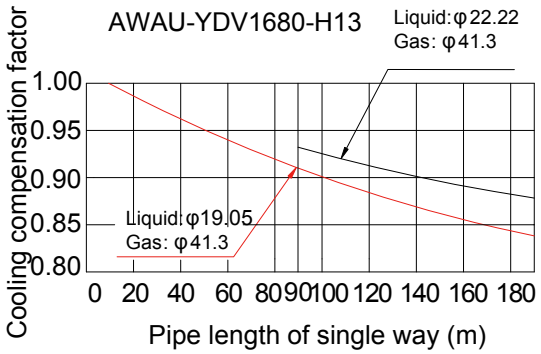

AWAU-YDV1408-H13
Liquid:φ22.22
Gas: φ38.1
Cooling compensation factor
1.00
0.95
0.90
0.85
0.80
0 20 40 60 80 90 100 120 140 160 180
Pipe length of single way (m)
Liquid:φ19.05
Gas: φ38.1

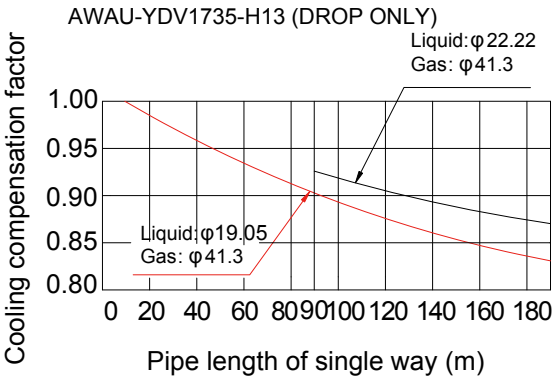

AWAU-YDV1460-H13
Liquid:φ22.22
Gas: φ38.1
Liquid:φ19.05
Gas: φ38.1
Cooling compensation factor
1.00
0.95
0.90
0.85
0.80
0 20 40 60 80 90 100 120 140 160 180
Pipe length of single way (m)

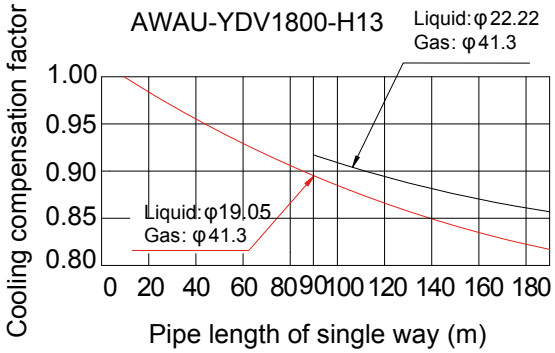

AWAU-YDV1514-H13
Liquid:φ22.22
Gas: φ38.1
Liquid:φ19.05
Gas: φ38.1
Cooling compensation factor
1.00
0.95
0.90
0.85
0.80
0 20 40 60 80 90 100 120 140 160 180
Pipe length of single way (m)

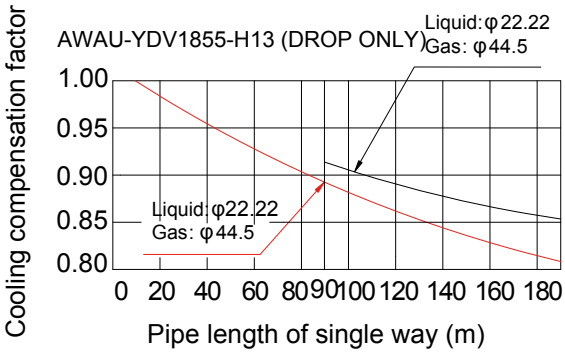

AWAU-YDV1570-H13
Liquid:φ22.22
Gas: φ41.3
Liquid:φ19.05
Gas: φ41.3
Cooling compensation factor
1.00
0.95
0.90
0.85
0.80
0 20 40 60 80 90 100 120 140 160 180
Pipe length of single way (m)

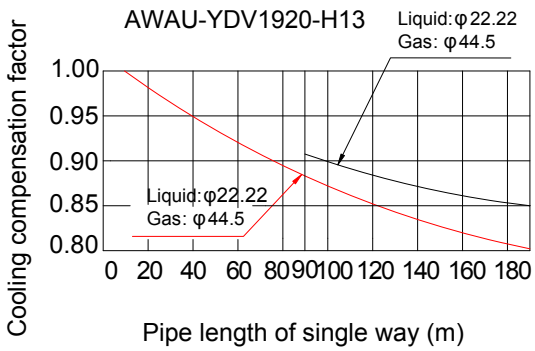

AWAU-YDV1624-H13
Liquid:φ22.22
Gas: φ41.3
Liquid:φ19.05
Gas: φ41.3
Cooling compensation factor
1.00
0.95
0.90
0.85
0.80
0 20 40 60 80 90 100 120 140 160 180
Pipe length of single way (m)

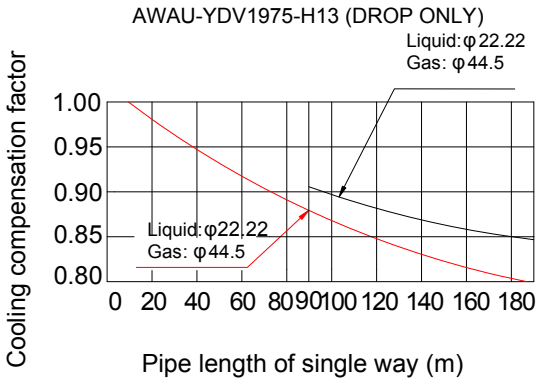

AWAU-YDV1680-H13
Liquid:φ22.22
Gas: φ41.3
Liquid:φ19.05
Gas: φ41.3
Cooling compensation factor
1.00
0.95
0.90
0.85
0.80
0 20 40 60 80 90 100 120 140 160 180
Pipe length of single way (m)

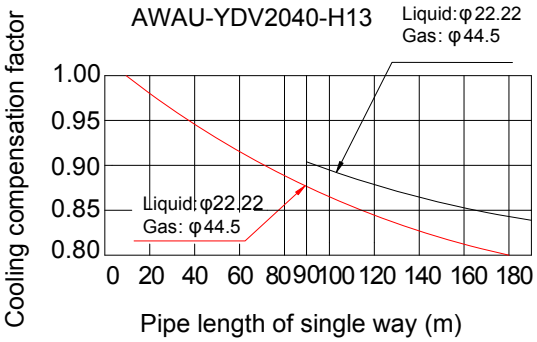

AWAU-YDV1735-H13 (DROP ONLY)
Liquid:φ22.22
Gas: φ41.3
Liquid:φ19.05
Gas: φ41.3
Cooling compensation factor
1.00
0.95
0.90
0.85
0.80
0 20 40 60 80 90 100 120 140 160 180
Pipe length of single way (m)


AWAU-YDV1800-H13
Liquid:φ22.22
Gas: φ41.3
Liquid:φ19.05
Gas: φ41.3
Cooling compensation factor
1.00
0.95
0.90
0.85
0.80
0 20 40 60 80 90 100 120 140 160 180
Pipe length of single way (m)


AWAU-YDV1855-H13 (DROP ONLY)
Liquid:φ22.22
Gas: φ44.5
Liquid:φ22.22
Gas: φ44.5
Cooling compensation factor
1.00
0.95
0.90
0.85
0.80
0 20 40 60 80 90 100 120 140 160 180
Pipe length of single way (m)



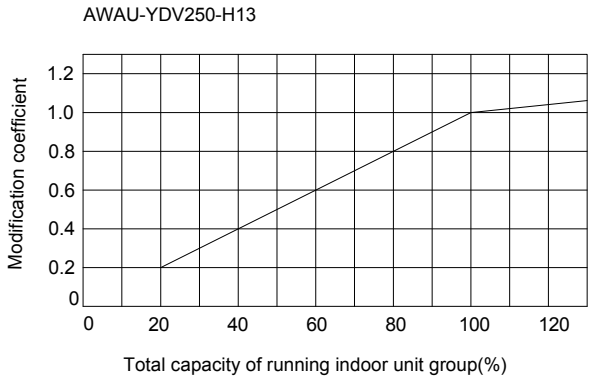


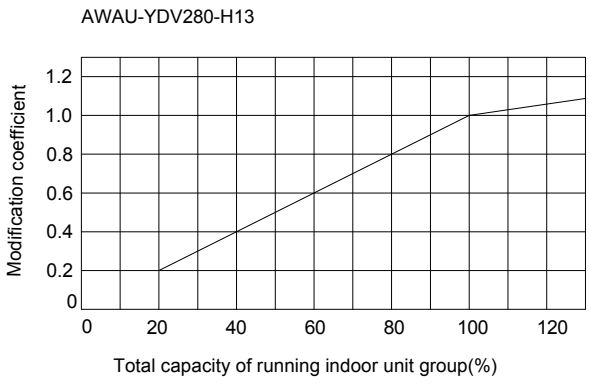


Note:

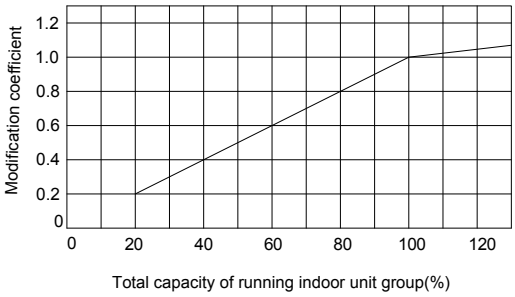
When the pipe length more than 90 m, the pipe diameter need be expanded

B. Capacity compensation suitable for total capability of indoor unit group

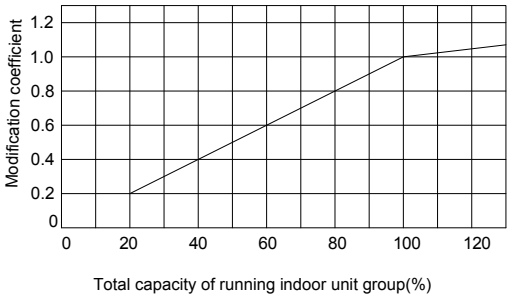




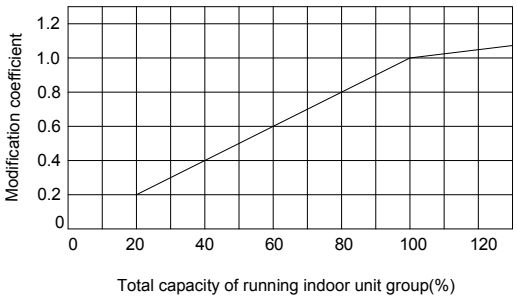
AWAU-YDV335-H13 (DROP ONLY)



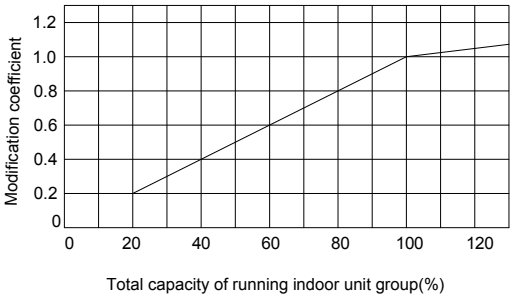
AWAU-YDV400-H13



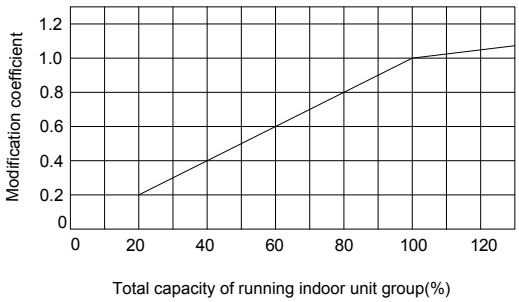
AWAU-YDV450-H13



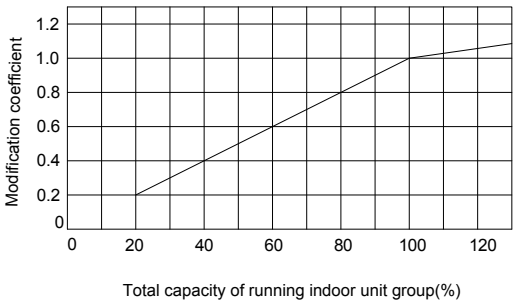
AWAU-YDV504-H13



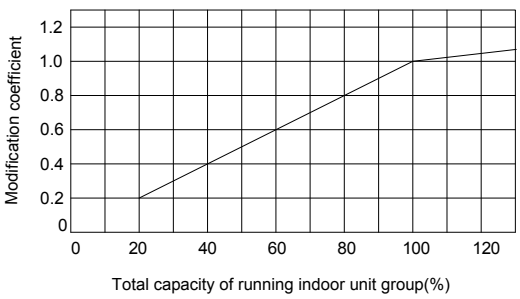
AWAU-YDV560-H13



AWAU-YDV615-H13 (DROP ONLY)



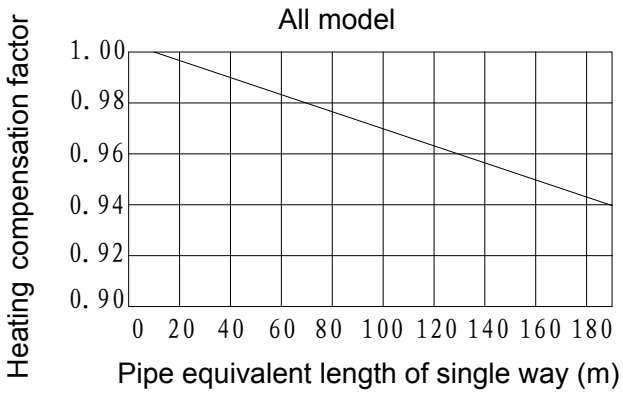
AWAU-YDV680-H13



Note: the modification capacity of the combination models is equal to the sum of the single model modification capacity

6.2 Capacity compensation value only for heating

A. Capacity compensation value at different piping length and drop



Note:

Refrigerant pipe equivalent length=∑ each size gas pipe elbow quantity × elbow equivalent length + ∑ each size straight pipe length

Elbow equivalent length:

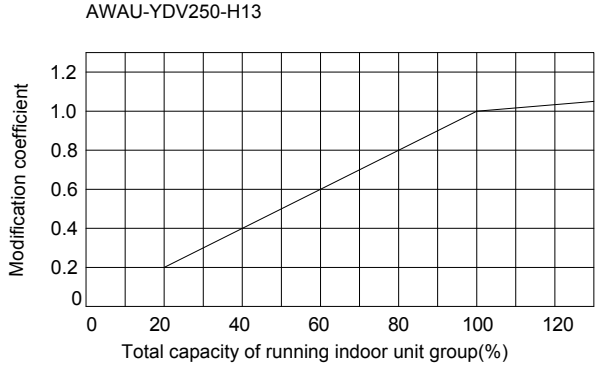
Unit: m /apice

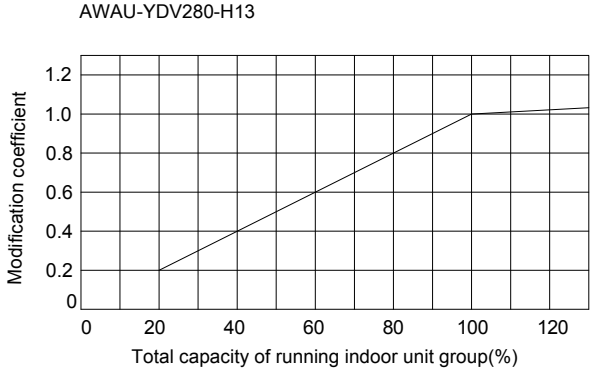
Gas pipe size	φ15.88	φ19.05	φ22.22	φ25.4	φ28.58	φ31.8	φ34.9	φ38.1	φ41.3	φ44.5	φ47.6	φ50.8
Joint（90°elbow）	0.25	0.3	0.35	0.4	0.45	0.55	0.6	0.65	0.7	0.75	0.8	0.85

B. Capacity compensation suitable for outdoor unit frosting

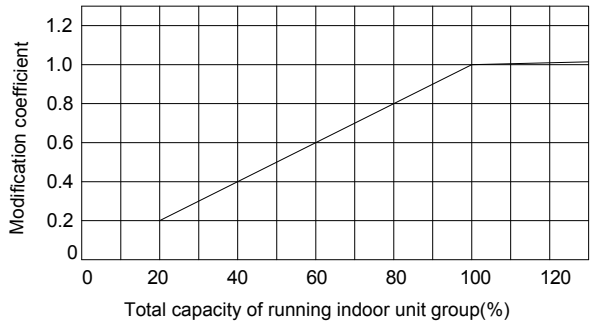
The wet-bulb temperature of oudoor suction air (℃)	-20	-15	-13	-11	-9	-7	-5	-3	-1	1	3	＞3
Compensation coefficient	0.96	0.96	0.96	0.95	0.94	0.93	0.91	0.88	0.86	0.87	0.92	1

C. Capacity compensation suitable for total capability of indoor unit group

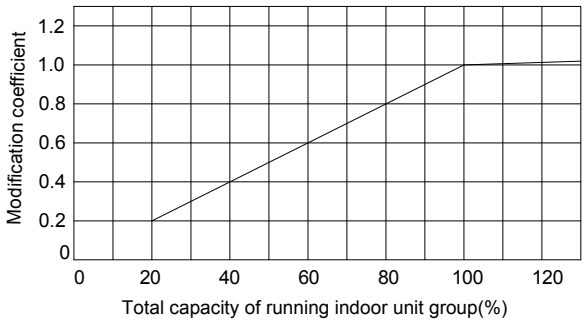




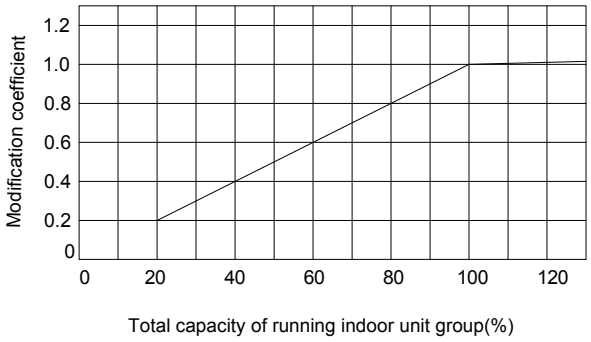
AWAU-YDV730-H13 (DROP ONLY)



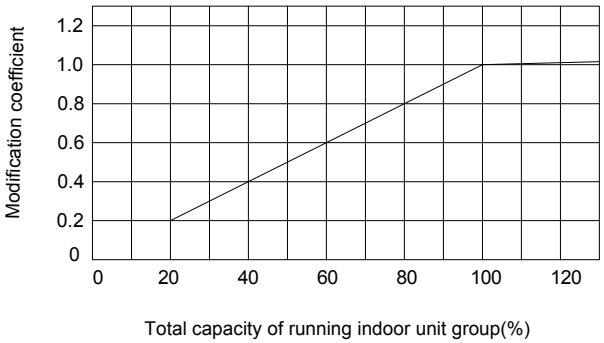
AWAU-YDV400-H13



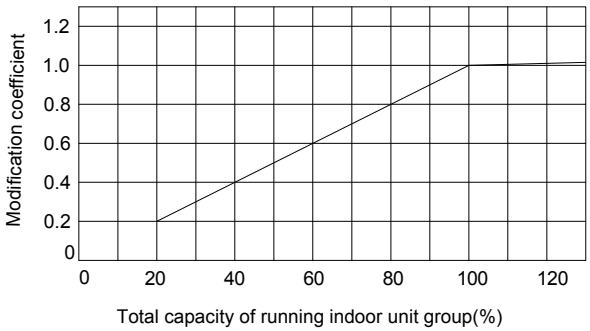
AWAU-YDV450-H13



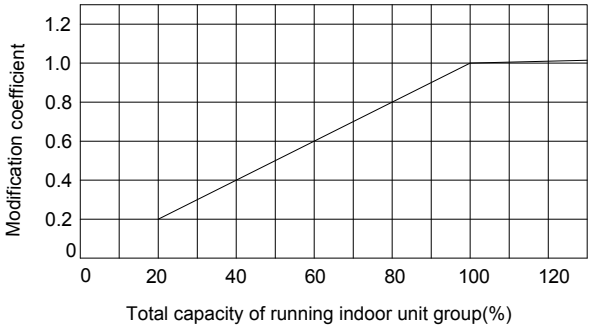
AWAU-YDV504-H13



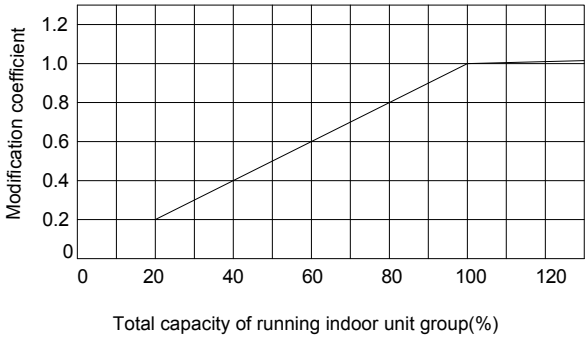
AWAU-YDV560-H13



AWAU-YDV615-H13 (DROP ONLY)



AWAU-YDV680-H13



Note: the modification capacity of the combination models is equal to the sum of the single model modification capacity

6.3 Capacity compensation value for cooling and heating

A. In cooling, when the outdoor lower than the indoor, or in heating the outdoor higher than the indoor, the compensation factor use the curve value minus the following table value

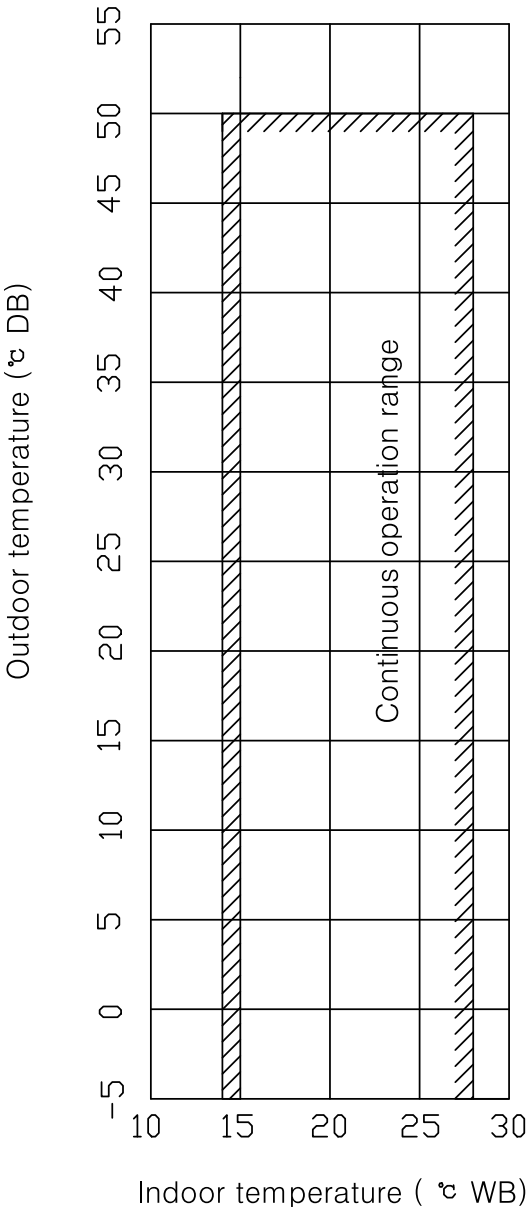
The vertical height difference between indoor and outdoor unit	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m
Adjustment coefficient	0.99	0.98	0.97	0.96	0.95	0.94	0.93	0.92	0.91	0.90

B. Capacity compensation suitable for outdoor outlet static pressure

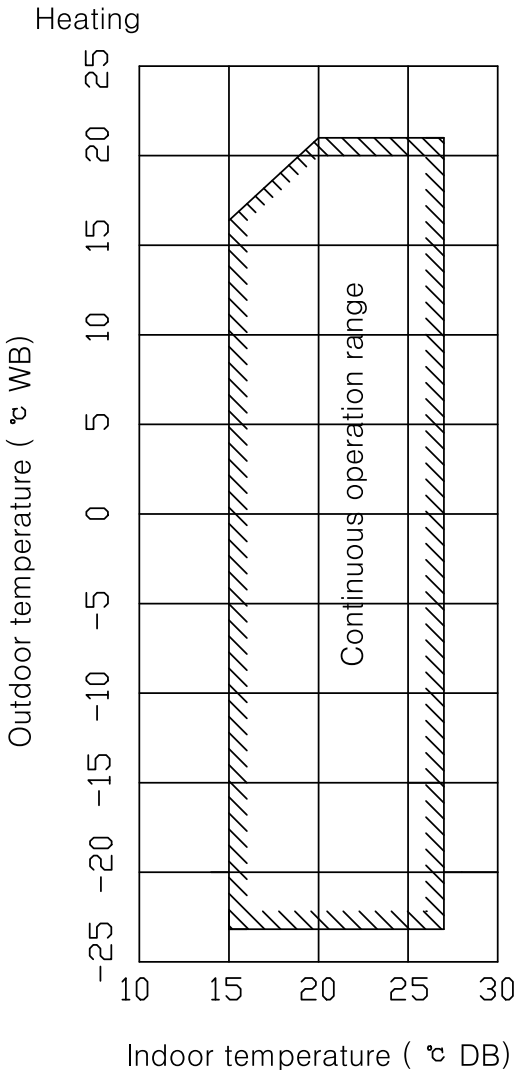
Outdoor outlet static pressure（Pa）	0	10	20	30	40	50	60	70	80
Adjustment coefficient	1	1	0.99	0.98	0.97	0.96	0.95	0.94	0.93

7. Operation range

Cooling

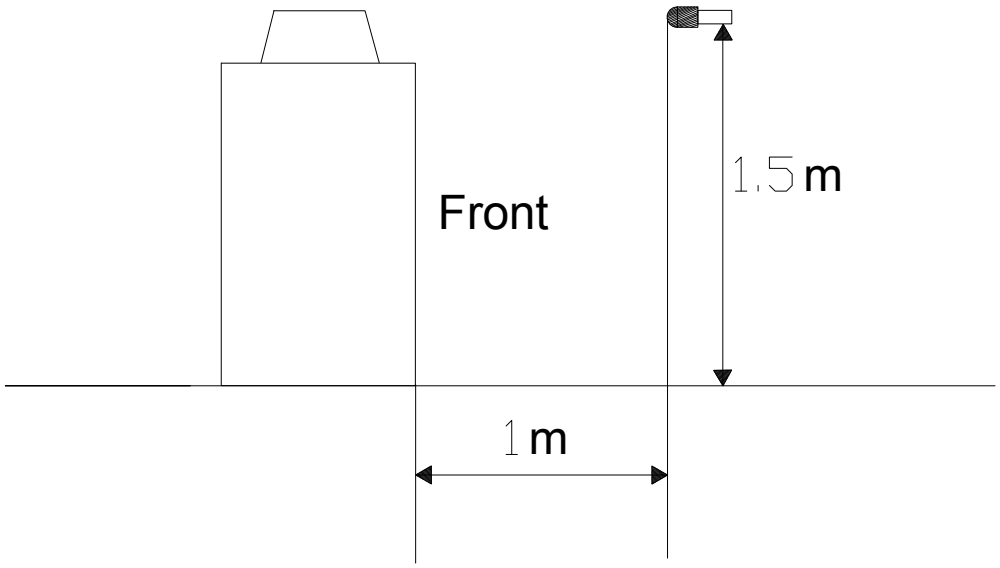


Heating



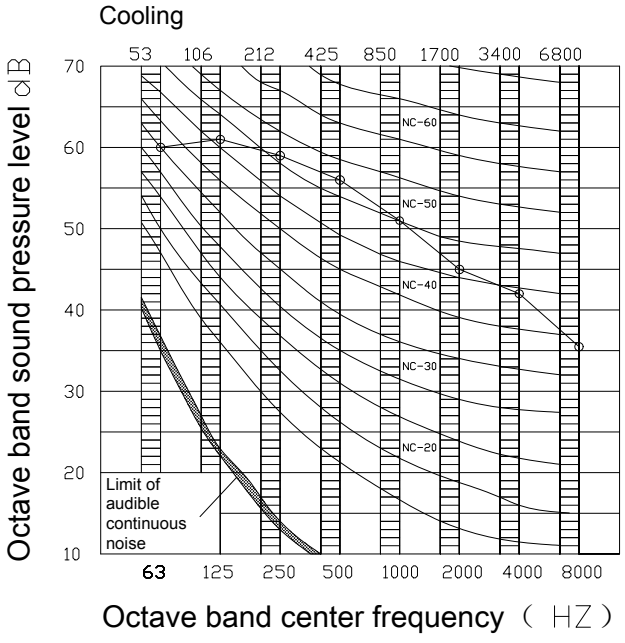
8. Noise level

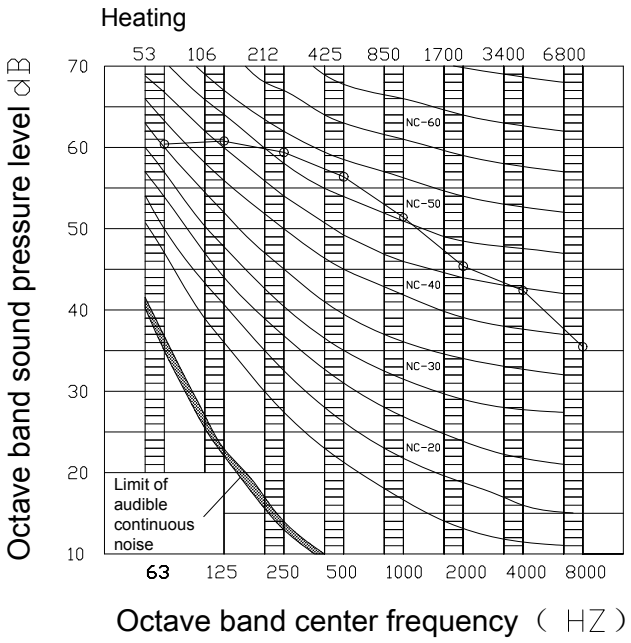
1) Testing illustrate



2) Octave band level

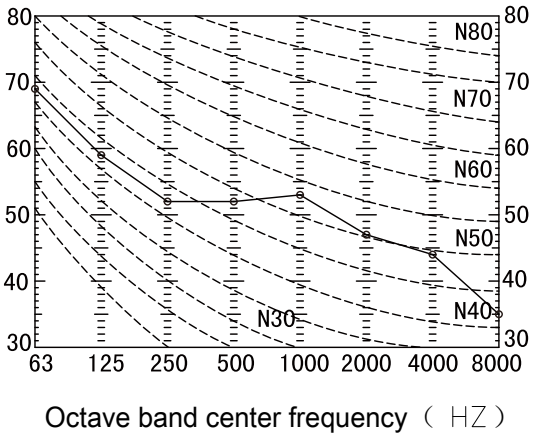
AWAU-YDV250-H13 AWAU-YDV280-H13





AWAU-YDV335-H13 (DROP ONLY)

Cooling



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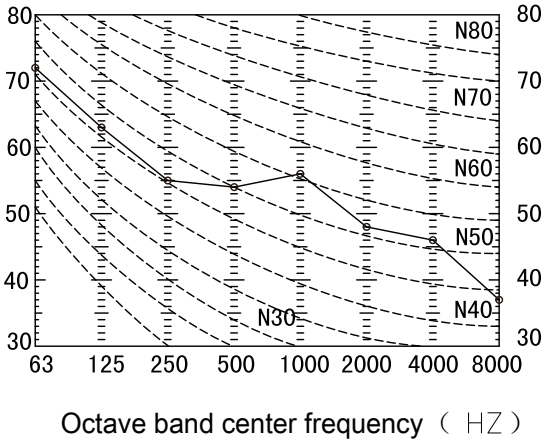
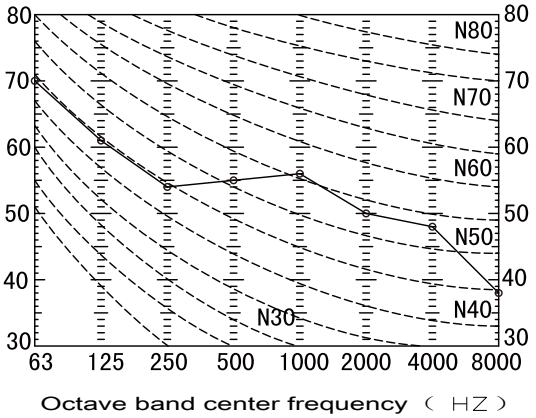
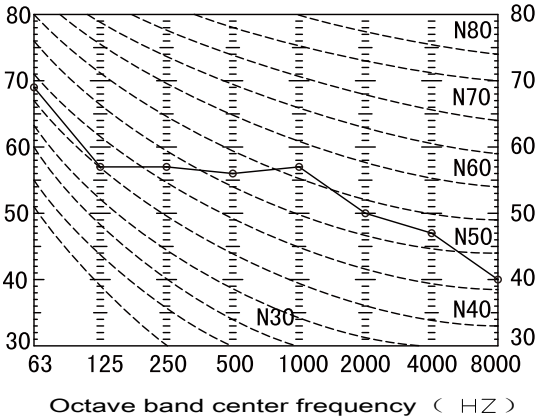


AWAU-YDV400-H13

Cooling

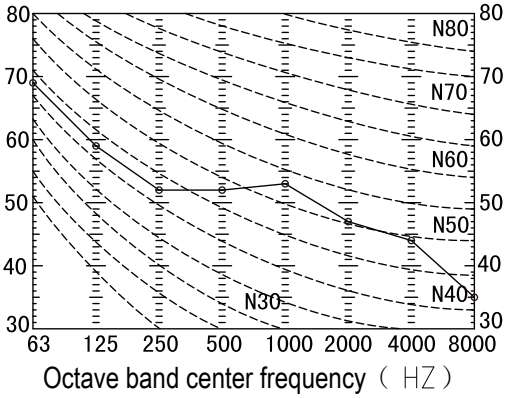


Heating

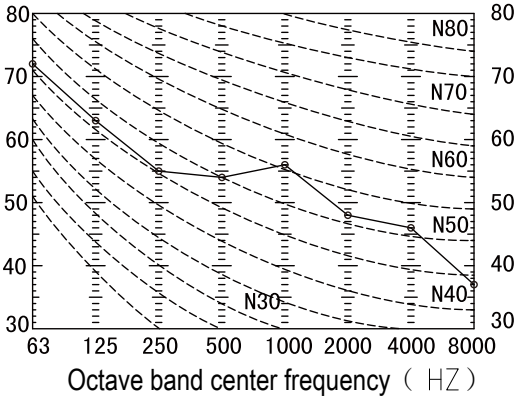


AWAU-YDV450-H13

Cooling

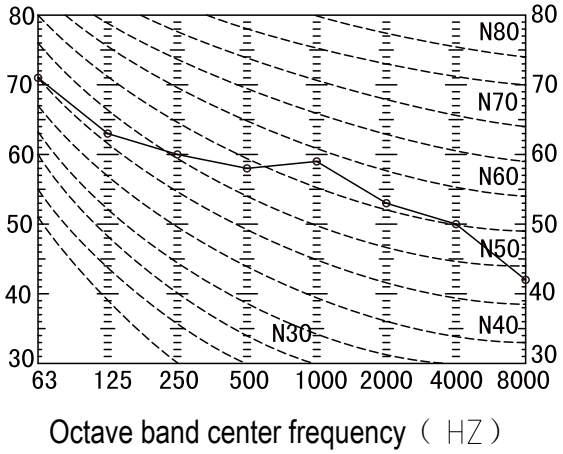


Heating

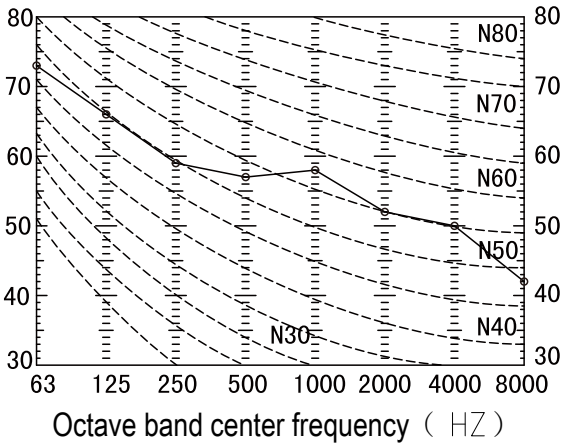


AWAU-YDV504-H13 AWAU-YDV560-H13 AWAU-YDV615-H13 (DROP ONLY)

Cooling

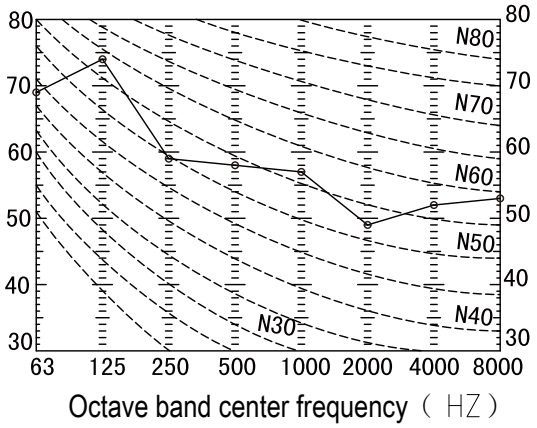


Heating

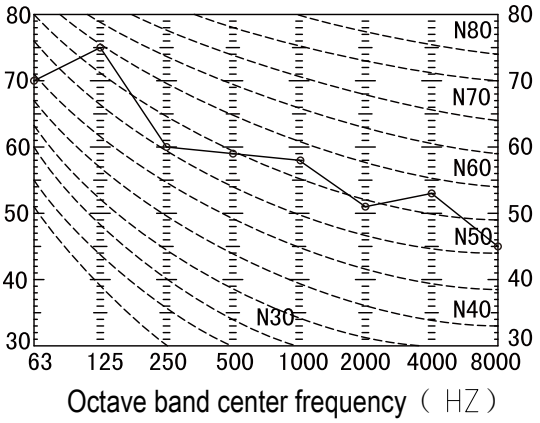


AWAU-YDV680-H13

Cooling



Heating



9. Installation

9.1 Safety

- Please read this installation manual carefully before installation and operation.
- The mentioned precaution includes ⚠Warning and ⚠ Attention . The precaution that will avoid death or heavy injury by faulty installation will be listed in ⚠Warning . Even the violation of the cautions listed in ⚠ Attention also may cause serious accidents. So both of them are related to the safety, and should be executed seriously.
- The meanings of "graphical symbol" used here are described below.

⊘	Absolutely prohibited	❗ ⏚	The instructions must be followed

- After installation, perform a trial and confirm everything normal, then introduce the operation manual to the user. Besides, put the manual to the user and ask them to preserve it carefully.

⚠Warning	
❗	• The installation should be executed correctly as the installation manual, or the faulty installation will cause water leakage, electric shock, fire or unit dropping, further leading to injury, etc accidents. • The installation should be performed by the retailer or professional installation institution. • If the users conducting the installation have any improperness, water leakage, electric shock, fire and unit dropping will be induced and further result in injury, etc. • If installation and maintenance require to operate inside the unit, the current should be cut off before the operation, or electric shock will be induced. • If installation requires to operate in a small room, appropriate measures must be taken. Please ensure that the refrigerant will not exceed the concentration limit (0.3 kg/m^3) in case of possible leakage. During installation, the proper measures to ensure the concentration limit should be consulted with the retailer. Otherwise, it will cause oxygen deficit once the refrigerant leaks and exceeds the concentration limit. • Please install the unit at the space which can bear the weight. Otherwise, the unit will drop down or turn over to cause the human injury. • The specified installation should defend against the typhoon and other strong wind as well as earthquake, etc. Otherwise, any improperness in the installation will cause the unit turnover and further induce accidents. • Please hang the ropes which can bear the weight to the specified location of the unit when transporting the unit. Otherwise, any improper handling method will cause the unit dropping and further induce death or serious injury. • When installation, please use the accessories with the unit or the specified parts. Otherwise, it will cause the unit dropping, water leakage, fire, electric shock, refrigerant leakage, insufficient performance, poor control, etc.

⚠Warning

- Please use the products specified by the company, such as air cleaner, humidifier, electric heater and other products sold separately.
  Besides, the installation should be performed by the retailer or professional installation institution. If the users conducting the installation have any improperness, water leakage, electric shock, fire and unit dropping will be induced and further result in injury, etc.
- The electric work must be performed by the personnel with qualification of electrician who should be in accordance with Relevant Technical Standards for Electrical Equipment, Interior Wiring Regulations and the installation manual, and also should use dedicated circuit.
  Otherwise, insufficient capacity of power circuit or improper construction will cause electric shock and fire.
- Please use the specified cable to make reliable earthing and fix the terminal firmly.
  Otherwise, loose connection will cause heating, fire or electric shock, etc.
- Please confirm that there is no dust, blockage or looseness on the power joint and also conduct connection correctly.
  Otherwise, it will cause electric shock or fire.
- The wiring should be in shape and cannot be raised. Ensure the maintenance panel to install correctly.
  Otherwise, the improper installation will cause heating, fire or electric shock, etc.
- Please install the refrigerant pipe correctly before running of compressor.
  If the compressor is running when refrigerant pipe has not been installed and operating valve has been open, the refrigerant will leak seriously, thus resulting in cold injury and other injury. Besides, it will have the air in the refrigeration system and thus lead to abnormal high pressure in refrigeration system, further inducing breakage, injury, etc.
- Operating valve (both gas side and liquid side) cannot be open before completion of refrigerant pipe works, airtight test and vacuum pumping.
  Serious leakage of the refrigerant will cause cold injury and other injury. In addition, if refrigerant leaks during operation, pipe brazing and other works must be interrupted for ventilation. Furthermore, the refrigerant will cause poisonous gas as meeting fire.
- Use R410A special tools for pipe, flared nut and other tools.
  If the existing components (beyond R410A) are used, it will cause the machine fault, the rupture of refrigeration cycle system, injury and other major accidents.
- Use the torque wrench for flared nut and double-ended wrench to tighten the nut as per appropriate torque.
  If the flared nut is tightened excessively, it will rupture after a long time, thus inducing refrigerant leakage. And looseness and damage of the flaring part will cause refrigerant leakage and further induce oxygen deficit accident.
- During pumping operation, shut down the compressor before refrigerant pipe being removed.
  If the refrigerant pipe is removed when the compressor is running and operating valve has been opened, the refrigerant will leak seriously, thus resulting in cold injury and other injury. Besides, it will have the air in the refrigeration system and thus lead to abnormal high pressure in refrigeration system, further inducing breakage, injury, etc.

⚠Warning

- If refrigerant leaks during operation, please take measures for ventilation and aeration. the refrigerant will cause poisonous gas as meeting fire.
- After installation, please confirm whether or not there is refrigerant leakage. If the refrigerant leaks indoors, it will generate poisonous gas after meeting fan heater, furnace, oven and other fire sources.
- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Children should be supervised to ensure that they do not play with the appliance.
- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.
- The appliances are not intended to be operated by means of an external timer or separate remote-control system.
- Keep the appliance and its cord out of reach of children less than 8 years.

- Operating valve (both gas side and liquid side) cannot be open before completion of refrigerant pipe works, airtight test and vacuum pumping and other steps.
- Rapid leakage of the refrigerant will cause cold injury or other injury.
- Drainage pipe cannot be connected directly to drainage tank which produces sulfur gases and other harmful gases.
- Otherwise, the poisonous gas may enter the indoor. Besides, it may corrode indoor units and cause fault of indoor units or leakage of the refrigerant.
- During installation or relocation of air conditioner, the air other than the specified refrigerant (R410A) cannot be mixed into refrigeration cycle system.
- If the air is mixed into the system, it will generate abnormal high pressure in refrigeration cycle system, further inducing breakage, injury, etc.

⚠ Attention

- Ensure the specified space for inspection and maintenance. The insufficient space will cause dropping from installation site and further induce injury.
- When installing outdoor unit on the roof or the other high place, to prevent the person falling down, please set fixed ladder, handrail in the passage, or equip railing and handrail around the outdoor unit.
- The installation should be executed correctly as the installation manual, or it will cause abnormal vibration and noise increase.
- After completion of refrigerant pipe works, conduct airtight test via nitrogen to ensure that there is no leakage.
  It will cause oxygen deficit once the refrigerant leaks in a small room or exceeds the concentration limit.
- Dewing prevention and heat insulation is necessary for refrigerant pipe.
  Otherwise, it will cause water leakage, water dropping, moistening of household articles, etc.
- Install residual-current circuit breaker (RCCB).
  Otherwise, it will cause fire and electric shock.
- The drainage pipe works should be executed correctly as the installation manual. Ensure proper drainage, and heat insulation to prevent dewing.
  Otherwise, it will cause water leakage, water dropping, moistening of household articles, etc.

- Connect ground wires correctly.(grounded).
  Ground wires cannot be connected to gas pipe, water pipe, lightning rod, telephone or other ground wires. Incorrect ground wires (grounded) will cause fault, fire. And electric leakage will cause electric shock.
  Besides, if ground wires are connected with gas pipe, explosion and fire may be induced if the gas leaks.

- Don't use the unit to preserve food, animals and plants, precision instruments and artworks, or for other special purposes.
  It may reduce the quality of preserved goods.
- Outdoor unit cannot be installed in the place that easily becomes nest of small animals.
  If any small animals enter the unit and get in touch with internal electronic components, it will cause fault, smoking or fire. Besides, remind users to keep the surroundings clean.
- Don't use packing belt for handling.
- Don't handle packing woods with bare hands.
- Don't install the unit in place with possible leakage of combustible gas or with combustibles.
  If the unit is installed in the place with possible leakage, generation, access and retention of combustible gas or the place with floating of carbon fiber, it will cause fire.
- Don't install the unit in place where the wind from fan will direct at animals and plants.
  Otherwise, the wind will affect plants, etc.

⚠ Attention	
⃠	• During operation, don't place any object on outdoor unit. If the object falls, it will be damaged or broken. • Don't climb to outdoor unit. Otherwise, it will cause falling, turnover, etc, thus inducing injury.

Instructions applicable to unit type with R410A refrigerant

- Don't use the refrigerant except for R410A. The R410A has the pressure 1.6 times higher than that of the previous refrigerant.
  The refrigerant R410A tank is marked with pink sign.
- Against charging different refrigerant, we change the diameter injection hole for operating valve of outdoor unit and that of the check joint diameter of the R410A unit
  To enhance the compression consistence, for refrigerant pipe, we also change machining dimension of refrigerant flared pipe and opposite side dimension of flared nut.
  When construction and maintenance, prepare the R410A special tools according to the below table.
- Don't use aeration tank, or it will cause changes of refrigerant composition and lack of refrigeration capacity.
- When filling the refrigerant, make sure to take it out of refrigerant tank in liquid form.
- Indoor unit refers to R410A appropriative unit. Please confirm the indoor unit available for connection according to the catalogue. (If other indoor unit is connected, normal operation will be impossible.)

	R410A special tools
a	Pressure gauge of manifold
b	Charge hose
c	Electronic balance for charging refrigerant
d	Torque wrench
e	Flare tool
f	Copper pipe gauge for adjustment of exposed length
g	Vacuum pump adapter
h	Gas leakage detector

9.2 Before installation

Before installation, check if unit type, power specification, pipe, wires and parts purchased respectively are correct.

Attention

- Make sure to read the manual before installation and conduct the installation accordingly.
- Please refer to installation manual of indoor unit when installing it.
- In pipe works, please refer to the manual for distribution spare parts (branch pipe and gather pipe) which sold separately.
- Make sure to equip leakage current protector (please chose the product resisting to high-order harmonic).
- The compressor may be burnt in case of running without discharge pipe thermistor, suction pipe thermistor and pressure sensor. Thus it is necessary to avoid such operation.

Combination form

- Combination form of outdoor unit as well as the quantity and capacity of connected indoor unit are shown in the table below.
- The connected indoor unit must be R410A appropriative unit. Please determine the type of indoor unit available for connection based on the manual.
- It can be used in combination with the following indoor units.

Model of outdoor unit	Combination type	Quantity of units connected	Total capacity of indoor units available for connection (×100W)
AWAU-YDV250-H13	Separate	1~13	126~323
AWAU-YDV280-H13	Separate	1~16	140~364
AWAU-YDV335-H13 (DROP ONLY)	Separate	1~20	168~436
AWAU-YDV400-H13	Separate	1~24	200~520
AWAU-YDV450-H13	Separate	1~27	225~585
AWAU-YDV504-H13	Separate	1~30	252~655
AWAU-YDV560-H13	Separate	1~33	280~728
AWAU-YDV615-H13 (DROP ONLY)	Separate	2~36	308~800
AWAU-YDV680-H13	Separate	2~40	340~884
AWAU-YDV730-H13 (DROP ONLY)	Combined (12HP+14HP)	2~43	368~956
AWAU-YDV800-H13	Combined (14HP+14HP)	2~46	400~1040
AWAU-YDV850-H13	Combined (14HP+16HP)	2~50	425~1105
AWAU-YDV904-H13	Combined (14HP+18HP)	2~53	452~1175
AWAU-YDV954-H13	Combined (16HP+18HP)	2~57	477~1240
AWAU-YDV1010-H13	Combined (16HP+20HP)	2~60	505~1313
AWAU-YDV1064-H13	Combined (18HP+20HP)	2~64	532~1383
AWAU-YDV1120-H13	Combined (20HP+20HP)	3~64	560~1456
AWAU-YDV1175-H13 (DROP ONLY)	Combined (20HP+22HP)	3~64	588~1527
AWAU-YDV1240-H13	Combined (20HP+24HP)	3~64	620~1612
AWAU-YDV1295-H13(DROP ONLY)	Combined (22HP+24HP)	3~64	648~1683

Model of outdoor unit	Combination type	Quantity of units connected	Total capacity of indoor units available for connection (×100W)
AWAU-YDV1360-H13	Combined (24HP+24HP)	3~64	680~1768
AWAU-YDV1408-H13	Combined (14HP+18HP+18HP)	3~64	704~1830
AWAU-YDV1460-H13	Combined (16HP+16HP+20HP)	3~64	730~1898
AWAU-YDV1514-H13	Combined (16VP+18HP+20HP)	3~64	757~1968
AWAU-YDV1570-H13	Combined (16HP+20HP+20HP)	3~64	785~2041
AWAU-YDV1624-H13	Combined (18HP+20HP+20HP)	3~64	812~2111
AWAU-YDV1680-H13	Combined (20HP+20HP+20HP)	3~64	840~2184
AWAU-YDV1680-H13	Combined (20HP+20HP+22HP)	4~64	868~2256
AWAU-YDV1800-H13	Combined (20HP+20HP+24HP)	4~64	900~2340
AWAU-YDV1855-H13	Combined (20HP+22HP+24HP)	4~64	928~2412
AWAU-YDV1920-H13	Combined (20HP+24HP+24HP)	4~64	960~2496
AWAU-YDV1975-H13 (DROP ONLY) (DROP ONLY)	Combined (22HP+24HP+24HP)	4~64	988~2568
AWAU-YDV2040-H13	Combined (24HP+24HP+24HP)	4~64	1020~2652

Notes:
Capacity allocation ratio of indoor and outdoor units series ranges between 50% and 130%, but the capacity of simultaneously operating indoor unit cannot be greater than 100% of the capacity of the operating outdoor unit.

[Separately sold products]
Separate spare parts for refrigerant pipe are required during installation.
For spare parts of refrigerant pipe, installation of outdoor gathering pipe (with specification of HZG) requires for manifold (with specification of FQG) outdoor. Please select it according to installation items of refrigerant pipe in item 4.
Please consult the retailer or the company in case of any question.
Refrigerant manifold and gathering pipe must be appropriative products of the R410A.

9.3 Installation location

Please obtain user's consent for selection of installation location.

Selection of installation location

○ The place without air trapping.
○ Install the unit body in the firm position.
○ The place where air inlet and air outlet is free of ventilation obstacle.
○ The place is free from heat radiation of other heat sources.
○ The place where exhaust port will not be subject to strong wind.
○ The place where electrical noise is not subject to strict restrictions.
○ The place with sound drainage.
○ The place where noise and hot air will not produce negative impact to the neighbors.
○ The place that will not be buried by snow.
○ More than 5m away from the TV set and the radio.
(Far away from electromagnetic interference as much as possible.)

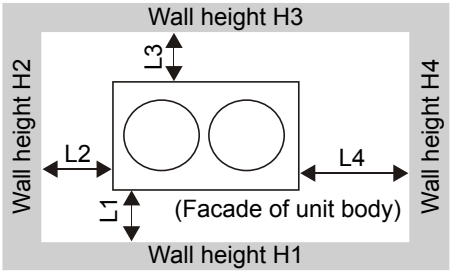
Warning:
(A) Install wind adapter in case of possible short circuit.
(B) In order to avoid short circuit, ensure sufficient inlet air space when installing multiple units.
(C) When using the unit in snow area, install stand and snow mantle to avoid the snow burying the unit body. (Don't adopt centralized drainage in snow area.)
(D) Don't install the unit in place subject to possible leakage of flammable gas.
(E) Install the unit in a firm position which can bear the unit weight.
● Please consult the retailer for wind adapter, snow mantle, supporting components for centralized drainage and other separately sold parts.

Attention
Please make sure to provide sufficient installation space. Otherwise, the compressor and instrument may be failure due to short circuit.

Installation space (maintenance space) example

Guarantee maintenance space (space for maintenance, passage, air duct and pipe placement).
(Consult with the retailer or the company in case of not meeting installation conditions as shown in the figure.)
Note:
1. The top of the outdoor within 2000 mm can not have obstructions; if there is an obstacle within 2000 mm must instal duct and ensure the air-out unobstructed, inlet air and return air don't short circuit.
2. The height beween obstacles around the outdoor and the bottom of the outdoor should be under 800 mm.
3. If the space is enough, for ease of maintenance, increase the distance between outdoors and the outddor and the walls.

① When installing single unit

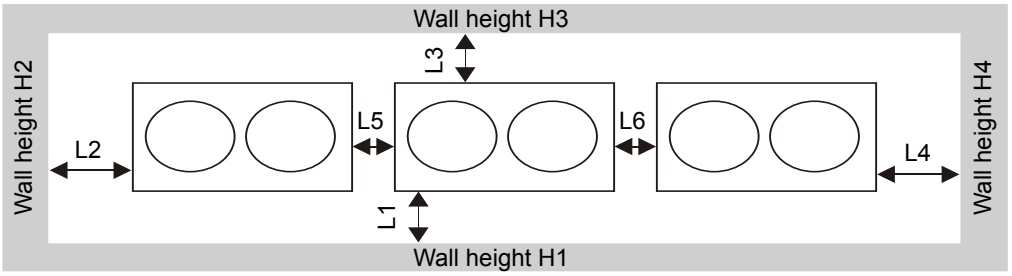


Installation example / Size	I	II	III
L1	500	500	Open
L2	10	50	10
L3	100	50	100
L4	10	50	Open
H1	1500	1500	Open
H2	Unrestricted	Unrestricted	Unrestricted
H3	1,000	1,000	Unrestricted
H4	Unrestricted	Unrestricted	Open

② When installing multiple units

In general, reserve at least 10mm (L5 and L6) at both sides of unit body during installation.

Reference:
Dimensions of all outdoor unit series (8P~24P) are 1350mm × 720mm.

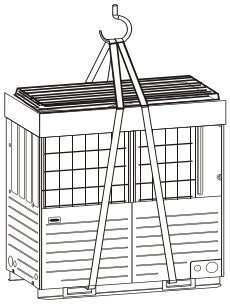


Installation example / Size	I	II
L1	500	Open
L2	10	200
L3	100	300
L4	10	Open
L5	10	400
L6	10	400
H1	1500	Unrestricted
H2	Unrestricted	Unrestricted
H3	1000	Unrestricted
H4	Unrestricted	Unrestricted

9.4 Unit transport and installation

⚠ **Attention**
When ropes are used for transporting unit, it is necessary to consider shift of gravity center of the unit. The unit may fall due to loss of stability.

1. Transport



- Please determine handling route and handle the unit with package to the installation location.
- To avoid damaging the unit during hoisting, protect the unit with cloth liner and lift it with two pieces of cloth ropes.

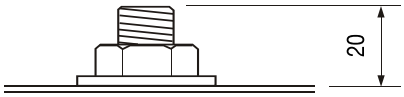
Warning:
(A) The ropes must pass through the corner hole of fixing foot of the unit.
(B) To avoid damaging the unit, make the ropes touch the unit along bottom plate and cloth liner.

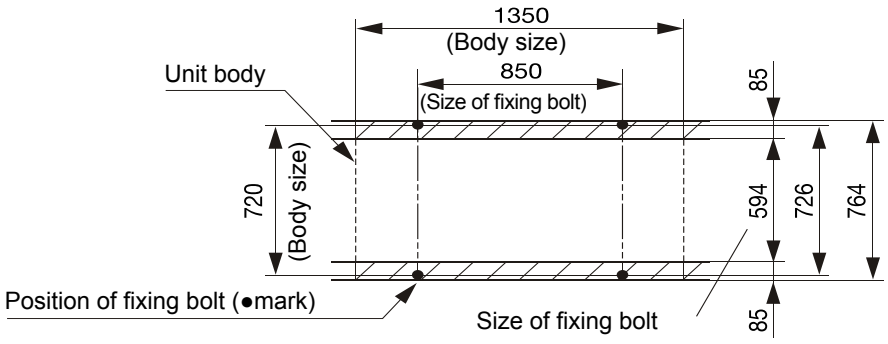
2. Attentions during installation

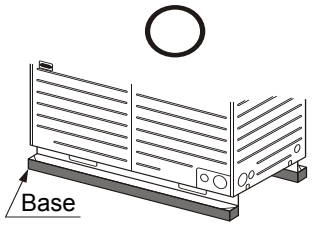
(1) Position of fixing bolt

- Please use 4 fixing bolts (M10) to fasten fixing feet of outdoor unit. The bolts with specification of 20mm are preferable.

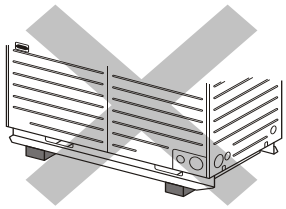
unit: mm



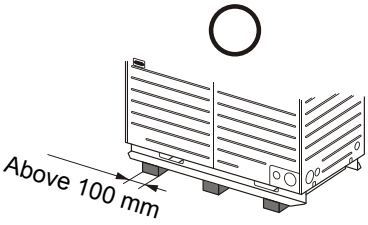




Generally set the base according to the figure above



Do not refer to the previous unit type for base direction



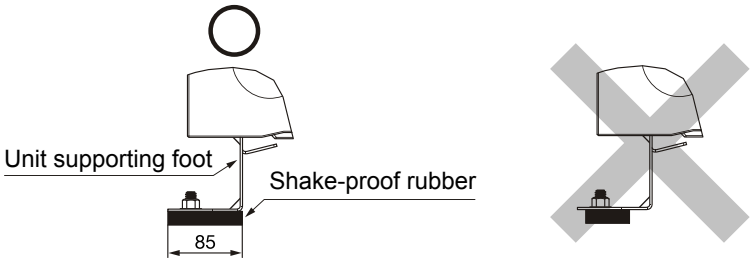
Use it when conducting updating (adding base in the middle) to prevent bending.

(2) Base

- During setting, confirm base strength and levelness and whether vibration and noise are produced.
- As to base size, set it as the scope above oblique lined area (above the front of fixing foot of outdoor unit) in the figure above.
- Set the base in side direction of outdoor (in the direction with width of 1,350 mm) as per the figure above.

(3) Shake-proof rubber

- The installed shake-proof rubber should be of the size enough to support the whole fixing feet of outdoor unit. (Please refer to the figure below.)



Warning:

1. When setting shake-proof rubber, pay attention to making the lower part of unit fixing foot touch the ground completely.
2. Prevent the lower part of supporting foot for unit fixing being exposed from shake-proof rubber or avoid setting shake-proof rubber in part.

9.5 Construction of refrigerant pipe

1. Determining pipe specifications

(Keep specifications of indoor unit consistent with installation site and select them according to the following contents.)

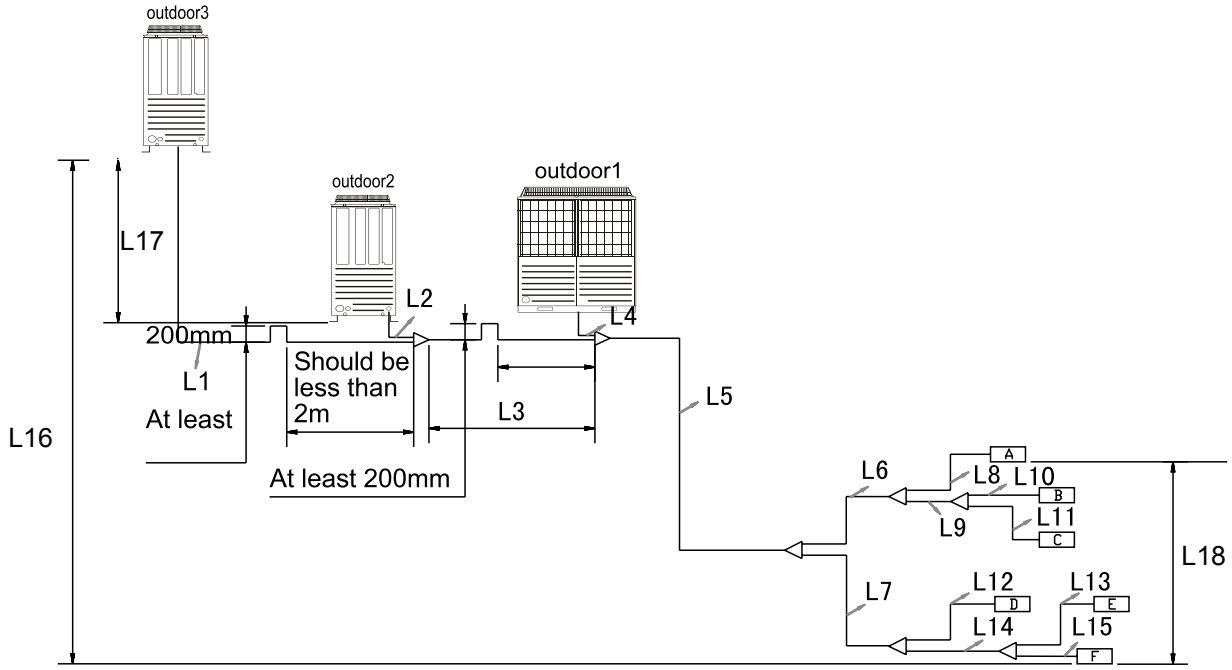
(1) Restriction of piping

- During pipe construction, make sure to follow the maximum length, total pipe length, allowable length of pipeline to the first manifold, allowable height difference (level difference) and other restrictions on specifications in (1).
- Avoid concave pipe ( ) and convex pipe ( ) in the pipeline as much as possible; otherwise, oil may accumulates.

Important notes

Separate the refrigerant system when exceeding values in the table below in terms of filling quantity of refrigerant pipe.

Outdoor unit	Additional sealing-in quantity (kg)
8HP~24HP	50
26HP~48HP	100
50HP~72HP	150

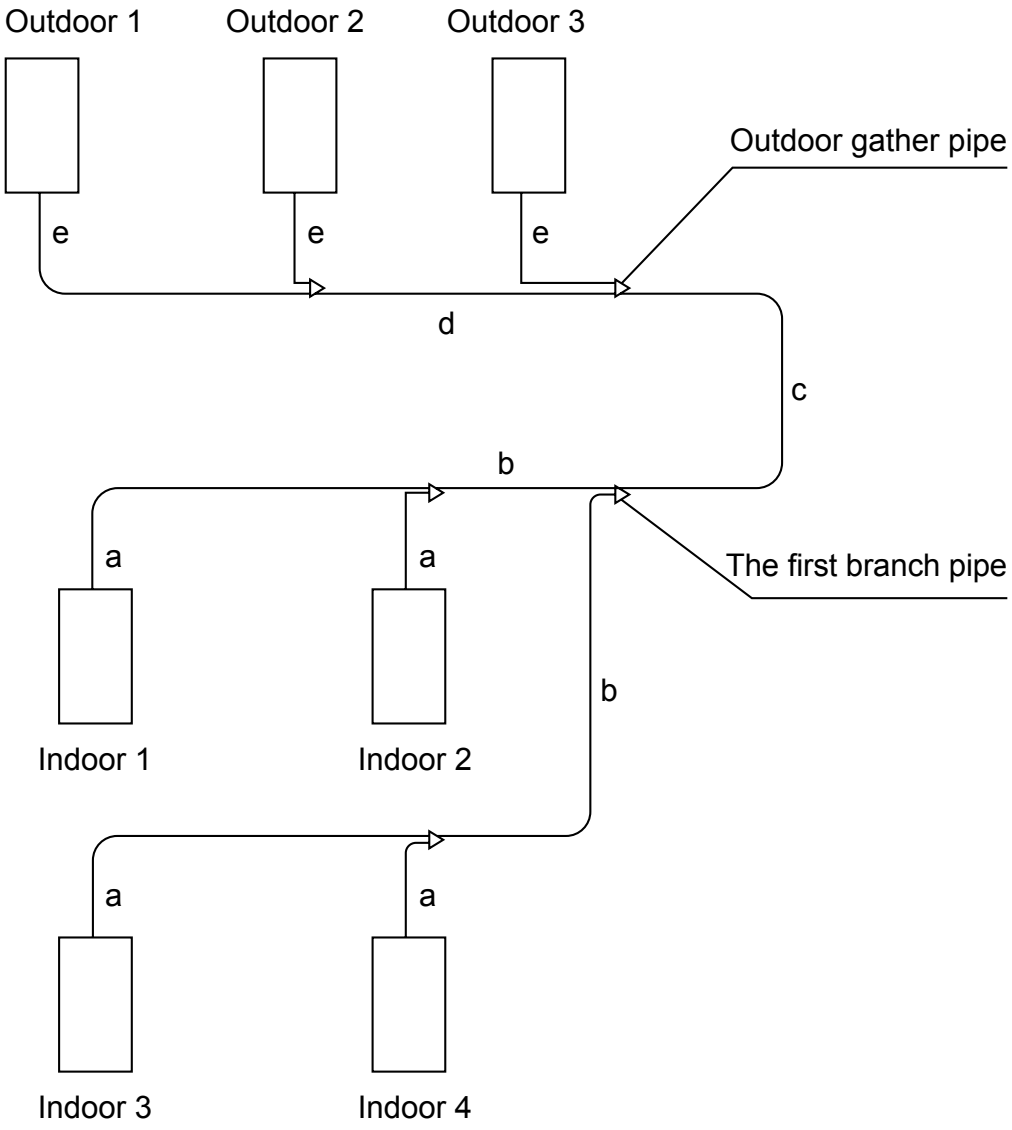


Item / Model		Length	Pipe in above figure
Single way total pipe length (=total liquid pipe length)		1000m	L1+L2+ L3+ L4+ L5+ L6+ L7+L8+ L9+ L10+L11+ L12+ L13+ L14+ L15
Single way max. pipe length (max. length between outdoor & indoor) actual / equivalent length		165m / 190m	L1+ L3+ L5+ L7+ L14+ L13
Main pipe actual length (length between first gather pipe & first branch pipe)		130m	L5
Pipe length among outdoor units (length between first gather pipe & farthest outdoor unit)		Max. 10m	L1+L3
Height difference between indoor and outdoor	Outdoor is upper	Max. 50m	L16
	Outdoor is lower	Max. 40m	L16
Height difference between outdoors (in the same system)		Max. 5m (better be horizontal)	L17
Pipe length after first branch pipe (length between first branch & farthest indoor)		Max. 90m	L7+L13+L14
Height difference between indoors		Max. 18m	L18

(2) Selection of pipe materials

- Interior and exterior surfaces of pipe should be clean and free of harmful sulfide, oxide, dust, grease residue and moisture (pollutant).
- Please select refrigerant pipe made of the equivalent materials as below.
- Materials: phosphorous deoxidized seamless copper pipe (C1220T-O, 1/2H, JIS H3300) C1220T-1/2H in case outer diameter is above Ø19.05 while C1220T-O in case outer diameter is below Ø15.88.
- Avoid bending the pipes of Ø28.58 × t1.0, Ø31.8 × t1.1, Ø34.92 × t1.2 and Ø38.1 × t1.35 when using them.
- Thickness and specification: select them in accordance with the essentials for selection of pipe specifications. (R410A is adopted for the unit and if 0 material is used for the pipe above ø19.05, pressure resistance will be insufficient, so the pipe must be made of 1/2H material and be above the minimum thickness.)
- Branch and gathering pipe of the company must be used as pipe manifold.
- Refer to the operation methods for operating valve when installing it.
- When installing pipes, make sure to follow the restrictions on the maximum length, total pipe length, allowable length of pipe to the first branch pipe, allowable height difference (level difference), etc. in (1).
- When installing the branch pipe, pay attention to the installation direction and install it after reading the installation manual carefully.

(3) Selection of pipe diameter



1. Pipe a (indoor-branch pipe) diameter: decided by connected indoor capacity					
Indoor rated capacity (x100w)	Gas pipe	Connecting method	Liquid pipe	Connecting method	Note
22~28	9.52	Flared	6.35	Flared	AS07/092MGERA gas pipe should be 12.7 AS182MGERA gas / liquid pipe should be 15.88 / 9.52
36~56	12.7		6.35		
71~140	15.88		9.52		
226~300	25.4	Braze	9.52		
450~600	28.58		12.7		
(1) When pipe length between indoor & nearest branch pipe ≥15m, adjust in accordance with following criteria: ① If indoor rated capacity≤5.6kW, change gas / liquid pipe diameter to 15.88 / 9.52 ② If 16.8kW≥ indoor rated capacity>5.6kW, change gas / liquid pipe diameter to 19.05 / 9.52 ③ If indoor rated capacity>16.8kW, change liquid pipe diameter to 12.7 (2) When pipe length between first branch pipe & farthest indoor is over 40m, pipe b (between first branch pipe & farthest indoor) should be enlarged one size.					

2. Pipe b (between branch pipes) diameter:

Total capacity of connected indoors	Gas pipe	Liquid pipe
x<16.8kw	15.88	9.52
16.8kw≤x<22.4kw	19.05	9.52
22.4kw≤x<33kw	22.22	9.52
33kw≤x<47kw	28.58	12.7
47kw≤x<71kw	28.58	15.88
71kw≤x<104kw	31.8	19.05
104kw≤x<154kw	38.1	19.05
154kw≤x<182kw	41.3	19.05
x≥182kw	44.5	22.22

(1) Select in accordance with total capacity connected
(2) Pipe b diameter should not be bigger than main pipe c
If pipe b diameter is larger than main pipe c, please correct diameter according to either of the following rules:
① Reduce b diameter to be the same as pipe c
② Enlarge main pipe c diameter to be the same as pipe b.
(3) If pipe b diameter smaller than pipe a, the pipe b diameter must be enlarged.

3. Main pipe c (between outdoor gather pipe & the first branch pipe) diameter:

Outdoor horse power	Main pipe		Enlarged main pipe	
	Gas pipe	Liquid pipe	Gas pipe	Liquid pipe
8HP	19.05	9.52	22.22	12.7
10HP	22.22	9.52	25.4	12.7
12-14HP	25.4	12.7	28.58	15.88
16HP	28.58	12.7	31.8	15.88
18-24HP	28.58	15.88	31.8	19.05
26-34HP	31.8	19.05	38.1	22.22
36-54HP	38.1	19.05	38.1	22.22
56-64HP	41.3	19.05	41.3	22.22
66-72HP	44.5	22.22	44.5	22.22

When the farthest length (between outdoor & the farthest indoor) is over 90m (equivalent length), the main pipe must be enlarged one size.

4. Pipe d (between gather pipes) diameter:

Total horse power of connected outdoors	Gas pipe	Liquid pipe
8HP	19.05	9.52
10HP	22.22	9.52
12-14HP	25.4	12.7
16HP	28.58	12.7
18-24HP	28.58	15.88
26-34HP	31.8	19.05
36-54HP	38.1	19.05
56-64HP	41.3	19.05
66-72HP	44.5	22.22

5. Pipe e (between outdoor & gather pipe) diameter:

Outdoor horse power	Gas pipe	Liquid pipe
8HP	19.05	9.52
10HP	22.22	9.52
12-14HP	25.4	12.7
16HP	28.58	12.7
18-24HP	28.58	15.88

(4) Setting of outdoor gathering pipe

Gathering pipe must be configured for outdoor combined units. (Not required in case of single unit)

Outdoor unit HP	Gathering pipe model	Remarks
26~48 HP (2 sets)	TBS20	2 corresponding modules
50~72 HP (3 sets)	TBS30	3 corresponding modules

Warning:

(A) Please ensure that connecting pipe of outdoor unit conforms to corresponding specifications.

(B) Please ensure that the pipe (main pipe) connected with indoor unit conforms to the specifications of main pipe marked in the next item.

(C) Make sure to install gathering pipe (gas and liquid sides) in a strictly horizontal or vertical direction.

(5) Selection of indoor branch pipe

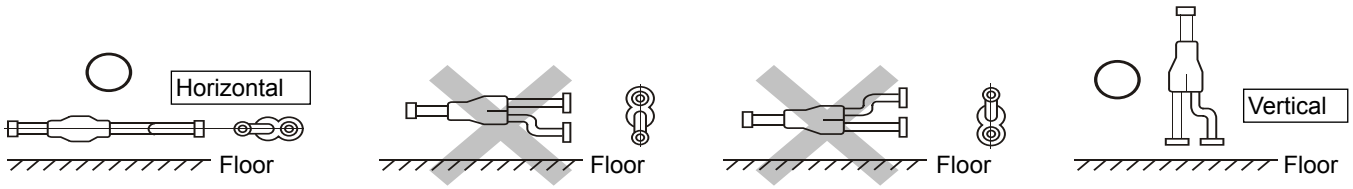
Selection method of branch pipe

- Branch pipe sizes vary due to different connection capacities (total downstream capacities) of indoor units, therefore, please select proper size for branch pipe.

Total capacity of indoor unit manifolds (100 W)	Model
Below 335	TAU335
Above 335 and below 506	TAU506
Above 506 and below 730	TAU730
Above 730 and below 1360	TAU1350
Above 1360	TAU2040

Warning:

- For the size of indoor unit and indoor branch pipe, please match the size of connecting pipe for indoor unit.
- Make sure to install branch pipes (gas and liquid sides) in a strictly horizontal or vertical direction.

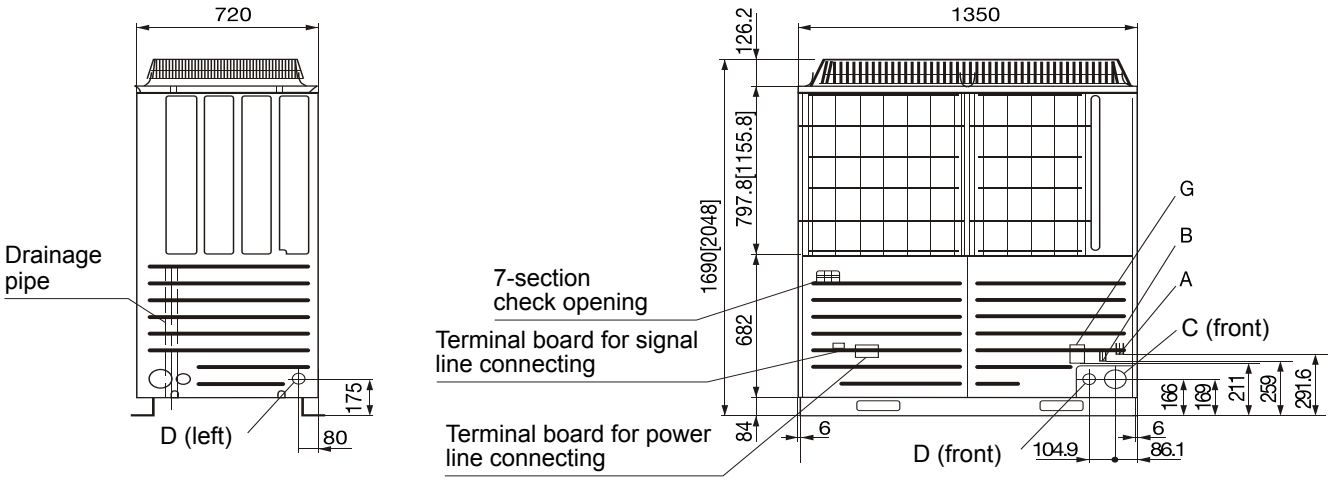


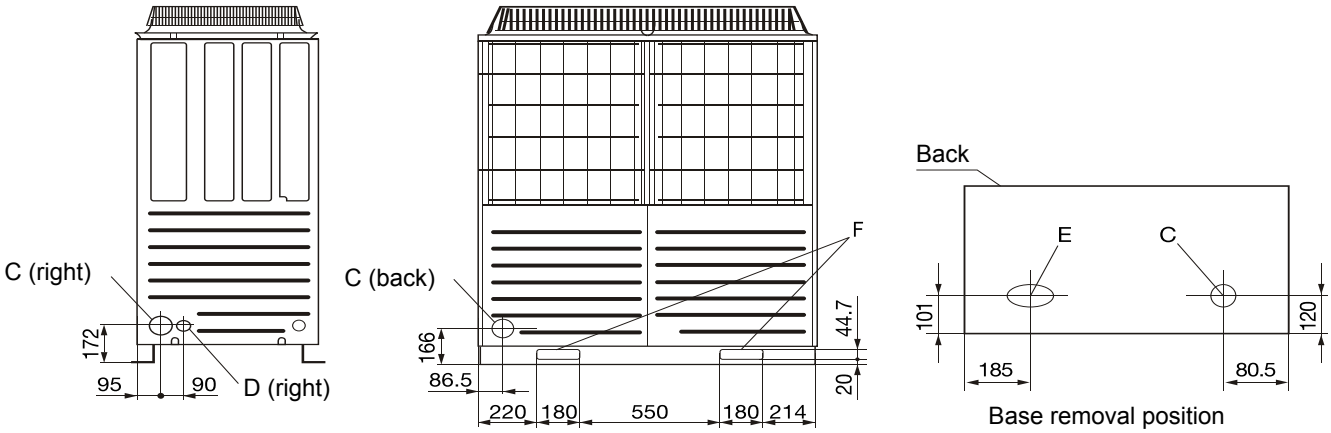
2. Pipe connecting position and removal direction

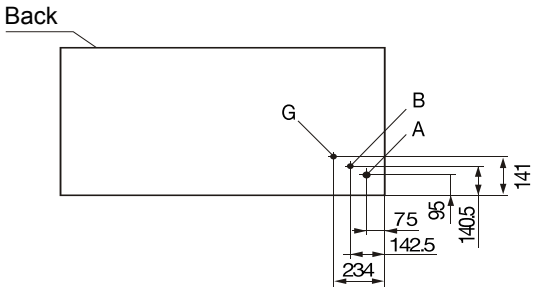
(1) Pipe connecting position and removal direction

The figure shows units with capacity below 16HP. Units with capacity above 18HP share the same pipe connecting position and removal direction only except for height.
Size in [ ] is for units with capacity above 18HP.

Unit below: mm





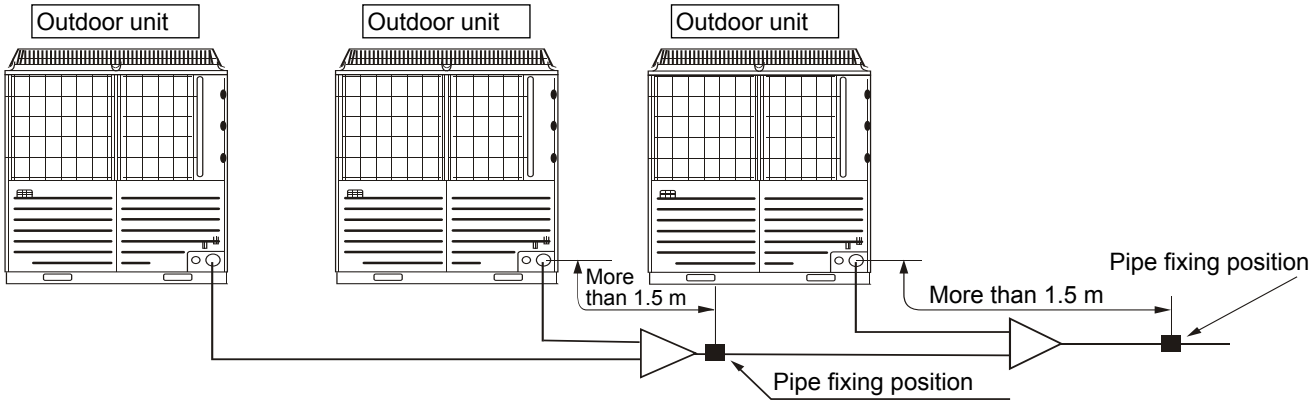


Connector size of refrigerant pipe (plane graph)

Marks
A: Refrigerant pipe connector at gas side
B: Refrigerant pipe connector at liquid side
C: Refrigerant pipe outlet (Ø88 or Ø100)
D: Power line outlet (Ø50)
E: Power line removal opening (slot hole 40 × 80)
F: Hole for handling and hoisting
G: Balancing oil pipe connector

Balancing oil pipe of connect G is only for outdoor combined units.
(Not required in case of single unit.)

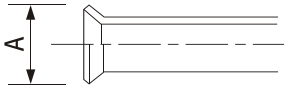
- As shown in the figure above, the pipe can be removed from the front, the right, the bottom and the back.
- When connecting pipes on site, use a wrench to sever the semi-finished through hole on the outer plate (ø88mm or ø100mm).
- Please use a stopper (provided on site) to plug the pipe outlet in order to prevent entry of small animals, etc.
- Please connect pipe and operating valve with corner joints (provided on site).
- As shown in the figure below, when fixing pipe on site, please set pipe fixing position more than 1.5 m distant from outdoor unit. (Otherwise, pipe may be broken sometimes due to various anti-vibration methods).



(2) Pipe Construction

Important notes

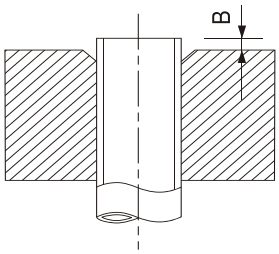
- Prevent collision between pipe under construction and components inside unit.
- When conducting pipe construction on site, please turn off operating valve completely.
- It is necessary to protect pipe ends (by welding them after squashing or by wrapping them tightly with tape), to prevent entry of moisture and foreign substances.
- Try to bend pipe around a large radius (more than four times the pipe diameter). Do not repeat bending.
- Use bell mouth to connect outdoor unit liquid pipe and liquid refrigerant pipe. Please install flared nut on the pipe to conduct flaring. The flaring method for R410A differs from the previous one for R407C. Flaring tool for R410A is appropriative, but the previous tools will be still available if copper pipe gauge for adjustment of exposed length is used to adjust exposed length B.
- Ester oil is proposed as flaring oil so as to adapt to unit type of R410A refrigerant.
- During connection for pipe flaring, please tighten the pipe with double wrenches. Refer to the following values for tightening torque of the flared nut.



Flared pipe head: A (mm)

Outer diameter of copper pipe	A $^{0}_{-0.4}$
Ø6.35	9.1
Ø9.52	13.2
Ø12.7	16.6
Ø15.88	19.7

Attention
Absent use of double wrenches for fastening may lead to deformation of operating valve, causing entry of nitrogen into outdoor unit.

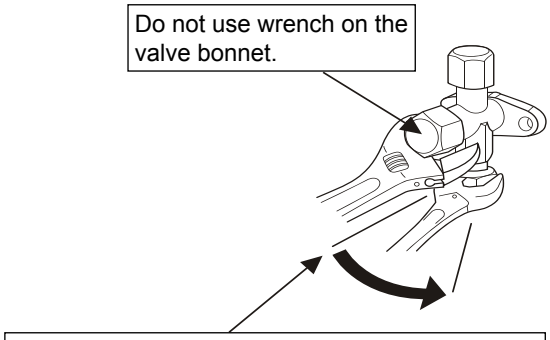


Exposed length of copper pipe when flaring pipe: B (mm)

Outer diameter of copper pipe	For rigid pipe (clutch-type)	
	When using the R410A special tool	When using the previous tool
Ø6.35	0-0.5	0.7-1.3
Ø9.52		
Ø12.7		
Ø15.88		

For operating valves at liquid and gas pipe sides, fix the main valve body and install as per a proper tightening torque as shown in the figure above.

Size of operating valve (mm)	Tightening torque (N·m)	Angle of tightening torque (°)	Suggested arm length of tool (mm)
Ø6.35 (1/4″)	14~18	45~60	150
Ø9.52 (3/8″)	34~42	30~45	200
Ø12.7 (1/2″)	49~61	30~45	250
Ø15.88 (5/8″)	68~82	15~20	300
Ø19.05 (3/4″)	100~120	15~20	450

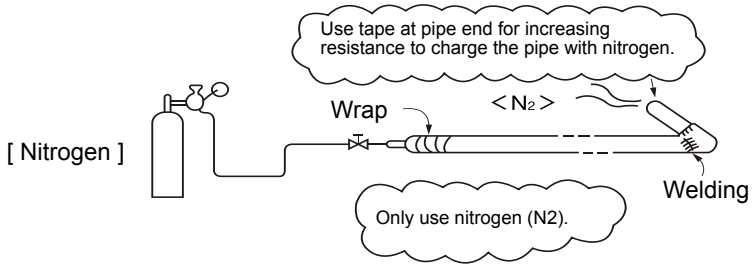


- When connecting flared pipe, don't apply oil on the flared part.
- Adopt brazing for connecting outdoor unit gas pipes with refrigerant pipes and refrigerant pipe with branch pipes.
- It is necessary to charge nitrogen while welding. Otherwise, a mass of foreign substance (oxidized film) will be generated to block capillary tube and expansion valve, thus causing lethal fault.
- While welding operating valve with pipe, cool down the valve body with wet towel at the same time.
- Please rinse pipe. During rinsing, charge nitrogen into the pipe with the pressure around 0.02 MPa while blocking the pipe ends with hand until pressure rises inside the pipe. (At the same time, plug other pipe ends.)

Operating sequence

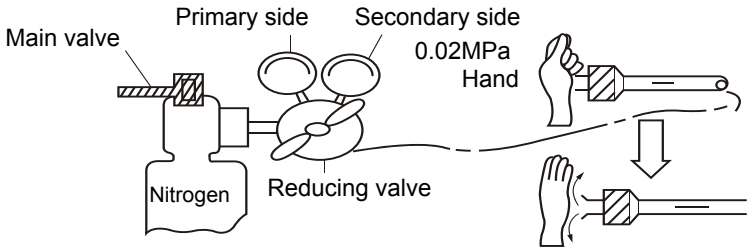
① Under pipe construction on site, turn off the operating valve completely.

② It is necessary to fill nitrogen while welding. Otherwise, a mass of foreign substance (oxidized film) will be generated to block capillary tube and expansion valve, thus causing lethal fault.



③ It is necessary to protect pipe ends (by welding them after squashing or wrapping them tightly with tape), to prevent entry of moisture and foreign substances.

④ Please rinse pipe. During rinsing, charge nitrogen into the pipe with pressure around 0.02 MPa while blocking the pipe ends with hand until pressure rises inside the pipe. (At the same time, plug other pipe ends.)



⑤ When welding operating valve with pipe, cool down the valve body with wet towel at the same time.

3. Airtight test and vacuum suction

(1) Airtight test

① The Company has completed airtight test of outdoor unit. After pipes are connected, airtight test on connecting pipe and indoor unit will be conducted through the check interface of the outdoor operating valve. Besides, it is necessary to turn off the operating valve during the airtight test.

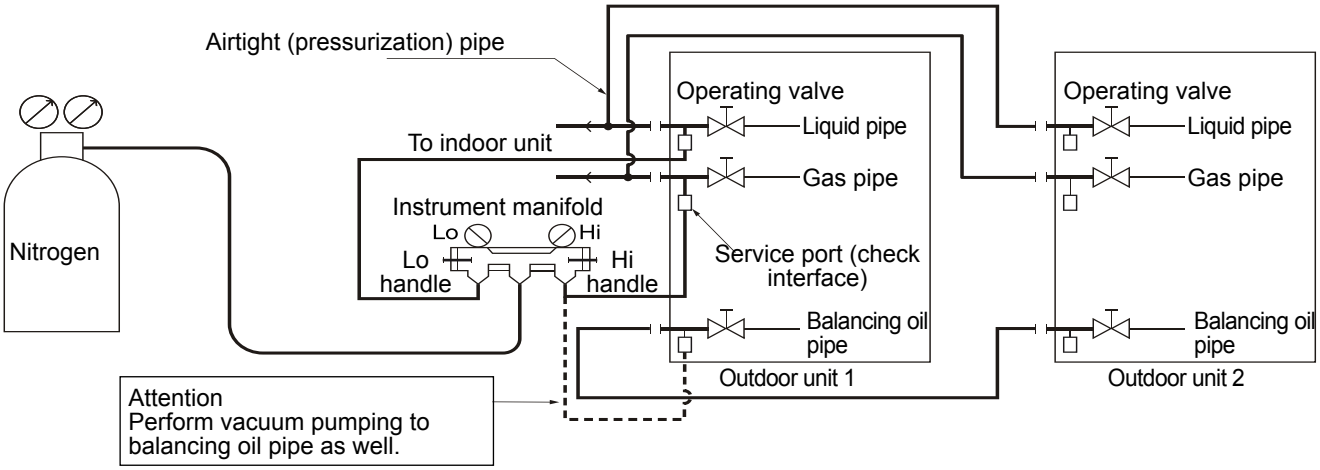
② To conduct airtight test by pressurizing the refrigerant pipe to design pressure of the product via nitrogen, use connecting devices shown as below. Never use chlorine refrigerant, oxygen or any inflammable gas as pressurizing gas.
Never open the closed operating valve.
Pressurize all liquid, gas and balancing oil pipes.

③ Instead of pressurization once for all, perform it slowly to the specified pressure.
(A) Raise pressure to 0.5 MPa and then stop pressurization, leave it alone for more than 5 minutes to confirm whether the pressure falls.
(B) Further raise the pressure to 1.5 MPa and then stop pressurization, leave it alone for more than 5 minutes to confirm whether the pressure falls.
(C) Raise the pressure to the designated value (4.15 MPa) and record the ambient temperature and pressure.
(D) Leave it alone at the designated value for more than 1 day, and if the pressure does not fall, air-tightness is qualified.
At this time, when ambient temperature changes by 1°C, the pressure will change by around 0.01 MPa as well. Therefore, rectification is required.

(E) Upon confirmation via the procedures from (A) to (D), if the pressure is low, the leakage exists.
Check welding part, flaring part, etc. with foam test solution, find out leakage and repair it. Test the air-tightness again after the repair.

Attention
Prevent excessive pressurizing, or nitrogen may access outdoor unit.

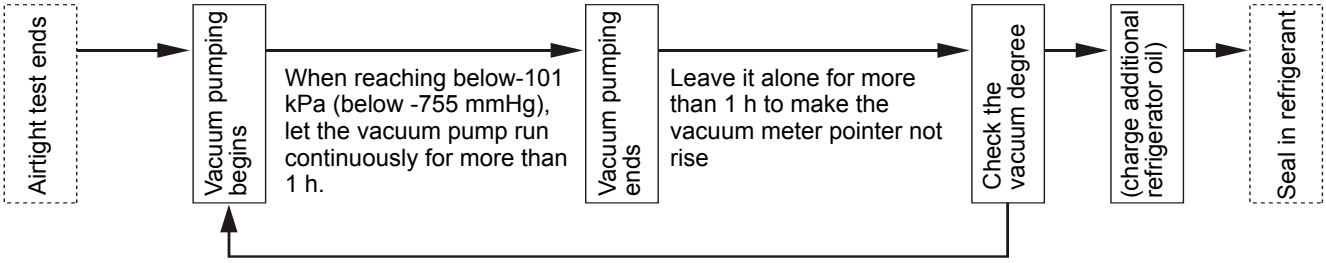
④ Make sure to conduct vacuum pumping after the airtight test.



(2) Vacuum pumping

Carry out vacuum pumping from the check interface of operating valve at liquid side and from both sides of operating valve at gas side.
Make sure to perform vacuum pumping for balancing oil pipe as well. (Use the check interface of balancing oil pipe's operating valve separately.)

<Workflow>



A rising vacuum meter pointer indicates there is residual moisture or water leakage inside the system.
Check and repair the leakage part before another vacuum pumping.

Attention
When vacuum degree is insufficient, blockage will result from inadequate capacity, residual moisture, etc., thus leading to compressor fault.

As R410A refrigerant is adopted for the unit, the following matters will be noted:

- Use special tools of different refrigerants to avoid mixture with different kinds of oil. Especially for instrument collector and filling hose, never share tools with other refrigerants (R22, R407C, etc.).
- Use anti-backflow adaptor to prevent air, compressor oil from mixing the cooling cycle.

(3) Charge additional refrigerant oil

When total pipe length is more than 510 m, shake the gas pipe after vacuum suction.
Charge additional 1000 cc FV50S refrigerant oil from the joint.

(4) Operating method of operating valve

Opening/closing method

- Remove the valve bonnet and turn the gas pipe side to "on".
- Rotate the liquid pipe side and the balancing oil pipe side with hexagon wrench (JISB4648) until the axle stops. Since opening the valve violently may damage it, it is necessary to use special tool.
- Fasten the valve bonnet.

Refer to the table below for tightening torque.

	Tightening torque N·m		
	Axle (valve body)	Bonnet (cover)	Cap nut (for check joint)
For gas pipe	Below 7	Below 30	13
For liquid gas	7.85 (MAX 15.7)	29.4 (MAX 39.2)	8.8 (MAX 14.7)
For balancing oil pipe	4.9 (MAX 11.8)	16.2 (MAX 24.5)	8.8 (MAX 14.7)

Refer to 2- (2) on-site pipe construction for tightening torque of tapered nut.

4. Seal in the charged additional refrigerant

Seal in the charged additional refrigerant in liquid state.
Make sure to use gauge for refrigerant sealing-in.
If the refrigerant cannot be completely sealed in when outdoor units are out of service, sealing in on test run mode will be conducted. (Refer to item for test run method.)
Insufficient refrigerant and long-term running will lead to compressor fault. (Especially when unit running and refrigerant sealing-in are simultaneous, they must be completed within 30 minutes.)
Determine sealing-in quantity of the additional refrigerant as per the calculation method below and record the additional quantity of charged refrigerant on the refrigerant quantity recording board on the back of front panel.

The unit is charged only part of the refrigerant at the factory, also need additional refrigerant at the installation site.
W1: Refrigerant charging volume to outdoor unit at factory.
W2: Refrigerant charging volume to outdoor unit on site.
W3: Refrigerant charging volume to liquid pipe base on different piping length calculation.
W3=actual length of liquid pipe×additional amount per meter liquid pipe=
L1×0.35+L2×0.25+L3×0.17+L4×0.11+L5×0.054+L6×0.022

L1: Total length of Ø25.4mm liquid pipe (m);
L2: Total length of Ø22.22mm liquid pipe (m);
L3: Total length of Ø19.05mm liquid pipe (m);
L4: Total length of Ø15.88mm liquid pipe (m);
L5: Total length of Ø12.7mm liquid pipe (m);
L6: Total length of Ø9.52mm liquid pipe (m);
Total refrigerant volume charging on site during installation=W2+W3
W: Total refrigerant volume charging on site for maintenance.

<table>
<tr><th colspan="7">Refrigerant record form</th></tr>
<tr><th rowspan="2">Model</th><th rowspan="2">W1: Refrigerant charging volume to outdoor unit at factory</th><th rowspan="2">W2: Refrigerant charging volume to outdoor unit on site</th><th colspan="2">W3: Refrigerant charging volume to liquid pipe base on different piping length calculation</th><th rowspan="2">Total refrigerant volume charging on site during installation</th><th rowspan="2">W: Total refrigerant volume charging on site for maintenance</th></tr>
<tr><th>Liquid pipe diameter (mm)</th><th>Additional refrigerant amount (kg)</th></tr>
<tr><td>AWAU-YDV250-H13</td><td>9.7kg</td><td>0kg</td><td>Ø9.52</td><td>0.054kg/m×__m=__kg</td><td rowspan="9">W2+W3=___kg</td><td rowspan="9">W1+W2+W3=___kg</td></tr>
<tr><td>AWAU-YDV280-H13</td><td>9.7kg</td><td>0kg</td><td>Ø12.7</td><td>0.11kg/m×__m=__kg</td></tr>
<tr><td>AWAU-YDV335-H13 (DROP ONLY)</td><td>9.7kg</td><td>0kg</td><td>Ø15.88</td><td>0.17kg/m×__m=__kg</td></tr>
<tr><td>AWAU-YDV400-H13</td><td>10kg</td><td>1kg</td><td>Ø19.05</td><td>0.25kg/m×__m=__kg</td></tr>
<tr><td>AWAU-YDV450-H13</td><td>10kg</td><td>3kg</td><td>Ø22.22</td><td>0.35kg/m×__m=__kg</td></tr>
<tr><td>AWAU-YDV504-H13</td><td>10kg</td><td>7.5kg</td><td>Ø25.4</td><td>0.45kg/m×__m=__kg</td></tr>
<tr><td>AWAU-YDV560-H13</td><td>10kg</td><td>7.5kg</td><td colspan="2" rowspan="3">W3=___kg</td></tr>
<tr><td>AWAU-YDV615-H13 (DROP ONLY)</td><td>10kg</td><td>10kg</td></tr>
<tr><td>AWAU-YDV680-H13</td><td>10kg</td><td>10kg</td></tr>
</table>

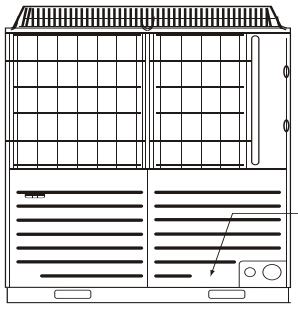
Important notes
Separate the refrigerant system when exceeding values in the table below in terms of filling quantity of refrigerant pipe.

Outdoor unit	Additional sealing-in quantity (kg)
8P~24P	50
26P~48P	100
50P~72P	150

As R410A refrigerant is adopted for the unit, the following matters will be noted:

- Use special tools of different refrigerants to avoid mixture with different kinds of oil. Especially for instrument collector and filling hose, never share tools with other refrigerants (R22, R407C, etc.).
- Mark different colors on refrigerant tanks to indicate the refrigerant types (pink for R410A) and ensure there is no error.
- Never use charging cylinder. Refrigerant composition may be changed when R410A is transferred to the cylinder.
- When charging the refrigerant, make sure to take it out of refrigerant tank in liquid form.

Warning:
Record the refrigerant quantity calculated as per the pipe length on the refrigerant quantity recording board on the back of front panel.



5. Heat insulation and dew prevention

① Carry out dewing prevention and heat insulation on refrigerant pipe (all gas, liquid and balancing oil pipes). Improper measures for dewing prevention and heat insulation will cause water leakage, dewing and moistening other indoor articles.

② Use heat insulation materials with heat resistance above 120°C. The low heat resistance will cause poor heat insulation and wire deterioration.

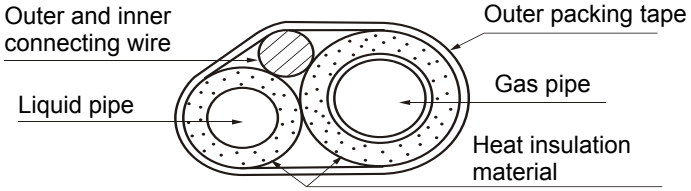
(A) During refrigerating, make sure to prevent condensed water on the pipe from accumulating and further inducing water leakage. And in the process of heating, the pipe's surface temperature increases due to flowing of exhaust gas, the person may get burned when touching it. Therefore, it is necessary to carry out heat insulation.

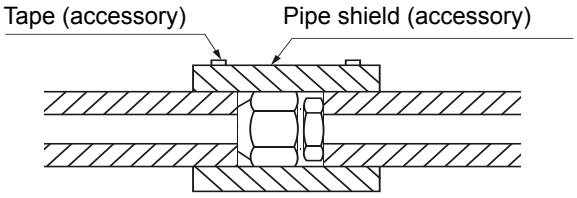
(B) Conduct heat insulation with heat insulation material (pipe casing) to the flaring joint of indoor units. (Conduct heat insulation to both gas and liquid pipes.)

(C) Carry out heat insulation to gas side and liquid side at the same time. In order to fit pipe closely with heat insulation material, wrap it up with outer packaging tape along with connecting wire.

(D) The air conditioner has been tested and proved to be a qualified product in dewing condition as regulated in JIS. However, dripping may occur in the environment of high humidity (with dew point temperature above 23°C). In this case, additional 10-20 mm heat insulation material will be applied on indoor main units, the pipe and drainage pipe.

(E) In case of ambient dew point temperature above 28°C or relative humidity above 80%, apply additional 10~20 mm heat insulation material.





9.6 Discharge pipe works

● For the parts with drainage problems in outdoor units, please use separately sold discharge pipe and metal ring in discharge pipe construction.

Electrical wiring should be conducted by construction organization recognized by electric power company. Please conduct electrical construction according to Relevant Technological Fundamentals of Electrical Equipment and Local domestic law.

⚠ To prevent electric shock and fire accident, please set leakage protector.
(The unit is equipped with frequency converter, therefore, to prevent misoperation of leakage protector, please adopt non-operational shock wave type of leakage protector)

Warning:

(A) Don't use wires other than copper ones.
Besides, don't use power wires with grade lower than the following ones.
- Rubber insulated shielded wire with standard toughness (wire name: 60245 IEC 53)
- Standard PVC insulated shielded wire (wire name: 60227 IEC 53)
- Don't use wires with weather fastness lower than that of the flexible neoprene shielded wire (design 245 IEC 57) as power wire for outdoor unit parts.

(B) Indoor and outdoor units should be respectively set with their own independent power supply.

(C) Power supply for all the indoor units in a system should be ensured to be simultaneously connected and disconnected.

(D) The units should be grounded. While the ground wire should not be connected to that of gas pipe, water pipe, lightning rod, or telephone lines. Any improper grounding may lead to electric shock or fire.

(E) Non-operational shock wave type of leakage protector must be installed. Otherwise, it may cause electric shock and fire accidents. Power supply should not be connected before installation, and maintenance should be conducted after the power supply is disconnected.
Besides, if ground wire is connected with gas pipe, explosion and fire may happen when the gas leaks.

(F) Never install phase capacitor for power factor improvement. (It cannot improve the power factor and may cause abnormal overheating accident.)

(G) Please use wire tube for power supply wiring.

(H) In case of wiring outside the unit, please do not put wire of low current (remote controller and signal wire) and that of other heavy currents through the same place. Otherwise the effect of electrical noise may lead to misoperation.

(I) Power supply wire and signal wire must be connected to power supply wiring board. Please fix them with wiring fixing clamp inside the unit.

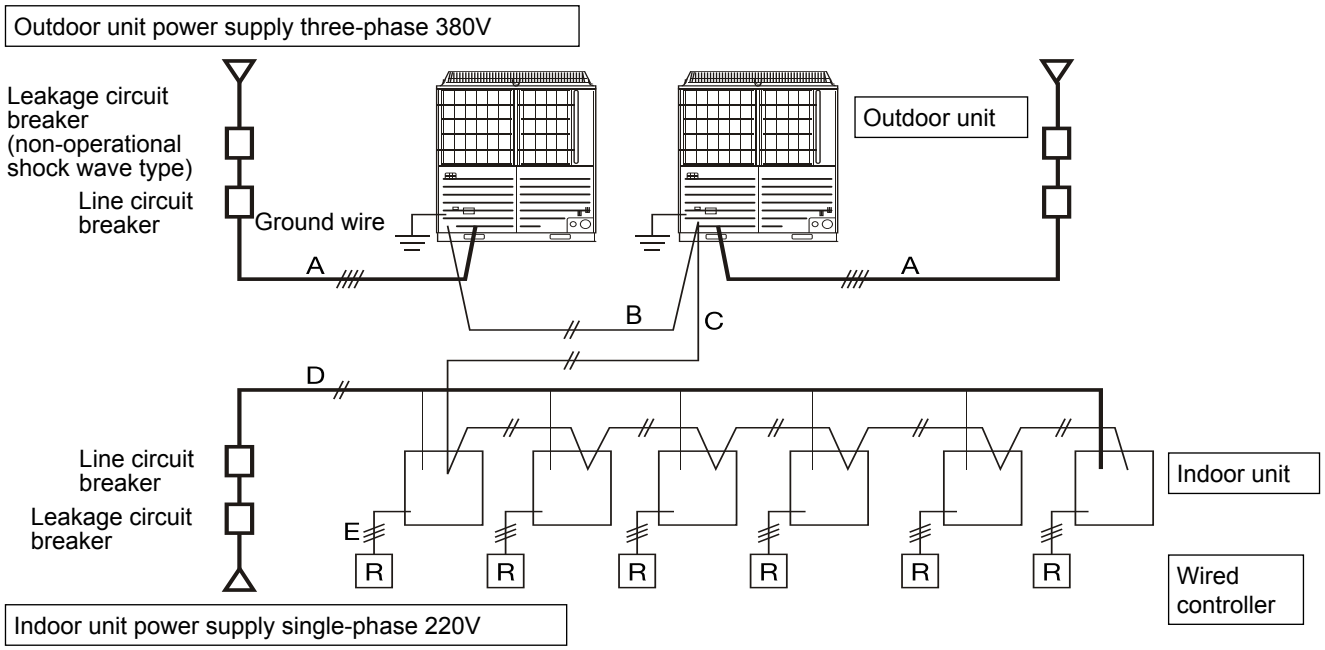
(J) Prevent the wire touching the pipe during fixing.

(K) After connection of wires, please make sure the connector or terminal of electrical components in the instrument box do not fall off and then install the box cover firmly. (If immerged in water due to improper installation, it may cause misoperation and fault.)

(L) Please use circuit breaker with correct capacity (leakage circuit breaker and line circuit breaker). If you use circuit breaker with a large capacity, fault, fire, etc. may be induced.

1. Wiring system diagram

(Combined unit)



A: Power supply wire (main power supply wire) [4-core]
B: Signal wire (outdoor-outdoor Signal wire) [3-core]
C: Signal wire (hyper connected wire) [2-core]
D: Power supply wire (indoor power supply wire) [2-core]
E: Wired controller wire [3-core]

Note: In case leakage protector is exclusive for ground protection, another protector shall be set for wiring.

2. Essentials in power supply wire connection

(1) Wire removal method

- As shown in Figure 2-(1) in Page 16, the wire can be removed from the front, the right, the left and the bottom.
- When connecting the wire on site, please cut off the semi-finished through hole on the outer plate by a wrench (hole of Ø50mm or slot hole of 40mm×80mm dimension)

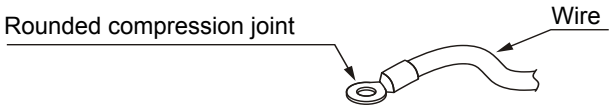
(2) Attentions during connection of power supply wires

Power supply wires should be connected to power supply wiring board and fixed outside electrical box.
When connecting to power supply wiring board, please use rounded compression joint.

- Ground wires should be connected before connection of power supply wire. Besides, when connected to the terminal board, the ground wire should be longer than the power supply wire and be free from bearing tension.
- Never connect power supply before completion of the works. Conduct maintenance after cutting off the power supply.

- Ground wires should be connected correctly (grounded).
- Power supply wire should be connected to power supply terminal board.
- When connected to the power supply terminal board, rounded compression terminal should be adopted.
- Particular wire should be used for connection in wiring. And external force should not be applied on the joint during fixing.
- Please use proper screwdriver to tighten screws on the binding post. Refer to the below table for tightening torque of relevant terminal.
  If the screws on binding post are tightened excessively, the screws may be broken.
- After completion of the power supply works, please make sure all the connectors and terminals of electrical components in the instrument box do not fall off.

Tightening torque (N m)		
M4	Terminal for signal wire	0.9~1.2
M5	Terminal and ground wire for power supply	2.00~2.35



(3) Specifications of outdoor unit power supply: three-phase power supply of 380V and 50/60Hz

Item / Model		Power supply	Minimum cross section area of power wire (mm^2)	Wiring length (m)	Circuit breaker (A)	Rated current of leakage circuit breaker (A) Leakage current (mA) Operation time (s)	Ground wire	
							Load area (mm^2)	Screw type
Independent power supply	AWAU-YDV250-H13	3PH, 380V, 50/60Hz	10	92	40	40A, 100mA, below 0.1s	5.5	M6
	AWAU-YDV280-H13		10	92	40	40A, 100mA, below 0.1s	5.5	M6
	AWAU-YDV335-H13 (DROP ONLY)		10	92	40	40A, 100mA, below 0.1s	5.5	M6
	AWAU-YDV400-H13		16	92	50	50A, 100mA, below 0.1s	5.5	M6
	AWAU-YDV450-H13		16	92	60	60A, 100mA, below 0.1s	5.5	M6
	AWAU-YDV504-H13		16	92	70	70A, 100mA, below 0.1s	5.5	M6
	AWAU-YDV560-H13		16	92	70	70A, 100mA, below 0.1s	5.5	M6
	AWAU-YDV615-H13 (DROP ONLY)		25	92	80	80A, 100mA, below 0.1s	5.5	M6
	AWAU-YDV680-H13		25	92	80	80A, 100mA, below 0.1s	5.5	M6

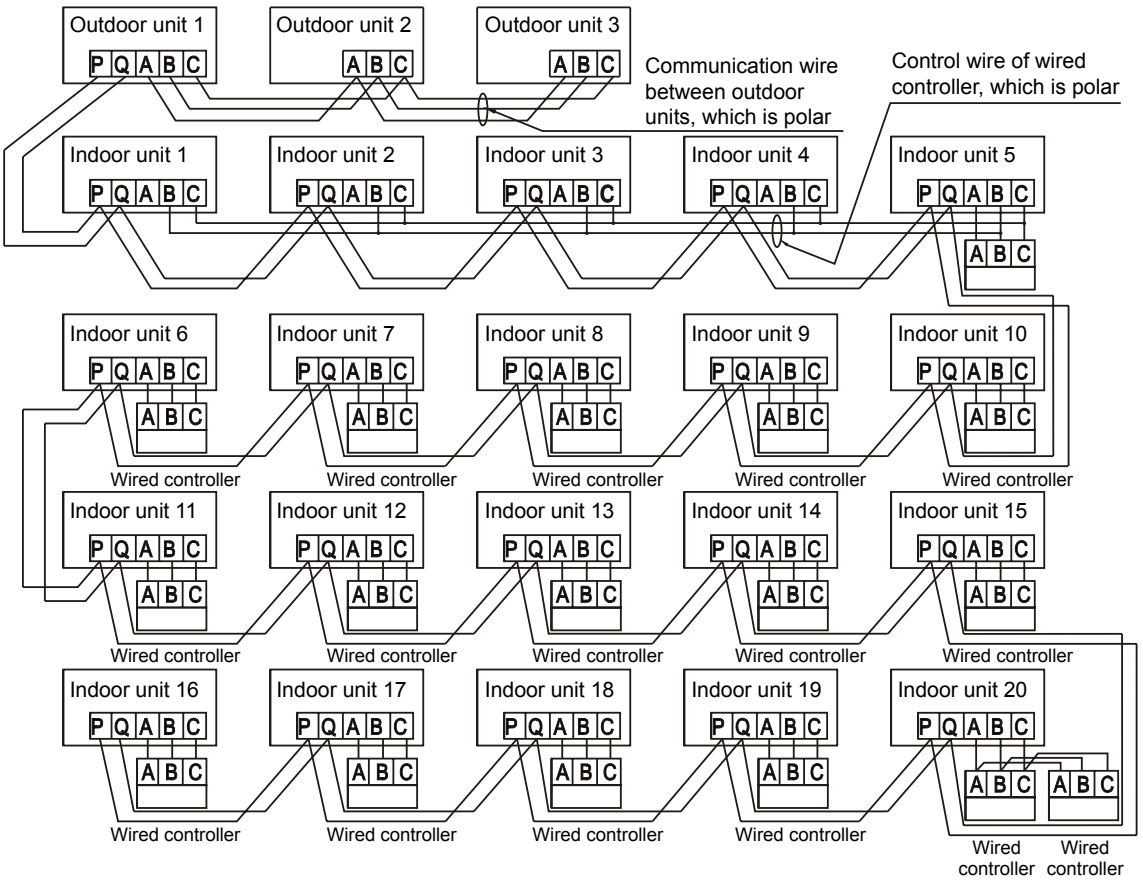
- Power wire of outdoor unit should be well fixed and connected by rounded compression joint. It is strictly prohibited to be connected to line bank.
- All the outdoor units should be grounded.
- Power wire should be thickened if its length is out of range.

(4) Specifications of indoor unit power supply: single-phase 220V and 50/60Hz

Item / Total current of indoor units (A)	Minimum cross section area of power wire (mm^2)	Wiring length (m)	Rated current of over-current circuit breaker (A)	Rated current of leakage circuit breaker (A) Leakage current (mA) Operation time (s)	Cross section area of signal wire	
					Outdoor-indoor (mm^2)	Indoor-indoor (mm^2)
<10	2	23	20	20A, 30 mA, below 0.1 s	2-core × 0.75-2.0 shielded wire	2-core × 0.75-2.0 shielded wire
≥10 and <15	3.5	24	30	30A, 30 mA, below 0.1 s		
≥15 and <22	5.5	27	40	40A, 30 mA, below 0.1 s		
≥22and <27	10	42	50	50A, 30 mA, below 0.1 s		

- Power wire and signal wire should be well fixed.
- All the indoor units should be grounded.
- Power wire should be thickened if its length is out of range.
- All the shielding layers of signal wire should be connected together with one end grounded.
- Total length of signal wire should not be more than 1000 m.

3. Essentials in signal wire connection



All the outdoor units should be directly connected in parallel by 3 polar wires, and the main unit and all the indoor units should be connected in parallel by 2 non-polar wires.
Note:
1) All the wires, parts and materials purchased on site should conform to the local laws and those of the host country.
2) Only copper conductor can be adopted.
3) Line circuit breaker should be installed for sake of safety.
4) All on-site wiring and devices should be in the charge of certified electricians.
5) Air conditioner should be grounded according to requirements of local laws and those of the host country.
6) The wiring diagram shows only general connection points, excluding installation details with special requirements.
7) All the equipment sets should be equipped with switch and fuse for power circuit installation.
8) Since the system consists of multipoint power supply connected equipment, power supply of all the equipment sets can be switched with centralized approach after installation of main switch.

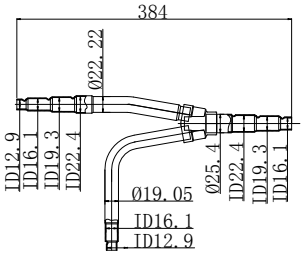
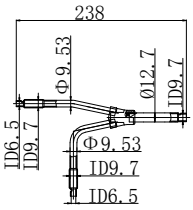
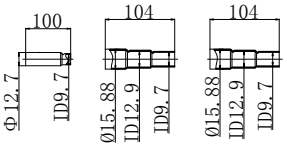
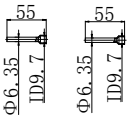
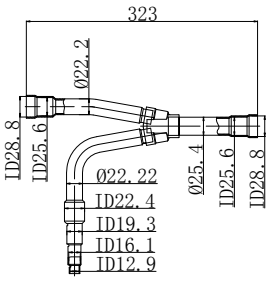
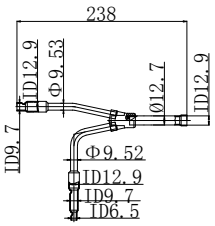
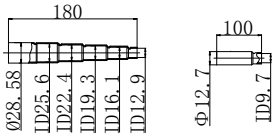
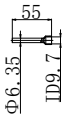
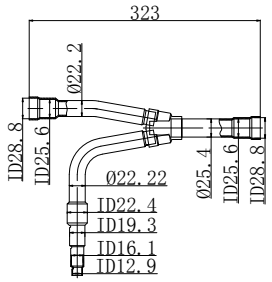
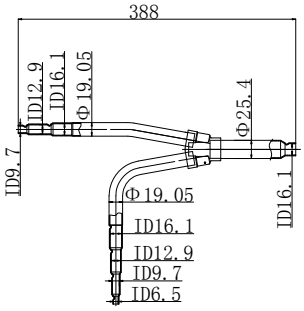
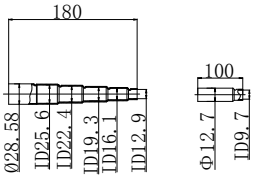
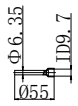
Wired controller signal wiring

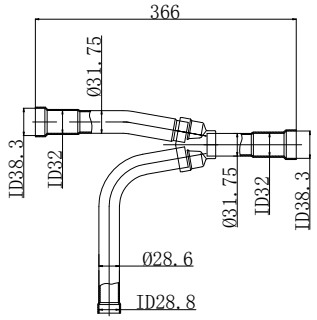
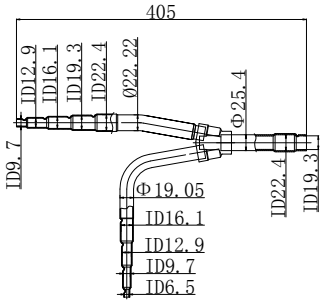
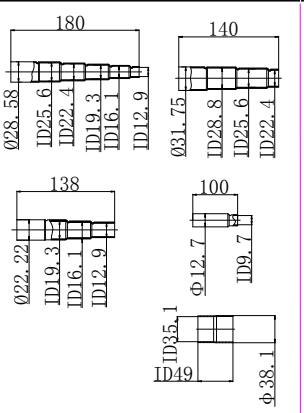
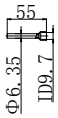
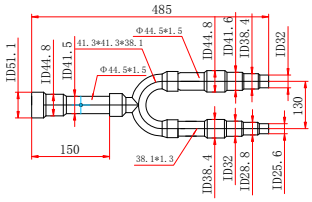
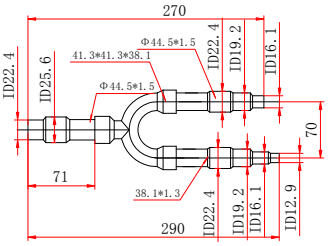
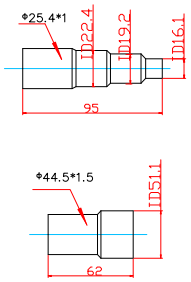
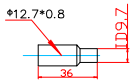
Length of signal wire (m)	Wiring size
<100	0.3 mm^2 × 3-core shielded wire
≥100 and <200	0.5 mm^2 × 3-core shielded wire
≥200 and <300	0.75 mm^2 × 3-core shielded wire
≥300 and <400	1.25 mm^2 × 3-core shielded wire
≥400 and <600	2 mm^2 × 3-core shielded wire

- Shielding layer of signal wire should be only one-end grounded.
- Total length of the signal wire should not be more than 600 m.

10. Branch pipe dimensions

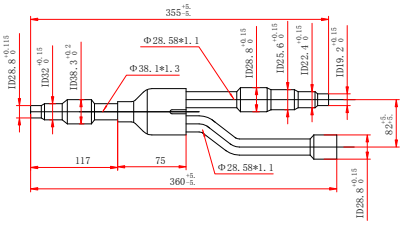
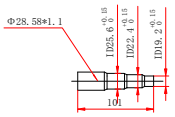
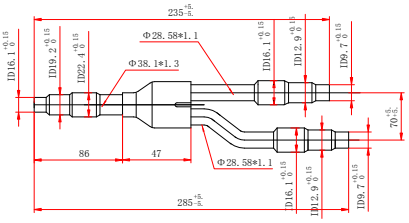
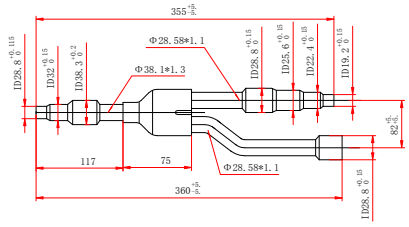
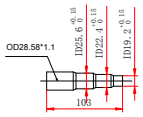
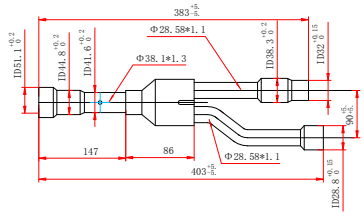
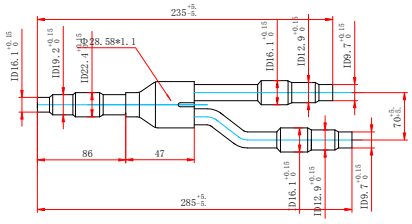
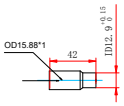
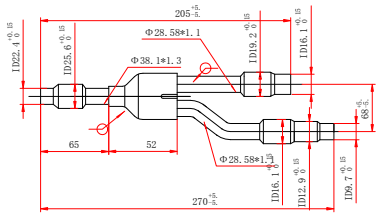
unit:mm ID: inner diameter OD: outer diameter

Model	Gas side branch pipe	Liquid side branch pipe	Gas side connection of branch pipe	Liquid side connection of branch pipe
TAU335				
TAU506				
TAU730				

Model	Gas side branch pipe	Liquid side branch pipe	Gas side connection of branch pipe	Liquid side connection of branch pipe
TAU1350				
TAU2040				

11. Gather pipe dimension

Gather pipe is used for combination of outdoor unit. TBS20 (for 2 basic modules); TBS30(for 3 basic modules). Unit: mm, ID: inner diameter; OD: outer diameter. Note: Cut off the pipe from its middle when using

Model	Side	Mark	Gather pipe	Connection of gather pipe
TBS20	Suction gas side	A		
	Liquid side	B		
TBS30	Suction gas side	C		 double
		D		
	Liquid side	E		 double
		F		

12. Trial operation

12.1 Confirmation by electrifying

Before the outdoor unit is powered on for the first time, the first and second bit (BM1-1, BM1-2) of dip switch code BM1 of the outdoor unit PCB board should be turned to OFF. Power supply for outdoor and indoor units should be checked according to the table below.

No.	Contents to be confirmed	Result
1	Whether there is power on interface board of the outdoor unit, whether the digital tube is displaying and whether the displayed data on dip switch panel and the tube are variable.	
2	For VRF outdoor unit, indoor unit number displayed on the digital tube is consistent with the actual number when dip switch panels SW9, SW10 and SW11 are turned to “0 3 2”, and dip switch code BM1-2 is turned from OFF to ON.	
3	For VRF outdoor unit system, outdoor unit number displayed on the digital tube is consistent with the actual number when dip switch panels SW9, SW10 and SW11 are turned to “0 2 2”, and dip switch code BM1-1 is turned from OFF to ON.	
4	For VRF outdoor unit system, the HP of outdoor unit sets displayed on the digital tube is consistent with the actual unit type when dip switch panels SW9, SW10 and SW11 are turned to “0 1 2” AWAU-YDV250-H13 shows “8.0” AWAU-YDV280-H13 shows “10.0” AWAU-YDV335-H13 (DROP ONLY) shows “12.0” AWAU-YDV400-H13 shows “14.0” AWAU-YDV450-H13 shows “16.0” AWAU-YDV504-H13 shows “18.0” AWAU-YDV560-H13 shows “20.0” AWAU-YDV615-H13 (DROP ONLY) shows “22.0” AWAU-YDV680-H13 shows “24.0”	
5	Check whether the parameters, such as parameters of outdoor unit sensors, number of indoors connected and the opening of electronic expansion valves, etc., are correct through dip switch on the outdoor unit interface board or by using testing equipment and computer software.	
6	Check whether the parameters, such as parameters of indoor unit sensors, the opening of electronic expansion valves, etc., are correct through dip switch on the outdoor unit interface board or by using testing equipment and computer software.	

Note: If the indoor unit cannot be searched or the number of the searched units isn't consistent with the actual number of indoor units in the system within four and a half minutes, it will be reported as communication fault 26-X.

12.2 Rated operation

Startup control on indoor and outdoor units and operation condition inspection for outdoor units can be completed through rated operation. In case of inspection on single indoor unit, wired controller or remote controller of indoor unit will be adopted for control.

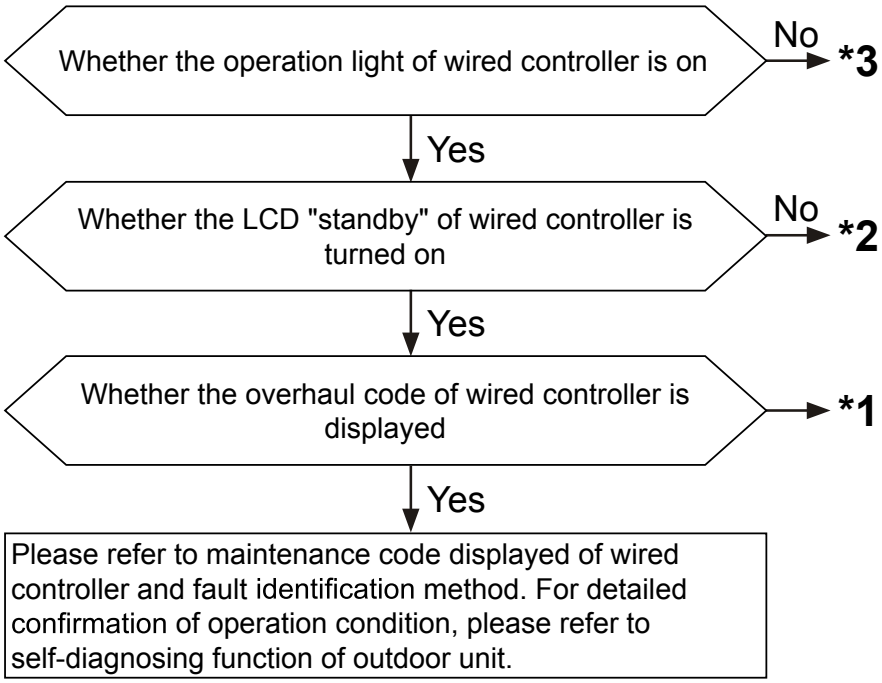
Rated cooling operation: when SW9, SW10 and SW11 dip switches are turned to 0, 13, 2, the indoor units will be started up automatically and be forced to turn to cooling operation.

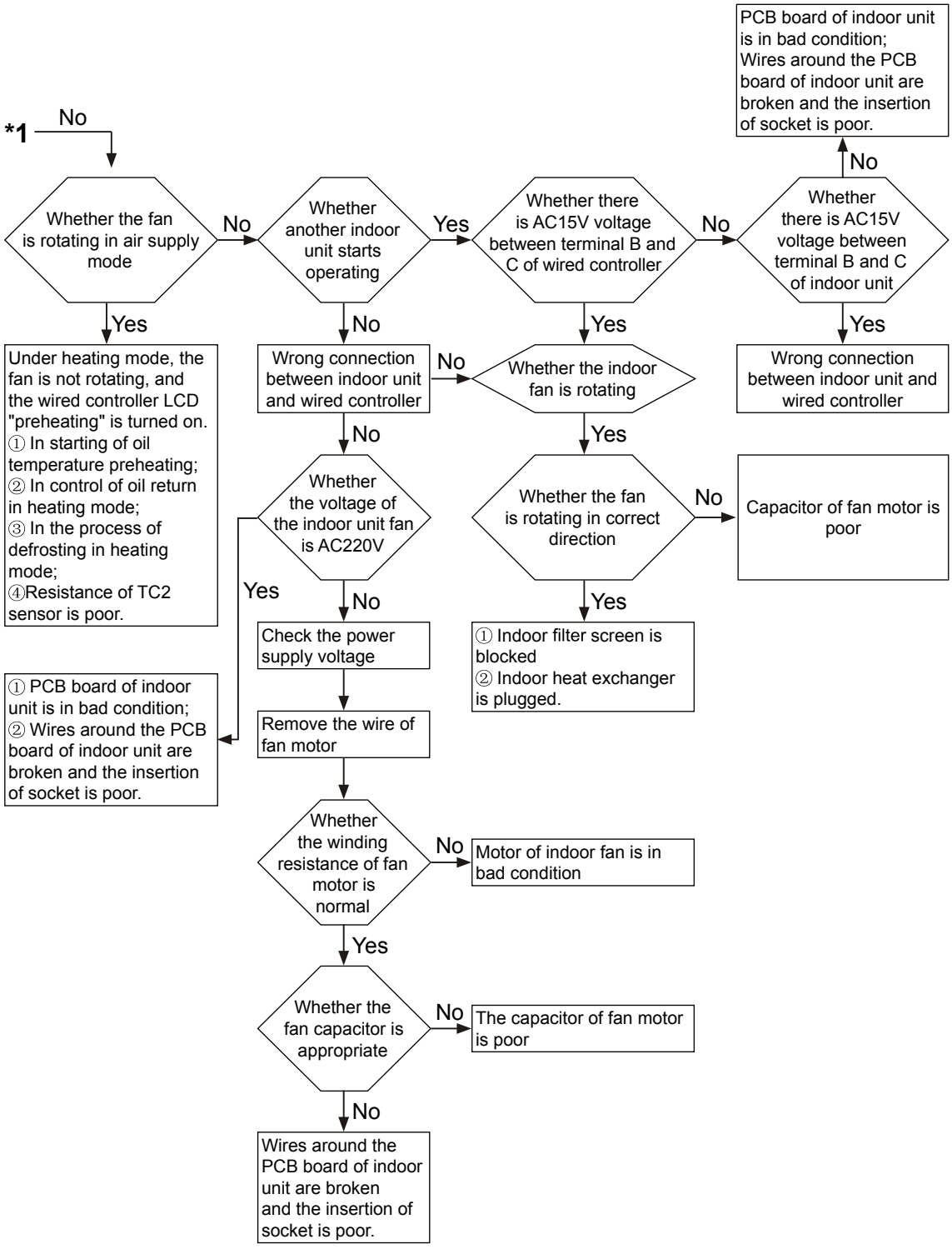
Rated heating operation: when SW9, SW10 and SW11 dip switches are turned to 0, 14, 2, the indoor units will be started up automatically and be forced to turn to heating operation.

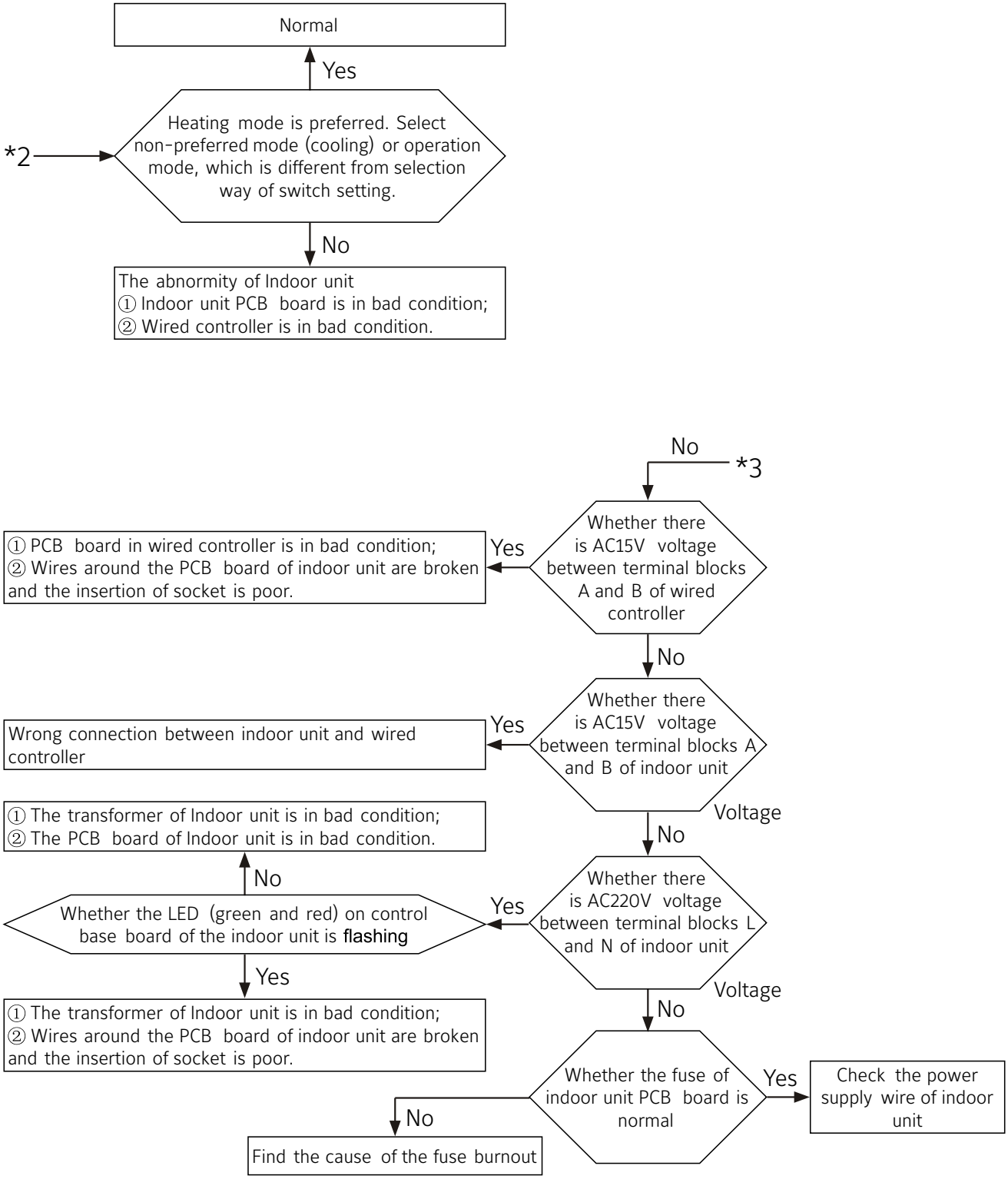
12.3 Trial operation confirmation

The test run confirmation, in principle, shows that all the indoor units should be confirmed one by one. The improper connection of refrigeration pipe and control wire cannot be confirmed when all the indoor units are running simultaneously. So all the other indoor units should be set in "stopped condition".

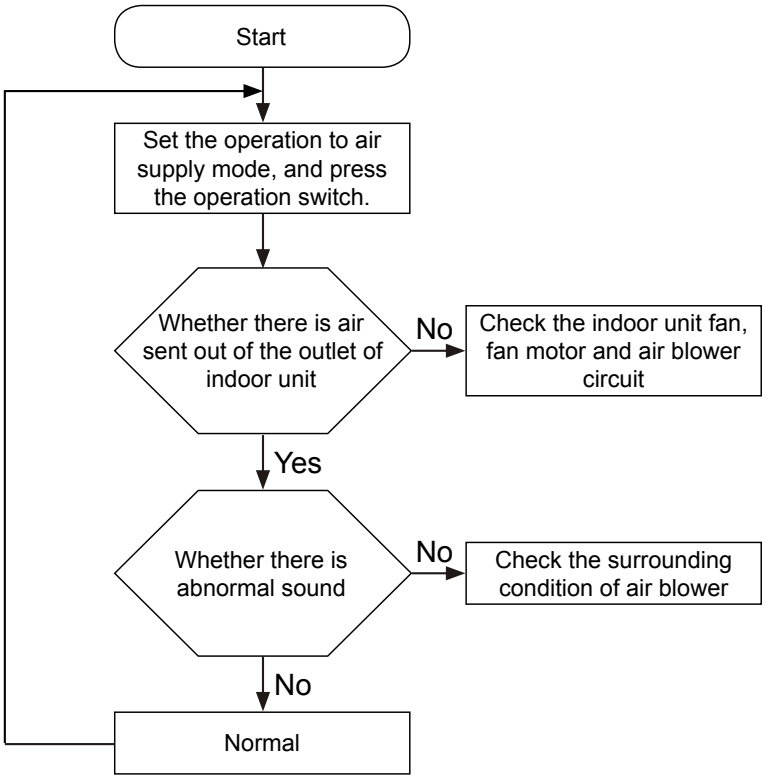
A. Main power supply and initial confirmation




*1
No
Whether the fan is rotating in air supply mode
No
Whether another indoor unit starts operating
Yes
Whether there is AC15V voltage between terminal B and C of wired controller
No
Whether there is AC15V voltage between terminal B and C of indoor unit
No
PCB board of indoor unit is in bad condition; Wires around the PCB board of indoor unit are broken and the insertion of socket is poor.
Yes
Under heating mode, the fan is not rotating, and the wired controller LCD "preheating" is turned on.
① In starting of oil temperature preheating;
② In control of oil return in heating mode;
③ In the process of defrosting in heating mode;
④Resistance of TC2 sensor is poor.
No
Wrong connection between indoor unit and wired controller
No
Whether the indoor fan is rotating
Yes
Wrong connection between indoor unit and wired controller
No
Whether the voltage of the indoor unit fan is AC220V
Yes
① PCB board of indoor unit is in bad condition;
② Wires around the PCB board of indoor unit are broken and the insertion of socket is poor.
No
Check the power supply voltage
Remove the wire of fan motor
Whether the winding resistance of fan motor is normal
No
Motor of indoor fan is in bad condition
Yes
Whether the fan capacitor is appropriate
No
The capacitor of fan motor is poor
No
Wires around the PCB board of indoor unit are broken and the insertion of socket is poor.
Yes
Whether the fan is rotating in correct direction
No
Capacitor of fan motor is poor
Yes
① Indoor filter screen is blocked
② Indoor heat exchanger is plugged.

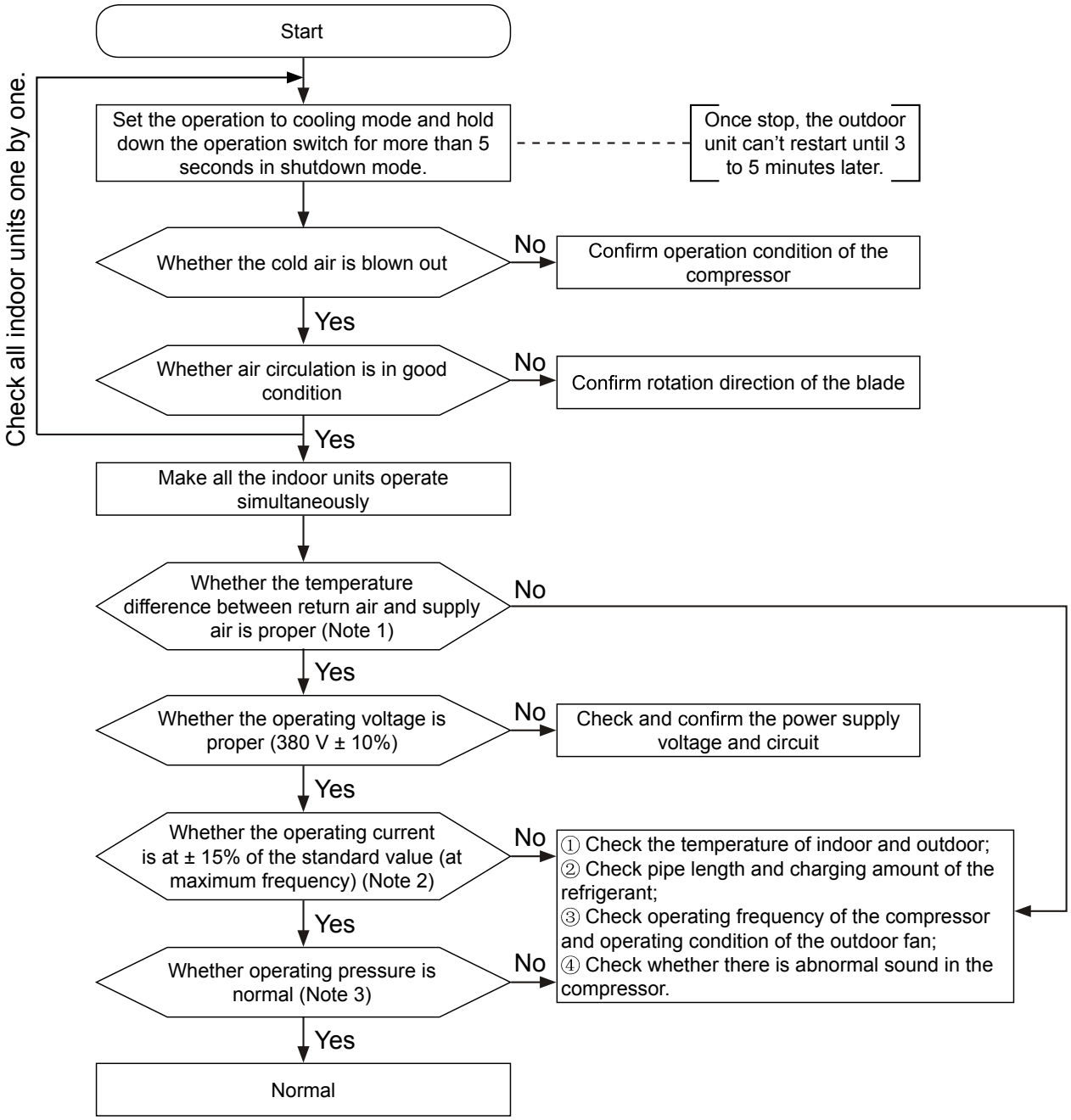

Normal
Yes
Heating mode is preferred. Select non-preferred mode (cooling) or operation mode, which is different from selection way of switch setting.
*2
No
The abnormity of Indoor unit
① Indoor unit PCB board is in bad condition;
② Wired controller is in bad condition.
No
*3
Whether there is AC15V voltage between terminal blocks A and B of wired controller
Yes
① PCB board in wired controller is in bad condition;
② Wires around the PCB board of indoor unit are broken and the insertion of socket is poor.
No
Whether there is AC15V voltage between terminal blocks A and B of indoor unit
Yes
Wrong connection between indoor unit and wired controller
Voltage
No
Whether there is AC220V voltage between terminal blocks L and N of indoor unit
Yes
① The transformer of Indoor unit is in bad condition;
② The PCB board of Indoor unit is in bad condition.
Voltage
No
Whether the LED (green and red) on control base board of the indoor unit is flashing
Yes
No
Yes
① The transformer of Indoor unit is in bad condition;
② Wires around the PCB board of indoor unit are broken and the insertion of socket is poor.
Whether the fuse of indoor unit PCB board is normal
Yes
Check the power supply wire of indoor unit
No
Find the cause of the fuse burnout

B. Air blower operation confirmation

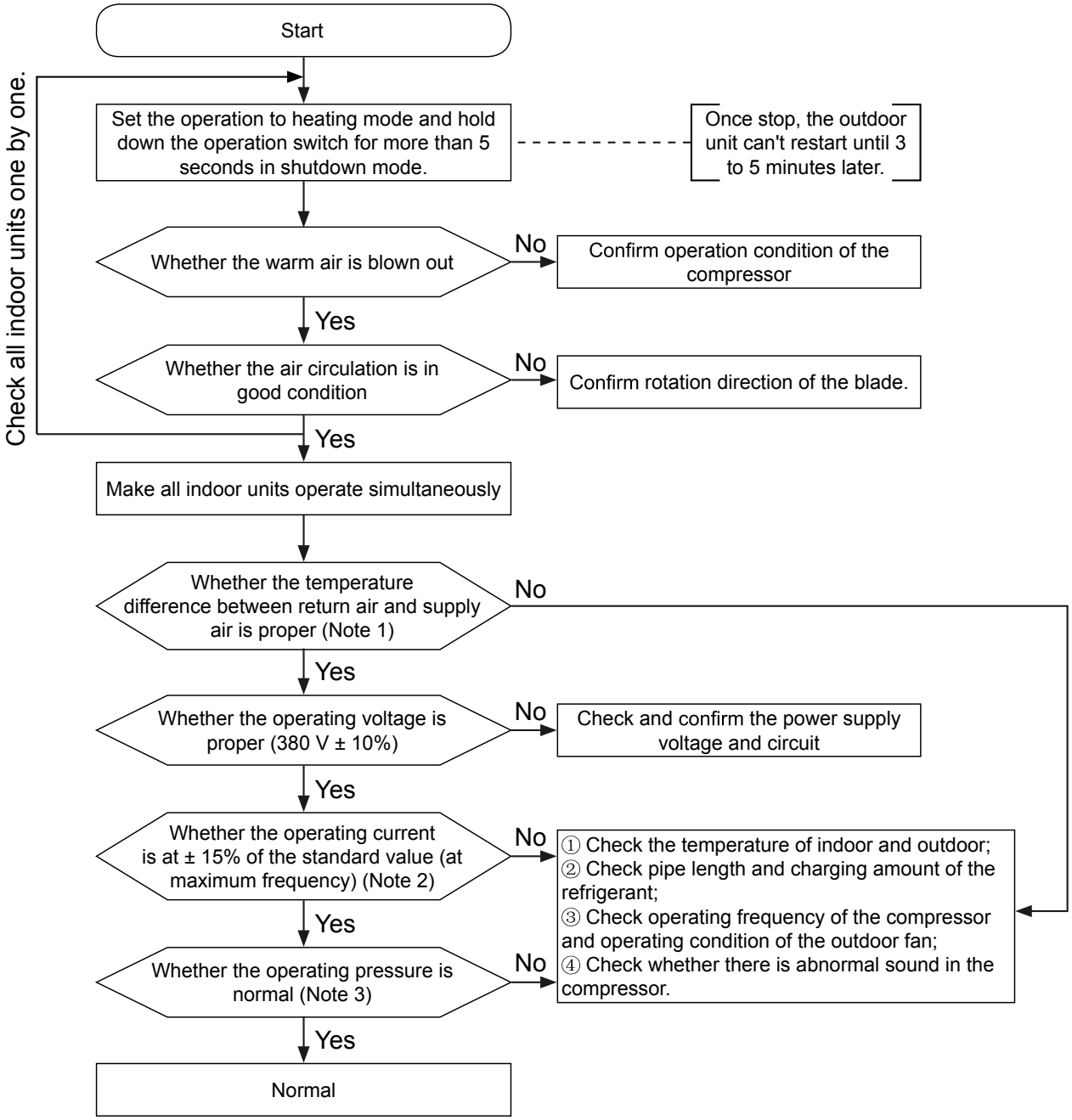


Note: Check the indoor units one by one.

C. Cooling operation confirmation



D. Heating operation confirmation



(Note 1)The general standard for temperature difference between inlet and outlet air

In "cooling" operation, it is normal that the dry bulb temperature difference between inlet air and outlet air of the air conditioner is over 10°C (at the maximum frequency) after 30 minutes at least.

In "heating" operation, it is normal that the dry bulb temperature difference between inlet air and outlet air of the air conditioner is over 14°C (at the maximum frequency) after 30 minutes at least.

(Note 2) General standard for operating current

It is normal that the current in either cooling/heating operation mode is within ±15% of the calibrated current. The value of current may have the following differences due to different operation conditions: When higher than the standard value of the current: the temperature of indoor and outdoor is high; heat dissipation of outdoor unit is poor. When lower than the standard value of the current: the temperature of indoor and outdoor is low; refrigerant gas leaks (insufficient refrigerant).

(Note 3) General standard for operating pressure

Cooling (at the maximum frequency)	High pressure 2.0~3.8 MPa	Indoor 18-32°C Outdoor 25-35°C
	Low pressure 0.6~1.0 MPa	
Heating (at the maximum frequency)	High pressure 2.2~3.0 MPa	Indoor 15-25°C Outdoor 5-10°C
	Low pressure 0.3~0.8 MPa	

Values after 15-minute operation (the temperature therein refers to dry bulb temperature with unit of °C)

The transformation trend of high pressure and low pressure due to change of operation condition

Refrigeration/heating: indoor temperature rises – high/low pressure rises

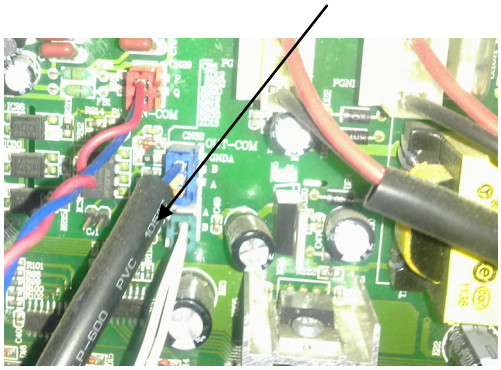
Indoor temperature drops – high/low pressure drops

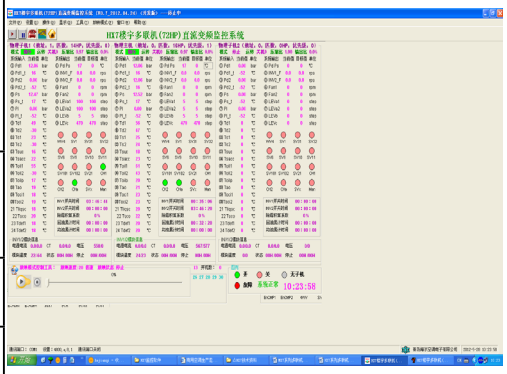
Outdoor temperature rises – high/low pressure rises

Outdoor temperature drops – high/low pressure drops

Evaluating unit through test device

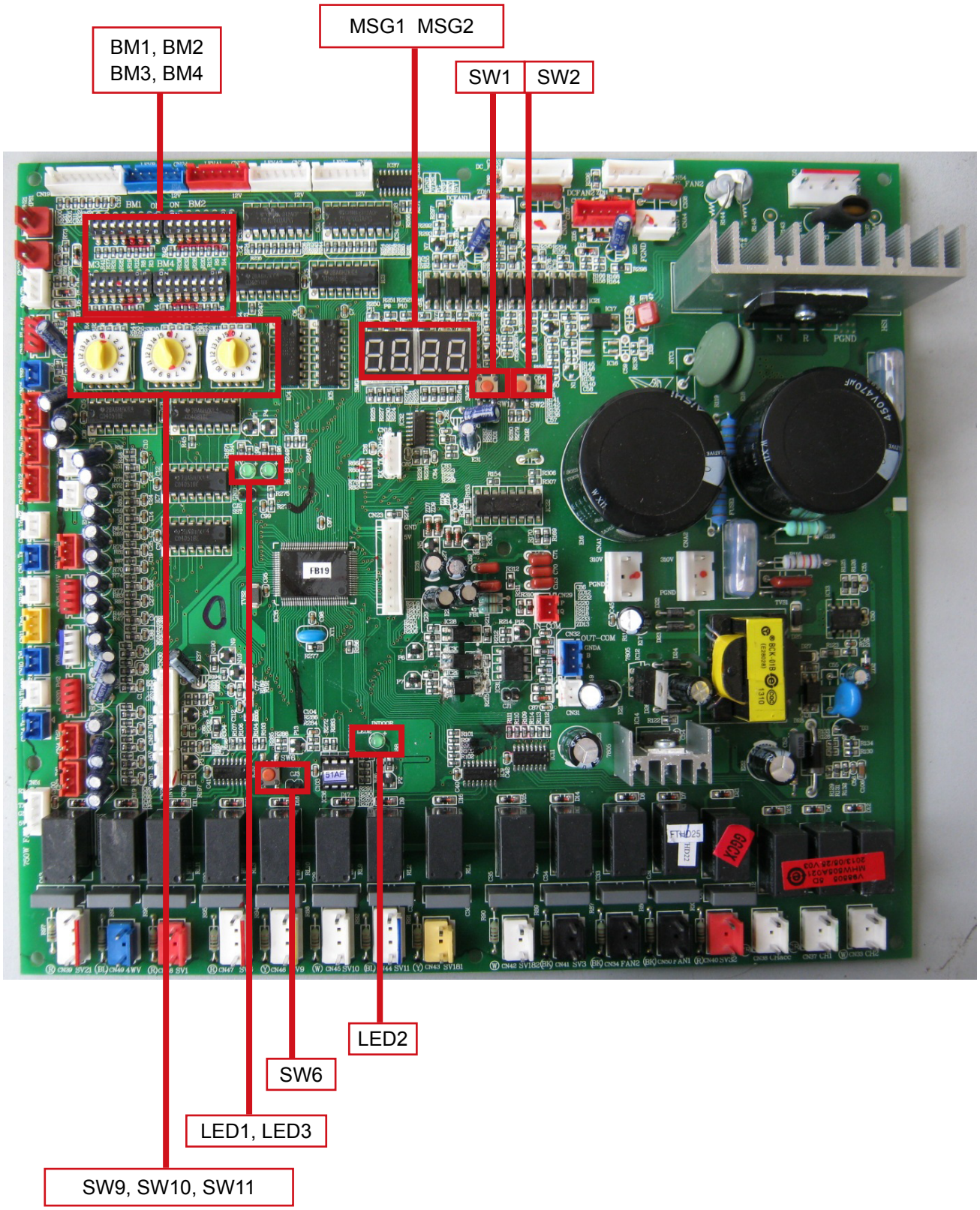
Operation	Begin to operate the system whose complete setting has been confirmed. Operating methods:	
	1. Switch the BM1, BM2 to OFF , search the indoor units and outdoor unit to check if the number of indoor units are right.	
	2. Switch the SW9, SW10, SW11 to 0, 13, 2 respectively, then press SW2 for 2 seconds, the digital display tube will display “1111” and indoor unit will enter into cooling operation; or switch SW9, SW10, SW11 to 0, 14, 2 respectively, then press SW2 for 2 seconds, the digital display tube will display “1111”, indoor unit will turn on automatically and enter into heating operation. Frequency of compressor is controlled by low pressure control for cooling, and high pressure control for heating.	

<table>
<tr><td rowspan="4">Data measuring</td><td>1. Connecting methods of device:
Insert one end of data line into the terminal of main PCB CN31 with a two-core terminal, one end connects with 485 device or Gangda device, the other end of the device connects computer.</td><td rowspan="4">Position of inserting test device (CN31)
 

It is normal if there is high pressure frequency limitation or high discharging temperature frequency limitation when outdoor ambient temperature is high and all the indoor units are operating.</td></tr>
<tr><td>2. The data that can acquire through device
Outdoor unit: The frequency of outdoor unit compressor /Outdoor fan speed/Opening of outdoor electronic expansion valve/ High pressure of outdoor unit/Corresponding saturation temperature of outdoor unit's high pressure/Low pressure of outdoor unit/ Corresponding saturation temperature of outdoor unit's low pressure/Discharging temperature/Suction temperature/Oil temperature/ Temperature of condenser outlet pipe/Ambient temperature/Temperature of defrosting sensor/Starting of all kinds of solenoid valve
Indoor unit: Temperatures of gas pipe and liquid pipe, opening angle of electronic expansion valve /Display of failure</td></tr>
<tr><td>3. Test device can display failures of the unit during operation, moreover it can realize a function of storing data in real time, and the test data can be stored in computer.</td></tr>
<tr><td>4. Prepare a report according to the test data and submit it to user.</td></tr>
<tr><td rowspan="5">Confirmation of the data</td><td>The confirmation of running data/Timing and recording of the measurement
After the measurement is begun, check the system pressure through detection software. Generally, the cooling low pressure is about 7.5kg and the heating high pressure is about 28kg under rated cooling and heating modes. Then observe if operation under each parameter is normal.</td><td rowspan="5">  </td></tr>
<tr><td>There is a picture about cooling operating parameters' data in the right column, after operating about half hour, the unit remains stable.</td></tr>
<tr><td>Check if there is a blockage in capillary during operation, if any, replace it.</td></tr>
<tr><td>Check if there is contact between refrigerant piping and capillary tube, if any, deal with it.</td></tr>
<tr><td>Check if wires of sensor (such as wiring, pressure sensor, etc.) are too tight, or contact with vibrating pipe, if so, deal with it.
Check if the value of sensor is correct.</td></tr>
</table>

13. Outdoor control board photo

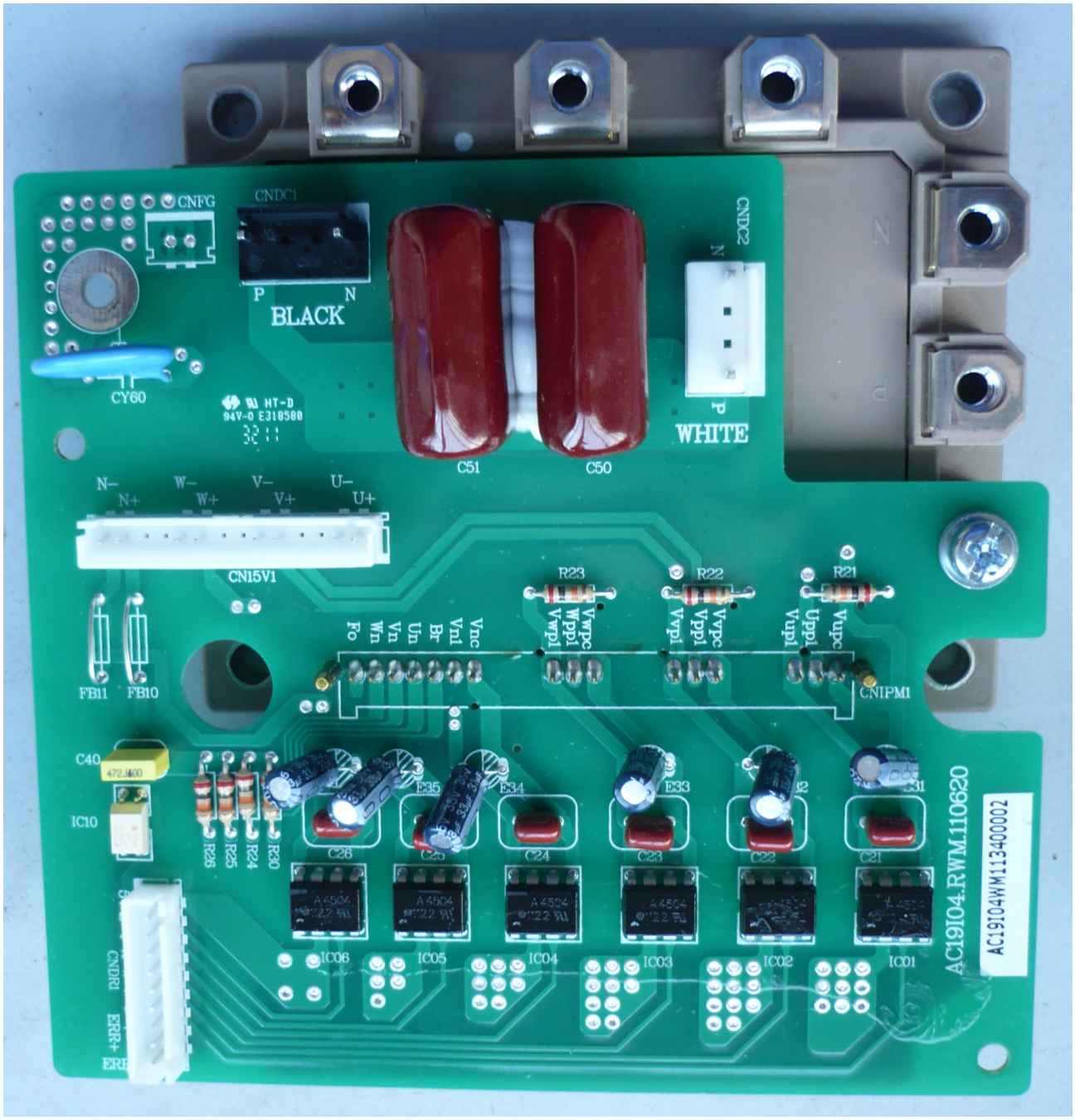
Outdoor PCB (0151800158) photo



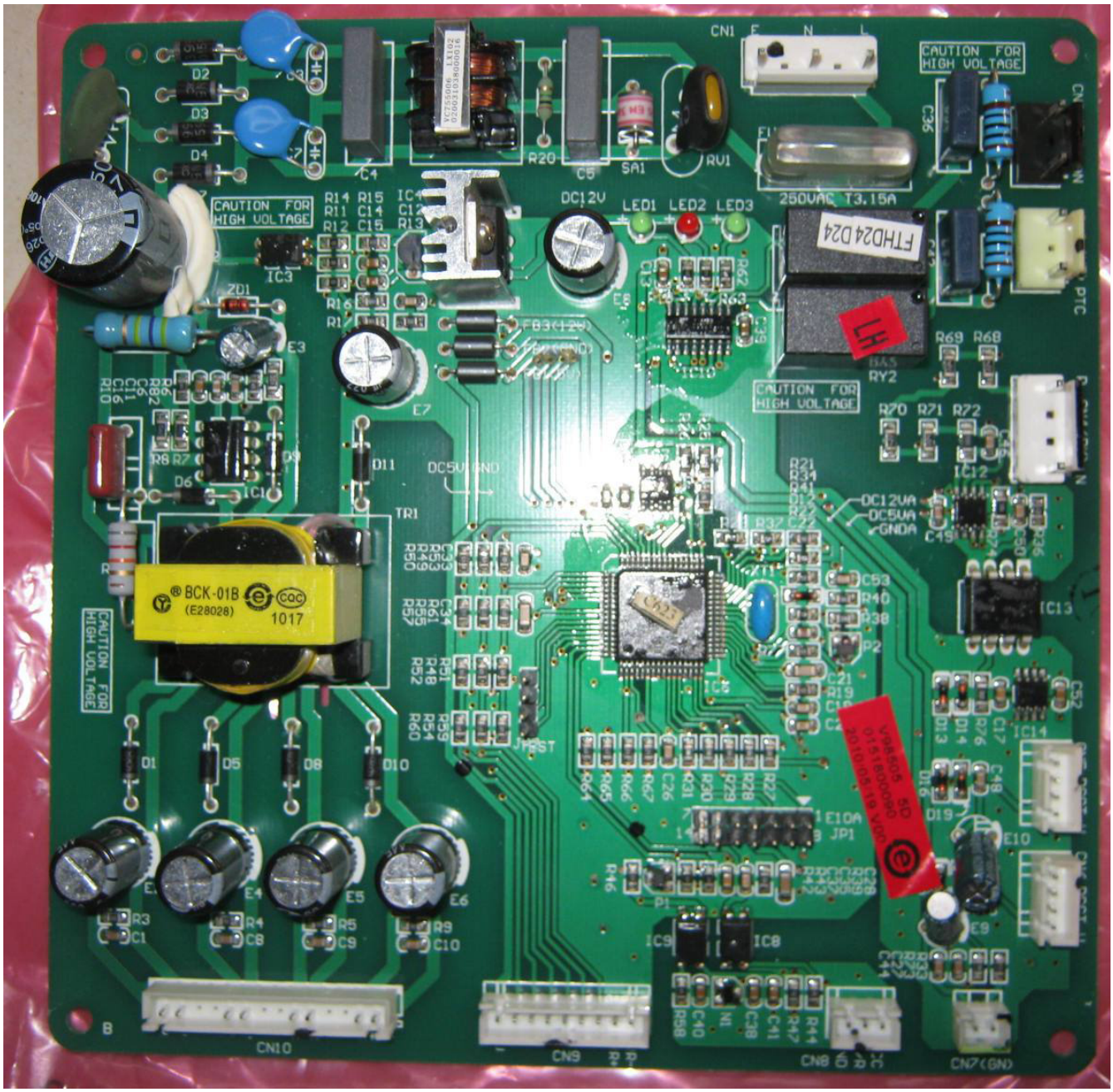
Power module (0150400941 and 0151800070)

Note:

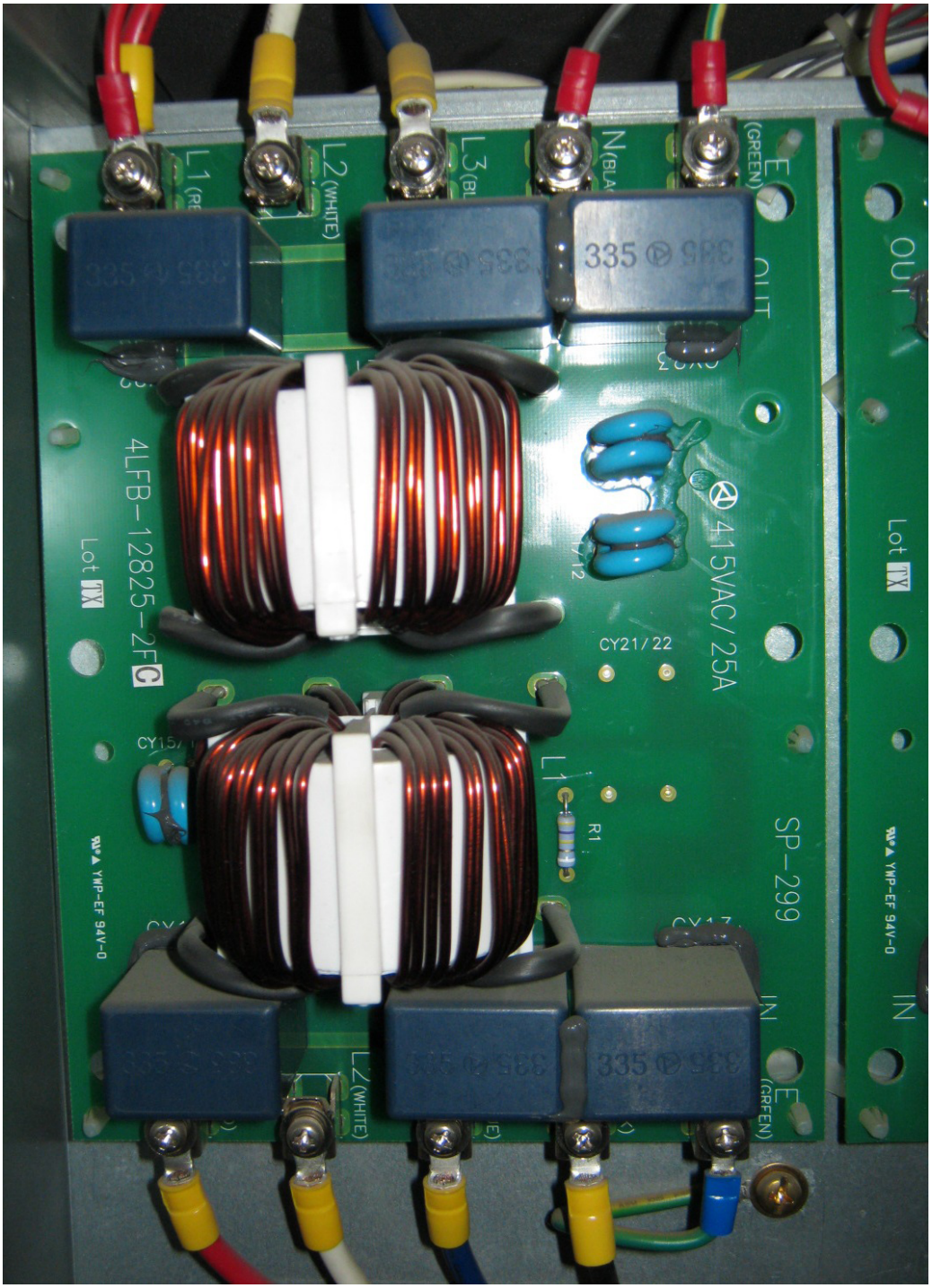
1. Power module 0150400941 match with power module driver board 0151800090B control the compressor ANB66F
2. Power module 0151800070 match with power module driver board 0151800090 control the compressor ANB52F and ANB42F



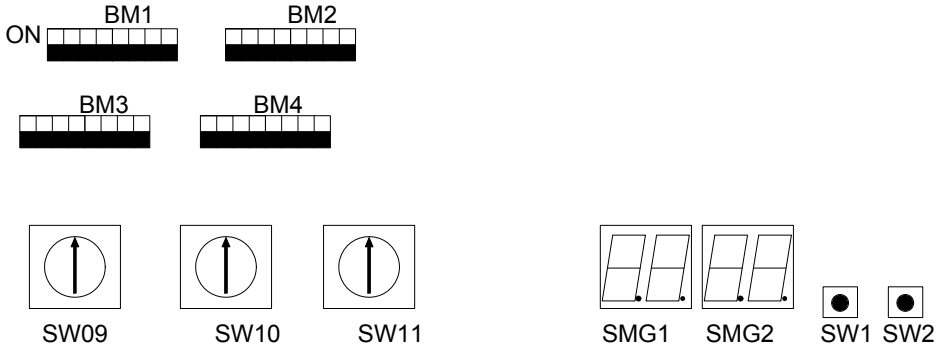
Power module driver board (0151800090B and 0151800090)



Filter board (MHW505A012)



14. Outdoor PCB dip switch setting



LED light definition:

- LED1: communication lamp among outdoor units.
  The lamp flicker frequency is 0.5s/time under normal condition; once occurs the communication faulty, the lamp flicker frequency is 1s/time.
- LED2: communication lamp between indoor units and outdoor units.
  The lamp flicker frequency is 0.5s/time under normal condition; once occurs the communication faulty, the lamp flicker frequency is 1s/time.
- LED3: communication lamp between outdoor PCB and inverter board.
  The lamp flicker frequency is 0.5s/time under normal condition; once occurs the communication faulty, the lamp flicker frequency is 1s/time.

Concept identification:

- Physical master unit: the outdoor unit, whose number is set as 0 by dip switch(BM1-7 and BM1-8), is the communication sponsor and in charge of the communication with indoor unit, also works as initiator of communication of the whole outdoor unit.
- Function master unit: the outdoor unit, whose priority is set as 0, operates with the highest priority.
- Physical slave unit: the outdoor unit, whose number is not set as 0 by dip switch(BM1-7 and BM1-8).
- Function slave unit: the outdoor unit, whose priority is set as 1~3, not operates with the highest priority.
- Setting of group class: the setting of physical master unit is valid for the whole unit. For example: setting of quiet, anti-snow, piping of medium length and so on. Physical master unit conducts all sorts of setting.
- Setting of local class: it is only valid for this unit, not for the whole unit. For example: setting of backup operation of sensor, selecting variable frequency inverter board and so on.

Dip switch introduction:

- BM1 is usually set by the engineer on site; BM2, BM3, BM4 are pre-set in the factory.
- BM1_1: Master outdoor unit searches the total outdoor units after power on at first time. The quantity of total outdoor units is floating from right to left on digital tube SMG1 and SMG2. "1=0" is one outdoor unit, "2=01" is two outdoor units, "3=012" is three outdoor units.
- BM1_2: Master outdoor unit searches the total indoor units after locked the quantity of the outdoor units. The quantity of total indoor units is floating from right to left on digital tube SMG1 and SMG2. "-04-" is 4 indoor units, "-06-" is 6 indoor units, "-15-" is 15 indoor units.
- BM1_3: The setting is OFF or ON. Default is ON. Once power off, unit software shall reset to "OFF" automatically ignoring BM1_3 setting.

Note: In the following tables the grey background is default setting.

BM1	Definition	Introduction			
BM1_1	Outdoor searching after startup	**OFF**	Begin to search outdoor		
		ON	Stop searching outdoor and lock the quantity		
BM1_2	Indoor searching after startup	**OFF**	Begin to search indoor		
		ON	Stop searching indoor and lock the quantity		
BM1_3	Start up	Power on, no action	Default: unit shall startup after 6 hours preheat or oil temp. reaches the target value		Group class (physical master unit is valid)
		Power on, change OFF to ON	Unit shall startup after 6 hours preheat or oil temp. reaches the target value (note: here the target value is lower than the target value when the BM1-3 on "OFF" position).		
BM1_4	Heating when outdoor temperature over 25°C	**OFF**	Ambient temp. >25 ℃ , available.		
		ON	Ambient temp. >25 ℃ , unavailable.		
BM1_5	Over match setting	**OFF**	Indoor total capacity >130%, system function normally		
		ON	Indoor total capacity>130%, system alarm		
BM1-6	Cooling only or heat pump selection	**OFF**	Heat pump		
		ON	Cooling only		
BM1_7	Address setting	BM1_7	BM1_8	Outdoor address	
		OFF	**OFF**	0# (physical master unit)	
		OFF	ON	1#	
		ON	OFF	2#	

BM2	Definition	Introduction			
BM2_1	Quiet running function	**OFF**	Quiet running function is unavailable (default)		Group class (physical master unit is valid)
		ON	Quiet running function is available		
BM2_2	Anti-snow function	**OFF**	Anti-snow function is unavailable (default)		
		ON	Anti-snow function is available		
BM2_3	Start mode selection	BM2_3	BM2_4	Set content	
		OFF	**OFF**	First open priority	
		OFF	ON	After opening priority	
		ON	OFF	Cooling priority, any one indoor unit runs in cooling mode, the outdoor unit will run in cooling mode, the indoor units running in heating mode will stop.	
		ON	ON	Heating priority, any one indoor unit runs in heating mode, the outdoor unit will run in heating mode, the indoor units running in cooling mode will stop.	
BM2_5	Defrosting condition Selection	BM2_5	BM2_6	Selection item	
		OFF	**OFF**	Default setting (Normal installation condition)	
		OFF	ON	Low humidification in winter condition	
		ON	OFF	High humidification in winter condition (when outdoor unit defrosting is not clear, can set the dip switch on this position)	
BM2_7 BM2_8	Piping length selection (Main pipe length: between outdoor to 1st branch pipe)	BM2_7	BM2_8	Selection item	
		OFF	**OFF**	Default setting (Medium piping length:30~60m)	
		OFF	ON	Long piping length: 60~90m	
		ON	OFF	Short piping length: 0~30m	

BM3	Definition	Introduction				
BM3_1	The type of outdoor unit	**OFF**	Default (Flow Logic III T1 outdoor unit)			
BM3_2		**OFF**				
BM3_3		**OFF**				
BM3-4	Inverter board type	**OFF**	Default (Haier module)			
BM3_5 BM3_6 BM3_7 BM3_8	HP setting of outdoor units	BM3_5	BM3_6	BM3_7	BM3_8	HP
		OFF	OFF	OFF	ON	8HP
		OFF	OFF	ON	OFF	10HP
		OFF	OFF	ON	ON	12HP
		OFF	ON	OFF	OFF	14HP
		OFF	ON	OFF	ON	16HP
		OFF	ON	ON	OFF	18HP
		OFF	ON	ON	ON	20HP
		ON	OFF	OFF	OFF	22HP
		ON	OFF	OFF	ON	24HP

BM4	Definition	Introduction			
BM4_1	Indoor quantity lock selection	**OFF**	Available (with the quantity lock function)		Group class (physical master unit is valid)
		ON	Unavailable (without the quantity lock function)		
BM4-2	Drop selection of indoor units	**OFF**	Without height drop between indoor units		Group class (physical master unit is valid)
		ON	With height drop between indoor units		
BM4_3	Outdoor static pressure selection	**OFF**	The maximum speed of outdoor fan motor is 14 (default)		Local class
		ON	The maximum speed of outdoor fan motor is 15		
BM4_4	Reserved	**OFF**			
BM4_5	Reserved	**OFF**			
BM4_6	Communication protocol between indoor and outdoor unit selection	**OFF**	New protocol		Group class (physical master unit is valid)
		ON	Old protocol		
BM4-7 BM4-8	Indoor and outdoor unit height drop setting	BM4_7	BM4_8	Dip switch definition	Group class (physical master unit is valid)
		OFF	**OFF**	Normal height drop	
		OFF	ON		
		ON	OFF	The outdoor is higher, the height drop between indoor and outdoor unit is more than 50 meters, and less than 90 meters	
		ON	ON	The outdoor is lower, the height drop between indoor and outdoor unit is more than 40 meters, and less than 70 meters	

Note: communication protocol between indoor and outdoor units

The new communication protocol is faster than the old communication and its control content is more than the old one.

The indoor PCB 151800113, 151800161, 0151800161B, 0151800227, 0151800244, 0010451751AF, 0151800141A, 0010451751AE and 151800141 are new communication protocol.

The indoor PCB 151800086 and 0010451181A are old communication protocol.

Old communication protocol indoor PCB can't connect with new communication protocol outdoor, so if this outdoor unit connect with old communication protocol indoor, need set the dip switch BM4-6 to ON position.

Monitor tools

According to the dip switch code comparison table of outside unit, adjust SW9, SW10 and SW11 and observe operation parameters of the unit, and then record the parameters in the form of operation and commissioning. The displayed contents are defined as follows:

• Buttons: SW2 (UP) and SW1 (DOWN)

• Dip switch panel: SW9, SW10 and SW11: they are settable dip switches from 0 to 15

• Displayed part: LED1, LED2, LED3 and LED4: the four digital tubes arranged from left to right.

1)Parameter observation of indoor unit

SW9 and SW10 indicate number of indoor unit, and SW11 indicates parameter description of indoor unit.

SW9	SW10	Indoor unit address
0	0-15	1-16
1		17-32
2		33-48
3		49-64

SW11	Functions	Digital tube SMG1 and SMG2 display
3	Indoor unit program version	If communication is normal, show the indoor unit program version (one decimal). If communication stops, normally show “0000” (failing communication for 5 consecutive rounds). If communication has been abnormal, show “----”. For example,“F0.1” means indoor unit version is V0.1
4	Indoor abnormal	Display indoor failure code; no failure, display 0
5	Indoor capacity	Indoor capacity (Unit: W, a decimal),1.5 HP displays 1.5
6	Indoor EEV open angle	Electronic expansion valve (EEV) open angle (Unit: Pls)
7	Indoor ambient temp. “Tai”	Ambient temperature (Unit: °C)
8	Indoor gas pipe temp. “Tc1”	Gas pipe temperature (Unit: °C)
9	Indoor liquid pipe temp. “Tc2”	Liquid pipe temperature (Unit: °C)
10	Startup mode, actual operating wind speed and capacity code of indoor unit	LED1 shows startup mode such as O: Shutdown C: cooling H: Heating LED2 indicates actual operating wind speed of indoor unit (0 - stop, 1 - low wind, 2 - medium wind and 3 - high wind) LED3 and LED4 indicate capacity code (0~15). For example, C311 indicates cooling operating at high wind, and the capacity is 11.
11	Setting temperature “Tset” of indoor unit	Setting temperature (Unit: °C)
12	Wrong wiring inspection	0 shows no failure, 79 shows wiring connection failure (indoor no display)
13	Forced startup & shutdown of indoor unit for cooling	• Hold down SW2 (UP) for 2 seconds until 1111 is displayed, it means startup
14	Forced startup & shutdown of indoor unit for heating	• Hold down SW1 (DOWN) for 2 seconds until 0000 is displayed, it means shutdown

2) Outdoor unit parameters observation

It is parameter observation of outdoor unit when SW11 range is 0, 1, and 15; 0~3 of SW9 is used to select outdoor unit number, 0 represents the main unit and 1 represents No. 1 sub-unit; SW10 indicates parameter description of outdoor unit.

Note: [The main unit can display parameters of other outdoor units and indoor units, while the sub-unit only displays its own parameters]

SW9	SW10	SW11	Functions	Digital tube SMG1 and SMG2 display
0-2 (Unit No.)	0	0	Display outdoor failure code	Failure code transmitted by outdoor bus data. If no failure, display the time as second counting down from the 6 hours for pre-heating. • Press SW2 (UP) for 2s continuously, display 1111, and access the condition of history fault inquiry to inquire the recent 10 faults: with fault sequence number and fault code displayed by flashing. Press SW2 (UP) once, sequence number will go up 1; press SW1 (DOWN) once, sequence number will decrease 1; 2 min later, quit the setting condition automatically. • Press SW1 (DOWN) for 2s continuously, display 0000, then quit query status and stop flashing. • When dip switch panel is at 13,0,0, press SW2 (UP) for 2s continuously, display 1111, thus history fault record can be cleared. • If capacity is more than 135% or less than 50%, startup is not allowed, and digital tube 000 will display “555.0” • If the temperature is above 26°C, heating is prohibited and startup is not allowed; then, digital tube 000 will display “555.1” • If cooling Ps is less than 0.23 Mpa or heating Ps is less than 0.12 Mpa, startup is not allowed, and then digital tube 000 will display “555.2” • If the temperature is above 54°C in cooling mode, startup is not allowed and then digital tube 000 will display “555.3”
	1	0	Display priority and capacity of outdoor unit	LED1 displays outdoor priority, LED2 displays “-”, LED3 and 4 display capacity of outdoor unit (unit: HP)
	2	0	Display operation mode and operation output ratio of outdoor unit	LED1 shows O: Stop C: Cooling H: Heating LED2 to LD4 show: 60 shows 60% capacity output
	3	0	Rotating speed of outdoor fan 1	• Press SW2(UP) for 2s continuously, display 1111, then to set: flashing. Press SW2 (UP) once, wind speed will go up 1 level; press SW1 (DOWN) once, wind speed will decrease 1 level. 5 min later, quit the setting condition automatically. • Press SW1 (DOWN) for 2s continuously, display 0000, then quit the setting condition, and stop flashing. Note: [345 indicates 345 rpm]
	4	0	Rotating speed of outdoor fan 2	

SW9	SW10	SW11	Functions	Digital tube SMG1 and SMG2 display
0-2 (Unit No.)	5	0	Current frequency of inverter compressor INV1	• Press SW2(UP) for 2s continuously, display 1111, then to set: flashing and press SW2 (UP) once, the frequency will go up 1 Hz; press SW1 (DOWN) once, the frequency will decrease 1 Hz. 5 min later, quit the setting condition automatically. • Press SW1 (DOWN) for 2s continuously, display 0000, then quit the setting condition, and stop flashing. Note: [110.0 indicates 110.0 HZ] (When system failures, compressor is forbidden to start up.)
	6	0	Current frequency of inverter compressor INV2	
	7	0	LEVa1 valve opening of outdoor unit	• Press SW2 (UP) for 2s continuously, display 1111, then to set: flashing. Press SW2 (UP) to open the valve fully, and press SW1 (DOWN) to close the valve fully. 2 min later, quit the setting condition automatically. • Press SW1 (DOWN) for 2s continuously, display 0000, then to set, and stop flashing. Note: [0 -- 470 steps]
	8	0	LEVa2 valve opening of outdoor unit	
	9	0	LEVb valve opening of outdoor unit	
	10	0	LEVc valve opening of outdoor unit	
	11	0	Outdoor solenoid valve output indication	LED1: 4WV: 1 On 0 OFF -- high-order left-most LED2: SV1: 1 On 0 OFF LED3: SV31: 1 On 0 OFF LED4: SV32: 1 On 0 OFF
	12	0	Outdoor solenoid valve output indication	LED1: SV6: 1 On 0 OFF -- high-order left-most LED2: SV9: 1 On 0 OFF LED3: SV10: 1 On 0 OFF LED4: SV11: 1 On 0 OFF
	13	0	Outdoor solenoid valve output indication	LED1: SV181: 1 On 0 OFF LED2: SV182: 1 On 0 OFF LED3: SV21: 1 On 0 OFF LED4: insignificance, display “-”
	14	0	Heating band output	LED1: CH1: 1 On 0 OFF LED2: CH2: 1 On 0 OFF LED3: CHa: 1 On 0 OFF LED4: insignificance, display “-”
	15	0	Program version	1.0 means Ver1.0

SW9	SW10	SW11	Functions	Digital tube SMG1 and SMG2 display
0-2 (unit No.)	0	1	Pressure of Pd1	Unit: kg, 2 decimals
	1	1	Pressure of Pd2	
	2	1	Pressure of Ps	
	3	1	Discharge temperature of Td1	Unit: °C
	4	1	Discharge temperature of Td2	
	5	1	Defrosting temperature of Tdef1	
	6	1	Defrosting temperature of Tdef2	
	7	1	Temperature of Toil1	
	8	1	Temperature of Toil2	
	9	1	Temperature of Toci1	
	10	1	Temperature of Toci2	
	11	1	Temperature of Ts1	
	12	1	Temperature of Ts2	
	13	1	Temperature of Tsuc	
	14	1	Temperature of Tsacc	
	15	1	Temperature of Toilp	

SW9	SW10	SW11	Functions	Digital tube SMG1 and SMG2 display
0-2 (unit No.)	0	15	Pressure of Pl	Unit: kg, 2 decimals
	1	15	Ambient temperature of Tao	Unit: °C
	2	15	Pressure temperature of Pd1_temp	
	3	15	Pressure temperature of Pd2_temp	
	4	15	Pressure temperature of Ps_temp	
	5	15	Temperature of Tliqsc	
	6	15	Temperature of Tsco	
	7	15	Pressure temperature of Pl_temp	
	8	15	Switching time of inverter compressor INV1	Unit: minute
	9	15	Switching time of inverter compressor INV2	Unit: minute
	10	15	Current CT of inverter compressor INV1	Unit: A, a decimal
	11	15	Current CT of inverter compressor INV2	Unit: A, a decimal
	12	15	DC voltage of inverter compressor INV1	Unit: V
	13	15	DC voltage of inverter compressor INV2	Unit: V
	14	15	Module temperature of inverter compressor INV1	Unit: °C
	15	15	Module temperature of inverter compressor INV2	Unit: °C

It is used to view data in EE when SW9 is 12 and 13.

SW9	SW10	SW11	Functions	Digital tube SMG1 and SMG2 display
12	0	0	EE data of 000H address	Display the first 256-byte data in EE of local unit Address calculation: addr = SW10 × 16 + SW11 Data display: hexadecimal display, H indicates hexadecimal number
	0	1	EE data of 001H address	
	…	…	…	
	0	15	EE data of 00FH address	
	1	0	EE data of 010H address	
	…	…	…	
	1	15	EE data of 01FH address	
	…	…	…	
	15	15	EE data of FFH address	
13	0	0	EE data of 100H address	Display the last 256-byte data in EE of local unit Address calculation: addr = SW10 × 16 + SW11 Data display: hexadecimal display, H indicates hexadecimal number
	0	1	EE data of 101H address	
	……	……	……	
	1	15	EE data of 11FH address	
	……	……	……	
	15	15	EE data of 1FFH address	

Data parameter information and control modes of the whole system are displayed when SW9 is 0

SW9	SW10	SW11	Function	Operation methods
0	0	2	Refrigerant type	407A stands for 407 refrigerant 410A stands for 410A refrigerant – static display R22 stands for 22 refrigerant
0	1	2	Outdoor total capacity	48.0 stands for 48 HP
0	2	2	Outdoor QTY in one system	E.g.: 3 outdoors (including master outdoor)
0	3	2	Indoor QTY in one system	E.g.: 64
0	4	2	Running indoor QTY	Thermostat ON indicates indoor running
0	5	2	Indoor QTY whose operation modes are as the same as that of outdoor	E.g.: 13 indoors
0	6	2	Target temperature of cooling	Unit: °C
0	7	2	Target temperature of heating	
0	8	2	Refrigerant evacuation setting *only for outdoor evacuation. If indoor evacuation, do not set. Note: When it finishes, cancel the setting or re-electricity.	• Press SW2 (UP) for 2s continuously, display 1111 and start up; digital tube displays “YES”. ■ Specific action: SV9, SV10 and SV11 open, LEVa1, 2, LEVb open for 100 pls, the other valves close compulsorily, and SV21 open and LEVc open for 470. • Press SW1 (DOWN) for 2s continuously, display 0000 and stops (setting is invalid when unit is running.)

SW9	SW10	SW11	Function	Operation methods
0	9	2	Refrigerant charging setting *only for gas charged outdoor. If indoor is charged, do not set. Note: When it finishes, cancel the setting or re-electricity.	• Press SW2 (UP) for 2s continuously, display 1111 and start up; digital tube displays “YES”. ■ Specific action: LEVa1 and 2 open for 470 Pls, the other valves close compulsorily, and SV21 open and LEVc open for 470. • Press SW1 (DOWN) for 2s continuously, display 0000 and stops (setting is invalid when unit is running.)
0	10	2	Wrong wiring inspection in cooling	• Press SW2(UP) for 2s continuously, display 1111 and start up; digital tube counts down judging time at second; after time arrives, display the result: ■ “00.00” shows the result is in conformity with the actual connection; ■ “01.05” shows one outdoor and 5 indoors are abnormal, To check the abnormal units by digital tube (indoor: X_X_12; outdoor: X_0_0); • Press SW1 (DOWN) for 2s continuously, display 0000, and stops.
0	11	2	Operation detection in case of heating false wiring	
0	12	2	Indoor expansion valve open fully	Press SW2 (UP) for 2s continuously, display 1111 and indoor valves open fully for 2 minutes, then indoor valves close automatically.
0	13	2	All indoor units running in cooling	• Press SW2(UP) for 2s continuously, display 1111, and start up; • Press SW1 (DOWN) for 2s continuously, display 0000, and stops.
0	14	2	All indoor units running in heating	
0	15	2	Cancel all manual controls (running type)	• Press SW2(UP) for 2s continuously, display 1111 and start up, then cancel the manual control; or press SW1(DOWN) for 2s continuously, display 0000 and then cancel the manual control; • Cancel items: Wrong wiring inspection in cooling/ heating mode; indoor running/stop totally; compulsory operation; rated operation, etc.

Dip switch setting condition of PCB board is displayed when SW9 is 15.

SW9	SW10	SW11	Functions	Operation methods
15	0	2	Setting condition of BM1 and BM2	Hexadecimal display, BM1: indicating by LED1 and LD2, BM2: indicating by LED3 and LED4
15	1	2	Setting condition of BM3 and BM4	Hexadecimal display, BM3: indicating by LED1 and LED2, BM4: indicating by LED3 and LED4
15	2	2	Capacity correction level	0 indicates that the pipe is short; 1 indicates the pipe length is moderate; 2 indicates that the pipe is long.
15	3	2	Defrosting compensation α	10, 8, 6
15	4	2	Power damping (the maximum output is allowable)	100 indicates 100%, and 0 indicates output is forbidden
15	5	2	Capacity overload detection	135 indicates there is limit, and 0 indicates there is no limit
15	6	2	Heating limit when external air is more than 25 °C	25 indicates there is limit, and 0 indicates there is no limit
15	7	2	Setting of mute operation	0 indicates non-mute operation, and 1 indicates mute operation
15	8	2	Setting of anti-snow operation	0 indicates the operation without snow prevention, and 1 indicates the operation with snow prevention
15	9	2	Operation setting of wind speed of sub-unit FAN of ThermoOff during operating of heating main unit	0 indicates there is no operation, and 1 indicates there is operation
15	10	2	Insignificance	Insignificance
15	11	2	High head setting	0 indicates invalidity, 1 indicates high head above outdoor unit and 2 indicates high head under outdoor unit.
15	12	2	Setting of 50 Hz and 60 Hz power supply detection	50 indicates 50 Hz, and 60 indicates 60 Hz
15	13	2	Reservation	Reservation
15	14	2	Type setting of outdoor unit	0 indicates AV*NMMEUA model, 1 indicates sideward air outlet model, and 2 indicates five-in-one model
15	15	2	Reservation	Reservation

Outdoor unit valve manual control

SW9	SW10	SW11	Functions	Operation methods
6	15	2	Cancel all the manual controls (component type)	• Press SW2 (UP) for 2s continuously, display 1111, then to quit, or press SW1 (DOWN) for 2s continuously, display 0000, then quit the set. • Cancel items: Movable component control by hand such as compressor, motor, electronic expansion valve (LEV), solenoid valve (SV) and so on (including evacuation and charging; excluding rated operation, compulsory operation, indoor run/stop, etc.)

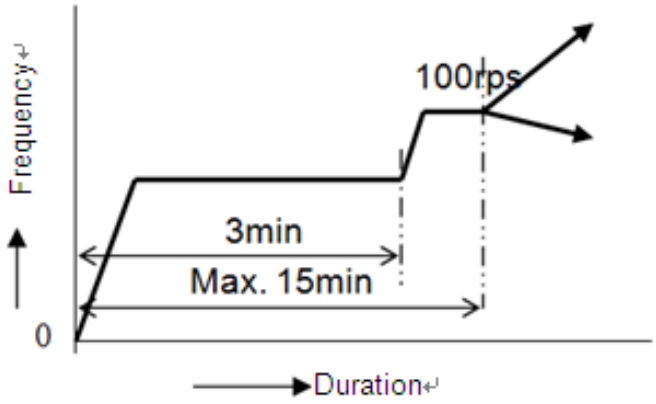
15. Outdoor system control function

15.1 Start Control

① Evaluate if the compressor is started according to the superheat of oil temperature or the heating time of energized heating trip, in order to prevent prolonged suspension compressor oil from being severely diluted by refrigerant. The compressor starting conditions are as follows:

- OR
  - Power ON after 6 hours
  - & [Dip switch OFF to ON (BM1-3)
    - OR
      - CT≦45℃: & [Toil1≧0.923CT1+13.5 ; Toil2≧0.923CT2+13.5
      - CT>45℃: & [Toil1≧55℃ ; Toil2≧55℃
  - OR
    - CT≦28℃: & [Toil1≧CT1+17℃ ; Toil2≧CT2+17℃
    - CT>28℃: & [Toil1≧0.66CT+25.4℃ lasts for 5 minutes ; Toil2≧0.66CT+25.4℃ lasts for 5 minutes

② Compressor start protecting control: Within the 3 min after starting, the operating frequency of compressor keeps at 50rps or 60rps. 3 min later, if Td SH is higher than 25℃ , withdrawal from the starting process and conduct target Pd or target Ps control; 3min later, if Td SH is lower than 25℃ , the frequency goes up to 100rps and withdrawal from the starting until the Td SH is higher than25℃ or the starting time reaches 15min. In the process of starting, protecting control has the priority.



[Note] Frequency maintained within the 3 min after starting is as follows:

- OR
  - Tao≧15℃ : 50rps
  - Tao<15℃ : 60rps

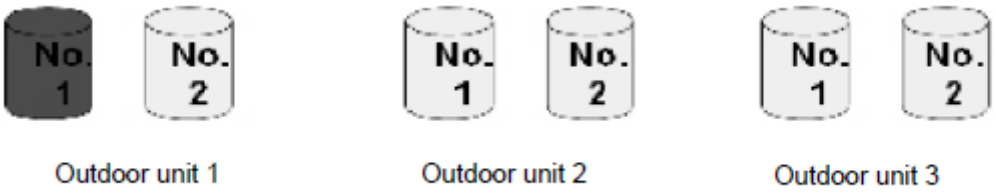
③ Restart of the compressor

1. In the control of the compressor, in order to prevent the starting at differential pressure, it must take some time to balance the high and low pressure after stopping fully, the restarting will delay automatically, and the compressor can restart after stopping for 3 to 5 minutes.
2. When the operating mode shifts reversely from [cooling. dehumidifying] to [heating], the all compressors

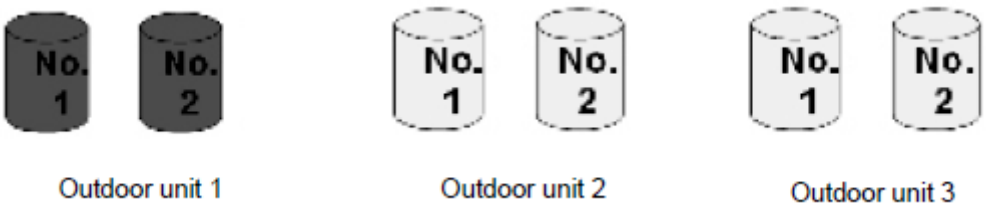
shall stop and delay 3~5 min to restart.
3. When power on, it shall delay 3~5 min to restart the compressor.
4. Before restart the compressor, when the oil temperature cannot meet the start requirement, it will delay the start until oil temperature can meet the requirement.

④ Cycle start function of compressor
1. According to different load of indoor unit, determine the number of compressors needing to start and outdoor units needing to start.
2. If there is only 1 outdoor unit but 2 compressors, shift the priority of compressor 1 and 2 every 4 hours.
3. If there are several outdoor units, the priority of these outdoor units shall be shifted every 8 hours. If the outdoor unit with 2 compressors is operating, it shall shift the priority of compressor 1 and 2 every 4 hours.
4. Shift the priority of compressor and outdoor unit to meet shift interval in the following conditions.
1) When all of compressor and outdoor unit are ON or OFF at the same time, the priority can be shifted directly;
2) When all of outdoor unit and compressor operate in the process of oil return and deforesting, they can shift the priority;
3) When outdoor unit and compressor with higher priority stop upon failure alarm, the priority can be shifted directly without evaluating the interval period.
5. Multi-connected unit of MX7 series without fixed host and sub-unit can shift in turn according to the conditions.

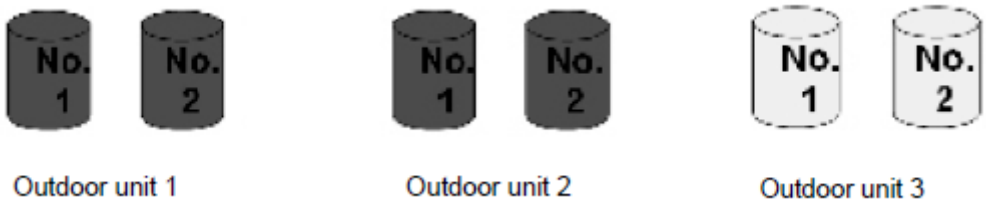
⑤ Changes of the number of compressor (take the multiple connection of 3 double compressor of outdoor unit as example)
Compressor shifts its number of operating with the different operating frequency according to the following pictures.
※ No.1 in the following picture represents the compressor with the highest priority, and outdoor unit 1 represents the outdoor unit with the highest priority, and so on.
1. At first, when operating frequency of one compressor of the outdoor unit 1 is less than 75% of the highest frequency, only No. 1 compressor works.



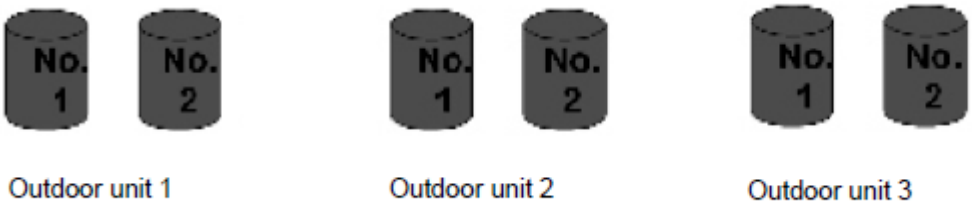
2. When operating frequency of one compressor rises up to the 75% of the highest frequency, two compressors in the outdoor unit 1 will work at the same time.



3. When the operation output ratio of the outdoor unit 1 (actual operating frequency/total operating frequency) continue to rise up to the 75%, two compressors in the outdoor unit 2 will also work at the same time.



4. When the total operation output ratio of the outdoor unit 1 and outdoor unit 2 (actual operating frequency/total operating frequency) rises up to the 75%, two compressors in the outdoor unit 3 will also work at the same time.



5. When the total operation output ratio of the outdoor unit 1, outdoor unit 2 and outdoor unit 3 declines to the 25%, two compressors in the outdoor unit 3 will stop at the same time, outdoor unit 1 and outdoor unit 2 continue to operate.
6. When the total operation output ratio of the outdoor unit 1 and outdoor unit 2 declines to the 25%, two compressors in the outdoor unit 2 will stop at the same time, and the two compressors in outdoor unit 1 continue to operate.
7. When the total operation output ratio of the outdoor unit 1 declines to the 25%, the No. 2 compressor of outdoor unit 1 will stop and the No. 1 compressor continues to operate.

15.2 Target pressure control

① Cooling low pressure control

Target pressure Ps when cooling		Remarks
Long piping setting	7.0kg	
Medium piping setting	7.5kg	Factory default setting
Short piping setting	8.3kg	

• During cooling, the operating frequency of compressor is fuzzy controlled based on target Ps.
• The frequency of compressor goes down and Ps goes up; the frequency of compressor goes up and Ps goes down.
• During cooling, if the low pressure reaches 1.05MPa, control the LEV of all indoor units to make sure it will not exceed 1.05MPa.
[Note] The one-way connection piping of unit is generally defined as: when the longest piping is less than 30m, it is short piping; 30-90m, medium piping; more than 90m, long piping. The specific situation is determined by installation in site.

② Heating high pressure control

Target pressure Pd when heating		Remarks
Long piping setting	30kg	
Medium piping setting	28kg	Factory default setting
Short piping setting	26kg	

During heating, the operating frequency of compressor is fuzzy controlled based on target Pd.
The frequency of compressor goes down and Pd goes down; the frequency of compressor goes up and Pd goes up.
[Note] For heating capacity, if the high pressure is higher, the capacity is higher. However, if the high pressure is higher, the COP of unit will be lower.

15.3 Fan control

① Control of MX7 series DC motor
The air supply speed of outdoor unit can be set from speed 0 to 15 in accordance with the operating mode.
The operating is commonly at speed 1 - 16, and it is CVT (Continuously Variable Transmission) control between speed 1 and 15.
② Air supply motor: range of number and rotating speed (unit: rpm)

Rotating Speed No.	12 - 14HP	16HP	18 - 24HP
1	OFF		
2	160rpm + OFF		
3	400rpm + OFF		
4	160rpm * 2		
5	190 * 2		
6	230 * 2		
7	280 * 2		
8	330 * 2		
9	400 / 400		
10	400 / 500		
11	520 / 660		
12	680 / 680		
13	800 / 880		
14	880 / 960		
Common used Max. value: 15	960	1080	1140
High static pressure: 16	1080	1140	1180

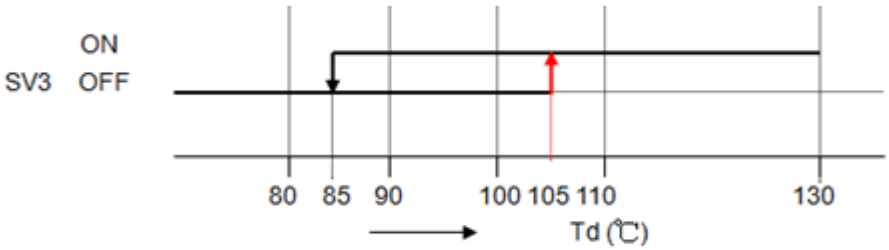
③ Fan control
1. When the cooling high pressure is lower than 1.9MPa, the outdoor fan will stop.
2. When the cooling high pressure is lower than 2.2MPa, the rotating speed of outdoor fan is fuzzy controlled based on targeting 2.2MPa of high pressure.
3. When the cooling high pressure is more than 2.2MPa, the outdoor fan will operate at the highest rotating speed.
4. When the heating high pressure is more than Pd+0.3MPa, the rotating speed of outdoor fan is fuzzy controlled based on targeting Pd+0.3MPa of high pressure.
5. When the heating high pressure is lower than Pd+0.3MPa, the outdoor fan will operate at the highest rotating speed.
6. When the heating high pressure is more than Pd+0.5MPa, the outdoor fan will stop.

15.4 Pressure protection control

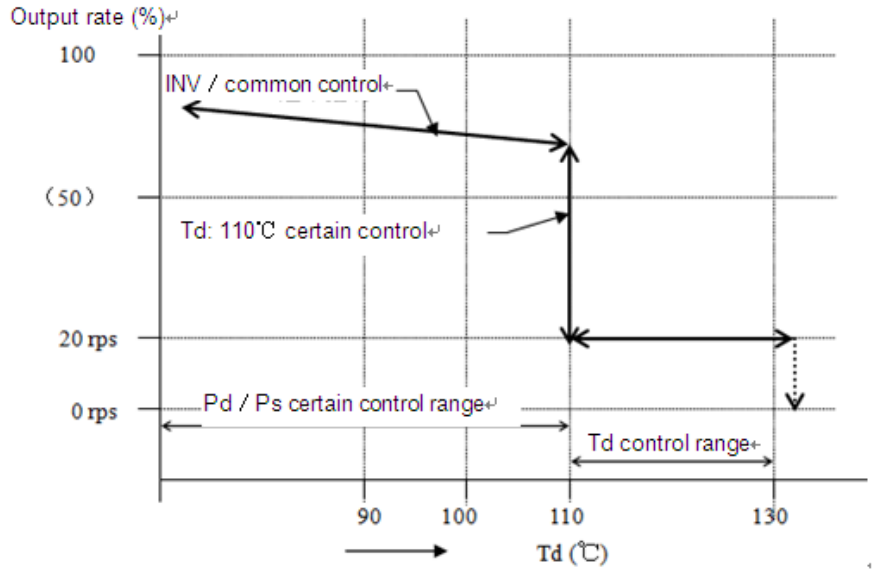
① Protection control for high pressure
1. When the high pressure reaches 3.7MPa, the frequency of compressor will be limited and controlled, and the SV1 start control will be conducted at the same time, making the high pressure not exceed 3.7MPa.
2. When the high pressure reaches 4.0MPa or more, the failure of high pressure switch disconnection is alarmed, and the unit will stop operating.
② Protection control for low pressure
1、When the low pressure reaches 1.05MPa or more, make sure the pressure will not exceed 1.05MPa by controlling the LEVa1 and 2 of all outdoor units when heating; make sure the pressure will not exceed 1.05MPa by controlling the LEV of all indoor units when cooling.
2、When the low pressure is lower than 0.2MPa, the SV1will be started to increase the low pressure;
3、Alarm to shut down if the followings are detected within 5min: cooling: Ps< 0.10Mpa; heating: Ps< 0.05Mpa; defrosting and oil return: Ps<0.03Mpa after the compressor operates.

15.5 Overheating protection control

① When the temperature at the top of compressor rises, the corresponding SV31 and 2 is started to conduct the liquid bypass cooling.
(Refer to Figure 1) Td high temperature side (≦ 130℃) control / SV31 and 2 control



② When the temperature at the bottom of compressor rises to 110℃ , the output frequency of compressor is limited and controlled.
(Refer to Figure 2) Td1 and 2 high temperature side (≦ 120℃) control / INV compressor control

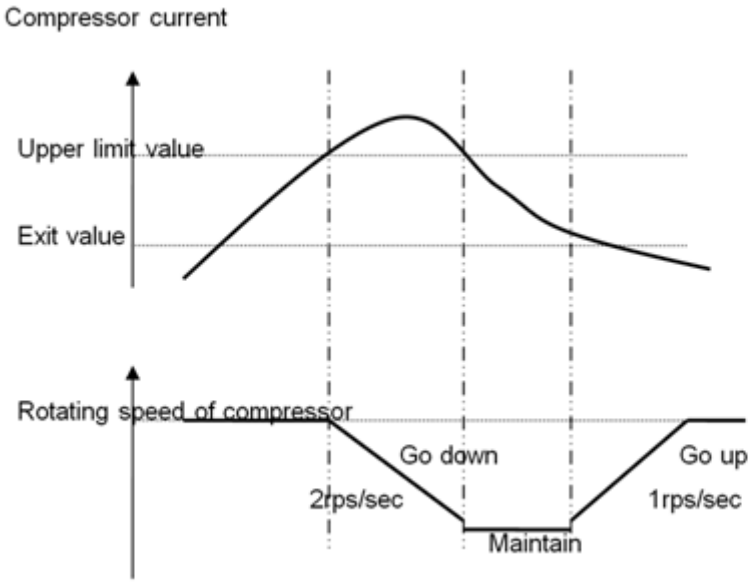


15.6 Current protection control

① If the current of compressor exceeds the stipulated upper limit value, the operating frequency is reduced for control before the current changes to exit value or below.

② When the current cannot reach the upper limit value or below even at the lowest rotating speed (20rps), the compressor will stop operating.

③ If the current reaches the exit value or below, it will get back to the target rotating speed.



[Note] The current upper limits / exit values are stipulated as follows:

Outdoor Unit	16HP	8HP, 10HP, 12HP, 18HP, 20HP	14HP, 22HP, 24HP
Inverter Drive	Self-control	Self-control	Self-control
Upper Limit Value	25A	34A	40A
Exit Value	24A	32.6A	37A

16. Failure code

Master unit digital tube display failure code	Failure code definition	Failure description	Remarks
20-0	Defrosting temp. sensor Tdef1 failure	AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, sensor has no alarm when abnormal in cooling mode.	Resumable
20-1	Defrosting temp. sensor Tdef2 failure		
21	Ambient temp. sensor Ta failure	AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, sensor has no alarm when abnormal in cooling mode.	Resumable
22-0	Suction temp. sensor Ts1 failure		
22-1	Suction temp. sensor Ts2 failure		
22-2	Suction temp. sensor Tsacc failure		
22-3	Suction temp. sensor Tsuc failure	If AD value is over 1012 (short circuit) for 60 seconds, alarm. AD value is below 11 (open circuit) for 60 seconds, If Tao<0℃ , there is no open circuit alarm. If Tao>=0℃ and ET<0, there is no alarm. ET>=0℃ ,for 5 minutes, alarm. sensor has no alarm when abnormal in cooling mode.	
23-0	Discharging temp. sensor Td1failure	AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds. If Tao≤0℃ , no need to detect the open circuit failure (AD value is below 11.)	Resumable
23-1	Discharging temp. sensor Td2 failure		
24-0	Oil temp. sensor Toilp failure	If AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, alarm. If Tao<0℃ , there is no open circuit alarm. If Tao>=0℃ and ET>=0℃ , no open circuit alarm within 5 minutes.	Resumable
24-1	Oil temp. sensor Toil1 failure	If AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, alarm. If Tao<0℃ , there is no open circuit alarm.	
24-2	Oil temp. sensor Toil2 failure		
25-0	Heat exchanger inlet temp. Toci1 failure	AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, sensor has no alarm when abnormal in cooling mode.	Resumable
25-1	Heat exchanger inlet temp.Toci2 failure		
26-0	Outdoor unit and indoor unit communication failure	Not finding connected indoor units for continuous 200 cycles	Resumable
26-1		The searched indoor unit quantity is less than the set quantity for continuous 270 seconds	
26-2		The searched indoor unit quantity is more than the set quantity for continuous 170 seconds	

Master unit digital tube display failure code	Failure code definition	Failure description	Remarks
27-0	Oil temp. too high protection（ToiL1）	Toili ≥120℃（E）at interval 25msec, continuous 2 times, and over the set value, then stop and alarm. The oil temp. 10℃ lower than the alarm condition for 3 minutes after stop. If it occurs 4 times in an hour, confirm the failure. (the same as Td too high protection.)	Once confirmed, un-resumable
27-1	Oil temp. too high protection（Toil2）		
28-0	High pressure sensor Pd1 failure	If AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, alarm.	Resumable
28-1	High pressure sensor Pd2 failure		
29	Low pressure sensor Ps failure		
30-0	High pressure switch HPS1 failure	When power on, the confirmation of OFF for continuous 2sec, alarm. If it occurs 4 times in an hour, confirm the failure.	Once confirmed, un-resumable
30-1	High pressure switch HPS2 failure		
31	Liquid pipe pressure sensor P1 failure	If AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, alarm.	
32-0	Heat exchanger outlet temp. Tsco failure	If AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, alarm, sensor has no alarm when abnormal in heating mode.	Resumable
32-1	Liquid pipe SC temp. of subcooler Tliqsc failure		
33-0	EEPROM (AT24C04) failure	EEPROM communication failure	Once confirmed, un-resumable
33-1		EEPROM data check failure(model code, check, etc.)	
33-2		EEPROM data logistic failure(data beyond limit, reverse sequence, etc.)	
34-0	Discharging temp. too high protection（Td1）	Td1 / Td2≥130℃（E）at interval 25msec, continuous 2sec, and over the set value, then stop and alarm. The oil temp. 10℃ lower than the alarm condition for 3 minutes after stop, then resume automatically. If it occurs 4 times in an hour, confirm the failure.	Once confirmed, un-resumable
34-1	Discharging temp. too high protection（Td2）		

Master unit digital tube display failure code	Failure code definition	Failure description	Remarks
35-0	4-way valve reversing failure	After the 4-way valve is electrified for 3 minunts, if the below conditions can be met for continuous 10 seconds, that is conversing successfully: · & · The outdoor compressor running normally · & · & · Tsuc − Tdef1 ≧ 10℃ · Tsuc − Tdef2 ≧ 10℃ · Pd − Ps ≧ βMpa ※Otherwise, stop protection. （Tao ＞ -10℃，β=0.60；Tao ≦ -10℃，β=0.40） *4-way valve OFF starts up again after 3 minutes *If Thermo. OFF for 2 continuous times, Error stop.	Once confirmed, un-resumable
35-1	4-way valve reversing failure	If there is 4-way valve of slave unit not electrified after master unit heating detection starts up for 20 min, alarm 35-1 failure.	
36-0	Oil temp. too low protection（Toil1）	In normal operation (exclude start up, defrosting, oil return, remain, stop), if Toil ＜ CT+10℃ for continuous 5 minutes, the unit stops for 170 seconds and then resumes automatically. If it occurs 3 times in an hour, lock the alarm. *The same as Td too low protection	Once confirmed, un-resumable
36-1	Oil temp. too low protection（Toil2）		
37-1	Lack of phase of 3N power supply	S phase lack (L1 connect R, supply power for main PCB, L2 connect the S of the main PCB, L3 supply power for module, no fixed frequency compress, so don't detect phase sequence, only detect if it lack of phase	Once confirmed, un-resumable
38	High pressure sensor Pd too low protection	Pd too low fault shield	
39-0	Low pressure sensor Ps too low protection	After compressor is running (except for residual operation), if in cooling, Ps<0.10MPa; in heating, Ps< 0.05MPa, in oil return, Ps<0.03MPa for continuous 5 minutes, stop and alarm. 170 seconds later, resume automatically. If it occurs 3 times in an hour, confirm the failure.	Once confirmed, un-resumable
39-1	Compressor ratio ε too high protection	After compressor is running, compression ratio ε ＞ 8.0 for continuous 5 minute, then stop and alarm. If in cooling, compression ratio ε ＞ 9.0 for continuous 1 minute or in heating, compression ratio ε ＞ 8.5 for continuous 1 minute or in heating, stop and alarm. 170 seconds later, resume automatically. If it occurs 4 times in an hour, confirm the failure.	
39-2	1# Compressor ratio ε too low protection	In normal operation (exclude start up, defrosting, oil return, remain, stop), if compression ratio ε<1.8 for continuous 5 minutes, then stop and alarm. Or ε<1.5 for continuous 1 minute, then stop and alarm. 170 seconds later, resume automatically. If it occurs 4 times in an hour, confirm the failure.	
39-3	2# Compressor ratio ε too low protection		

Master unit digital tube display failure code	Failure code definition	Failure description	Remarks
40-0	High pressure sensor Pd1 too high protection	After compressor is running, if Pd≥4.15MPa, stop and alarm.170 seconds later, resume automatically. If it occurs 4 times in an hour, confirm the failure.	Once confirmed, un-resumable
40-1	High pressure sensor Pd2 too high protection		
43-0	Discharging temp. sensor Td1 too low protection	After 10 minutes for normal operation (exclude start up, defrosting, oil return, remain, stop), if Td ＜ CT+10℃ for continuous 5 minutes, stop and alarm. 170 seconds later, resume automatically. If it occurs 3 times in an hour, lock the alarm. After the compressor 1 or 2 alarm, the compressor 1 or 2 remain running. After 3 tiems locked ,the system stop and report fault	Once confirmed, un-resumable
43-1	Discharging temp. sensor Td2 too low protection		
44	Low pressure sensor Ps too high protection	Don't protect control, continue to work. If it occurs 4 times in an hour, locking.	Once confirmed, un-resumable
45	If it occurs 4 times in an hour,	No communication within 30 seconds continuously (E)	Resumable
46-0	Communication with INV1 board failure	No communication within 30 seconds continuously (E)	
46-1	Communication with INV2 board failure	No communication within 30 seconds continuously (E)	
71-0	Fan 1 locked-rotor （Left）	Running at speed below 20rpm for 30s, or at speed of 70% lower than target for 2 minutes, stop. 170 seconds later, resume automatically. If it occurs 4 times in an hour, confirm the failure.	Once confirmed, un-resumable
71-1	Fan 2 locked-rotor （Right）		
72-0	Fan 1 reversal （Left）	Detect the reversal signal which send by the fan motor, and the reversal speed more than 700, alarm and stop.	Resumable
72-1	Fan 2 reversal （right）		Resumable
73-0	Fan 1 over current（Left）	When the motor speed lower than 400, occur over current signal for10 seconds, alarm and stop, if it occurs 5 times in an hour, lock the failure	Resumable
73-1	Fan 2 over current（right）		Resumable

Master unit digital tube display failure code	Failure code definition	Failure description	Remarks
75-0	No pressure drop between high pressure and low pressure	n 1 minute after INV compressor starts up, Pd-Ps≤0.1MPa,then stop. 170 seconds later, resume automatically. If it occurs 4 times in an hour, confirm the failure.	Once confirmed, un-resumable
75-4	Too small pressure drop between high pressure and low pressure	If Pd-Ps≤0.4MPa for 3 minutes, the outdoor unit protection stop. • 5 minutes after stopping protection, restart. • If there are more than 6 times of stopping protecting within 2 hours, Error stop.	Once confirmed, un-resumable
76-0	Incorrect outdoor unit quantity, address or capacity setting	Slave unit quantity setting is not in conformance with data in EEPROM of the master unit.	Reset
76-1		Slave unit quantity setting is not in conformance with data in EEPROM of the master unit.	
76-2		Slave unit capacity setting is not in conformance with data in EEPROM of the master unit.	
77	Oil equalization protection among outdoor units	If ToilpB-ToilpA≤10℃ , alarm and stop. Not detecting in the course of startup, defrosting and oil return and in 10 minutes after oil return finishes.170 seconds later, resume automatically. If it occurs 2 times in an hour, lock the failure.	Once confirmed, un-resumable
78-0	Lack of refrigerant alarm in cooling	When cooling compressor runs, Ps<0.1MPa for 30 minutes.	—
78-1	Lack of refrigerant alarm in heating	When heating compressor runs, Ts1-ET>20 & Ts1-ET>20 & LEV open fully for 60 minutes, output the lack of gas alarm signal and not stop.	
80	Capacity not match to the outdoor units	In VRF system, the difference of capacity between any two outdoor units is more than 4HP, confirm the failure.	Un-resumable

Master unit digital tube display failure code	Failure code definition	Failure description	Remarks
99-X	The program self-checking fault	X=0~5	Resumable
110-0	Module 1 over current	Module hardware over current	If it occurs 4 times in an hour, confirm the failure. Once confirmed, un-resumable
110-1	Module 2 over current		
111-0	Compressor 1 out of control	In the course of compressor startup or running, the unit can not detect the rotor position for 6 times, stop for 5s and then the INV control board resumes automatically.	
111-1	Compressor 2 out of control		
112-0	Module 1 radiator temp. too high	If temp. ＞ 94℃ , alarm. If temp.≤94℃ , INV control board resumes automatically.	
112-1	Module 2 radiator temp. too high		
113-0	Module 1 over load	Module over load	
113-1	Module 2 over load		
114-0	Module 1 DC under voltage	If DCBUS voltage ＜ DC420V, alarm If DCBUS voltage ＞ DC420V, INV control board resumes automatically.	
114-1	Module 2 DC under voltage		
115-0	Module 1 DC over voltage	If DCBUS voltage ＞ DC642V、alarm If DCBUS voltage ＜ DC642V, INV control board resumes automatically.	
115-1	Module 2 DC over voltage		
116-0	Communication with modular 1 abnormal	If communication signal can not be detected for continuous 30 seconds, alarm. After it can be detected, INV control board resumes automatically.	
116-1	Communication with modular 2 abnormal		
117-0	Module 1 software over current	Module software over current	
117-1	Module 2 software over current		
118-0	Module 1 startup failure	Compressor starts up fail for continuous 5 times.	
118-1	Module 2 startup failure		
119-0	Current detecting circuit abnormal of INV controller 1	Sensor for detecting current of inverter controller is abnormal. Cannot be connected or wrong connection.	
119-1	Current detecting circuit abnormal of INV controller 2		
120-0	Inverter controller 1 power supply abnormal	Power supply of inverter controller stops suddenly.	
120-1	Inverter controller 2 power supply abnormal		

Master unit digital tube display failure code	Failure code definition	Failure description	Remarks
121-0	Power supply of inverter controller 1 board is abnormal	Power supply of inverter controller board is broken down instantly.	f it occurs 4 times in an hour, confirm the failure. Once confirmed, un-resumable.
121-1	Power supply of inverter controller 2 board is abnormal		
122-0	Radiator temp. sensor of inverter controller 1 is abnormal.	Resistor of temp. sensor abnormal or temp. sensor disconnected.	
122-1	Radiator temp. sensor of inverter controller 2 is abnormal.		
125-0	Compressor 1 frequency un-match	(Current frequency≥INV target frequency+3Hz) or （target frequency>0 & actual frequency=0）for continuous 5 minutes	Resumable
125-1	Compressor 2 frequency un-match		
127	MCU reset failure	If the master unit inspects that MCU of slave unit is reset, and the slave unit is running, the master unit alarm MCU reset failure, then the whole system stop. In heating mode, when restart up, 4WV will not be electrified, and the whole system will execute 4WV reversing operation again. If it occurs 4 times in one hour, confirm the failure.	Once confirmed, un-resumable
128	MCU program need update	The VRF system program is incompatible, program update prompt.	Un-resumable

When there is no failure, if the starting condition can not be met, digital tube on master unit will display stand-by code:

555.0	Standby state of capacity overmatch	When capacity is over 135% or lower than 50%, the system is standby.	Resumable
555.1	Standby state of 26°C heating mode	When it is in heating mode with ambient temperature over 26°C, the system is standby.	
555.2	Standby state of super low pressure (lack of refrigerant)	When the unit starts in cooling with Ps<0.23Mpa or heating with Ps<0.12Mpa, the system is standby.	
555.3	54°C cooling standby	High ambient models, the unit can't open if ambient temp. above 54°C, 7-segment board display: "555.3"	
555.6	Coded lock restrictions standby	Reach the system maximum operation time set by coded lock, the system standby	

※Failure code distribution introduction

0 ～ 19：indoor unit failure

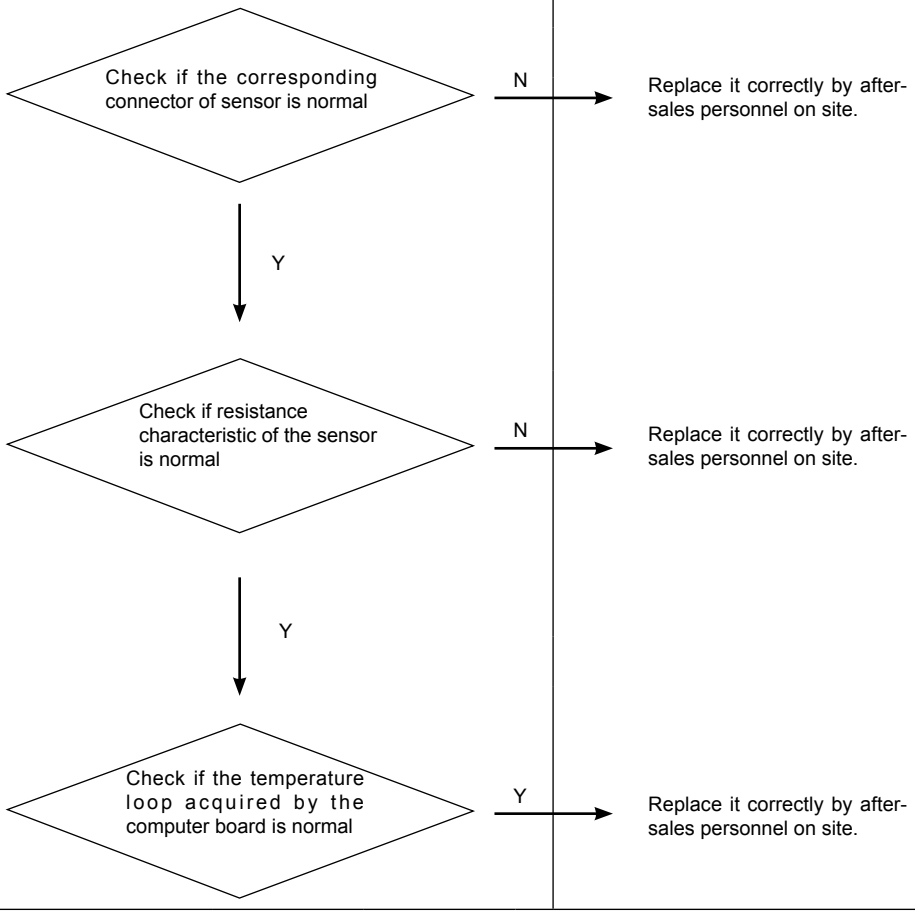
20 ～ 99：outdoor unit failure

110 ～ 125：inverter module failure

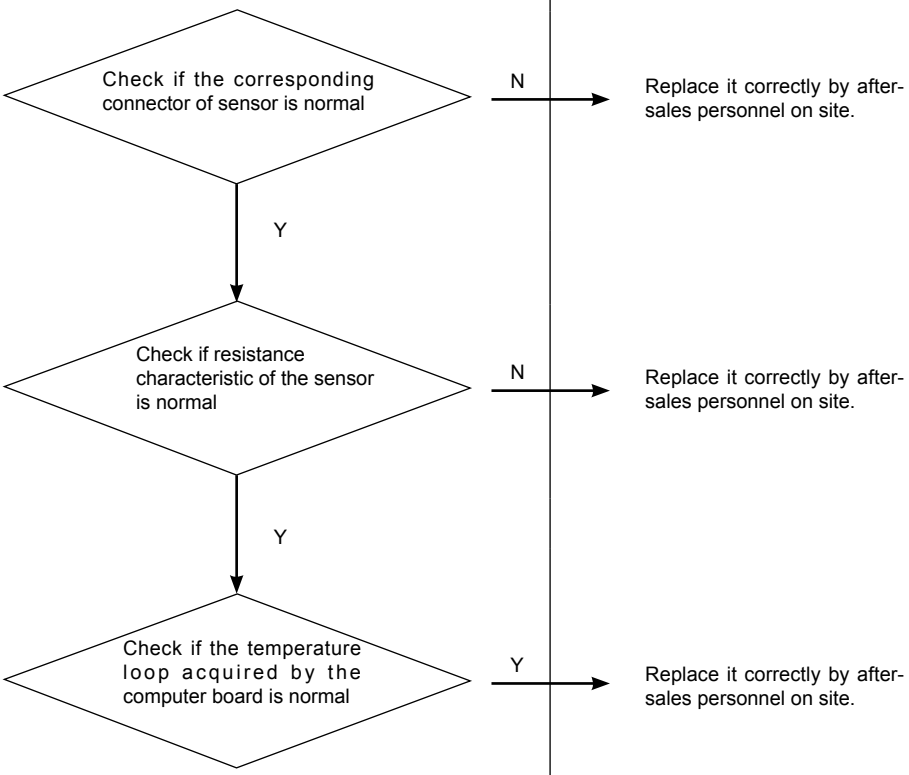
126 ～ 127：soft self-detect

17. Troubleshooting

Failure code Outdoor digital display tube: 20-0,1 Indoor wired controller: 14	Indoor unit LED status	LED5		Failure description: Defrosting temperature sensors: Tdef1 and Tdef2 failure
		20 times		
	Outdoor unit LED status Normal	LED1	LED2	
		Normal	Normal	

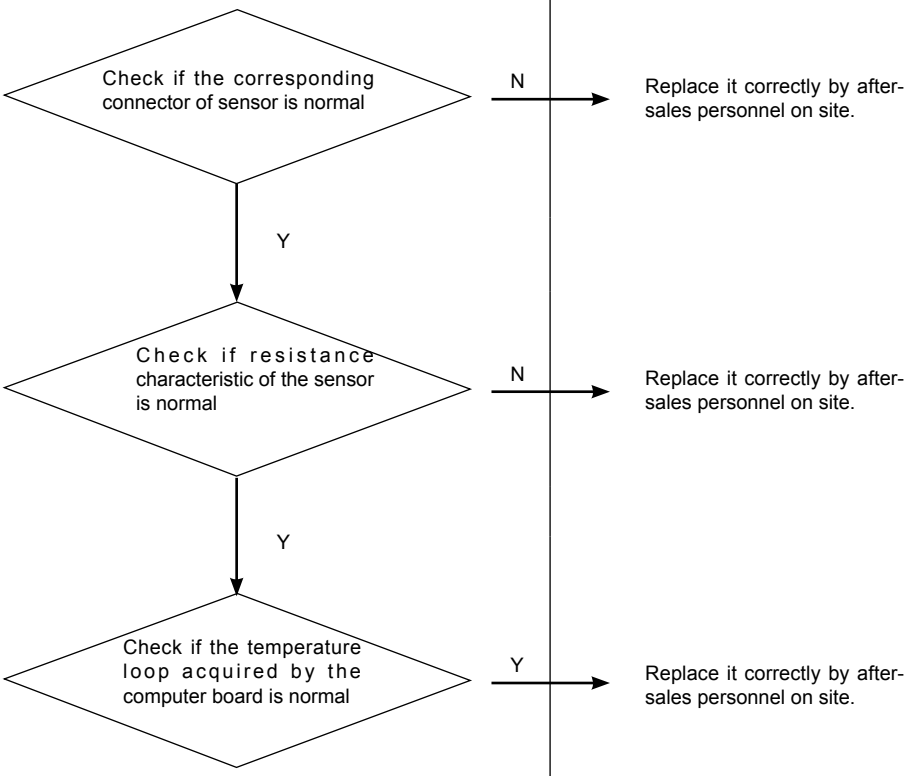
1. Model	Failure diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check if the sensor connection is normal; ◆ Check if resistance characteristic of the sensor is normal; ◆ Check if the temperature loop acquired by the PCB is normal.		
3. Abnormity confirmation conditions It is detected that the AD value is below 11 (open circuit) or above 1012 (short circuit) for 60 seconds continuously, the in abnormity will not be handled when the sensor operates in the cooling mode, and no alarm is given during defrosting and within 3 minutes at the end of defrosting.		
4. Possible causes ◆ The connection of sensor is not secure; ◆ The sensor is broken; ◆ The sensor is with resistance drift; ◆ The temperature acquired by PCB is not accurate.		

Failure code Outdoor digital display tube: 21 Indoor wired controller: 15	Indoor unit LED status	LED5		Failure description: Ambient temperature sensor: Tao failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

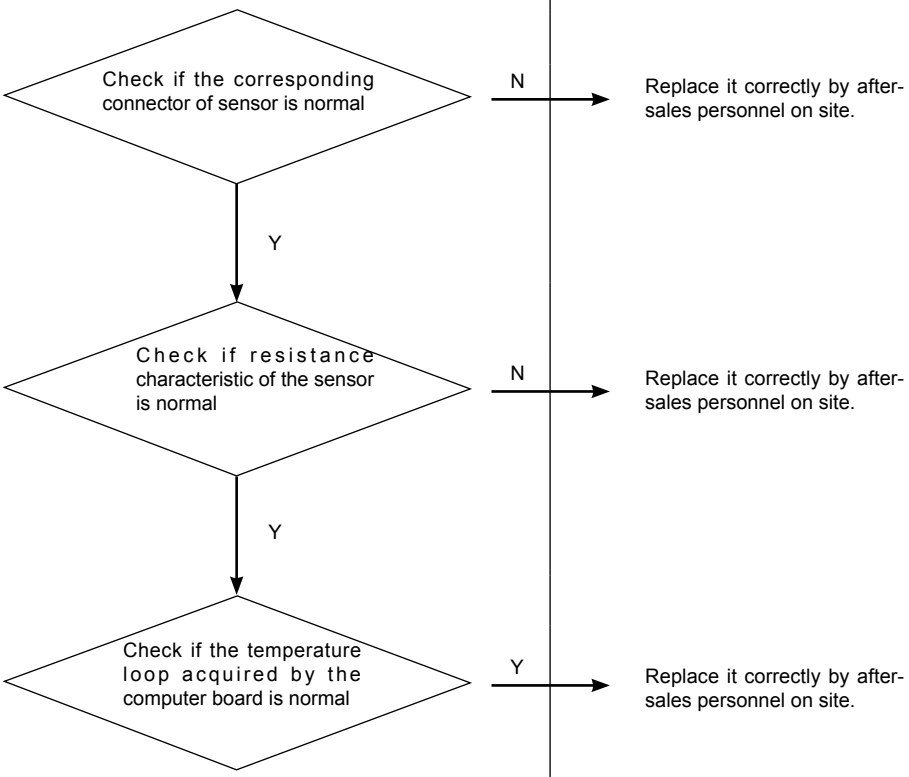
1. Model	Failure diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the sensor connection is normal; ◆ Check if resistance characteristic of the sensor is normal; ◆ Check if the temperature loop acquired by the PCB is normal.		
3. Abnormity confirmation conditions		
It is detected that the AD value is below 11 (open circuit) or above 1012 (short circuit) for 60 seconds continuously, and no alarm is given during defrosting and within 3 minutes at the end of defrosting.		
4. Possible causes		
◆ The connection of sensor is not secure; ◆ The sensor is broken; ◆ The sensor is with resistance drift; ◆ The temperature acquired by PCB is not accurate.		

Failure code Outdoor digital display tube: 22-0, 1, 2, 3 Indoor wired controller: 16	Indoor unit LED status	LED5		Failure description: Suction temperature sensor: Ts1, Ts2, Tsacc and Tsuc failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the sensor connection is normal; ◆ Check if resistance characteristic of the sensor is normal; ◆ Check if the temperature loop acquired by the PCB is normal.		
3. Abnormity confirmation conditions		
It is detected that the AD value is below 11 (open circuit) or above 1012 (short circuit) for 60 seconds continuously, and no alarm is given during defrosting and within 3 minutes at the end of defrosting.		
4. Possible causes		
◆ The connection of sensor is not secure; ◆ The sensor is broken; ◆ The sensor is with resistance drift; ◆ The temperature acquired by PCB is not accurate.		

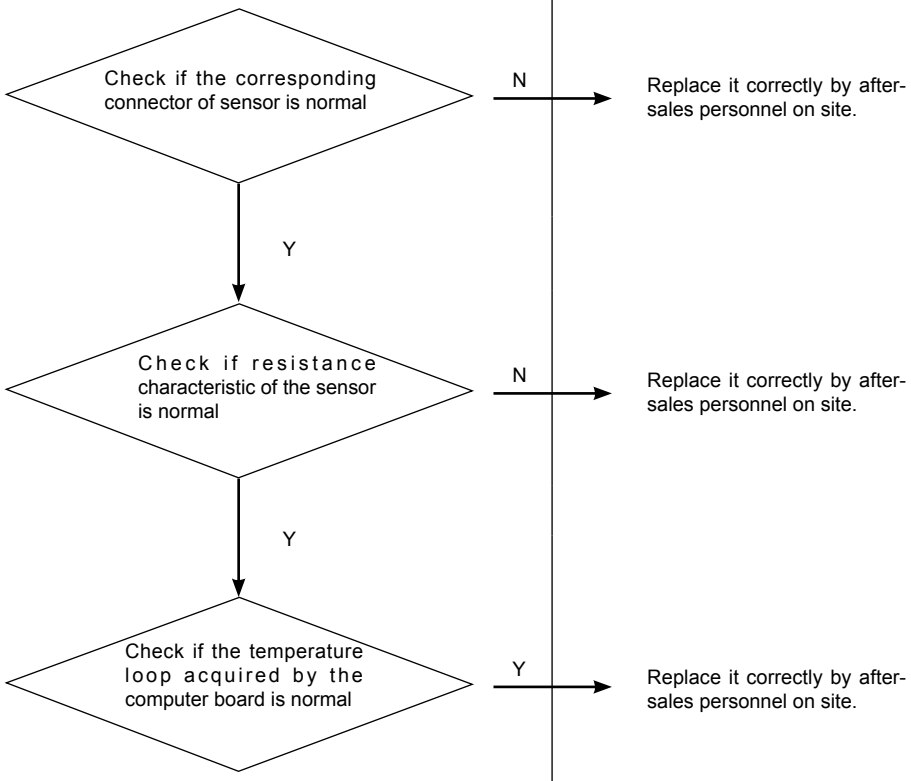


FFailure code Outdoor digital display tube: 23-0,1 Indoor wired controller: 17	Indoor unit LED status	LED5		Failure description: Discharging temperature sensor: Td1and Td2 failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the sensor connection is normal; ◆ Check if resistance characteristic of the sensor is normal; ◆ Check if the temperature loop acquired by the PCB is normal.		
3. Abnormity confirmation conditions		
It is detected that the AD value is below 11 (open circuit) or above 1012 (short circuit) for 60 seconds continuously. If Ta≤-10°C the open circuit is detected after 3 minutes of compressor operation (AD value is below 11).		
4. Possible causes		
◆ The connection of sensor is not secure; ◆ The sensor is broken; ◆ The sensor is with resistance drift; ◆ The temperature acquired by PCB is not accurate.		

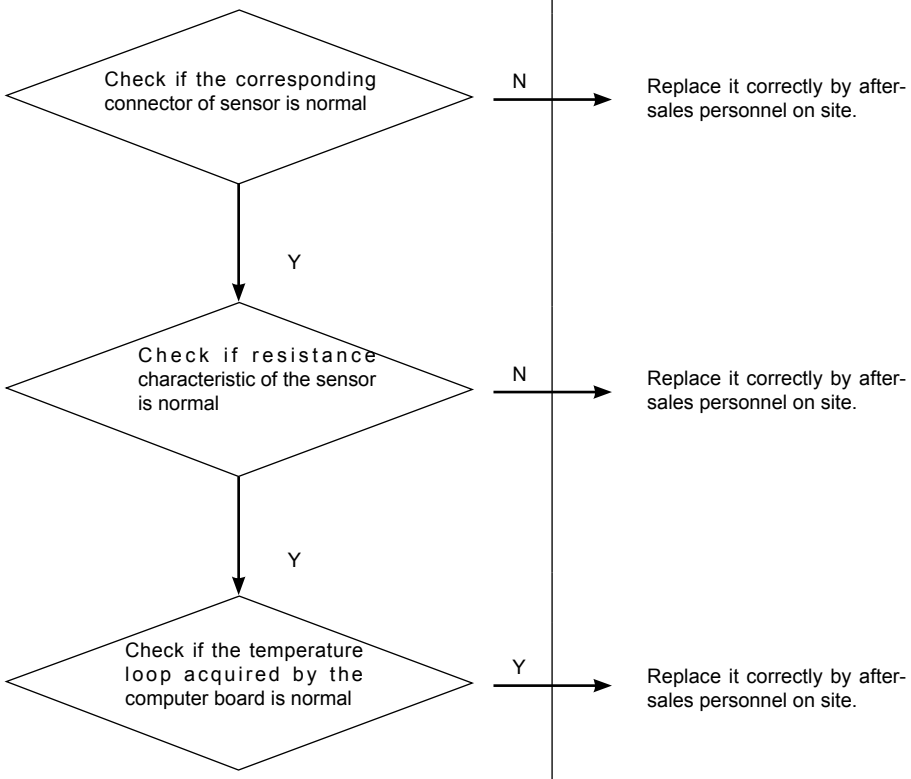
Failure code Outdoor digital display tube: 24-0, 1, 2 Indoor wired controller: 18	Indoor unit LED status	LED5		Failure description: Oil temperature sensor: Toilp, Toil1 and Toil2 failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the sensor connection is normal; ◆ Check if resistance characteristic of the sensor is normal; ◆ Check if the temperature loop acquired by the PCB is normal.		
3. Abnormity confirmation conditions		
It is detected that the AD value is below 11 (open circuit) or above 1012 (short circuit) for 60 seconds continuously, when Ta≤-10°C, no alarm is given; when ET≤-10°C, no alarm is given within 5 minutes.		
4. Possible causes		
◆ The connection of sensor is not secure; ◆ The sensor is broken; ◆ The oil temperature sensor is with resistance drift; ◆ The temperature acquired by PCB is not accurate.		



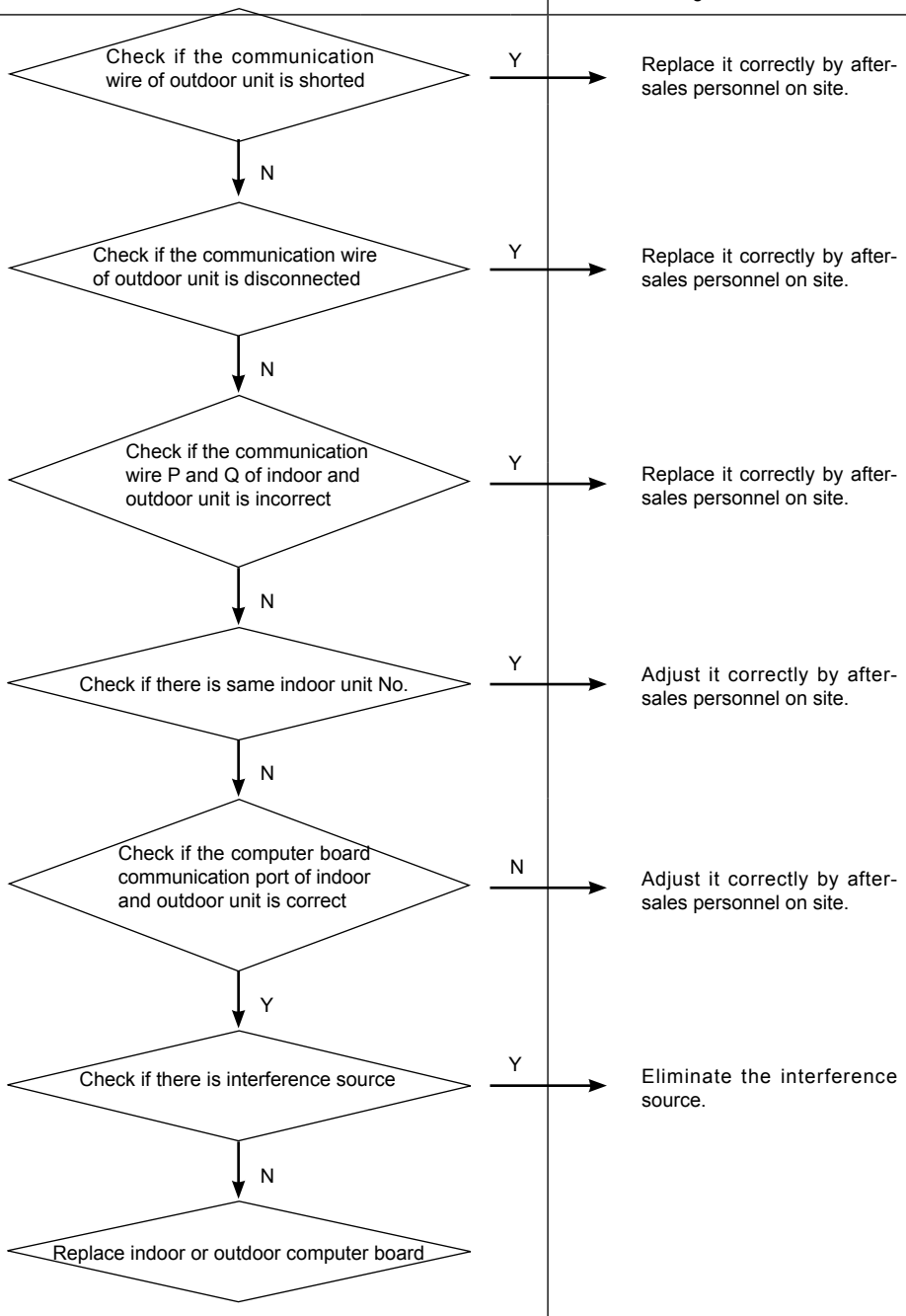
Failure code Outdoor digital display tube: 25-0, 1 Indoor wired controller: 19	Indoor unit LED status	LED5		Failure description: Heat exchanger inlet temperature: Toci1 and Toci2 failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the sensor connection is normal; ◆ Check if resistance characteristic of the sensor is normal; ◆ Check if the temperature loop acquired by the PCB is normal.		
3. Abnormity confirmation conditions		
It is detected that the AD value is below 11 (open circuit) or above 1012 (short circuit) for 60 seconds continuously, the cooling mode operates the sensor abnormity without troubleshooting it, and no alarm is given during defrosting and within 3 minutes at the end of defrosting.		
4. Possible causes		
◆ The connection of sensor is not secure; ◆ The sensor is broken; ◆ The sensor is with resistance drift; ◆ The temperature acquired by PCB is not accurate.		



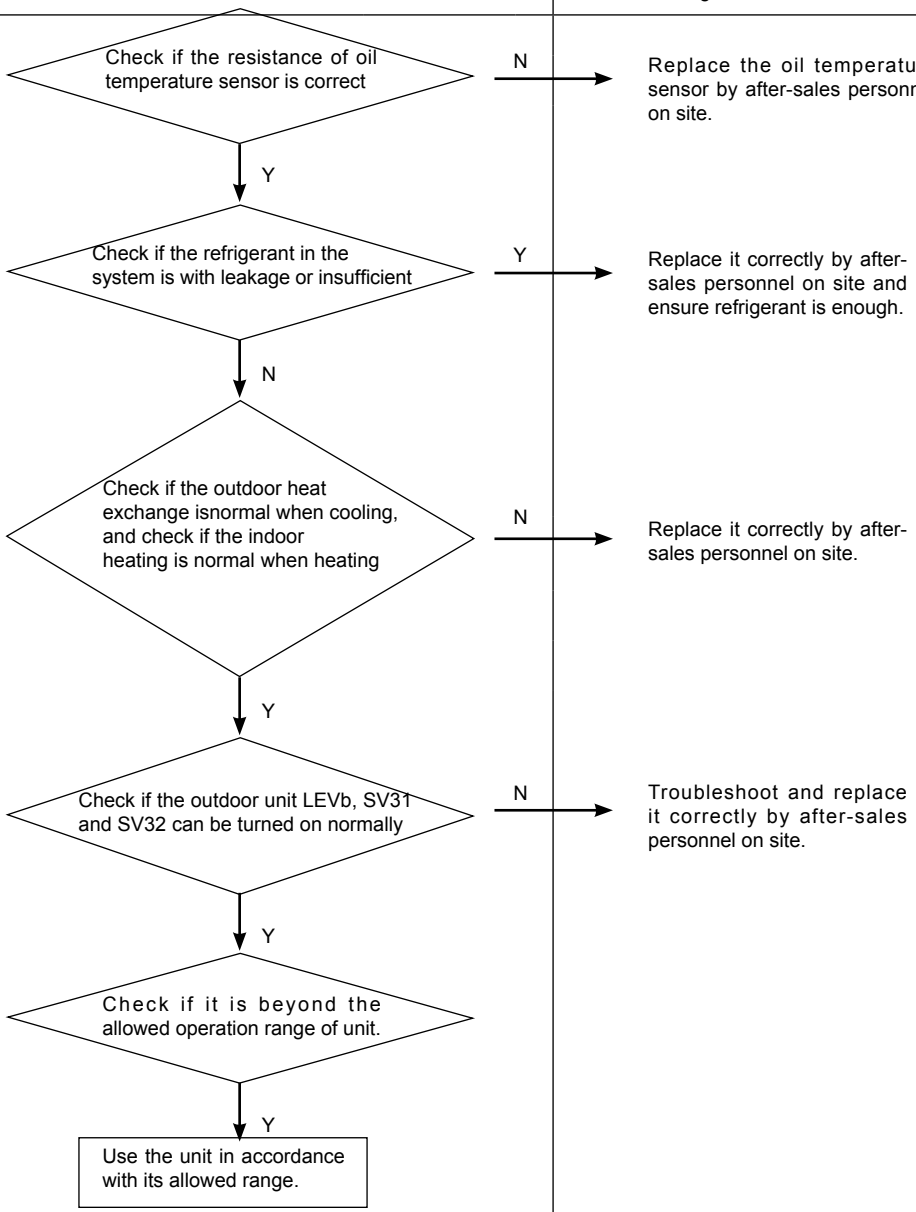
Failure code Outdoor digital display tube: 26-0, 1, 2 Indoor wired controller: 1A	Indoor unit LED status	LED5		Failure description: Communication between indoor unit and outdoor unit failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Grounded short-circuit of communication wire, or disconnected communication wire P and Q; ◆ Incorrect wiring of communication wire P and Q; ◆ Uniform indoor unit power supply, and partial indoor unit being powered off. ◆ Larger interference and unstable communication signal. ◆ Failure in PCB of indoor and outdoor unit results in unstable communication.		
3. Abnormity confirmation conditions		
It is not detected that there is indoor unit connection for 200 rounds continuously; it is detected that the number of indoor units is less than set number for 270 seconds continuously; it is detected that the number of indoor units is more than set number for 170 seconds continuously.		
4. Possible causes		
◆ Poor communication wire: short circuit and disconnection; ◆ Incorrect wiring of communication wire P and Q P and Q; ◆ Poor PCB results poor communication; ◆ Larger interference of normal communication.		

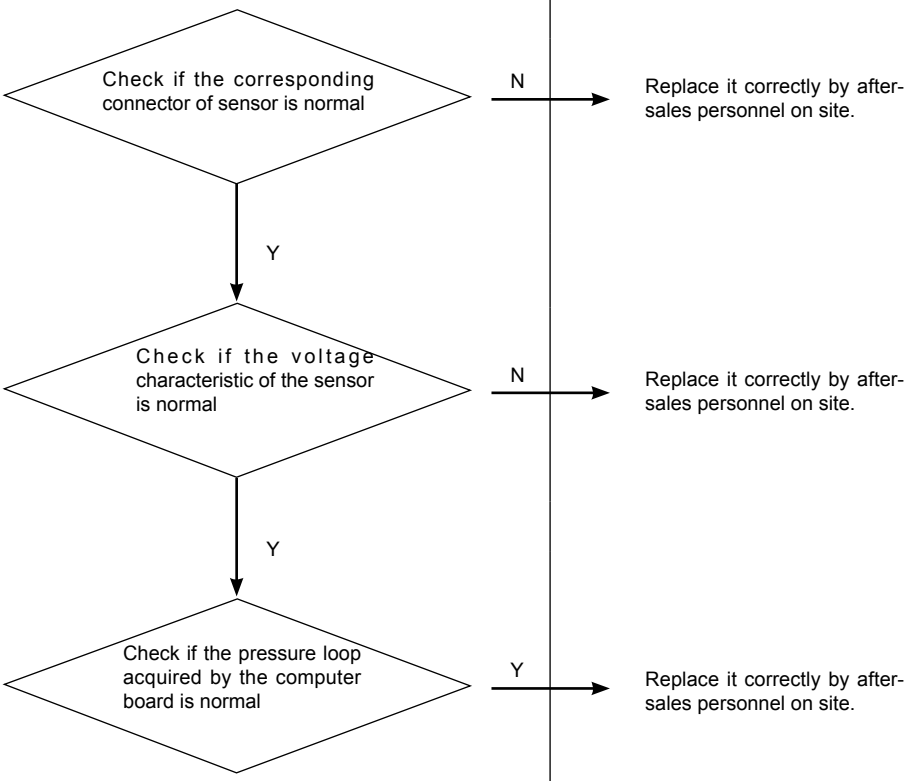


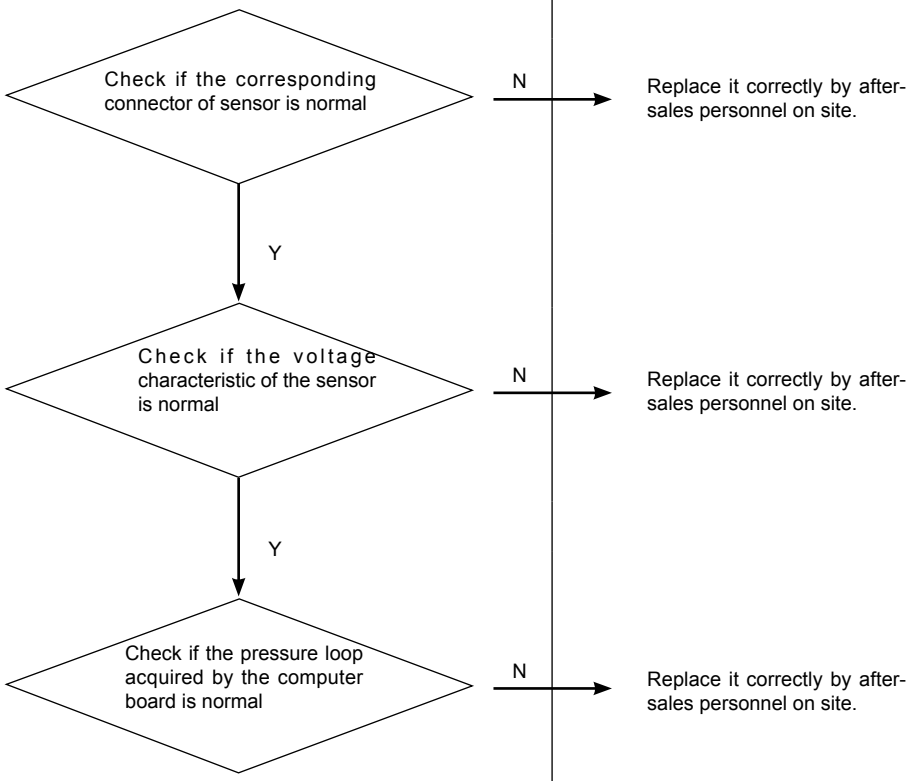
Failure code Outdoor digital display tube: 27-0, 1 Indoor wired controller: 1B	Indoor unit LED status	LED5		Failure description: Outdoor compressor oil temperature too high failure(Toil1 and Toil2)
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the temperature detected by the oil temperature sensor is correct; ◆ Check the unit for leakage or insufficient refrigerant; ◆ Check if the outdoor unit SV31, SV32, LEVb, etc. can be normally turned on; ◆ Check the outdoor heat exchanger of this unit for filth blockage and inlet & outlet air blockage. ◆ Check the indoor heat exchanger of this unit for filth blockage and inlet & outlet air blockage when cooling.		
3. Abnormity confirmation conditions		
Toil1/Toil2≥120°C.		
4. Possible causes		
◆ The oil temperature sensor is with resistance drift; ◆ The refrigerant in the system is insufficient; ◆ The outdoor unit LEVb, SV31, SV32, etc. cannot be turned on normally; ◆ The unit condensation side is with poor heat transfer function. ◆ The operation environment is beyond the allowed range.		



Failure code Outdoor digital display tube: 28-0, 1 Indoor wired controller: 1C	Indoor unit LED status	LED5		Failure description: High pressure sensor disconnection failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

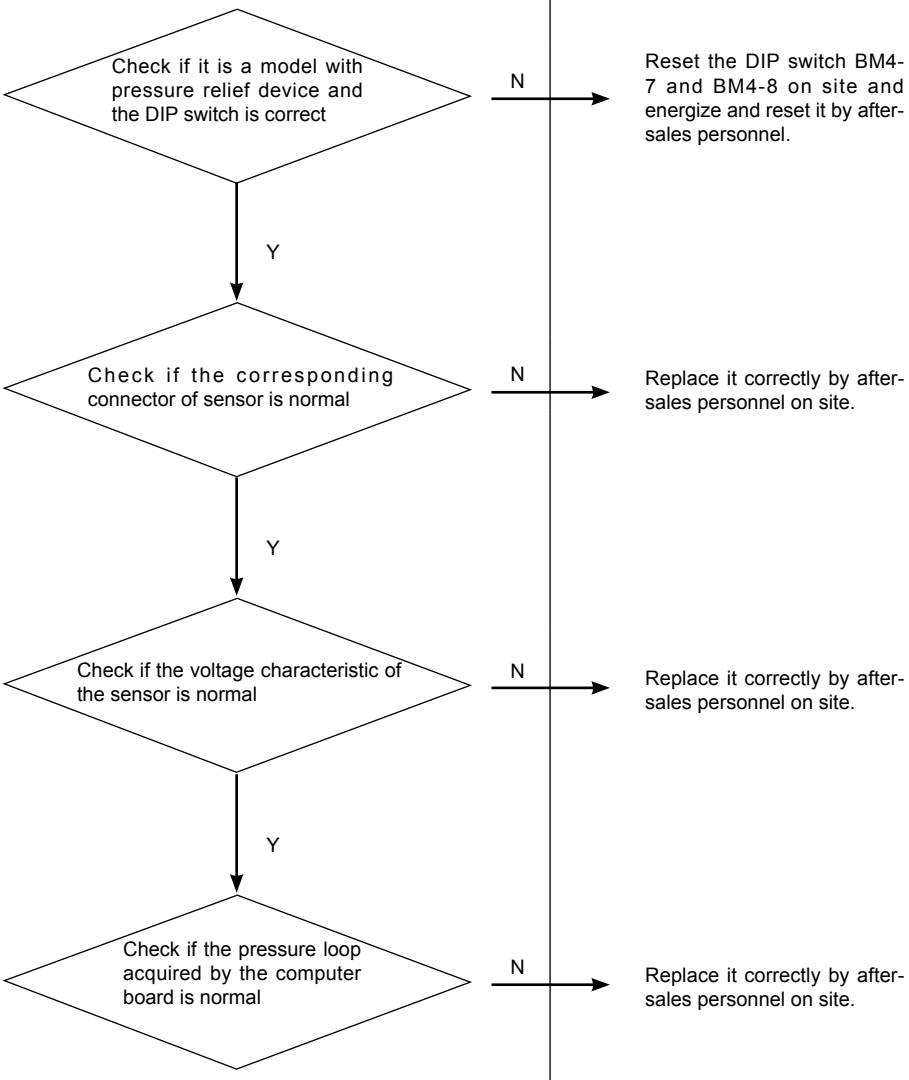
1. Model	Failure diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the sensor connection is normal; ◆ Check if voltage characteristic of the sensor is normal; ◆ Check if the pressure loop acquired by the PCB is normal.		
3. Abnormity confirmation conditions		
It is detected that the AD value is below 11 (open circuit) or above 1012 (short circuit) for 30 seconds continuously, and no alarm is given during defrosting and within 3 minutes at the end of defrosting.		
4. Possible causes		
◆ The connection of pressure sensor is not secure; ◆ The pressure sensor is broken; ◆ The pressure acquired by PCB is not accurate.		

<table>
<tr><td rowspan="3">Failure code
Outdoor digital display tube: 29
Indoor wired controller: 1D</td><td colspan="2">Indoor unit LED status</td><td colspan="2">LED5</td><td rowspan="3">Failure description:
Low pressure sensor disconnection failure</td></tr>
<tr><td colspan="2"></td><td colspan="2">20 times</td></tr>
<tr><td colspan="2">Outdoor unit LED status</td><td>LED1</td><td>LED2</td></tr>
<tr><td colspan="2"></td><td>Normal</td><td>Normal</td></tr>
<tr><td>1. Model</td><td colspan="5">Failure diagnosis and troubleshooting</td></tr>
<tr><td rowspan="8">Flow Logic III series</td><td colspan="3">Diagnosis</td><td colspan="2">Troubleshooting</td></tr>
<tr><td colspan="3" rowspan="7"> 
</td><td colspan="2" rowspan="7"></td></tr>
<tr><td>2. Abnormity detection method</td></tr>
<tr><td>◆ Check if the sensor connection is normal;
◆ Check if voltage characteristic of the sensor is normal;
◆ Check if the pressure loop acquired by the PCB is normal.</td></tr>
<tr><td>3. Abnormity confirmation conditions</td></tr>
<tr><td>It is detected that the AD value is below 11 (open circuit) or above 1012 (short circuit) for 30 seconds continuously, and no alarm is given during defrosting and within 3 minutes at the end of defrosting.</td></tr>
<tr><td>4. Possible causes</td></tr>
<tr><td>◆ The connection of pressure sensor is not secure;
◆ The pressure sensor is broken;
◆ The pressure acquired by PCB is not accurate.</td></tr>
</table>

Failure code Outdoor digital display tube: 30-0, 1 Indoor wired controller: 1E	Indoor unit LED status	LED5		Failure description: High pressure switch disconnection failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

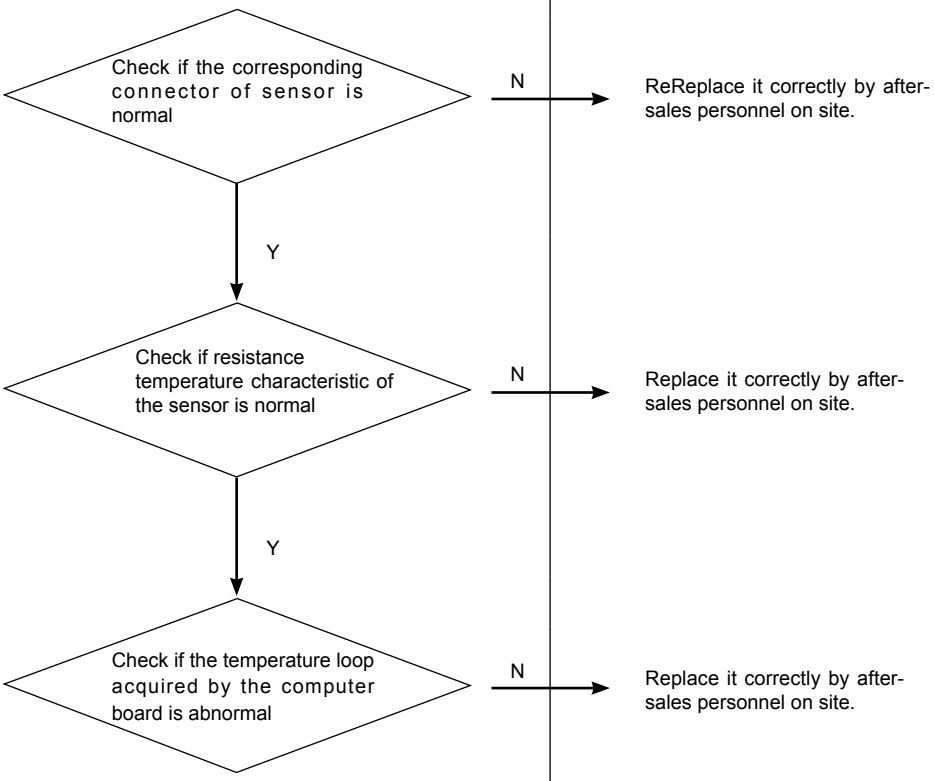
1. Model	Failure diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the pressure switch connection is normal; ◆ Check if the pressure switch signal loop acquired by the PCB is normal; ◆ Check if the pressure switch is turned off usually and the pressure exceeds 4.0MPa when disconnection; ◆ Check if the high pressure side of the system is blocked; ◆ Check the outdoor fan for normal operation when cooling.		
3. Abnormity confirmation conditions		
The high pressure switch is turned off for 2s.		
4. Possible causes		
◆ The connection of pressure switch is not secure; ◆ Pressure switch is broken; ◆ The pressure switch signal acquired by the PCB is incorrect; ◆ The high pressure side of the unit is blocked; ◆ The outdoor fan stops operating when cooling; ◆ The refrigerant is excessive; ◆ It is out of the operating range of units.	Check if the corresponding connector of pressure switch is normal N → Replace it correctly by after-sales personnel on site. Y Check if the pressure switch signal loop acquired by the computer board is normal Y → Replace it correctly by after-sales personnel on site. N Check if the high pressure reaches 4.0MPa when the pressure switch is turned off Y Check if the high pressure stop valve is turned on or the high pressure side is blocked Y → Rectify it correctly by after-sales personnel on site. N Check the outdoor fan for normal operation when cooling N → Rectify it correctly by after-sales personnel on site. Y Check if the refrigerant is excessive Y → Rectify it correctly by after-sales personnel on site. [Note] Confirm if non-condensable gases enter the system. N Check if it is out of the operating range of units. Y → Notify the user to use it within the operating range of units by after-sales personnel.	

Failure code Outdoor digital display tube: 31 Indoor wired controller: 1F	Indoor unit LED status	LED5		Failure description: P1 pressure sensor disconnection failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

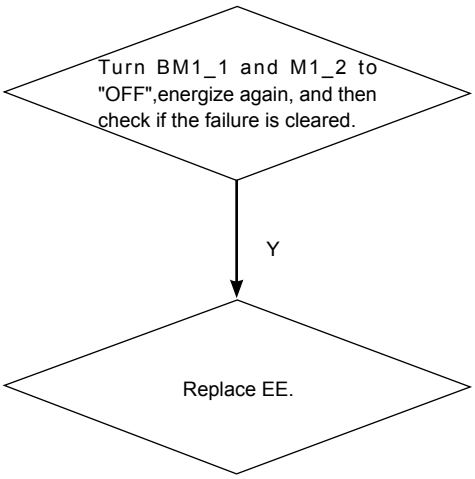
1. Model	Failure diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method	
◆ Check if the dip switch is set as a model with pressure relief device for ordinary model. ◆ Check if the sensor connection is normal; ◆ Check if resistance characteristic of the sensor is normal; ◆ Check if the temperature loop acquired by the PCB is normal.		
3. Abnormity confirmation conditions		
It is detected that the AD value is below 11 (open circuit) or above 1012 (short circuit) for 30 seconds continuously, and no alarm is given during defrosting and within 3 minutes at the end of defrosting (shielded by ordinary model).		
4. Possible causes		
◆ The dip switch is set as a model with pressure relief device for ordinary model. ◆ The connection of sensor is not secure; ◆ The sensor is broken; ◆ The pressure signal acquired by PCB is not accurate.		

FFailure code Outdoor digital display tube: 32-0, 1 Indoor wired controller: 20	Indoor unit LED status	LED5		Failure description: Defrosting temperature sensor failure: Tsco and Tliqsc
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the sensor connection is normal; ◆ Check if resistance characteristic of the sensor is normal; ◆ Check if the temperature loop acquired by the PCB is abnormal.		
3. Abnormity confirmation conditions		
It is detected that the AD value is below 11 (open circuit) or above 1012 (short circuit) for 60 seconds continuously, the cooling mode operates the sensor abnormity without troubleshooting it, and no alarm is given during defrosting and within 3 minutes at the end of defrosting.		
4. Possible causes		
◆ The connection of sensor is not secure; ◆ The sensor is broken; ◆ The sensor is with resistance drift; ◆ The temperature acquired by PCB is not accurate.		

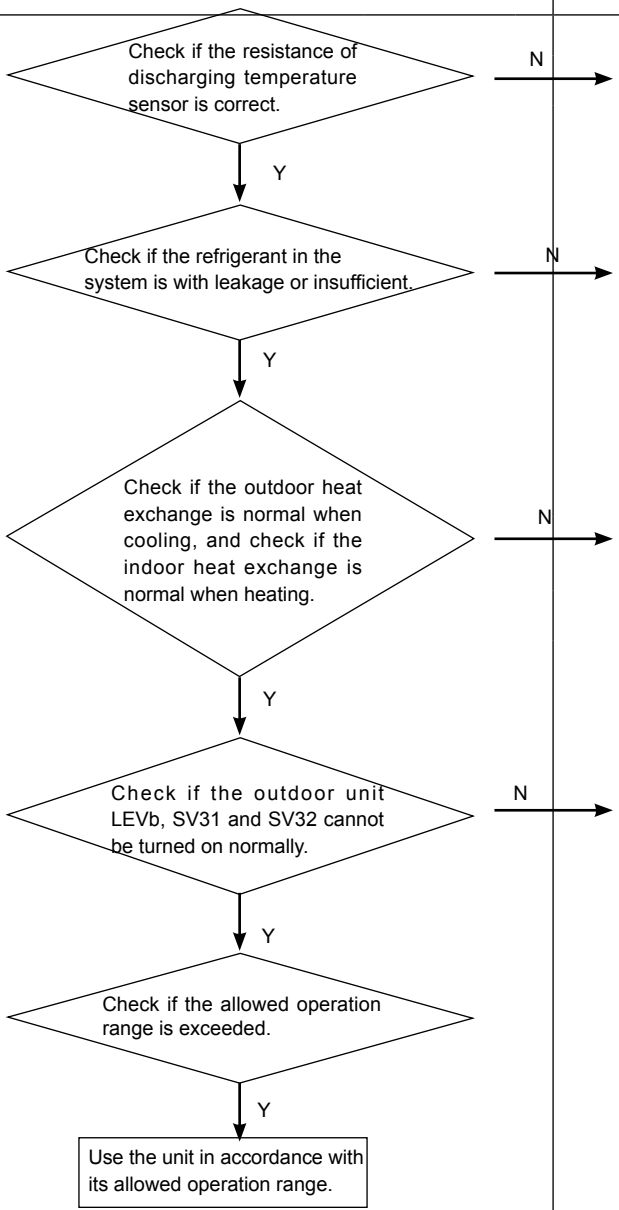


<table>
<tr><td rowspan="3">Failure code
Outdoor digital display tube: 33-0, 1, 2
Indoor wired controller: 21</td><td rowspan="2">Indoor unit LED status</td><td colspan="2">LED5</td><td rowspan="3">Failure description:
EEPROM(AT24C04) failure</td></tr>
<tr><td colspan="2">20 times</td></tr>
<tr><td>Outdoor unit LED status</td><td>LED1</td><td>LED2</td></tr>
<tr><td></td><td>Normal</td><td>Normal</td><td></td></tr>
</table>

<table>
<tr><td>1. Model</td><td colspan="2">Diagnosis and troubleshooting</td></tr>
<tr><td rowspan="2">Flow Logic III series</td><td>Diagnosis</td><td>Troubleshooting</td></tr>
<tr><td rowspan="8"> 
</td><td rowspan="8"></td></tr>
<tr><td>2. Abnormity detection method</td></tr>
<tr><td>◆ Incorrect EEPROM data.</td></tr>
<tr><td>3. Abnormity confirmation conditions</td></tr>
<tr><td>EEPROM communication error; EEPROM data check error (model ID, checksum, etc.); EEPROM data logic error (wider data range, wrong order, etc.)</td></tr>
<tr><td>4. Possible causes</td></tr>
<tr><td>◆ EEPROM is an old version, while the program is a new version.</td></tr>
</table>

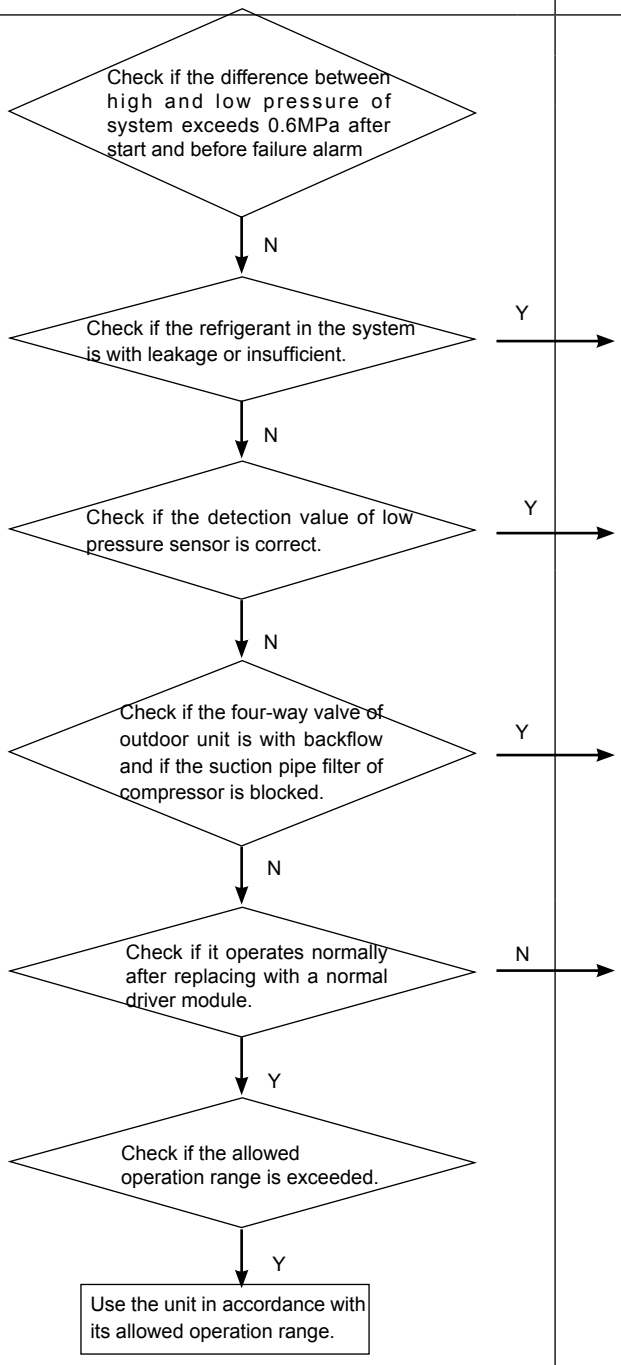
Failure code Outdoor digital display tube: 34-0, 1 Indoor wired controller: 22	Indoor unit LED status	LED5		Failure description: Outdoor compressor discharging temperature (Td1, Td2).too high failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the temperature detected via a discharging temperature sensor is correct. ◆ Check the unit for leakage or insufficient refrigerant; ◆ Check if the outdoor unit SV31, SV32, LEVb, etc. can be normally turned on; ◆ Check the outdoor heat exchanger of unit for filth blockage and air inlet & outlet short circuit when cooling. ◆ Check the indoor heat exchanger of the unit for filth blockage and air inlet & outlet short circuit when heating.		
3. Abnormity confirmation conditions		
Toil1/Toil2≥120°C.		
4. Possible causes		
◆ The oil temperature sensor is with resistance drift; ◆ The refrigerant in the system is insufficient; ◆ The outdoor unit LEVb, SV31 and SV32 cannot be turned on normally. ◆ The unit condensation side is with poor heat transfer function; ◆ The operation environment is beyond the allowed range.		



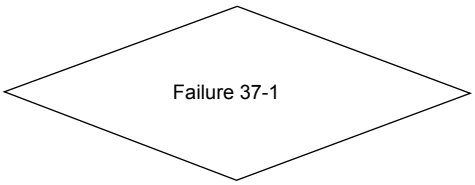
Failure code Outdoor digital display tube: 35-0, 1 Indoor wired controller: 23	Indoor unit LED status	LED5		Failure description: 35-0, 1 four-way valve reversing failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the difference between high and low pressure of system exceeds 0.6MPa after start and before failure alarm; ◆ Check if the unit lack of refrigerant. ◆ Check the four-way valve of unit for normal switching and free from backflow. ◆ Check if the detection value of high/low pressure sensor is correct. ◆ Check if the unit is beyond the operation range.		
3. Abnormity confirmation conditions		
In case of meeting one of the following conditions after the four-way valve is energized for 3min and lasts for 10s, it is judged as switching completion: •Tsuc-Tdef≥10°C •Pd-Ps≥βMpa (Tao>-10°C, β=0.60;Tao≤-10°C, β=0.40), otherwise, it is judged as failure.		
4. Possible causes		
◆ The detection value of high/low pressure sensor is incorrect; ◆ The refrigerant in the system is insufficient; ◆ The four-way valve cannot be switched normally or with backflow. ◆ The filter of compressor suction pipe is blocked by foreign matters; ◆ The detection value of Tsuc or Tdef1/2 sensor is incorrect; The power module cannot drive the compressor operating normally; ◆ The operation environment is beyond the allowed range.		



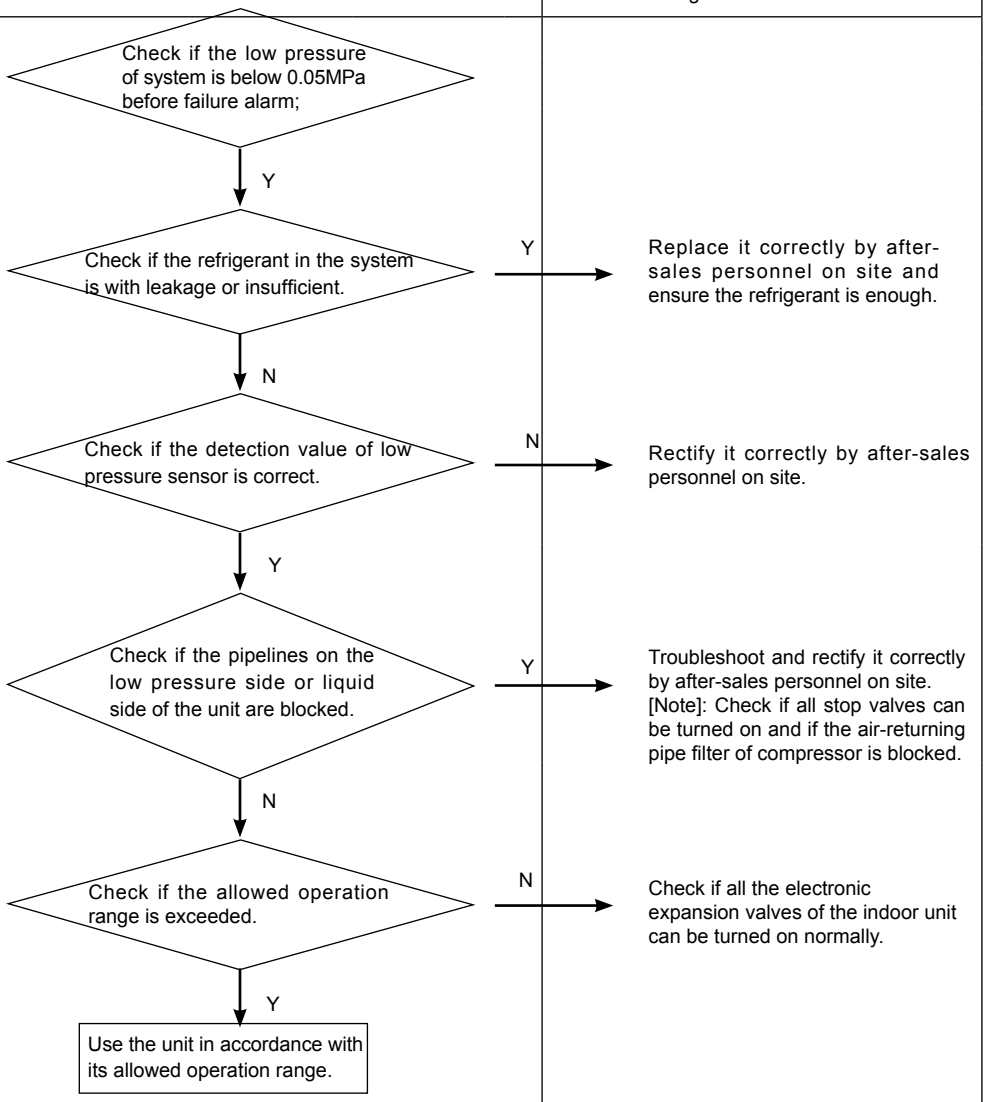
Failure code Outdoor digital display tube: 36-0, 1 Indoor wired controller: 24	Indoor unit LED status	LED5		Failure description: Outdoor compressor oil temperature (Toil1, Toil2) too low failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check if the temperature detected by the oil temperature sensor is correct. ◆ Check if the outdoor unit SV31, SV32, LEVb, etc. are with abnormal leakage and check if the detected temperature is correct; ◆ Check if the shutdown indoor unit LEV of unit is closed tightly, and if the running indoor unit fan operates normally.	Check if the resistance of oil temperature sensor is correct. — N → Replace the oil temperature sensor by after-sales personnel on site. Y Check if the sensor probe is secure and if the position is correct. — N → Replace it correctly by after-sales personnel on site. [Note]: Check if it is inserted, connected and intersected with another compressor, especially when a single compressor operates. Y Check if the indoor unit LEV of "OFF" is closed tightly and if the indoor unit fan of "ON" is normal. — N → Replace the poor valve (with leakage) and fan correctly by after-sales personnel on site. Y Check if the terminal of outdoor unit LEVb, SV31 and SV32 is connected properly or is closed tightly. — N → Replace the poor valve (with leakage) and fan correctly by after-sales personnel on site. Y Check if the outdoor unit LEVa1, 2 and LEVb are connected properly and correctly when heating. — N → Replace it correctly by after-sales personnel on site. Y Check if the unit is filled with excessive refrigerant. — N → Check if the computer board can normally control the related electronic expansion valve and solenoid valve, if not, replace it. Y Fill with regular refrigerant in accordance with standard quantity.	
3. Abnormity confirmation conditions Toil1/Toil2-CT≤10°C lasts for 5min.		
4. Possible causes ◆ The probe of oil temperature sensor falls off or is with unsecure connection; ◆ The probe of oil temperature sensor is misplaced; ◆ The oil temperature sensor is with resistance drift; ◆ The outdoor unit LEVb, SV31 and SV32 are with leakage; ◆ The terminal of outdoor unit LEVa1, 2 and LEVb is connected incorrectly; ◆ For the unit, there is LEV leakage in shutdown indoor unit and non-operation of fan in operating indoor unit; ◆ The system refrigerant.is too much ◆ The operation environment is beyond the allowed range.		

<table>
<tr><td rowspan="3">Failure code
Outdoor digital display tube: 37-1
Indoor wired controller: 25</td><td colspan="2">Indoor unit LED status</td><td colspan="2">LED5</td><td rowspan="2">Failure description:
Three-phase power supply S-phase loss</td></tr>
<tr><td colspan="2">20 times</td></tr>
<tr><td colspan="2">Outdoor unit LED status</td><td>LED1</td><td>LED2</td></tr>
<tr><td colspan="2"></td><td>Normal</td><td>Normal</td><td></td></tr>
<tr><td colspan="2">1. Model</td><td colspan="4">Diagnosis and troubleshooting</td></tr>
<tr><td colspan="2" rowspan="2">Flow Logic III series</td><td colspan="2">Diagnosis</td><td colspan="2">Troubleshooting</td></tr>
<tr><td colspan="2" rowspan="7"> 
</td><td colspan="2" rowspan="7">Check if the S-phase voltage is within the specified range.</td></tr>
<tr><td colspan="2">2. Abnormity detection method</td></tr>
<tr><td colspan="2">◆ S-phase loss error</td></tr>
<tr><td colspan="2">3. Abnormity confirmation conditions</td></tr>
<tr><td colspan="2">S-phase loss 37-1</td></tr>
<tr><td colspan="2">4. Possible causes</td></tr>
<tr><td colspan="2">◆ Power supply S-phase loss</td></tr>
</table>

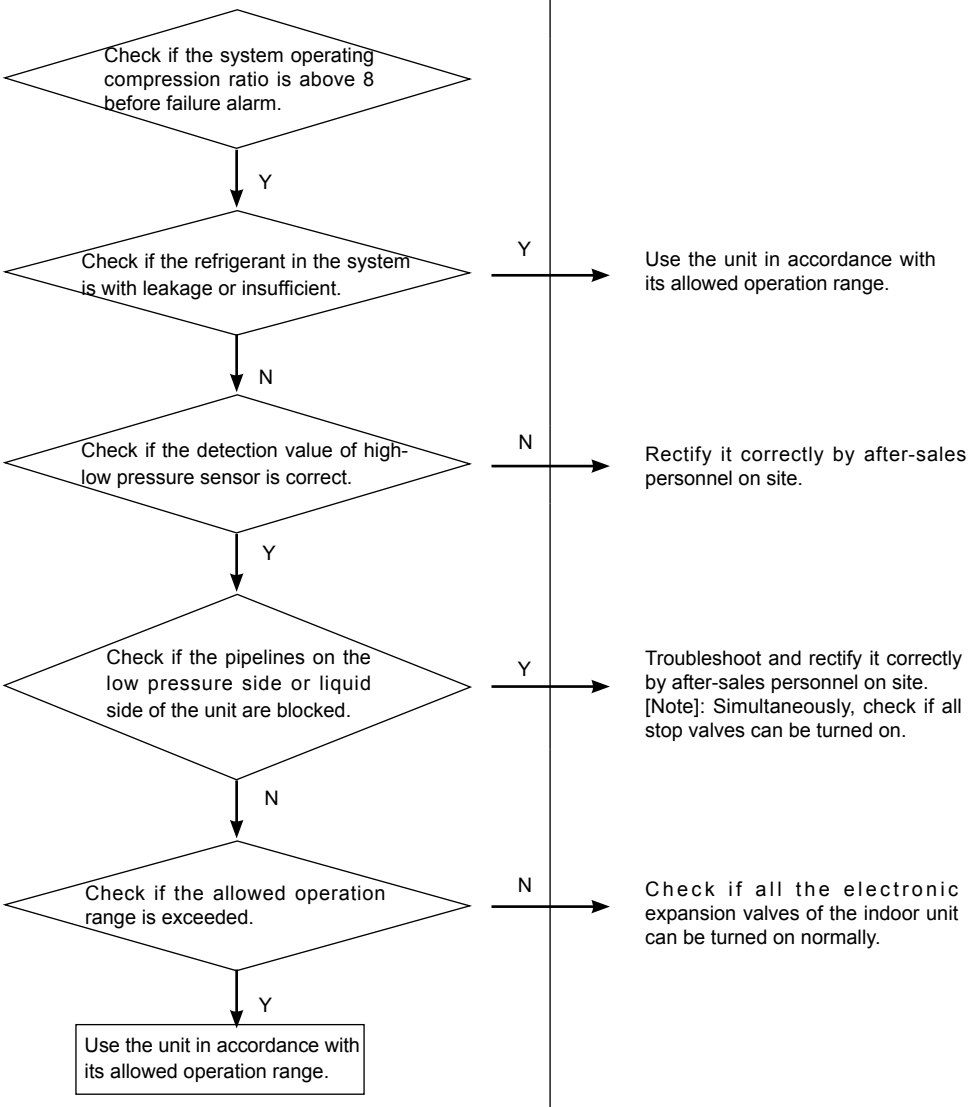
Failure code Outdoor digital display tube: 39-0 Indoor wired controller: 27	Indoor unit LED status	LED5		Failure description: Low-pressure too low failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the low pressure of system is below 0.06MPa before failure alarm; ◆ Check if the unit lack of refrigerant. ◆ Check if the pipelines on the low pressure side or liquid side of the unit are blocked; ◆ Check if the detection value of low pressure sensor is correct. ◆ Check if the unit is beyond the operation range.		
3. Abnormity confirmation conditions		
Alarm to shut down if the followings are detected for 5min: cooling: Ps< 0.10Mpa; heating: Ps< 0.05Mpa; oil return: Ps<0.03Mpa after the compressor operates. (except residual operation)		
4. Possible causes		
◆ The detection value of low pressure sensor is incorrect; ◆ The refrigerant in the system is insufficient or the system is with air leakage; ◆ The pipelines on the low pressure side or liquid side of the unit are blocked; ◆ The outdoor unit cannot be turned on normally due to failure to open electronic expansion of outdoor heat exchanger when heating; ◆ The operation environment is beyond the allowed range.		

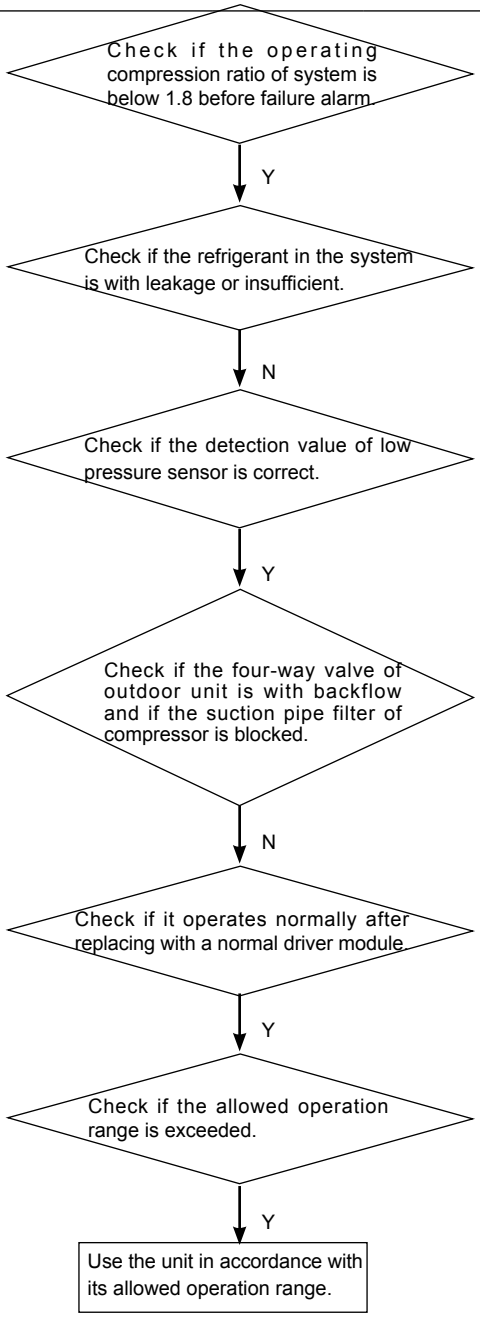


Failure code Outdoor digital display tube: 39-1 Indoor wired controller: 27	Indoor unit LED status	LED5		Failure description: The unit compression ratio too high failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the operating compression ratio of system is above 8 before failure alarm; ◆ Check if the unit lack of refrigerant. ◆ Check if the pipelines on the low pressure side or liquid side are blocked; ◆ Check if the detection value of high/low pressure sensor is correct. ◆ Check if the unit is beyond the operation range.		
3. Abnormity confirmation conditions		
Alarm to shut down if the compression ratio ε>8.0 is detected for continuous 5min after the compressor operates; alarm to shut down if the compression ratio ε>9.0 or ε>8.5 when cooling or heating for 1min separately.		
4. Possible causes		
◆ The detection value of high/low pressure sensor is incorrect; ◆ The refrigerant in the system is insufficient or the system is with air leakage; ◆ The pipelines on the high pressure side or liquid side of the unit are blocked; ◆ The outdoor unit cannot be turned on normally due to failure to open electronic expansion of outdoor heat exchanger when heating; ◆ The operation environment is beyond the allowed range.		



Failure code Outdoor digital display tube: 39-2, 3 Indoor wired controller: 27	Indoor unit LED status	LED5		Failure description: The unit compression ratio too low failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

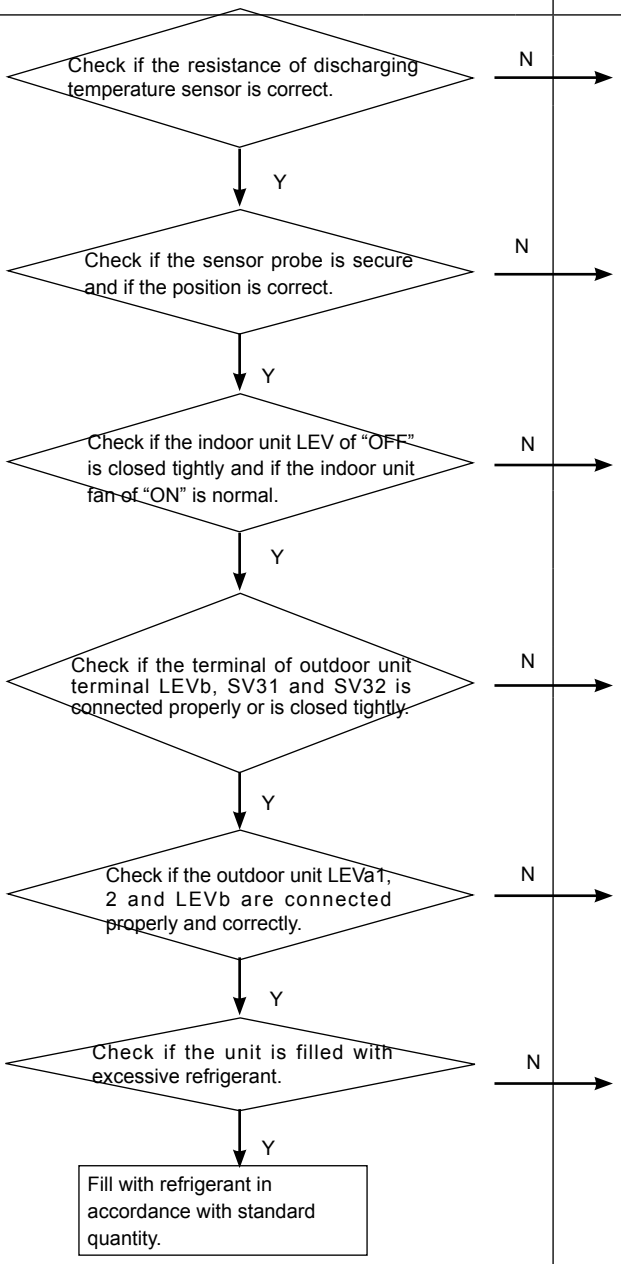
1. Model	Diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the operating compression ratio of system is below 1.8 before failure alarm; ◆ Check if the unit lack of refrigerant. ◆ Check the four-way valve of unit for normal switching and free from backflow. ◆ Check if the detection value of high/low pressure sensor is correct. ◆ Check if the unit is beyond the operation range.		
3. Abnormity confirmation conditions		
Alarm to shut down if the ε<1.8 is detected for 5min during normal operation (except start, defrosting, oil return, residual, shutdown)		
4. Possible causes		
◆ The detection value of high/ low pressure sensor is incorrect; ◆ The refrigerant in the system is insufficient or the system is with air leakage; ◆ The four-way valve cannot be switched normally or with backflow. ◆ The filter of compressor suction pipe are blocked by foreign matters; The power module cannot drive the compressor operating normally; ◆ The inverter compressor is with serious inter deterioration, which makes it difficult to form difference between high and low pressure. ◆ The operation environment is beyond the allowed range.		

Failure code Outdoor digital display tube: 40-0, 1 Indoor wired controller: 28	Indoor unit LED status	LED5		Failure description: High pressure too high failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check if the high pressure acquired by the PCB is correct; ◆ Check if the voltage characteristic corresponding to the pressure sensor is correct; ◆ Check if the high pressure side of the system is blocked; ◆ Check the outdoor fan for normal operation when cooling.	Check if the voltage characteristic of the corresponding pressure sensor is normal. — N → Replace it correctly by after-sales personnel on site. Y Check if the pressure sensor signal acquisition loop of the computer board is normal. — N → Replace it correctly by after-sales personnel on site. Y Check if the high pressure reaches 4.0MPa upon failure alarm.	
3. Abnormity confirmation conditions The high pressure switch is turned off for 2s.	Y Check if the high pressure stop valve is turned on or the high pressure side is blocked. — Y → Rectify it correctly by after-sales personnel on site. N	
4. Possible causes ◆ The pressure sensor is broken; ◆ The pressure sensor signal acquired by the PCB is incorrect; ◆ The high pressure side of the unit is blocked; ◆ The outdoor fan stops operating when cooling; ◆ The refrigerant is excessive; ◆ It is out of the operating range of units.	Check the outdoor fan for normal operation when cooling. — N → Rectify it correctly by after-sales personnel on site. Y Check if the refrigerant is excessive. — Y → Rectify it correctly by after-sales personnel on site. Note: confirm if the systerm including the noncondensable gas N Check if the allowed operation range is exceeded — Y → Notify the user to use it within the operating range of units by after-sales personnel.	

Failure code Outdoor digital display tube: 43-0, 1 Indoor wired controller: 2B	Indoor unit LED status	LED5		Failure description: Outdoor unit compressor discharging temperature (Td1, Td2).too low failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

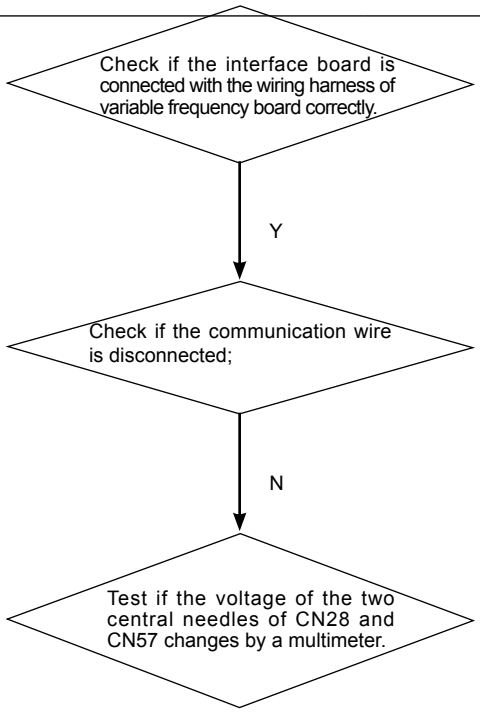
1. Model	Diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the temperature detected by the oil temperature sensor is correct. ◆ Check the outdoor unit SV31, SV32, LEVb, etc. for abnormal leakage and check if the detected temperature is correct; ◆ Check if the shutdown indoor unit LEV of unit is closed tightly, and if the running indoor unit fan operates normally.		
3. Abnormity confirmation conditions		
Td1/Td2-CT≤10°C lasts for 5min.		
4. Possible causes		
◆ The probe of oil temperature sensor falls off or is with unsecure connection; ◆ The probe of oil temperature sensor is misplaced; ◆ The oil temperature sensor is with resistance drift; ◆ The outdoor unit LEVb, SV31 and SV32 are with leakage; ◆ The terminal of outdoor unit LEVa1, 2 and LEVb is connected incorrectly; ◆ For the unit, there is LEV leakage in shutdown indoor unit and non-operation of fan in operating indoor unit; ◆ The system is filled with excessive refrigerant. ◆ The operation environment is beyond the allowed range.		



Failure code Outdoor digital display tube: 45 Indoor wired controller: 2D	Indoor unit LED status	LED5		Failure description: Communications between outdoor units failure.
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Incorrect order of outdoor communication wire; ◆ Incorrect wiring of outdoor communication wire; ◆ Incorrect terminal connection of outdoor communication wire; ◆ Incorrect setting of address dip switch of outdoor unit;	Check if the communication wire between the outdoor units is normal. — N → Replace it correctly by after-sales personnel on site. Y Check if the address DIP switch of outdoor unit is correct. — N → Reset it correctly by after-sales personnel on site. Y Check if there is interference source in the position where the outdoor unit is installed. — Y → Clear the interference source. N Power off the outdoor unit and research it. N Replace the outdoor unit PCB	
3. Abnormity confirmation conditions No communication for 30s (E)		
4. Possible causes ◆ Poor communication wire: short circuit or disconnection; ◆ Non-corresponding communication wire A, B and C; ◆ Incorrect connection of outdoor unit communication port of PCB; ◆ Interference source, which causes unstable communication of outdoor unit.		

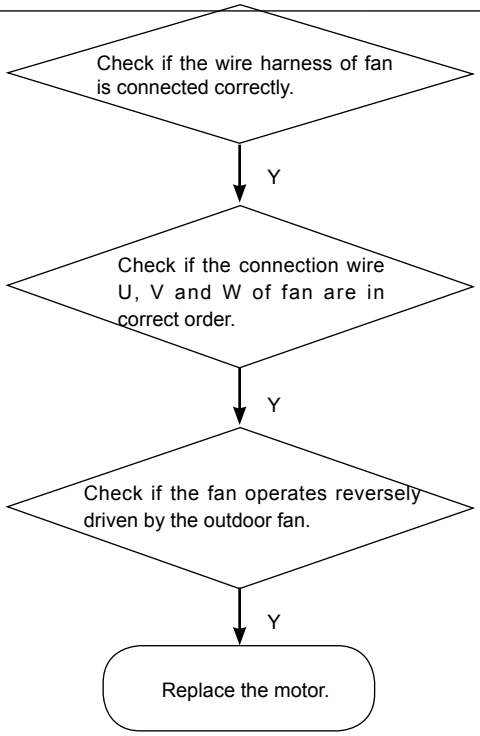
<table>
<tr><td rowspan="3">Failure code
Outdoor digital display tube: 46-0, 1
Indoor wired controller: 2E</td><td colspan="2">Indoor unit LED status</td><td colspan="2">LED5</td><td rowspan="3">Failure description:
Communication with INV1 and INV2 module board failure</td></tr>
<tr><td colspan="2">20 times</td></tr>
<tr><td rowspan="2">Outdoor unit LED status</td><td>LED1</td><td>LED2</td></tr>
<tr><td>Normal</td><td>Normal</td></tr>
</table>

1. Model	Diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check if the communication wire correspondence of inverter module is correct; ◆ Check if the communication wire is disconnected;		
3. Abnormity confirmation conditions No communication for 30s		
4. Possible causes ◆ Poor communication wire: disconnection; ◆ Incorrect correspondence of INV1 and INV2; incorrect connection of outdoor unit communication port of PCB; ◆ Poor inverter board or connection board		

Failure code Outdoor digital display tube: 71-0, 1 Indoor wired controller: 47	Indoor unit LED status	LED5		Failure description: Fan motor 1 blocked (left fan) Fan motor 2 blocked (right fan)
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

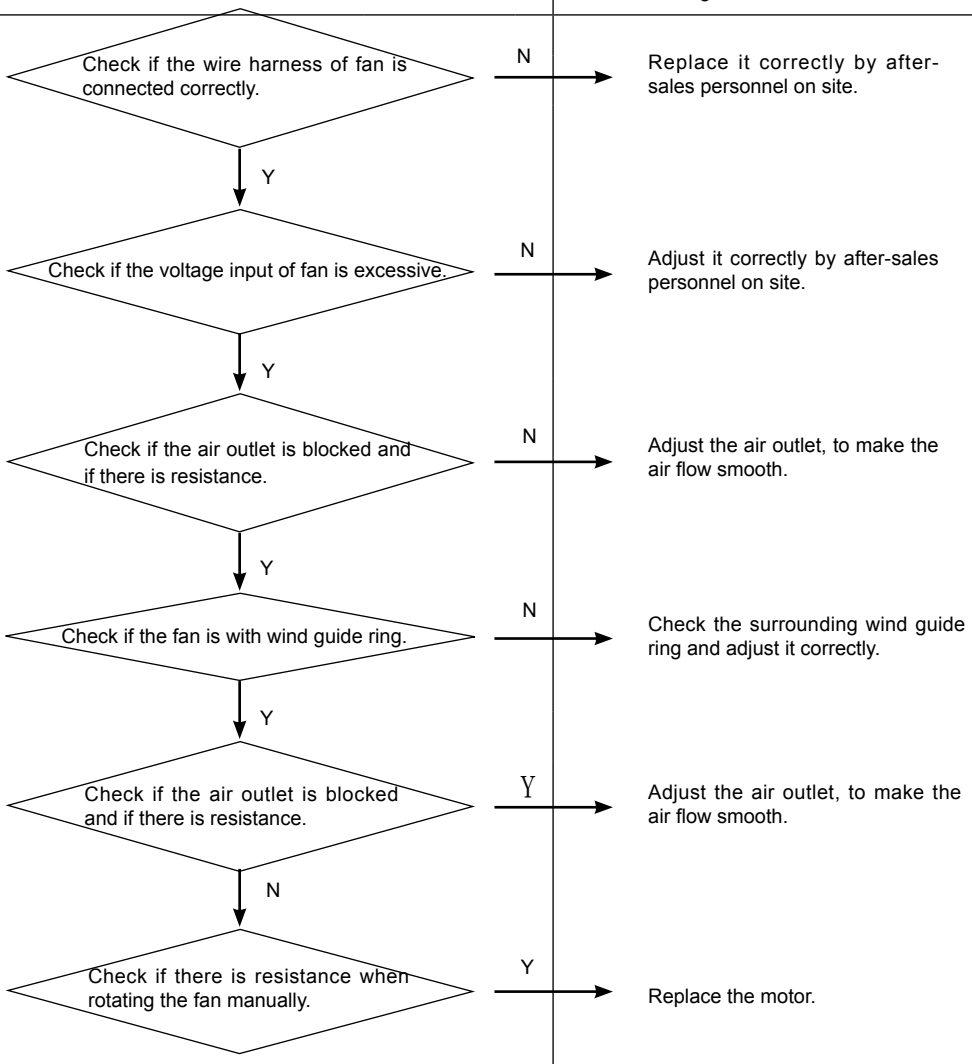
1. Model	Diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check if the connection wire is correct ◆ Check if the motor fan is with friction; ◆ Check if the DC input of motor is correct.	Check if the wire harness of fan is connected correctly. — N → Replace it correctly by after-sales personnel on site. Y Check if the connection wire of fan is connected correctly. — N → Replace it correctly by after-sales personnel on site. Y Check if the fan can operate and check if there is resistance when rotating the fan manually. — N → Replace the motor. Y Test if the fan is with 310V DC input. — N → Check the power supply and adjust it correctly. Y Check if the power supply is with 220V input. — N → Check the power supply and adjust it correctly. Y Replace the interface board of outdoor unit.	
3. Abnormity confirmation conditions Make failure confirmation three times per hour as follows: below 20rpm, operate for 30s or below 70% of target value, operate for 2min, shut down 2min and automatically recover after 50s.		
4. Possible causes ◆ Insufficient power supply, which causes motor with lower or higher voltage input; ◆ The rotating speed of fan decreases affected by resistance.		

Failure code Outdoor digital display tube: 72-0, 1 Indoor wired controller: 48	Indoor unit LED status	LED5		Failure description: Fan motor 1 reverse rotation (left fan) Fan motor 2 reverse rotation (left fan)
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

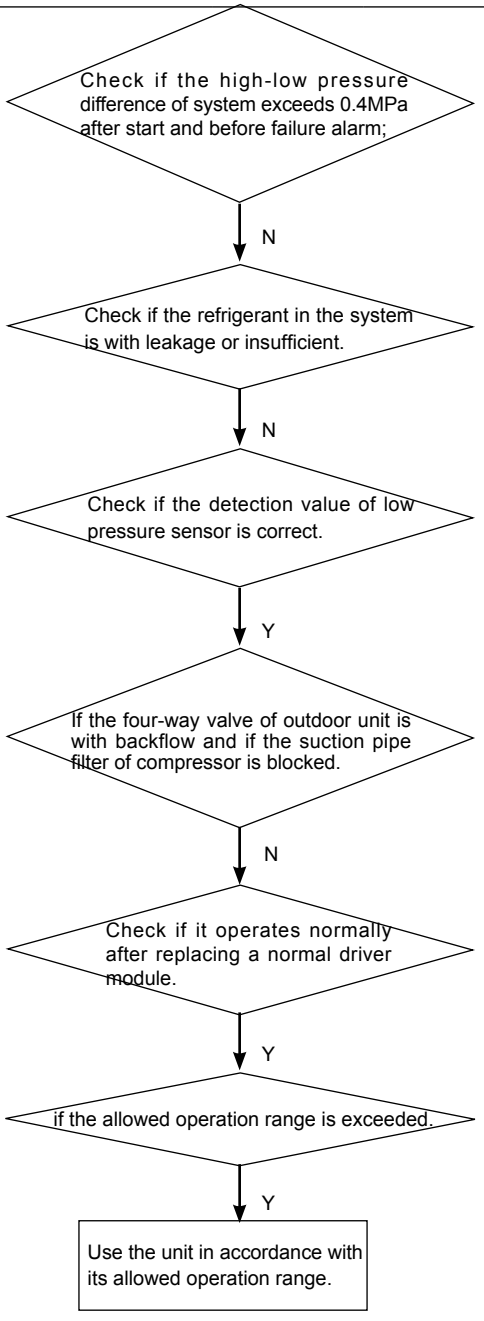
1. Model	Diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check if the connection wire is correct; ◆ Check if the motor fan is rotating reversely, driven by external force.		
3. Abnormity confirmation conditions Alarm to shut down if the reverse signal from the fan is detected and the reverse rotation speed is above 700rpm. (overlook the fan, clockwise operation refers to reverse rotation)		
4. Possible causes ◆ Poor motor drive, which causes reverse rotation of fan; ◆ Reverse rotation of fan affected by external force.		

Failure code Outdoor digital display tube: 73-0, 1 Indoor wired controller: 49	Indoor unit LED status	LED5		Failure description: Fan motor 1 overcurrent (left fan) Fan motor 2 overcurrent (right fan)
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

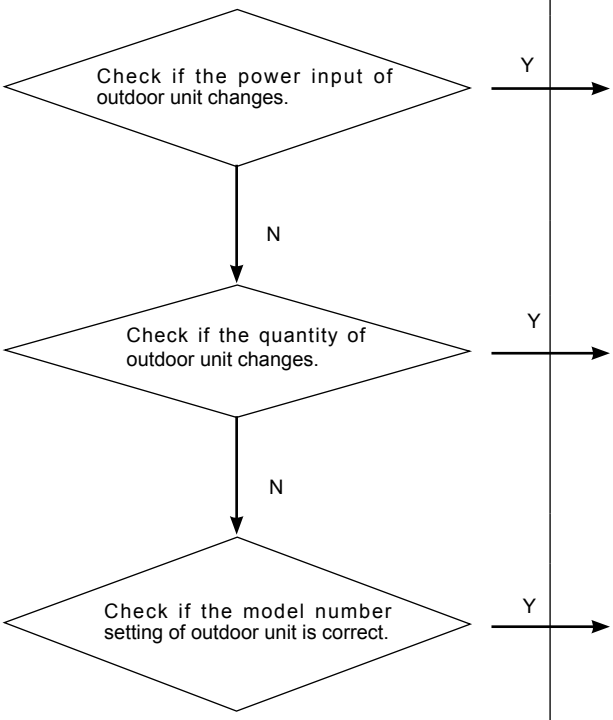
1. Model	Diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the connection wire is correct; ◆ Check if the motor fan is with friction; ◆ Check if the voltage input of motor is correct.		
3. Abnormity confirmation conditions		
Alarm to shut down if overcurrent signal appears when the rotating speed is set as below 400rpm for 10s; make failure confirmation five times per hour.		
4. Possible causes		
◆ Excessive supply voltage; ◆ Larger static pressure of fan.		



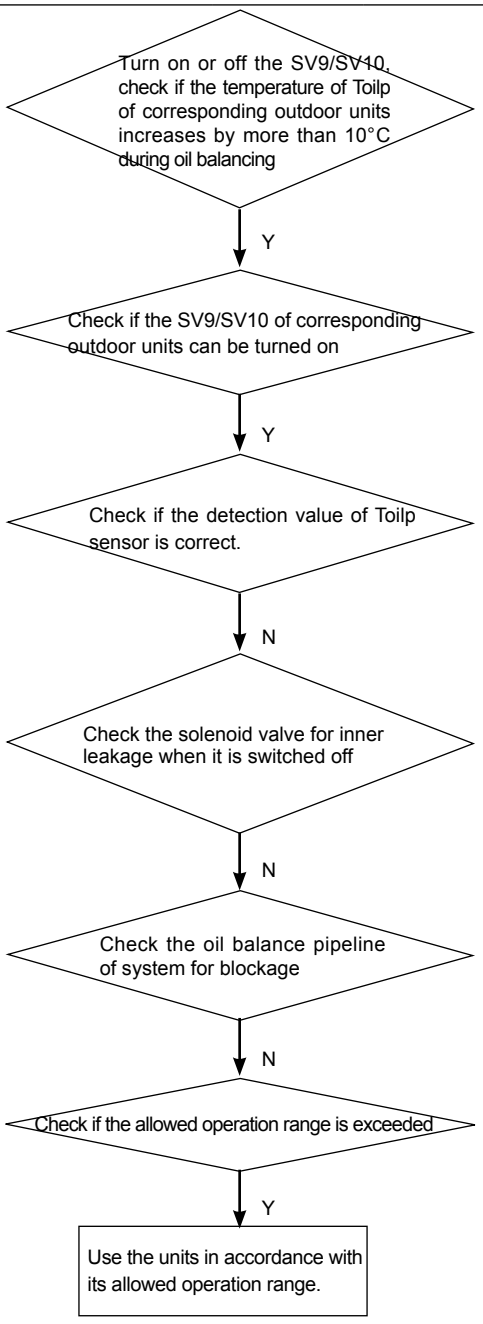
Failure code Outdoor digital display tube: 75-0, 4 Indoor wired controller: 4B	Indoor unit LED status	LED5		Failure description: Pressure difference between high and low pressure too low failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

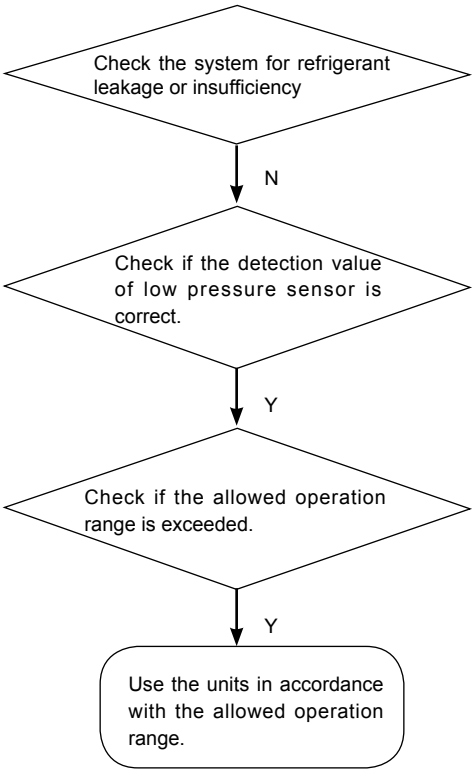
1. Model	Diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check if the difference between high and low pressure of system exceeds 0.4MPa after start and before failure alarm; ◆ Check if the unit lack of refrigerant. ◆ Check the four-way valve of unit for normal switching and free from backflow. ◆ Check if the detection value of high/low pressure sensor is correct. ◆ Check if the unit is beyond the operation range.		
3. Abnormity confirmation conditions 75-0: Pd-Ps≤0.1Mpa within 1min upon the INV compressor starts. 75-4: Pd-Ps≤0.4Mpa lasts for 3min.		
4. Possible causes ◆ The detection value of high/low pressure sensor is incorrect; ◆ The refrigerant in the system is insufficient; ◆ The four-way valve cannot be switched normally or with backflow. The power module cannot drive the compressor operating normally; ◆ The inverter compressor is with serious inter deterioration, which makes it difficult to form difference between high and low pressure. ◆ The operation environment is beyond the allowed range.		

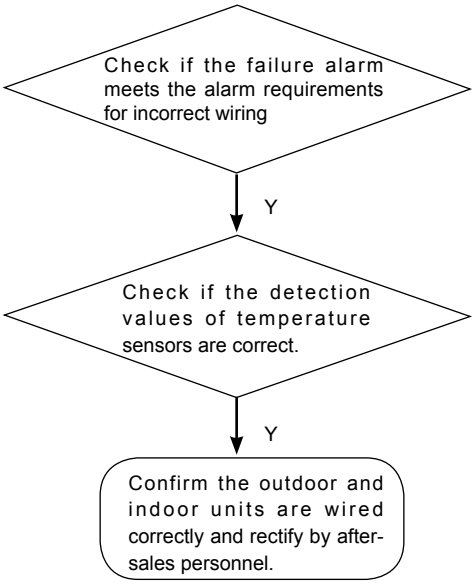
Failure code Outdoor digital display tube: 76-0, 1, 2 Indoor wired controller: 4C	Indoor unit LED status	LED5		Failure description: Incorrect settings of quantity, address or power input for outdoor unit
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check if the quantity of outdoor unit changes; (76-0) ◆ Check if the model number of outdoor unit changes; (76-1) ◆ Check if the power input of outdoor unit changes.(76-2) 3. Abnormity confirmation conditions Quantity of sub-unit setting does not conform to host EEPROM data; address of sub-unit setting does not conform to host EEPROM data; power input setting of sub-unit does not conform to host EEPROM data. 4. Possible causes ◆ The quantity of connected unit changes; ◆ The power input of outdoor unit of the same system changes; ◆ The model setting of the same system changes;		

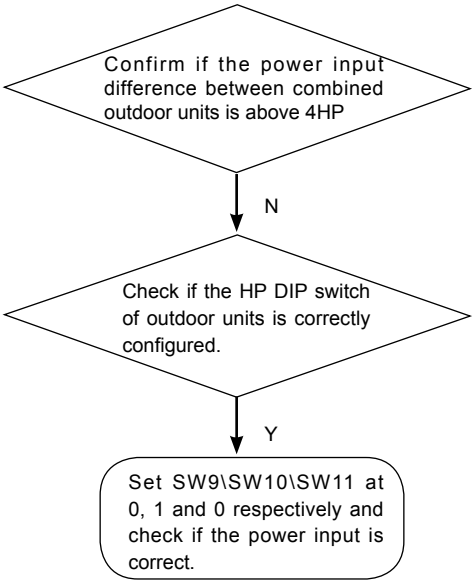
Failure code Outdoor digital display tube: 77 Indoor wired controller: 4D	Indoor unit LED status	LED5		Failure description: Oil balancing protection failure between outdoor units
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Turn on or off the SV9/SV10, check if the temperature of Toilp of corresponding outdoor units increases by more than 10℃ during oil balancing; ◆ Check the SV9/SV10 of corresponding outdoor units for inner leakage and if they can be turned on; ◆ Check if detection temperature of the Toilp of corresponding outdoor units is correct; ◆ Check the oil balance pipeline of units for blockage.		
3. Abnormity confirmation conditions Alarm to shut down when ToilpB-ToilpA≤10°C [Note]The ToilpA and ToilpB are the temperatures of oil balance pipe when the oil balance pipe is switched on/off.		
4. Possible causes ◆ The oil balance electromagnetic valves cannot be switched on; ◆ Inner leakage occurs when the oil balance electromagnetic valves are switched off; ◆ The temperature detected by Toilp sensor is incorrect; ◆ The oil balance pipe is blocked. ◆ The allowed operation range is exceeded and it becomes difficult to switch on the electromagnetic valves due to reinforced oil viscosity caused by low ambient temperature.		

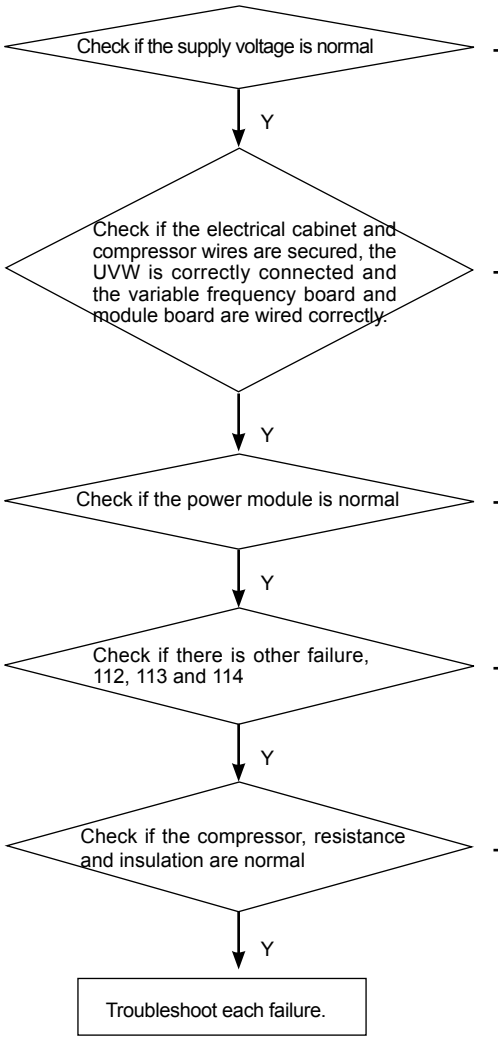
<table>
<tr><td rowspan="3">Failure code
Outdoor digital display tube: 78-0, 1
Indoor wired controller: 4E</td><td colspan="2">Indoor unit LED status</td><td colspan="2">LED5</td><td rowspan="3">Failure description:
Cooling/heating lack of refrigerant alarm</td></tr>
<tr><td colspan="2"></td><td colspan="2">20 times</td></tr>
<tr><td colspan="2">Outdoor unit LED status</td><td>LED1</td><td>LED2</td></tr>
<tr><td colspan="2"></td><td>Normal</td><td>Normal</td></tr>
<tr><td>1. Model</td><td colspan="5">Failure diagnosis and troubleshooting</td></tr>
<tr><td rowspan="8">Flow Logic III series</td><td colspan="3">Diagnosis</td><td colspan="2">Troubleshooting</td></tr>
<tr><td colspan="3" rowspan="7"> 
</td><td colspan="2" rowspan="7"></td></tr>
<tr><td>2. Abnormity detection method</td></tr>
<tr><td>◆ When the unit stops, confirm if the corresponding temperature upon saturated equilibrium pressure is lower than the outdoor or indoor temperature, whichever is lower;
◆ Check the unit parts for leakage.
◆ Check if the detection value of low pressure sensor is correct.</td></tr>
<tr><td>3. Abnormity confirmation conditions</td></tr>
<tr><td>Ps<0.1Mpa runs continually for 30 minutes upon operation of cooling compressor; Ts1-ET>20& Ts1-ET>20°C LEV runs fully-open for 60 minutes upon operation of heating compressor.</td></tr>
<tr><td>4. Possible causes</td></tr>
<tr><td>◆ The refrigerant in the system is insufficient or the leakage parts are found;
◆ The detection value of low pressure sensor is incorrect;
◆ The allowed operation range is exceeded.</td></tr>
</table>

<table>
<tr><td rowspan="3">Failure code
Outdoor digital display tube: 79
Indoor wired controller: 4F</td><td colspan="2">Indoor unit LED status</td><td colspan="2">LED5</td><td rowspan="2">Failure description:
Operation protection of incorrect wiring.</td></tr>
<tr><td colspan="2"></td><td colspan="2">20 times</td></tr>
<tr><td colspan="2">Outdoor unit LED status</td><td>LED1</td><td>LED2</td></tr>
<tr><td colspan="2"></td><td>Normal</td><td>Normal</td><td></td></tr>
<tr><td>1. Model</td><td colspan="5">Failure diagnosis and troubleshooting</td></tr>
<tr><td rowspan="8">Flow Logic III series</td><td colspan="3">Diagnosis</td><td colspan="2">Troubleshooting</td></tr>
<tr><td colspan="3" rowspan="7"> 
</td><td colspan="2" rowspan="7"></td></tr>
<tr><td>2. Abnormity detection method</td></tr>
<tr><td>◆ Confirm operation of incorrect wiring</td></tr>
<tr><td>3. Abnormity confirmation conditions</td></tr>
<tr><td>After 30-minute detection on incorrect wiring, for outdoor units: display the failure code when Td2 <=Tao+30K; for indoor units: display the failure code when cooling Tc2>=Tai-20K; display the failure code when heating Tc1<=Tai+20K.</td></tr>
<tr><td>4. Possible causes</td></tr>
<tr><td>◆ The wire connection of outdoor and indoor units are wrong during installation.</td></tr>
</table>

Failure code Outdoor digital display tube: 80 Indoor wired controller: 50	Indoor unit LED status	LED5		Failure description: The HP difference between outdoor units in one system is above 4.
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Confirm if the power input difference between combined outdoor units is above 4HP; ◆ Set SW9\SW10\SW11 at 0, 1 and 0 respectively and check if the power input on LED3 and LED4 is correct. 3. Abnormity confirmation conditions ◆ The HP difference between outdoor units is above 4 in one system. 4. Possible causes ◆ The power input difference between outdoor units is above 4HP in multi-connected system; ◆ The power input dip switch BM3_5, BM3_6, BM3_7 and BM3_8 of outdoor units is incorrect.		

<table>
<tr><td rowspan="3">Failure code
Outdoor digital display tube: 110-0, 1, 1
Indoor wired controller: 6E</td><td colspan="2">Indoor unit LED status</td><td colspan="2">LED5</td><td rowspan="3">Failure description:
Overcurrent of module 1 and 2</td></tr>
<tr><td colspan="2"></td><td colspan="2">20 times</td></tr>
<tr><td colspan="2">Outdoor unit LED status</td><td>LED1</td><td>LED2</td></tr>
<tr><td colspan="2"></td><td>Normal</td><td>Normal</td></tr>
<tr><td>1. Model</td><td colspan="5">Failure diagnosis and troubleshooting</td></tr>
<tr><td>Flow Logic III series</td><td colspan="3">Diagnosis</td><td colspan="2">Troubleshooting</td></tr>
<tr><td>2. Abnormity detection method

◆ Check if the modules are in normal conditions and if P and N are short-circuited to U, V and W.
◆ Check if the modules are fixed securely and the heat dissipation is good;
◆ Check if the compressor resistance is normal,
◆ Check if the compressor wiring UVW is wrongly connected and if the inverter board and module board are wired securely.</td><td colspan="3" rowspan="2"> 
</td><td colspan="2" rowspan="2">Rectify on site by after-sales personnel.

Rectify on site by after-sales personnel.

Replace on site by after-sales personnel.

Replace the compressor.

Detect by exclusion.</td></tr>
<tr><td>3. Abnormity confirmation conditions

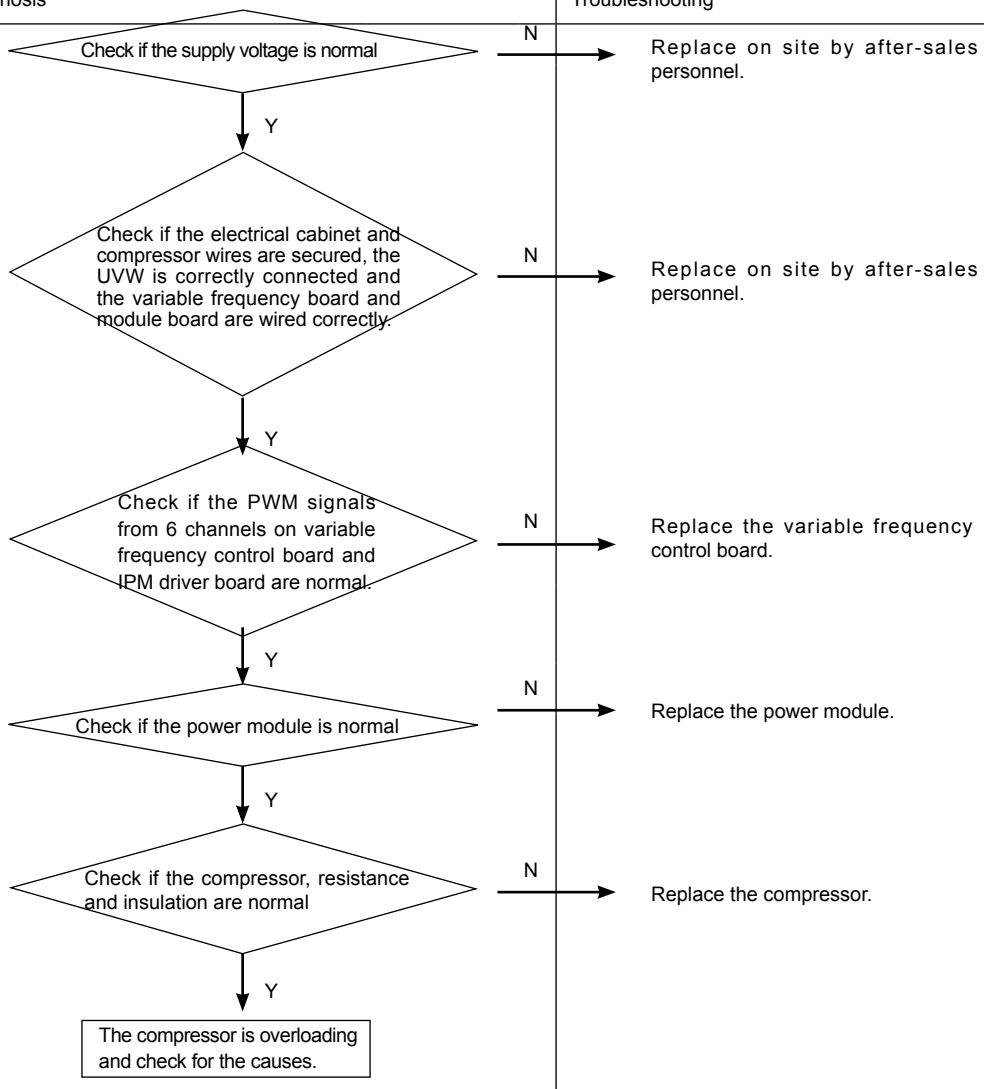
Overcurrent of module hardware

4. Possible causes

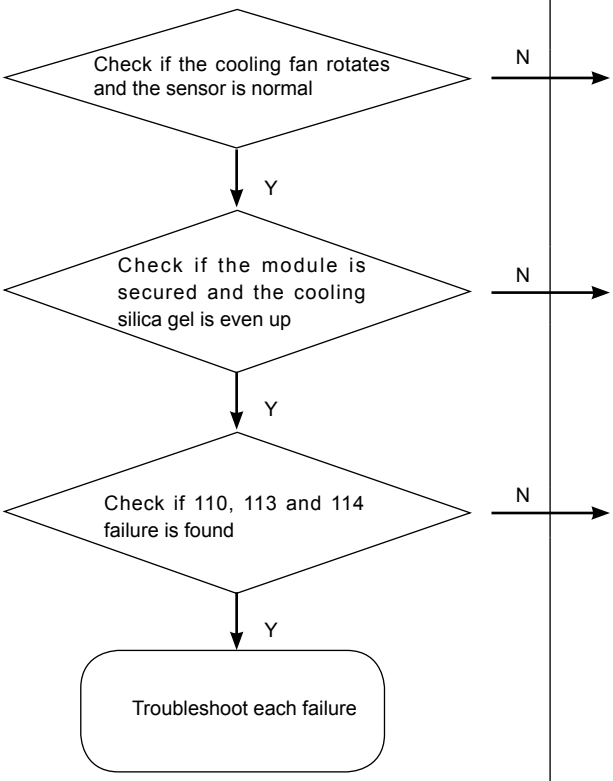
◆ The module alarms FO failure due to poor heat dissipation;
◆ The module alarms failure as it is broken down;
◆ Liquid shock is found in compressor, which results in overcurrent upon starting or operating;
◆ The winding resistance of compressor is large;
◆ UVW wiring is wrongly connected or the inverter board and module board are wired insecurely.</td></tr>
</table>

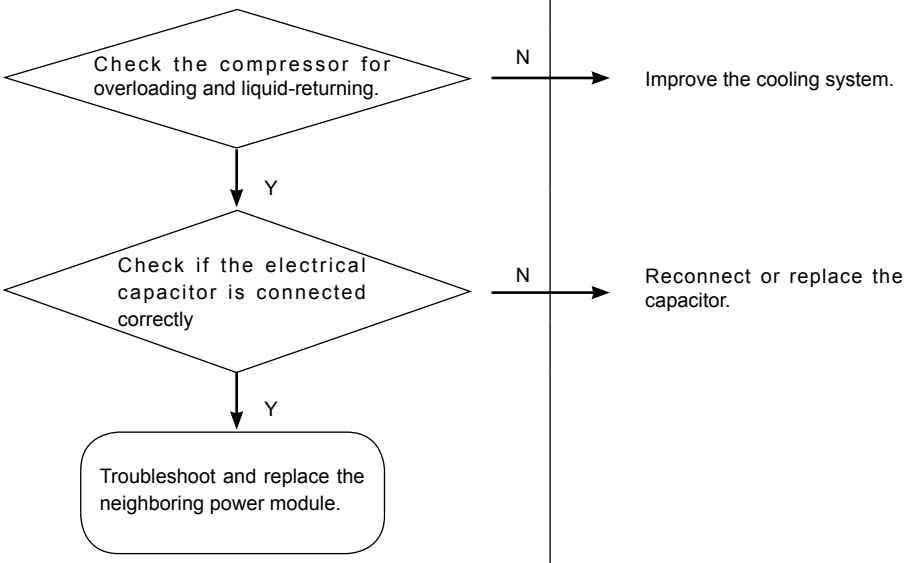
Failure code Outdoor digital display tube: 111-0, 1, 1 Indoor wired controller: 6F	Indoor unit LED status	LED5		Failure description: Overcurrent of module 1 and 2
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the module is in normal conditions and if P and N is short-circuited to U, V and W; Measure with diode to see if there is a voltage drop between P/N and U/V/W. ◆ Check if the module is securely fixed and the heat dissipation is good; ◆ Check if the compressor winding is normal. ◆ Check if the compressor wiring UVW is connected correctly and the inverter board and module board is securely wired.		
3. Abnormity confirmation conditions		
Overcurrent of module hardware		
4. Possible causes		
◆ The module alarms failure as it broke down; ◆ Liquid shock is found in compressor which results in overcurrent upon starting or operating; ◆ The compressor winding is burned out; ◆ UVW wiring is wrongly connected or the inverter board and module board are wired insecurely.		

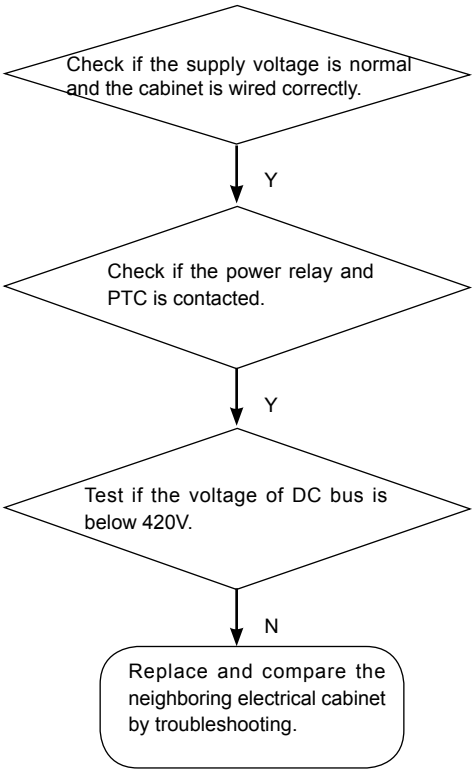


Failure code Outdoor digital display tube: 112-0, 1, 1 Indoor wired controller: 70	Indoor unit LED status	LED5		Failure description: Radiator temperature of module 1 and 2 is too high.
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

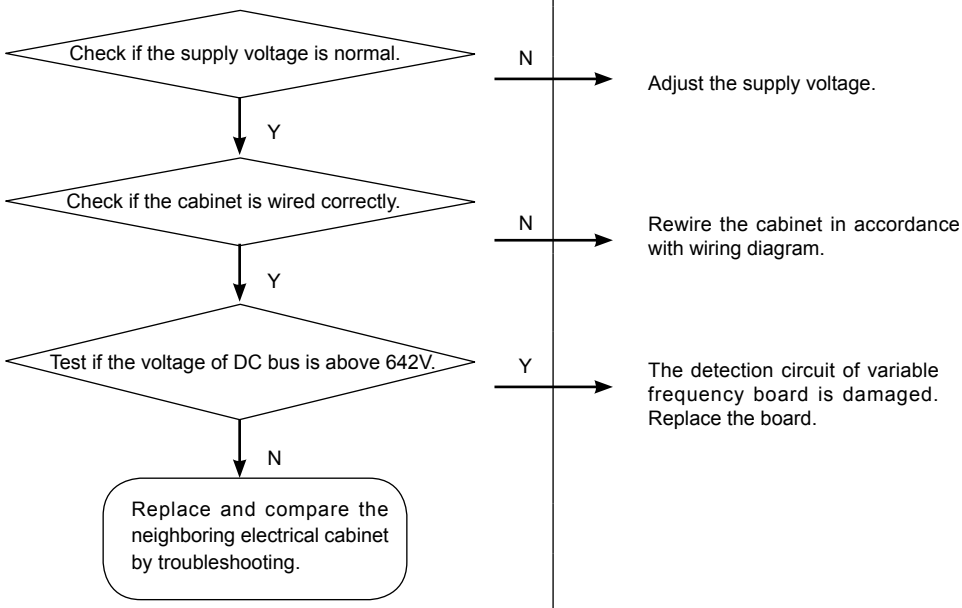
1. Model	Failure diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check if the radiator is in normal conditions; ◆ Check if the cooling fan is in normal conditions; ◆ Check if the radiator sensor is in normal conditions.		
3. Abnormity confirmation conditions Raise failure alarm when temperature ≥94°C. INV control board recovers automatically when temperature ≤94°C.		
4. Possible causes ◆ The module is insecurely fixed, which results in poor heat dissipation; ◆ The radiator sensor is broken which results in high detection temperature; ◆ The cooling fan fails to operate; ◆ There is no 220V output from the terminal of cooling fan of PCB.		

<table>
<tr><td rowspan="3">Failure code
Outdoor digital display tube: 113-0,1
Indoor wired controller: 71</td><td colspan="2">Indoor unit LED status</td><td colspan="2">LED5</td><td rowspan="3">Failure description:
Overload of module 1 and 2</td></tr>
<tr><td colspan="2">20 times</td></tr>
<tr><td colspan="2">Outdoor unit LED status</td><td>LED1</td><td>LED2</td></tr>
<tr><td colspan="2"></td><td>Normal</td><td>Normal</td><td></td></tr>
<tr><td>1. Model</td><td colspan="5">Failure diagnosis and troubleshooting</td></tr>
<tr><td rowspan="8">Flow Logic III series</td><td colspan="3">Diagnosis</td><td colspan="2">Troubleshooting</td></tr>
<tr><td colspan="3" rowspan="7"> 
</td><td colspan="2" rowspan="7"></td></tr>
<tr><td>2. Abnormity detection method</td></tr>
<tr><td>◆ Check the compressor for liquid shock;
◆ Check if the capacitor junction or capacitor is in normal conditions.</td></tr>
<tr><td>3. Abnormity confirmation conditions</td></tr>
<tr><td>Module overload</td></tr>
<tr><td>4. Possible causes</td></tr>
<tr><td>◆ There is a problem of heating tape of compressor that the compressor forcibly starts without heating or with inadequate heating time;
◆ The capacitor and PTC may be incorrectly connected.</td></tr>
</table>

Failure code Outdoor digital display tube: 114-0,1 Indoor wired controller: 72	Indoor unit LED status	LED5		Failure description: DC under voltage of module 1 and 2
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check if the power voltage is too low and results in voltage decrease after rectification; ◆ Check if the PTC is in normal conditions; ◆ Check if the cabinet is correctly wired.		
3. Abnormity confirmation conditions Raise failure alarm when power voltage<DC420V. INV control board recovers automatically when voltage >DC420V		
4. Possible causes ◆ Incorrect wiring may result in under voltage alarm; ◆ PTC or relay damage may result in under voltage; ◆ Low power voltage may result in under voltage.		

Failure code Outdoor digital display tube: 115-0,1 Indoor wired controller: 73	Indoor unit LED status	LED5		Failure description: DC over-voltage of module 1 and 2
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the power voltage is too high and results in over voltage after rectification; ◆ Check if the cabinet is correctly wired.		
3. Abnormity confirmation conditions		
Raise failure alarm when power voltage>DC642V. INV control board recovers automatically when voltage <DC642V.		
4. Possible causes		
◆ Incorrect connection may result in over voltage alarm; ◆ High power voltage may result in over voltage.		

<table>
<tr><td rowspan="3">Failure code
Outdoor digital display tube: 116-0, 1
Indoor wired controller: 74</td><td colspan="2">Indoor unit LED status</td><td colspan="2">LED5</td><td rowspan="3">Failure description:
Communication failure of module 1 and 2</td></tr>
<tr><td colspan="3">20 times</td></tr>
<tr><td colspan="2">Outdoor unit LED status</td><td>LED1</td><td>LED2</td></tr>
<tr><td colspan="2"></td><td>Normal</td><td>Normal</td><td></td></tr>
<tr><td>1. Model</td><td colspan="5">Failure diagnosis and troubleshooting</td></tr>
<tr><td rowspan="8">Flow Logic III series

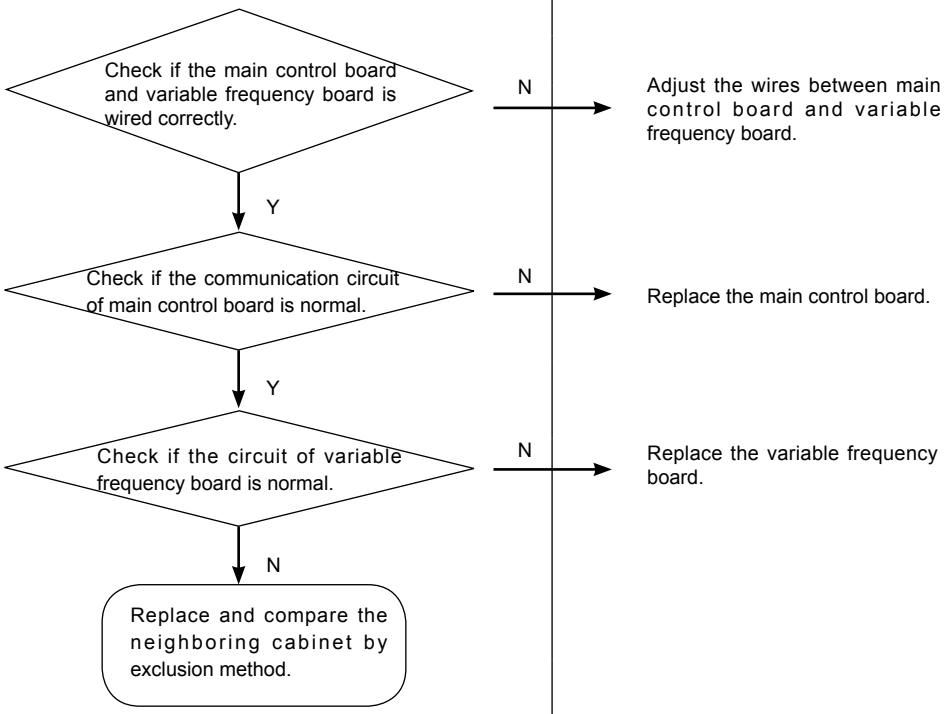
2. Abnormity detection method

◆ Check if the main control board and the nverter board as well as the inverter board and module board are respectively wired correctly;
◆ Check if the communication loop between main control board and inverter board is in normal conditions.

3. Abnormity confirmation conditions

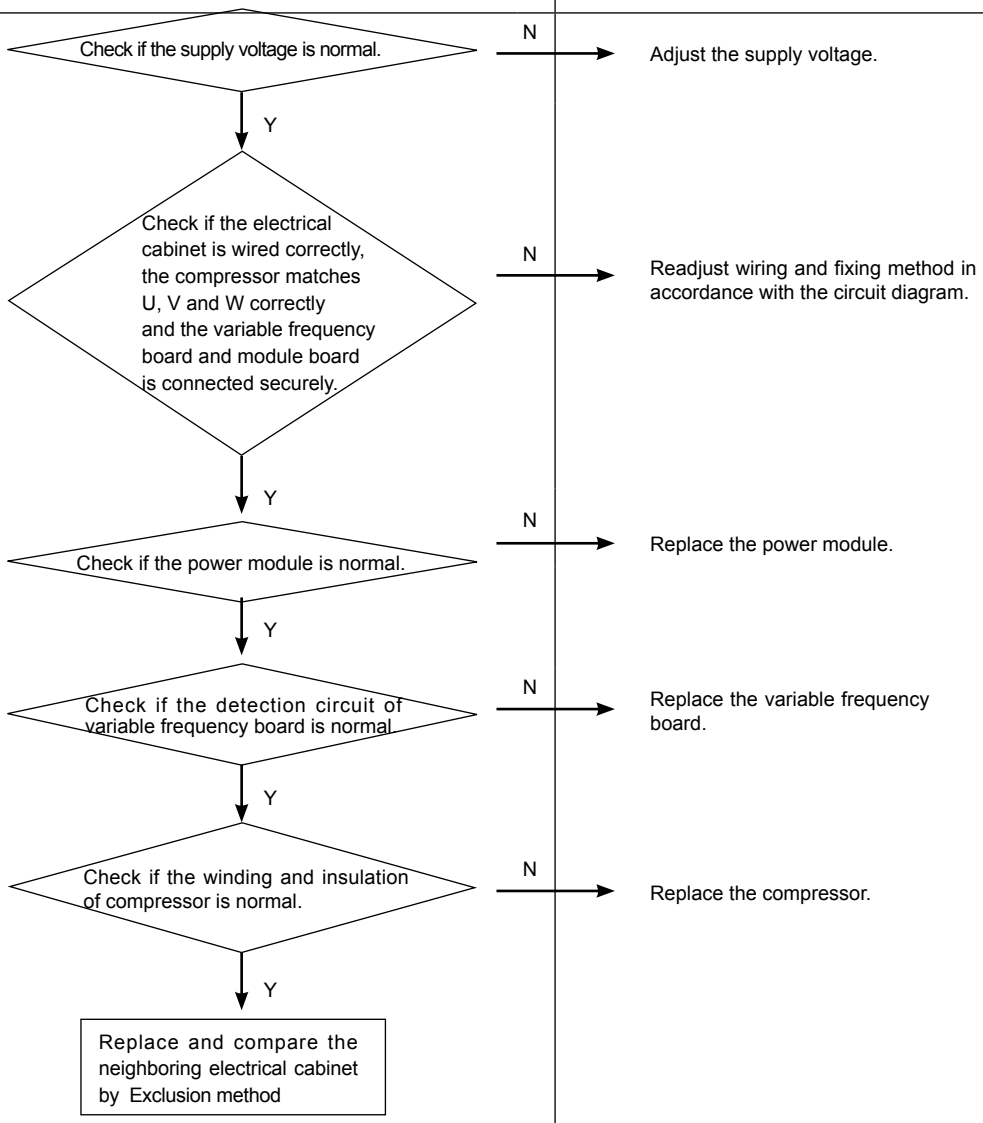
Failure alarm if communication signal fails to be detected for continuous 30s and INV control board recovers immediately upon signal detection.

4. Possible causes

◆ Poor communication of inverter board or main control board.</td><td colspan="3">Diagnosis</td><td colspan="2">Troubleshooting</td></tr>
<tr><td colspan="5"> 
</td></tr>
</table>

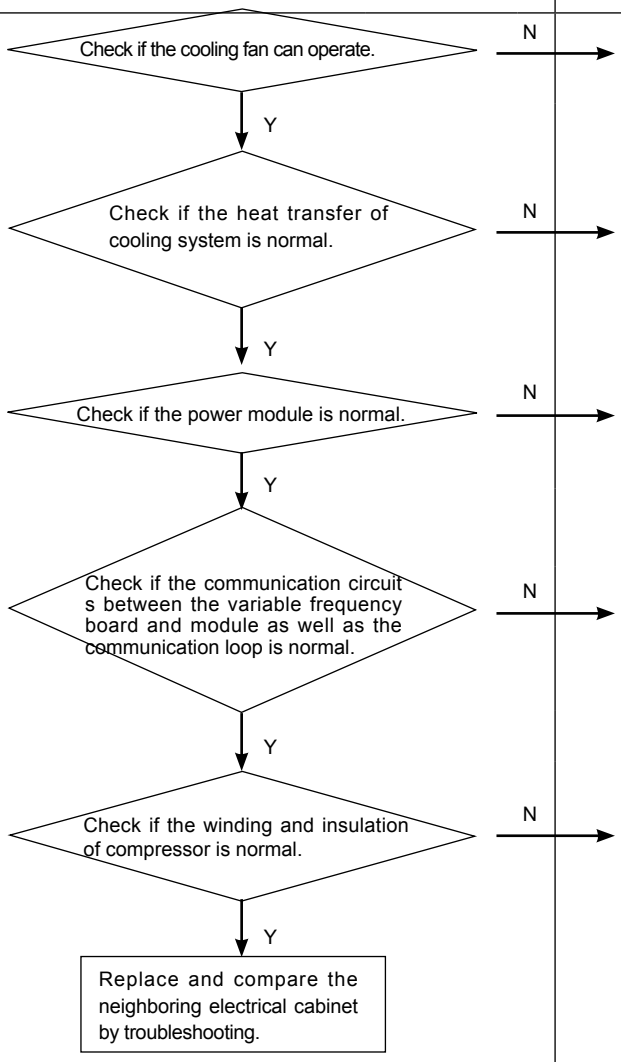
Failure code Outdoor digital display tube: 117-0,1 Indoor wired controller: 75	Indoor unit LED status	LED5		Failure description: Software overcurrent of module 1 and 2
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the compressor is insecurely connected; ◆ Check the system for liquid shock. ◆ Check if the module is in normal conditions and subject to short circuit. ◆ Check if the compressor is well. ◆ Check if the compressor wiring UVW is connected correctly and the inverter board and module board is securely wired.		
3. Abnormity confirmation conditions		
Overcurrent of module software		
4. Possible causes		
◆ The current detection loop of inverter board is in poor performance, which results in rapid current rise of compressor; ◆ Damage or liquid shock is found in compressor, which results in overcurrent; ◆ UVW wiring is wrongly connected or the inverter board and module board are wired insecurely.		



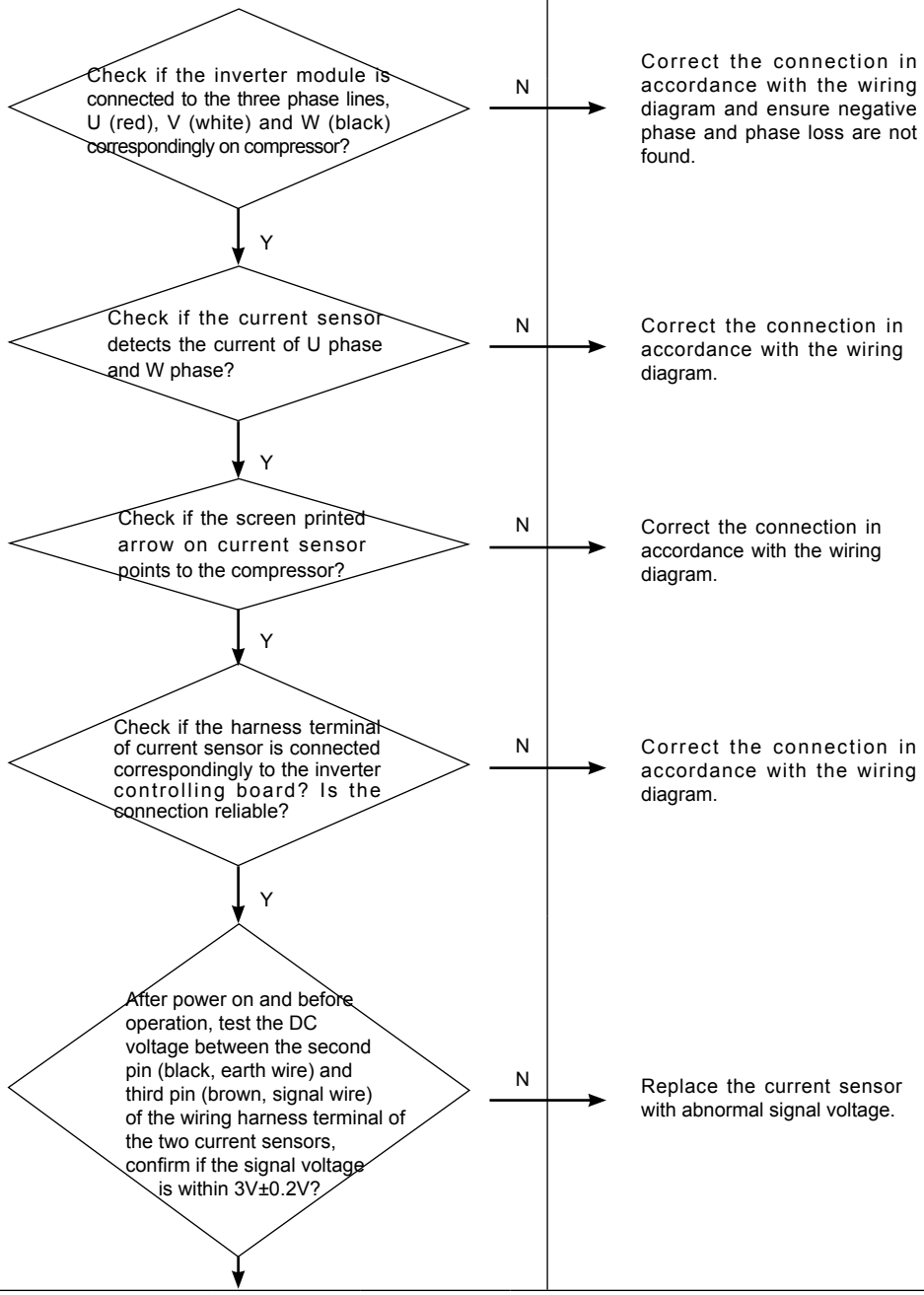
Failure code Outdoor digital display tube: 118-0, 1 Indoor wired controller: 76	Indoor unit LED status	LED5		Failure description: Start failure of module 1 and 2
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the compressor is insecurely connected; ◆ Check the system for liquid shock and poor heat dissipation. ◆ Check if the compressor and modules are well. ◆ Check if the inverter board and module is insecurely connected or inserted.		
3. Abnormity confirmation conditions		
The module is found with limiting current or overheating protection.		
4. Possible causes		
◆ The inverter board and module are wired insecurely, which results in failure alarm due to failure to detect compressor rotation speed. ◆ The compressor or the power module is damaged.		



Failure code Outdoor digital display tube: 119-0, 1 Indoor wired controller77	Indoor unit LED status	LED5		Failure description: The current detection of inverter control board 1 and 2 is abnormal
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

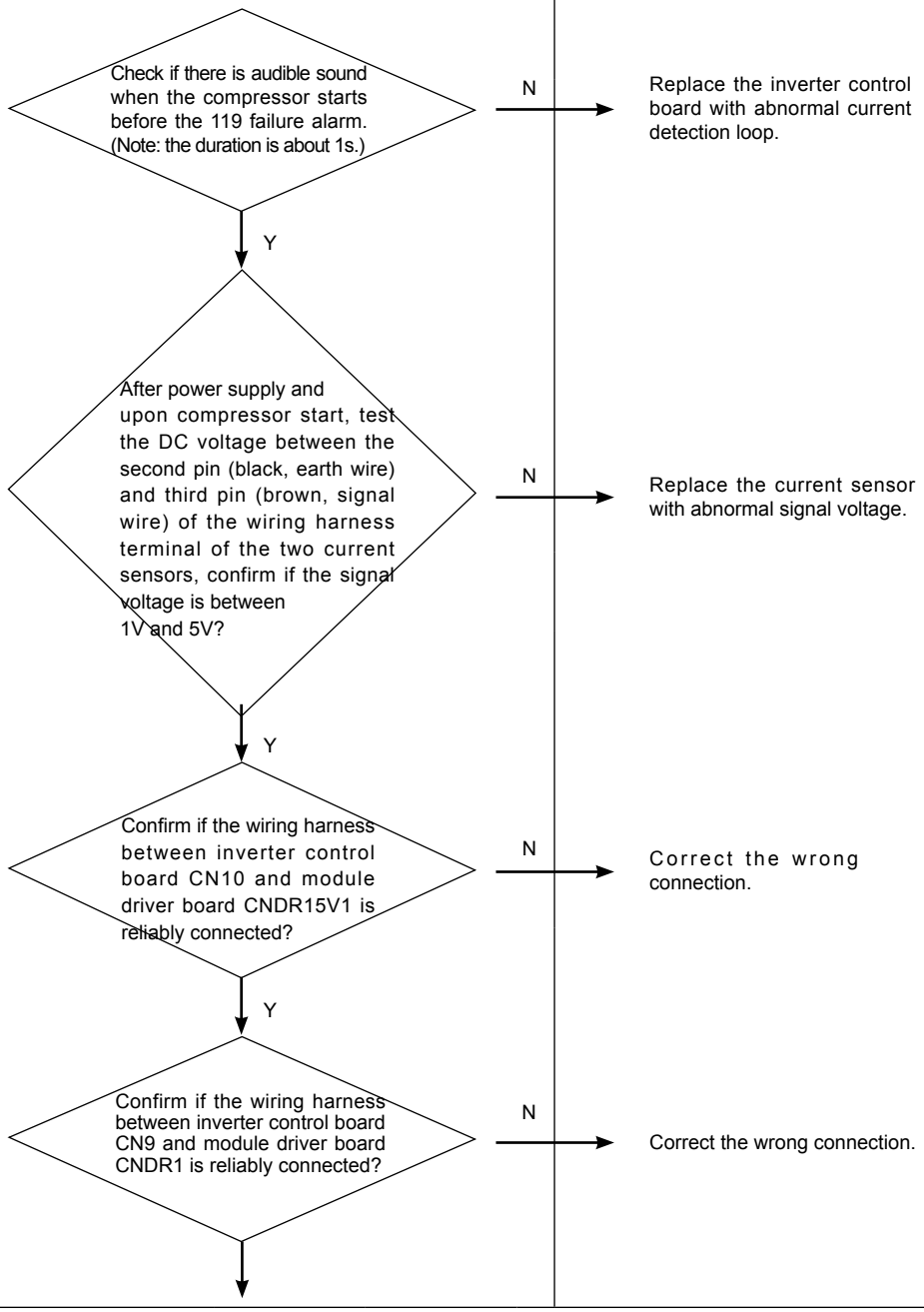
1. Model	Failure diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the current sensor is reversely connected and U and W is in reverse direction. ◆ Check if the current sensor is in reverse direction. (the arrow on sensor points at the compressor) ◆ Check if the inverter board is well. ◆ Check if the current sensor is well.		
3. Abnormity confirmation conditions		
The current detection sensor of inverter control board is in abnormal conditions, disconnected or connected incorrectly.		
4. Possible causes		
◆ The inverter board and current sensor is anti-connected or the current sensor is in incorrect direction. ◆ The inverter board or current sensor is damaged.		



To be continued

Failure code Outdoor digital display tube: 119-0, 1 Indoor wired controller77	Indoor unit LED status	LED5		Failure description: The current detection of inverter control board 1 and 2 is abnormal
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

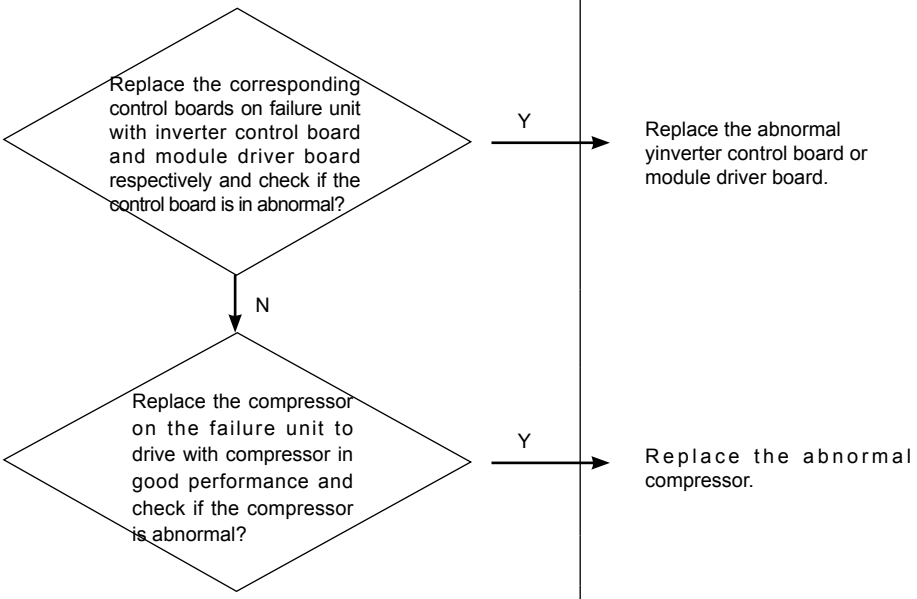
1. Model	Failure diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the current sensor is reversely connected and U and W is in reverse direction. ◆ Check if the current sensor is in reverse direction. (the arrow on sensor points at the compressor) ◆ Check if the inverter board is well. ◆ Check if the current sensor is well.		
3. Abnormity confirmation conditions		
The current detection sensor of inverter control board is in abnormal conditions, disconnected or connected incorrectly.		
4. Possible causes		
◆ The inverter board and current sensor is anti-connected or the current sensor is in incorrect direction. ◆ The inverter board or current sensor is damaged.		



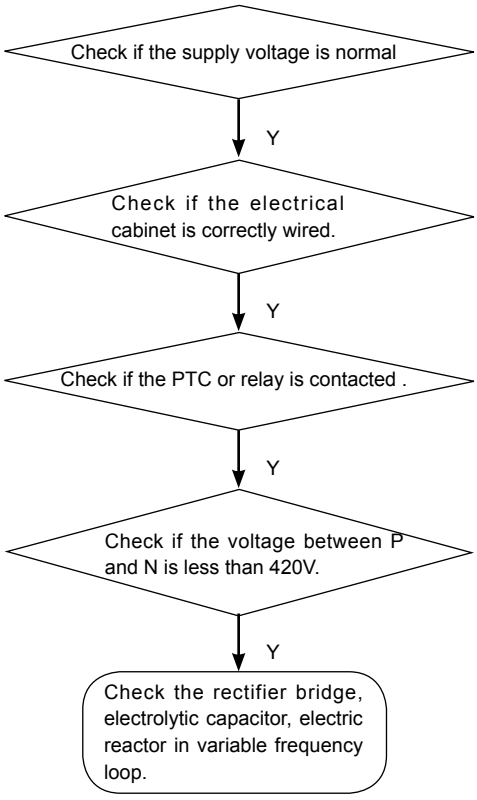
To be continued

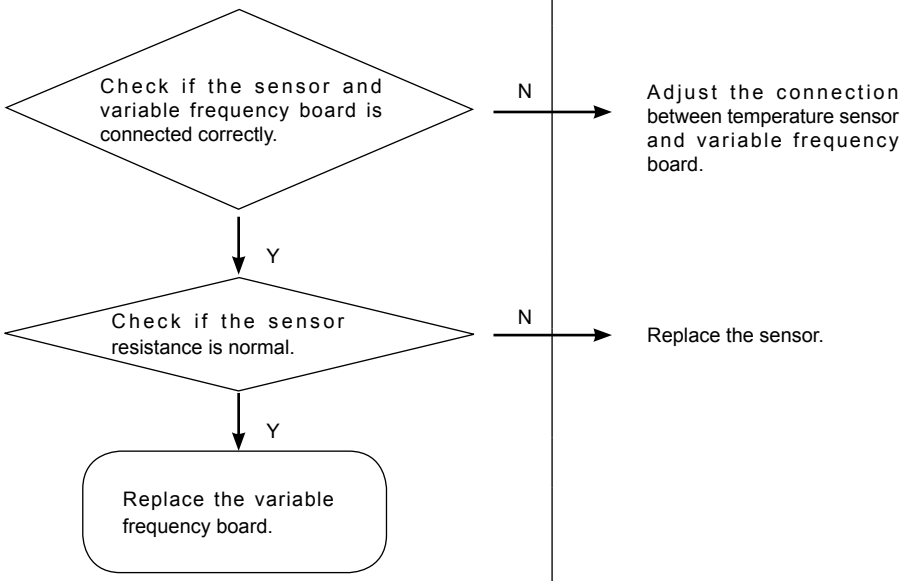
Continued

Failure code Outdoor digital display tube: 119-0, 1 Indoor wired controller77	Indoor unit LED status	LED5		Failure description: The current detection of inverter control board 1 and 2 is abnormal
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

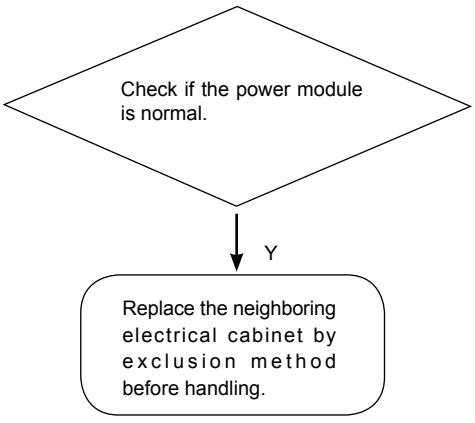
1. Model	Failure diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the current sensor is reversely connected and U and W is in reverse direction. ◆ Check if the current sensor is in reverse direction. (the arrow on sensor points at the compressor) ◆ Check if the inverter board is well. ◆ Check if the current sensor is well.		
3. Abnormity confirmation conditions		
The current detection sensor of inverter control board is in abnormal conditions, disconnected or connected incorrectly.		
4. Possible causes		
◆ The inverter board and current sensor is anti-connected or the current sensor is in incorrect direction. ◆ The inverter board or current sensor is damaged.		

Failure code Outdoor digital display tube: 120, 121-0, 1 Indoor wired controller: 78, 79	Indoor unit LED status	LED5		Failure description: Abnormal power supply of the inverter control board 1 and 2
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check if the supply voltage is abnormal. ◆ Check if the PTC or relay contacts or not. ◆ Check if the DC bus voltage is normal. ◆ Check if the DC power supply of inverter board is normal.		
3. Abnormity confirmation conditions The power supply of inverter control board is interrupted instantly.		
4. Possible causes ◆ The supply voltage is found with abnormal fluctuations. ◆ The PTC or relay does not contact. ◆ The inverter control board is in poor performance.		

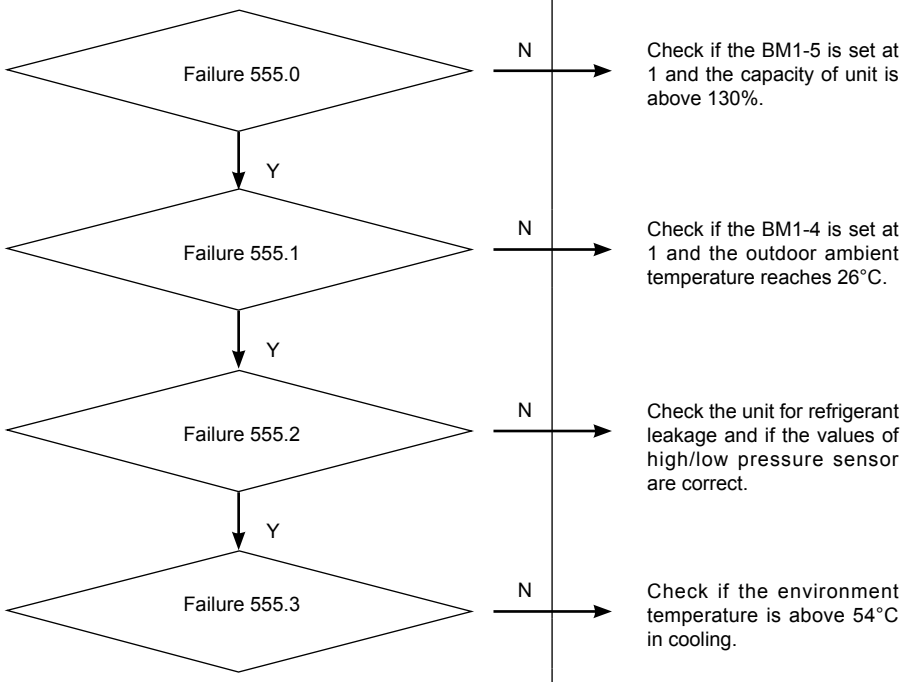
<table>
<tr><td rowspan="3">Failure code
Outdoor digital display tube: 122-0, 1
Indoor wired controller: 7A</td><td colspan="2" rowspan="2">Indoor unit LED status</td><td colspan="2">LED5</td><td rowspan="3">Failure description:
The temperature sensors of radiator of inverter control board 1 and 2 are abnormal</td></tr>
<tr><td colspan="2">20 times</td></tr>
<tr><td rowspan="2">Outdoor unit LED status</td><td>LED1</td><td>LED2</td></tr>
<tr><td>Normal</td><td>Normal</td></tr>
<tr><td colspan="2">1. Model</td><td colspan="4">Failure diagnosis and troubleshooting</td></tr>
<tr><td colspan="2">Flow Logic III series</td><td colspan="2">Diagnosis</td><td colspan="2">Troubleshooting</td></tr>
<tr><td colspan="2">2. Abnormity detection method</td><td colspan="4" rowspan="8"> 
</td></tr>
<tr><td colspan="2">◆ Check if the temperature acquisition circuit of inverter board is normal.
◆ Check if the resistance of temperature sensor is normal.
◆ Check if they are connected correctly</td></tr>
<tr><td colspan="2">3. Abnormity confirmation conditions</td></tr>
<tr><td colspan="2">The temperature sensor is disconnected or the resistance is incorrect.</td></tr>
<tr><td colspan="2">4. Possible causes</td></tr>
<tr><td colspan="2">◆ The resistance of temperature sensor is found with drift.
◆ The inverter board acquires inaccurate temperature.</td></tr>
</table>

Failure code Outdoor digital display tube: 125-0, 1 Indoor wired controller: 7D	Indoor unit LED status	LED5		Failure description: The frequency of compressor 1 and 2 don't match
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the communication circuits of power module and inverter board are securely inserted and connected. ◆ Check if the power module is well. ◆ Check if the inverter board is well.		
3. Abnormity confirmation conditions		
(current frequency ≥ INV target frequency +3Hz) or (target frequency ≥0 && actual frequency =0) for continuous 5 minutes		
4. Possible causes		
◆ The power module and inverter board are connected loosely, which results in detection failure of compressor rotation speed. ◆ The power module is damaged.		

<table>
<tr><td rowspan="3">Failure code
Outdoor digital display tube: 555.0, 1, 2, 3
Indoor wired controller: /</td><td rowspan="2">Indoor unit LED status</td><td colspan="2">LED5</td><td rowspan="3">Failure description:
Overload standby/ heating standby at 26℃ / low pressure (lack of refrigerant) standby/ cooling standby at 54°C</td></tr>
<tr><td colspan="2">20 times</td></tr>
<tr><td rowspan="2">Outdoor unit LED status</td><td>LED1</td><td>LED2</td></tr>
<tr><td>Normal</td><td>Normal</td></tr>
</table>

1. Model	Failure diagnosis and troubleshooting	
Flow Logic III series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Confirm the dip switch setting is correct and the running limited condition is reached ◆ In case of lack of refrigerant standby, check the system for air leakage and if the detection value of pressure sensor is correct.		
3. Abnormity confirmation conditions		
Power on is not allowed in following situations: the capacity is above 130% or below 50%; heating when the outdoor ambient temperature is above 26°C upon system standby; start cooling Ps<0.23Mpa or heating Ps<0.12Mpa upon system standby; system standby with temperature above 54°C.		
4. Possible causes		
◆ The dip switch is configured with capacity/ heating with outdoor ambient temperature exceeding 26℃ /cooling with the temperature exceeding 54℃ ; ◆ System air leakage results in too low pressure of units.		



APPENDIX Sensor Resistance Table

No.	Model	Name	Code	Characteristic
1	AWAU-YDV250-H13 AWAU-YDV280-H13 AWAU-YDV335-H13 (DROP ONLY) AWAU-YDV400-H13 AWAU-YDV450-H13 AWAU-YDV504-H13 AWAU-YDV560-H13 AWAU-YDV615-H13 (DROP ONLY) AWAU-YDV680-H13	Suction temp. sensor（Ts、Ts1、Ts2、Tsco）	0010451307	R25=10KΩ±3%，B25/50=3700K±3%
2		Indoor coil temp. sensor（Tdef1、Tdef2、Toci1、Toci2、Tliqsc）	MHW551A026	R25=10KΩ±3%，B25/50=3700K±3%
3		Outdoor ambient temp. sensor（Tao）	0010450192	R25=10KΩ±3%，B25/50=3700K±3%
4		Discharging temp. \ oil temp. sensor(Toil1、Toil2、Td1、Td2、Toilp、Tsuc）	0010451303	R80=50KΩ±3%，B25/50=4450K±3%
5		Power module temp. sensor（Tfin）	0010452082	R50=17K±2%，B25/50=4170K±3%

R80=50kΩ±3% B25/80=4450K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
0	1749.014	1921.993	2094.972	9	9
1	1651.431	1813.265	1975.099	8.93	8.93
2	1560.165	1711.646	1863.127	8.85	8.85
3	1474.737	1616.593	1758.449	8.78	8.78
4	1394.709	1527.611	1660.513	8.7	8.7
5	1319.683	1444.25	1568.817	8.63	8.63
6	1249.295	1366.096	1482.897	8.55	8.55
7	1183.21	1292.773	1402.336	8.48	8.48
8	1121.124	1223.935	1326.746	8.4	8.4
9	1062.756	1159.265	1255.774	8.33	8.33
10	1007.85	1098.474	1189.098	8.25	8.25
11	956.167	1041.293	1126.419	8.18	8.18
12	907.491	987.477	1067.463	8.1	8.1
13	861.621	936.799	1011.977	8.03	8.03
14	818.372	889.052	959.732	7.95	7.95
15	777.574	844.042	910.51	7.88	7.88
16	739.066	801.59	864.114	7.8	7.8
17	702.705	761.533	820.361	7.73	7.73
18	668.353	723.717	779.081	7.65	7.65
19	635.885	688.001	740.117	7.58	7.58
20	605.185	654.254	703.323	7.5	7.5
21	576.145	622.355	668.565	7.43	7.43
22	548.663	592.189	635.715	7.35	7.35
23	522.645	563.651	604.657	7.28	7.28
24	498.006	536.644	575.282	7.2	7.2
25	474.662	511.076	547.49	7.13	7.13
26	452.538	486.862	521.186	7.05	7.05
27	431.563	463.922	496.281	6.98	6.98
28	411.671	442.182	472.693	6.9	6.9
29	392.8	421.572	450.344	6.83	6.83
30	374.891	402.028	429.165	6.75	6.75
31	357.891	383.489	409.087	6.68	6.68
32	341.749	365.898	390.047	6.6	6.6
33	326.416	349.201	371.986	6.53	6.53
34	311.848	333.349	354.85	6.45	6.45
35	298.004	318.295	338.586	6.38	6.38
36	284.843	303.995	323.147	6.3	6.3

R80=50kΩ±3% B25/80=4450K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
37	272.329	290.407	308.485	6.23	6.23
38	260.427	277.493	294.559	6.15	6.15
39	249.104	265.216	281.328	6.08	6.08
40	238.329	253.541	268.753	6	6
41	228.073	242.437	256.801	5.93	5.93
42	218.308	231.873	245.438	5.85	5.85
43	209.01	221.82	234.63	5.78	5.78
44	200.154	212.252	224.35	5.7	5.7
45	191.715	203.142	214.569	5.63	5.63
46	183.674	194.467	205.26	5.55	5.55
47	176.009	186.204	196.399	5.48	5.48
48	168.703	178.333	187.963	5.4	5.4
49	161.735	170.832	179.929	5.33	5.33
50	155.089	163.682	172.275	5.25	5.25
51	148.748	156.866	164.984	5.18	5.18
52	142.698	150.367	158.036	5.1	5.1
53	136.924	144.168	151.412	5.03	5.03
54	131.411	138.255	145.099	4.95	4.95
55	126.148	132.613	139.078	4.88	4.88
56	121.122	127.229	133.336	4.8	4.8
57	116.32	122.089	127.858	4.73	4.73
58	111.732	117.181	122.63	4.65	4.65
59	107.347	112.494	117.641	4.58	4.58
60	103.157	108.018	112.879	4.5	4.5
61	99.15	103.741	108.332	4.43	4.43
62	95.319	99.654	103.989	4.35	4.35
63	91.655	95.748	99.841	4.28	4.28
64	88.149	92.014	95.879	4.2	4.2
65	84.795	88.443	92.091	4.13	4.13
66	81.584	85.028	88.472	4.05	4.05
67	78.511	81.761	85.011	3.98	3.98
68	75.569	78.636	81.703	3.9	3.9
69	72.752	75.645	78.538	3.83	3.83
70	70.052	72.781	75.51	3.75	3.75
71	67.466	70.04	72.614	3.68	3.68

R80=50kΩ±3% B25/80=4450K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
72	64.988	67.415	69.842	3.6	3.6
73	62.613	64.901	67.189	3.53	3.53
74	60.337	62.493	64.649	3.45	3.45
75	58.154	60.185	62.216	3.38	3.38
76	56.06	57.973	59.886	3.3	3.3
77	54.051	55.852	57.653	3.23	3.23
78	52.125	53.82	55.515	3.15	3.15
79	50.275	51.87	53.465	3.08	3.08
80	48.5	50	51.5	3	3
81	46.728	48.206	49.684	3.07	3.07
82	45.028	46.484	47.94	3.13	3.13
83	43.397	44.832	46.267	3.2	3.2
84	41.833	43.246	44.659	3.27	3.27
85	40.332	41.723	43.114	3.33	3.33
86	38.891	40.26	41.629	3.4	3.4
87	37.509	38.856	40.203	3.47	3.47
88	36.181	37.506	38.831	3.53	3.53
89	34.905	36.209	37.513	3.6	3.6
90	33.68	34.962	36.244	3.67	3.67
91	32.503	33.764	35.025	3.73	3.73
92	31.373	32.612	33.851	3.8	3.8
93	30.286	31.504	32.722	3.87	3.87
94	29.242	30.439	31.636	3.93	3.93
95	28.236	29.413	30.59	4	4
96	27.271	28.427	29.583	4.07	4.07
97	26.342	27.478	28.614	4.13	4.13
98	25.448	26.564	27.68	4.2	4.2
99	24.589	25.685	26.781	4.27	4.27
100	23.762	24.838	25.914	4.33	4.33
101	22.966	24.023	25.08	4.4	4.4
102	22.199	23.237	24.275	4.47	4.47
103	21.462	22.481	23.5	4.53	4.53
104	20.751	21.752	22.753	4.6	4.6

R80=50kΩ±3% B25/80=4450K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
105	20.067	21.049	22.031	4.67	4.67
106	19.408	20.372	21.336	4.73	4.73
107	18.773	19.72	20.667	4.8	4.8
108	18.162	19.091	20.02	4.87	4.87
109	17.573	18.485	19.397	4.93	4.93
110	17.005	17.9	18.795	5	5
111	16.459	17.337	18.215	5.07	5.07
112	15.931	16.793	17.655	5.13	5.13
113	15.422	16.268	17.114	5.2	5.2
114	14.933	15.763	16.593	5.27	5.27
115	14.46	15.275	16.09	5.33	5.33
116	14.005	14.804	15.603	5.4	5.4
117	13.565	14.349	15.133	5.47	5.47
118	13.141	13.911	14.681	5.53	5.53
119	12.733	13.488	14.243	5.6	5.6
120	12.339	13.08	13.821	5.67	5.67
121	11.958	12.685	13.412	5.73	5.73
122	11.591	12.305	13.019	5.8	5.8
123	11.238	11.938	12.638	5.87	5.87
124	10.897	11.584	12.271	5.93	5.93
125	10.567	11.242	11.917	6	6
126	10.249	10.911	11.573	6.07	6.07
127	9.943	10.593	11.243	6.13	6.13
128	9.647	10.285	10.923	6.2	6.2
129	9.362	9.988	10.614	6.27	6.27
130	9.087	9.701	10.315	6.33	6.33
131	8.822	9.425	10.028	6.4	6.4
132	8.566	9.158	9.75	6.47	6.47
133	8.319	8.9	9.481	6.53	6.53
134	8.08	8.651	9.222	6.6	6.6
135	7.85	8.411	8.972	6.67	6.67
136	7.629	8.18	8.731	6.73	6.73
137	7.416	7.957	8.498	6.8	6.8
138	7.209	7.741	8.273	6.87	6.87
139	7.011	7.533	8.055	6.93	6.93
140	6.82	7.333	7.846	7	7

R25=10kΩ±3% B25/50=3700K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
-30	145.819	135.018	124.217	7	7
-29	138.071	129.126	120.181	6.93	6.93
-28	131.793	123.339	114.885	6.85	6.85
-27	125.665	117.684	109.703	6.78	6.78
-26	119.706	112.18	104.654	6.71	6.71
-25	113.933	106.843	99.753	6.64	6.64
-24	108.361	101.687	95.013	6.56	6.56
-23	102.997	96.719	90.441	6.49	6.49
-22	97.847	91.946	86.045	6.42	6.42
-21	92.915	87.371	81.827	6.35	6.35
-20	88.2	82.994	77.788	6.27	6.27
-19	83.702	78.815	73.928	6.2	6.2
-18	79.417	74.832	70.247	6.13	6.13
-17	75.342	71.041	66.74	6.05	6.05
-16	71.471	67.437	63.403	5.98	5.98
-15	67.798	64.015	60.232	5.91	5.91
-14	64.316	60.769	57.222	5.84	5.84
-13	61.017	57.692	54.367	5.76	5.76
-12	57.895	54.778	51.661	5.69	5.69
-11	54.942	52.019	49.096	5.62	5.62
-10	52.149	49.409	46.669	5.55	5.55
-9	49.51	46.941	44.372	5.47	5.47
-8	47.016	44.607	42.198	5.4	5.4
-7	44.659	42.4	40.141	5.33	5.33
-6	42.433	40.315	38.197	5.25	5.25
-5	40.332	38.345	36.358	5.18	5.18
-4	38.346	36.482	34.618	5.11	5.11
-3	36.472	34.723	32.974	5.04	5.04
-2	34.7	33.059	31.418	4.96	4.96
-1	33.027	31.487	29.947	4.89	4.89
0	31.445	30	28.555	4.82	4.82
1	29.951	28.594	27.237	4.75	4.75
2	28.538	27.264	25.99	4.67	4.67
3	27.202	26.006	24.81	4.6	4.6
4	25.938	24.815	23.692	4.53	4.53

R25=10kΩ±3% B25/50=3700K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
5	24.742	23.687	22.632	4.45	4.45
6	23.61	22.619	21.628	4.38	4.38
7	22.538	21.607	20.676	4.31	4.31
8	21.522	20.647	19.772	4.24	4.24
9	20.559	19.737	18.915	4.16	4.16
10	19.646	18.874	18.102	4.09	4.09
11	18.779	18.054	17.329	4.02	4.02
12	17.958	17.276	16.594	3.95	3.95
13	17.177	16.537	15.897	3.87	3.87
14	16.436	15.834	15.232	3.8	3.8
15	15.731	15.166	14.601	3.73	3.73
16	15.061	14.53	13.999	3.65	3.65
17	14.424	13.925	13.426	3.58	3.58
18	13.817	13.349	12.881	3.51	3.51
19	13.24	12.8	12.36	3.44	3.44
20	12.69	12.277	11.864	3.36	3.36
21	12.166	11.778	11.39	3.29	3.29
22	11.666	11.302	10.938	3.22	3.22
23	11.189	10.848	10.507	3.15	3.15
24	10.734	10.414	10.094	3.07	3.07
25	10.3	10	9.7	3	3
26	9.898	9.604	9.31	3.06	3.06
27	9.514	9.226	8.938	3.13	3.13
28	9.147	8.864	8.581	3.19	3.19
29	8.796	8.519	8.242	3.25	3.25
30	8.459	8.188	7.917	3.31	3.31
31	8.137	7.871	7.605	3.38	3.38
32	7.828	7.568	7.308	3.44	3.44
33	7.532	7.277	7.022	3.5	3.5
34	7.248	6.999	6.75	3.56	3.56
35	6.977	6.733	6.489	3.63	3.63
36	6.716	6.477	6.238	3.69	3.69
37	6.466	6.232	5.998	3.75	3.75
38	6.227	5.998	5.769	3.81	3.81
39	5.997	5.773	5.549	3.88	3.88
40	5.776	5.557	5.338	3.94	3.94
41	5.564	5.35	5.136	4	4

R25=10kΩ±3% B25/50=3700K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
42	5.36	5.151	4.942	4.06	4.06
43	5.166	4.961	4.756	4.13	4.13
44	4.978	4.778	4.578	4.19	4.19
45	4.799	4.603	4.407	4.25	4.25
46	4.625	4.434	4.243	4.31	4.31
47	4.46	4.273	4.086	4.38	4.38
48	4.301	4.118	3.935	4.44	4.44
49	4.148	3.969	3.79	4.5	4.5
50	4.001	3.826	3.651	4.56	4.56
51	3.86	3.689	3.518	4.63	4.63
52	3.724	3.557	3.39	4.69	4.69
53	3.594	3.431	3.268	4.75	4.75
54	3.468	3.309	3.15	4.81	4.81
55	3.349	3.193	3.037	4.88	4.88
56	3.233	3.081	2.929	4.94	4.94
57	3.123	2.974	2.825	5	5
58	3.015	2.87	2.725	5.06	5.06
59	2.913	2.771	2.629	5.13	5.13
60	2.815	2.676	2.537	5.19	5.19
61	2.721	2.585	2.449	5.25	5.25
62	2.63	2.497	2.364	5.31	5.31
63	2.543	2.413	2.283	5.38	5.38
64	2.459	2.332	2.205	5.44	5.44
65	2.379	2.255	2.131	5.5	5.5
66	2.301	2.18	2.059	5.56	5.56
67	2.228	2.109	1.99	5.63	5.63
68	2.156	2.04	1.924	5.69	5.69
69	2.088	1.974	1.86	5.75	5.75
70	2.021	1.91	1.799	5.81	5.81
71	1.958	1.849	1.74	5.88	5.88
72	1.897	1.791	1.685	5.94	5.94
73	1.839	1.735	1.631	6	6
74	1.782	1.68	1.578	6.06	6.06
75	1.728	1.628	1.528	6.13	6.13

R25=10kΩ±3% B25/50=3700K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
76	1.676	1.578	1.48	6.19	6.19
77	1.626	1.53	1.434	6.25	6.25
78	1.578	1.484	1.39	6.31	6.31
79	1.531	1.439	1.347	6.38	6.38
80	1.486	1.396	1.306	6.44	6.44
81	1.443	1.355	1.267	6.5	6.5
82	1.401	1.315	1.229	6.56	6.56
83	1.362	1.277	1.192	6.63	6.63
84	1.323	1.24	1.157	6.69	6.69
85	1.285	1.204	1.123	6.75	6.75
86	1.249	1.169	1.089	6.81	6.81
87	1.214	1.136	1.058	6.88	6.88
88	1.181	1.104	1.027	6.94	6.94
89	1.148	1.073	0.998	7	7
90	1.116	1.042	0.968	7.06	7.06
91	1.085	1.013	0.941	7.13	7.13
92	1.056	0.985	0.914	7.19	7.19
93	1.026	0.957	0.888	7.25	7.25
94	0.998	0.93	0.862	7.31	7.31
95	0.971	0.904	0.837	7.38	7.38
96	0.944	0.879	0.814	7.44	7.44
97	0.918	0.854	0.79	7.5	7.5
98	0.893	0.83	0.767	7.56	7.56
99	0.867	0.806	0.745	7.63	7.63
100	0.843	0.783	0.723	7.69	7.69
101	0.819	0.76	0.701	7.75	7.75
102	0.796	0.738	0.68	7.81	7.81
103	0.772	0.716	0.66	7.88	7.88
104	0.749	0.694	0.639	7.94	7.94
105	0.727	0.673	0.619	8	8

R50=17KΩ±2% B25/50=4170K±3%							
Temp（℃）	Rmin	R（t）Normal	Rmax	Temp（℃）	Rmin	R（t）Normal	Rmax
0	164.73	176.38	187.00	53.00	14.73	15.07	15.41
1	156.21	167.10	177.02	54.00	14.14	14.48	14.82
2	148.19	158.36	167.64	55.00	13.58	13.93	14.26
3	140.63	150.13	158.81	56.00	13.05	13.39	13.72
4	133.50	142.38	150.49	57.00	12.53	12.88	13.20
5	126.77	135.07	142.66	58.00	12.04	12.38	12.71
6	120.42	128.18	135.28	59.00	11.58	11.91	12.24
7	114.43	121.68	128.32	60.00	11.13	11.46	11.79
8	108.77	115.55	121.76	61.00	10.70	11.03	11.35
9	103.42	109.76	115.58	62.00	10.29	10.62	10.94
10	98.37	104.30	109.74	63.00	9.90	10.23	10.54
11	93.59	99.14	104.23	64.00	9.52	9.85	10.16
12	89.07	94.26	99.02	65.00	9.16	9.49	9.79
13	84.80	89.65	94.11	66.00	8.82	9.14	9.44
14	80.76	85.29	89.47	67.00	8.49	8.81	9.10
15	76.93	81.17	85.08	68.00	8.18	8.49	8.78
16	73.31	77.27	80.93	69.00	7.87	8.18	8.47
17	69.87	73.58	77.01	70.00	7.58	7.89	8.17
18	66.62	70.09	73.30	71.00	7.31	7.61	7.89
19	63.54	66.78	69.78	72.00	7.04	7.33	7.61
20	60.62	63.65	66.46	73.00	6.78	7.08	7.35
21	57.84	60.68	63.31	74.00	6.54	6.83	7.10
22	55.22	57.87	60.33	75.00	6.30	6.59	6.85
23	52.72	55.20	57.50	76.00	6.08	6.36	6.62
24	50.35	52.67	54.82	77.00	5.86	6.14	6.39
25	48.10	50.27	52.28	78.00	5.65	5.93	6.18
26	45.97	47.99	49.87	79.00	5.45	5.72	5.97
27	43.94	45.83	47.59	80.00	5.26	5.53	5.77
28	42.01	43.77	45.42	81.00	5.08	5.34	5.58
29	40.18	41.82	43.37	82.00	4.90	5.16	5.39
30	38.43	39.97	41.41	83.00	4.73	4.98	5.22
31	36.78	38.21	39.56	84.00	4.57	4.82	5.04
32	35.20	36.53	37.79	85.00	4.41	4.66	4.88
33	33.70	34.94	36.12	86.00	4.26	4.50	4.72
34	32.27	33.43	34.53	87.00	4.12	4.35	4.57
35	30.91	31.99	33.01	88.00	3.98	4.21	4.42
36	29.61	30.62	31.57	89.00	3.84	4.07	4.28
37	28.38	29.31	30.21	90.00	3.71	3.94	4.14
38	27.20	28.07	28.90	91.00	3.59	3.81	4.01
39	26.08	26.89	27.66	92.00	3.47	3.69	3.88
40	25.01	25.76	26.48	93.00	3.36	3.57	3.76
41	23.99	24.69	25.36	94.00	3.24	3.45	3.64
42	23.01	23.66	24.29	95.00	3.14	3.34	3.53
43	22.09	22.69	23.27	96.00	3.04	3.24	3.42
44	21.20	21.76	22.30	97.00	2.94	3.14	3.32
45	20.35	20.87	21.37	98.00	2.84	3.04	3.21
46	19.55	20.02	20.49	99.00	2.75	2.94	3.12
47	18.78	19.21	19.64	100.00	2.66	2.85	3.02
48	18.04	18.44	18.84	101.00	2.58	2.76	2.93
49	17.33	17.70	18.07	102.00	2.50	2.68	2.84
50	16.66	17.00	17.34	103.00	2.42	2.60	2.76
51	15.99	16.33	16.67	104.00	2.34	2.52	2.68
52	15.34	15.68	16.02	105.00	2.27	2.44	2.60