

# Ceiling & Floor type

## Part 1. Product Features

### 1. Convenient installation

- The ceiling type can be easily installed into a corner of the ceiling even if the ceiling is very narrow
- It is especially useful when installation of an air conditioner in the center of the ceiling is impossible due to a structure such as a lighting



Floor & ceiling type

### 2. Double auto swing and wide angle air flow

- Air flow directional control minimizes the air resistance and produces wider air flow to vertical direction
- The range of horizontal air discharge is widened which secures wider air flow distribution to provide more comfortable air circulation no matter where the unit is set up



### 3. Water proof by utilizing the absorbing plastic film on water collector

### 4. Low noise level plus compact size

- Shape of the blades has been improved to prevent noise caused by turbulence

## Part 2. Specification

### R407C

Model		MUA-18HRN2	MUA-24HRN2	MUA-24HRN2	MUA-30HRN2	
Power supply		Ph-V-Hz	220-240V~, 50Hz	220-240V~, 50Hz	3N,380V ~, 50Hz	3N,380V ~, 50Hz
Cooling	Capacity	Btu/h	18000	24000	24000	30000
	Capacity	kW	5.28	7.44	7.45	8.8
	Input	W	2090	3100	3100	3660
	Rated current	A	9.5	14.1	6.0	6.3
	EER	Btu/W.h	8.6	8.2	8.2	8.2
Heating	Capacity	Btu/h	19000	30000	30000	32000
	Capacity	kW	5.57	8.8	8.8	9.4
	Input	W	2100	3050	3300	3800
	Rated current	A	9.5	13.9	5.0	5.3
	COP	Btu/W.h	9.1	9.8	9.1	8.4
Moisture Removal		L/h	1.8	2.4	2.4	3
Max. input consumption		W	2700	4100	4400	5200
Max. current		A	12.3	18.6	6.7	7.9
Starting current		A	48	44	25	25
Compressor	Model		PG330X2CS-4KU3	HQ034PAA	C-SBN263H8A	C-SBN263H8A
	Type		Rotary	Scroll	Scroll	Scroll
	Brand		TOSHIBA	LG	SANYO	SANYO
	Supplier		TOSHIBA(Guangdong)	LG	SANYO(Dalian)	SANYO(Dalian)
	Capacity	Btu/h	20137	29000	33788	33788
	Input	W	1980	2760	3500	3500
	Rated current(RLA)	A	9.7	12.4	6.33	6.33
	Locked rotor Amp(LRA)	A	50	61	33	33
	Thermal protector		Internal type	INTERNAL TYPE	Internal type	Internal type
	Capacitor	uF	40	60	/	/
	Refrigerant oil	ml	RB68AF/T68/A68tf 750	750	DAPHN-E FV68S 1700	DAPHN-E FV68S 1700
Indoor fan motor	Model		YSK66-4A	YSK66-4A	YSK66-4A	YSK66-4A
	Brand		WELLING	WELLING	WELLING	WELLING
	Input	W	130	130	130	130
	Capacitor	uF	3.5	3.5	3.5	3.5
	Speed(hi /lo)	r/min	1080/850	1250/940	1250/940	1250/940
Indoor coil	Number of rows		3	3	3	3
	Tube pitch(a)x row pitch(b)	mm	25.4×22	25.4×22	25.4×22	25.4×22
	Fin spacing	mm	1.7	1.7	1.7	1.7
	Fin type (code)		Hydrophilic aluminium	Hydrophilic aluminium	Hydrophilic aluminium	Hydrophilic aluminium

	Tube outside dia.and type	mm	9.53, innergroove tube	9.53, innergroove tube	9.53, innergroove tube	9.53, innergroove tube
	Coil length x height x width	mm	685*203*66	905*203*66	905*203*66	905*203*66
	Number of circuits		5	5	5	5
Indoor air flow (Hi/Lo)		m3/h	800/650	1000/850	1000/850	1200/1050
Indoor noise level (Hi/Lo)		dB(A)	42/38	45/40	45/40	46/41
Indoor unit	Dimension (W*H*D)	mm	980*600*220	1200*600*220	1200*600*220	1200*600*220
	Packing (W*H*D)	mm	1104*730*370	1324*730*370	1324*730*370	1324*730*370
	Net/Gross weight	kg	28/35	32/40	32/40	32/40
Outdoor fan motor	Model		YDK53-6K	YDK53-6H	YDK53-6H	YDK53-6H
	Brand		WELLING	WELLING	WELLING	WELLING
	Input	W	130	130	130	130
	Capacitor	uF	3	3	3	3
	Speed	r/min	750	800	800	800
Outdoor coil	Number of rows		2	2	2	2
	Tube pitch(a)x row pitch(b)	mm	25.4x22	25.4x22	25.4x22	25.4x22
	Fin spacing	mm	1.4	1.5	1.5	1.5
	Fin type (code)		Hydrophilic aluminium	Hydrophilic aluminium	Hydrophilic aluminium	Hydrophilic aluminium
	Tube outside dia.and type	mm	9.53, innergroove tube	9.53, innergroove tube	9.53, innergroove tube	9.53, innergroove tube
	Coil length x height x width	mm	638*660*44	850X813X44	850*813*44	850*813*44
	Number of circuits		3	2	4	4
Outdoor air flow		m3/h	2400	3000	3000	3500
Outdoor noise level		dB(A)	48	52	52	55
Outdoor unit	Dimension(W*H*D)	mm	845*695*335	895X860X330	895*860*330	895*860*330
	Packing (W*H*D)	mm	965*847*395	972X987X406	972X987X406	972X987X406
	Net/Gross weight	kg	55/58	79/90	79/90	79/90
Refrigerant type R407C		g	2100	2500	2350	2350
Design pressure		MPa	2.8/1.2	2.8/1.2	2.8/1.2	2.8/1.2
Refrigerant piping	Liquid side/ Gas side	Mm (inch)	6.35/ 12.7(1/4"-1/2")	9.53/ 16.0(3/8"-5/8")	9.53/ 16.0(3/8"-5/8")	9.53/ 16.0(3/8"-5/8")
	Max. refrigerant pipe length	m	30	30	30	30
	Max. difference in level	m	20	20	20	20
Connection wiring			NO	NO	NO	NO
Plug type			NO	NO	NO	NO
Controller			Remote	Remote	Remote	Remote
Operation temp			17~30	17~30	17~30	17~30
Ambient temp			-7 ~ 45	-7 ~ 45	-7 ~ 45	-7 ~ 45
Application area		m2	30-40	40-56	40-56	40-56
Qty'per 20'/ 40'/40HQ		Pieces	48/96/112	38/79/86	38/79/86	38/79/86

## R407C

Model			MUA-30HRN2	MUA-36HRN2	MUA-36HRN2
Power supply		Ph-V-Hz	220-240V, 50Hz	3N,380V ~, 50Hz	220-240V, 50Hz
Cooling	Capacity	Btu/h	30000	36000	36000
	Capacity	kW	9.00	10.55	10.55
	Input	W	3750	4050	4100
	Rated current	A	17.0	7.1	18.6
	EER	Btu/W.h	8.2	8.9	8.8
Heating	Capacity	Btu/h	36000	38000	38000
	Capacity	kW	10.55	11.14	11.14
	Input	W	4400	5000	4456
	Rated current	A	20	8.4	20.3
	COP	Btu/W.h	8.2	8.2	8.5
Moisture Removal		L/h	3	3.6	3.6
Max. input consumption		W	5720	6100	6150
Max. current		A	26	9.4	28
Starting current		A	45	40	45
Compressor	Model		C-SBN301H5A	C-SBN303H8A	C-SBN301H5A
	Type		Scroll	Scroll	Scroll
	Brand		SANYO	SANYO	SANYO
	Supplier		SANYO(Dalian)	SANYO(Dalian)	SANYO(Dalian)
	Capacity	Btu/h	39602	39067	39602
	Input	W	4000	4000	4000
	Rated current(RLA)	A	17.3	7	17.3
	Locked rotor Amp(LRA)	A	50	36	50
	Thermal protector		Internal type	Internal type	Internal type
	Capacitor	uF	60uF/450V	/	60uF/450V
	Refrigerant oil	ml	DAPHN-E FV68S 1697	DAPHN-E FV68S 1700	DAPHN-E FV68S 1698
Indoor fan motor	Model		YSK66-4A	YSK66-4A	YSK66-4A
	Brand		WELLING	WELLING	WELLING
	Input	W	130	130	130
	Capacitor	uF	3.5	3.5	3.5
	Speed(hi//lo)	r/min	1250/940	1250/940	1250/940
Indoor coil	Number of rows		3	3	3
	Tube pitch(a)x row pitch(b)	mm	25.4×22	25.4×22	25.4×22
	Fin spacing	mm	1.7	1.7	1.7
	Fin type (code)		Hydrophilic aluminium	Hydrophilic aluminium	Hydrophilic aluminium
	Tube outside dia.and type	mm	9.53, innergroove tube	9.53, innergroove tube	9.53, innergroove tube
	Coil length x height x width	mm	905*203*66	905*203*66	905*203*66
	Number of circuits		5	5	5

Indoor air flow (Hi/Lo)		m <sup>3</sup> /h	1400/1200	1400/1200	1400/1200
Indoor noise level (Hi/Lo)		dB(A)	45/41	45/41	45/41
Indoor unit	Dimension (W*H*D)	mm	1200*600*220	1200*600*220	1200*600*220
	Packing (W*H*D)	mm	1324*730*370	1324*730*370	1324*730*370
	Net/Gross weight	kg	32/40	32/40	32/40
Outdoor fan motor	Model		YDK250-6D-WL	YDK250-6D-WL	YDK250-6D-WL
	Brand		WELLING	WELLING	WELLING
	Input	W	307	307	307
	Capacitor	uF	10	10	10
	Speed	r/min	740	740	740
Outdoor coil	Number of rows		2	2	2
	Tube pitch(a)x row pitch(b)	mm	25.4x22	25.4x22	25.4x22
	Fin spacing	mm	1.7	1.7	1.7
	Fin type (code)		Unhydrophilic aluminium	Unhydrophilic aluminium	Unhydrophilic aluminium
	Tube outside dia.and type	mm	9.53,innergroove tube	9.53,innergroove tube	9.53,innergroove tube
	Coil length x height x width	mm	955*915*44	955*915*44	955*915*44
	Number of circuits		8	8	8
Outdoor air flow		m <sup>3</sup> /h	5000	5000	5000
Outdoor noise level		dB(A)	57	57	57
Outdoor unit	Dimension(W*H*D)	mm	990*960*360	990*960*360	990*960*360
	Packing (W*H*D)	mm	1120*1090*435	1120*1090*435	1120*1090*435
	Net/Gross weight	kg	101/106	101/106	101/106
Refrigerant type R407C		g	2700	2700	2700
Design pressure		MPa	2.8/1.2	1.2/3.5	2.8/1.2
Refrigerant piping	Liquid side/ Gas side	mm(inch)	12.7/ 19.0	12.7/ 19.0(1/2"-3/4")	12.7/ 19.0
	Max. refrigerant pipe length	m	30	30	30
	Max. difference in level	m	20	20	20
Connection wiring			NO	NO	NO
Plug type			NO	NO	NO
Controller			Remote	Remote	Remote
Operation temp			17~30	17~30	17~30
Ambient temp			-7~45	-7 ~ 45	-7~45
Application area		m <sup>2</sup>	60-85	60-85	60-85
Qty'per 20'/ 40'/40HQ		Pieces	28/66/76	28/66/76	28/66/76

**R407C**

Model			MUA-48HRN2	MUA-60HRN2
Power supply		Ph-V-Hz	3N,380V ~, 50Hz	3N,380V ~, 50Hz
Cooling	Capacity	Btu/h	48000	54600
	Capacity	kW	14.0	16.0
	Input	W	5500	6600
	Rated current	A	9.0	12.5
	EER	Btu/W.h	8.7	8.3
Heating	Capacity	Btu/h	53000	59700
	Capacity	kW	15.5	17.5
	Input	W	5700	6800
	Rated current	A	9.2	13
	COP	Btu/W.h	9.3	8.8
Moisture Removal		L/h	4.8	6
Max. input consumption		W	7100	8730
Max. current		A	10.9	13.2
Starting current		A	44	50
Compressor	Model		C-SBN373H8A	C-SBN453H8A
	Type		Scroll	Scroll
	Brand		SANYO	SANYO
	Supplier		SANYO(Dalian)	SANYO(Dalian)
	Capacity	Btu/h	49474	60100
	Input	W	4950	5800
	Rated current(RLA)	A	8.5	9.93
	Locked rotor Amp(LRA)	A	50	66
	Thermal protector		Internal type	Internal type
	Capacitor	uF	/	/
	Refrigerant oil	ml	DAPHN-E FV68S 1700	DAPHN-E FV68S 1700
Indoor fan motor	Model		YSK66-4A	YSK66-4A
	Brand		WELLING	WELLING
	Input	W	110	110
	Capacitor	uF	3.5	3.5
	Speed(hi//lo)	r/min	1080/850	1080/850
Indoor coil	Number of rows		4	4
	Tube pitch(a)x row pitch(b)	mm	21×13.37	21×13.37
	Fin spacing	mm	1.5	1.5
	Fin type (code)		Hydrophilic aluminium	Hydrophilic aluminium
	Tube outside dia.and type	mm	7, innergroove tube	7, innergroove tube
	Coil length x height x width	mm	1570*258*53.5	1570*258*53.5
	Number of circuits		24	24

Indoor air flow (Hi/Lo)		m <sup>3</sup> /h	1800/1600	2000/1800
Indoor noise level (Hi/Lo)		dB(A)	52/49	54/52
Indoor unit	Dimension (W*H*D)	mm	1860*600*220	1860*600*220
	Packing (W*H*D)	mm	1984*730*370	1984*730*370
	Net/Gross weight	kg	52/62	52/62
Outdoor fan motor	Model		YDK65-6-WL;YDK65-6F	YDK65-6-WL;YDK65-6F
	Brand		WELLING	WELLING
	Input	W	138+156	138+156
	Capacitor	uF	3.5x2	3.5x2
	Speed	r/min	800	800
Outdoor coil	Number of rows		2	2
	Tube pitch(a)x row pitch(b)	mm	25.4x22	25.4x22
	Fin spacing	mm	1.8	1.8
	Fin type (code)		Unhydrophilic aluminium	hydrophilic aluminium
	Tube outside dia.and type	mm	9.53,bare tube	9.53, innergroove tube
	Coil length x height x width	mm	715*1220*44	715*1220*44
	Number of circuits		4	4
Outdoor air flow		m <sup>3</sup> /h	5000	5000
Outdoor noise level		dB(A)	58	58
Outdoor unit	Dimension(W*H*D)	mm	940*1245*360	940*1245*360
	Packing (W*H*D)	mm	1018*1377*434	1018*1377*434
	Net/Gross weight	kg	110/125	110/125
Refrigerant type R407C		g	4050	4300
Design pressure		MPa	1.2/3.5	1.2/3.5
Refrigerant piping	Liquid side/ Gas side	mm(inch)	12.7/ 19.0(1/2"-3/4")	12.7/ 19.0(1/2"-3/4")
	Max. refrigerant pipe length	m	30	30
	Max. difference in level	m	20	20
Connection wiring			NO	NO
Plug type			NO	NO
Controller			Remote	Remote
Operation temp			17~30	17~30
Ambient temp			-7~45	-7~45
Application area		m <sup>2</sup>	80-100	90-110
Qty'per 20'/ 40'/40HQ		Pieces	21/46/51	21/46/51

## R407C

Model			MUA-18CRN2	MUA-24CRN2	MUA-24CRN2	MUA-30CRN2
Power supply		Ph-V-Hz	220-240V~, 50Hz	220-240V~, 50Hz	3N,380V ~, 50Hz	3N,380V ~, 50Hz
Cooling	Capacity	Btu/h	18000	24000	24000	30000
	Capacity	kW	5.28	7.44	7.45	8.8
	Input	W	2090	3100	3100	3660
	Rated current	A	9.5	14.1	7.1	6.3
	EER	Btu/W.h	8.6	8.2	8.2	8.2
Heating	Capacity	Btu/h	—	—	—	—
	Capacity	kW	—	—	—	—
	Input	W	—	—	—	—
	Rated current	A	—	—	—	—
	COP	Btu/W.h	—	—	—	—
Moisture Removal		L/h	1.8	2.4	2.4	2.4
Max. input consumption		W	2800	4400	5000	5000
Max. current		A	12.7	22	8	8
Starting current		A	34	44	25	58
Compressor	Model		PG330X2CS-4KU3	HQ034PAA	C-SBN263H8A	C-SBN263H8A
	Type		Rotary	Scroll	Scroll	Scroll
	Brand		TOSHIBA	LG	SANYO	SANYO
	Supplier		TOSHIBA(Guangdong)	LG	SANYO(Dalian)	SANYO(Dalian)
	Capacity	Btu/h	20137	29000	33788	33788
	Input	W	1980	2760	3500	3500
	Rated current(RLA)	A	9.7	12.4	6.33	6.33
	Locked rotor Amp(LRA)	A	50	61	33	33
	Thermal protector		Internal type	INTERNAL TYPE	Internal type	Internal type
	Capacitor	uF	40	60	/	/
Refrigerant oil	ml	RB68AF/T68/A68tf 750	750	DAPHN-E FV68S 1700	DAPHN-E FV68S 1700	
Indoor fan motor	Model		YSK66-4A	YSK66-4A	YSK66-4A	YSK66-4A
	Brand		WELLING	WELLING	WELLING	WELLING
	Input	W	130	130	130	130
	Capacitor	uF	3.5	3.5	3.5	3.5
	Speed(hi /lo)	r/min	1080/850	1250/940	1250/940	1250/940
Indoor coil	Number of rows		3	3	3	3
	Tube pitch(a)x row pitch(b)	mm	25.4×22	25.4×22	25.4×22	25.4×22
	Fin spacing	mm	1.7	1.7	1.7	1.7
	Fin type (code)		Hydrophilic aluminium	Hydrophilic aluminium	Hydrophilic aluminium	Hydrophilic aluminium
	Tube outside dia.and type	mm	9.53 , innergroove tube	9.53, innergroove tube	9.53, innergroove tube	9.53, innergroove tube

	Coil length x height x width	mm	685*203*66	905*203*66	905*203*66	905*203*66
	Number of circuits		5	5	5	5
Indoor air flow (Hi/Lo)		m3/h	800/650	1000/850	1000/850	1000/850
Indoor noise level (Hi/Lo)		dB(A)	45/41	47/42	47/42	47/42
Indoor unit	Dimension (W*H*D)	mm	980*600*220	1200*600*220	1200*600*220	1200*600*220
	Packing (W*H*D)	mm	1104*730*370	1324*730*370	1324*730*370	1324*730*370
	Net/Gross weight	kg	28/35	32/40	32/40	32/40
Outdoor fan motor	Model		YDK53-6G	YDK65-6-2	YDK65-6-2	YDK53-6H
	Brand		Welling	Welling	Welling	WELLING
	Input	W	138	138	138	130
	Capacitor	uF	2.5	3.5	3.5	3
	Speed	r/min	640	800	800	800
Outdoor coil	Number of rows		1	2	2	2
	Tube pitch(a)x row pitch(b)	mm	25.4 X22	25.4X22	25.4X22	25.4x22
	Fin spacing	mm	1.7	1.7	1.7	1.5
	Fin type (code)		Hydrophilic aluminium	Unhydrophilic aluminium	Hydrophilic aluminium	Hydrophilic aluminium
	Tube outside dia.and type	mm	9.53, innergroove tube	9.53, innergroove tube	9.53, innergroove tube	9.53, innergroove tube
	Coil length x height x width	mm	638X660X22	850X810X44	850X810X44	850*813*44
	Number of circuits		2	2	2	4
Outdoor air flow		m3/h	2400	2000	3000	3000
Outdoor noise level		dB(A)	48	56	60	60
Outdoor unit	Dimension(W*H*D)	mm	845X695X335	895X860X330	895X860X330	895*860*330
	Packing (W*H*D)	mm	965X847X395	972X987X406	972X987X406	972X987X406
	Net/Gross weight	kg	52/56	75/79	86/90	79/90
Refrigerant type R407C		g	2050	1850g	2400g	2350g
Design pressure		MPa	2.8/1.2	2.8/1.2	2.8/1.2	2.8/1.2
Refrigerant piping	Liquid side/ Gas side	Mm (inch)	6.35/ 12.7	9.53/ 16.0	9.53/ 16.0(3/8"-5/8")	9.53/ 16.0(3/8"-5/8")
	Max. refrigerant pipe length	m	30	30	30	30
	Max. difference in level	m	20	20	20	20
Connection wiring			NO	NO	NO	NO
Plug type			NO	NO	NO	NO
Controller			Remote	Remote	Remote	Remote
Operation temp			17~30	17~30	17~30	17~30
Ambient temp			18~45	18~45	18~45	18~45
Application area		m2	30-40	40-56	40-56	40-56
Qty'per 20' / 40'/40HQ		Pieces	48/96/112	38/79/86	38/79/86	38/79/86

## R407C

Model			MUA-30CRN2	MUA-36CRN2	MUA-36CRN2
Power supply		Ph-V-Hz	220-240V, 50Hz	220-240V, 50Hz	3N,380V ~, 50Hz
Cooling	Capacity	Btu/h	30000	36000	3600
	Capacity	kW	9	10.5	10.5
	Input	W	3750	4100	4050
	Rated current	A	17	18.6	7.1
	EER	Btu/W.h	8.2	8.8	8.9
Heating	Capacity	Btu/h	—	—	—
	Capacity	kW	—	—	—
	Input	W	—	—	—
	Rated current	A	—	—	—
	COP	Btu/W.h	—	—	—
Moisture Removal		L/h	3.6	3.6	3.6
Max. input consumption		W	6150	6150	6150
Max. current		A	28	28	11
Starting current		A	58	58	58
Compressor	Model		C-SBN301H5A	C-SBN301H5A	C-SBN303H8A
	Type		Scroll	Scroll	Scroll
	Brand		SANYO	SANYO	SANYO
	Supplier		SANYO(Dalian)	SANYO(Dalian)	SANYO(Dalian)
	Capacity	Btu/h	39602	39602	39067
	Input	W	4000	4000	4000
	Rated current(RLA)	A	17.3	17.3	7
	Locked rotor Amp(LRA)	A	50	50	36
	Thermal protector		Internal type	Internal type	Internal type
	Capacitor	uF	60uF/450V	60uF/450V	/
	Refrigerant oil	ml	DAPHN-E FV68S 1697	DAPHN-E FV68S 1697	DAPHN-E FV68S 1700
Indoor fan motor	Model		YSK66-4A	YSK66-4A	YSK66-4A
	Brand		WELLING	WELLING	WELLING
	Input	W	130	130	130
	Capacitor	uF	3.5	3.5	3.5
	Speed(hi//lo)	r/min	1250/940	1250/940	1250/940
Indoor coil	Number of rows		3	3	3
	Tube pitch(a)x row pitch(b)	mm	25.4×22	25.4×22	25.4×22
	Fin spacing	mm	1.7	1.7	1.7
	Fin type (code)		Hydrophilic aluminium	Hydrophilic aluminium	Hydrophilic aluminium
	Tube outside dia.and type	mm	9.53, innergroove tube	9.53, innergroove tube	9.53, innergroove tube
	Coil length x height x width	mm	905*203*66	905*203*66	905*203*66
	Number of circuits		5	5	5

Indoor air flow (Hi/Lo)		m <sup>3</sup> /h	1400/1200	1400/1200	1400/1200
Indoor noise level (Hi/Lo)		dB(A)	49/43		49/43
Indoor unit	Dimension (W*H*D)	mm	1860*600*220		1860*600*220
	Packing (W*H*D)	mm	1984*730*370		1984*730*370
	Net/Gross weight	kg	32/40		32/40
Outdoor fan motor	Model		YDK250-6D		YDK250-6D
	Brand		Welling		Welling
	Input	W		290	290
	Capacitor	uF		10	10
	Speed	r/min	850	850	850
Outdoor coil	Number of rows			2	2
	Tube pitch(a)x row pitch(b)	mm		25.4X22	25.4X22
	Fin spacing	mm	1.7	1.7	1.7
	Fin type (code)		Unhydrophilic aluminium	Unhydrophilic aluminium	Unhydrophilic aluminium
	Tube outside dia.and type	mm	9.53, bare tube	9.53, bare tube	9.53, bare tube
	Coil length x height x width	mm	715X1220X44	715X1220X44	715X1220X44
	Number of circuits		4	4	4
Outdoor air flow		m <sup>3</sup> /h	6000	6000	6000
Outdoor noise level		dB(A)	62		62
Outdoor unit	Dimension(W*H*D)	mm	990X960X360	990X960X360	990X960X360
	Packing (W*H*D)	mm	1120X1090X435	1120X1090X435	1120X1090X435
	Net/Gross weight	kg	99/104	99/104	99/104
Refrigerant type R407C		g	2700g	2700g	2700g
Design pressure		MPa	2.8/1.2	2.8/1.2	2.8/1.2
Refrigerant piping	Liquid side/ Gas side	mm(inch)	19(3/4")/ 12.7(1/2")	19(3/4")/ 12.7(1/2")	19(3/4")/ 12.7(1/2")
	Max. refrigerant pipe length	m	30	30	30
	Max. difference in level	m	20	20	20
Connection wiring			NO	NO	NO
Plug type			NO	NO	NO
Controller			Remote	Remote	Remote
Operation temp			17~30	17~30	17~30
Ambient temp			18~45	18~45	18~45
Application area		m <sup>2</sup>	60-85	60-85	60-85
Qty'per 20'/ 40'/40HQ		Pieces	28/66/76	28/66/76	28/66/76

**R407C**

Model			MUA-48CRN2	MUA-60CRN2
Power supply		Ph-V-Hz	3N,380V ~, 50Hz	3N,380V ~, 50Hz
Cooling	Capacity	Btu/h	48000	57420
	Capacity	kW	14.0	16.0
	Input	W	5500	6600
	Rated current	A	9	12.5
	EER	Btu/W.h	8.7	8.7
Heating	Capacity	Btu/h	—	—
	Capacity	kW	—	—
	Input	W	—	—
	Rated current	A	—	—
	COP	Btu/W.h	—	—
Moisture Removal		L/h	4.8	4.8
Max. input consumption		W	7100	8300
Max. current		A	12.1	15.8
Starting current		A	58	58
Compressor	Model		ZR61KH-TFD-522	ZR61KH-TFD-522
	Type		SCROLL	SCROLL
	Brand		COPELAND	COPELAND
	Supplier		COPELAND(su zhou)	COPELAND(su zhou)
	Capacity	Btu/h	51180	51180
	Input	W	4660	4660
	Rated current(RLA)	A	8.6	8.6
	Locked rotor Amp(LRA)	A	65.8	65.8
	Thermal protector		Internal	Internal
	Capacitor	uF	—	—
	Refrigerant oil	ml	1750	1750
Indoor fan motor	Model		YSK66-4A	YSK66-4A
	Brand		WELLING	WELLING
	Input	W	110	110
	Capacitor	uF	3.5	3.5
	Speed(hi//lo)	r/min	1080/850	1080/850
Indoor coil	Number of rows		4	4
	Tube pitch(a)x row pitch(b)	mm	21×13.37	21×13.37
	Fin spacing	mm	1.5	1.5
	Fin type (code)		Hydrophilic aluminium	Hydrophilic aluminium
	Tube outside dia.and type	mm	7, innergroove tube	7, innergroove tube
	Coil length x height x width	mm	1570*258*53.5	1570*258*53.5
	Number of circuits		24	24

Indoor air flow (Hi/Lo)		m <sup>3</sup> /h	1800/1600	1800/1600
Indoor noise level (Hi/Lo)		dB(A)	54/48	54/48
Indoor unit	Dimension (W*H*D)	mm	1860*600*220	1860*600*220
	Packing (W*H*D)	mm	1984*730*370	1984*730*370
	Net/Gross weight	kg	52/62	52/62
Outdoor fan motor	Model		YDK250-6D	YDK250-6D
	Brand		Welling	Welling
	Input	W	290	290
	Capacitor	uF	10	10
	Speed	r/min	850	850
Outdoor coil	Number of rows		2	2
	Tube pitch(a)x row pitch(b)	mm	25.4X22	25.4X22
	Fin spacing	mm	1.7	1.7
	Fin type (code)		Unhydrophilic aluminium	Unhydrophilic aluminium
	Tube outside dia.and type	mm	9.53, bare tube	9.53, bare tube
	Coil length x height x width	mm	715X1220X44	715X1220X44
	Number of circuits		4	4
Outdoor air flow		m <sup>3</sup> /h	6000	6000
Outdoor noise level		dB(A)	65	65
Outdoor unit	Dimension(W*H*D)	mm	990X960X360	990X960X360
	Packing (W*H*D)	mm	1120X1090X435	1120X1090X435
	Net/Gross weight	kg	115/122	117/122
Refrigerant type R407C		g	R407C/3500g	R407C/4000g
Design pressure		MPa	2.8/1.2	2.8/1.2
Refrigerant piping	Liquid side/ Gas side	mm(inch)	19(3/4")/φ12.7(1/2")	19(3/4")/ 12.7(1/2")
	Max. refrigerant pipe length	m	30	30
	Max. difference in level	m	20	20
Connection wiring			NO	NO
Plug type			NO	NO
Controller			Remote	Remote
Operation temp			17~30	17~30
Ambient temp			18~45	18~45
Application area		m <sup>2</sup>	80-105	80-105
Qty'per 20'/ 40'/40HQ		Pieces	20/39/52	20/39/52

**R22**

Model		MUA-18HR	MUA-24HR	MUA-24HR	
Power supply		Ph-V-Hz	220-240V~, 50Hz	220-240V~, 50Hz	3N,380V~, 50Hz
Cooling	Capacity	Btu/h	18000	24000	24000
	Capacity	kW	5.3	7.44	7.45
	Input	W	2090	3100	3100
	Rated current	A	9.5	14.1	6
	EER	Btu/W.h	8.7	8.2	8.2
Heating	Capacity	Btu/h	19000	30000	30000
	Capacity	kW	5.57	8.8	8.8
	Input	W	2100	3300	3300
	Rated current	A	9.5	15	6.2
	COP	Btu/W.h	9	9.1	9.1
Moisture Removal		L/h	1.8	2.4	2.4
Max. input consumption		W	2800	5000	5000
Max. current		A	12.7	17	8.0
Starting current		A	34	44	25
Compressor	Model		PH330X2CS-8KUC1	JT90BCBV1Y	JT90BCBY1Y
	Type		ROTARY	Scroll	Scroll
	Brand		TOSHIBA	DAKIN	DAKIN
	Supplier		TOSHIBA (GUANG DONG)	DAKIN(XI'AN)	DAKIN(XI'AN)
	Capacity	Btu/h	19790	29170	29170
	Input	W	2020	2890	2890
	Rated current(RLA)	A	10.3	14.4	5.5
	Locked rotor Amp(LRA)	A	47.6	89.5	89.5
	Thermal protector		UP3QE0591-T39	Internal	Internal
	Capacitor	uF	40	—	—
	Refrigerant oil	ml	750	1200	1200
Indoor fan motor	Model		YSK66-4A	YSK66-4A	YSK66-4A
	Brand		WELLING	WELLING	WELLING
	Input	W	130	130	130
	Capacitor	uF	3.5	3.5	3.5
	Speed(hi /lo)	r/min	1080/850	1250/940	1250/940
Indoor coil	Number of rows		3	3	3
	Tube pitch(a)x row pitch(b)	mm	25.4×22	25.4×22	25.4×22
	Fin spacing	mm	1.7	1.7	1.7
	Fin type (code)		Hydrophilic aluminium	Hydrophilic aluminium	Hydrophilic aluminium
	Tube outside dia.and type	mm	9.53 innergroove tube	9.53, innergroove tube	9.53, innergroove tube

	Coil length x height x width	mm	685*203*66	905*203*66	905*203*66
			5	5	5
Indoor air flow (Hi/Lo)		m3/h	800/650	1000/850	1000/850
Indoor noise level (Hi/Lo)		dB(A)	42/38	45/40	45/40
Indoor unit	Dimension (W*H*D)	mm	980*600*220	1200*600*220	1200*600*220
	Packing (W*H*D)	mm	1104*730*370	1324*730*370	1324*730*370
	Net/Gross weight	kg	28/35	32/40	32/40
Outdoor fan motor	Model		YDK53-6G	YDK65-6-2	YDK65-6-2
	Brand		Welling	Welling	Welling
	Input	W	138	138	138
	Capacitor	uF	2.5	3.5	3.5
	Speed	r/min	640	800	800
Outdoor coil	Number of rows		2	2	2
	Tube pitch(a)x row pitch(b)	mm	25.4X22	25.4X22	25.4X22
	Fin spacing	mm	1.4	1.7	1.7
	Fin type (code)		Hydrophilic aluminium	Hydrophilic aluminium	Hydrophilic aluminium
	Tube outside dia.and type	mm	9.53, innergroove tube	9.53, innergroove tube	9.53, innergroove tube
	Coil length x height x width	mm	638X660X22	850X810X44	850X810X44
	Number of circuits		2	2	2
Outdoor air flow		m3/h	2000	3000	3000
Outdoor noise level		dB(A)	48	52	52
Outdoor unit	Dimension(W*H*D)	mm	845X695X335	895X860X330	895X860X330
	Packing (W*H*D)	mm	965X847X395	972X987X406	972X987X406
	Net/Gross weight	kg	55/58	79/90	79/90
Refrigerant type R22		g	1850g	2750g	2750g
Design pressure		MPa	2.8/1.2	2.8/1.2	2.8/1.2
Refrigerant piping	Liquid side/ Gas side	Mm (inch)	6.35/ 12.7	16.0/ 9.53	16.0/ 9.53
	Max. refrigerant pipe length	m	30	30	30
	Max. difference in level	m	20	20	20
Connection wiring			NO	NO	NO
Plug type			NO	NO	NO
Controllor			Remote	Remote	Remote
Operation temp			17~30	17~30	17~30
Ambient temp			-7~45	-7~45	-7~45
Application area		m2	30-40	40-56	40-56
Qty'per 20' / 40' /40HQ		Pieces	49/96/112	38/79/86	38/79/86

**R22**

Model		MUA-36HR	MUA-48HR	MUA-60HR
Power supply		Ph-V-Hz	3N,380V ~, 50Hz	3N,380V ~, 50Hz
Cooling	Capacity	Btu/h	36000	48000
	Capacity	kW	10.5	14.0
	Input	W	4050	5500
	Rated current	A	7.1	9.0
	EER	Btu/W.h	8.9	8.7
Heating	Capacity	Btu/h	38000	53000
	Capacity	kW	12.00	15.53
	Input	W	5000	5700
	Rated current	A	8.4	9.2
	COP	Btu/W.h	8.2	9.3
Moisture Removal		L/h	3.6	4.8
Max. input consumption		W	6100	7100
Max. current		A	11	12.1
Starting current		A	58	58
Compressor	Model		VR61KF-TFD-542	VR61KF-TFD-542
	Type		SCROLL	SCROLL
	Brand		COPELAND	COPELAND
	Supplier		COPELAND(su zhou)	COPELAND(su zhou)
	Capacity	Btu/h	51180	51180
	Input	W	4660	4660
	Rated current(RLA)	A	8.6	8.6
	Locked rotor Amp(LRA)	A	65.8	65.8
	Thermal protector		Internal	Internal
	Capacitor	uF	—	—
	Refrigerant oil	ml	1750	1750
Indoor fan motor	Model		YSK66-4A	YSK66-4A
	Brand		WELLING	WELLING
	Input	W	130	110
	Capacitor	uF	3.5	3.5
	Speed(hi//lo)	r/min	1250/940	1080/850
Indoor coil	Number of rows		3	4
	Tube pitch(a)x row pitch(b)	mm	25.4×22	21×13.37
	Fin spacing	mm	1.7	1.5
	Fin type (code)		Hydrophilic aluminium	Hydrophilic aluminium
	Tube outside dia.and type	mm	9.53, innergroove tube	7, innergroove tube

	Coil length x height x width	mm	905*203*66	1570*258*53.5	1570*258*53.5
			5	24	6
Indoor air flow (Hi/Lo)		m <sup>3</sup> /h	1400/1200	1800/1600	1800/1600
Indoor noise level (Hi/Lo)		dB(A)	45/41	52/49	52/49
Indoor unit	Dimension (W*H*D)	mm	1860*600*220	1860*600*220	1860*600*220
	Packing (W*H*D)	mm	1984*730*370	1984*730*370	1984*730*370
	Net/Gross weight	kg	52/62	52/62	52/62
Outdoor fan motor	Model		YDK250-6D	YDK250-6D	YDK65-6WL; YDK65-6F
	Brand		Welling	Welling	WELLING
	Input	W	290	290	138+156
	Capacitor	uF	10	10	3.5x2
	Speed	r/min	850	850	800
Outdoor coil	Number of rows		2	2	2
	Tube pitch(a)x row pitch(b)	mm	25.4X22	25.4X22	25.4X22
	Fin spacing	mm	1.7	1.7	1.8
	Fin type (code)		Unhydrophilic aluminium	Unhydrophilic aluminium	Hydrophilic aluminium
	Tube outside dia.and type	mm	9.53, bare tube	9.53, bare tube	9.53, innergroove tube
	Coil length x height x width	mm	715X1220X44	715X1220X44	760*1220*44
	Number of circuits		4	4	4
Outdoor air flow		m <sup>3</sup> /h	6000	6000	5000
Outdoor noise level		dB(A)	57	57	52
Outdoor unit	Dimension(W*H*D)	mm	990X960X360	990X960X360	940*1245*360
	Packing (W*H*D)	mm	1120X1090X435	1120X1090X435	1020*1500*435
	Net/Gross weight	kg	101/106	101/106	114/135
Refrigerant type R22		g	3100g	3100g	5000 g
Design pressure		MPa	2.8/1.2	2.8/1.2	1.2/2.8
Refrigerant piping	Liquid side/ Gas side	mm(inch)	19(3/4")/φ12.7(1/2")	19(3/4")/φ12.7(1/2")	12.7(1/2")-19(3/4")
	Max. refrigerant pipe length	m	30	30	30
	Max. difference in level	m	20	20	20
Connection wiring			NO	NO	NO
Plug type			NO	NO	NO
Controller			Remote	Remote	Remote control
Operation temp			17~30	17~30	17 30
Ambient temp			-7~45	-7~45	-7 45
Application area		m <sup>2</sup>	60-85	80-105	80-105
Qty'per 20'/ 40'/40HQ		Pieces	26/54/62	26/54/62	21/46/51

**R22**

Model		MUA-18CR	MUA-24CR	MUA-24CR	
Power supply		Ph-V-Hz	220-240V~, 50Hz	220-240V~, 50Hz	3N,380V ~, 50Hz
Cooling	Capacity	Btu/h	18000	24000	24000
	Capacity	kW	5.30	7.44	7.45
	Input	W	2090	3100	3100
	Rated current	A	9.5	14.1	6.0
	EER	Btu/W.h	8.7	8.2	8.2
Heating	Capacity	Btu/h	—	—	—
	Capacity	kW	—	—	—
	Input	W	—	—	—
	Rated current	A	—	—	—
	COP	Btu/W.h	—	—	—
Moisture Removal		L/h	1.8	2.4	2.4
Max. input consumption		W	2800	5000	5000
Max. current		A	12.7	22.7	8.0
Starting current		A	34	44	25
Compressor	Model		PH330X2CS-8KUC1	JT90BCBV1L	JT90BCBY1L
	Type		ROTARY	Scroll	Scroll
	Brand		TOSHIBA	DAKIN	DAKIN
	Supplier		TOSHIBA (GUANG DONG)	DAKIN(XI'AN)	DAKIN(XI'AN)
	Capacity	Btu/h	19790	29170	29170
	Input	W	2020	2890	2890
	Rated current(RLA)	A	10.3	14.4	14.4
	Locked rotor Amp(LRA)	A	47.6	89.5	89.5
	Thermal protector		UP3QE0591-T39	Internal	Internal
	Capacitor	uF	40	—	—
	Refrigerant oil	ml	750	1200	1200
Indoor fan motor	Model		YSK66-4A	YSK66-4A	YSK66-4A
	Brand		WELLING	WELLING	WELLING
	Input	W	130	130	130
	Capacitor	uF	3.5	3.5	3.5
	Speed(hi /lo)	r/min	1080/850	1250/940	1250/940
Indoor coil	Number of rows		3	3	3
	Tube pitch(a)x row pitch(b)	mm	25.4×22	25.4×22	25.4×22
	Fin spacing	mm	1.7	1.7	1.7
	Fin type (code)		Hydrophilic aluminium	Hydrophilic aluminium	Hydrophilic aluminium
	Tube outside dia.and type	mm	9.53 innergroove tube	9.53, innergroove tube	9.53, innergroove tube

	Coil length x height x width	mm	685*203*66	905*203*66	905*203*66
			5	5	5
Indoor air flow (Hi/Lo)		m3/h	800/650	1000/850	1000/850
Indoor noise level (Hi/Lo)		dB(A)	42/38	45/40	45/40
Indoor unit	Dimension (W*H*D)	mm	980*600*220	1200*600*220	1200*600*220
	Packing (W*H*D)	mm	1104*730*370	1324*730*370	1324*730*370
	Net/Gross weight	kg	28/35	32/40	32/40
Outdoor fan motor	Model		YDK53-6G	YDK65-6-2	YDK65-6-2
	Brand		Welling	Welling	Welling
	Input	W	138	138	138
	Capacitor	uF	2.5	3.5	3.5
	Speed	r/min	640	800	800
Outdoor coil	Number of rows		2	2	2
	Tube pitch(a)x row pitch(b)	mm	25.4X22	25.4X22	25.4X22
	Fin spacing	mm	1.4	1.7	1.7
	Fin type (code)		Hydrophilic aluminium	Hydrophilic aluminium	Hydrophilic aluminium
	Tube outside dia.and type	mm	9.53, innergroove tube	9.53, innergroove tube	9.53, innergroove tube
	Coil length x height x width	mm	638X660X22	850X810X44	850X810X44
	Number of circuits		2	2	2
Outdoor air flow		m3/h	2000	3000	3000
Outdoor noise level		dB(A)	48	52	52
Outdoor unit	Dimension(W*H*D)	mm	845X695X335	895X860X330	895X860X330
	Packing (W*H*D)	mm	965X847X395	972X987X406	972X987X406
	Net/Gross weight	kg	55/58	79/90	79/90
Refrigerant type R22		g	1150g	1350g	1350g
Design pressure		MPa	2.8/1.2	2.8/1.2	2.8/1.2
Refrigerant piping	Liquid side/ Gas side	Mm (inch)	6.35/ 12.7	19(3/4")/φ12.7(1/2")	19(3/4")/φ12.7(1/2")
	Max. refrigerant pipe length	m	30	30	30
	Max. difference in level	m	20	20	20
Connection wiring			NO	NO	NO
Plug type			NO	NO	NO
Controllor			Remote	Remote	Remote
Operation temp			17~30	17~30	17~30
Ambient temp			-7~45	-7~45	-7~45
Application area		m2	30-40	40-56	40-56
Qty'per 20'/ 40'/40HQ		Pieces	48/96/112	38/79/86	38/79/86

**R22**

Model		MUA-36CR	MUA-48CR	MUA-60CR
Power supply		Ph-V-Hz	3N,380V ~, 50Hz	3N,380V ~, 50H
Cooling	Capacity	Btu/h	36000	48000
	Capacity	kW	10.5	14.0
	Input	W	4050	5500
	Rated current	A	7.1	9.0
	EER	Btu/W.h	8.9	8.7
Heating	Capacity	Btu/h	—	—
	Capacity	kW	—	—
	Input	W	—	—
	Rated current	A	—	—
	COP	Btu/W.h	—	—
Moisture Removal		L/h	3.6	4.8
Max. input consumption		W	6100	7100
Max. current		A	11	12.1
Starting current		A	58	58
Compressor	Model		VR61KF-TFP-522	VR61KF-TFP-522
	Type		SCROLL	SCROLL
	Brand		COPELAND	COPELAND
	Supplier		COPELAND	COPELAND
	Capacity	Btu/h	51180	51180
	Input	W	4660	4660
	Rated current(RLA)	A	8.6	8.6
	Locked rotor Amp(LRA)	A	65.8	65.8
	Thermal protector		Internal	Internal
	Capacitor	uF	—	—
	Refrigerant oil	ml	1750	1750
Indoor fan motor	Model		YSK66-4A	YSK66-4A
	Brand		WELLING	WELLING
	Input	W	130	110
	Capacitor	uF	3.5	3.5
	Speed(hi//lo)	r/min	1250/940	1080/850
Indoor coil	Number of rows		3	4
	Tube pitch(a)x row pitch(b)	mm	25.4×22	21×13.37
	Fin spacing	mm	1.7	1.5
	Fin type (code)		Hydrophilic aluminium	Hydrophilic aluminium
	Tube outside dia.and type	mm	9.53, innergroove tube	7, innergroove tube
	Coil length x height x width	mm	905*203*66	1570*258*53.5
	Number of circuits		5	24

Indoor air flow (Hi/Lo)		m <sup>3</sup> /h	1400/1200	1800/1600	1800/1600
Indoor noise level (Hi/Lo)		dB(A)	45/41	52/49	52/49
Indoor unit	Dimension (W*H*D)	mm	1860*600*220	1860*600*220	1860*600*220
	Packing (W*H*D)	mm	1984*730*370	1984*730*370	1984*730*370
	Net/Gross weight	kg	52/62	52/62	52/62
Outdoor fan motor	Model		YDK250-6D	YDK250-6D	YDK65-6WL;
	Brand		Welling	Welling	WELLING
	Input	W	290	290	138+156
	Capacitor	uF	10	10	3.5x2
	Speed	r/min	850	850	800
Outdoor coil	Number of rows		2	2	2
	Tube pitch(a)x row pitch(b)	mm	25.4X22	25.4X22	25.4X22
	Fin spacing	mm	1.7	1.7	1.8
	Fin type (code)		Unhydrophilic aluminium	Unhydrophilic aluminium	UnHydrophilic aluminium
	Tube outside dia.and type	mm	9.53, bare tube	9.53, bare tube	9.53,innergroove
	Coil length x height x width	mm	715X1220X44	715X1220X44	760*1220*44
	Number of circuits		4	4	4
Outdoor air flow		m <sup>3</sup> /h	6000	6000	5000
Outdoor noise level		dB(A)	57	57	52
Outdoor unit	Dimension(W*H*D)	mm	990X960X360	990X960X360	940*1245*360
	Packing (W*H*D)	mm	1120X1090X435	1120X1090X435	1020*1500*435
	Net/Gross weight	kg	101/106	101/106	110/125
Refrigerant type R22		g	1700g	1700g	4400
Design pressure		MPa	2.8/1.2	2.8/1.2	1.2/2.8
Refrigerant piping	Liquid side/ Gas side	mm(inch)	19(3/4")/φ12.7(1/2")	19(3/4")/φ12.7(1/2")	12.7(1/2")-19(3/4")
	Max. refrigerant pipe length	m	30	30	30
	Max. difference in level	m	20	20	20
Connection wiring			NO	NO	NO
Plug type			NO	NO	NO
Controller			Remote	Remote	Remote control
Operation temp			17~30	17~30	17~ 30
Ambient temp			-7~45	-7~45	-7 ~45
Application area		m <sup>2</sup>	60-85	60-85	80-105
Qty'per 20'/ 40'/40HQ		Pieces	24/54/62	24/54/62	21/46/51

Notes: 1. Nominal cooling capacities are based on the following conditions:

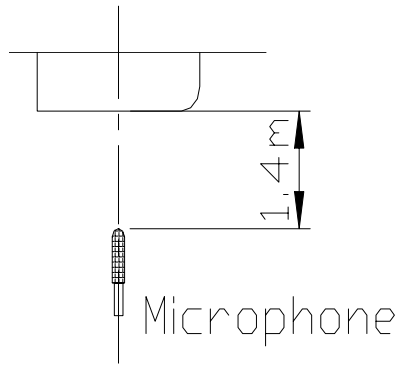
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB;

2. Nominal heating capacities are based on the following conditions:

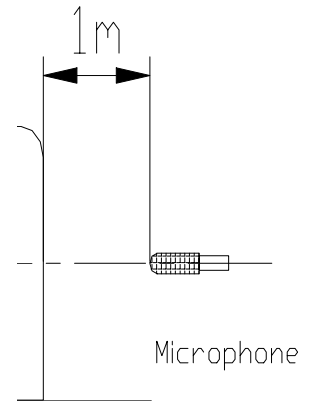
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB;

3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

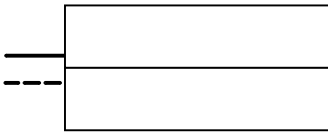
# Part 3 Noise Level



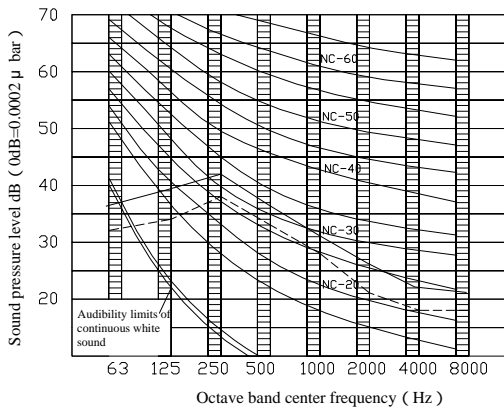
Ceiling



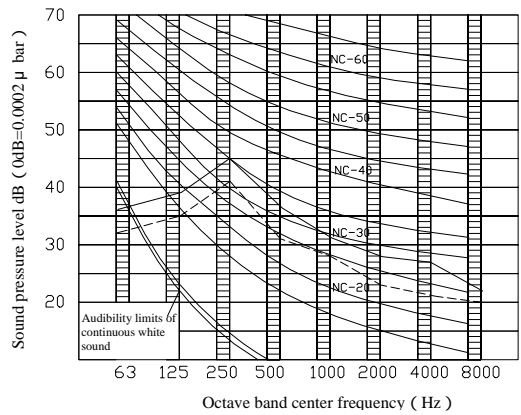
Floor



1.18000btu/h

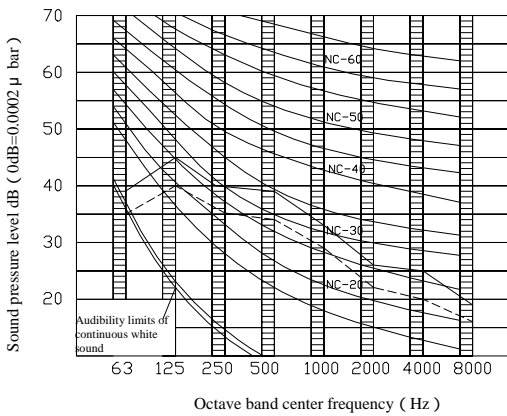


Ceiling

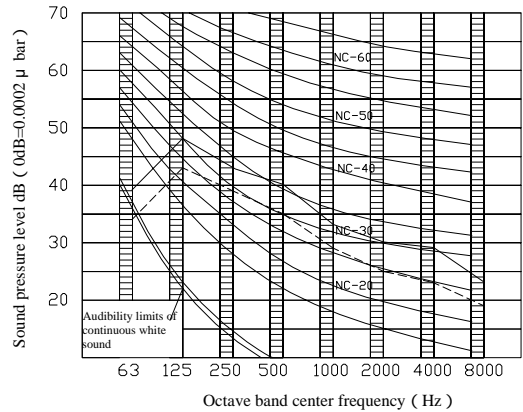


Floor

2.24000btu/h

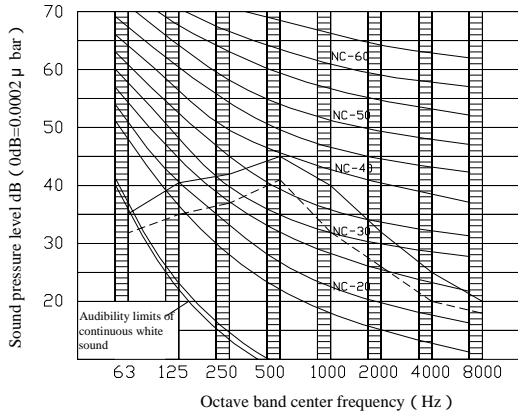


Ceiling

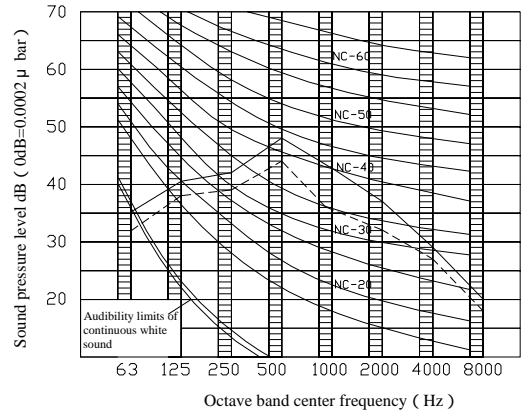


Floor

3.30000btu/h    36000btu/h

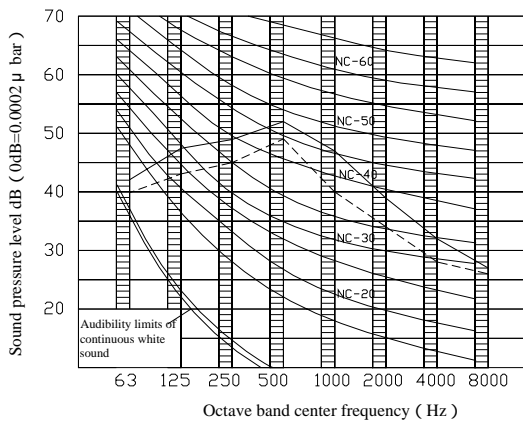


Ceiling

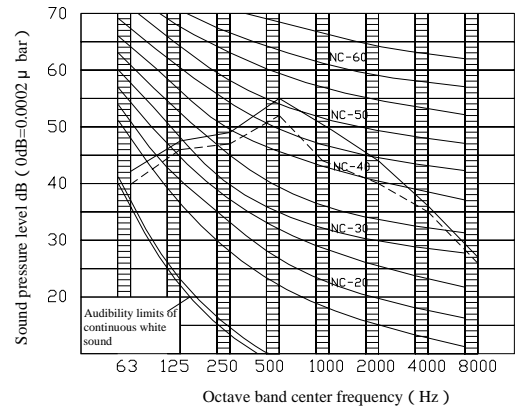


Floor

4.48000btu/h

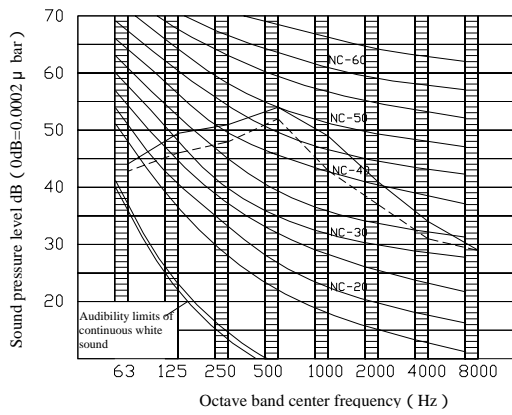


Ceiling

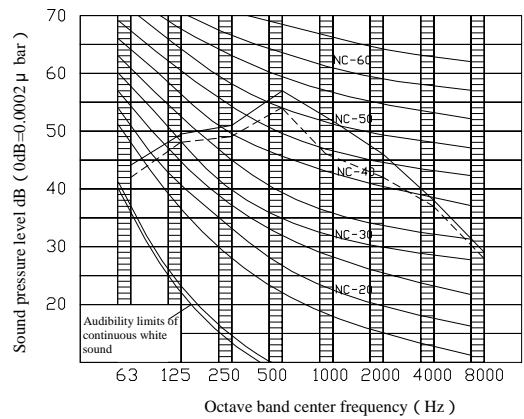


Floor

5.60000btu/h



Ceiling

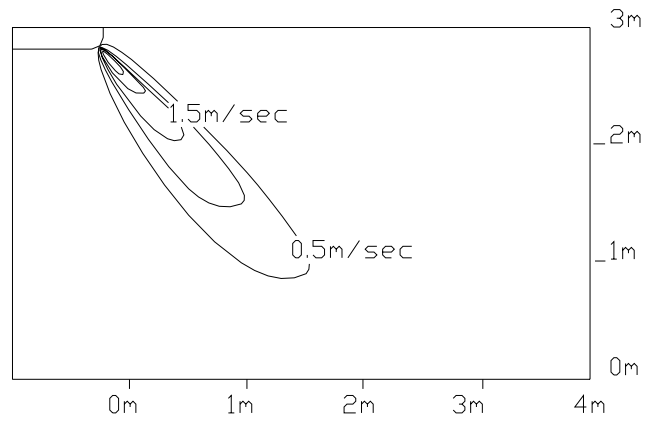


Floor

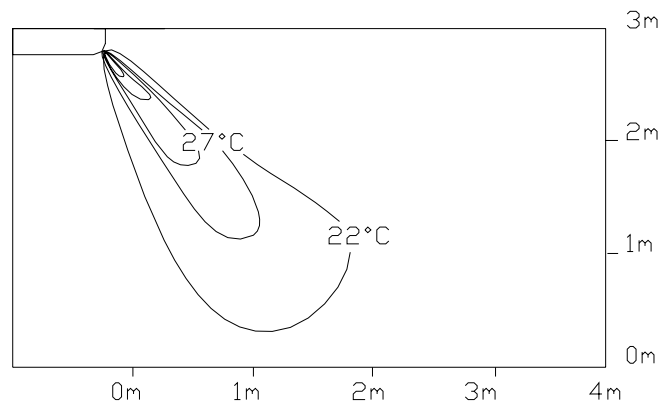
## Part 4 Velocity & temperature distribution

Discharge angle 60 ° (CEILING)

Airflow velocity

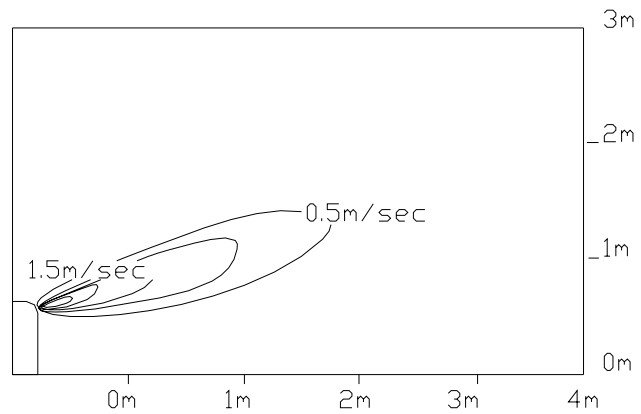


Temperature

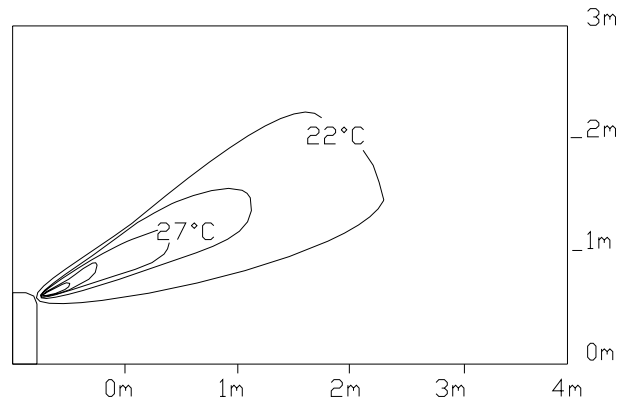


Discharge angle 60 ° (FLOOR)

Airflow velocity



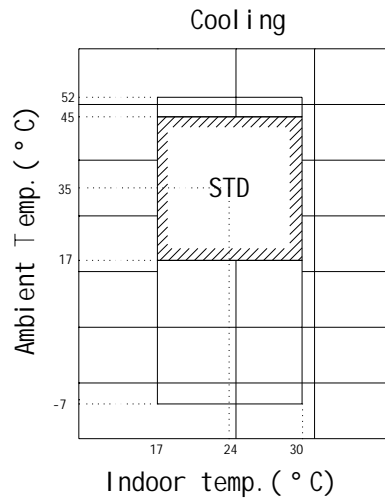
Temperature



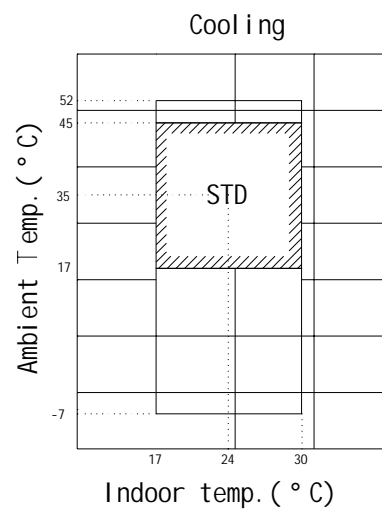
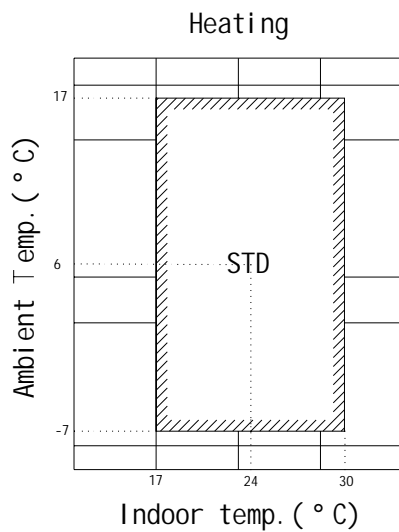
## Part 5 Operation Range

Ensure the operating temperature is in allowable range.

### Cooling only



### Heat pump



## Part 6 Capacity Table

### Model: MUA-18HRN2 MUA-18CRN2

COOLING		OUTDOOR TEMPERATURE DRY						
Indoor Conditions		21°C	25°C	30°C	35°C	40°C	45°C	50°C
21°C D 15°C W	Total capacity kW	5.10	4.88	4.70	4.44	4.26	4.12	3.99
	Sensitive capacity kW	4.08	3.90	3.76	3.55	3.41	3.30	3.19
	Input kW.	1.32	1.50	1.69	1.88	2.07	2.26	2.45
24°C D 17°C W	Total capacity kW	5.59	5.34	5.15	4.86	4.66	4.52	4.37
	Sensitive capacity kW	4.47	4.27	4.12	3.89	3.73	3.61	3.50
	Input kW.	1.39	1.59	1.79	1.99	2.18	2.38	2.58
27°C D 19°C W	Total capacity kW	6.07	5.81	5.60	<b>5.28</b>	5.07	4.91	4.75
	Sensitive capacity kW	4.86	4.65	4.48	4.22	4.06	3.93	3.80
	Input kW.	1.46	1.67	1.88	<b>2.09</b>	2.30	2.51	2.72
32°C D 23°C W	Total capacity kW	6.98	6.68	6.44	6.07	5.83	5.65	5.46
	Sensitive capacity kW	5.59	5.34	5.15	4.86	4.66	4.52	4.37
	Input kW.	1.68	1.92	2.16	2.40	2.64	2.88	3.12

### Model: MUA-18HRN2

HEATING		OUTDOOR TEMPERATURE							
Indoor Conditions		24°C D	12°C D	7°C D	4°C D	0°C D	-5°C D	-7°C D	-15°C D
		18°C W	11°C W	6°C W	3°C W	-1°C W	-6°C W	-8°C W	-16°C W
15°C	Capacity kW	6.68	5.35	4.46	4.01	3.79	3.38	3.12	2.90
	Input kW.	2.52	2.02	1.68	1.60	1.51	1.43	1.34	1.18
18°C	Capacity kW	7.52	6.02	5.01	4.51	4.26	3.76	3.51	3.26
	Input kW.	2.84	2.27	1.89	1.80	1.70	1.61	1.51	1.32
20°C	Capacity kW	8.36	6.68	<b>5.57</b>	5.01	4.73	4.18	3.90	3.62
	Input kW.	3.15	2.52	<b>2.10</b>	2.00	1.89	1.79	1.68	1.47
22°C	Capacity kW	9.19	7.35	6.13	5.51	5.21	4.60	4.29	3.98
	Input kW.	3.47	2.77	2.31	2.19	2.08	1.96	1.85	1.62
27°C	Capacity kW	10.86	8.69	7.24	6.52	6.15	5.43	5.07	4.71
	Input kW.	4.10	3.28	2.73	2.59	2.46	2.32	2.18	1.91

**Model: MUA-24HRN2 MUA-24CRN2 (1phase)**

COOLING		OUTDOOR TEMPERATURE DRY						
Indoor Conditions		21°C	25°C	30°C	35°C	40°C	45°C	50°C
21°C D 15°C W	Total capacity kW	7.19	6.87	6.62	6.25	6.00	5.81	5.62
	Sensitive capacity kW	5.75	5.50	5.30	5.00	4.80	4.65	4.50
	Input kW.	1.95	2.23	2.51	2.79	3.07	3.35	3.63
24°C D 17°C W	Total capacity kW	7.87	7.53	7.26	6.84	6.57	6.37	6.16
	Sensitive capacity kW	6.30	6.02	5.80	5.48	5.26	5.09	4.93
	Input kW.	2.06	2.36	2.65	2.95	3.24	3.53	3.83
27°C D 19°C W	Total capacity kW	8.56	8.18	7.89	<b>7.44</b>	7.14	6.92	6.70
	Sensitive capacity kW	6.84	6.55	6.31	5.95	5.71	5.54	5.36
	Input kW.	2.17	2.48	2.79	<b>3.10</b>	3.41	3.72	4.03
32°C D 23°C W	Total capacity kW	9.84	9.41	9.07	8.56	8.21	7.96	7.70
	Sensitive capacity kW	7.87	7.53	7.26	6.84	6.57	6.37	6.16
	Input kW.	2.50	2.85	3.21	3.57	3.92	4.28	4.63

**Model: MUA-24HRN2(1 phase)**

HEATING		OUTDOOR TEMPERATURE							
Indoor Conditions		24°C D	12°C D	7°C D	4°C D	0°C D	-5°C D	-7°C D	-15°C D
		18°C W	11°C W	6°C W	3°C W	-1°C W	-6°C W	-8°C W	-16°C W
15°C	Capacity kW	10.56	8.45	7.04	6.34	5.98	5.35	4.93	4.58
	Input kW.	3.66	2.93	2.44	2.32	2.20	2.07	1.95	1.71
18°C	Capacity kW	11.88	9.50	7.92	7.13	6.73	5.94	5.54	5.15
	Input kW.	4.12	3.29	2.75	2.61	2.47	2.33	2.20	1.92
20°C	Capacity kW	13.20	10.56	<b>8.80</b>	7.92	7.48	6.60	6.16	5.72
	Input kW.	4.58	3.66	<b>3.05</b>	2.90	2.75	2.59	2.44	2.14
22°C	Capacity kW	14.52	11.62	9.68	8.71	8.23	7.26	6.78	6.29
	Input kW.	5.03	4.03	3.36	3.19	3.02	2.85	2.68	2.35
27°C	Capacity kW	17.16	13.73	11.44	10.30	9.72	8.58	8.01	7.44
	Input kW.	5.95	4.76	3.97	3.77	3.57	3.37	3.17	2.78

**Model: MUA-24HRN2 MUA-24CRN2 (3phase)**

COOLING		OUTDOOR TEMPERATURE DRY						
Indoor Conditions		21°C	25°C	30°C	35°C	40°C	45°C	50°C
21°C D 15°C W	Total capacity kW	7.20	6.88	6.63	6.26	6.01	5.82	5.63
	Sensitive capacity kW	5.76	5.51	5.31	5.01	4.81	4.66	4.51
	Input kW.	1.95	2.23	2.51	2.79	3.07	3.35	3.63
24°C D 17°C W	Total capacity kW	7.88	7.54	7.27	6.85	6.58	6.37	6.17
	Sensitive capacity kW	6.31	6.03	5.81	5.48	5.26	5.10	4.93
	Input kW.	2.06	2.36	2.65	2.95	3.24	3.53	3.83
27°C D 19°C W	Total capacity kW	8.57	8.20	7.90	<b>7.45</b>	7.15	6.93	6.71
	Sensitive capacity kW	6.85	6.56	6.32	5.96	5.72	5.54	5.36
	Input kW.	2.17	2.48	2.79	<b>3.10</b>	3.41	3.72	4.03
32°C D 23°C W	Total capacity kW	9.85	9.42	9.08	8.57	8.22	7.97	7.71
	Sensitive capacity kW	7.88	7.54	7.27	6.85	6.58	6.37	6.17
	Input kW.	2.50	2.85	3.21	3.57	3.92	4.28	4.63

**Model: MUA-24HRN2 (3phase)**

HEATING		OUTDOOR TEMPERATURE							
Indoor Conditions		24°C D	12°C D	7°C D	4°C D	0°C D	-5°C D	-7°C D	-15°C D
		18°C W	11°C W	6°C W	3°C W	-1°C W	-6°C W	-8°C W	-16°C W
15°C	Capacity kW	10.56	8.45	7.04	6.34	5.98	5.35	4.93	4.58
	Input kW.	3.96	3.17	2.64	2.51	2.38	2.24	2.11	1.85
18°C	Capacity kW	11.88	9.50	7.92	7.13	6.73	5.94	5.54	5.15
	Input kW.	4.46	3.56	2.97	2.82	2.67	2.52	2.38	2.08
20°C	Capacity kW	13.20	10.56	<b>8.80</b>	7.92	7.48	6.60	6.16	5.72
	Input kW.	4.95	3.96	<b>3.30</b>	3.14	2.97	2.81	2.64	2.31
22°C	Capacity kW	14.52	11.62	9.68	8.71	8.23	7.26	6.78	6.29
	Input kW.	5.45	4.36	3.63	3.45	3.27	3.09	2.90	2.54
27°C	Capacity kW	17.16	13.73	11.44	10.30	9.72	8.58	8.01	7.44
	Input kW.	6.44	5.15	4.29	4.08	3.86	3.65	3.43	3.00

**Model: MUA-30HRN2 MUA30CRN2 ((1phase))**

COOLING		OUTDOOR TEMPERATURE DRY						
Indoor Conditions		21°C	25°C	30°C	35°C	40°C	45°C	50°C
21°C D 15°C W	Total capacity kW	8.69	8.32	8.01	7.56	7.26	7.03	6.80
	Sensitive capacity kW	6.96	6.65	6.41	6.05	5.81	5.62	5.44
	Input kW.	2.36	2.70	3.04	3.38	3.71	4.05	4.39
24°C D 17°C W	Total capacity kW	9.52	9.11	8.78	8.28	7.95	7.70	7.45
	Sensitive capacity kW	7.62	7.29	7.02	6.62	6.36	6.16	5.96
	Input kW.	2.49	2.85	3.21	3.56	3.92	4.28	4.63
27°C D 19°C W	Total capacity kW	10.35	9.90	9.54	<b>9.00</b>	8.64	8.37	8.10
	Sensitive capacity kW	8.28	7.92	7.63	7.20	6.91	6.70	6.48
	Input kW.	2.63	3.00	3.38	<b>3.75</b>	4.13	4.50	4.88
32°C D 23°C W	Total capacity kW	11.90	11.39	10.97	10.35	9.94	9.63	9.32
	Sensitive capacity kW	9.52	9.11	8.78	8.28	7.95	7.70	7.45
	Input kW.	3.02	3.45	3.88	4.31	4.74	5.18	5.61

**Model: MUA-30HRN2(1phase)**

HEATING		OUTDOOR TEMPERATURE							
Indoor Conditions		24°C D	12°C D	7°C D	4°C D	0°C D	-5°C D	-7°C D	-15°C D
		18°C W	11°C W	6°C W	3°C W	-1°C W	-6°C W	-8°C W	-16°C W
15°C	Capacity kW	12.66	10.13	8.44	7.60	7.17	6.41	5.91	5.49
	Input kW.	5.28	4.22	3.52	3.34	3.17	2.99	2.82	2.46
18°C	Capacity kW	14.24	11.39	9.50	8.55	8.07	7.12	6.65	6.17
	Input kW.	5.94	4.75	3.96	3.76	3.56	3.37	3.17	2.77
20°C	Capacity kW	15.83	12.66	<b>10.55</b>	9.50	8.97	7.91	7.39	6.86
	Input kW.	6.60	5.28	<b>4.40</b>	4.18	3.96	3.74	3.52	3.08
22°C	Capacity kW	17.41	13.93	11.61	10.44	9.86	8.70	8.12	7.54
	Input kW.	7.26	5.81	4.84	4.60	4.36	4.11	3.87	3.39
27°C	Capacity kW	20.57	16.46	13.72	12.34	11.66	10.29	9.60	8.91
	Input kW.	8.58	6.86	5.72	5.43	5.15	4.86	4.58	4.00

**Model: MUA-30HRN2 MUA-30CRN2 (3phase)**

COOLING		OUTDOOR TEMPERATURE DRY						
Indoor Conditions		21°C	25°C	30°C	35°C	40°C	45°C	50°C
21°C D 15°C W	Total capacity kW	8.50	8.13	7.84	7.39	7.10	6.87	6.65
	Sensitive capacity kW	6.80	6.50	6.27	5.91	5.68	5.50	5.32
	Input kW.	2.31	2.64	2.96	3.29	3.62	3.95	4.28
24°C D 17°C W	Total capacity kW	9.31	8.91	8.58	8.10	7.77	7.53	7.29
	Sensitive capacity kW	7.45	7.12	6.87	6.48	6.22	6.02	5.83
	Input kW.	2.43	2.78	3.13	3.48	3.82	4.17	4.52
27°C D 19°C W	Total capacity kW	10.12	9.68	9.33	<b>8.80</b>	8.45	8.18	7.92
	Sensitive capacity kW	8.10	7.74	7.46	7.04	6.76	6.55	6.34
	Input kW.	2.56	2.93	3.29	<b>3.66</b>	4.03	4.39	4.76
32°C D 23°C W	Total capacity kW	11.64	11.13	10.73	10.12	9.72	9.41	9.11
	Sensitive capacity kW	9.31	8.91	8.58	8.10	7.77	7.53	7.29
	Input kW.	2.95	3.37	3.79	4.21	4.63	5.05	5.47

**Model: MUA-30HRN2(3phase)**

HEATING		OUTDOOR TEMPERATURE							
Indoor Conditions		24°C D	12°C D	7°C D	4°C D	0°C D	-5°C D	-7°C D	-15°C D
		18°C W	11°C W	6°C W	3°C W	-1°C W	-6°C W	-8°C W	-16°C W
15°C	Capacity kW	11.28	9.02	7.52	6.77	6.39	5.94	5.26	4.89
	Input kW.	4.56	3.65	3.04	2.89	2.74	2.58	2.43	2.13
18°C	Capacity kW	12.69	10.15	8.46	7.61	7.19	2.16	5.92	5.50
	Input kW.	5.13	4.10	3.42	3.25	3.08	2.91	2.74	2.39
20°C	Capacity kW	14.10	11.28	<b>9.40</b>	8.46	7.99	7.05	6.58	6.11
	Input kW.	5.70	4.56	<b>3.80</b>	3.61	3.42	3.23	3.04	2.66
22°C	Capacity kW	15.51	12.41	10.34	9.31	8.79	7.76	7.24	6.72
	Input kW.	6.27	5.02	4.18	3.97	3.76	3.55	3.34	2.93
27°C	Capacity kW	18.33	14.66	12.22	11.00	10.39	9.17	8.55	7.94
	Input kW.	7.41	5.93	4.94	4.69	4.45	4.20	3.95	3.46

**Model: MUA-36HRN2 MUA36CRN2 (1phase)**

COOLING		OUTDOOR TEMPERATURE DRY						
Indoor Conditions		21°C	25°C	30°C	35°C	40°C	45°C	50°C
21°C D 15°C W	Total capacity kW	10.19	9.75	9.39	8.86	8.51	8.24	7.98
	Sensitive capacity kW	8.15	7.80	7.51	7.09	6.81	6.59	6.38
	Input kW.	2.58	2.95	3.32	3.69	4.06	4.43	4.80
24°C D 17°C W	Total capacity kW	11.16	10.68	10.29	9.71	9.32	9.03	8.74
	Sensitive capacity kW	8.93	8.54	8.23	7.76	7.45	7.22	6.99
	Input kW.	2.73	3.12	3.51	3.90	4.28	4.67	5.06
27°C D 19°C W	Total capacity kW	12.13	11.61	11.18	<b>10.55</b>	10.13	9.81	9.50
	Sensitive capacity kW	9.71	9.28	8.95	8.44	8.10	7.85	7.60
	Input kW.	2.87	3.28	3.69	<b>4.10</b>	4.51	4.92	5.33
32°C D 23°C W	Total capacity kW	13.95	13.35	12.86	12.13	11.65	11.28	10.92
	Sensitive capacity kW	13.89	13.28	12.80	12.08	11.59	11.23	10.87
	Input kW.	11.11	10.63	10.24	9.66	9.27	8.98	8.69

**Model: MUA-36HRN2(1phase)**

HEATING		OUTDOOR TEMPERATURE							
Indoor Conditions		24°C D	12°C D	7°C D	4°C D	0°C D	-5°C D	-7°C D	-15°C D
		18°C W	11°C W	6°C W	3°C W	-1°C W	-6°C W	-8°C W	-16°C W
15°C	Capacity kW	13.37	10.69	8.91	8.02	7.58	6.77	6.24	5.79
	Input kW.	5.34	4.27	3.56	3.38	3.20	3.03	2.85	2.49
18°C	Capacity kW	15.04	12.03	10.03	9.02	8.52	7.52	7.02	6.52
	Input kW.	6.01	4.81	4.01	3.80	3.60	3.40	3.20	2.80
20°C	Capacity kW	16.71	13.37	<b>11.14</b>	10.03	9.47	8.36	7.80	7.24
	Input kW.	6.68	5.34	<b>4.45</b>	4.23	4.01	3.78	3.56	3.12
22°C	Capacity kW	18.38	14.70	12.25	11.03	10.42	9.19	8.58	7.97
	Input kW.	7.34	5.87	4.90	4.65	4.41	4.16	3.92	3.43
27°C	Capacity kW	21.72	17.38	14.48	13.03	12.31	10.86	10.14	9.41
	Input kW.	8.68	6.94	5.79	5.50	5.21	4.92	4.63	4.05

**Model: MUA-36HRN2 MUA-36CRN2 (3phase)**

COOLING		OUTDOOR TEMPERATURE DRY						
Indoor Conditions		21°C	25°C	30°C	35°C	40°C	45°C	50°C
21°C D 15°C W	Total capacity kW	10.14	9.70	9.35	8.82	8.47	8.20	7.94
	Sensitive capacity kW	8.11	7.76	7.48	7.06	6.77	6.56	6.35
	Input kW.	2.55	2.92	3.28	3.65	4.01	4.37	4.74
24°C D 17°C W	Total capacity kW	11.11	10.63	10.24	9.66	9.27	8.98	8.69
	Sensitive capacity kW	8.89	8.50	8.19	7.73	7.42	7.19	6.96
	Input kW.	2.69	3.08	3.46	3.85	4.23	4.62	5.00
27°C D 19°C W	Total capacity kW	12.08	11.55	11.13	<b>10.50</b>	10.08	9.77	9.45
	Sensitive capacity kW	9.66	9.24	8.90	8.40	8.06	7.81	7.56
	Input kW.	2.84	3.24	3.65	<b>4.05</b>	4.46	4.86	5.27
32°C D 23°C W	Total capacity kW	13.89	13.28	12.80	12.08	11.59	11.23	10.87
	Sensitive capacity kW	11.11	10.63	10.24	9.66	9.27	8.98	8.69
	Input kW.	3.26	3.73	4.19	4.66	5.12	5.59	6.05

**Model: MUA-36HRN2 (3phase)**

HEATING		OUTDOOR TEMPERATURE							
Indoor Conditions		24°C D	12°C D	7°C D	4°C D	0°C D	-5°C D	-7°C D	-15°C D
		18°C W	11°C W	6°C W	3°C W	-1°C W	-6°C W	-8°C W	-16°C W
15°C	Capacity kW	14.40	11.52	9.60	8.64	8.16	7.29	6.72	6.24
	Input kW.	6.00	4.80	4.00	3.80	3.60	3.40	3.20	2.80
18°C	Capacity kW	16.20	12.96	10.80	9.72	9.18	8.10	7.56	7.02
	Input kW.	6.75	5.40	4.50	4.28	4.05	3.83	3.60	3.15
20°C	Capacity kW	18.00	14.40	<b>12.00</b>	10.80	10.20	9.00	8.40	7.80
	Input kW.	7.50	6.00	<b>5.00</b>	4.75	4.50	4.25	4.00	3.50
22°C	Capacity kW	19.80	15.84	13.20	11.88	11.22	9.90	9.24	8.58
	Input kW.	8.25	6.60	5.50	5.23	4.95	4.68	4.40	3.85
27°C	Capacity kW	23.40	18.72	15.60	14.04	13.26	11.70	10.92	10.14
	Input kW.	9.75	7.80	6.50	6.18	5.85	5.53	5.20	4.55

**Model: MUA-48HRN2 MUA-48CRN2**

COOLING		OUTDOOR TEMPERATURE DRY						
Indoor Conditions		21°C	25°C	30°C	35°C	40°C	45°C	50°C
21°C D 15°C W	Total capacity kW	13.52	12.94	12.47	11.76	11.29	10.94	10.58
	Sensitive capacity kW	10.82	10.35	9.97	9.41	9.03	8.75	8.47
	Input kW.	3.47	3.96	4.46	4.95	5.45	5.94	6.44
24°C D 17°C W	Total capacity kW	14.81	14.17	13.65	12.88	12.36	11.98	11.59
	Sensitive capacity kW	11.85	11.33	10.92	10.30	9.89	9.58	9.27
	Input kW.	3.66	4.18	4.70	5.23	5.75	6.27	6.79
27°C D 19°C W	Total capacity kW	16.10	15.40	14.84	<b>14.00</b>	13.44	13.02	12.60
	Sensitive capacity kW	12.88	12.32	11.87	11.20	10.75	10.42	10.08
	Input kW.	3.85	4.40	4.95	<b>5.50</b>	6.05	6.60	7.15
32°C D 23°C W	Total capacity kW	18.52	17.71	17.07	16.10	15.46	14.97	14.49
	Sensitive capacity kW	14.81	14.17	13.65	12.88	12.36	11.98	11.59
	Input kW.	4.43	5.06	5.69	6.33	6.96	7.59	8.22

**Model: MUA-48HRN2**

HEATING		OUTDOOR TEMPERATURE							
Indoor Conditions		24°C D	12°C D	7°C D	4°C D	0°C D	-5°C D	-7°C D	-15°C D
		18°C W	11°C W	6°C W	3°C W	-1°C W	-6°C W	-8°C W	-16°C W
15°C	Capacity kW	18.60	14.88	12.40	11.16	10.54	9.42	8.68	8.06
	Input kW.	6.84	5.47	4.56	4.33	4.10	3.88	3.65	3.19
18°C	Capacity kW	20.93	16.74	13.95	12.56	11.86	10.46	9.77	9.07
	Input kW.	7.70	6.16	5.13	4.87	4.62	4.36	4.10	3.59
20°C	Capacity kW	23.25	18.60	<b>15.50</b>	13.95	13.18	11.63	10.85	10.08
	Input kW.	8.55	6.84	<b>5.70</b>	5.42	5.13	4.85	4.56	3.99
22°C	Capacity kW	25.58	20.46	17.05	15.35	14.49	12.79	11.94	11.08
	Input kW.	9.41	7.52	6.27	5.96	5.64	5.33	5.02	4.39
27°C	Capacity kW	30.23	24.18	20.15	18.14	17.13	15.11	14.11	13.10
	Input kW.	11.12	8.89	7.41	7.04	6.67	6.30	5.93	5.19

**Model: MUA-60HRN2 MUA-60CRN2**

COOLING		OUTDOOR TEMPERATURE DRY						
Indoor Conditions		21°C	25°C	30°C	35°C	40°C	45°C	50°C
21°C D 15°C W	Total capacity kW	15.46	14.78	14.25	13.44	12.90	12.50	12.10
	Sensitive capacity kW	12.36	11.83	11.40	10.75	10.32	10.00	9.68
	Input kW.	4.16	4.75	5.35	5.94	6.53	7.13	7.72
24°C D 17°C W	Total capacity kW	16.93	16.19	15.60	14.72	14.13	13.69	13.25
	Sensitive capacity kW	13.54	12.95	12.48	11.78	11.30	10.95	10.60
	Input kW.	4.39	5.02	5.64	6.27	6.90	7.52	8.15
27°C D 19°C W	Total capacity kW	18.40	17.60	16.96	<b>16.00</b>	15.36	14.88	14.40
	Sensitive capacity kW	14.72	14.08	13.57	12.80	12.29	11.90	11.52
	Input kW.	4.62	5.28	5.94	<b>6.60</b>	7.26	7.92	8.58
32°C D 23°C W	Total capacity kW	21.16	20.24	19.50	18.40	17.66	17.11	16.56
	Sensitive capacity kW	16.93	16.19	15.60	14.72	14.13	13.69	13.25
	Input kW.	5.31	6.07	6.83	7.59	8.35	9.11	9.87

**Model: MUA-60HRN2**

HEATING		OUTDOOR TEMPERATURE							
Indoor Conditions		24°C D	12°C D	7°C D	4°C D	0°C D	-5°C D	-7°C D	-15°C D
		18°C W	11°C W	6°C W	3°C W	-1°C W	-6°C W	-8°C W	-16°C W
15°C	Capacity kW	21.00	16.80	14.00	12.60	11.90	10.63	9.80	9.10
	Input kW.	8.16	6.53	5.44	5.17	4.90	4.62	4.35	3.81
18°C	Capacity kW	23.63	18.90	15.75	14.18	13.39	11.81	11.03	10.24
	Input kW.	9.18	7.34	6.12	5.81	5.51	5.20	4.90	4.28
20°C	Capacity kW	26.25	21.00	<b>17.50</b>	15.75	14.88	13.13	12.25	11.38
	Input kW.	10.20	8.16	<b>6.80</b>	6.46	6.12	5.78	5.44	4.76
22°C	Capacity kW	28.88	23.10	19.25	17.33	16.36	14.44	13.48	12.51
	Input kW.	11.22	8.98	7.48	7.11	6.73	6.36	5.98	5.24
27°C	Capacity kW	34.13	27.30	22.75	20.48	19.34	17.06	15.93	14.79
	Input kW.	13.26	10.61	8.84	8.40	7.96	7.51	7.07	6.19

**Model: MUA-18HR MUA-18CR**

COOLING		OUTDOOR TEMPERATURE DRY						
Indoor Conditions		21°C	25°C	30°C	35°C	40°C	45°C	50°C
21°C D 15°C W	Total capacity kW	5.12	4.90	4.72	4.45	4.27	4.14	4.01
	Sensitive capacity kW	4.10	3.92	3.78	3.56	3.42	3.31	3.21
	Input kW.	1.32	1.50	1.69	1.88	2.07	2.26	2.45
24°C D 17°C W	Total capacity kW	5.61	5.36	5.17	4.88	4.68	4.53	4.39
	Sensitive capacity kW	4.49	4.29	4.13	3.90	3.74	3.63	3.51
	Input kW.	1.39	1.59	1.79	1.99	2.18	2.38	2.58
27°C D 19°C W	Total capacity kW	6.10	5.83	5.62	<b>5.30</b>	5.09	4.93	4.77
	Sensitive capacity kW	4.88	4.66	4.49	4.24	4.07	3.94	3.82
	Input kW.	1.46	1.67	1.88	<b>2.09</b>	2.30	2.51	2.72
32°C D 23°C W	Total capacity kW	7.01	6.70	6.46	6.10	5.85	5.67	5.49
	Sensitive capacity kW	5.61	5.36	5.17	4.88	4.68	4.53	4.39
	Input kW.	1.68	1.92	2.16	2.40	2.64	2.88	3.12

**Model: MUA-18HR**

HEATING		OUTDOOR TEMPERATURE							
Indoor Conditions		24°C D	12°C D	7°C D	4°C D	0°C D	-5°C D	-7°C D	-15°C D
		18°C W	11°C W	6°C W	3°C W	-1°C W	-6°C W	-8°C W	-16°C W
15°C	Capacity kW	6.68	5.35	4.46	4.01	3.79	3.64	3.12	2.90
	Input kW.	2.52	2.02	1.68	1.60	1.51	1.43	1.34	1.18
18°C	Capacity kW	7.52	6.02	5.01	4.51	4.26	2.16	3.51	3.26
	Input kW.	2.84	2.27	1.89	1.80	1.70	1.61	1.51	1.32
20°C	Capacity kW	8.36	6.68	<b>5.57</b>	5.01	4.73	4.18	3.90	3.62
	Input kW.	3.15	2.52	<b>2.10</b>	2.00	1.89	1.79	1.68	1.47
22°C	Capacity kW	9.19	7.35	6.13	5.51	5.21	4.60	4.29	3.98
	Input kW.	3.47	2.77	2.31	2.19	2.08	1.96	1.85	1.62
27°C	Capacity kW	10.86	8.69	7.24	6.52	6.15	5.43	5.07	4.71
	Input kW.	4.10	3.28	2.73	2.59	2.46	2.32	2.18	1.91

**Model: MUA-24HR MUA24CR (1phase)**

COOLING		OUTDOOR TEMPERATURE DRY						
Indoor Conditions		21°C	25°C	30°C	35°C	40°C	45°C	50°C
21°C D 15°C W	Total capacity kW	7.19	6.87	6.62	6.25	6.00	5.81	5.62
	Sensitive capacity kW	5.75	5.50	5.30	5.00	4.80	4.65	4.50
	Input kW.	1.95	2.23	2.51	2.79	3.07	3.35	3.63
24°C D 17°C W	Total capacity kW	7.87	7.53	7.26	6.84	6.57	6.37	6.16
	Sensitive capacity kW	6.30	6.02	5.80	5.48	5.26	5.09	4.93
	Input kW.	2.06	2.36	2.65	2.95	3.24	3.53	3.83
27°C D 19°C W	Total capacity kW	8.56	8.18	7.89	<b>7.44</b>	7.14	6.92	6.70
	Sensitive capacity kW	6.84	6.55	6.31	5.95	5.71	5.54	5.36
	Input kW.	2.17	2.48	2.79	<b>3.10</b>	3.41	3.72	4.03
32°C D 23°C W	Total capacity kW	9.84	9.41	9.07	8.56	8.21	7.96	7.70
	Sensitive capacity kW	7.87	7.53	7.26	6.84	6.57	6.37	6.16
	Input kW.	2.50	2.85	3.21	3.57	3.92	4.28	4.63

**Model: MUA-24HR(1phase)**

HEATING		OUTDOOR TEMPERATURE							
Indoor Conditions		24°C D	12°C D	7°C D	4°C D	0°C D	-5°C D	-7°C D	-15°C D
		18°C W	11°C W	6°C W	3°C W	-1°C W	-6°C W	-8°C W	-16°C W
15°C	Capacity kW	10.56	8.45	7.04	6.34	5.98	5.52	4.93	4.58
	Input kW.	3.96	3.17	2.64	2.51	2.38	2.24	2.11	1.85
18°C	Capacity kW	11.88	9.50	7.92	7.13	6.73	2.16	5.54	5.15
	Input kW.	4.46	3.56	2.97	2.82	2.67	2.52	2.38	2.08
20°C	Capacity kW	13.20	10.56	<b>8.80</b>	7.92	7.48	6.60	6.16	5.72
	Input kW.	4.95	3.96	<b>3.30</b>	3.14	2.97	2.81	2.64	2.31
22°C	Capacity kW	14.52	11.62	9.68	8.71	8.23	7.26	6.78	6.29
	Input kW.	5.45	4.36	3.63	3.45	3.27	3.09	2.90	2.54
27°C	Capacity kW	17.16	13.73	11.44	10.30	9.72	8.58	8.01	7.44
	Input kW.	6.44	5.15	4.29	4.08	3.86	3.65	3.43	3.00

**Model: MUA-24HR MUA-24CR (3phase)**

COOLING		OUTDOOR TEMPERATURE DRY						
Indoor Conditions		21°C	25°C	30°C	35°C	40°C	45°C	50°C
21°C D 15°C W	Total capacity kW	7.20	6.88	6.63	6.26	6.01	5.82	5.63
	Sensitive capacity kW	5.76	5.51	5.31	5.01	4.81	4.66	4.51
	Input kW.	1.95	2.23	2.51	2.79	3.07	3.35	3.63
24°C D 17°C W	Total capacity kW	7.88	7.54	7.27	6.85	6.58	6.37	6.17
	Sensitive capacity kW	6.31	6.03	5.81	5.48	5.26	5.10	4.93
	Input kW.	2.06	2.36	2.65	2.95	3.24	3.53	3.83
27°C D 19°C W	Total capacity kW	8.57	8.20	7.90	<b>7.45</b>	7.15	6.93	6.71
	Sensitive capacity kW	6.85	6.56	6.32	5.96	5.72	5.54	5.36
	Input kW.	2.17	2.48	2.79	<b>3.10</b>	3.41	3.72	4.03
32°C D 23°C W	Total capacity kW	9.85	9.42	9.08	8.57	8.22	7.97	7.71
	Sensitive capacity kW	7.88	7.54	7.27	6.85	6.58	6.37	6.17
	Input kW.	2.50	2.85	3.21	3.57	3.92	4.28	4.63

**Model: MUA-24HR(3phase)**

HEATING		OUTDOOR TEMPERATURE							
Indoor Conditions		24°C D	12°C D	7°C D	4°C D	0°C D	-5°C D	-7°C D	-15°C D
		18°C W	11°C W	6°C W	3°C W	-1°C W	-6°C W	-8°C W	-16°C W
15°C	Capacity kW	10.56	8.45	7.04	6.34	5.98	5.52	4.93	4.58
	Input kW.	3.96	3.17	2.64	2.51	2.38	2.24	2.11	1.85
18°C	Capacity kW	11.88	9.50	7.92	7.13	6.73	2.16	5.54	5.15
	Input kW.	4.46	3.56	2.97	2.82	2.67	2.52	2.38	2.08
20°C	Capacity kW	13.20	10.56	<b>8.80</b>	7.92	7.48	6.60	6.16	5.72
	Input kW.	4.95	3.96	<b>3.30</b>	3.14	2.97	2.81	2.64	2.31
22°C	Capacity kW	14.52	11.62	9.68	8.71	8.23	7.26	6.78	6.29
	Input kW.	5.45	4.36	3.63	3.45	3.27	3.09	2.90	2.54
27°C	Capacity kW	17.16	13.73	11.44	10.30	9.72	8.58	8.01	7.44
	Input kW.	6.44	5.15	4.29	4.08	3.86	3.65	3.43	3.00

**Model: MUA-36HR MUA-36CR (3phase)**

COOLING		OUTDOOR TEMPERATURE DRY						
Indoor Conditions		21°C	25°C	30°C	35°C	40°C	45°C	50°C
21°C D 15°C W	Total capacity kW	9.71	9.29	8.95	8.44	8.10	7.85	7.60
	Sensitive capacity kW	7.77	7.43	7.16	6.75	6.48	6.28	6.08
	Input kW.	2.55	2.92	3.28	3.65	4.01	4.37	4.74
24°C D 17°C W	Total capacity kW	10.63	10.17	9.80	9.25	8.88	8.60	8.32
	Sensitive capacity kW	8.51	8.14	7.84	7.40	7.10	6.88	6.66
	Input kW.	2.69	3.08	3.46	3.85	4.23	4.62	5.00
27°C D 19°C W	Total capacity kW	11.56	11.06	10.65	<b>10.05</b>	9.65	9.35	9.05
	Sensitive capacity kW	9.25	8.84	8.52	8.04	7.72	7.48	7.24
	Input kW.	2.84	3.24	3.65	<b>4.05</b>	4.46	4.86	5.27
32°C D 23°C W	Total capacity kW	13.29	12.71	12.25	11.56	11.10	10.75	10.40
	Sensitive capacity kW	10.63	10.17	9.80	9.25	8.88	8.60	8.32
	Input kW.	3.26	3.73	4.19	4.66	5.12	5.59	6.05

**Model: MUA-36HR(1phase)**

HEATING		OUTDOOR TEMPERATURE							
Indoor Conditions		24°C D	12°C D	7°C D	4°C D	0°C D	-5°C D	-7°C D	-15°C D
		18°C W	11°C W	6°C W	3°C W	-1°C W	-6°C W	-8°C W	-16°C W
15°C	Capacity kW	14.40	11.52	9.60	8.64	8.16	7.29	6.72	6.24
	Input kW.	6.00	4.80	4.00	3.80	3.60	3.40	3.20	2.80
18°C	Capacity kW	16.20	12.96	10.80	9.72	9.18	8.10	7.56	7.02
	Input kW.	6.75	5.40	4.50	4.28	4.05	3.83	3.60	3.15
20°C	Capacity kW	18.00	14.40	<b>12.00</b>	10.80	10.20	9.00	8.40	7.80
	Input kW.	7.50	6.00	<b>5.00</b>	4.75	4.50	4.25	4.00	3.50
22°C	Capacity kW	19.80	15.84	13.20	11.88	11.22	9.90	9.24	8.58
	Input kW.	8.25	6.60	5.50	5.23	4.95	4.68	4.40	3.85
27°C	Capacity kW	23.40	18.72	15.60	14.04	13.26	11.70	10.92	10.14
	Input kW.	9.75	7.80	6.50	6.18	5.85	5.53	5.20	4.55

**Model: MUA-48HR MUA-48CR**

COOLING		OUTDOOR TEMPERATURE DRY						
Indoor Conditions		21°C	25°C	30°C	35°C	40°C	45°C	50°C
21°C D 15°C W	Total capacity kW	13.52	12.94	12.47	11.76	11.29	10.94	10.58
	Sensitive capacity kW	10.82	10.35	9.97	9.41	9.03	8.75	8.47
	Input kW.	3.47	3.96	4.46	4.95	5.45	5.94	6.44
24°C D 17°C W	Total capacity kW	14.81	14.17	13.65	12.88	12.36	11.98	11.59
	Sensitive capacity kW	11.85	11.33	10.92	10.30	9.89	9.58	9.27
	Input kW.	3.66	4.18	4.70	5.23	5.75	6.27	6.79
27°C D 19°C W	Total capacity kW	16.10	15.40	14.84	<b>14.00</b>	13.44	13.02	12.60
	Sensitive capacity kW	12.88	12.32	11.87	11.20	10.75	10.42	10.08
	Input kW.	3.85	4.40	4.95	<b>5.50</b>	6.05	6.60	7.15
32°C D 23°C W	Total capacity kW	18.52	17.71	17.07	16.10	15.46	14.97	14.49
	Sensitive capacity kW	14.81	14.17	13.65	12.88	12.36	11.98	11.59
	Input kW.	4.43	5.06	5.69	6.33	6.96	7.59	8.22

**Model: MUA-48HR**

HEATING		OUTDOOR TEMPERATURE							
Indoor Conditions		24°C D	12°C D	7°C D	4°C D	0°C D	-5°C D	-7°C D	-15°C D
		18°C W	11°C W	6°C W	3°C W	-1°C W	-6°C W	-8°C W	-16°C W
15°C	Capacity kW	18.64	14.91	12.42	11.18	10.56	9.43	8.70	8.08
	Input kW.	6.84	5.47	4.56	4.33	4.10	3.88	3.65	3.19
18°C	Capacity kW	20.97	16.77	13.98	12.58	11.88	10.48	9.78	9.09
	Input kW.	7.70	6.16	5.13	4.87	4.62	4.36	4.10	3.59
20°C	Capacity kW	23.30	18.64	<b>15.53</b>	13.98	13.20	11.65	10.87	10.09
	Input kW.	8.55	6.84	<b>5.70</b>	5.42	5.13	4.85	4.56	3.99
22°C	Capacity kW	25.62	20.50	17.08	15.37	14.52	12.81	11.96	11.10
	Input kW.	9.41	7.52	6.27	5.96	5.64	5.33	5.02	4.39
27°C	Capacity kW	30.28	24.23	20.19	18.17	17.16	15.14	14.13	13.12
	Input kW.	11.12	8.89	7.41	7.04	6.67	6.30	5.93	5.19

**Model: MUA-60HR MUA-60CR**

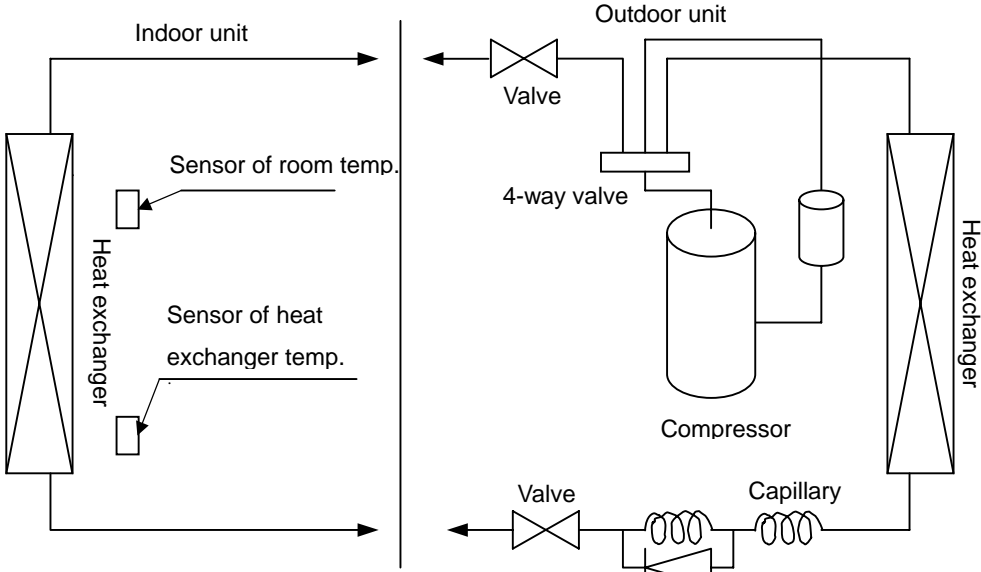
COOLING		OUTDOOR TEMPERATURE DRY						
Indoor Conditions		21°C	25°C	30°C	35°C	40°C	45°C	50°C
21°C D 15°C W	Total capacity kW	17.00	16.26	15.67	14.78	14.19	13.75	13.31
	Sensitive capacity kW	13.60	13.01	12.54	11.83	11.35	11.00	10.64
	Input kW.	4.14	4.73	5.32	5.91	6.50	7.10	7.69
24°C D 17°C W	Total capacity kW	18.62	17.81	17.16	16.19	15.54	15.06	14.57
	Sensitive capacity kW	14.90	14.25	13.73	12.95	12.44	12.05	11.66
	Input kW.	4.37	4.99	5.62	6.24	6.87	7.49	8.11
27°C D 19°C W	Total capacity kW	20.24	19.36	18.66	<b>17.60</b>	16.90	16.37	15.84
	Sensitive capacity kW	16.19	15.49	14.92	14.08	13.52	13.09	12.67
	Input kW.	4.60	5.26	5.91	<b>6.57</b>	7.23	7.88	8.54
32°C D 23°C W	Total capacity kW	23.28	22.26	21.45	20.24	19.43	18.82	18.22
	Sensitive capacity kW	18.62	17.81	17.16	16.19	15.54	15.06	14.57
	Input kW.	5.29	6.04	6.80	7.56	8.31	9.07	9.82

**Model: MUA-60HR**

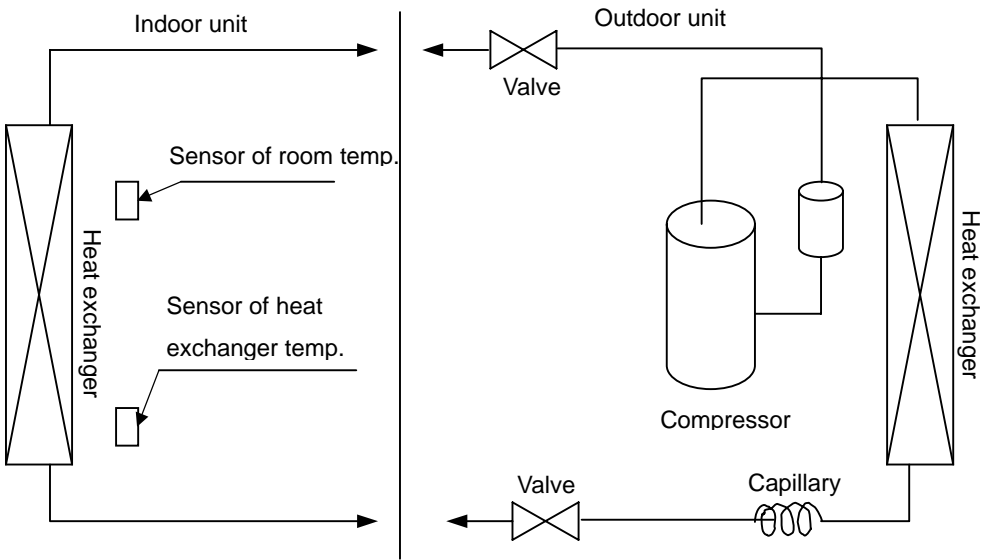
HEATING		OUTDOOR TEMPERATURE							
Indoor Conditions		24°C D	12°C D	7°C D	4°C D	0°C D	-5°C D	-7°C D	-15°C D
		18°C W	11°C W	6°C W	3°C W	-1°C W	-6°C W	-8°C W	-16°C W
15°C	Capacity kW	22.86	18.29	15.24	13.72	12.95	12.20	10.67	9.91
	Input kW.	8.28	6.62	5.52	5.24	4.97	4.69	4.42	3.86
18°C	Capacity kW	25.72	20.57	17.15	15.43	14.57	2.16	12.00	11.14
	Input kW.	9.32	7.45	6.21	5.90	5.59	5.28	4.97	4.35
20°C	Capacity kW	28.58	22.86	<b>19.05</b>	17.15	16.19	14.29	13.34	12.38
	Input kW.	10.35	8.28	<b>6.90</b>	6.56	6.21	5.87	5.52	4.83
22°C	Capacity kW	31.43	25.15	20.96	18.86	17.81	15.72	14.67	13.62
	Input kW.	11.39	9.11	7.59	7.21	6.83	6.45	6.07	5.31
27°C	Capacity kW	37.15	29.72	24.77	22.29	21.05	18.57	17.34	16.10
	Input kW.	13.46	10.76	8.97	8.52	8.07	7.62	7.18	6.28

# Part 7. Refrigeration cycle diagram

## 1. Cooling/heating



## 2. Cooling only



## Part 8. Electric Control Functions

### 1. Performance Index

No.	Item	Index
1	Applicable Voltage Range	185-253V~, 342-418V~
2	A/C Frequency	50Hz
3	Working environment temperature	-5°C- +43°C

### 2. Main Parts Introduction

#### 2.1 Indoor Fan

High speed and low speed.  
Breeze speed for anti-cold air.

#### 2.2 Outdoor Fan

High speed and low speed.  
Remark : some model just have one speed.

#### 2.3 Buzzer

- 2.3.1 It will buzz when its driving port in the main chip outputs high level.
- 2.3.2 It will buzz once when the main frame receives remote start-up signal.
- 2.3.3 It will buzz once for 1 second when receiving turn-off signal.
- 2.3.4 It will buzz for 0.5 second once receiving other signal.

#### 2.4 Indicator

- 2.4.1 There are 4 indicators: operating indicator, timer indicator, water level warning indicator, defrosting indicator and pre-heating indicator (wind-delivery indicator for cooling-only A/C).
- 2.4.2 LED indicates errors when protection is in effective.

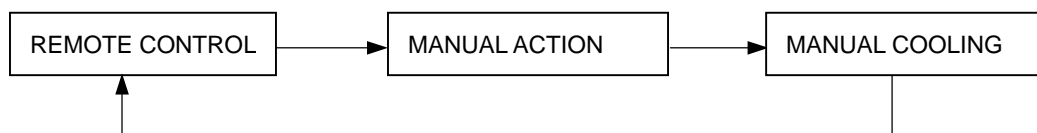
#### 2.5 Four-way Valve

It is controlled by relays.

### 3. Operation Modes and Functions

#### 3.1 Manual Operation

- 3.1.1 The manual operation mode is controlled through “manual” pad in the wind in-take grid, including such two modes as manual action and manual cooling. Push the manual pad for each switchover, the order for which is shown below:



#### 3.1.2 Manual Cooling

- 3.1.2.1 Under this mode, no remote control signal will be received.
- 3.1.2.2 The compressor is started up unconditionally and the rotating speed of indoor and outdoor fans is set to be in high and forced cooling operation.
- 3.1.2.3 Under this mode, the buzzer will buzz twice with each lasting 0.5 second at 0.5 interval. During the first 30 minutes of unconditional forced cooling operation, the operation indicator will blink at 0.5Hz. In the

process of switchover to manual action mode, the buzzer buzzes for 0.5 second and the indicator is illuminated.

3.1.2.4 Under this mode, the corresponding protections are in effective (3- minute delayed start-up, over current, outdoor protection and evaporator low temperature protection.). Corresponding protection will act once any protection is in active.

Push “manual” pad once to end this mode and enter the remote control pending status. The buzzer will buzz for 1 second and the indicator turn off.

### 3.1.3 Manual Action

3.1.3.1 Under this mode, the remote signal will be received and corresponding actions will be taken accordingly upon the receipt of the remote signal.

3.1.3.2 On entering this mode, the buzzer will buzz for 0.5 second and the indicator on.

3.1.3.3 The system will operate under the auto mode whose temperature is set to be 24°C and at the same time, the wind grille will swing automatically.

3.1.3.4 Under this mode, corresponding protections are in effective.

3.1.3.5 Push “ manual” pad to end this mode and switch over to manual cooling mode.

## 3.2 Heating Mode

3.2.1 Four-way valve opens at once, while defrosting process closes.

3.2.2 Condition for the compressor action: (Ts = set temperature, Ta = room temperature)

	Condition	Compressor	Outdoor fan
Room temp. up	Ta > Ts+4	Off	Off
	Ta < Ts+4	On	On
Room temp. down	Ta < Ts+3	On	On
	Ta > Ts+3	Off	Off

### 3.2.3 Indoor Fan Action

3.2.3.1 Fan speed among high/low/auto,(anti-cold air function takes priority).

3.2.3.2 Anti-cold air:

Switchover between fan speed and fine tune can be set according to temperature of evaporator pipe .

	Condition (T= Indoor exchanger temp.)	Indoor fan speed
Indoor exchanger temp. up	T < 25°C	Off
	25°C < T < 32°C	Breeze
	T > 32°C	Setting fan speed
Indoor exchanger temp.	T > 30°C	Setting fan speed
down	15°C < T < 30°C	Breeze
	T < 15°C	Off

During anti-cold air period, if indoor fan is shut down, then pre-heating/defrosting lamp is on. Once indoor fan starts, pre-heating/defrosting lamp will be off.

3.2.3.3 Auto fan of indoor fan under heating mode.

	Condition (T =Indoor Temp.-Setting Temp.)	Indoor fan speed
Room temp. up	T < 3°C	High
	T > 3°C	Low
Room temp. down	T > 1°C	Low
	T < 1°C	High

### **3.3 Defrost (only available to heating mode)**

3.3.1 The defrosting of 1~3HP, 4HP(1N) is processed by indoor control board.

#### 3.3.1.1 Defrosting Conditions

##### 3.3.1.1.1 Low temperature defrosting condition:

Accumulated operating time when temperature of outdoor heat exchanger coil T3 is below -2°C reaches up to over 40 minutes.

##### 3.3.1.1.2 High temperature defrosting condition:

Under high temperature protection of evaporator, the time when outdoor fan is shut down but compressor is not has been accumulated for up to 90 minutes. It is considered that defrosting is performed when either 3.3.1.1 or 3.3.1.2 is met.

#### 3.3.1.2 Defrosting Action

Four-way valve and outdoor fan are shut down. Indoor fan operates according to anti-cold air function. Compressor keeps on continuously.

#### 3.3.1.3 Ending Of Defrosting Condition

It is considered that defrosting condition is ended when any of the conditions is met:

3.3.1.3.1 Operating current of compressor reaches 1.5Ie.

3.3.1.3.2 Time of defrosting reaches 10 minutes.

3.3.1.3.3 Temperature of outdoor coil T3 is up to 20°C.

#### 3.3.1.4 Ending Action of Defrost

3.3.1.4.1 Outdoor fan and four-way valve are open.

3.3.1.4.2 Compressor keeps on continuously.

3.3.1.4.3 Indoor fan acts according to anti-cold air function.

3.3.1.4.4 Defrosting/pre-heating lamp continues to be on until indoor fan starts up.

3.3.2 The defrosting of 4~7HP(3N) is processed by outdoor control board.

#### 3.3.2.1 Defrosting Conditions(any of the following conditions is met)

3.3.2.1.1 Under indoor pipe high temperature protection in heating mode, accumulated operating time is up to 90 minutes.(if outdoor fan is off and compressor are cut down, time again.)

3.3.2.1.2 When T4 - 8 ,1min, process the normal defrost mode: compressor operates continue 40 minute, the accumulated time up to 40 minutes when pipe temperature sensor T3 -2 (if compressor is off, time again); when defrosting ends, check T4 again.

#### 3.3.2.2 Defrosting Action

When defrosting, the outdoor four-way valve is power off, defrosting valve is power on, outdoor fan is off, compressor operate continue, indoor fan operates according to anti-cold air condition in heating mode. If indoor fan is to be off, cut down the electric auxiliary heater and after 15 seconds cut down indoor fan.

#### 3.3.2.3 Ending Action of Defrost(any of the following conditions is met)

3.3.2.3.1 Time of defrosting reaches 10 minutes.

3.3.2.3.2 Temperature of outdoor coil T3 is up to 20°C

#### 3.3.2.4 Ending Action of Defrost

Operate in normal heating mode. After defrost stops, indoor fan starts to operate according to anti-cold air condition.

### 3.4 Cooling Mode

3.4.1 Four-way valve is closed.

3.4.2 Conditions for the compressor and outdoor fan action ( $T_s$  = set temperature,  $T_a$ =room temperature)

	Condition	Compressor	Outdoor fan
Room temp. up	$T_a > T_s + 1$	On	On
	$T_a < T_s + 1$	Off	Off
Room temp. down	$T_a > T_s$	On	On
	$T_a < T_s$	Off	Off

3.4.3 Action of Indoor Fan

3.4.3.1 HIGH/LOW/AUTO fan can be switched over for your comfort.

3.4.3.2 Auto fan under cooling mode.

	Condition (T=Indoor Temp.-Setting Temp.)	Indoor fan speed
Temp. up	$T < 4^{\circ}\text{C}$	Low
	$T > 4^{\circ}\text{C}$	High
Temp. down	$T > 1^{\circ}\text{C}$	High
	$T < 1^{\circ}\text{C}$	Low

### 3.5 Dehumidifying Mode

3.5.1 Dehumidifying mode is the cooling operation, under which the indoor fan is high and outdoor fan is low.

3.5.2 Protective condition is activated.

### 3.6 Auto Mode

3.6.1 Under auto mode, the indoor fan is set to be auto (refer to auto fan under cooling, heating).

3.6.2 When entering auto mode, the heating, fan only or cooling operation will be automatically chosen according to the room temperature  $T_a$  and the set temperature  $T_s$ .

3.6.2.1 When  $T_a < T_s - 1^{\circ}\text{C}$ , it performs the heating operation with a set temperature of  $T_s - 1^{\circ}\text{C}$  (refer to the heating mode). However the cool only model will be in low fan.

3.6.2.2 When  $T_s + 2^{\circ}\text{C} < T_a < T_s - 1^{\circ}\text{C}$ , control according to cooling auto fan with a set temperature of  $23^{\circ}\text{C}$ .

3.6.2.3 When  $T_a > T_s + 2^{\circ}\text{C}$ , it performs the cooling operation with a set temperature of  $T_s$  (refer to the cooling mode).

3.6.3 After one mode is chosen, if the condition  $T_a > T_s + 1^{\circ}\text{C}$  or  $T_a < T_s - 1^{\circ}\text{C}$  lasts for 15 minutes, meanwhile the compressor doesn't start up within consecutive 15 minutes, the operation mode will be re-chosen according to the  $T_a$  and  $T_s$ .

3.6.4 Protective condition is activated.

### 3.7 Fan Only Mode

3.7.1 Under this mode, four-way valve, compressor and outdoor fan are shut down.

3.7.2 High/Low/Auto fan can be switched over through manual control. Auto fan will be controlled in line with cooling auto fan with temperature set to be  $23^{\circ}\text{C}$ .

3.7.3 After entering fan mode, the operating indicator is on. If the model is cooling only mode, fan indicator is on at the same time.

## 4. Other Functions

### 4.1 LED Display

Operation lamp, timer lamp, defrosting/pre-heating lamp, and water level alarm lamp.

#### 4.1.1 Operation Lamp

When the operation is recovering, it will blink at 1 Hz.

After the unit is on, the lamp will keep on.

After the unit is off, the lamp will be off.

When the unit is switched over from manual cooling to remote control, the lamp will be off.

#### 4.1.2 Timer Lamp

During timer operation, it will be on.

#### 4.1.3 Defrosting/Pre-Heating Lamp

When heat pump model performs defrosting or anti-cold air, it will be on.

## 4.2 Timer

Refer to remote controller manual for detail operation.

Note: The timer is valid for one operation of the A/C.

## 5. Trouble Shooting

### 5.1 Protective Function

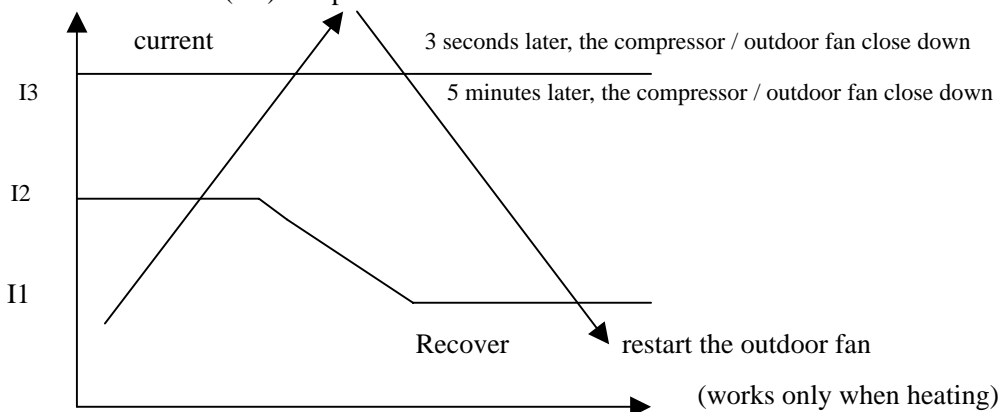
#### 5.1.1 3-minute delay for the compressor start-up.

At the beginning of energizing or after the stop of the compressor, 3-minute delay will be needed to start the compressor.

When switchover between cooling/heating mode, the compressor stops automatically.

#### 5.1.2 Compressor current overload protection

##### 5.1.2.1 3HP and 4HP(1N) compressor current examination and action



Remark :Ie: rating current; I<sub>1</sub>:1.3 time Ie; I<sub>2</sub>:1.5 time Ie; I<sub>3</sub>:2.0 time Ie.

- The compressor and outdoor fan closed for protection purpose will restart after 3 minutes.
- During the protection, the indoor fan continues working in a set speed, while the anti-cold air function when heating and the compressor will be 3 minutes delayed to shut down for protection.
- When there are 4 times compressor protection within one hour, the A/C will be shut down, meanwhile the operation light and timer light will be turned on, the defrosting light flashes in a frequency of 0.5Hz. This situation will be recovered only when power is switched off.

5.1.2.2 If AC don't check the compressor current through electric control system, then use compressor self current protection.

5.1.2.2 4HP(3N) and 5HP compressor current is checked by outdoor main board. The protection principle is as following:

In any case, after the compressor starts, if

- a. Only in heating mode, when current is higher than  $1.5I_e$ , then outdoor fan will shut off. When compressor current is less than  $1.3I_e$ , then restart outdoor fan and recover operation.
- b. when current is higher than  $1.5I_e$  and time is up to 20seconds, compressor and outdoor fan will shut down. At the same time, cut down outdoor protection communication wiring, protection malfunction will be indicated by indoor unit and 3minutes later restart compressor.

#### 5.1.3 Evaporator protection against high temperature(heating mode)

Only available to heating mode, including heating mode, heating operation under auto mode.

Note: During protection, the indoor fan continues operating at a setting speed, while the anti-cold air function of heating and the compressor will be 3 minute delayed to shut down for protection.

#### 5.1.4 Evaporator Protection against low temperature(cooling mode)

5.1.4.1 When the evaporator pipe temperature  $\leq 3^{\circ}\text{c}$  and this lasts for 3 minutes, the compressor and outdoor fan will be shut off.

5.1.4.2 When the evaporator pipe temperature  $\geq 7^{\circ}\text{c}$ , it recovers.

5.1.4.3 The restart of the compressor shall execute the delay protection.

#### 5.1.5 Anti-cold air protection

Only available to heating mode, including heating mode, heating operation under auto mode.

#### 5.1.6 Condenser high temperature protection

5.1.6.1 Only available to cooling (incl. cooling mode, cooling operation under auto mode) and dehumidifying mode.

5.1.6.2 Delay protection should be performed when the compressor restarts.

#### 5.1.7 Outdoor protection

Only 3HP has outdoor protection function.

## 5.2 Self-diagnosis

### 5.2.1 Indoor unit

No.	Type	Contents	LED Flashing	Remark
1	Protection	Over current protection of the compressor occurs 4 times in 1h	Lamps of operation, timer, defrosting (only fan ) flashing simultaneously at 5Hz.	Whole unit is shut down. It cannot recover unless power is cut off
2	Protection	Outdoor protection (absent phase, phase sequence and temperature protection)	All lamps flashing at 5Hz	Recover automatically after errors are eliminated(For T3 malfunction of 5HP, can't recover automatically)
3	Error	Room temperature sensor checking channel is abnormal	Timer lamp flashing at 5Hz	
4	Error	Evaporator sensor checking channel is abnormal	Operation lamp flashing at 5Hz	
5	Error	Condenser sensor checking channel is abnormal	Defrosting lamp flashing at 5Hz	
6	Error	Temperature fuse is melt(reserved)	Operation lamp and timer lamp flashing at 5Hz	

### 5.2.2 LEDs for the indication of outdoor trouble(3~3.5HP, 3phase)

Type	Contents	LED1	LED2	LED3
Normal	Ok	Off	Off	On
Protection	Phase sequence error	On	Off	On
Protection	Overload of current	Off	On	On
Protection	Lack of phase	On	On	On
Protection	Protection of pressure	On	On	On

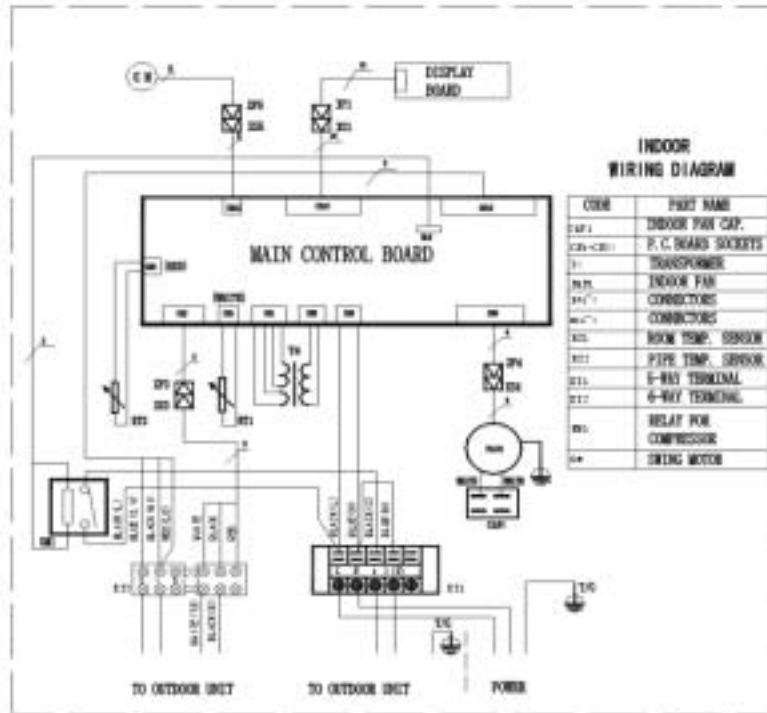
### 5.2.4 LEDs for the indication of outdoor trouble(4~7HP, 3phase)

Type	Contents	LED1	LED2	LED3
Protection	Phase sequence	Flash	Off	Off
Protection	Lack of phase	Flash	Off	Off
Protection	Protection of pressure	Flash	Flash	Off
Protection	Overload of current	Off	Off	Flash
Protection	Open-circuit and short-circuit trouble of T3	Off	Flash	Flash
Protection	Open-circuit and short-circuit trouble of T4	Off	Flash	Off
Protection	High temperature protection of condenser	Flash	Flash	Flash

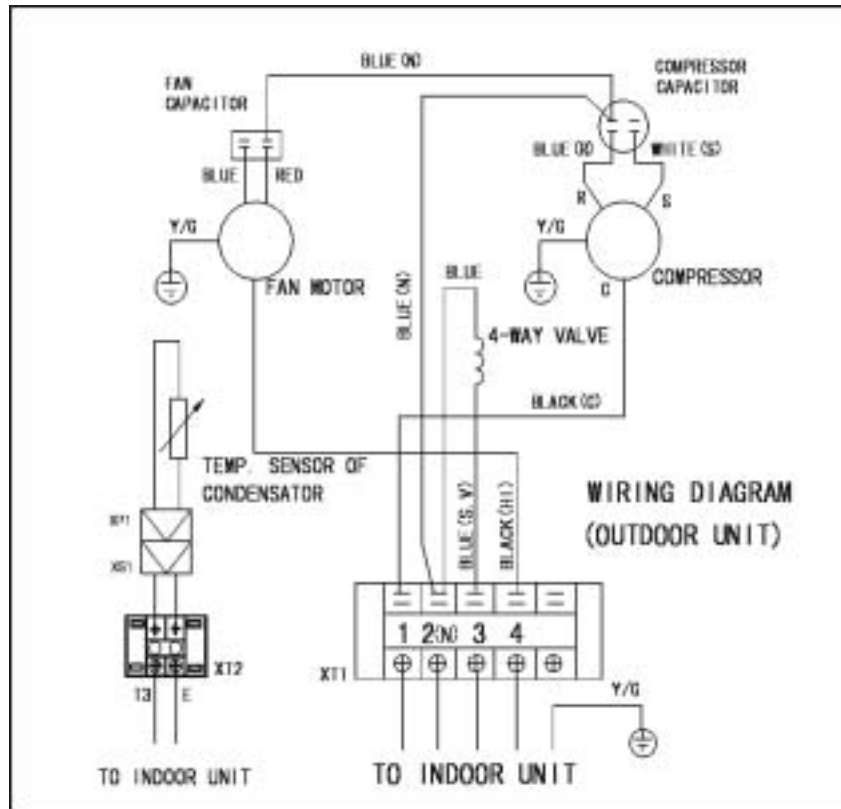
# Part 9. Wiring Diagram

## 1. MUA-18HRN2

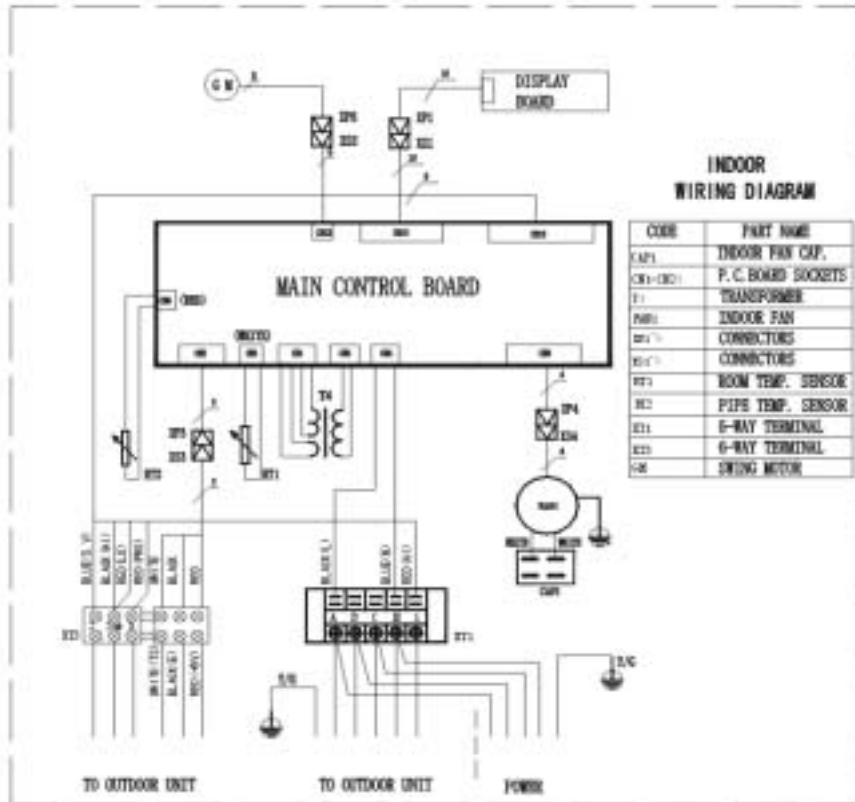
### Indoor Unit:



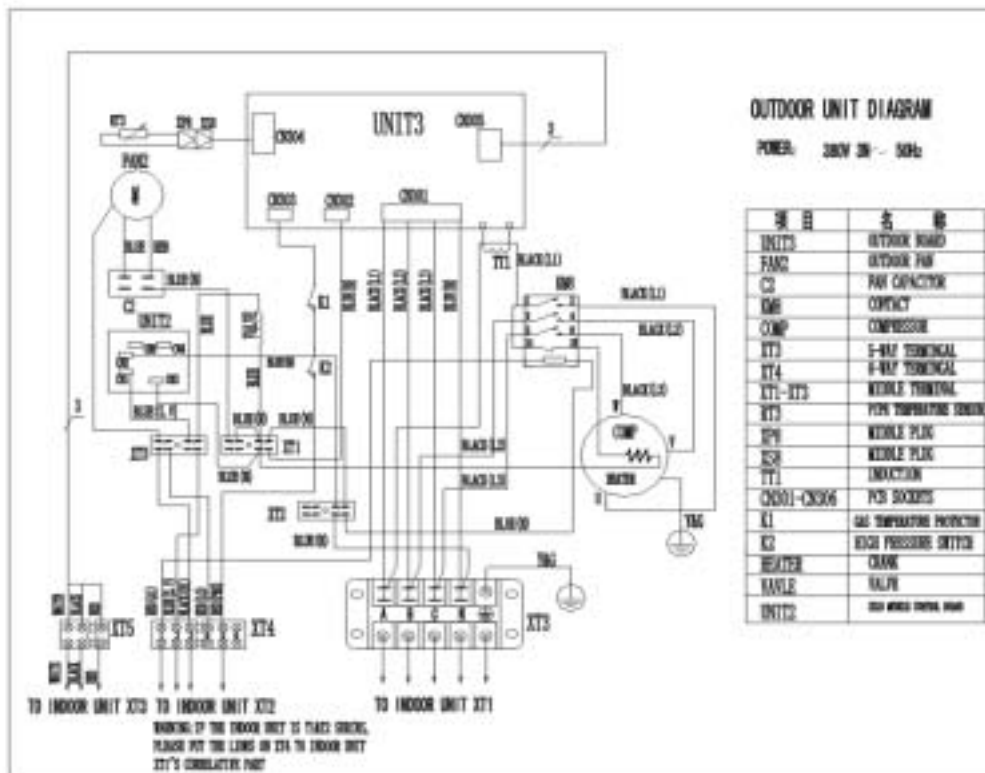
### Outdoor unit



2. MUA-24HRN2 (3phase) MUA-30HRN2 (3phase)  
Indoor unit

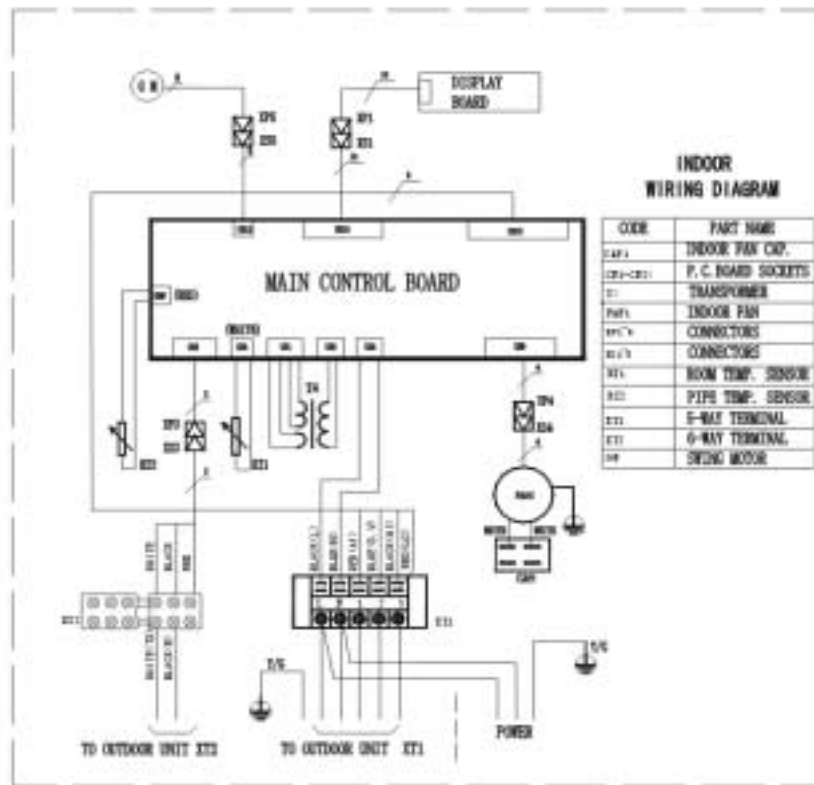


Outdoor unit

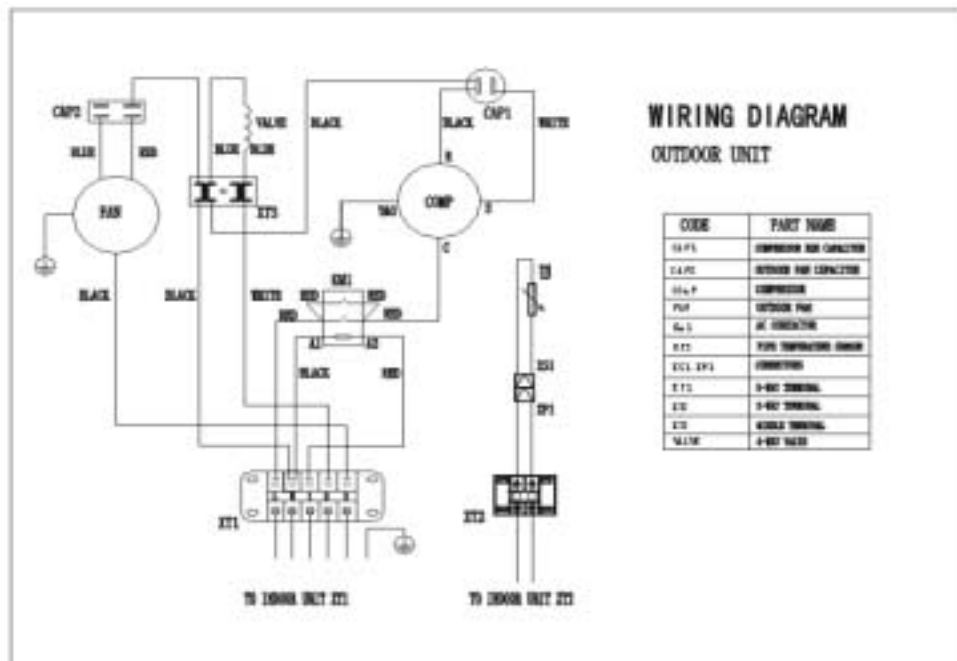


### 3. MUA-24HRN2 (1phase)

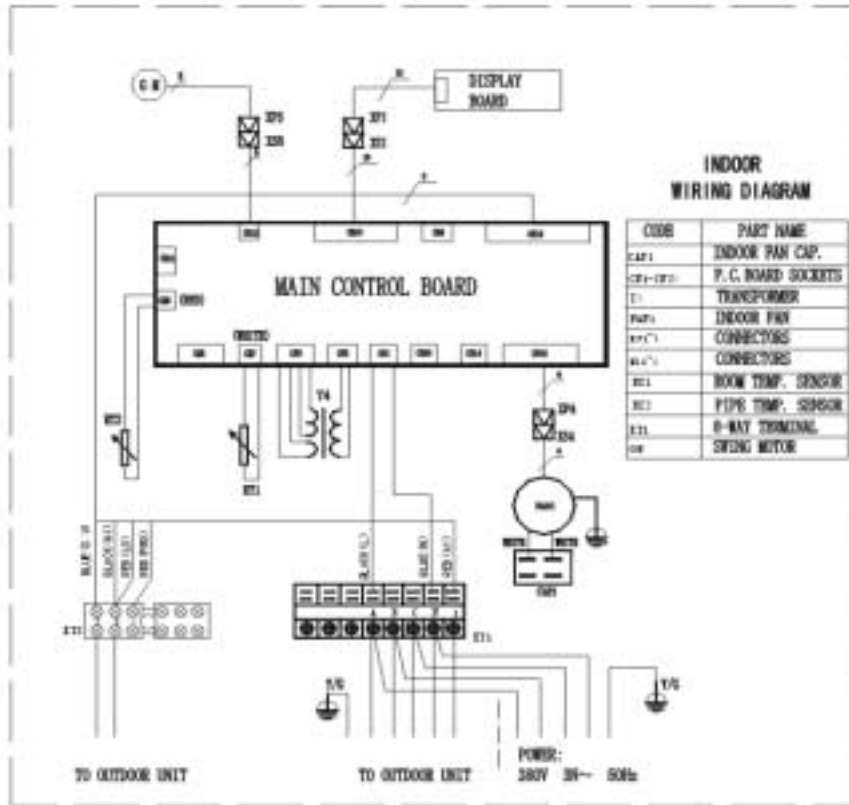
#### Indoor unit



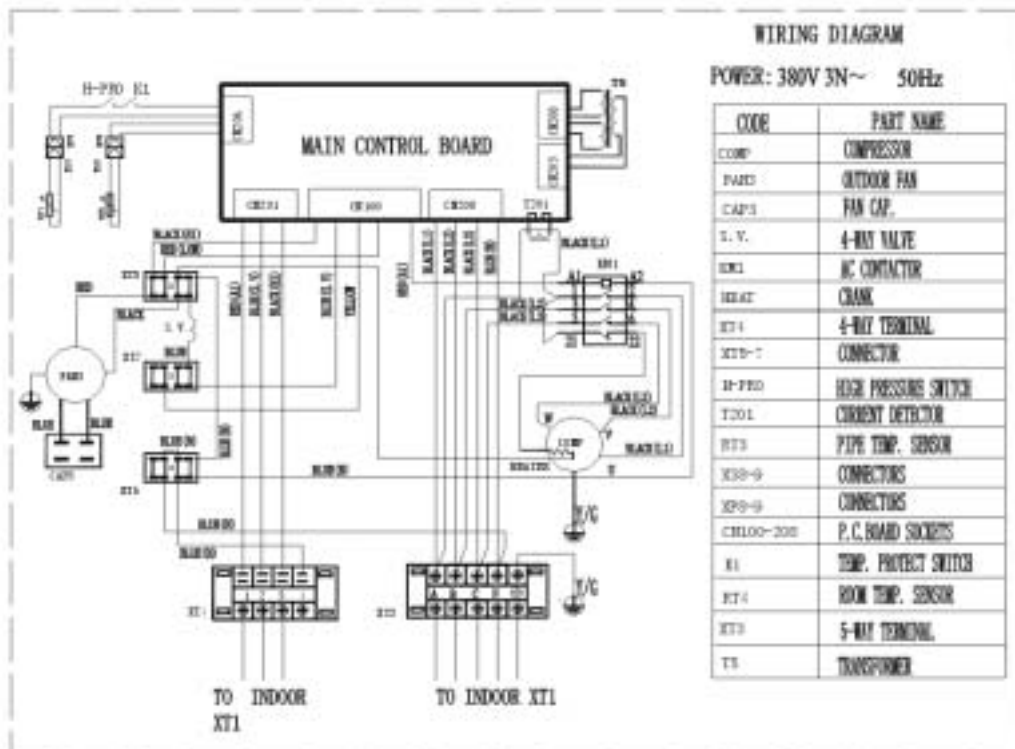
#### Outdoor unit



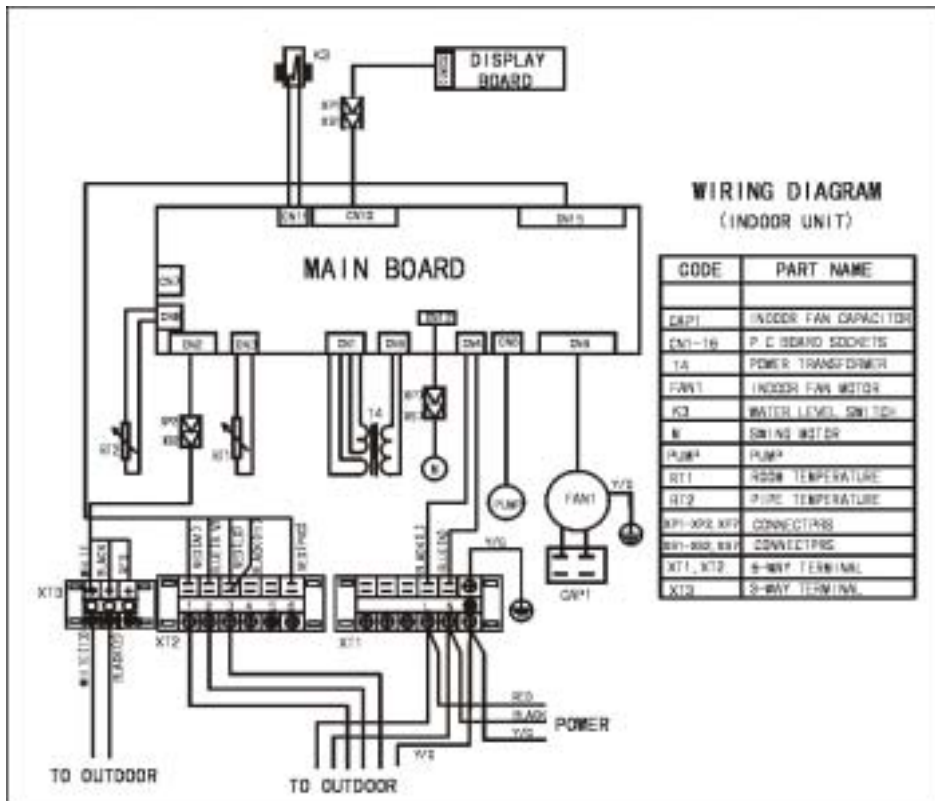
**4.MUA-36HRN2(3phase)**  
**Indoor unit**



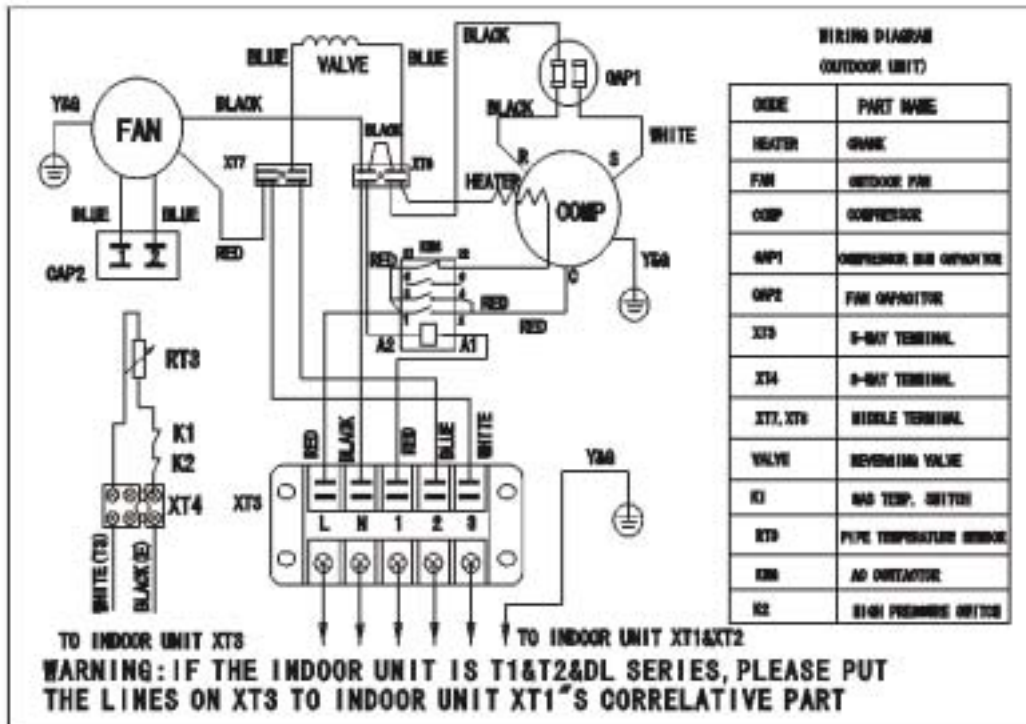
**Outdoor unit**



5. MUA-36HRN2(1phase) MUA-30HRN2(1phase)  
Indoor unit

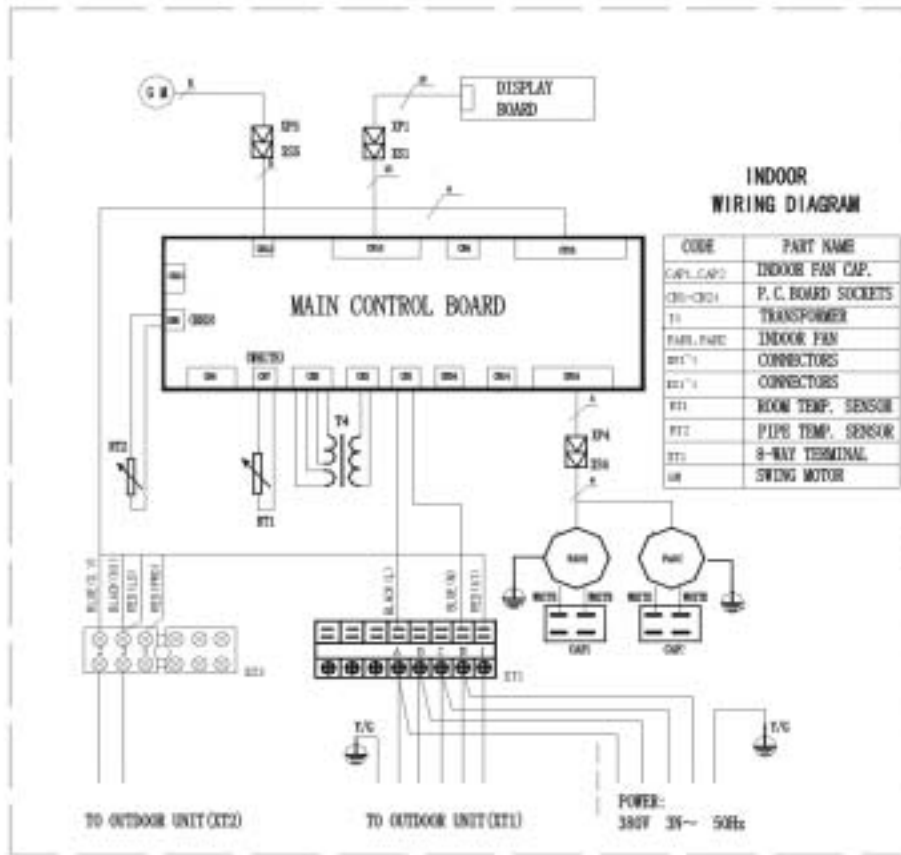


Outdoor unit

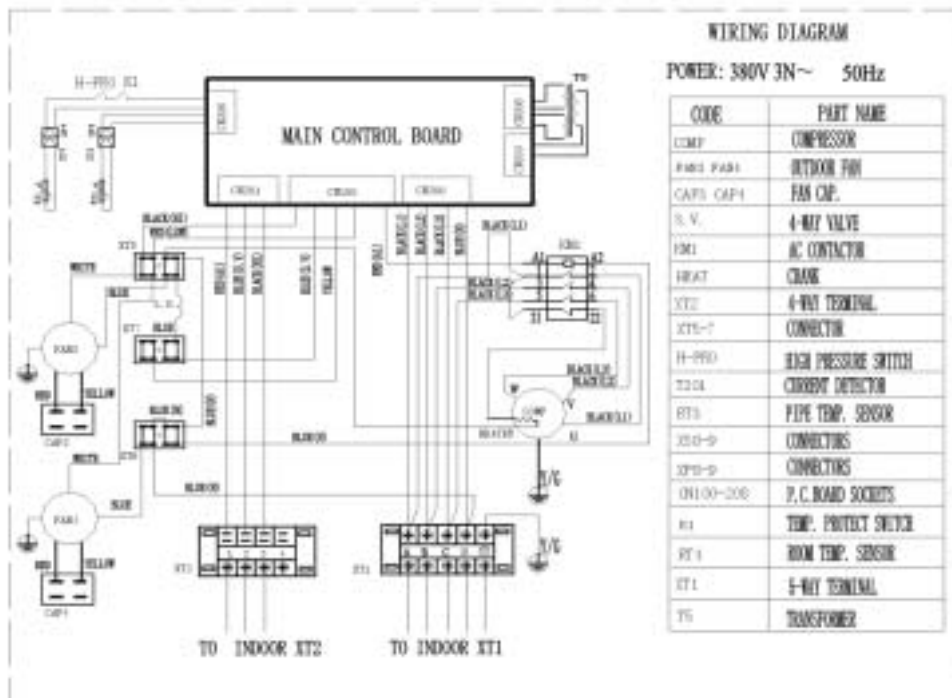


## 6. MUA-48HRN2 , MUA-60HRN2

### Indoor unit

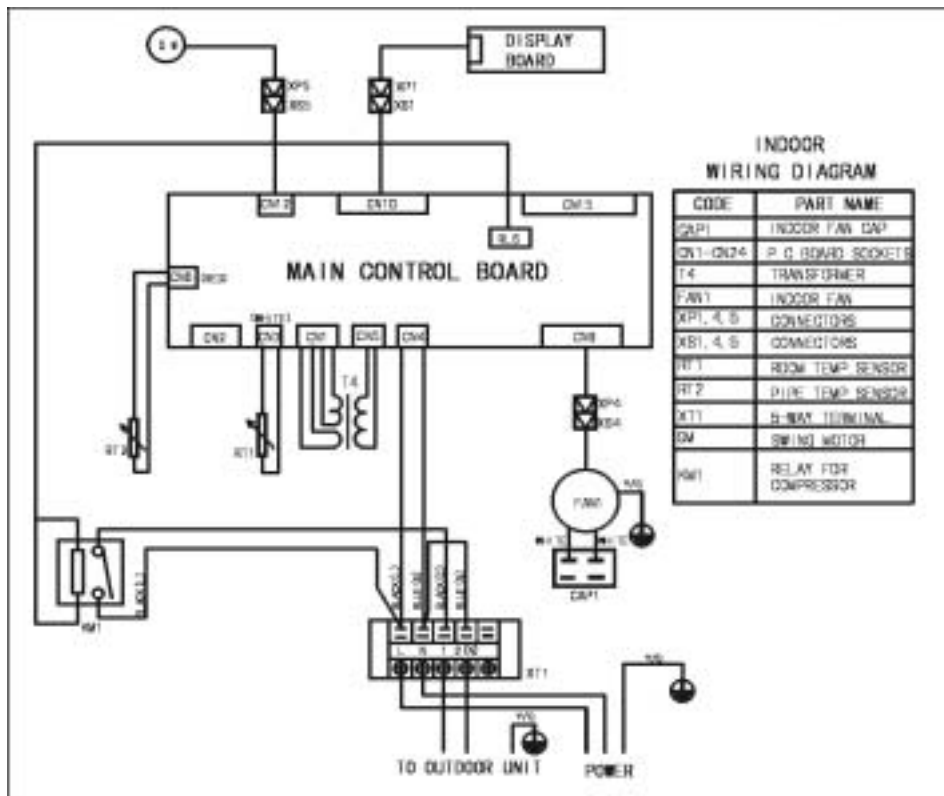


### Outdoor unit

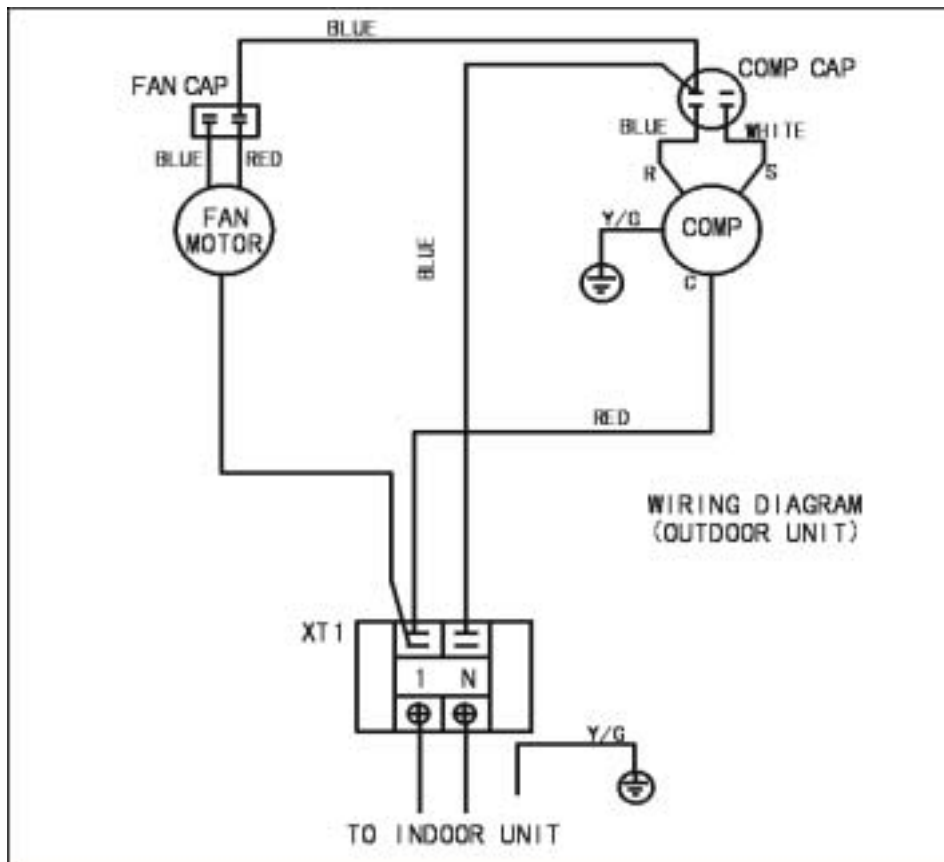


## 7. MUA-18CRN2

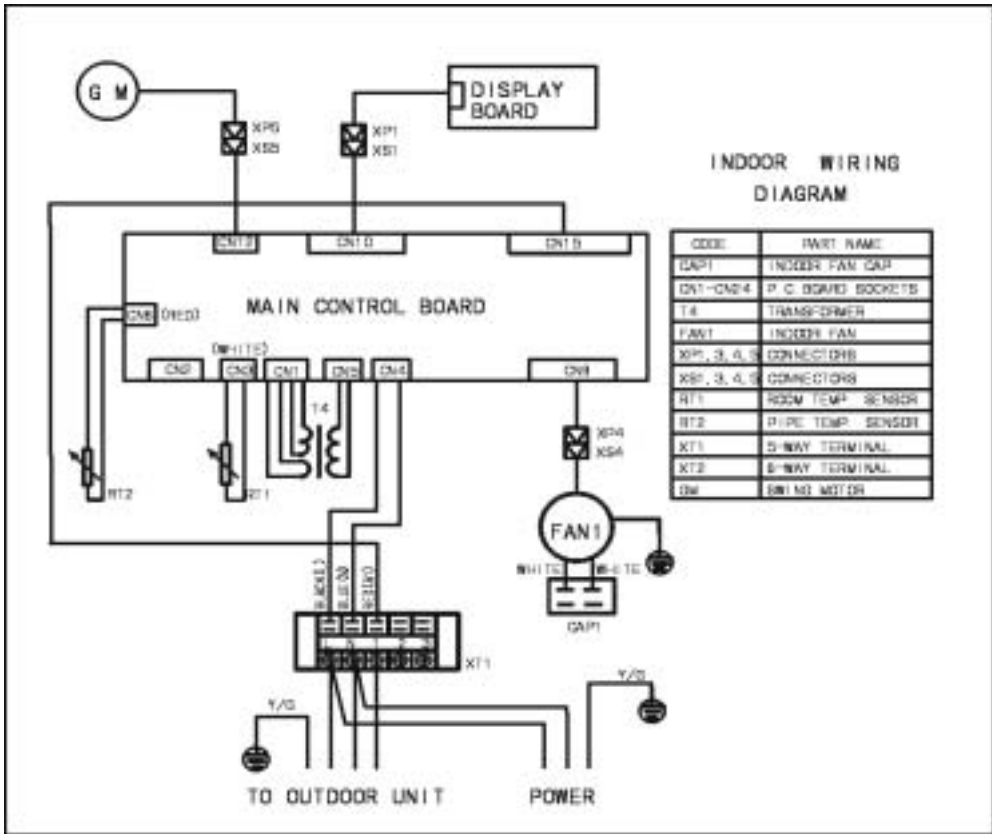
### Indoor unit



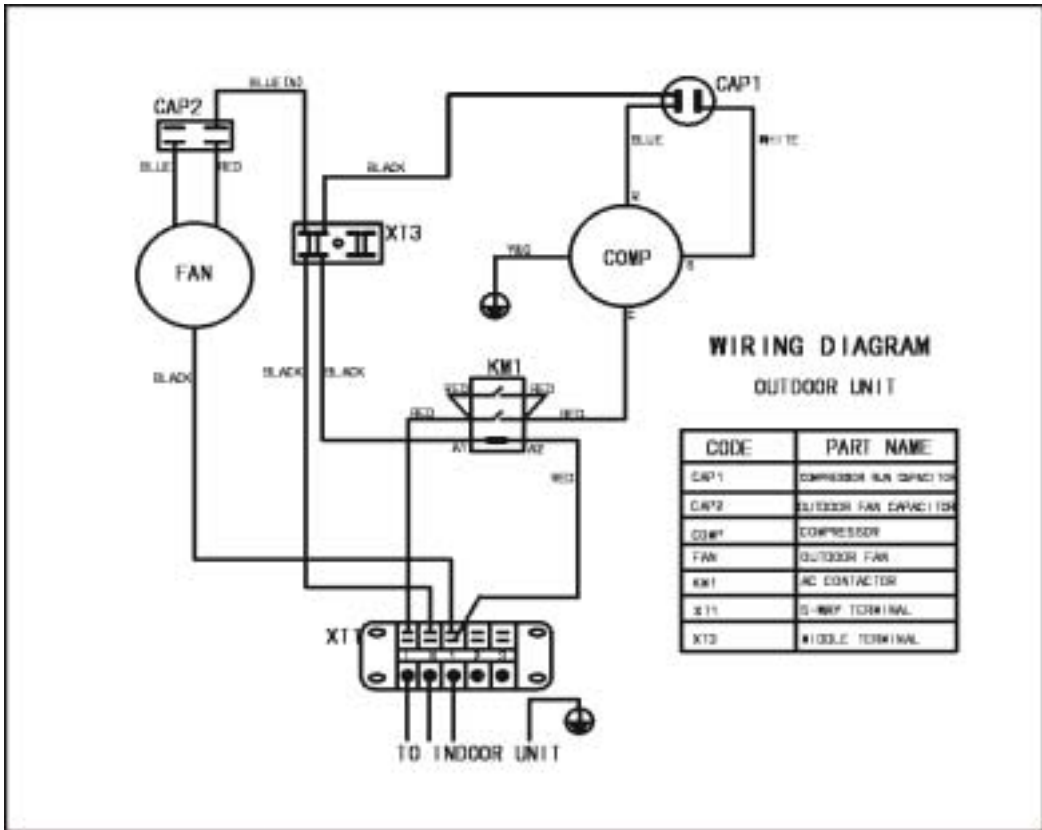
### Outdoor unit



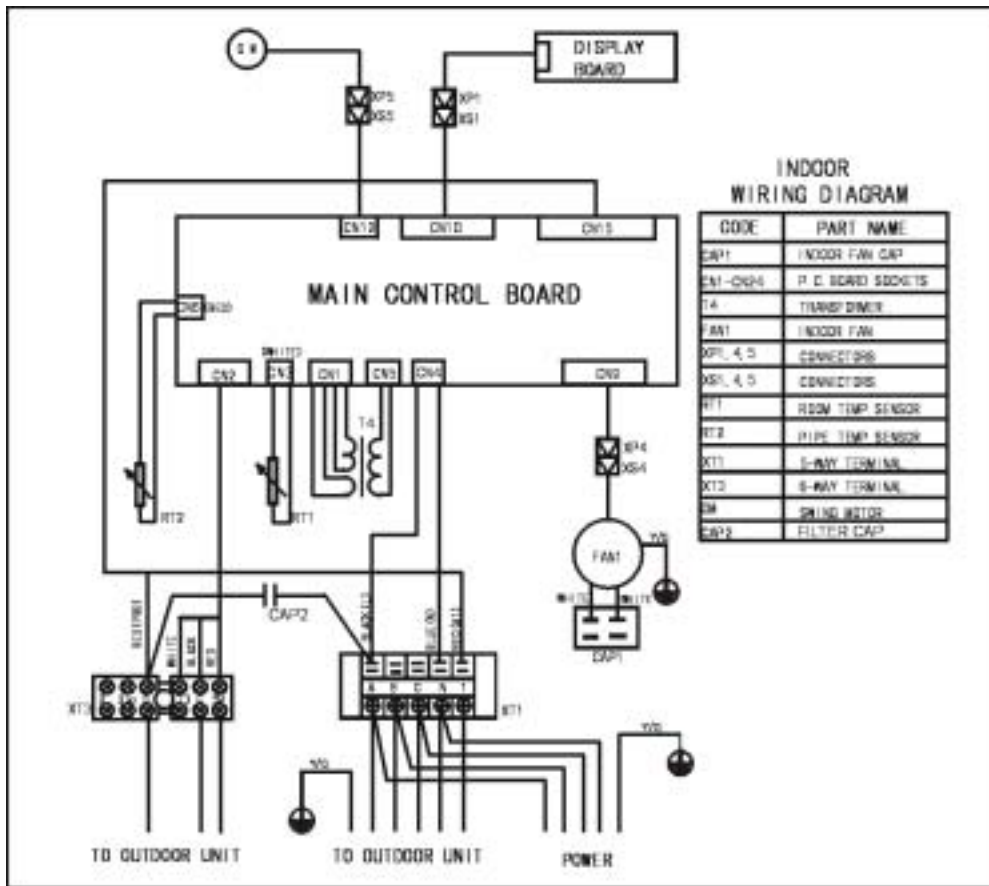
8. MUA-24CRN2(1phase)  
Indoor unit



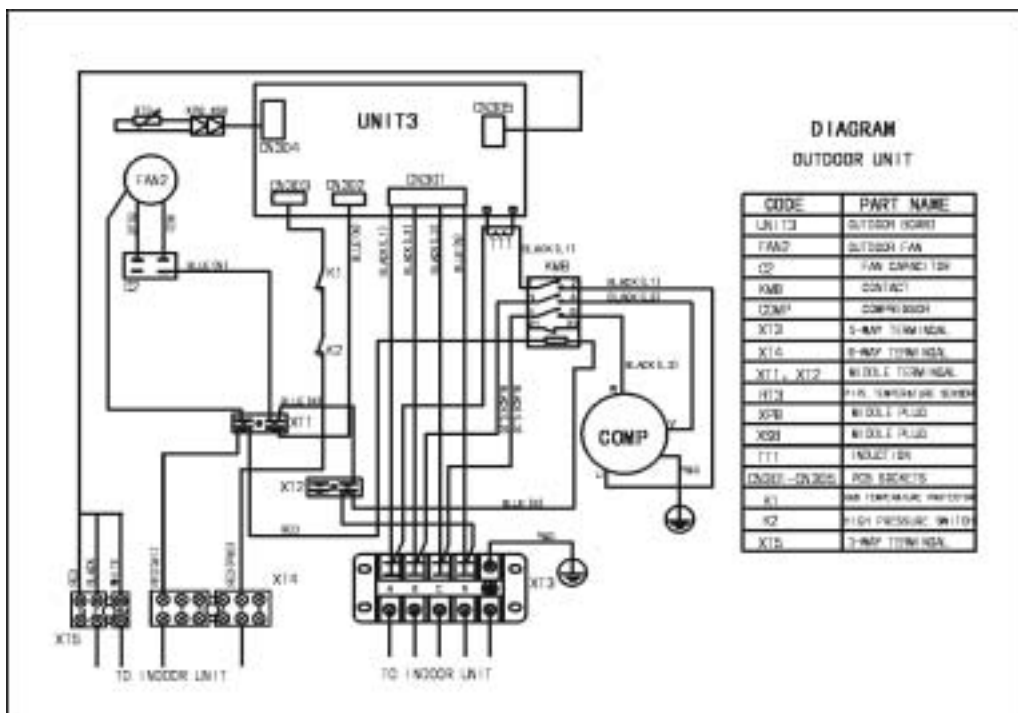
Outdoor unit



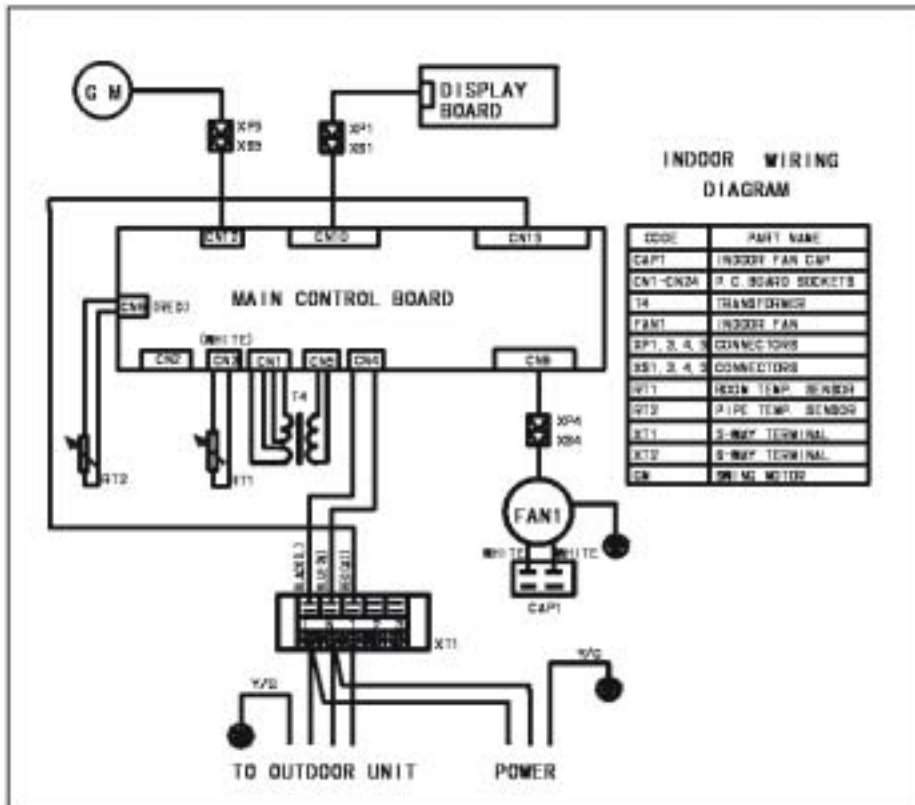
9. MUA-24CRN2(3phase) MUA-30CRN2(3phase)  
Indoor unit



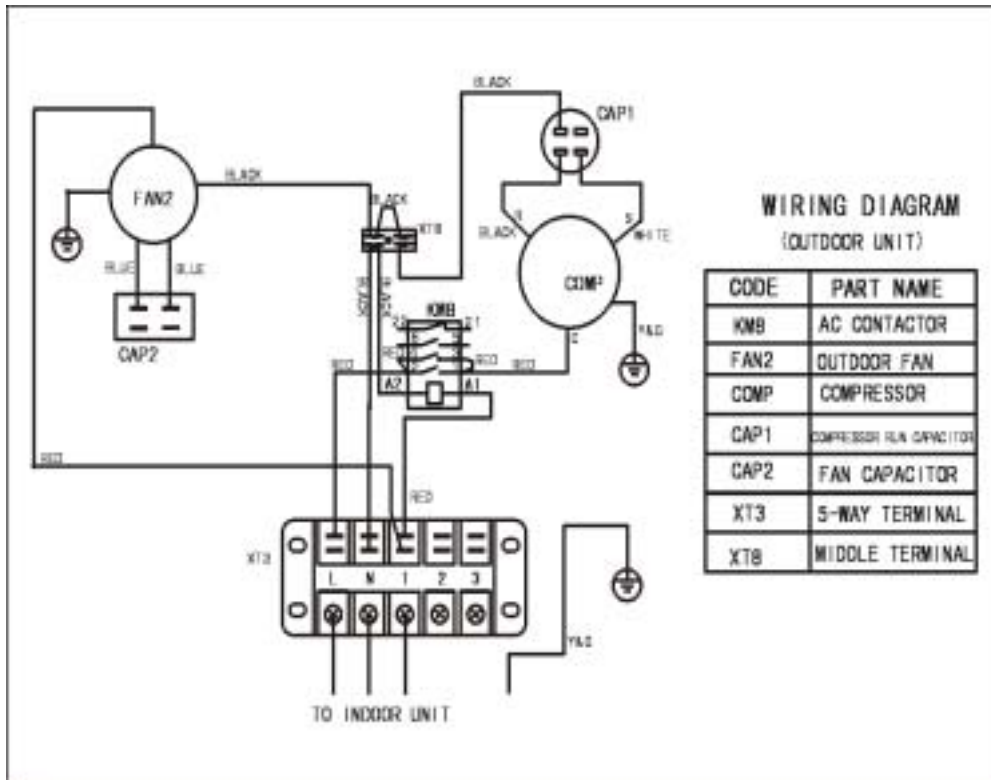
Outdoor unit



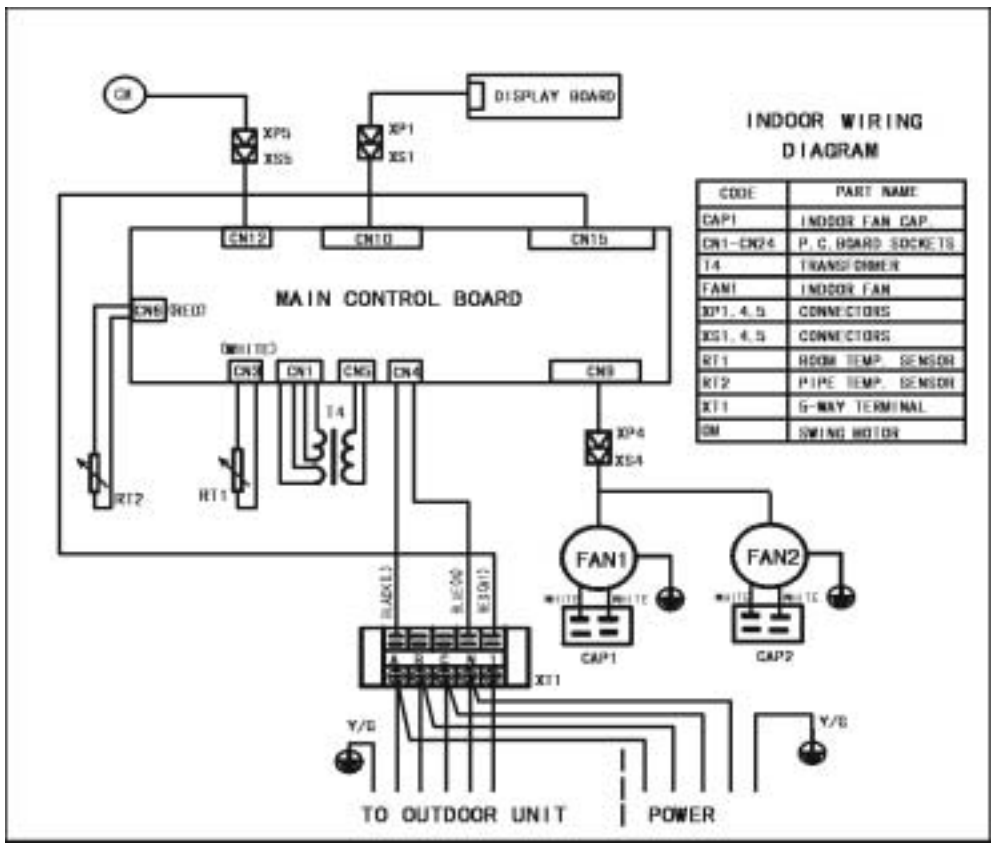
10. MUA-36CRN2(1phase) MUA-30CRN2(1phase)  
Indoor unit



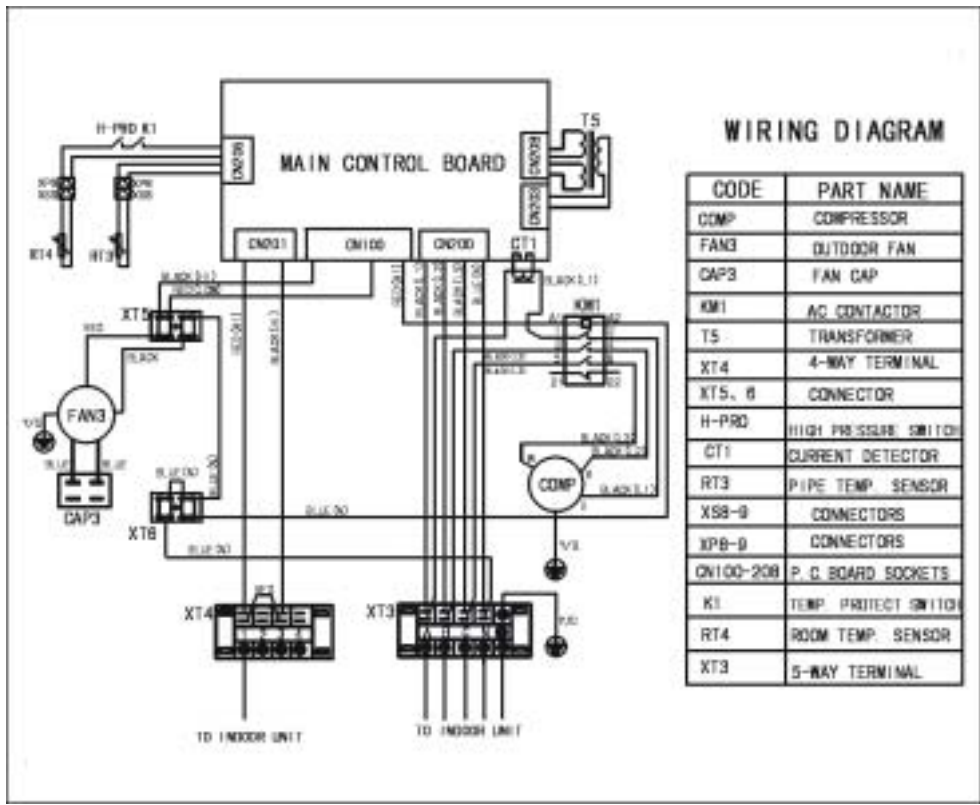
Outdoor unit



11. MUA-36CRN2(3phase)  
Indoor unit

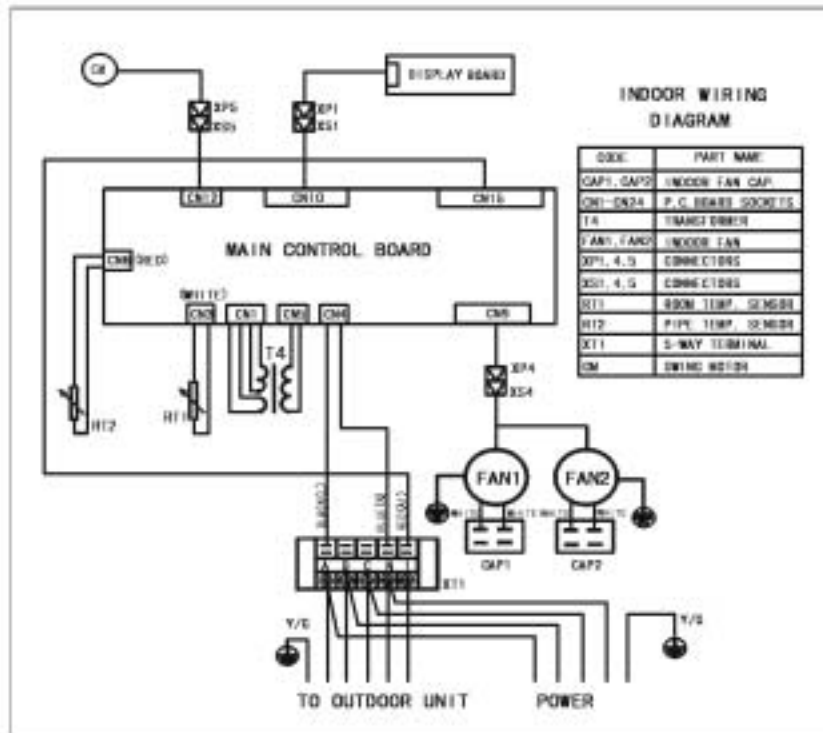


Outdoor unit

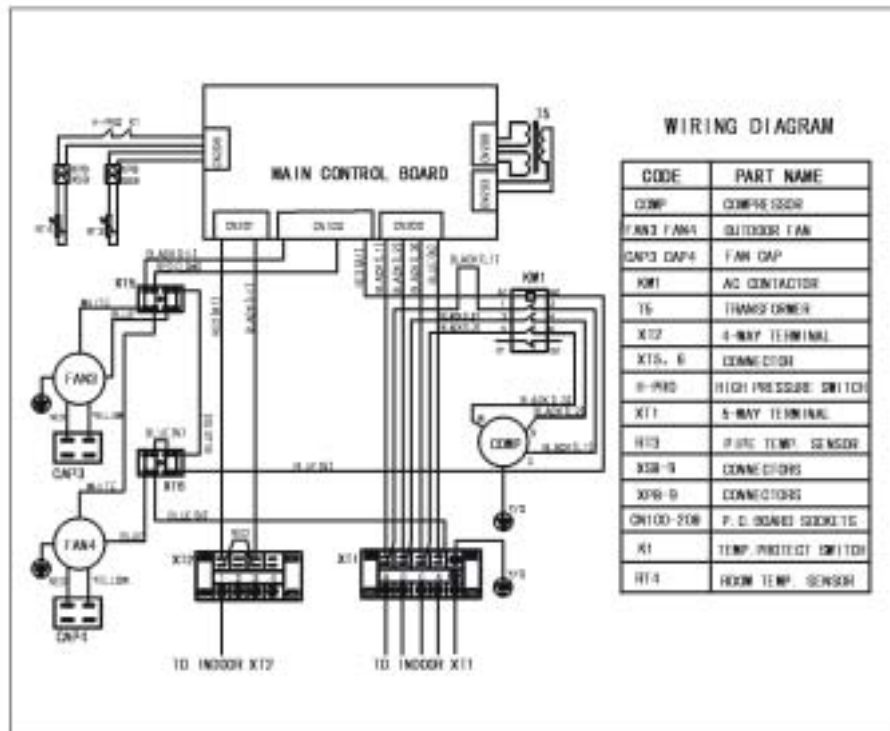


## 12. MUA-48CRN2 MUA-60CRN2

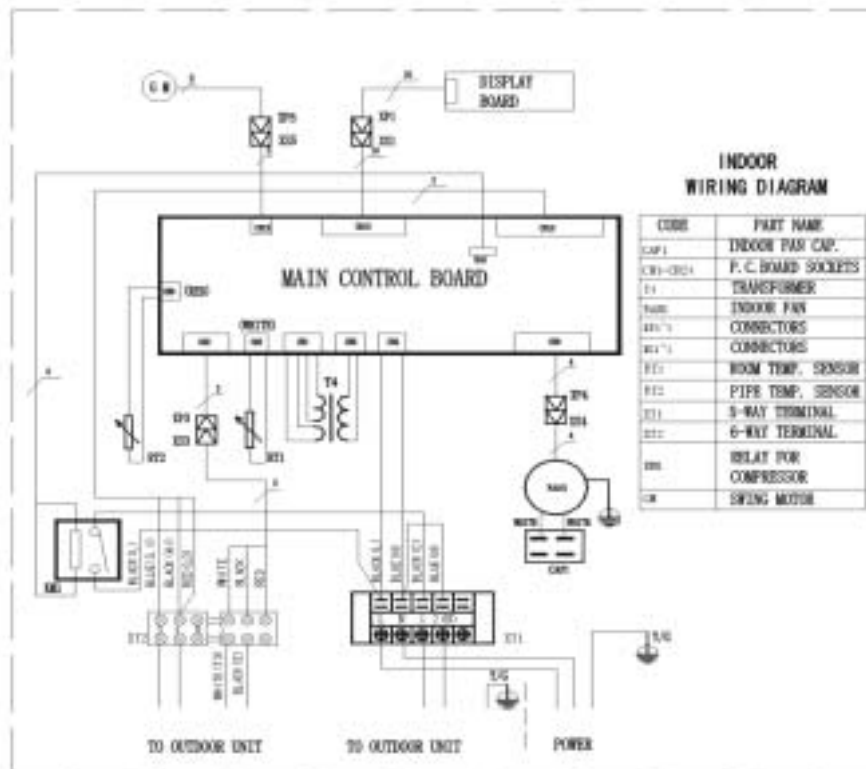
### Indoor unit



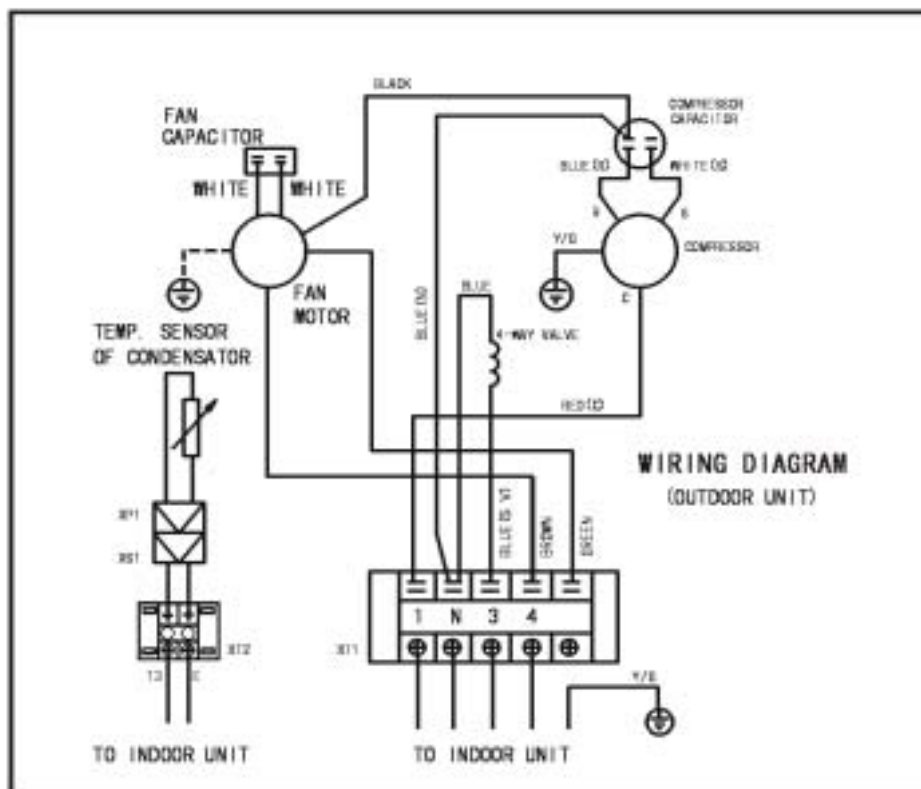
### Outdoor unit



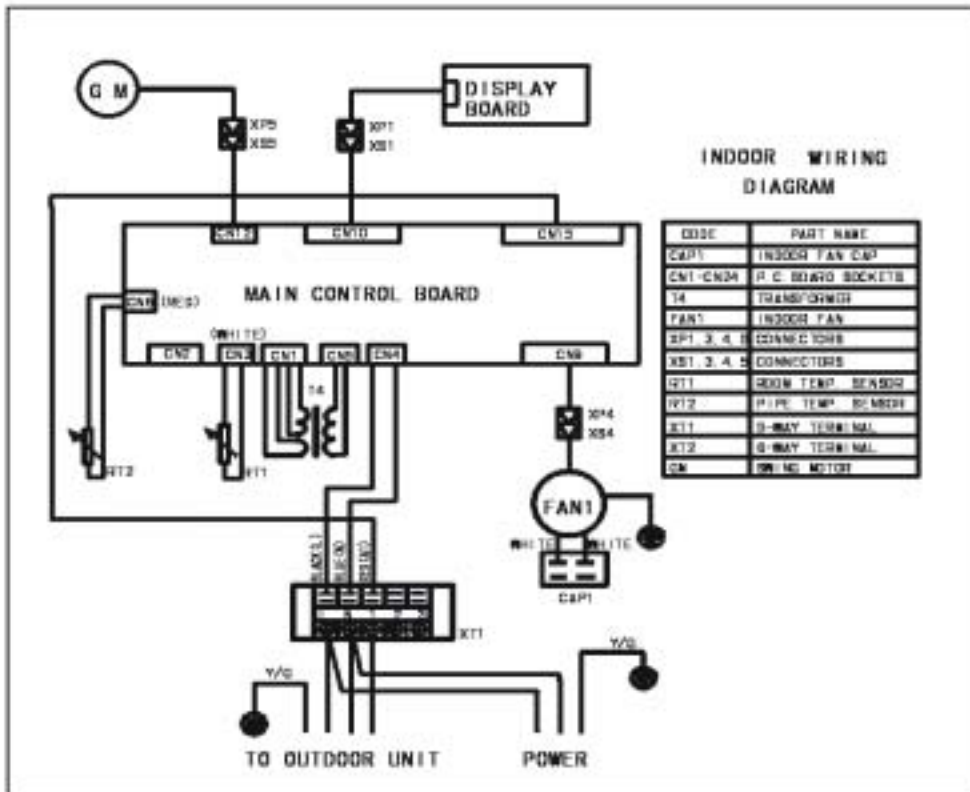
### 13. MUA-18HR Indoor unit



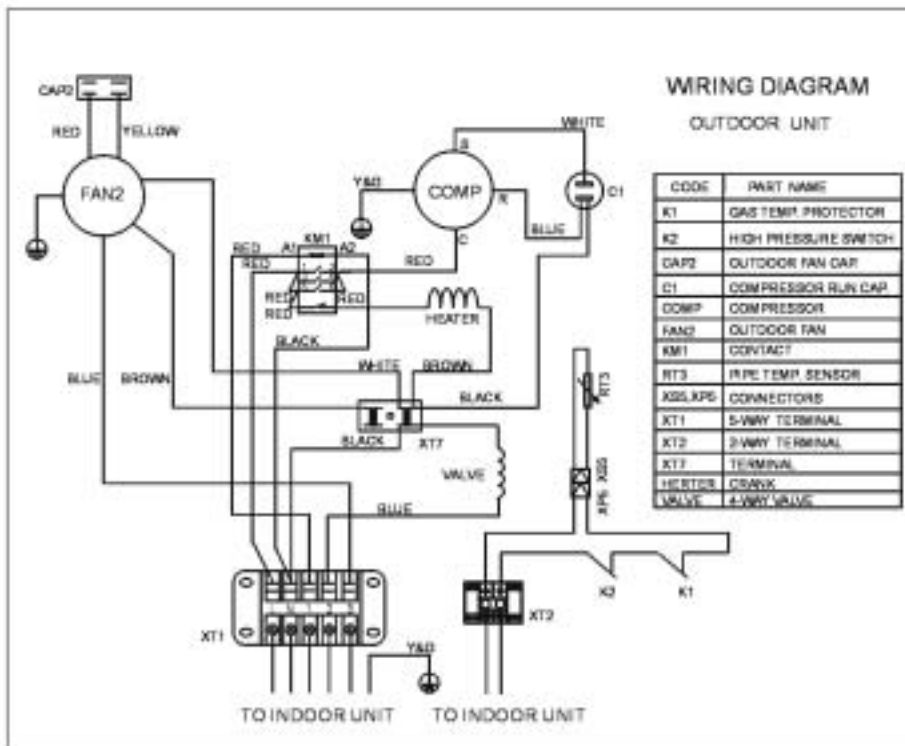
### Outdoor unit



14. MUA-24HR(1phase)  
Indoor unit

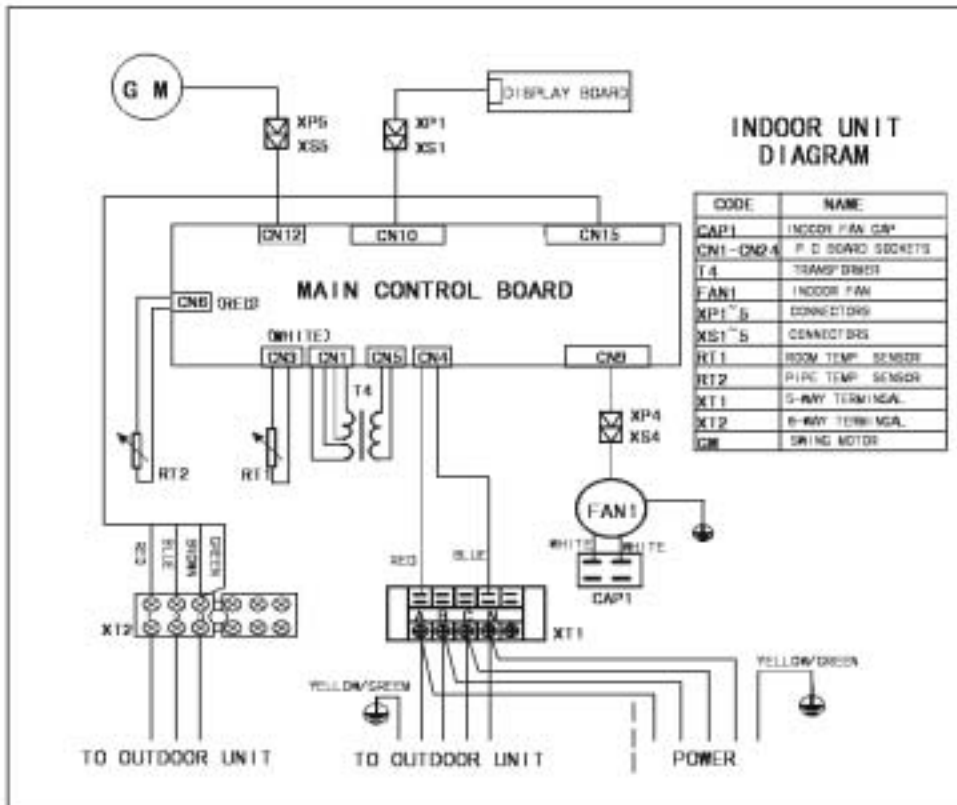


Outdoor unit

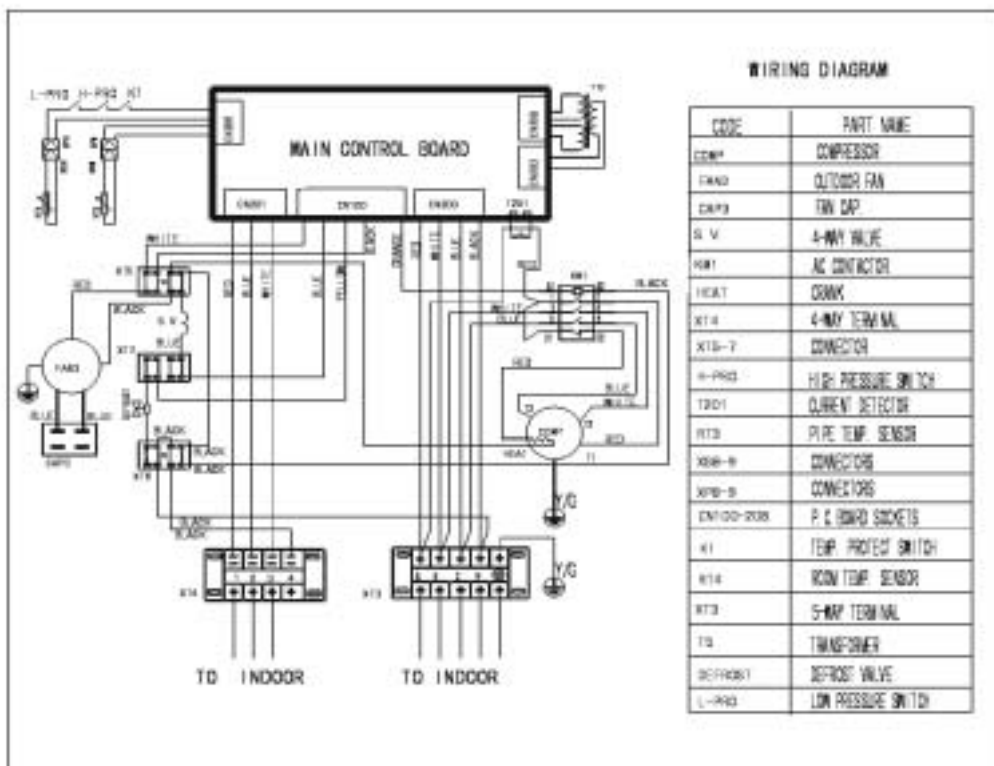




16. MUA-36HR(3phase)  
Indoor unit

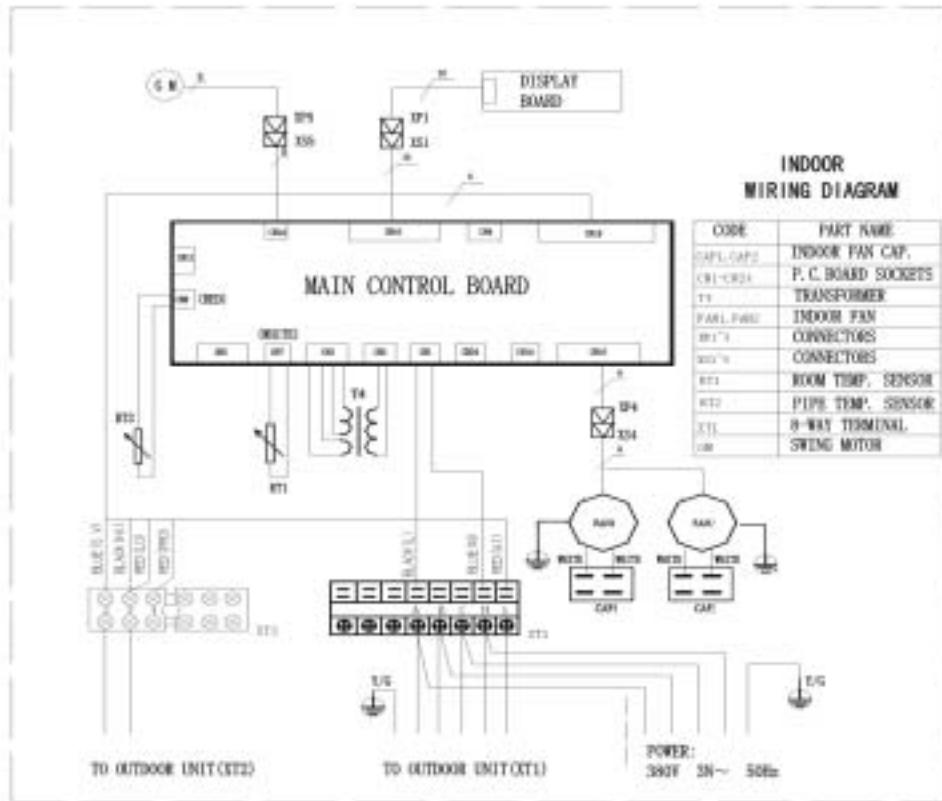


Outdoor unit

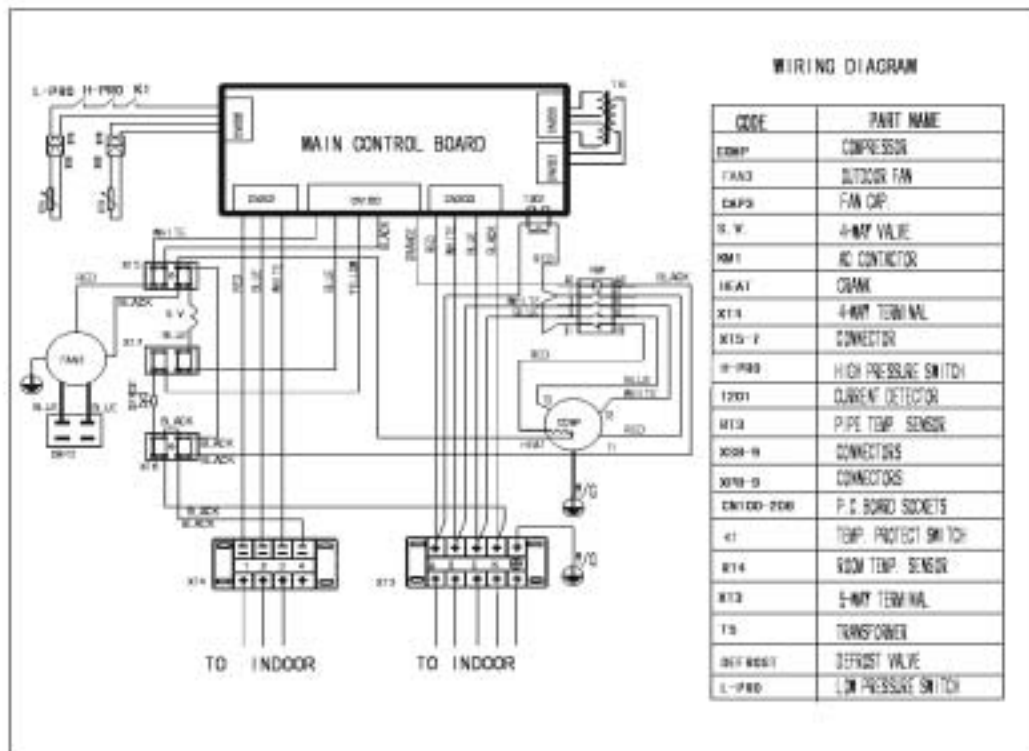


## 17. MUA-48HR MUA-60HR

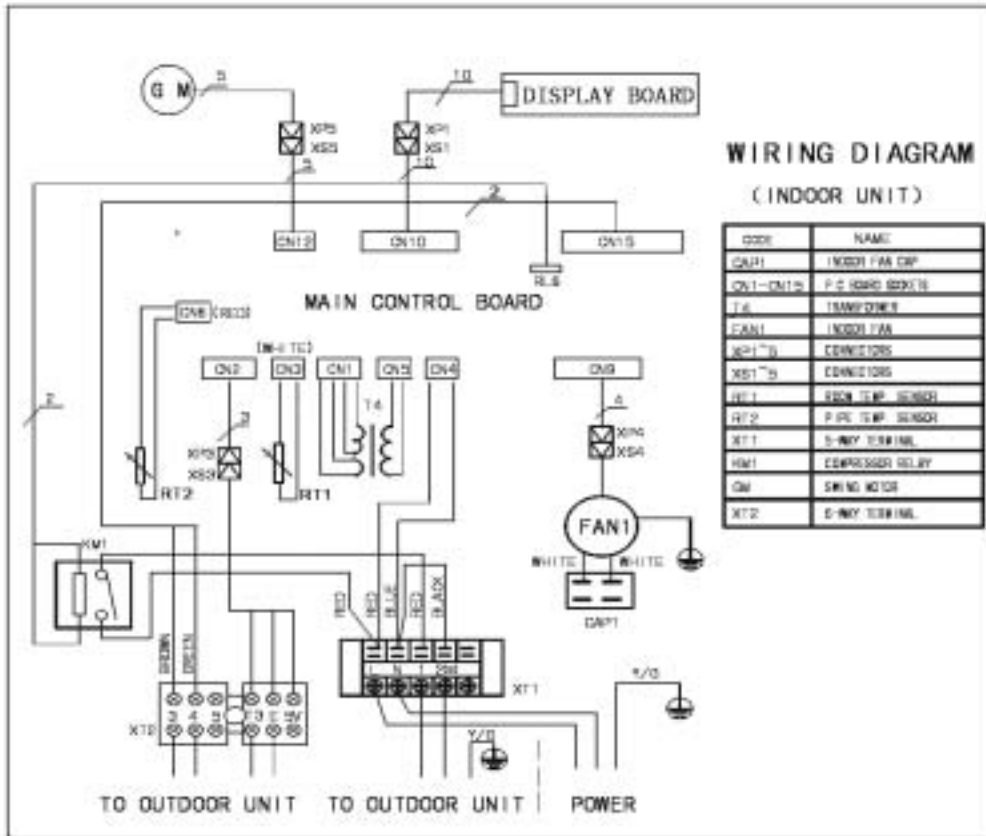
### Indoor unit



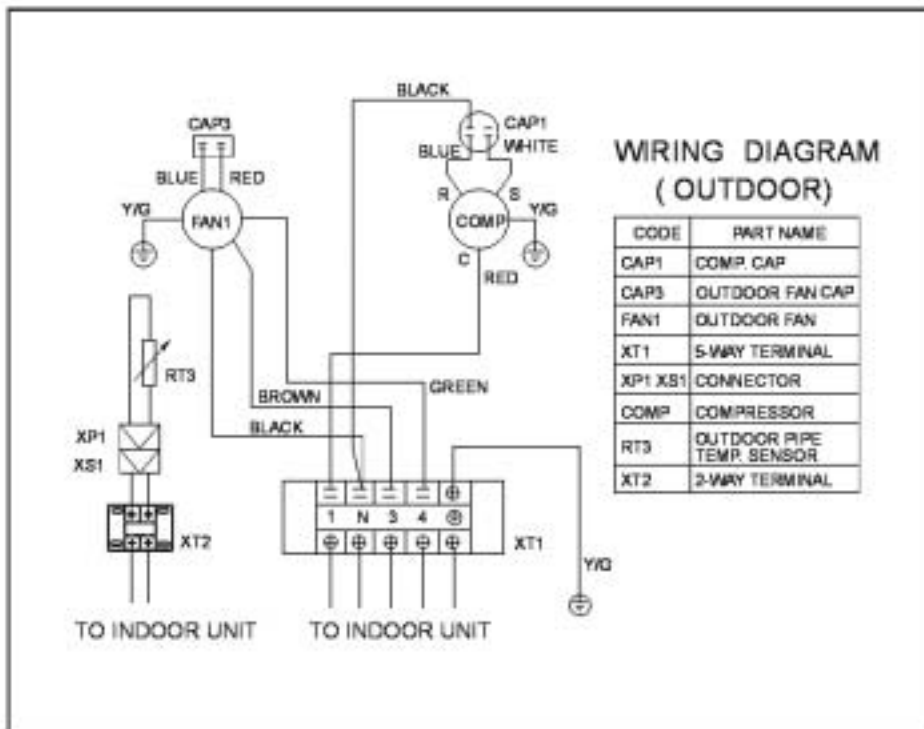
### Outdoor unit



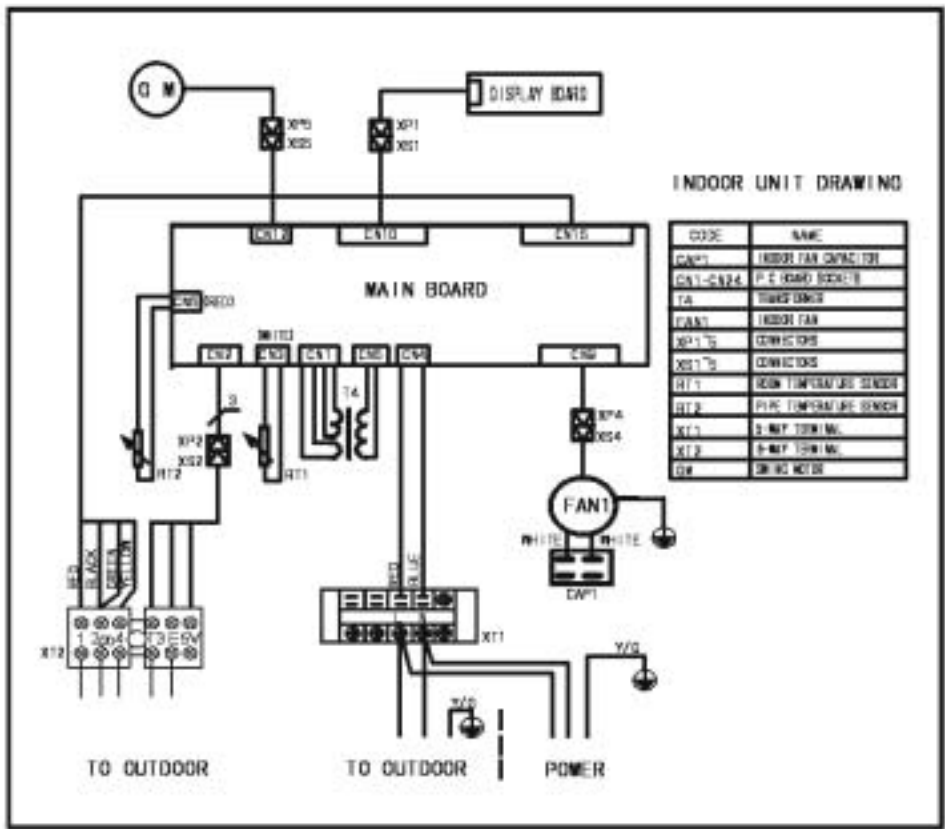
**18. MUA-18CR**  
**Indoor unit**



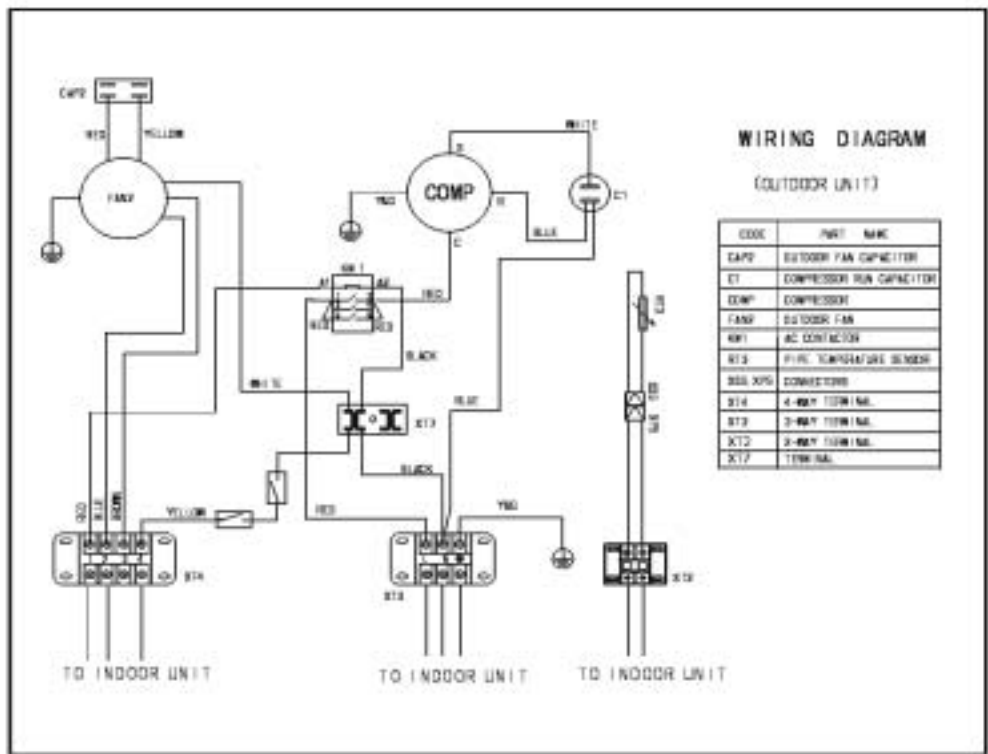
**Outdoor unit**



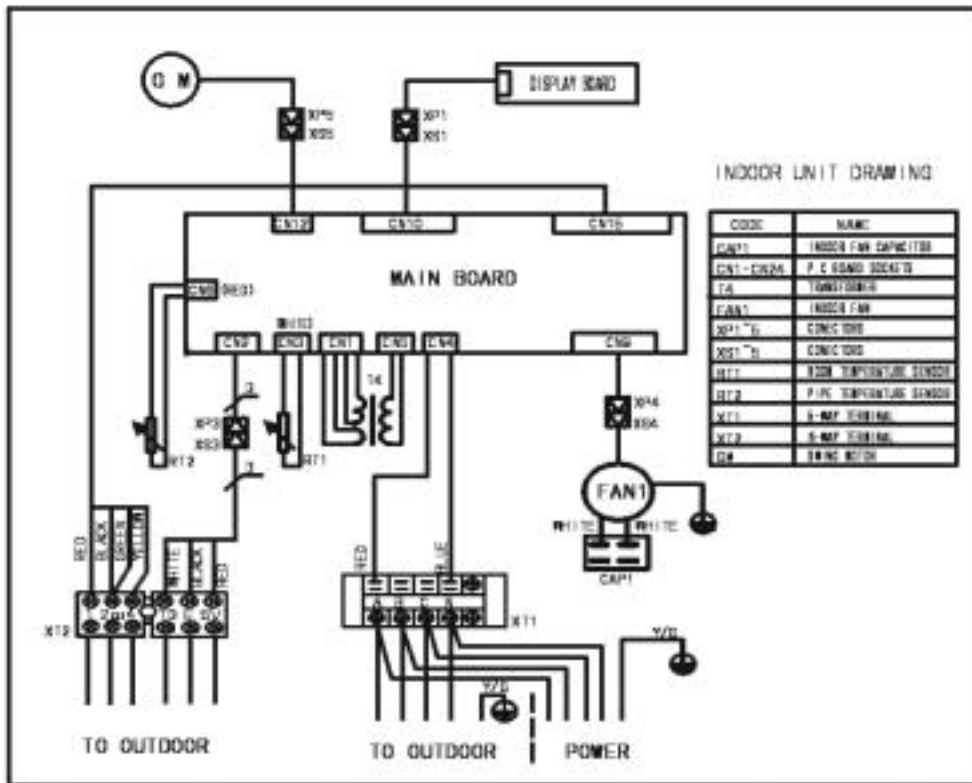
19. MUA-24CR(1phase)  
Indoor unit



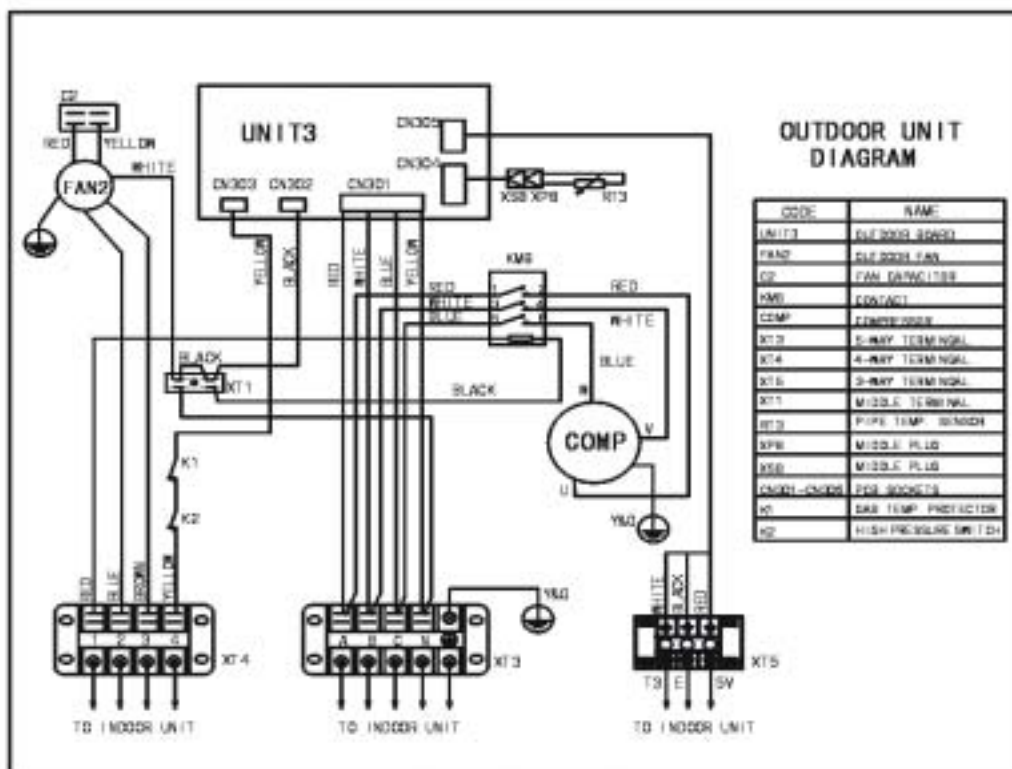
Outdoor unit



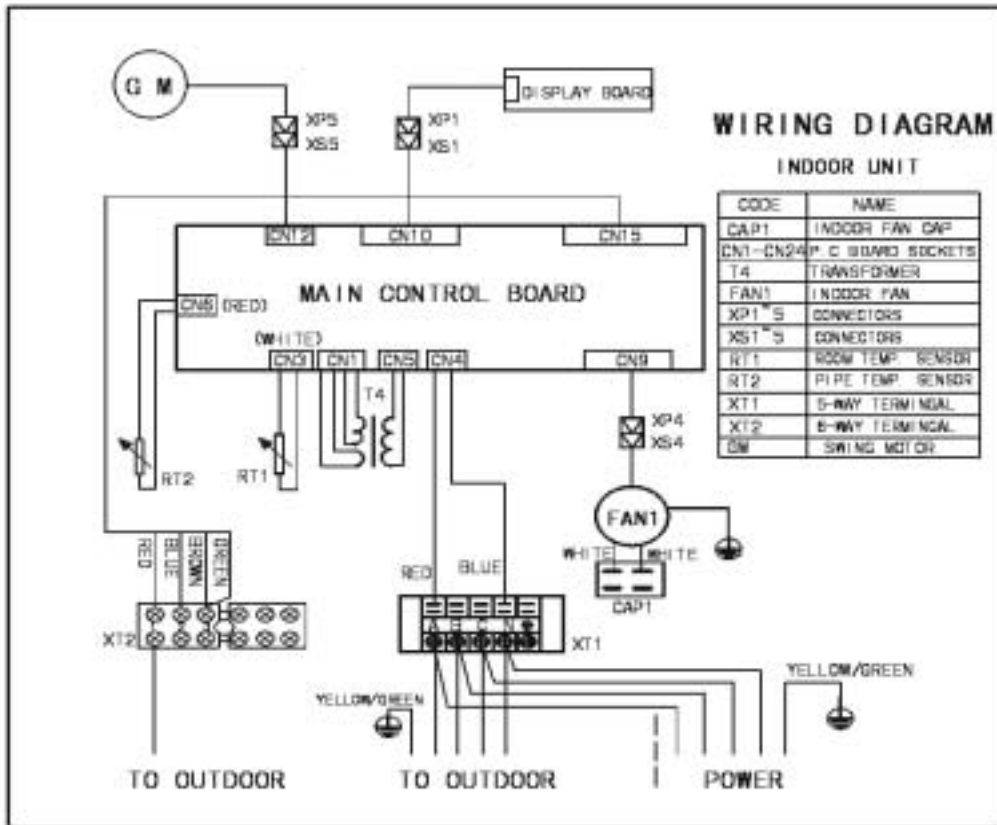
20. MUA-24CR (3phase)  
Indoor unit



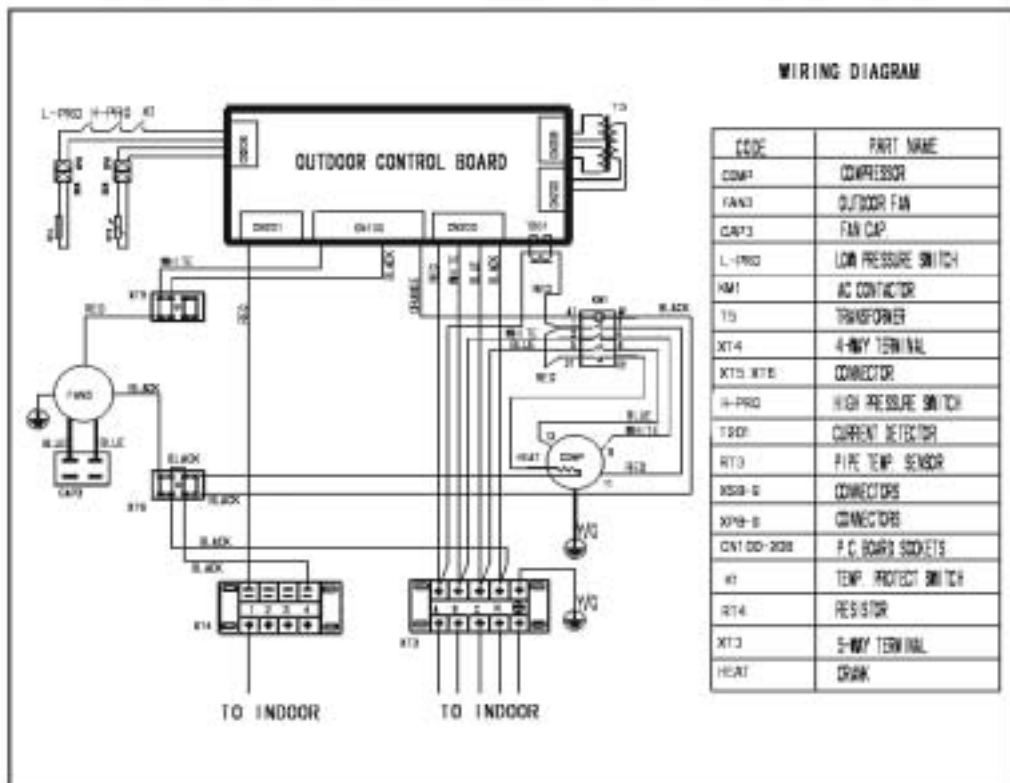
Outdoor unit



21. MUA-36CR(3phase)  
Indoor unit



Outdoor unit





## Part 10 Installation

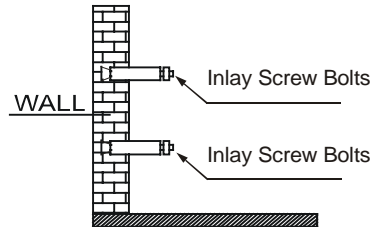
### 1. Installation of indoor unit

#### (1) Wall Mounting Installation :

Please use the level indicator when install the unit on the floor by wall mounting.

Keep the unit perpendicular to the floor.

Use inlay screw blot or flaring screw bolt to install.

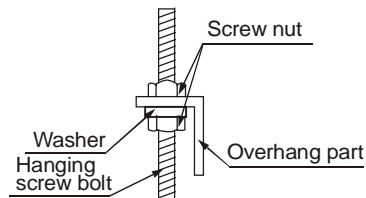


#### (2) Ceiling Installation :

Overhang the indoor unit onto the hanging screw bolts with block.

Position the indoor unit in a flat level by using the level indicator,

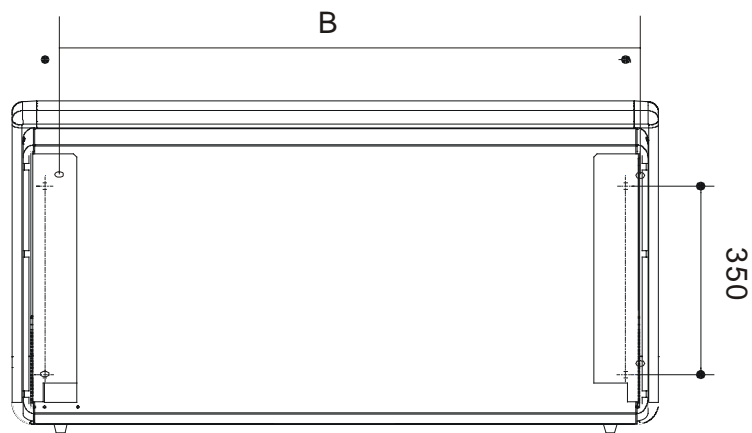
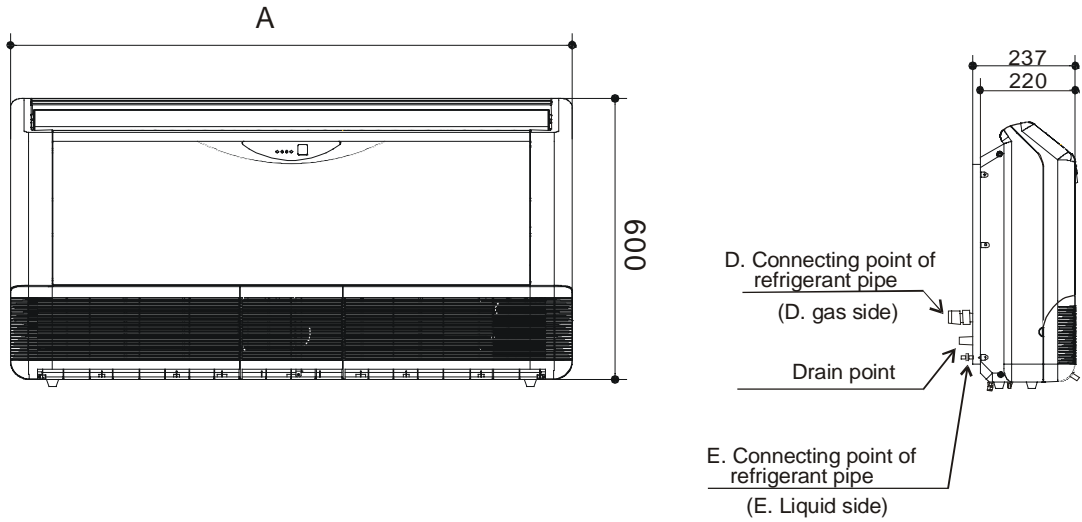
unless it may cause leakage.



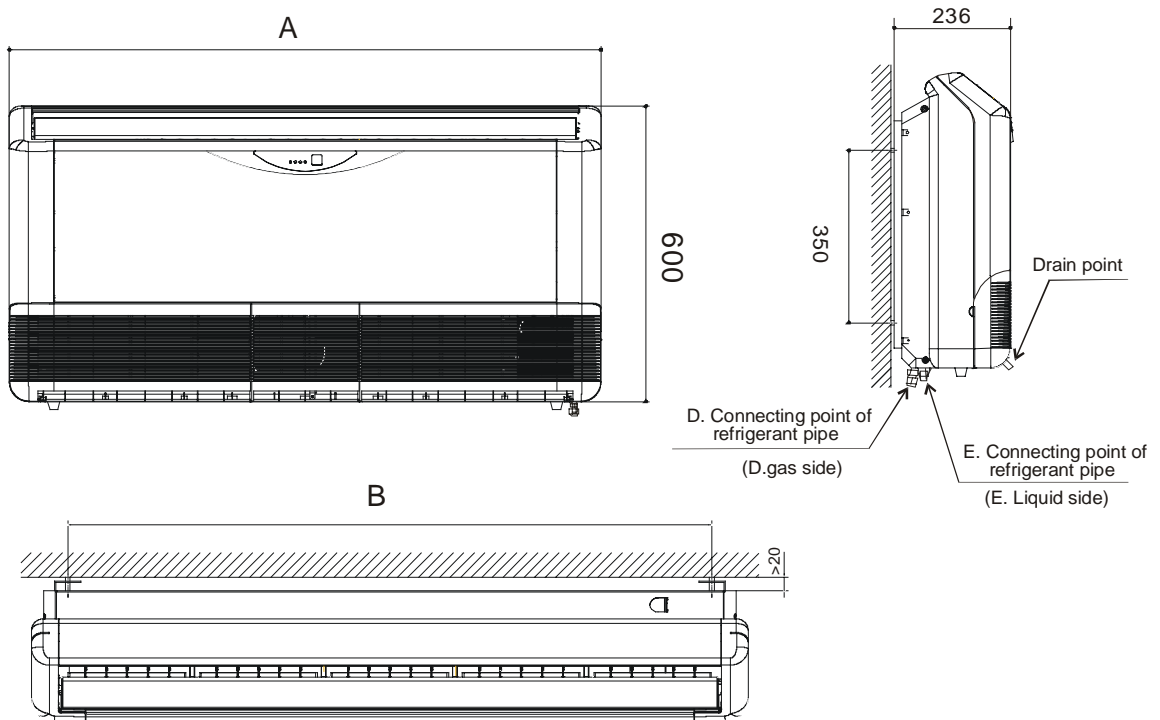
#### (3) Dimension

Capacity (Btu/h)	A	B	D	E
MUA-18H(C)R(N2)	980	864	12.7	6.35
MUA-24H(C)R(N2) MUA-30H(C)RN2 (380V~)	1200	1084	16	9.53
MUA-36H(C)R(N2) MUA-30H(C)RN2 (220-240V~)	1200	1084	19	12.7
MUA-48H(C)R(N2) MUA-60H(C)R(N2)	1860	1744	19	12.7

### Chart for Wall Mounting Installation



### Chart for Ceiling Installation



## 2. Install outdoor unit

### 3. Refrigerant pipe connecting

#### (1) Maximum pipe length

Model	Max. Length	Max. Elevation
MUA-18~60H(C)R(N2)	15m	5m

#### (2) Piping sizes

Model	Liquid(mm/inch)	Gas(mm/inch)
MUA-18H(C)R(N2)	6.35(1/4")	12.7(1/2")
MUA-24H(C)R(N2) MUA-30H(C)RN2(380V~)	9.53(3/8")	16.0(5/8")
MUA-30H(C)RN2(220-240V~) MUA-36(48,60)H(C)R(N2)	12.7(1/2")	19.0(3/4")

#### (3) Piping connection

1). Measure the necessary length of the connecting pipe, and make it by the following way.

a. Connect the indoor unit at first, then the outdoor unit.

Bend the tubing in proper way. Do not harm them.

##### CAUTIONS

& Daub the surfaces of the flare pipe and the joint nuts with frozen oil, and wrench it for 3~4 rounds

& With hands before fasten the flare nuts.

& Be sure to use two wrenches simultaneously when you connect or disconnect the pipes.

Tubing size	Torque
6.35	1420~1720N.cm(144~176kgf.cm)
9.52	3270~3990N.cm(333~407kgf.cm)
12.7	4950~6030N.cm(504~616kgf.cm)
16	6180~7540N.cm(630~770kgf.cm)
19	9720~11860N.cm(990~1210kgf.cm)

b. The stop value of the outdoor unit should be closed absolutely (as original state). Every time you connect it, first loosen the nuts at the part of stop value, then connect the flare pipe immediately (in 5 minutes). If the nuts have been loosened for a long time, dusts and other impurities may enter the pipe system and may cause malfunction later. So please expel the air out of the pipe with refrigerant before connection.

c. Expel the air after connecting the refrigerant pipe with the indoor unit and the outdoor unit. Then fasten the nuts at the repair-points.

#### 2) Locate The Pipe

a. Drill a hole in the wall (suitable just for the size of the wall conduit), then set on the fittings such as the wall conduit and its cover.

b. Bind the connecting pipe and the cables together tightly with binding tapes. Do not let air in, which will cause water leakage by condensation.

c. Pass the bound connecting pipe through the wall conduit from outside. Be careful of the pipe allocation to do no damage to the tubing.

#### 3) Connect the pipes.

4) Then, open the stem of stop values of the outdoor unit to make the refrigerant pipe connecting the indoor unit with the outdoor unit in fluent flow.

- 5) Be sure of no leakage by checking it with leak detector or soap water.
- 6) Cover the joint of the connecting pipe to the indoor unit with the soundproof / insulating sheath (fittings), and bind it well with the tapes to prevent leakage.

#### (4) Additional charge

When the length of the one-way pipe is less than 5m, additional refrigerant charge after vacuuming is not necessary.

When the length of one-way pipe is over 5m, the quantity to be added is as follows (unit in gram):

Connective pipe length	Air purging method	Additional amount of refrigerant to be charged
Less than 5m	Use refrigerant of outdoor unit	
Over 5m	Use vacuum pump or refrigerant cylinder	30g(length-5m) (capacity 20000btu/h.)
		65g(length-5m) (capacity 24000btu/h.)

#### 4. Connect the drain pipe

#### 5. Wiring

Please refer to the Wiring Diagram.

#### 6. Test operation

- (1) The test operation must be carried out after the entire installation has been completed.
- (2) Please confirm the following points before the test operation.
  - The indoor unit and outdoor unit are installed properly.
  - Tubing and wiring are correctly completed.
  - The refrigerant pipe system is leakage-checked.
  - The drainage is unimpeded.
  - The ground wiring is connected correctly.
  - The length of the tubing and the added stow capacity of the refrigerant have been recorded.
  - The power voltage fits the rated voltage of the air conditioner.
  - There is no obstacle at the outlet and inlet of the outdoor and indoor units.
  - The gas-side and liquid-side stop valves are both opened.
  - The air conditioner is pre-heated by turning on the power.
- (3) According to the user's requirement, install the remote controller when the remote controller's signal can reach the indoor unit smoothly.
- (4) Test operation
  - Indoor unit
    - Whether the switch on the remote controller works well.
    - Whether the buttons on the remote controller works well.
    - Whether the air flow louver moves normally.
    - Whether the room temperature is adjusted well.
    - Whether the indicator lights normally.
    - Whether the drainage is normal.
    - Whether there is vibration or abnormal noise during operation.
  - Outdoor unit
    - Whether there is vibration or abnormal noise during operation.
    - Whether the generated wind, noise, or condensed of by the air conditioner have influenced your neighborhood.
    - Whether any of the refrigerant is leaked.

## Part 11 Servicing and Maintenance

### 1. Troubles and Solutions

If any the following abnormal conditions occur, turn off the power supply immediately. Please contact our dealer.	
TROUBLES	Indicator lamps flash rapidly, after your disconnecting and connecting the unit, the situation is the same.
	Fuse or circuit breaker work frequently.
	Foreign matter or water has fallen into the unit.
	Remote controller is disabled or the switch is out of hand.
	Any other unusual conditioner is observed.

If any of the following conditions occur, check your unit and resolve corresponding problems referring to given remediation. If the trouble can't be settled contact our dealer.		
Trouble	Cause	Solutions
Unit does not start	Power failure.	Wait for the comeback of power
	Power switch is open.	Switch on the power
	Fuse of power switch may have blown.	Replace the fuse
	Batteries of remote controller are exhausted.	Replace the batteries
	The time is not start-up time you have set.	Wait or cancel the time set.
Air flowing normally with low cooling(heating) effect	Temperature is not set correctly.	Set the temperature properly.
	Door or window is open.	Close door and window.
	Air filter is blocked with dust or dirtiness.	Clean the air filter.
	Inlet/outlet of indoor/outdoor units are blocked.	Clear all blockages.
	Inlet/outlet of indoor/outdoor units are blocked.	Clear the blockage, then restart your operation.
	Be in 3 minutes protection of compressor	Wait

NOTE: Do not replace electric wire or repair the air conditioner by yourself to avoid possible danger.

### 2. Troubles and solutions concerning the remote controller

Please make the following check before asking for repair or maintenance.

Trouble	Cause	Solutions
CAN NOT CHANGE THE FAN SPEED SETTING	Check if the mode display on the LCD is AUTO	The Indoor Unit will select fan speed automatically when AUTO mode is selected.
	Check if the mode display on the LCD is DRY	The Indoor Unit will select fan speed automatically when the unit is on DRY mode.

The transmission symbol does not flash		
Symptom	Checking items	Cause
Press ON/OFF button, the remote controlling signals can not be transmitted	Check if the remote controller has run out of power	When the battery was out, transmission signals can not be sent

Temperature display disappear		
Symptom	Checking items	Cause
Temperature Display does not light.	Check if the mode display on the LCD is FAN ONLY	You can not set the temperature when the unit is on FAN ONLY mode.

The Display Goes Off		
Symptom	Checking items	Cause
The indication on the display disappears after a lapse of time.	Check whether the timer operation has come to an end when the OFF TIMER is indicated on the display.	The air conditioner operation stops since the set time elapsed.
The ON TIMER indicators go off after a lapse of certain time.	Check whether the timer operation is started when the ON TIMER is indicated on the display.	When the time set to start the air conditioner is reached, the air conditioner will automatically start and the appropriate indicator will go off.

The Signal Receiving Tone does Not Sound		
Symptom	Checking items	Cause
No receiving tone sounds from the indoor unit even when the ON/OFF button is pushed.	Check whether the signal transmitter of the remote controller is properly directed to the receiver of the indoor unit when the ON/OFF button is pushed.	Direct the signal transmitter of the remote controller to the receiver of the indoor unit, and then repeatedly push the ON/OFF button twice.
Buttons on the remote controller don't work.		Press Reset button.

### 3. Clean

CAUTION: Please turn off your air conditioner and disconnect power supply before cleaning.

#### (1) CLEANING INDOOR UNIT

Use a dry to wipe the indoor unit.

A cloth dampened with cold water may be used if the indoor unit is too dirty.

It is allowed to remove the front panel of indoor unit and clean it with water, and ensure to wipe it up with a dry rag.

Note: Do not use a chemically treated duster for wiping or leave such materials near the unit for long.

Do not use benzene, thinner, polishing powder, or similar solvents for cleaning.

#### (2) CLEANING AIR FILTER

The air filter in unit can filter dust and other granules in air. It may reduce the cooling effect that the air filter is covered with dust. So clean the air filter often.