

AIR CONDITIONER

Ceiling type

SERVICE MANUAL

INDOOR



ABUH18LUAS



ABUH24LUAS
ABUH30LUAS



ABUH36LUAS

OUTDOOR



AOUH18LUAS1



AOUH24LUAS1



AOUH30LUAS1
AOUH36LUAS1

FUJITSU GENERAL LIMITED

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- Product specifications and design are subject to change without notice for future improvement.
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1. GENERAL INFORMATION

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1. GENERAL INFORMATION

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1. Specifications

1-1. Indoor unit

Type				Ceiling		
Model name				Inverter, Heat pump		
Power supply intake				ABUH18LUAS		
System power supply				Outdoor unit		
Voltage				208/230		
Frequency				60		
Available voltage range				187—253		
Indoor unit power supply (from outdoor unit)				208/230		
Capacity	Cooling	Rated	kW	5.28		
			Btu/h	18,000		
		Min.—Max.	kW	0.91—5.89		
			Btu/h	3,100—20,100		
	Heating	47°FDB (Outdoor temp.)	Rated	kW	6.33	
			Btu/h	21,600		
		Min.—Max.	kW	0.91—7.50		
			Btu/h	3,100—25,600		
		17°FDB (Outdoor temp.)*1	Rated	kW	4.63	
			Btu/h	15,800		
Max.	kW		5.66			
Btu/h	19,300					
5°FDB (Outdoor temp.)*2	Rated	kW	4.92			
	Btu/h	16,800				
Input power	Cooling	Rated	kW	1.44		
				Min.—Max.	0.14—2.01	
		Heating	47°FDB (Outdoor temp.)	Rated	1.98	
				Min.—Max.	0.15—2.86	
	17°FDB (Outdoor temp.)*1		Rated	1.59		
			Max.	2.40		
	5°FDB (Outdoor temp.)*2	Rated	2.22			
		Fan	HIGH	W	36	
			MED		28	
			LOW		21	
	QUIET		18			
	Current	Cooling	Rated	A	6.4	
Heating		8.8				
EER2	Cooling		Btu/hW	12.5		
COP2	Heating		kW/kW	3.2		
SEER2	Cooling		Btu/hW	22.5		
HSPF2	Heating		Btu/hW	10.6		
Power factor	Cooling		%	97.8		
	Heating		%	98.6		
Moisture removal			pints/h (L/h)	4.9 (2.3)		
Maximum operating current*3	Cooling		A	11.8		
	Heating			14.8		
Fan	Airflow rate	Cooling	CFM (m ³ /h)	HIGH (840)		
				MED (790)		
				LOW (710)		
				QUIET (650)		
		Heating	HIGH (840)			
			MED (790)			
			LOW (710)			
			QUIET (650)			
	Type × Qty			Sirocco fan × 2		
	Motor output		W	50		
Sound pressure level*4	Cooling	dB (A)	HIGH			
			MED			
			LOW			
			QUIET			
	Heating	dB (A)	HIGH			
			MED			
			LOW			
			QUIET			
			HIGH			
			QUIET			
Heat exchanger type	Dimensions (H × W × D)		in (mm)	11-9/16 × 28-1/8 × 1-9/16 (294 × 715 × 39.9)		
	Fin pitch		FPI	20		
	Rows × Stages			3 × 14		
	Pipe type			Copper tube		
	Fin type			Aluminum		
Enclosure	Material			Steel sheet		
	Color			White		
Dimensions (H × W × D)	Net	in (mm)	Approximate color of Munsell N9.25/ 9-1/4 × 42-1/2 × 27-3/4 (235 × 1,080 × 705)			
	Gross		13 × 45-7/8 × 32-1/2 (330 × 1,165 × 825)			
Weight	Net	lb (kg)	53 (24)			
	Gross		73 (33)			
Connection pipe	Size	Liquid Gas	in (mm)	Ø1/4 (Ø6.35)		
				Ø1/2 (Ø12.70)		
Drain hose	Method			Flare		
	Material			PVC		
Operation range	Tip diameter	in (mm)	Ø13/16 (Ø20.7) (I.D.), Ø1-1/16 (Ø26.6) (O.D.)			
			Cooling	°F (°C)	64 to 90 (18 to 32)	
Remote controller	Heating	°F (°C)	%RH			
			80 or less			
			60 to 86 (16 to 30)			
				Option: Wired, Wireless, Mobile app*5 (AIRSTAGE Mobile)		

Type	Ceiling
	Inverter, Heat pump
Model name	ABUH18LUAS
<p>NOTES:</p> <ul style="list-style-type: none"> • Specifications are based on the following conditions: <ul style="list-style-type: none"> – Cooling: Indoor temperature of 80°FDB/67°FWB (26.67°CDB/19.44°CWB), and outdoor temperature of 95°FDB/75°FWB (35°CDB/23.9°CWB). – Heating: Indoor temperature of 70°FDB/60°FWB (21.11°CDB/15.56°CWB), and outdoor temperature of 47°FDB/43°FWB (8.33°CDB/6.11°CWB). – *1: Heating (17°F): Indoor temperature of 70°FDB/60°FWB (21.11°CDB/15.56°CWB), and outdoor temperature of 17°FDB/15°FWB (-8.33°CDB/-9.44°CWB). – *2: Heating (5°F): Indoor temperature of 70°FDB/60°FWB (21.11°CDB/15.56°CWB), and outdoor temperature of 5°FDB/4°FWB (-15.0°CDB/-15.56°CWB). – Test conditions are based on AHRI 210/240 2023. – Pipe length: 25 ft (7.5 m), Height difference: 0 ft (0 m). (Between outdoor unit and indoor unit.) • Protective function might work when using it outside the operation range. • *3: Maximum current: <ul style="list-style-type: none"> – The maximum value when operated within the operation range. – The total current of indoor unit and outdoor unit. • *4: Sound pressure level: <ul style="list-style-type: none"> – Measured values in manufacturer's anechoic chamber. – Because of the surrounding sound environment, the sound levels measured in actual installation conditions might be higher than the specified values here. • *5: Available on Google Play™ store or on App Store®. Optional WLAN Adapter is also required. For details, refer to the setting manual. 	

Type				Ceiling		
				Inverter, Heat pump		
Model name				ABUH24LUAS	ABUH30LUAS	
Power supply intake				Outdoor unit		
System power supply		Voltage		208/230		
		Frequency		60		
		Available voltage range		187—253		
Indoor unit power supply (from outdoor unit)				208/230		
Capacity	Cooling	Rated	kW	7.03	8.79	
			Btu/h	24,000	30,000	
		Min.—Max.	kW	1.58—8.21	2.81—10.26	
			Btu/h	5,400—28,000	9,600—35,000	
	Heating	47°FDB (Outdoor temp.)	Rated	kW	7.91	9.38
			Btu/h	27,000	32,000	
		Min.—Max.	kW	1.58—9.38	2.70—11.14	
			Btu/h	5,400—32,000	9,200—38,000	
		17°FDB (Outdoor temp.)*1	Rated	kW	5.13	6.15
			Btu/h	17,500	21,000	
Max.	kW		7.62	9.05		
	Btu/h		26,000	30,900		
5°FDB (Outdoor temp.)*2	Rated	kW	6.92	8.21		
	Btu/h	23,600	28,000			
Input power	Cooling	Rated	kW	1.95	2.78	
			Btu/h	0.42—2.82	0.40—3.63	
		Min.—Max.	kW	2.04	2.48	
			Btu/h	0.47—3.00	0.63—3.83	
	Heating	47°FDB (Outdoor temp.)	Rated	kW	1.67	2.00
			Btu/h	3.24	3.92	
		17°FDB (Outdoor temp.)*1	Rated	kW	3.33	3.95
			Btu/h	3.33	3.95	
	5°FDB (Outdoor temp.)*2	Rated	kW	48	69	
			Btu/h	27	38	
MED		kW	19	26		
		Btu/h	12	16		
Fan	HIGH	Rated	A	8.7	12.3	
			W	9.0	11.0	
	LOW	kW	12.3	10.8		
		Btu/hW	3.88	3.78		
QUIET	Cooling	SEER2	21.5	20.0		
	Heating	HSPF2	10.5			
Power factor		Cooling	%	97.5	98.3	
		Heating		98.6	98.0	
Moisture removal			pints/h (L/h)	6.1 (2.9)	8.2 (3.9)	
Maximum operating current*3		Cooling	A	15.8	18.3	
		Heating		15.8	18.3	
Fan	Airflow rate	Cooling	HIGH	724 (1,230)	824 (1,400)	
			MED	583 (990)	659 (1,120)	
			LOW	506 (860)	577 (980)	
			QUIET	412 (700)	471 (800)	
		Heating	HIGH	724 (1,230)	824 (1,400)	
			MED	583 (990)	659 (1,120)	
			LOW	506 (860)	577 (980)	
			QUIET	412 (700)	471 (800)	
	Type × Qty		Sirocco fan × 3			
	Motor output		W		80	
Sound pressure level*4	Cooling	HIGH	dB (A)	41	45	
				36	40	
		LOW	32	35		
			29	32		
	Heating	HIGH	dB (A)	41	45	
				36	40	
		LOW	32	35		
			29	32		
Heat exchanger type		Dimensions (H × W × D)	in (mm)	11-9/16 × 40-3/8 × 1-9/16 (294 × 1,025 × 39.9)		
		Fin pitch	FPI	20		
		Rows × Stages		3 × 14		
		Pipe type		Copper tube		
		Fin type		Aluminum		
Enclosure		Material	Steel sheet			
		Color	White Approximate color of Munsell N9.25/			
Dimensions (H × W × D)	Net		in (mm)	9-1/4 × 54-3/4 × 27-3/4 (235 × 1,390 × 705)		
	Gross			13 × 58-1/16 × 32-1/2 (330 × 1,475 × 825)		
Weight	Net		lb (kg)	68 (31)		
	Gross			90 (41)		
Connection pipe	Size	Liquid	in (mm)	Ø3/8 (Ø9.52)		
		Gas		Ø5/8 (Ø15.88)		
Method		Flare				
Material		PVC				
Tip diameter		Ø13/16 (Ø20.7) (I.D.), Ø1-1/16 (Ø26.6) (O.D.)				
Operation range		Cooling	°F (°C)	64 to 90 (18 to 32)		
			%RH	80 or less		
		Heating	°F (°C)	60 to 86 (16 to 30)		
Remote controller			Option: Wired, Wireless, Mobile app*5 (AIRSTAGE Mobile)			

Type	Ceiling	
	Inverter, Heat pump	
Model name	ABUH24LUAS	ABUH30LUAS
<p>NOTES:</p> <ul style="list-style-type: none"> • Specifications are based on the following conditions: <ul style="list-style-type: none"> – Cooling: Indoor temperature of 80°FDB/67°FWB (26.67°CDB/19.44°CWB), and outdoor temperature of 95°FDB/75°FWB (35°CDB/23.9°CWB). – Heating: Indoor temperature of 70°FDB/60°FWB (21.11°CDB/15.56°CWB), and outdoor temperature of 47°FDB/43°FWB (8.33°CDB/6.11°CWB). – *1: Heating (17°F): Indoor temperature of 70°FDB/60°FWB (21.11°CDB/15.56°CWB), and outdoor temperature of 17°FDB/15°FWB (-8.33°CDB/-9.44°CWB). – *2: Heating (5°F): Indoor temperature of 70°FDB/60°FWB (21.11°CDB/15.56°CWB), and outdoor temperature of 5°FDB/4°FWB (-15.0°CDB/-15.56°CWB). – Test conditions are based on AHRI 210/240 2023. – Pipe length: 25 ft (7.5 m), Height difference: 0 ft (0 m). (Between outdoor unit and indoor unit.) • Protective function might work when using it outside the operation range. • *3: Maximum current: <ul style="list-style-type: none"> – The maximum value when operated within the operation range. – The total current of indoor unit and outdoor unit. • *4: Sound pressure level: <ul style="list-style-type: none"> – Measured values in manufacturer's anechoic chamber. – Because of the surrounding sound environment, the sound levels measured in actual installation conditions might be higher than the specified values here. • *5: Available on Google Play™ store or on App Store®. Optional WLAN Adapter is also required. For details, refer to the setting manual. 		

Type				Ceiling				
				Inverter, Heat pump				
Model name				ABUH36LUAS				
Power supply intake				Outdoor unit				
System power supply		Voltage		208/230				
		Frequency		60				
		Available voltage range		187—253				
Indoor unit power supply (from outdoor unit)				208/230				
Capacity	Cooling		Rated	kW	10.55			
			Min.—Max.		Btu/h	36,000		
			Min.—Max.		kW	2.81—11.43		
			Min.—Max.		Btu/h	9,600—39,000		
	Heating		47°FDB (Outdoor temp.)		Rated	kW	11.14	
			47°FDB (Outdoor temp.)		Min.—Max.		Btu/h	38,000
			47°FDB (Outdoor temp.)		Min.—Max.		kW	2.7—12.6
			47°FDB (Outdoor temp.)		Min.—Max.		Btu/h	9,200—43,000
			17°FDB (Outdoor temp.)*1		Rated	kW	7.09	
			17°FDB (Outdoor temp.)*1		Max.	kW	10.11	
17°FDB (Outdoor temp.)*1		Max.	Btu/h	34,500				
5°FDB (Outdoor temp.)*2		Rated	kW	9.09				
5°FDB (Outdoor temp.)*2		Rated	Btu/h	31,000				
Input power	Cooling		Rated	3.75				
			Min.—Max.		0.38—4.22			
			47°FDB (Outdoor temp.)		Rated	2.96		
			47°FDB (Outdoor temp.)		Min.—Max.	0.59—4.13		
	Heating		17°FDB (Outdoor temp.)*1		Rated	2.41		
			17°FDB (Outdoor temp.)*1		Max.	4.27		
			5°FDB (Outdoor temp.)*2		Rated	4.33		
			5°FDB (Outdoor temp.)*2		Rated	4.33		
	Fan		HIGH	94				
			MED	51				
LOW			34					
QUIET			22					
Current		Cooling	16.5					
Current		Heating	13.0					
EER2		Cooling	9.60					
COP2		Heating	3.76					
SEER2		Cooling	19.5					
HSPF2		Heating	10.0					
Power factor		Cooling	98.8					
		Heating	99.0					
Moisture removal				pints/h (L/h)				
Maximum operating current*3				A				
Maximum operating current*3				19.8				
Maximum operating current*3				19.8				
Fan	Airflow rate		Cooling		HIGH	1,089 (1,850)		
					MED	865 (1,470)		
					LOW	765 (1,300)		
					QUIET	618 (1,050)		
			Heating		HIGH	1,059 (1,800)		
					MED	865 (1,470)		
					LOW	765 (1,300)		
					QUIET	618 (1,050)		
	Type × Qty		Sirocco fan × 4					
	Motor output		W		110			
Sound pressure level*4		Cooling		HIGH	44			
				MED	40			
				LOW	37			
				QUIET	32			
		Heating		HIGH	44			
				MED	40			
				LOW	37			
				QUIET	32			
Heat exchanger type		Dimensions (H × W × D)		in (mm)				
		Dimensions (H × W × D)		11-9/16 × 52-9/16 × 1-9/16 (294 × 1,335 × 39.9)				
		Fin pitch		FPI		20		
		Rows × Stages		3 × 14				
		Pipe type		Copper tube				
		Fin type		Aluminum				
Enclosure		Material		Steel sheet				
		Color		White				
				Approximate color of Munsell N9.25/				
Dimensions (H × W × D)		Net		9-1/4 × 66-15/16 × 27-3/4 (235 × 1,700 × 705)				
		Gross		13 × 70-1/4 × 32-1/2 (330 × 1,785 × 825)				
Weight		Net		84 (38)				
		Gross		106 (48)				
Connection pipe		Size		in (mm)				
		Size		Liquid		Ø3/8 (Ø9.52)		
				Gas		Ø5/8 (Ø15.88)		
		Method		Flare				
Drain hose		Material		PVC				
		Tip diameter		in (mm)		Ø13/16 (Ø20.7) (I.D.), Ø1-1/16 (Ø26.6) (O.D.)		
Operation range		Cooling		°F (°C)		64 to 90 (18 to 32)		
		Cooling		%RH		80 or less		
		Heating		°F (°C)		60 to 86 (16 to 30)		
Remote controller				Option: Wired, Wireless, Mobile app*5 (AIRSTAGE Mobile)				

Type	Ceiling
	Inverter, Heat pump
Model name	ABUH36LUAS
<p>NOTES:</p> <ul style="list-style-type: none"> • Specifications are based on the following conditions: <ul style="list-style-type: none"> – Cooling: Indoor temperature of 80°FDB/67°FWB (26.67°CDB/19.44°CWB), and outdoor temperature of 95°FDB/75°FWB (35°CDB/23.9°CWB). – Heating: Indoor temperature of 70°FDB/60°FWB (21.11°CDB/15.56°CWB), and outdoor temperature of 47°FDB/43°FWB (8.33°CDB/6.11°CWB). – *1: Heating (17°F): Indoor temperature of 70°FDB/60°FWB (21.11°CDB/15.56°CWB), and outdoor temperature of 17°FDB/15°FWB (-8.33°CDB/-9.44°CWB). – *2: Heating (5°F): Indoor temperature of 70°FDB/60°FWB (21.11°CDB/15.56°CWB), and outdoor temperature of 5°FDB/4°FWB (-15.0°CDB/-15.56°CWB). – Test conditions are based on AHRI 210/240 2023. – Pipe length: 25 ft (7.5 m), Height difference: 0 ft (0 m). (Between outdoor unit and indoor unit.) • Protective function might work when using it outside the operation range. • *3: Maximum current: <ul style="list-style-type: none"> – The maximum value when operated within the operation range. – The total current of indoor unit and outdoor unit. • *4: Sound pressure level: <ul style="list-style-type: none"> – Measured values in manufacturer's anechoic chamber. – Because of the surrounding sound environment, the sound levels measured in actual installation conditions might be higher than the specified values here. • *5: Available on Google Play™ store or on App Store®. Optional WLAN Adapter is also required. For details, refer to the setting manual. 	

1-2. Outdoor unit

Type			Inverter, Heat pump		
Model name			AOUH18LUAS1	AOUH24LUAS1	
Power supply			208/230 V~ 60 Hz		
Power supply intake			Outdoor unit		
Available voltage range			187—253 V		
Starting current			A		
			8.1	10.3	
Fan	Airflow rate	Cooling	CFM (m ³ /h)	1,395 (2,370)	2,187 (3,715)
		Heating			
	Type × Qty	Propeller fan × 1			
Motor output			W	49	100
Sound pressure level*			Cooling	52	
			Heating	55	54
Heat exchanger type			Dimensions (H × W × D)	Main 1: 23-1/8 × 34-11/16 × 11/16 (588 × 881 × 18.19)	Main 1: 29-3/4 × 35-5/8 × 11/16 (756 × 905 × 18.19)
			Fin pitch	Main 1: 20 Main 2: 20	Main 1: 18 Main 2: 18
			Rows × Stages	Main 1: 1 × 28 Main 2: 1 × 28	Main 1: 1 × 36 Main 2: 1 × 36
			Pipe type	Copper tube	
			Fin type	Aluminum	
			Type (Material)	PC fin	
			Surface treatment	DC rotary	DC twin rotary
Compressor			Motor output	W	1,030
Refrigerant			Type	R410A	
			Charge	lb oz	2 lb 12 oz
				g	1,250
Refrigerant oil			Type	POE (RB68)	
			Amount	in ³ (cm ³)	24.4 (400)
					48.8 (800)
Enclosure			Material	Steel sheet	
			Color	Beige	
				Approximate color of Munsell 10YR 7.5/1.0	
Dimensions (H × W × D)			Net	24-7/8 × 31-7/16 × 11-7/16 (632 × 799 × 290)	31 × 37 × 12-5/8 (788 × 940 × 320)
			Gross	27-1/4 × 37 × 14-3/4 (692 × 940 × 375)	38-1/16 × 40-7/16 × 17-1/2 (966 × 1,027 × 445)
Weight			Net	86 (39)	117 (53)
			Gross	95 (43)	134 (61)
Connection pipe			Size	Liquid	Ø1/4 (Ø6.35)
				Gas	Ø1/2 (Ø12.70)
			Method	Flare	
			Pre-charge length	66 (20)	
			Max. length	98 (30)	164 (50)
			Max. height difference	49 (15)	98 (30)
Operation range			Cooling	14 to 115 (-10 to 46)	-5 to 115 (-21 to 46)
			Heating	-5 to 75 (-21 to 24)	
Drain hose			Material	LDPE	
			Tip diameter	Ø1/2 (Ø13.0) (I.D.) Ø5/8 to Ø11/16 (Ø16.0 to Ø16.7) (O.D.)	

NOTES:

- Specifications are based on the following conditions:
 - Cooling: Indoor temperature of 80°FDB (26.67°CDB)/67°FWB (19.44°CWB), and outdoor temperature of 95°FDB (35°CDB)/75°FWB (23.9°CWB).
 - Heating: Indoor temperature of 70°FDB (21.11°CDB)/60°FWB (15.56°CWB), and outdoor temperature of 47°FDB (8.33°CDB)/43°FWB (6.11°CWB).
 - Pipe length: 25 ft (7.5 m), Height difference: 0 ft (0 m). (Between outdoor unit and indoor unit.)
- Protective function might work when using it outside the operation range.
- *: Sound pressure level
 - Measured values in manufacturer's anechoic chamber.
 - Because of the surrounding sound environment, the sound levels measured in actual installation conditions might be higher than the specified values here.

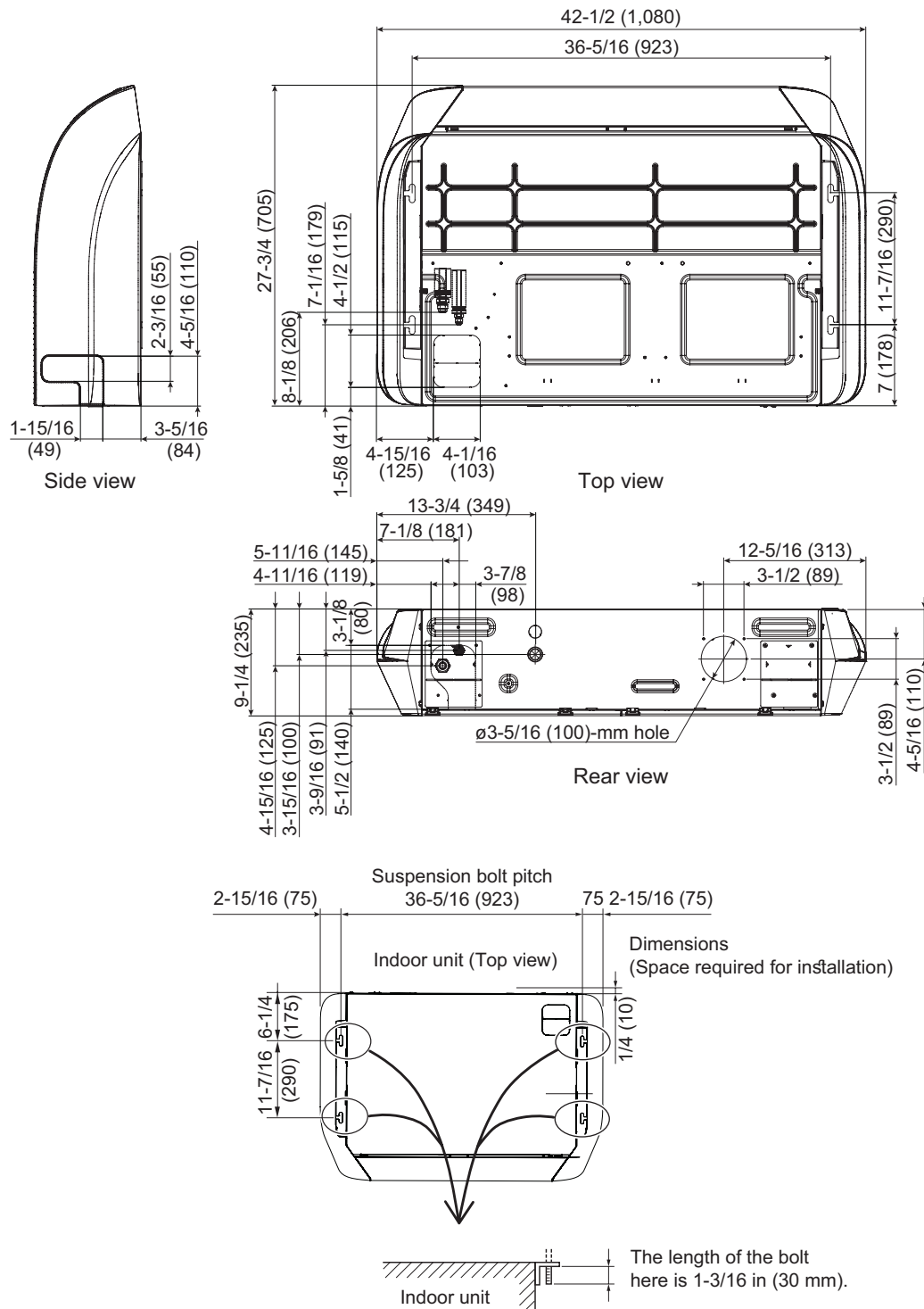
Type			Inverter, Heat pump		
Model name			AOUH30LUAS1	AOUH36LUAS1	
Power supply			208/230 V~ 60 Hz		
Power supply intake			Outdoor unit		
Available voltage range			187—253 V		
Starting current			A		
			13.4	16.5	
Fan	Airflow rate	Cooling	CFM (m ³ /h)	2,301 (3,910)	2,502 (4,250)
		Heating			
	Type × Qty	Propeller fan × 1			
Motor output			W	120	
Sound pressure level*			dB (A)	Cooling	53
				Heating	55
Heat exchanger type	Dimensions (H × W × D)		in (mm)	Main 1: 38-1/16 × 35-5/8 × 11/16 (966 × 905 × 18.19)	
				Main 2: 38-1/16 × 35-5/8 × 11/16 (966 × 905 × 18.19)	
	Fin pitch		FPI	Main 1: 18 Main 2: 18	
	Rows × Stages		Main 1: 1 × 46 Main 2: 1 × 46		
	Pipe type		Copper tube		
	Fin type		Type (Material)	Aluminum	
		Surface treatment	Blue fin		
Compressor			Type	DC twin rotary	
Motor output			W	1,830	
Refrigerant			Type	R410A	
Charge			lb oz	5 lb 8 oz	
			g	2,500	
Refrigerant oil			Type	POE (RB68)	
Amount			in ³ (cm ³)	48.8 (800)	
Enclosure			Material	Steel sheet	
Color			Beige Approximate color of Munsell 10YR 7.5/1.0		
Dimensions (H × W × D)	Net		in (mm)	39-5/16 × 37 × 12-5/8 (998 × 940 × 320)	
	Gross			46-5/16 × 40-7/16 × 17-1/2 (1,176 × 1,027 × 445)	
Weight	Net		lb (kg)	139 (63)	
	Gross			159 (72)	
Connection pipe	Size	Liquid	in (mm)	Ø3/8 (Ø9.52)	
		Gas		Ø5/8 (Ø15.88)	
		Method		Flare	
	Pre-charge length		ft (m)	66 (20)	
	Max. length			164 (50)	
Max. height difference		98 (30)			
Operation range			Cooling	-5 to 115 (-21 to 46)	
			Heating	-5 to 75 (-21 to 24)	
Drain hose			Material	LDPE	
Tip diameter			in (mm)	Ø1/2 (Ø13.0) (I.D.) Ø5/8 to Ø11/16 (Ø16.0 to Ø16.7) (O.D.)	
NOTES:					
<ul style="list-style-type: none"> • Specifications are based on the following conditions: <ul style="list-style-type: none"> – Cooling: Indoor temperature of 80°FDB (26.67°CDB)/67°FWB (19.44°CWB), and outdoor temperature of 95°FDB (35°CDB)/75°FWB (23.9°CWB). – Heating: Indoor temperature of 70°FDB (21.11°CDB)/60°FWB (15.56°CWB), and outdoor temperature of 47°FDB (8.33°CDB)/43°FWB (6.11°CWB). – Pipe length: 25 ft (7.5 m), Height difference: 0 ft (0 m). (Between outdoor unit and indoor unit.) • Protective function might work when using it outside the operation range. • *: Sound pressure level <ul style="list-style-type: none"> – Measured values in manufacturer's anechoic chamber. – Because of the surrounding sound environment, the sound levels measured in actual installation conditions might be higher than the specified values here. 					

2. Dimensions

2-1. Indoor unit

■ Model: ABUH18LUAS

Unit: in (mm)

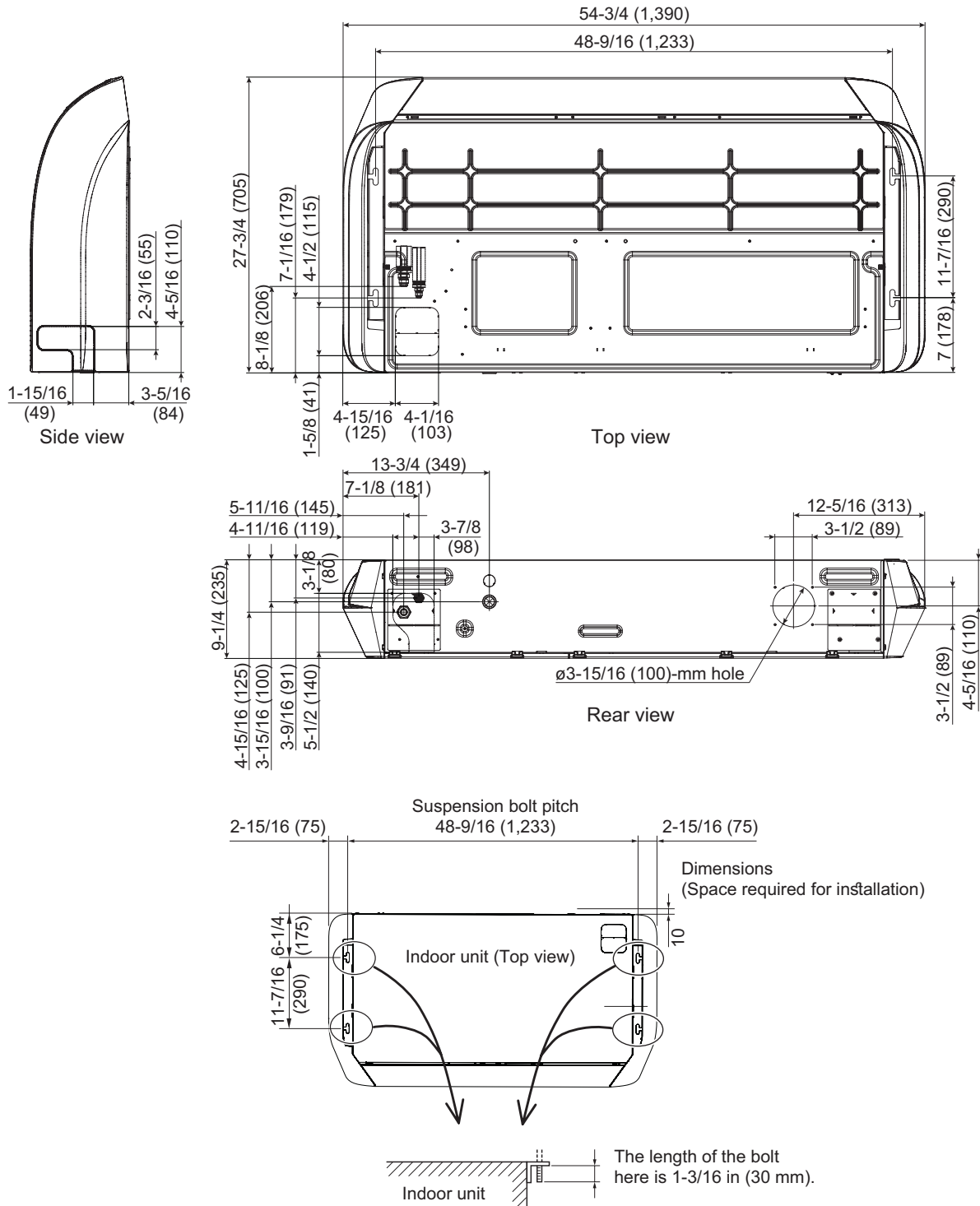


Models: ABUH24LUAS and ABUH30LUAS

Unit: in (mm)

GENERAL INFORMATION

GENERAL INFORMATION

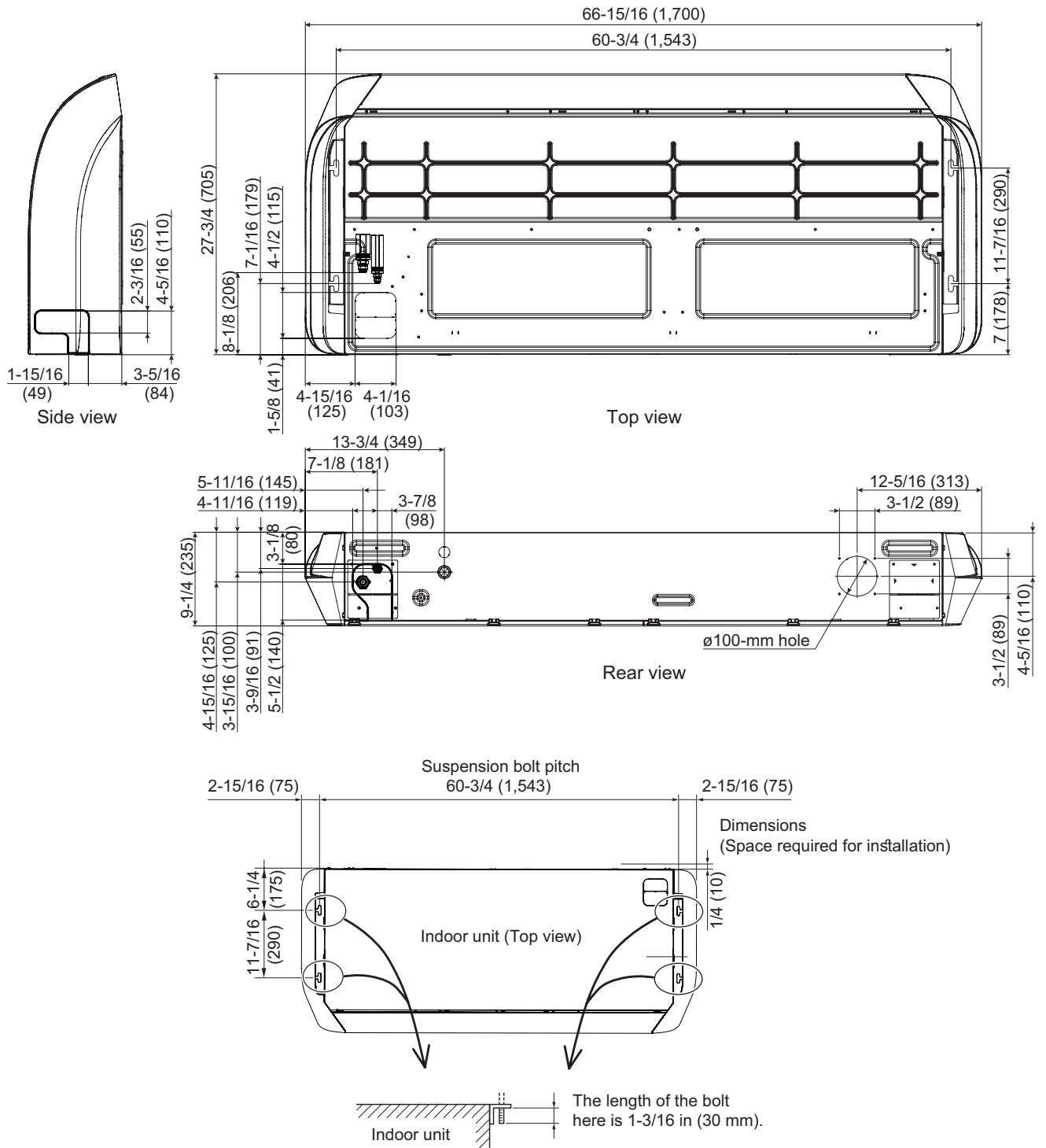


Model: ABUH36LUAS

Unit: in (mm)

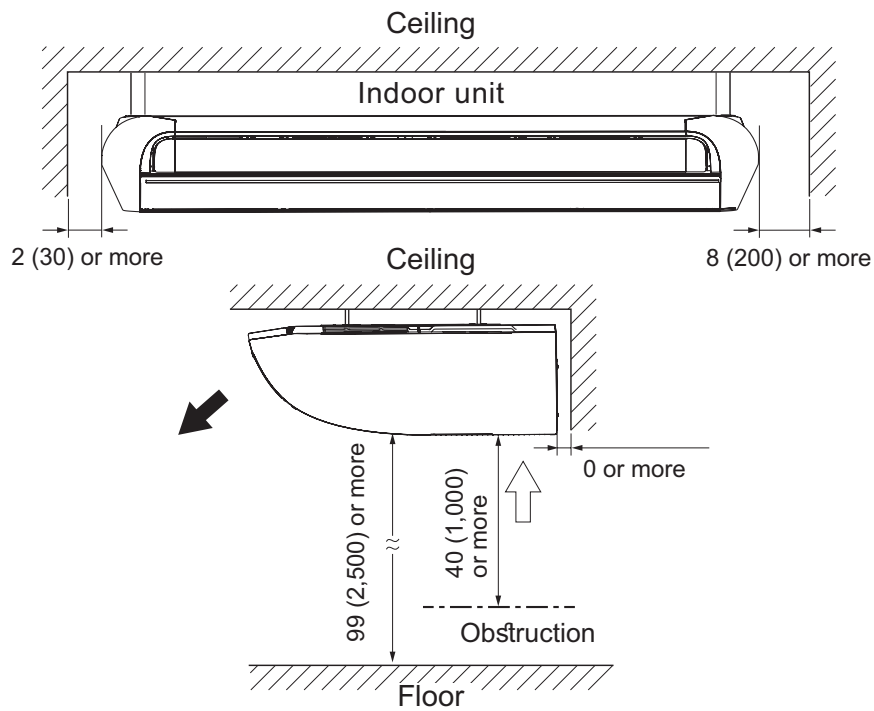
GENERAL INFORMATION

GENERAL INFORMATION



■ Installation space requirement

Unit: in (mm)



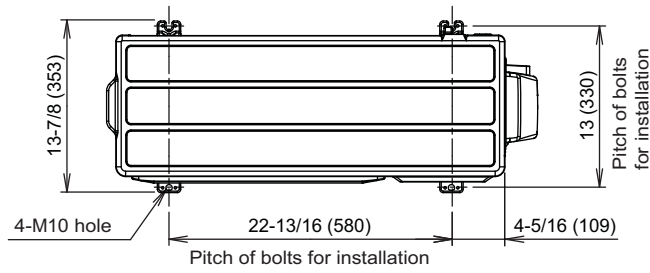
Required ceiling height varies according to the ceiling mode setting of function setting No. 20.

Ceiling height		
in (mm)		
Ceiling mode	Standard	High ceiling
18, 24, and 30 models	107 (2,700)	138 (3,500)
36 model	138 (3,500)	170 (4,300)

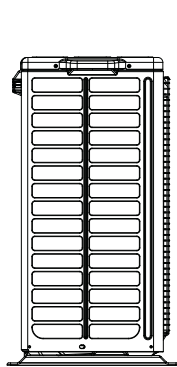
2-2. Outdoor unit

■ Model: AOUH18LUAS1

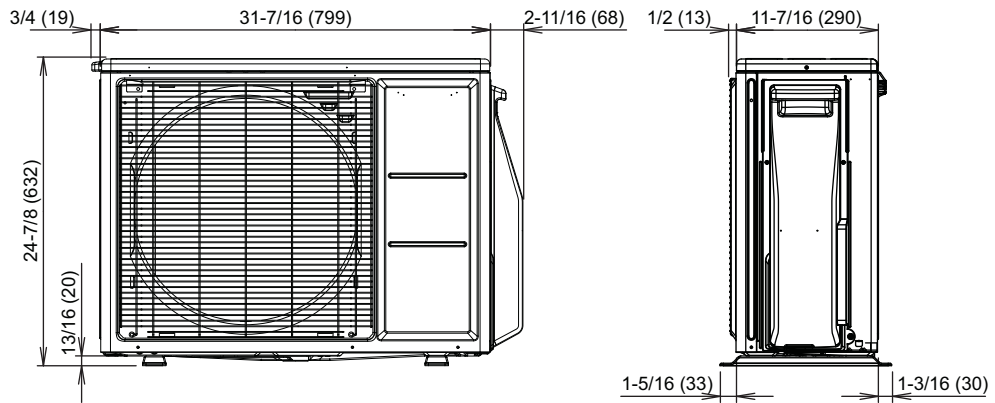
Unit: in (mm)



Top view



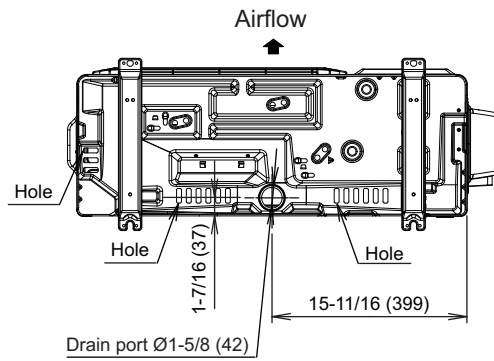
Side view



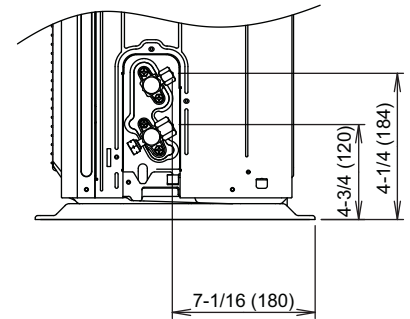
Front view



Side view



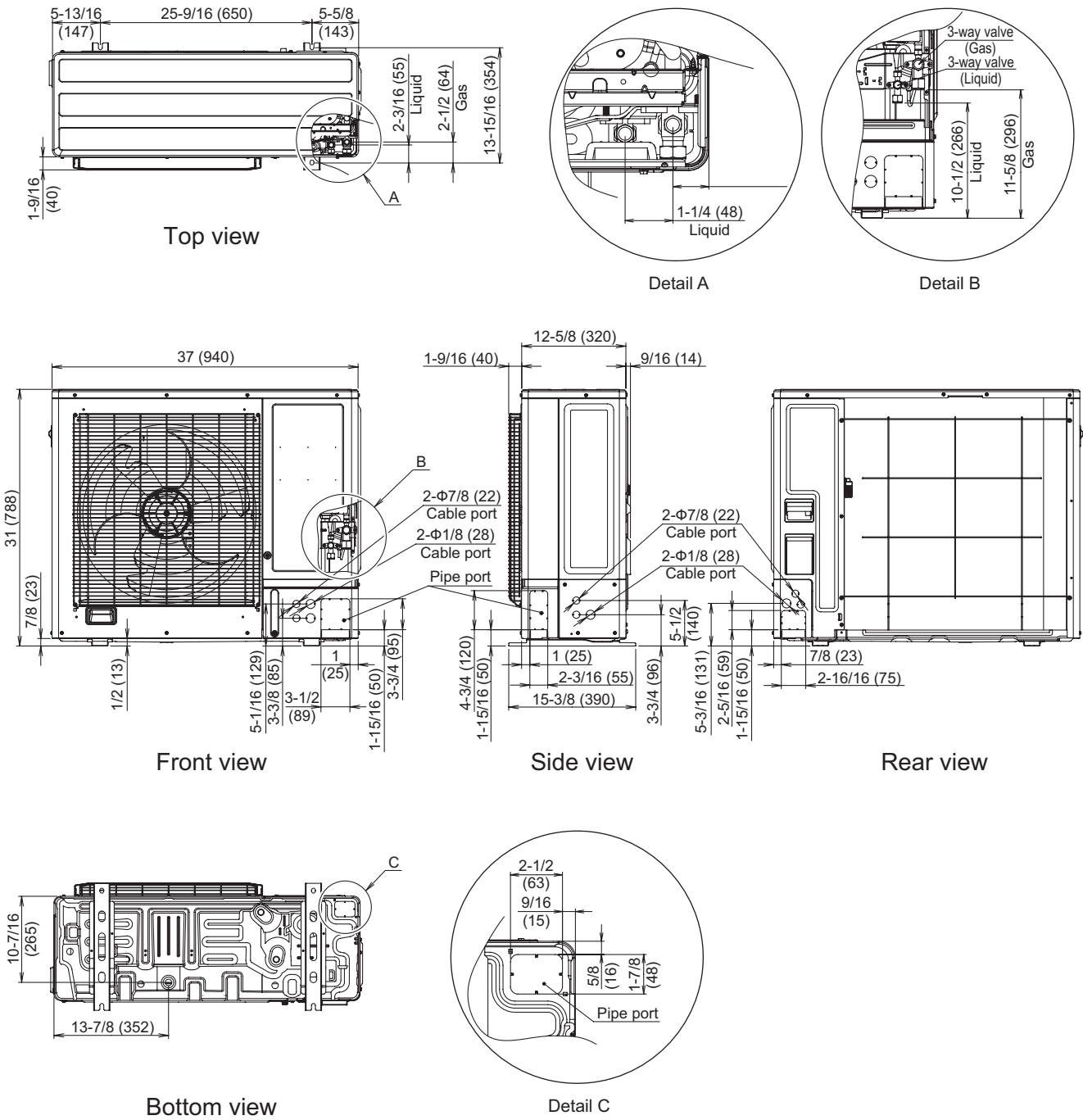
Bottom view



Side view (Valve part)

Model: AOUH24LUAS1

Unit: in (mm)

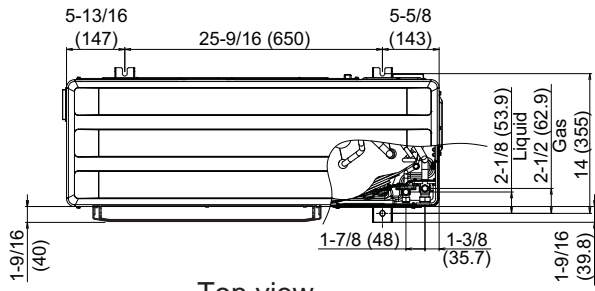


Models: AOUH30LUAS1 and AOUH36LUAS1

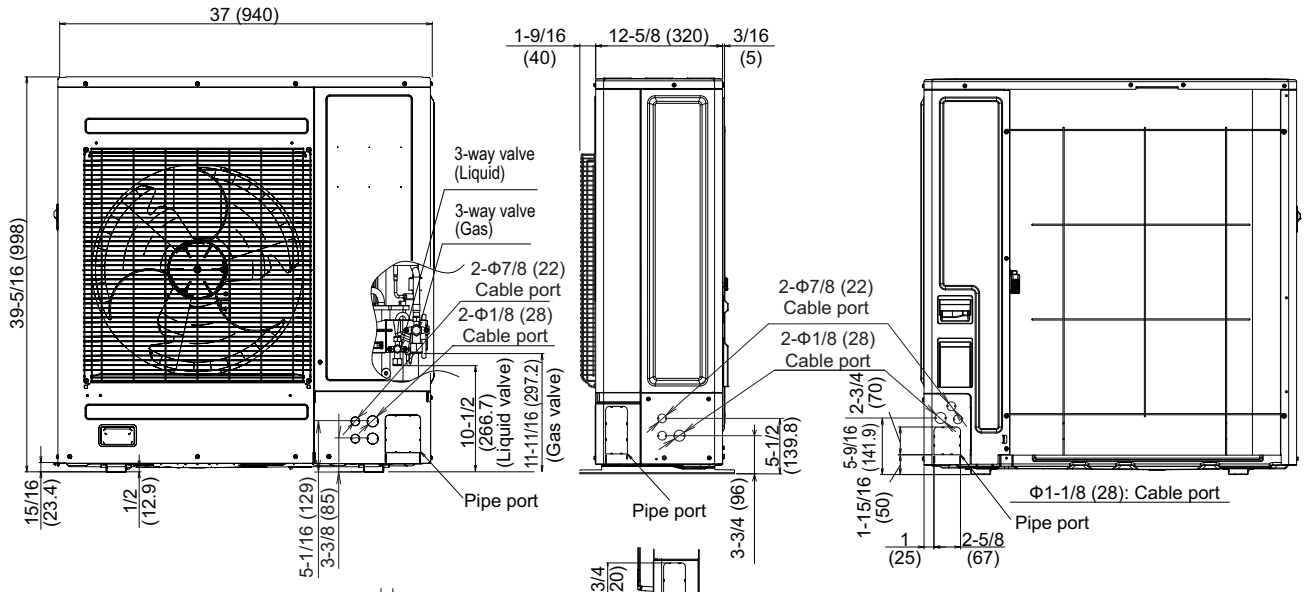
Unit: in (mm)

GENERAL INFORMATION

GENERAL INFORMATION



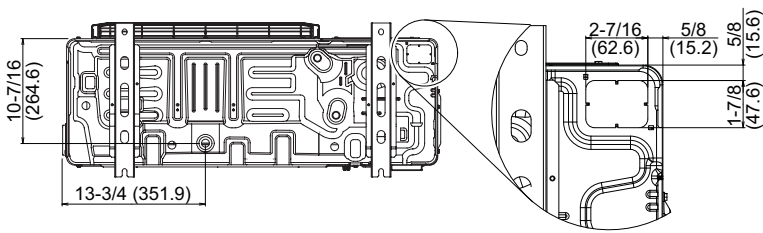
Top view



Front view

Side view

Rear view



Bottom view

Pipe & Cable port

2. TECHNICAL DATA AND PARTS LIST

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2. TECHNICAL DATA AND PARTS LIST

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1. Precautions

When you start servicing, pay attention to the following points. For detailed precautions, refer to the installation manual of the products.

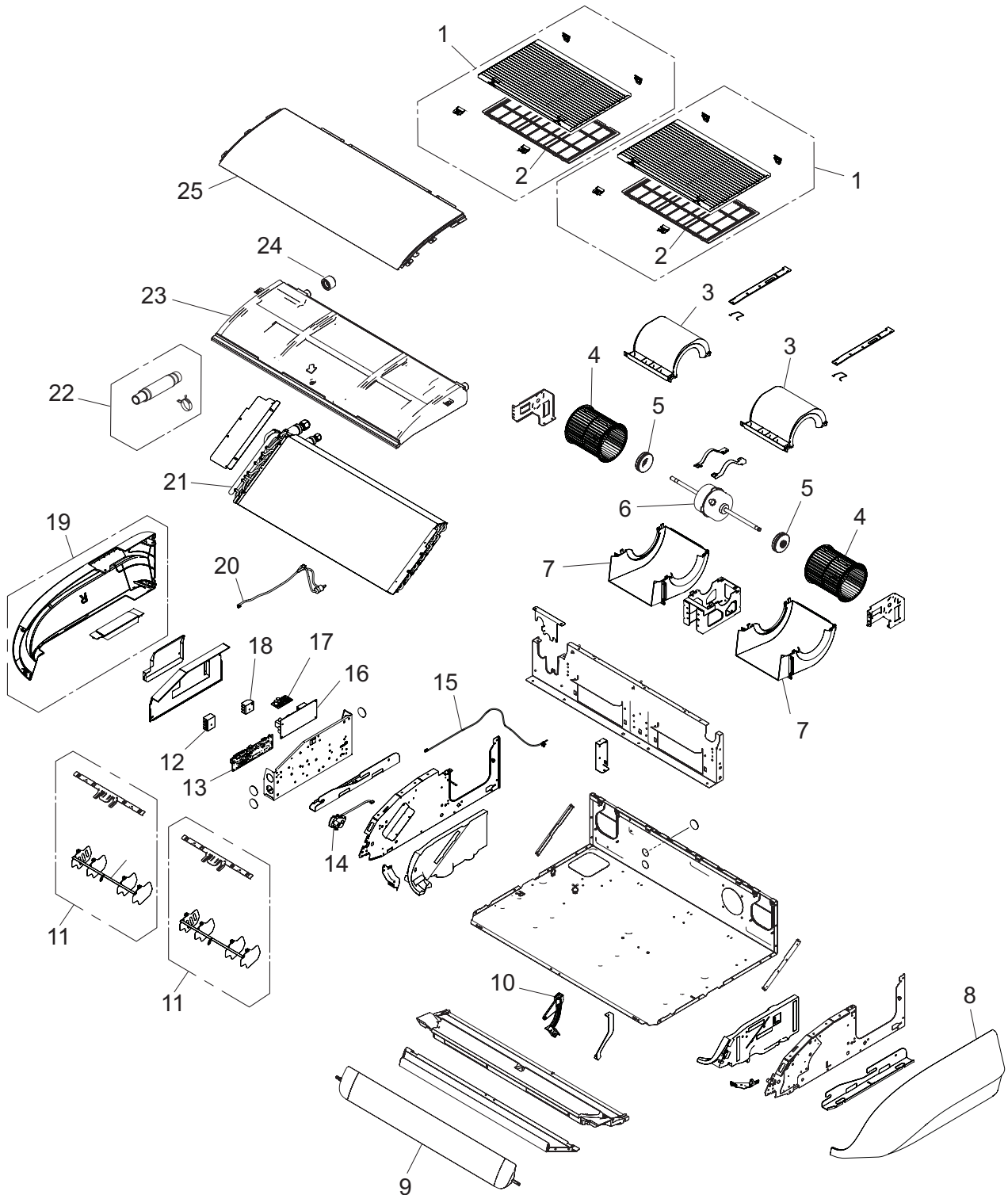
CAUTION

- Service personnel
 - Any person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorizes their competence to handle refrigerants safely in accordance with an industry recognized assessment specification.
 - Servicing shall only be performed as recommended by the equipment manufacturer. Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants.
 - Servicing shall be performed only as recommended by the manufacturer.
 - Work
 - Work in confined spaces shall be avoided.
 - The area around the workspace shall be sectioned off.
 - Electric shock may occur. After turning off the power, always wait 5 minutes before touching electrical components.
 - Do not touch the fins of the heat exchanger. Touching the heat exchanger fins could result in damage to the fins or personal injury such as skin rupture.
 - Do not place any other electrical products or household belongings under the product.
 - Condensation dripping from the product might get them wet, and may cause damage or malfunction to the property.
-
- Service parts information and design are subject to change without notice for product improvement.
 - For the latest information of the service parts, refer to our Service Portal.
<https://fujitsu-general.force.com/portal/>
 - Precise figure of the service parts listed in this manual may differ from the actual service parts.

2. Indoor unit parts list

2-1. Model: ABUH18LUAS

■ Chassis



TECHNICAL DATA
AND PARTS LIST

TECHNICAL DATA
AND PARTS LIST

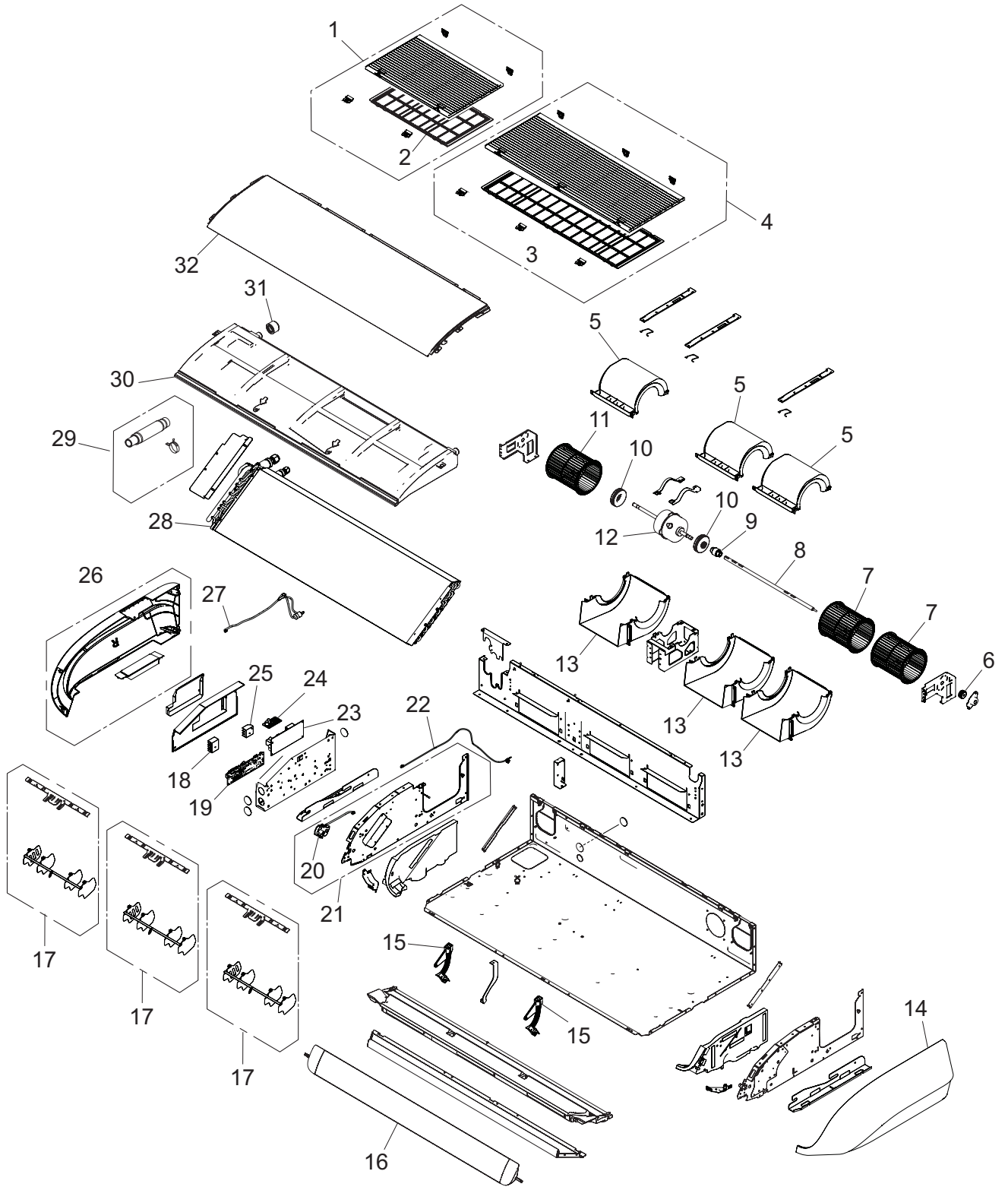
Item no.	Part no.	Part name	Service part
1	9384321015	Intake grille A sub assy	◆
2	9383342011	Air filter B	◆
3	9384307002	Casing U assy	◆
4	9384110015	Sirocco fan assy	◆
5	9383443008	Rubber (Vibration proof)	◆
6	9603817008	DC fan motor	◆
7	9384311009	Casing B assy	◆
8	9383406003	Side panel L	◆
9	9384144027	Flap assy (2-fan)	◆
10	9383386008	Flap hinge	◆
11	9384375001	L and R louver assy	◆
12	9900896027	Terminal (5P)	◆
13	9711870605	Main PCB	◆
14	9384312013	Gear box sub assy (including stepping motor)	◆
15	9900960049	Thermistor (Room)	◆
16	9710661068	Power supply PCB	◆
17	9710019005	2-way remote PCB	◆
18	9306489045	Terminal (3P)	◆
19	9384320001	Side panel R sub assy	◆
20	9900892029	Thermistor (Pipe)	◆
21	9384287106	Evaporator total assy	◆
22	9384324016	Drain hose sub assy	◆
23	9384364029	Drain pan total assy (2-fan)	◆
24	9358746004	Drain cap	◆
25	9384241023	Front panel (2-fan) assy	◆
—	9710171086	Wire with connector (CN54 on Main PCB—CN262 on Power supply PCB)	◆
—	9710206047	Wire with connector (CN55 on Main PCB—CN263 on Power supply PCB)	◆
—	9710343056	Wire with connector (CN300 on Main PCB—Terminal [5P])	◆
—	9710177095	Wire with connector (CN46 on Main PCB—Terminal [5P])	◆
—	9710703041	Wire with connector (CN205 on Power supply PCB—Terminal [3P])	◆

2-2. Models: ABUH24LUAS and ABUH30LUAS

■ Chassis

TECHNICAL DATA
AND PARTS LIST

TECHNICAL DATA
AND PARTS LIST



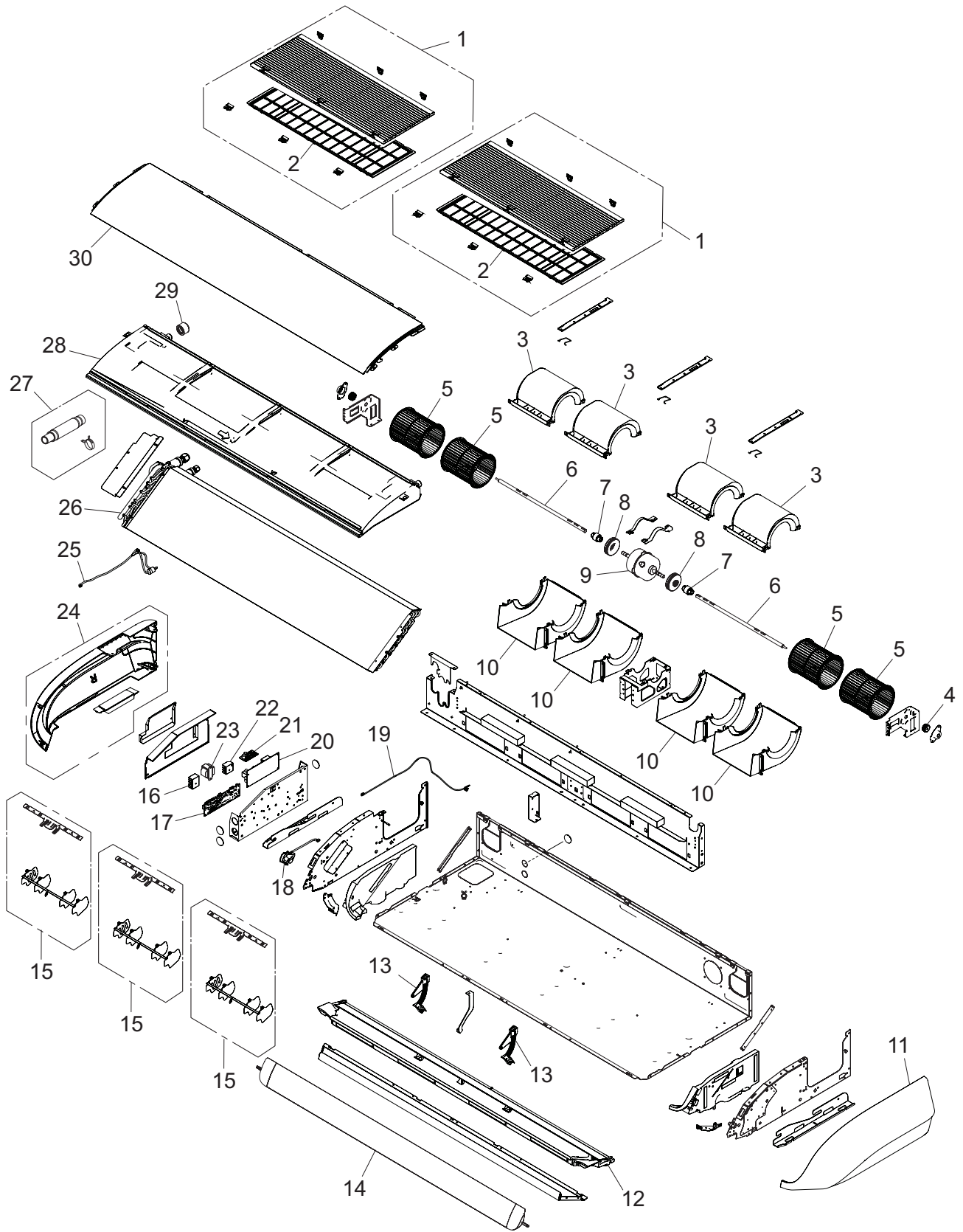
Item no.	Part no.	Part name	Service part
1	9384321015	Intake grille B sub assy	◆
2	9383342011	Air filter B	◆
3	9383342004	Air filter A	◆
4	9384321008	Intake grille A sub assy	◆
5	9384307002	Casing U assy	◆
6	9357921006	Bearing B assy	◆
7	9384110008	Sirocco fan assy	◆
8	9384270009	Shaft	◆
9	9378038011	Joint assy	◆
10	9383443008	Rubber (Vibration proof)	◆
11	9384110015	Sirocco fan assy	◆
12	9603816001	DC fan motor	◆
13	9384311009	Casing B assy	◆
14	9383406003	Side panel L	◆
15	9383386008	Flap hinge	◆
16	9384144010	Flap assy (3-fan)	◆
17	9384375001	L and R louver assy	◆
18	9900896027	Terminal (5P)	◆
19	9711870612	Main PCB (24 model)	◆
	9711870629	Main PCB (30 model)	◆
20	9384312013	Gear box sub assy (including stepping motor)	◆
21	9384306005	Side bracket R sub assy	◆
22	9900960049	Thermistor (Room)	◆
23	9710661068	Power supply PCB	◆
24	9710019005	2-way remote PCB	◆
25	9306489045	Terminal (3P)	◆
26	9384320001	Side panel R sub assy	◆
27	9900892029	Thermistor (Pipe)	◆
28	9384287113	Evaporator total assy	◆
29	9384324016	Drain hose sub assy	◆
30	9384364012	Drain pan total assy (3-fan)	◆
31	9358746004	Drain cap	◆
32	9384241016	Front panel (3-fan) assy	◆
—	9710171086	Wire with connector (CN54 on Main PCB—CN262 on Power supply PCB)	◆
—	9710206047	Wire with connector (CN55 on Main PCB—CN263 on Power supply PCB)	◆
—	9710343056	Wire with connector (CN300 on Main PCB—Terminal [5P])	◆
—	9710177095	Wire with connector (CN46 on Main PCB—Terminal [5P])	◆
—	9710703041	Wire with connector (CN205 on Power supply PCB—Terminal [3P])	◆

2-3. Model: ABUH36LUAS

■ Chassis

TECHNICAL DATA
AND PARTS LIST

TECHNICAL DATA
AND PARTS LIST

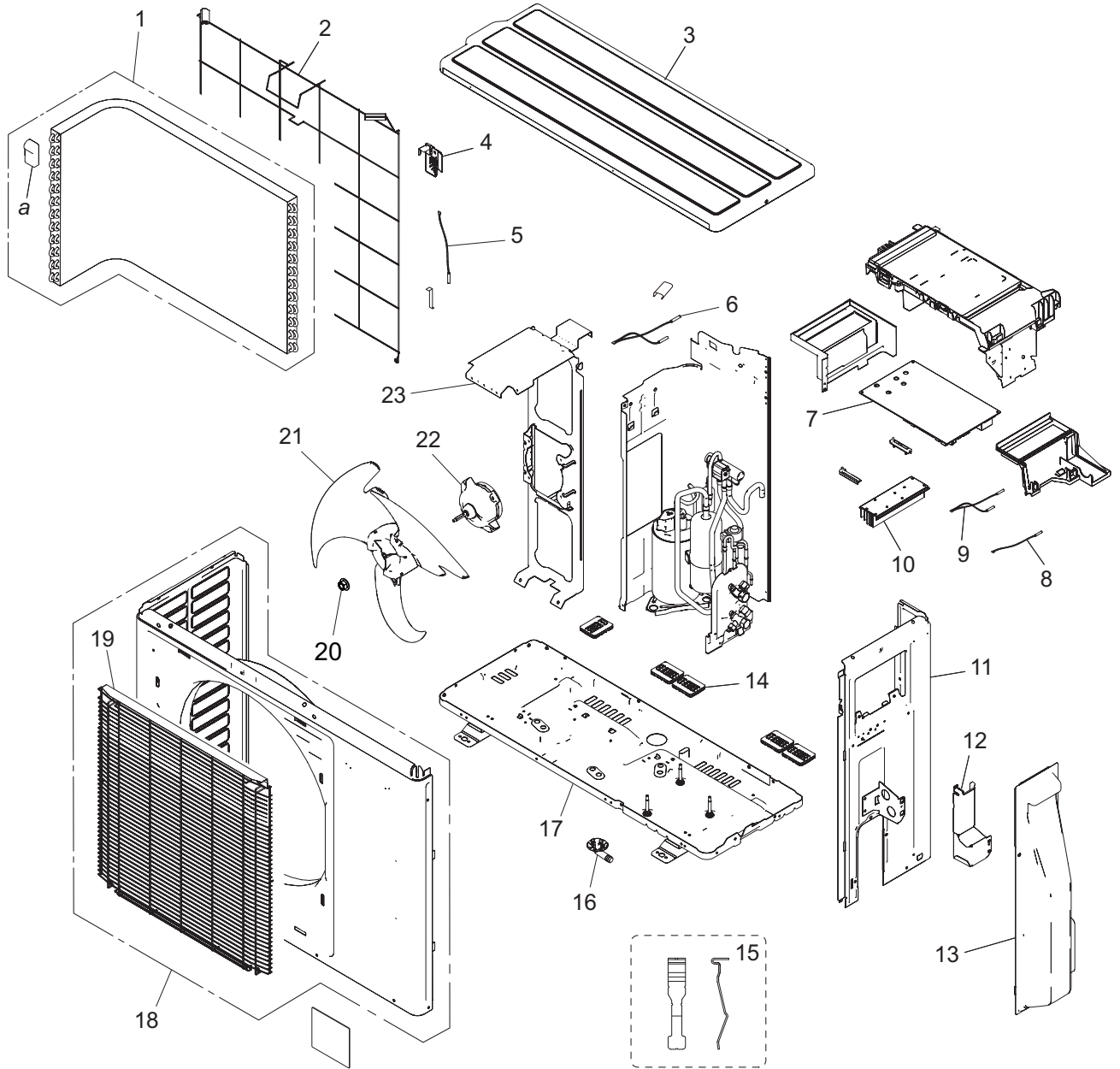


Item no.	Part no.	Part name	Service part
1	9384321008	Intake grille A sub assy	◆
2	9383342004	Air filter A	◆
3	9384307002	Casing U assy	◆
4	9357921006	Bearing B assy	◆
5	9384110008	Sirocco fan assy	◆
6	9384270009	Shaft	◆
7	9378038011	Joint assy	◆
8	9383443008	Rubber (Vibration proof)	◆
9	9603815004	DC fan motor	◆
10	9384311009	Casing B assy	◆
11	9383406003	Side panel L	◆
12	9384308009	Top panel cover assy (4-fan)	◆
13	9383386008	Flap hinge	◆
14	9384144003	Flap assy (4-fan)	◆
15	9384375001	L and R louver assy	◆
16	9900896027	Terminal (5P)	◆
17	9711870636	Main PCB	◆
18	9384312013	Gear box sub assy (including stepping motor)	◆
19	9900960049	Thermistor (Room)	◆
20	9710661075	Power supply PCB	◆
21	9710019005	2-way remote PCB	◆
22	9306489045	Terminal (3P)	◆
23	9707457056	Reactor assy	◆
24	9384320001	Side panel R sub assy	◆
25	9900892029	Thermistor (Pipe)	◆
26	9384287120	Evaporator total assy	◆
27	9384324016	Drain hose sub assy	◆
28	9384364005	Drain pan total assy (4-fan)	◆
29	9358746004	Drain cap	◆
30	9384241009	Front panel (4-fan) assy	◆
—	9710171086	Wire with connector (CN54 on Main PCB—CN262 on Power supply PCB)	◆
—	9710206047	Wire with connector (CN55 on Main PCB—CN263 on Power supply PCB)	◆
—	9710343056	Wire with connector (CN300 on Main PCB—Terminal [5P])	◆
—	9710177095	Wire with connector (CN46 on Main PCB—Terminal [5P])	◆
—	9710703041	Wire with connector (CN205 on Power supply PCB—Terminal [3P])	◆

3. Outdoor unit parts list

3-1. Model: AOUH18LUAS1

■ Exterior parts and chassis



TECHNICAL DATA
AND PARTS LIST

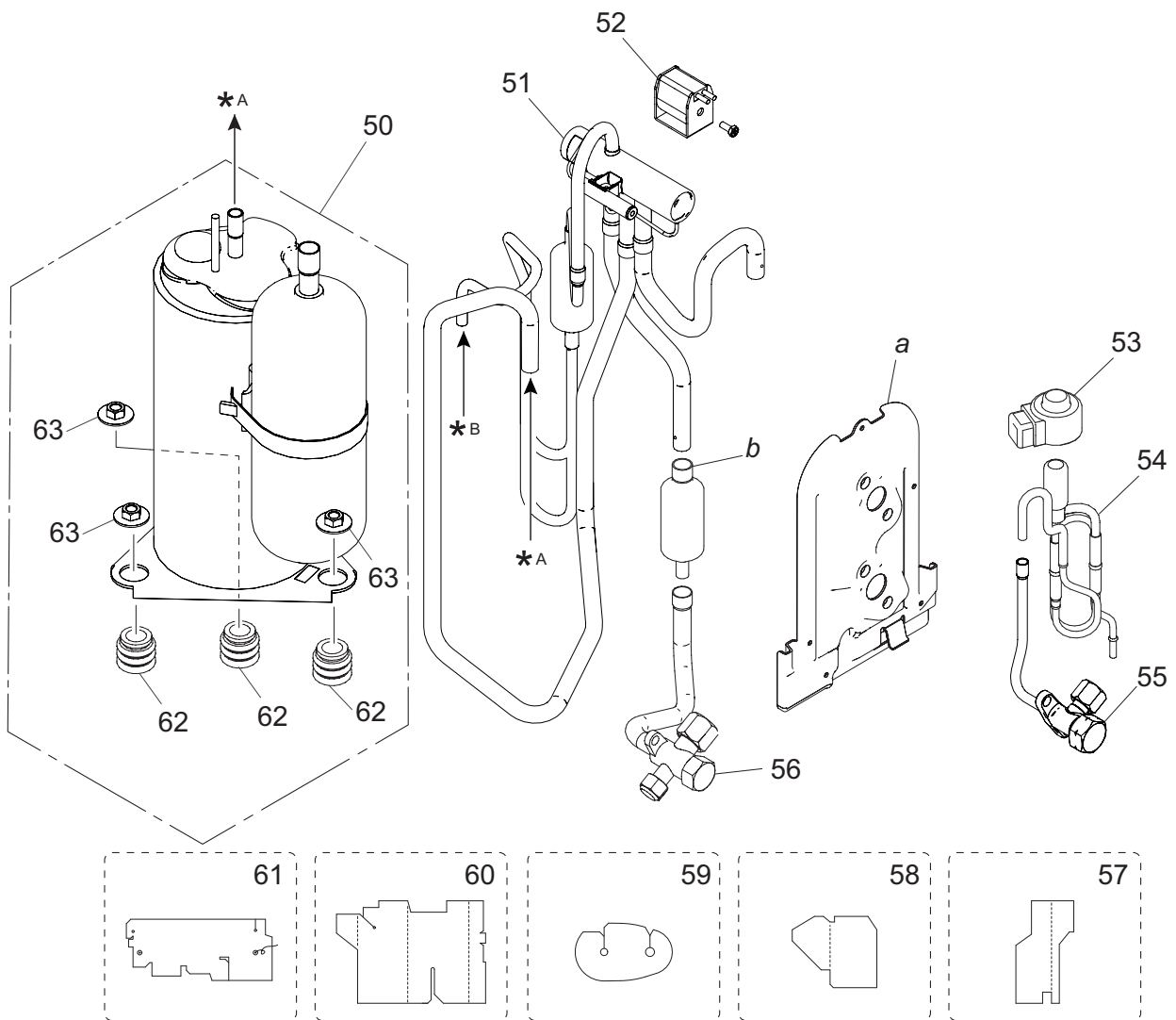
TECHNICAL DATA
AND PARTS LIST

Item no.	Part no.	Part name	Service part
1	9323834330	Heat exchanger unit	◆
2	9377854001	Protective net assy	◆
3	9322556028	Top panel assy	◆
4	9322327000	Thermistor holder	◆
5	9900984014	Thermistor (Heat exchanger)	◆
6	9900935054	Thermistor assy (Discharge temp.)	◆
7	9709688427	Main PCB	◆
8	9900985011	Thermistor assy (Compressor temp.)	◆
9	9900565060	Thermistor assy (Outdoor temp.)	◆
10	9322420046	Heat sink	◆
11	9322552242	Cabinet right assy	◆
12	9384276001	Conduit cover	◆
13	9322570062	Switch cover assy	◆
14	9383720000	Drain cap assy	◆
15	9810028006	Thermistor stopper	◆
16	9322144003	Drain pipe	◆
17	9323550025	Base assy	◆
18	9322555182	Front panel assy	◆
19	9384273000	Fan guard	◆
20	0700103070	Nut for Propeller fan	◆
21	9322150004	Propeller fan	◆
22	9604091001	DC fan motor	◆
23	9322553027	Motor bracket assy	◆
—	9709488027	Wire with terminal (Terminal—Earth)	◆
a	—	Hair pin cushion	—

Compressor

TECHNICAL DATA
AND PARTS LIST

TECHNICAL DATA
AND PARTS LIST



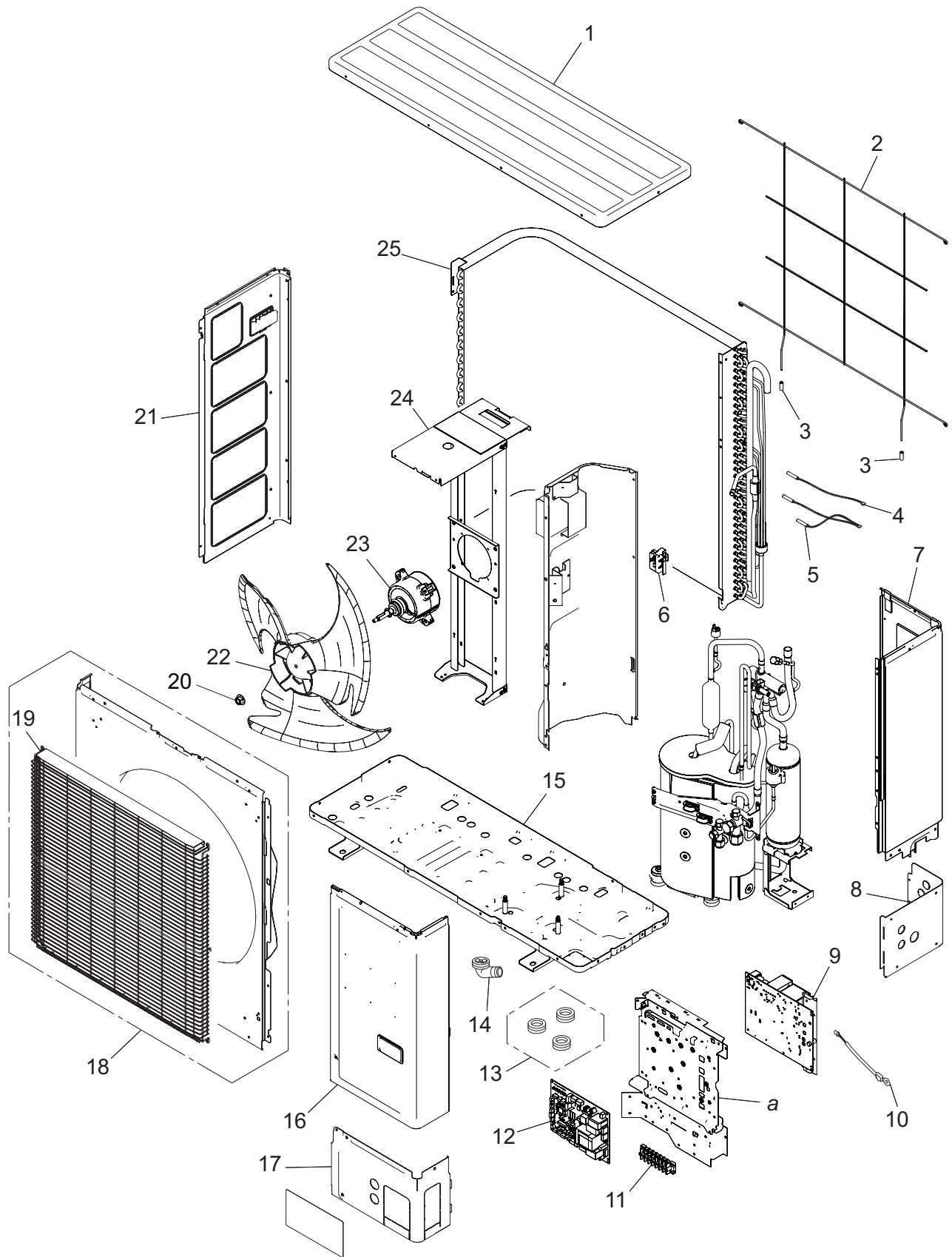
Item no.	Part no.	Part name	Service part
50	9323825215	Compressor unit	◆
51	9322446015	4-way valve assy	◆
52	9970194023	Solenoid	◆
53	9970222016	Expansion valve coil	◆
54	9322463029	Pulse motor valve assy	◆
55	9322474001	2-way valve assy	◆
56	9387831016	3-way valve assy	◆
57	9322824004	Sound insulator K	◆
58	9323045002	Sound insulator V	◆
59	9322501004	Sound insulator H	◆
60	9322847003	Sound insulator F	◆
61	9324014014	Sound insulator B	◆
62	9322386007	Cushion rubber	◆
63	9313437008	Special nut	◆
<i>a</i>	—	Valve bracket	—
<i>b</i>	—	Muffler	—

3-2. Model: AOUH24LUAS1

■ Exterior parts and chassis

TECHNICAL DATA
AND PARTS LIST

TECHNICAL DATA
AND PARTS LIST

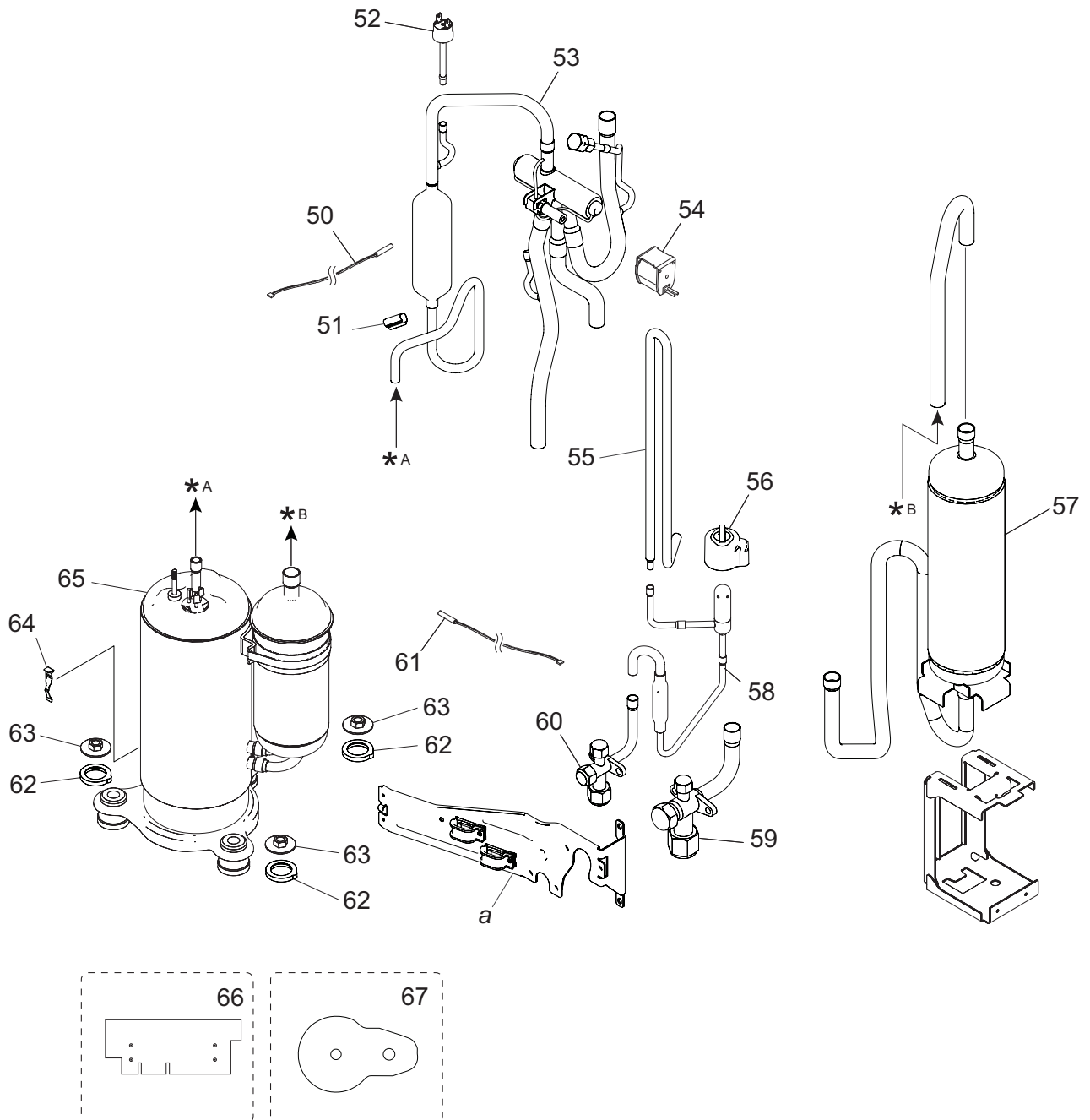


Item no.	Part no.	Part name	Service part
1	9383880001	Top panel assy	◆
2	9383779008	Protective net	◆
3	9375361013	Net rubber	◆
4	9900984038	Thermistor (Heat exchanger)	◆
5	9900727154	Thermistor assy	◆
6	9383607004	Thermo holder	◆
7	9383874000	Right panel sub assy	◆
8	9384997005	Rear pipe cover	◆
9	9709688137	Inverter PCB (Service)	◆
10	9901031014	Heat sink thermistor	◆
11	9900203085	Terminal	◆
12	9711432407	Main PCB	◆
13	313166024302	Drain cap	◆
14	9303029015	Drain assy	◆
15	9383871016	Base assy	◆
16	9383876004	Service panel sub assy	◆
17	9384196019	Front pipe cover	◆
18	9383863035	Front panel assy	◆
19	9350680009	Fan guard	◆
20	0700103063	Nut for Propeller fan	◆
21	9383882005	Left panel sub assy	◆
22	9383336003	Propeller fan	◆
23	9603732011	DC fan motor	◆
24	9383862007	Motor bracket assy	◆
25	9374420711	Condenser sub assy	◆
—	9711332004	Wire with terminal (P102 on Main PCB—Terminal)	◆
—	9711332011	Wire with terminal (P103 on Main PCB—Terminal)	◆
—	9711198006	Wire with connector (P108 on Main PCB—Terminal)	◆
—	9711203007	Wire with connector (P660 on Main PCB—P662 on Inverter PCB)	◆
—	9711204004	Wire with connector (P661 on Main PCB—P663 on Inverter PCB)	◆
—	9711205001	Wire with connector (P350 on Main PCB—P351 on Inverter PCB)	◆
—	9711206039	Wire with terminal (P400, P401, P402 on Inverter PCB—Compressor)	◆
—	9711212009	Wire with connector (P650 on Inverter PCB—Fan motor)	◆
—	9711213006	Wire with connector (P770 on Inverter PCB—Wire with connector [to Pressure switch])	◆
—	9711214003	Wire with connector (Pressure switch—Wire with connector [to Inverter PCB])	◆
a	—	Control box unit	—

Compressor

TECHNICAL DATA
AND PARTS LIST

TECHNICAL DATA
AND PARTS LIST



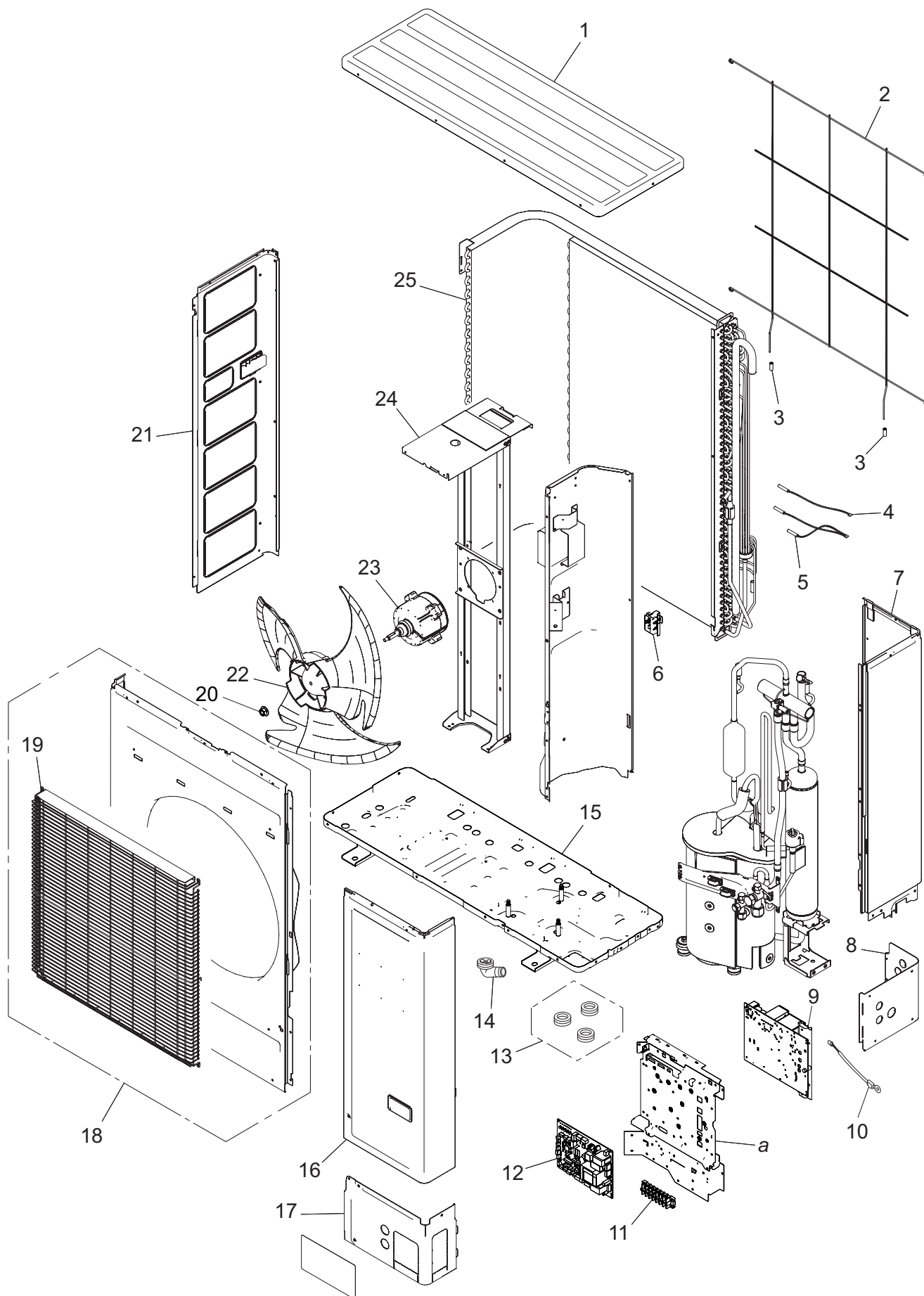
Item no.	Part no.	Part name	Service part
50	9900565091	Thermistor (Outdoor temp.)	◆
51	9357804002	Thermostat holder	◆
52	9900186029	Pressure switch	◆
53	9374425723	4-way valve assy	◆
54	9970194016	Solenoid	◆
55	9380416029	Joint pipe D	◆
56	9970209000	Expansion valve coil	◆
57	9375250225	Accumulator assy	◆
58	9370947373	Expansion valve assy	◆
59	9379079013	3-way valve assy	◆
60	9377958037	3-way valve assy	◆
61	9900985035	Thermistor (Compressor)	◆
62	9379179096	Rubber washer E	◆
63	9377973016	Special nut	◆
64	9810028006	Thermistor stopper	◆
65	9810666000	Compressor assy	◆
66	9379647243	S-ABS (body)	◆
67	9380516064	S-ABS (top)	◆
a	—	Wiring fixation unit	—

3-3. Models: AOUH30LUAS1 and AOUH36LUAS1

■ Exterior parts and chassis

TECHNICAL DATA
AND PARTS LIST

TECHNICAL DATA
AND PARTS LIST

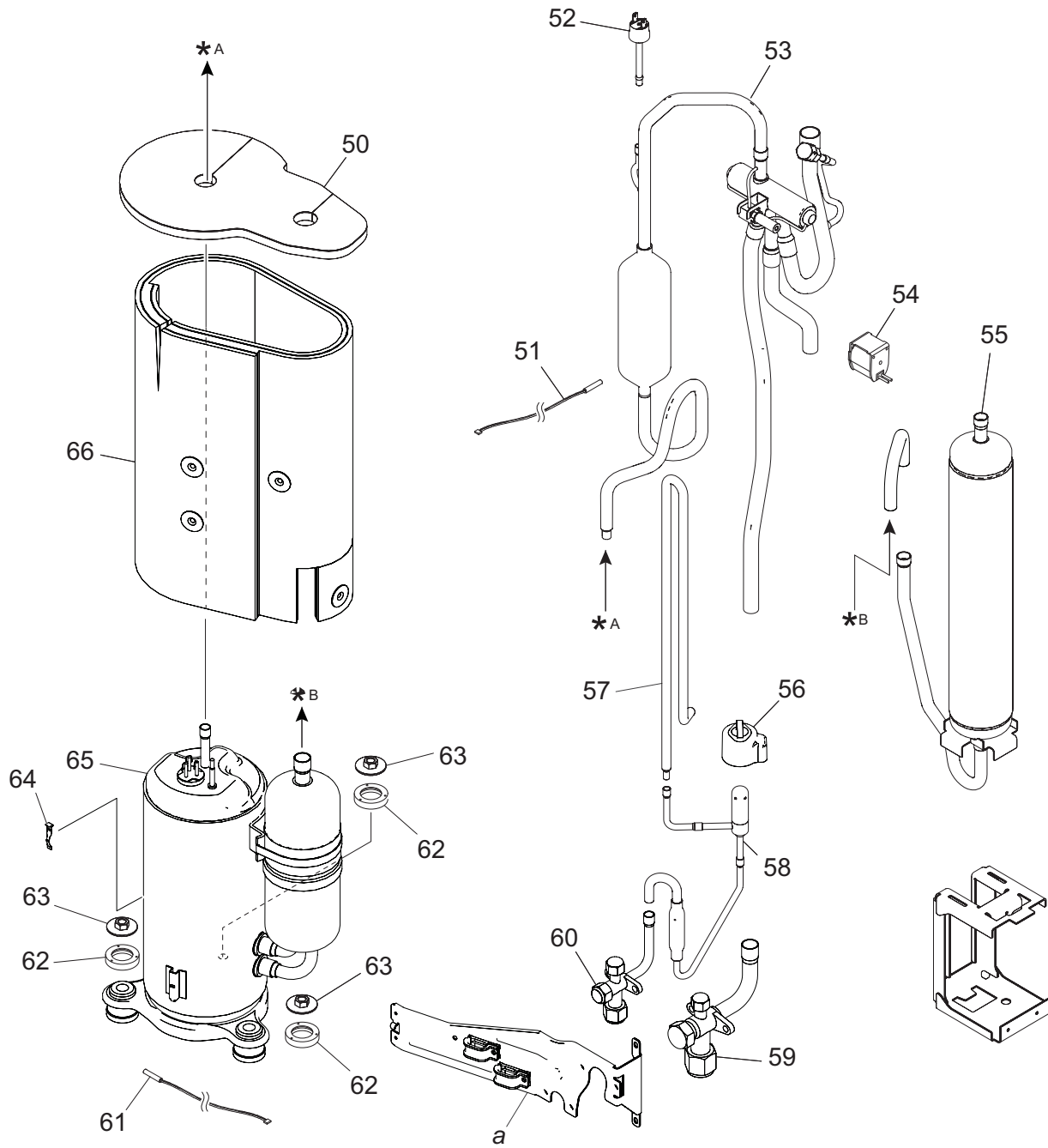


Item no.	Part no.	Part name	Service part
1	9383880001	Top panel assy	◆
2	9381013005	Protective net	◆
3	9375361013	Net rubber	◆
4	9900984038	Thermistor (Heat exchanger)	◆
5	9900727154	Thermistor assy	◆
6	9383607004	Thermo holder	◆
7	9383874017	Right panel sub assy	◆
8	9384997005	Rear pipe cover	◆
9	9709688144	Inverter PCB	◆
10	9901031014	Heat sink thermistor	◆
11	9900203085	Terminal	◆
12	9711432414	Main PCB (for 30 model)	◆
	9711432421	Main PCB (for 36 model)	◆
13	313166024302	Drain cap	◆
14	9303029015	Drain assy	◆
15	9383871016	Base assy	◆
16	9383876011	Service panel sub assy	◆
17	9384196019	Front pipe cover	◆
18	9383863042	Front panel assy	◆
19	9350680009	Fan guard	◆
20	0700103063	Nut for Propeller fan	◆
21	9383882012	Left panel sub assy	◆
22	9383336003	Propeller fan	◆
23	9603733018	DC fan motor	◆
24	9383862021	Motor bracket assy	◆
25	9374420759	Condenser sub assy	◆
—	9711198006	Wire with connector (Terminal—EMI filter)	◆
—	9711203007	Wire with connector (P660 on Main PCB—P662 on Inverter PCB)	◆
—	9711204004	Wire with connector (P661 on Main PCB—P663 on Inverter PCB)	◆
—	9711205001	Wire with connector (P350 on Main PCB—P351 on Inverter PCB))	◆
—	9711212009	Wire with connector (P650 on Inverter PCB—Fan motor)	◆
—	9711213006	Wire with connector (P770 on Inverter PCB—Wire with connector [to Pressure switch])	◆
—	9711214003	Wire with connector (Pressure switch—Wire with connector [to Inverter PCB])	◆
a	—	Control box unit	—

Compressor

TECHNICAL DATA
AND PARTS LIST

TECHNICAL DATA
AND PARTS LIST





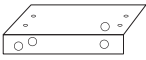



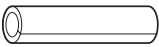

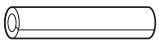
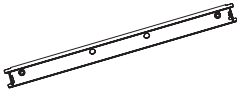
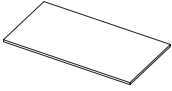

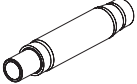


Item no.	Part no.	Part name	Service part
50	9380516019	S-ABS (top)	◆
51	9900565091	Thermistor (Outdoor temp.)	◆
52	9900186029	Pressure switch	◆
53	9374425761	4-way valve assy	◆
54	9970194016	Solenoid	◆
55	9375250188	Accumulator assy	◆
56	9970209000	Expansion valve coil	◆
57	9380416012	Joint pipe D	◆
58	9370947311	Expansion valve assy	◆
59	9379079013	3-way valve assy	◆
60	9377958037	3-way valve assy	◆
61	9900985028	Thermistor (Compressor)	◆
62	9379179089	Rubber washer F	◆
63	9377973016	Special nut	◆
64	9810028006	Thermistor stopper	◆
65	9810832009	Compressor	◆
66	9379647168	S-ABS (body)	◆
a	—	Wiring fixation unit	—

4. Accessories




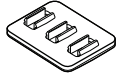
4-1. Indoor unit

■ Models: ABUH18LUAS, ABUH24LUAS, ABUH30LUAS, and ABUH36LUAS




Part name	Exterior	Qty	Part name	Exterior	Qty
Operation manual		1	Hose band		1
Installation manual		1	Cable tie (large)		4
Template		1	Cable tie (small)		1
Washer		8	Cable hole cap		1
Coupler heat insulation (large)		1	Self-tapping screw (white)		6
Coupler heat insulation (small)		1	Casing guard (for 24, 30, and 36 model)		1
Insulation		1	Self-tapping screw		3
Drain hose		1			

4-2. Outdoor unit

■ Model: AOUH18LUAS1

Part name	Exterior	Qty	Part name	Exterior	Qty
Installation manual		1	Cable tie		2
Drain pipe		1	Drain cap		5





■ Models: AOUH24LUAS1, AOUH30LUAS1, and AOUH36LUAS1

Part name	Exterior	Qty	Part name	Exterior	Qty
Installation manual		1	Drain cap		3
Drain pipe		1			

5. Optional parts

5-1. Indoor unit

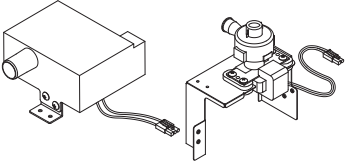
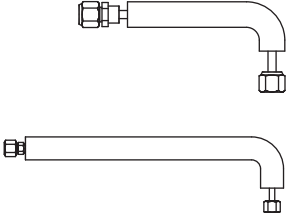
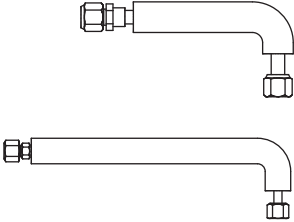


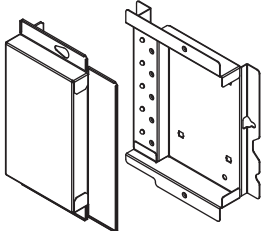


■ Controllers


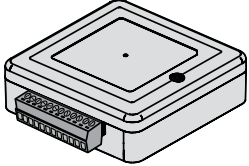

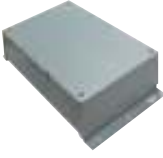

Exterior	Part name	Model name	Summary
	Wired Remote Controller	UTY-RNRUZ*	Easy finger touch operation with LCD panel. Backlit LCD enables easy operation in a dark room. Wire type: Non-polar 2-wire
	Simple Remote Controller	UTY-RSRY	Compact remote controller concentrates on the basic functions such as Start/Stop, fan control, temperature setting, and operation mode. Wire type: Non-polar 2-wire
	Simple Remote Controller	UTY-RHRY	Compact remote controller concentrates on the basic functions such as Start/Stop, fan control, and temperature setting. Wire type: Non-polar 2-wire
	IR Receiver Kit with Wireless Remote Controller	UTY-LBTUH	Unit control is performed by Wireless Remote Controller. Connecting point: CN48 on Main PCB

NOTES:

- Available functions may differ by the remote controller. For details, refer to the operation manual.
- When using the group controlling system of the Wired Remote Controller, using WLAN Adapter is prohibited.

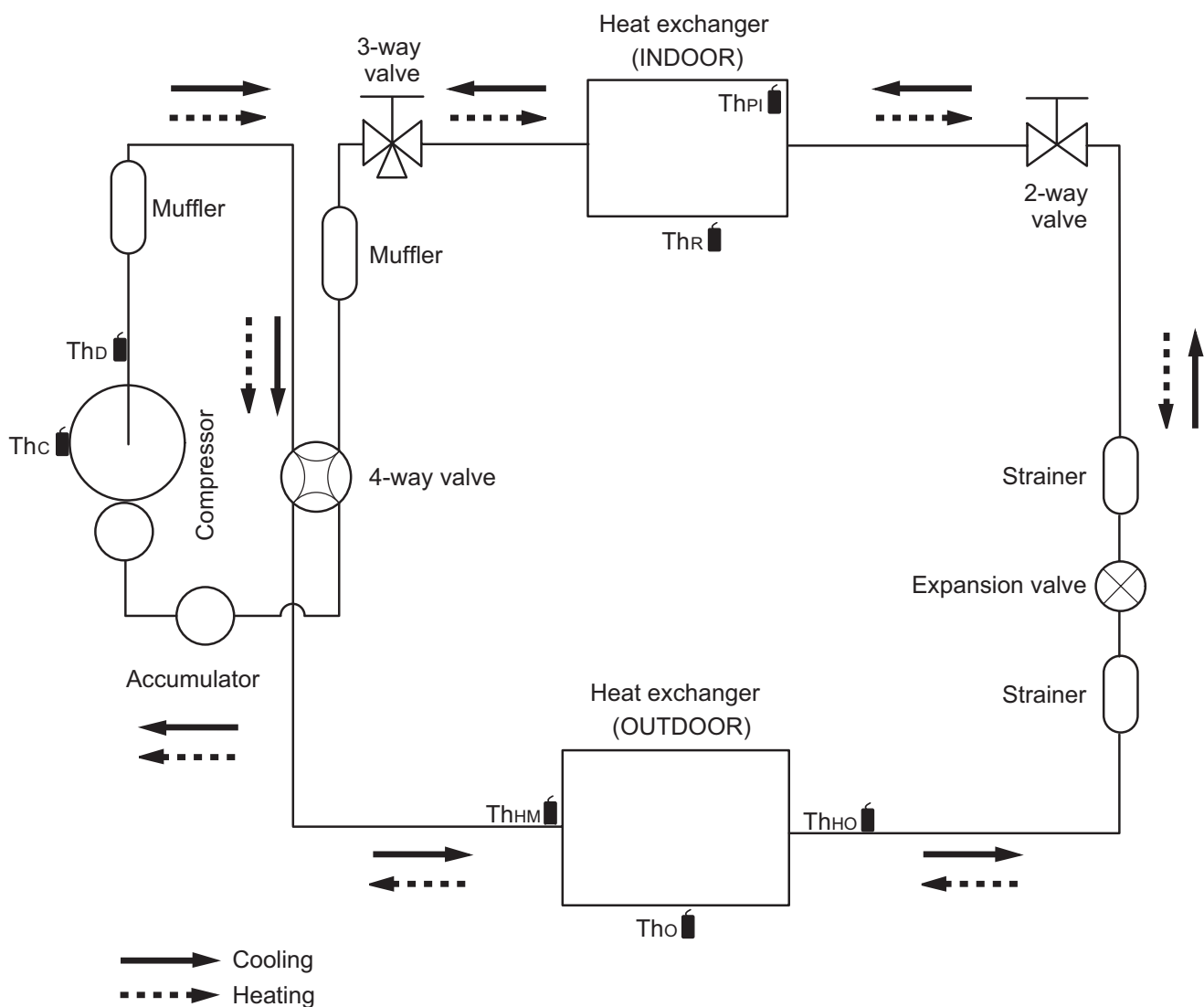
Others

Exterior	Part name	Model name	Summary
	Drain Pump Unit	UTZ-PU1EBB	Optional drain lift up mechanism allows more flexible installation.
	Auxiliary Pipe Assembly	UTP-FX24A	For piping of upward direction only. <ul style="list-style-type: none"> For liquid: 1/4 in (6.35 mm) For gas: 1/2 in (12.70 mm)
	Auxiliary Pipe Assembly	UTP-FX35A	For piping of upward direction only. <ul style="list-style-type: none"> For liquid: 3/8 in (9.52 mm) For gas: 5/8 in (15.88 mm)
	External Connect Kit	UTY-XWZXZG	Use to connect with various peripheral devices and air conditioner PCB. For control output port. Connecting point: CN47 on Main PCB
	External Input and Output PCB	UTY-XCSX	Use to connect with external devices and air conditioner PCB. Connecting point: CN65 or CN75 on Main PCB
	External Input and Output PCB Box	UTZ-GXEA	For installing the External input and output PCB.
	WLAN Adapter	UTY-TFSXJ4	Remotely manage an air conditioning system using mobile devices such as smartphones and tablets. For connection indoor unit with UART interface. Appropriate application for each region is required to use this option. For details, contact FGL sales company. Connecting point: CN75 on Main PCB
	Modbus Converter	UTY-VMSX	For connection between indoor unit with UART interface and a Modbus open network. Connecting point: CN65 or CN75 on Main PCB

Exterior	Part name	Model name	Summary
	KNX Converter	UTY-VKSX	For connection between indoor unit with UART interface and a KNX open network. Connecting point: CN65 or CN75 on Main PCB
	Thermostat Converter	UTY-TTRXZ*	This converter can control Fujitsu General products using a third-party thermostat controller. Connecting point: Terminal block (Y1, Y2) on Main PCB
	Network Converter	UTY-VTGX	This converter is required when connecting single split system to VRF network system. Connecting point: Terminal block (Y1, Y2) on Main PCB
	Network Converter (AC power supply)	UTY-VTGXV	This converter is required when connecting single split system to VRF network system. Connecting point: Terminal block (Y1, Y2) on Main PCB
	External Switch Controller	UTY-TERX	Air conditioner switching can be controlled by connecting other external sensor switches. Connecting point: Terminal block (Y1, Y2) on Main PCB

6. Refrigerant system diagrams

6-1. Model: AOUH18LUAS1

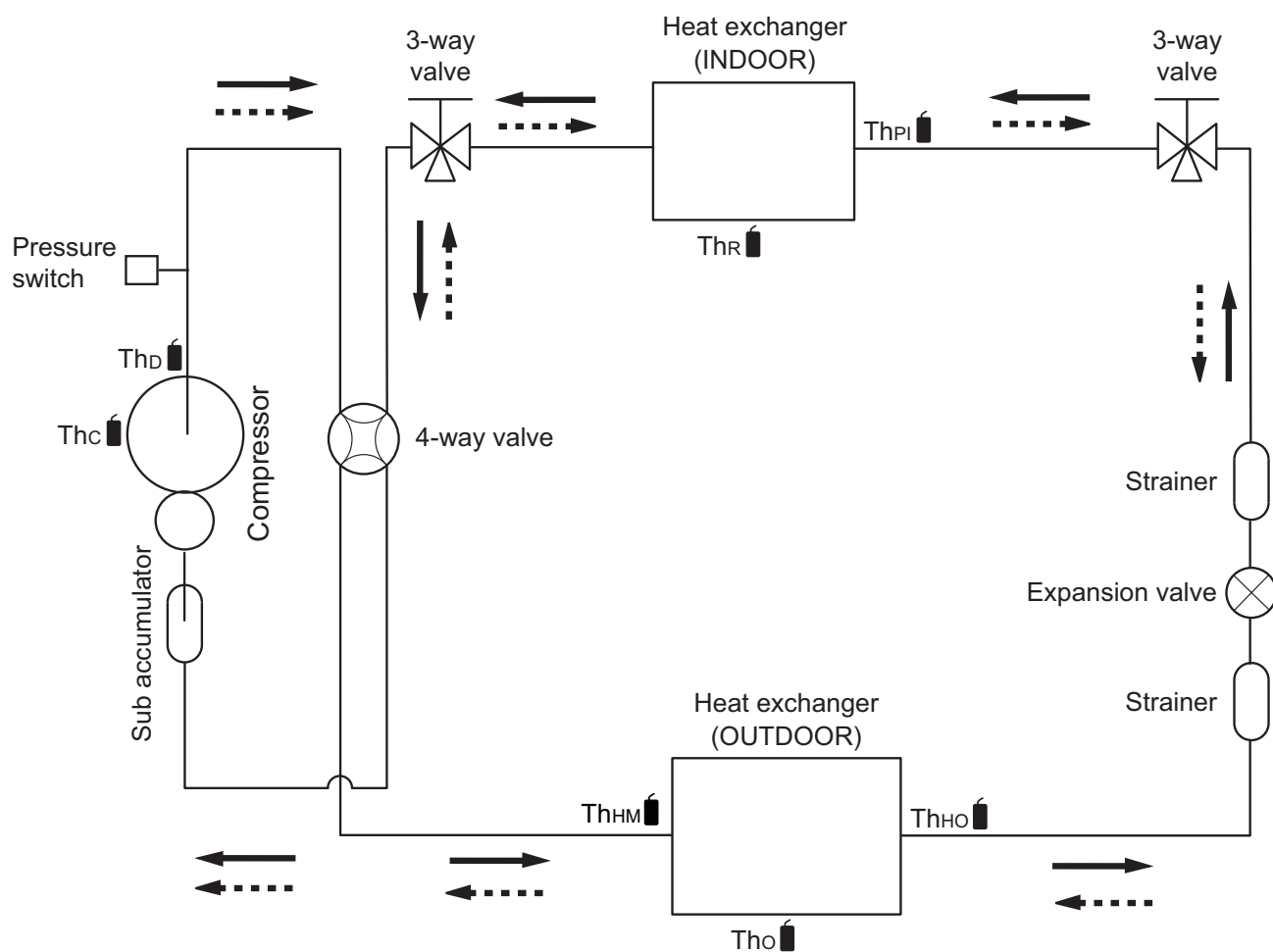


- Thc : Thermistor (Compressor temperature)
- Thd : Thermistor (Discharge temperature)
- Thhm : Thermistor (Heat exchanger middle temperature)
- Tho : Thermistor (Outdoor temperature)
- Thho : Thermistor (Heat exchanger out temperature)
- Thpi : Thermistor (Pipe temperature)
- Thr : Thermistor (Room temperature)

6-2. Model: AOUH24LUAS1

TECHNICAL DATA
AND PARTS LIST

TECHNICAL DATA
AND PARTS LIST



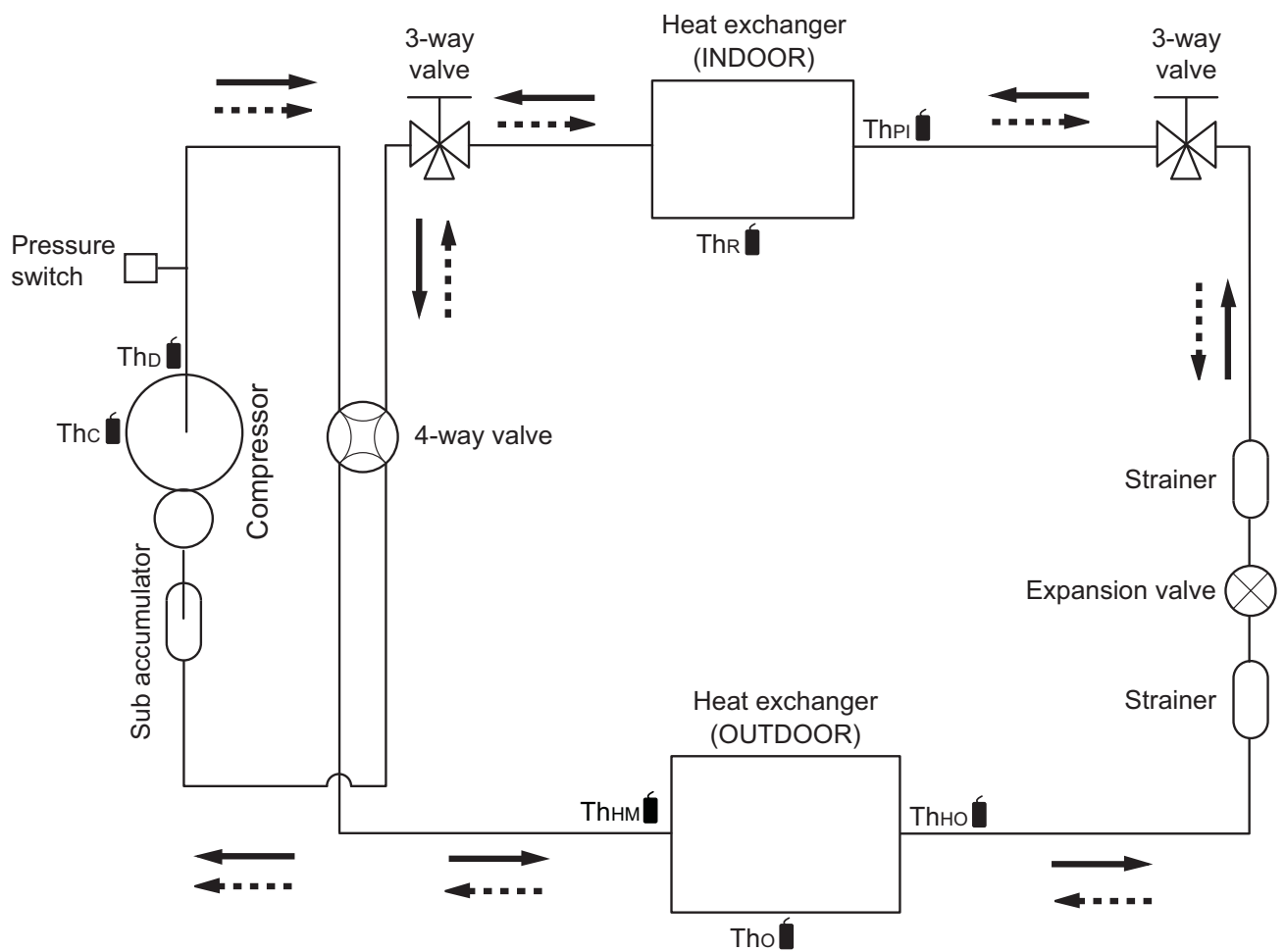
—————▶ : Cooling
▶ : Heating

- Thc : Thermistor (Compressor temperature)
- Thd : Thermistor (Discharge temperature)
- ThHM : Thermistor (Heat exchanger middle temperature)
- Tho : Thermistor (Outdoor temperature)
- ThHO : Thermistor (Heat exchanger out temperature)
- ThPI : Thermistor (Pipe temperature)
- ThR : Thermistor (Room temperature)

6-3. Models: AOUH30LUAS1 and AOUH36LUAS1

TECHNICAL DATA
AND PARTS LIST

TECHNICAL DATA
AND PARTS LIST



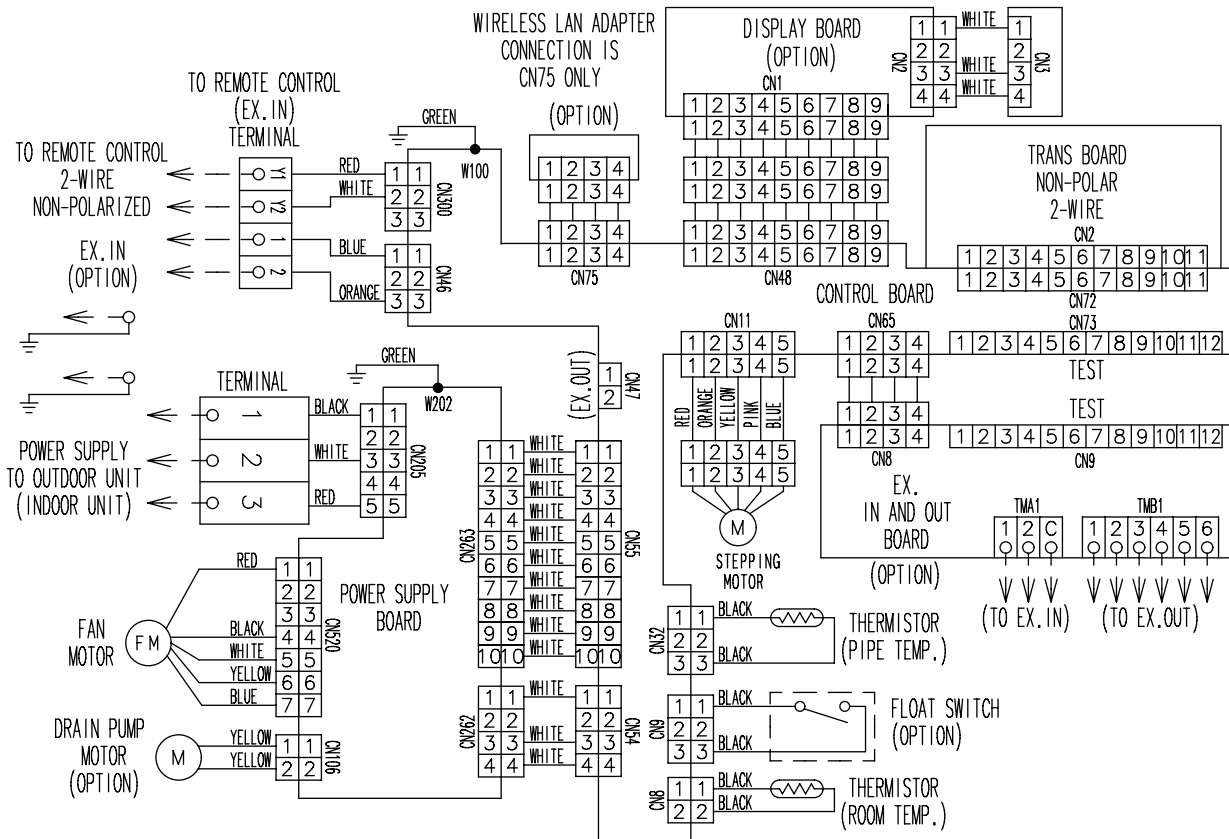
—————> : Cooling
 - - - - -> : Heating

- Thc : Thermistor (Compressor temperature)
- Thd : Thermistor (Discharge temperature)
- ThHM : Thermistor (Heat exchanger middle temperature)
- Tho : Thermistor (Outdoor temperature)
- ThHO : Thermistor (Heat exchanger out temperature)
- ThPI : Thermistor (Pipe temperature)
- ThR : Thermistor (Room temperature)

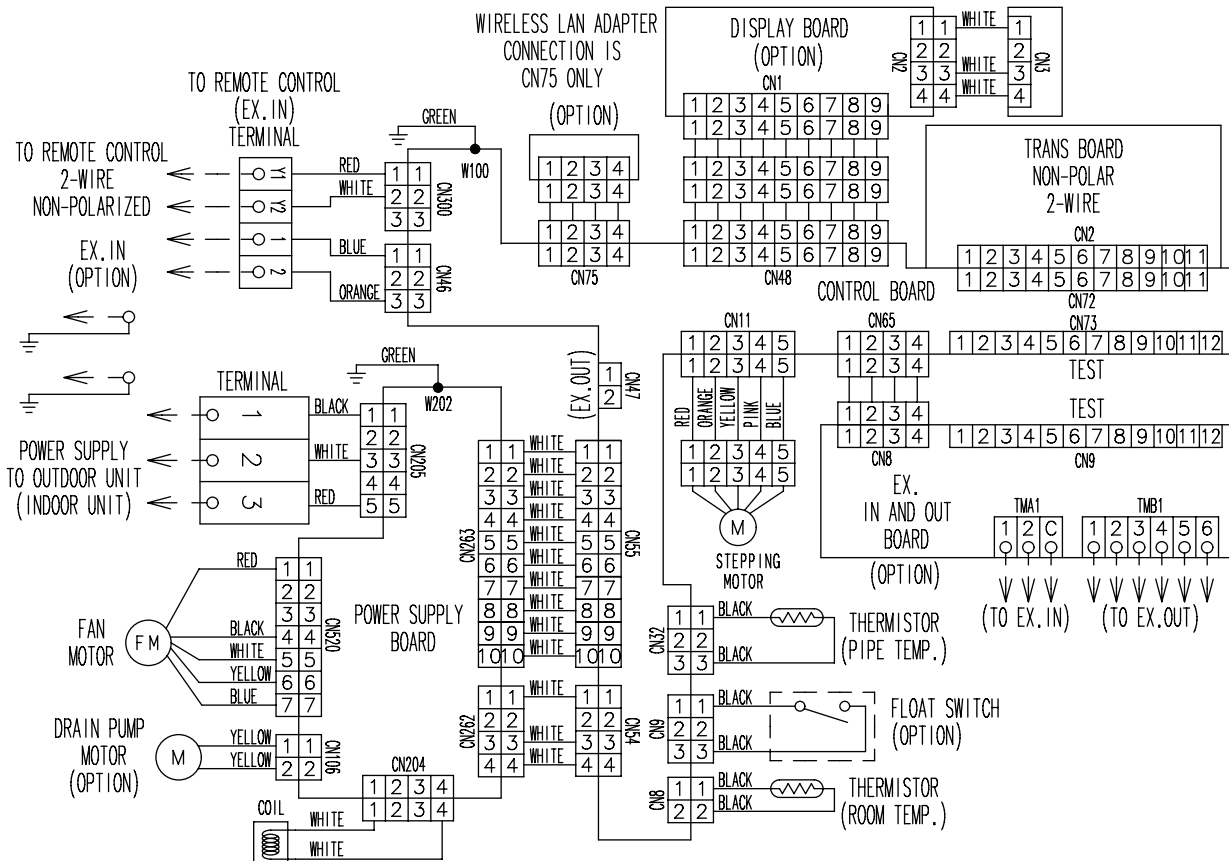
7. Wiring diagrams

7-1. Indoor unit

Models: ABUH18LUAS, ABUH24LUAS, and ABUH30LUAS



Model: ABUH36LUAS

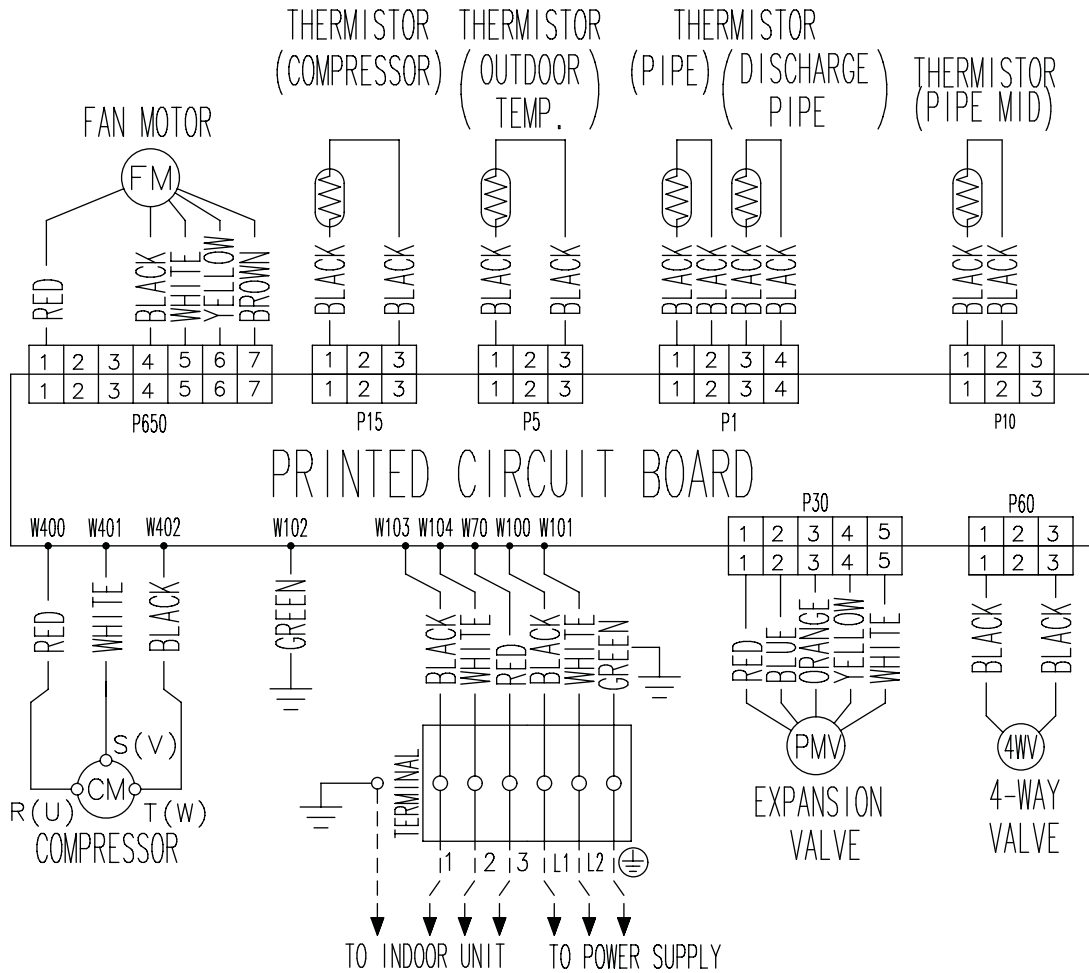


7-2. Outdoor unit

Model: AOUH18LUAS1

TECHNICAL DATA
AND PARTS LIST

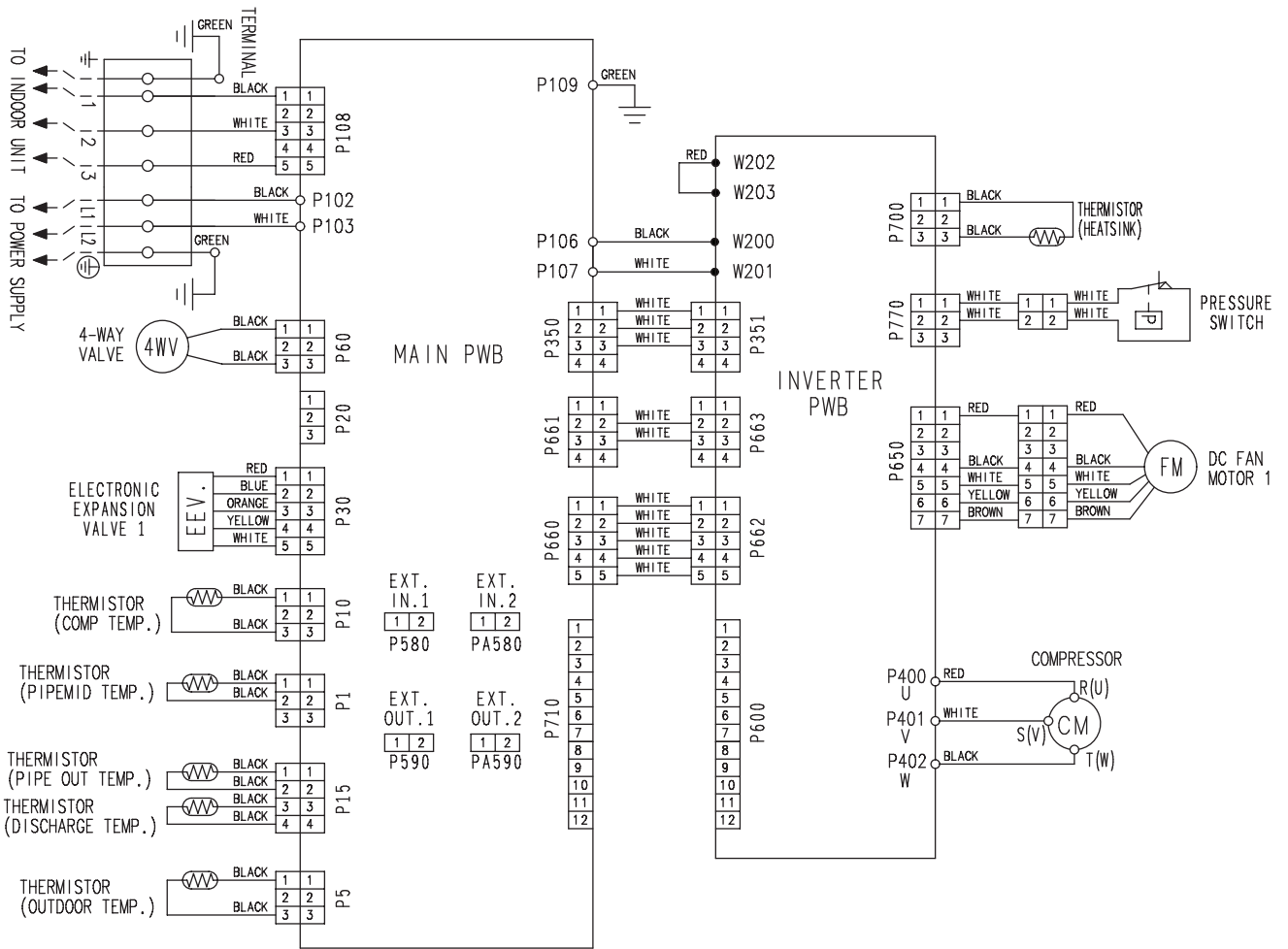
TECHNICAL DATA
AND PARTS LIST



Models: AOUH24LUAS1, AOUH30LUAS1, and AOUH36LUAS1

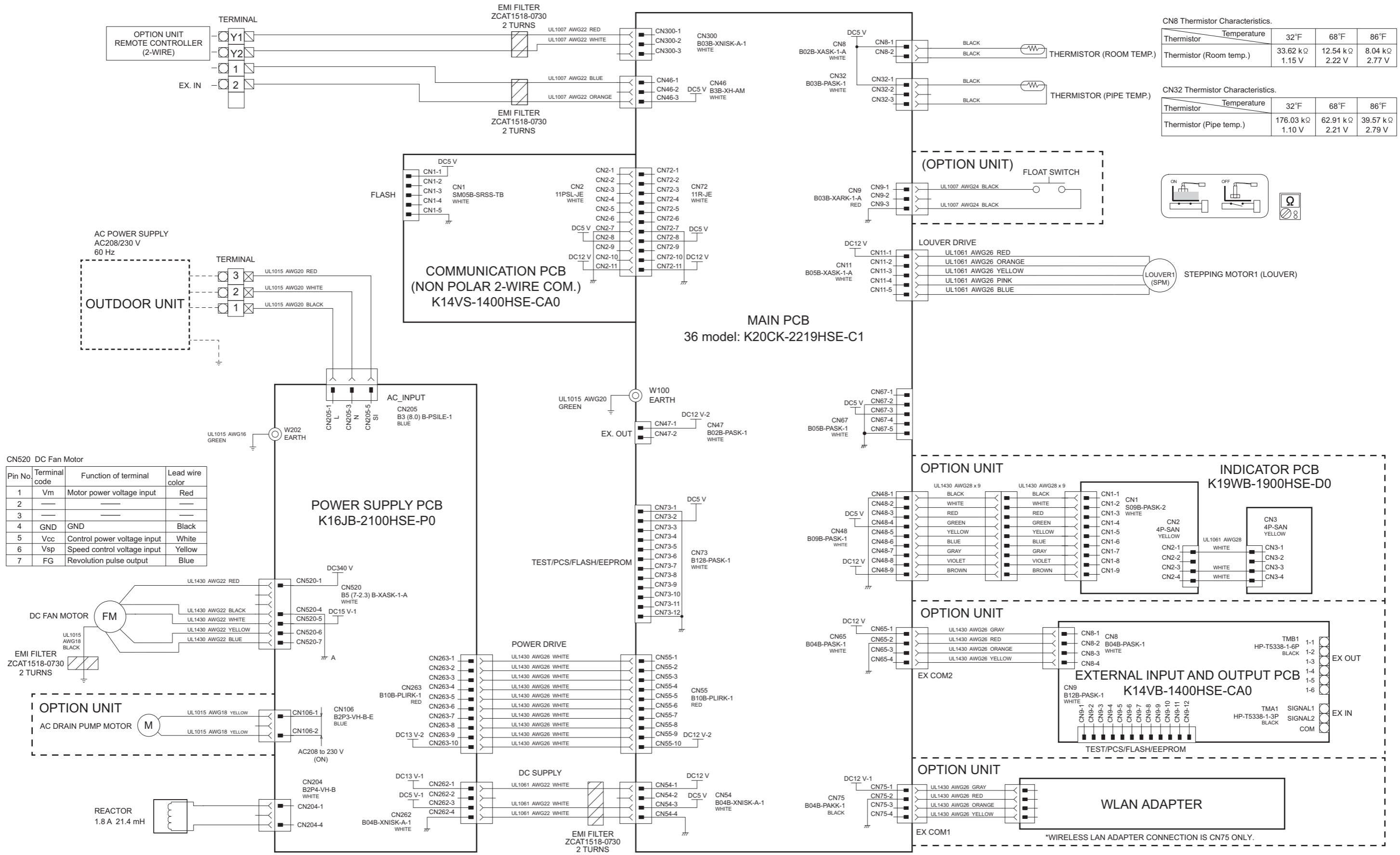
TECHNICAL DATA
AND PARTS LIST

TECHNICAL DATA
AND PARTS LIST



8-2. Model: ABUH36LUAS

CONTROL UNIT 36 model: EZ-0221SHSE



CN8 Thermistor Characteristics.

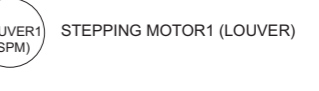
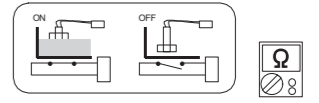
Thermistor	Temperature	32°F	68°F	86°F
Thermistor (Room temp.)		33.62 kΩ	12.54 kΩ	8.04 kΩ
		1.15 V	2.22 V	2.77 V

CN32 Thermistor Characteristics.

Thermistor	Temperature	32°F	68°F	86°F
Thermistor (Pipe temp.)		176.03 kΩ	62.91 kΩ	39.57 kΩ
		1.10 V	2.21 V	2.79 V

CN520 DC Fan Motor

Pin No.	Terminal code	Function of terminal	Lead wire color
1	Vm	Motor power voltage input	Red
2			
3			
4	GND	GND	Black
5	Vcc	Control power voltage input	White
6	Vsp	Speed control voltage input	Yellow
7	FG	Revolution pulse output	Blue

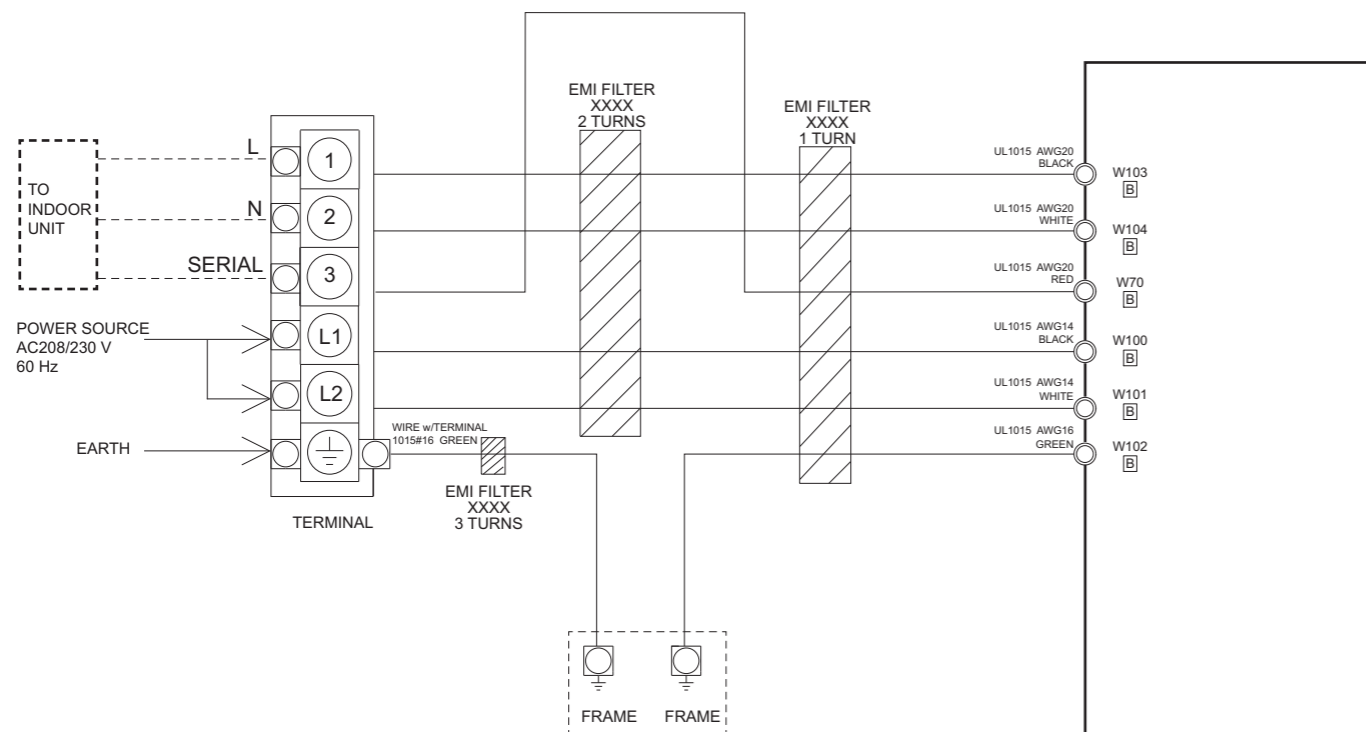


TECHNICAL DATA AND PARTS LIST

8-3. Model: AOUH18LUAS1

TECHNICAL DATA
AND PARTS LIST

TECHNICAL DATA
AND PARTS LIST



CONTROL UNIT 18 model: EZ-0200YHUE

MAIN PCB 18 model: H18LBTA(U)-A02-02-SV

P1 Thermistor Characteristics.

Thermistor	Temperature	32°F	68°F	86°F
Thermistor (Pipe temp.)	Resistance	16.05 kΩ	5.98 kΩ	3.84 kΩ
	Voltage	1.14 V	2.21 V	2.77 V
Thermistor (Discharge temp.)	Resistance	168.60 kΩ	62.55 kΩ	40.01 kΩ
	Voltage	0.36 V	0.86 V	1.23 V

P5 Thermistor Characteristics.

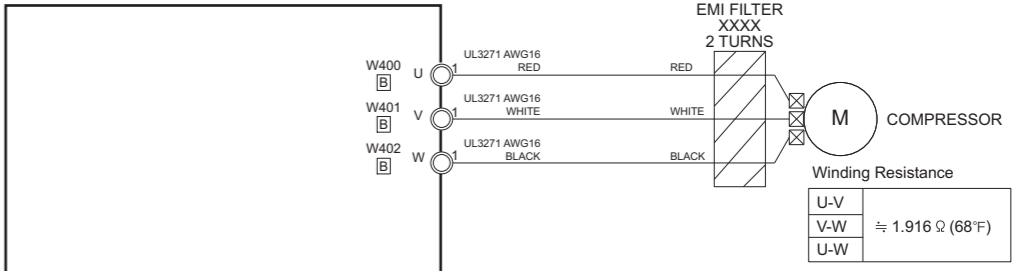
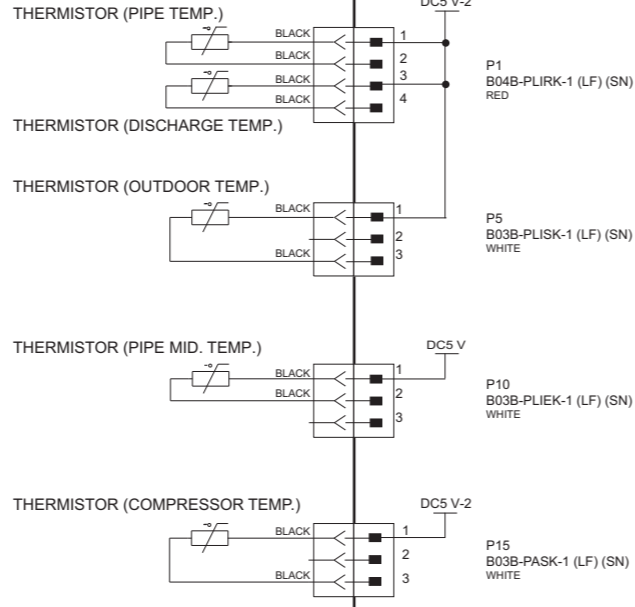
Thermistor	Temperature	32°F	68°F	86°F
Thermistor (Outdoor temp.)	Resistance	35.21 kΩ	12.64 kΩ	7.97 kΩ
	Voltage	2.61 V	3.76 V	4.14 V

P10 Thermistor Characteristics.

Thermistor	Temperature	32°F	68°F	86°F
Thermistor (Pipe mid temp.)	Resistance	16.05 kΩ	5.98 kΩ	3.84 kΩ
	Voltage	1.92 V	3.13 V	3.61 V

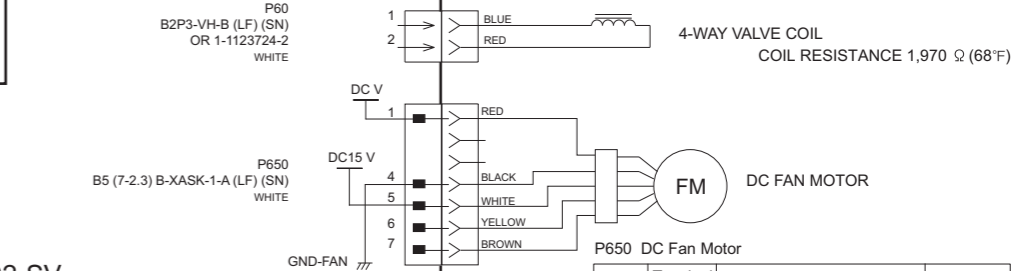
P15 Thermistor Characteristics.

Thermistor	Temperature	32°F	68°F	86°F
Thermistor (Compressor temp.)	Resistance	168.60 kΩ	62.55 kΩ	40.01 kΩ
	Voltage	0.36 V	0.86 V	1.23 V



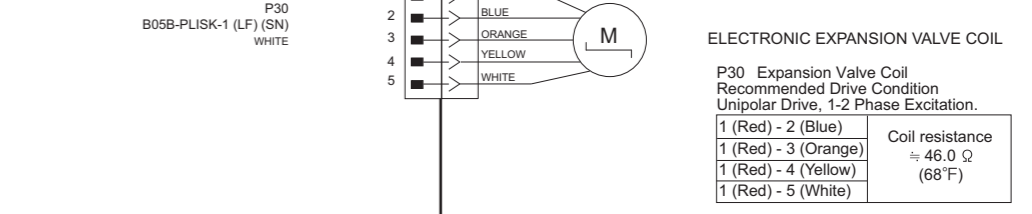
Winding Resistance

U-V	≈ 1.916 Ω (68°F)
V-W	
U-W	



P650 DC Fan Motor

Pin No.	Terminal code	Function of terminal	Lead wire color
1	Vm	Motor power voltage input	Red
2	—	—	—
3	—	—	—
4	GND	GND	Black
5	Vcc	Control power voltage input	White
6	Vsp	Speed control voltage input	Yellow
7	FG	Revolution pulse output	Brown



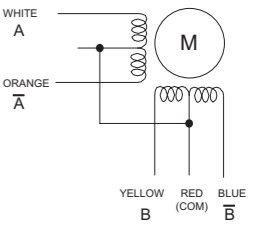
P30 Expansion Valve Coil Recommended Drive Condition Unipolar Drive, 1-2 Phase Excitation.

1 (Red) - 2 (Blue)	Coil resistance ≈ 46.0 Ω (68°F)
1 (Red) - 3 (Orange)	
1 (Red) - 4 (Yellow)	
1 (Red) - 5 (White)	

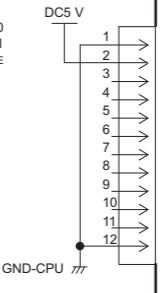
Recommended drive condition: Unipolar drive, 1-2 phase excitation.

Phase No. (Symbol)	Lead wire colors	Switching mode							
		1	2	3	4	5	6	7	8
A	White	On	On	Off	Off	Off	Off	Off	On
B	Yellow	Off	On	On	On	Off	Off	Off	Off
\bar{A}	Orange	Off	Off	Off	On	On	On	Off	Off
\bar{B}	Blue	Off	Off	Off	Off	Off	On	On	On

The movement mode
 1 → 2 → 3 → 4 → 5 → 6 → 7 → 8: Valve close
 8 → 7 → 6 → 5 → 4 → 3 → 2 → 1: Valve open



TEST/PCS/FLASH/EEPROM

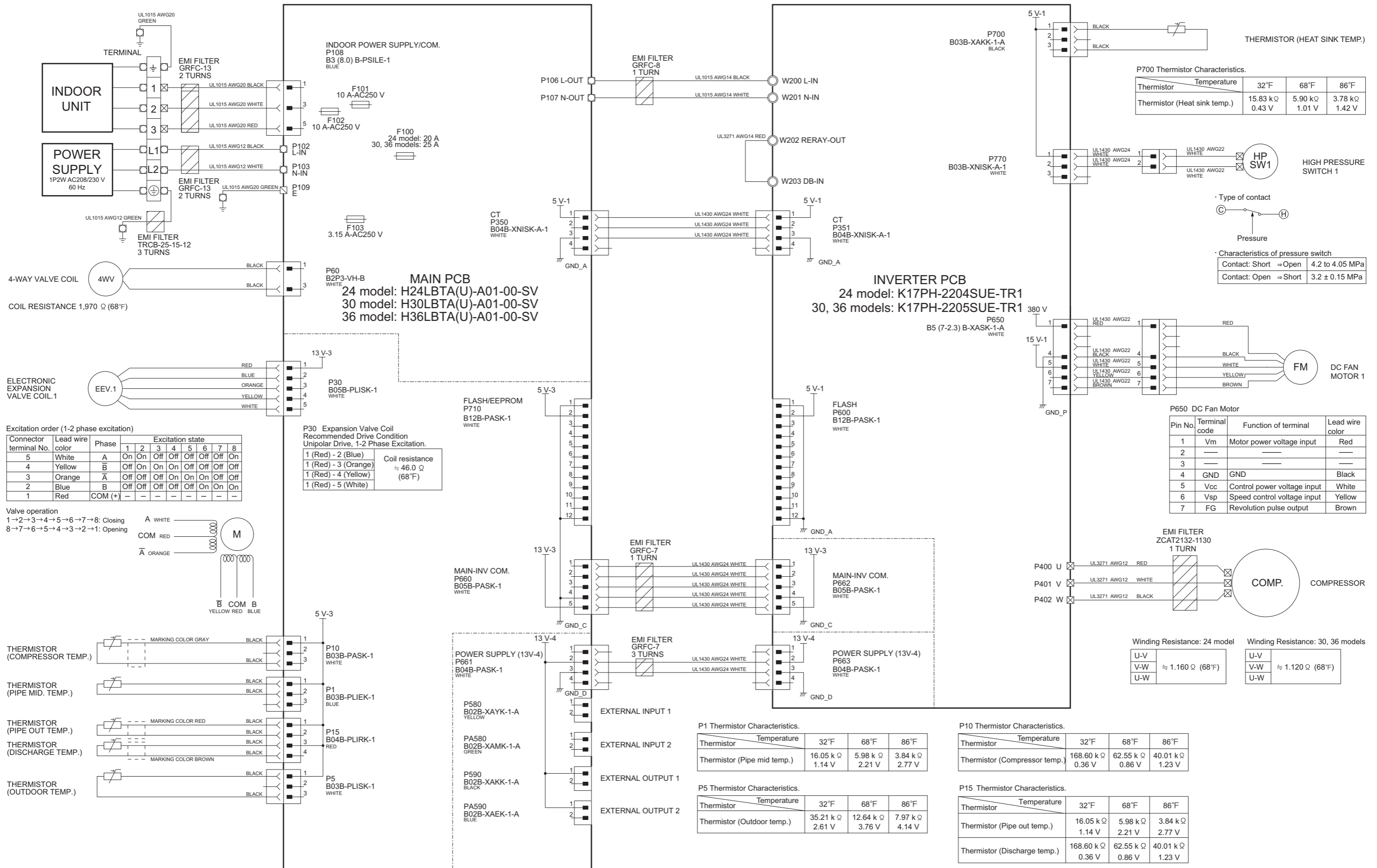


8-4. Models: AOUH24LUAS1, AOUH30LUAS1, and AOUH36LUAS1

CONTROL UNIT 24 model: EZ-02201HUE 30, 36 models: EZ-02202HUE

TECHNICAL DATA
AND PARTS LIST

TECHNICAL DATA
AND PARTS LIST



3. TROUBLESHOOTING

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3. TROUBLESHOOTING

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1. Error code

When a problem occurs in the system or the connected device, the error content is notified by displaying the code.

NOTE: This function is only available in a system with indoor or IR receiver units equipped with indicator lamps to show the error content.

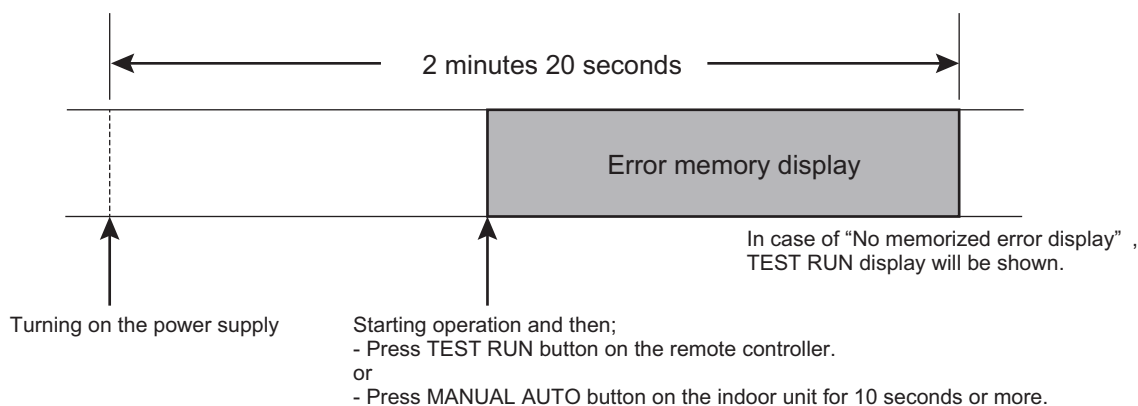
Errors, once displayed, will be automatically stored in the PC board of the indoor unit. Even if the power is disconnected, the memory containing the error history will not be erased.

If another error occurs later, the stored error memory will be updated automatically and replaced with the new one. (Previous error will be erased.)

1-1. How to check the error memory

When an error occurs, the operation lamp (Green) and the timer lamp (Orange) indicate the error content by blinking. To check the error memory, follow the procedures below.

1. Stop the operation of the air conditioner, and then disconnect the power supply.
2. Reconnect the power supply.
3. In one of the following two methods, the memorized error is only displayed during the “3 minutes ST”^{*} state period.
 - Start the operation and then press the TEST RUN button on the remote controller.
 - Press the MANUAL AUTO button on the indoor unit for 10 seconds or more.



*: The “3 minutes ST” period lasts 2 minutes and 20 seconds after turning on the power supply.

1-2. How to erase the error memory

The error memory can be erased in one of the following two methods.

- Manual erase: Pressing the MANUAL AUTO button on the indoor unit while the “Error memory display” is being shown. (Short beep emits for about 3 seconds.)
- Automatic erase: After continuing the normal operation of the air conditioner without error for 2 hours or longer after displaying the error memory as described in [How to check the error memory](#). (Except FAN operation mode.)

1-3. Error code table (Wired remote controller)

The operation, timer, and economy indicators operate according to the error contents.
For confirmation of the error contents, refer the flashing pattern as follows.

Error contents	Wired remote controller display
E: 11.X. Serial communication error (Serial reverse transfer error) (Outdoor unit)	11
E: 11.X. Serial communication error (Serial forward transfer error) (Indoor unit)	11
E: 12.X. Wired remote controller communication error (Indoor unit)	12
E: 15.X. Automatic air flow adjustment error (Indoor unit)	15
E: 22.X. Indoor unit capacity error (Indoor unit)	22
E: 23.X. Combination error (Outdoor unit)	23
E: 32.X. Indoor unit main PCB error (Indoor unit)	32
E: 33.X. Indoor unit motor electricity consumption detection error (Indoor unit)	33
E: 35.X. MANUAL AUTO button error (Indoor unit)	35
E: 39.X. Indoor unit power supply error for fan motor (Indoor unit)	39
E: 41.X. Room temperature sensor error (Indoor unit)	41
E: 42.X. Indoor unit heat exchanger sensor error (Indoor unit)	42
E: 51.X. Indoor unit fan motor error (Indoor unit)	51
E: 53.X. Drain pump error (Indoor unit)	53
E: 57.X. Damper (Open/Close) detection limit switch error	57
E: 58.X. Intake grille error (Indoor unit)	58
E: 62.X. Outdoor unit main PCB error (Outdoor unit)	62
E: 63.X. Inverter error (Outdoor unit)	63
E: 64.X. PFC circuit error (Outdoor unit)	64
E: 65.X. Trip terminal L error (Outdoor unit)	65
E: 71.X. Discharge thermistor error (Outdoor unit)	71
E: 72.X. Compressor thermistor error (Outdoor unit)	72
E: 73.X. Heat exchanger (Middle/Outlet) temperature thermistor error (Outdoor unit)	73
E: 74.X. Outdoor temperature thermistor error (Outdoor unit)	74
E: 77.X. Heat sink thermistor error (Outdoor unit) (24/30/36 model)	77
E: 84.X. Current sensor error (Outdoor unit)	84
E: 86.X. High pressure switch error (Outdoor unit) (24/30/36 model)	86
E: 94.X. Trip detection (Outdoor unit)	94
E: 95.X. Compressor motor control error (Outdoor unit)	95
E: 97.X. Outdoor unit fan motor error (Outdoor unit)	97
E: 99.X. 4-way valve error (Outdoor unit)	99
E: A1.X. Discharge temperature error (Outdoor unit)	A1
E: A3.X. Compressor temperature error (Outdoor unit)	A3
E: AC.X. Heat sink temperature error (Outdoor unit) (24/30/36 model)	AC

1-4. Error code table (Outdoor unit: for 24/30/36 model only)

The operation status is determined by the lighting up and blinking of the LED lamp.

After check that ERROR LED lamp blinks, press the ENTER button once.

NOTE: For the positions of LED lamp and buttons, refer to "Function settings (for 24-36 outdoor units)" in Chapter 5. FIELD WORKING on page 05-10.

Error contents	POWER/ MODE	ERROR	PUMP DOWN	LOW NOISE		PEAK CUT		
			L1	L2	L3	L4	L5	L6
E: 11.X. Serial communication error (Serial forward transfer error) (Indoor unit) (Occurs immediately after starting operation)	■ 2	●	■ 1	■ 1	○	○	●	●
E: 11.X. Serial communication error (Serial forward transfer error) (Indoor unit) (Occurs during operation)	■ 2	●	■ 1	■ 1	○	●	○	○
E: 12.X. Wired remote controller communication error (Indoor unit)	■ 2	●	■ 5	■ 15	○	○	○	●
E: 23.X. Combination error (Outdoor unit)	■ 2	●	■ 5	■ 15	○	○	○	●
E: 32.X. Indoor unit main PCB error (Indoor unit)	■ 2	●	■ 5	■ 15	○	○	○	●
E: 35.X. MANUAL AUTO button error (Indoor unit)	■ 2	●	■ 5	■ 15	○	○	○	●
E: 41.X. Room temperature sensor error (Indoor unit)	■ 2	●	■ 5	■ 15	○	○	○	●
E: 42.X. Indoor unit heat exchanger sensor error (Indoor unit)	■ 2	●	■ 5	■ 15	○	○	○	●
E: 51.X. Indoor unit fan motor error (Indoor unit)	■ 2	●	■ 5	■ 15	○	○	○	●
E: 62.X. Outdoor unit main PCB error (Outdoor unit)	■ 2	●	■ 6	■ 2	○	○	○	●
E: 63.X. Inverter error (Outdoor unit)	■ 2	●	■ 6	■ 3	○	○	○	●
E: 71.X. Discharge thermistor error (Outdoor unit)	■ 2	●	■ 7	■ 1	○	○	○	●
E: 72.X. Compressor thermistor error (Outdoor unit)	■ 2	●	■ 7	■ 2	○	○	○	●
E: 73.X. Heat exchanger (Middle/Outlet) temperature thermistor error (Outdoor unit)	■ 2	●	■ 7	■ 3	○	○	●	○
E: 74.X. Outdoor temperature thermistor error (Outdoor unit)	■ 2	●	■ 7	■ 4	○	○	○	●
E: 77.X. Heat sink thermistor error (Outdoor unit) (24/30/36 model)	■ 2	●	■ 7	■ 7	○	○	○	●
E: 84.X. Current sensor error (Outdoor unit)	■ 2	●	■ 8	■ 4	○	○	○	●
E: 86.X. High pressure switch error (Outdoor unit) (24/30/36 model)	■ 2	●	■ 8	■ 6	○	●	○	○
E: 94.X. Trip detection (Outdoor unit)	■ 2	●	■ 9	■ 4	○	○	○	●
E: 95.X. Compressor motor control error (Outdoor unit)	■ 2	●	■ 9	■ 5	○	○	○	●
E: 97.X. Outdoor unit fan motor error (Outdoor unit)	■ 2	●	■ 9	■ 7	○	○	●	●
E: 99.X. 4-way valve error (Outdoor unit)	■ 2	●	■ 9	■ 9	○	○	○	●

Error contents	POWER/ MODE	ERROR	PUMP DOWN	LOW NOISE		PEAK CUT		
			L1	L2	L3	L4	L5	L6
E: A1.X. Discharge temperature error (Outdoor unit)	■ 2	●	■ 10	■ 1	○	○	○	●
E: A3.X. Compressor temperature error (Outdoor unit)	■ 2	●	■ 10	■ 3	○	○	○	●
E: AC.X. Heat sink temperature error (Outdoor unit) (24/30/36 model)	■ 2	●	■ 10	■ 12	○	○	●	●

● : Light on ○ : Light off ■ (n) : n Times blinking

2. Troubleshooting with error code

2-1. E: 11.X. Serial communication error (Serial reverse transfer error) (Outdoor unit)

Indicator	Wired remote controller	Error code	E: 11
Detective actuator	Outdoor unit	Main PCB	When the indoor unit cannot receive the serial signal from outdoor unit more than 2 minutes after power on, or the indoor unit cannot receive the serial signal more than 15 seconds during normal operation.
		Fan motor	
Forecast of cause			Connection failure
			External cause
			Main PCB failure
			Outdoor unit fan motor failure

Check point 1. Reset the power and operate

Does error indication show again?

→ If no, go to "Check point 1-2".



Check point 2. Check connection

Check any loose or removed connection line of indoor unit and outdoor unit.

Check connection condition is control unit. (If there is loose connector, open cable or mis-wiring.)

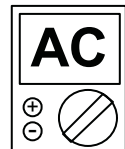
→ If there is an abnormal condition, correct it by referring to the installation manual or the "DESIGN & TECHNICAL MANUAL".



Check point 3. Check the voltage of power supply

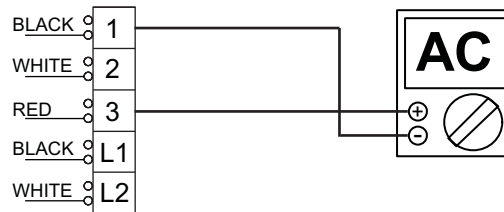
Check the voltage of power supply

Check if AC 187 V (AC 208 V -10%) to AC 253 V (AC 230 V +10%) appears at outdoor unit terminal L1—L2.



Check point 4. Check serial signal (Reverse transfer signal)

Check serial signal (Reverse transfer signal)



- Check if indicated value swings between AC 90 V and AC 270 V at the outdoor unit terminal 1—3.
- If it is abnormal, check the parts below.
 - Outdoor unit fan motor
- If outdoor fan motor is abnormal, replace outdoor unit fan motor and main PCB.
- If the checked parts are normal, replace the main PCB.



End

Check point 1-2. Check external cause such as noise

- Check the complete insulation of the grounding.
- Check if there is any equipment that causes harmonic wave near the power cable (Neon light bulb or any electronic equipment which causes harmonic wave).



End

2-2. E: 11.X. Serial communication error (Serial forward transfer error) (Indoor unit)

Indicator	Wired remote controller	Error code	E: 11
Detective actuator	Indoor unit	Main PCB	When the outdoor unit cannot receive the serial signal from indoor unit more than 10 seconds.
Forecast of cause			Connection failure
			External cause
			Main PCB failure

Check point 1. Reset the power and operate

Does error indication show again?

→ If no, go to "Check point 1-2".



Check point 2. Check connection

Check any loose or removed connection line of indoor unit and outdoor unit.

Check connection condition is control unit. (If there is loose connector, open cable or mis-wiring.)

→ If there is an abnormal condition, correct it by referring to the installation manual or the "DESIGN & TECHNICAL MANUAL".



Check point 3. Check the voltage of power supply

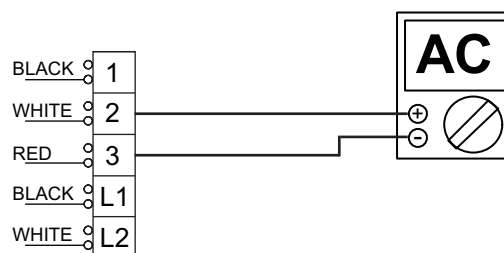
Check the voltage of power supply

Check if AC 187 V (AC 208 V -10%) to AC 253 V (AC 230 V +10%) appears at outdoor unit terminal L1—L2.



Check point 4. Check serial signal (Forward transfer signal)

Check serial signal (Forward transfer signal)



- Check if indicated value swings between AC 30 V and AC 130 V at outdoor unit terminal 2—3.
- If it is abnormal, replace main PCB.



End

Check point 1-2. Check external cause such as noise

- Check the complete insulation of the grounding.
- Check if there is any equipment that causes harmonic wave near the power cable (Neon light bulb or any electronic equipment which causes harmonic wave).



End

2-3. E: 12.X. Wired remote controller communication error (Indoor unit)

Indicator	Wired remote controller	Error code	E: 12
Detective actuator	Indoor unit	Main PCB	When the indoor unit cannot receive the signal from Wired remote controller more than 1 minute during normal operation.
	Wired remote control		
Forecast of cause			Terminal connection abnormal
			Wired remote control failure
			Main PCB failure

Check point 1. Check the connection of terminal

After turning off the power, check & correct the followings.

- Check the connection of terminal between wired remote controller and indoor unit, and check if there is a disconnection of the cable.



Check Point 1-2 : Check Wired remote controller and main PCB

Check voltage at CN300 of main PCB (terminal 1—3, terminal 1—2). (Power supply to the remote controller)

Upon correcting the removed connector or mis-wiring, reset the power.



- If it is DC 12 V, remote controller is failure. (Main PCB is normal) => Replace remote control.
- If it is DC 0 V, Main PCB is failure. (Check remote controller once again) => Replace Main PCB.



End

Check Point 2 : Wire installation wrong remote controller group setting

- Wrong wire connection in remote controller group (Please refer to the installation manual)
- The number of connecting indoor unit and remote controller in one remote controller group were less than 16 units.



Check Point 2-1 : Check Indoor unit main PCB

- Check if main PCB damage
- Change main PCB and check the error after setting remote controller address



End

2-4. E: 15.X. Automatic air flow adjustment error (Indoor unit)

Indicator	Wired remote controller	Error code	E: 15
Detective actuator	Indoor unit	Main PCB	<ul style="list-style-type: none"> On automatic airflow adjustment operation, when the fan speed other than 0rpm is detected at the 0rpm operation. On automatic airflow adjustment operation, when the fan speed is not reach the target speed, after 2 minutes from the fan started. On automatic airflow adjustment operation operation, when the 72:750W,90:1000W of input power is detected.
Forecast of cause			Fan rotation failure
			Fan motor winding open
			Indoor unit main PCB

Check point 1. Check the rotation of fan

Rotate the fan by hand when the operation is off. (Check if fan is caught, drop off or locked motor)
→ If fan or bearing is abnormal, replace it.



Check point 2. Check ambient temperature around the motor

Check excessively high temperature around the motor. (If there is any surrounding equipment that causes heat.)
→ Upon the temperature coming down, restart operation.



Check point 3. Check indoor unit fan motor

Check indoor unit fan motor. (Refer to indoor unit fan motor in "[Service parts information](#)" on page 03-52.)
→ If indoor unit fan motor is abnormal, replace it.



Check point 4. Replace main PCB

If check point 1-3 does not improve the symptom, change main PCB.



End

2-5. E: 22.X. Indoor unit capacity error (Indoor unit)

Detective actuator	Indoor unit main PCB	When the total capacity of the indoor units does not match outdoor unit capacity while 3 minutes after power on.
Forecast of cause		Indoor unit selection is incorrect.
		Main PCB failure

Check point 1. Check the total capacity of indoor units

Check the total capacity of the indoor units.

→ If abnormal condition is found, correct it referring to the installation manual or DESIGN & TECHNICAL MANUAL.



Check point 2. Replace the main PCB

If check point 1 does not improve the symptom, replace the main PCB.



End

2-6. E: 23.X. Combination error (Outdoor unit)

Indicator	Wired remote controller	Error code	E: 23
Detective actuator	Indoor unit		The outdoor unit receives the serial signal of applied refrigerant information from indoor unit.
Forecast of cause			Incorrect indoor unit is selected.

Check point 1. Check the type of indoor unit

- Check the type of the connected indoor unit.
-> If there is an abnormal condition, correct it by refer to the installation manual or the "DESIGN & TECHNICAL MANAL".



Check point 2. Replace the main PCB

If check point 1 do not improve the symptom, replace the main PCB of the outdoor unit.



End

2-7. E: 32.X. Indoor unit main PCB error (Indoor unit)

Indicator	Wired remote controller	Error code	E: 32
Detective actuator	Indoor unit	Main PCB	When power is on and there is some below case. 1. When model information of EEPROM is incorrect. 2. When the access to EEPROM failed.
Forecast of cause			External cause
			Defective connection of electrical components
			Main PCB failure

Check point 1. Reset power supply and operate

Does error indication show again?

→ If no, go to "Check point 1-2".



Check point 2. Check Indoor unit electrical components

- Check all connectors. (loose connector or incorrect wiring)
- Check any shortage or corrosion on PCB.



Check point 3. Replace the main PCB

Replace the main PCB.



End

Check point 1-2. Check external cause such as noise

- Check if the ground connection is proper.
- Check if there is any equipment that causes harmonic wave near the power cable (Neon light bulb or any electronic equipment which causes harmonic wave).



End

NOTE: EEPROM

EEPROM (Electrically Erasable and Programmable Read Only Memory) is a non-volatile memory which keeps memorized information even if the power is turned off. It can change the contents electronically. To change the contents, it uses higher voltage than normal, and it cannot change a partial contents. (Rewriting shall be done upon erasing the all contents.) There is a limit in a number of rewriting.

2-8. E: 33.X. Indoor unit motor electricity consumption detection error (Indoor unit)

Indicator	Wired remote controller	Error code	E: 33
Detective actuator	Indoor unit motor electricity consumption detection		When the voltage value or the current value of the motor go beyond the limits
Forecast of cause			Fan motor failure
			Main PCB failure

Check point 1. Check the rotation of fan

Rotate the fan by hand when the operation is off. (Check if fan is caught, drop off or locked motor)
→ If fan or bearing is abnormal, replace it.



Check point 2. Check ambient temperature around the motor

Check excessively high temperature around the motor. (If there is any surrounding equipment that causes heat.)
→ Upon the temperature coming down, restart operation.



Check point 3. Check indoor unit fan motor

Check indoor unit fan motor. (Refer to indoor unit fan motor in "[Service parts information](#)" on page 03-52.)
→ If indoor unit fan motor is abnormal, replace it.



Check point 4. Replace the main PCB

If check point 1-3 does not improve the symptom, replace the main PCB.



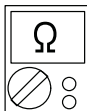
End

2-9. E: 35.X. MANUAL AUTO button error (Indoor unit)

Indicator	Wired remote controller	Error code	E: 35
Detective actuator	Indoor unit controller PCB		When the MANUAL AUTO button becomes on for consecutive 60 or more seconds.
	Indicator PCB		
	Manual auto switch		
Forecast of cause			MANUAL AUTO button failure
			Controller PCB and indicator PCB failure

Check point 1. Check the MANUAL AUTO button

- Check if MANUAL AUTO button is kept pressed.
- Check ON/OFF switching operation by using a meter.



If MANUAL AUTO button is disabled (ON/OFF switching), replace it.



Check point 2. Replace the main PCB and indicator PCB

If Check Point 1 does not improve the symptom, replace the main PCB and indicator PCB.



End

2-10. E: 39.X. Indoor unit power supply error for fan motor (Indoor unit)

Indicator	Wired remote controller	Error code	E: 39
Detective actuator	Indoor unit main PCB		<ul style="list-style-type: none"> When a momentary power cut off When do not start fan motor
Forecast of cause			External cause
			Connector connection failure
			Main PCB failure

Check point 1. Check external cause at indoor and outdoor (Voltage drop or Noise)

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave)
Check the complete insulation of grounding.



Check point 2. Check connection of Connector

- Check if connector is removed.
- Check erroneous connection.
- Check if cable is open.

→ Upon correcting the removed connector or mis-wiring, reset the power.



Check point 3. Replace the main PCB

If check point 1 to 2 do not improve the symptom, replace the main PCB.



End

2-11. E: 41.X. Room temperature sensor error (Indoor unit)

Indicator	Wired remote controller	Error code	E: 41
Detective actuator	Indoor unit main PCB	Room temperature thermistor is open or short is detected always.	
	Room temperature thermistor		
Forecast of cause		Connector failure	
		Thermistor failure	
		Main PCB failure	

Check point 1. Check connection of connector

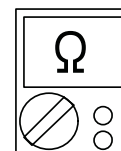
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

-> Reset power when reinstalling due to removed connector or incorrect wiring.



Check point 2. Remove connector and check thermistor resistance value

- For the room thermistor resistance value, refer to "[Thermistor resistance values](#)" on page 03-62.
- If thermistor is either open or shorted, replace it and reset the power.



Check point 3. Check voltage of main PCB

Make sure circuit diagram of each indoor unit and check terminal voltage at thermistor (DC 5.0 V).

NOTE: For details of thermistor connector, refer to "[Wiring diagrams](#)" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-28.



If the voltage does not appear, replace main PCB.



End

2-12. E: 42.X. Indoor unit heat exchanger sensor error (Indoor unit)

Indicator	Wired remote controller	Error code	E: 42
Detective actuator	Indoor unit main PCB	Heat exchanger temperature thermistor	When heat exchanger temperature thermistor open or short circuit is detected.
Forecast of cause			Connector connection failure
			Thermistor failure
			Main PCB failure

Check point 1. Check connection of connector

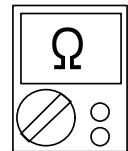
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

-> Reset power when reinstalling due to removed connector or incorrect wiring.



Check point 2. Remove connector and check thermistor resistance value

- For the heat exchanger thermistor resistance value, refer to "[Thermistor resistance values](#)" on page 03-62.
- If thermistor is either open or shorted, replace it and reset the power.



Check point 3. Check voltage of main PCB

Make sure circuit diagram of each indoor unit and check terminal voltage at thermistor (DC 5.0 V).

NOTE: For details of thermistor connector, refer to "[Wiring diagrams](#)" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-28.



If the voltage does not appear, replace main PCB.



End

2-13. E: 51.X. Indoor unit fan motor error (Indoor unit)

Indicator	Wired remote controller	Error code	E: 51
Detective actuator	Indoor unit	Main PCB	When the actual rotation number of the indoor unit fan motor is below 1/3 of the target rotation number continuously for more than 56 seconds.
		Fan motor	
Forecast of cause			Fan rotation failure
			Fan motor winding open
			Motor protection by surrounding temperature rise
			Control PCB failure
			Indoor unit fan motor failure

Check point 1. Check rotation of fan

Rotate the fan by hand when operation is off. (Check if fan is caught, dropped off or locked motor)
→ If fan or bearing is abnormal, replace it.



Check point 2. Check ambient temperature around motor

Check excessively high temperature around the motor. (If there is any surrounding equipment that causes heat)
→ Upon the temperature coming down, restart operation.



Check point 3. Check indoor unit fan motor

Check Indoor unit fan motor. (Refer to indoor unit fan motor in "[Service parts information](#)" on page 03-52.)
→ If Indoor unit fan motor is abnormal, replace Indoor unit fan motor.



Check point 4. Replace the main PCB

If Check Point 1 to 3 do not improve the symptom, replace the main PCB.



End

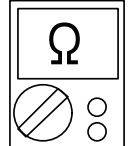
2-14. E: 53.X. Drain pump error (Indoor unit)

Indicator	Wired remote controller	Error code	E: 53
Detective actuator	Indoor unit main PCB Float switch		When Float switch is ON for more than 3 minutes.
Forecast of cause			Float switch failure
			Shorted connector/wire failure
			Main PCB failure
			Drain pump failure
			Hose clogging

Check point 1. Check float switch

- Check operation of float switch. (any blocking by dust, etc.)
- Remove float switch and check ON/OFF switching operation by using a meter.

-> If float switch is abnormal, replace it.



Check point 2. Check connector and wire

Check loose contact of CN9 and shorted wire (pinched wire).
-> Replace float switch if the wire is abnormal



Check point 3. Check drain hose

Check drain hose.
-> If there is hose clogging. Please clear the clog.



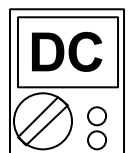
Check point 4. Check voltage of power supply and drain pump

Check drain pump
-> If drain pump is not run on the working condition, check the voltage of the CN71 on the main PCB.

Measurement result

- 12V: Replace the drain pump
- Other than 12V: Replace the main PCB

NOTE: For details of thermistor connector, refer to "[Wiring diagrams](#)" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-28.



End

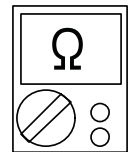
2-15. E: 57.X. Damper (Open/Close) detection limit switch error

Indicator	Wired remote controller	Error code	E: 57
Detective actuator	Indoor unit main PCB		<ul style="list-style-type: none"> When limit switch were not able to detect the close though the damper close.(Upper air flow) When limit switch were not able to detect the open though the damper open.(Upper & Lower air flow)
	Limit switch		
	Damper		
Forecast of cause			Limit switch failure
			Shorted connector/wire
			Damper failure
			Controller PCB failure

Check point 1. Check limit switch

- Check operation of limit switch. (any blocking by dust, etc.)
- Remove limit switch and check ON/OFF switching operation by using a meter.

-> If limit switch is detective, replace it.



Check point 2. Check connector (CN18)/wire

Check loose contact of CN18/shorted wire (pinched wire).

-> Replace limit switch if the wire is abnormal



Check point 3. Check Damper

- Check the obstruction of damper movement.
- Check the damper movement.

-> Replace damper if the damper is abnormal



Check point 4. Replace the main PCB

If Check Point 1 and 3 do not improve the symptom, replace the main PCB.



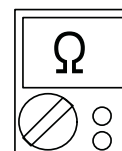
End

2-16. E: 58.X. Intake grille error (Indoor unit)

Indicator	Wired remote controller	Error code	E: 58
Detective actuator	Indoor unit main PCB	When the Micro switch is detected open while running the compressor.	
	Micro switch		
Forecast of cause			Micro switch failure
			Shorted connector/wire
			Main PCB failure

Check point 1. Check limit switch

- Check operation of Micro switch. (any blocking by dust, etc.)
- Remove Micro switch and check ON/OFF switching operation by using a meter.



-> If micro switch is detective, replace it.



Check point 2. Check connector (CN11)/wire

Check loose contact of CN11/shorted wire (pinched wire).

-> Replace micro switch if the wire is abnormal



Check point 3. Replace the main PCB

If Check Point 1 and 2 do not improve the symptom, replace the main PCB.



End

2-17. E: 62.X. Outdoor unit main PCB error (Outdoor unit)

Indicator	Wired remote controller	Error code	E: 62
Detective actuator	Outdoor unit	Main PCB	Access to EEPROM failed due to some cause after outdoor unit started.
Forecast of cause			External cause (Noise, temporary open, voltage drop)
			Main PCB failure

Check point 1. Reset power supply and operate

Does error indication show again?

If no, go to "[Check point 1-2](#)".



Check point 2. Replace the main PCB

Replace the main PCB.



End

Check point 1-2. Check external cause

- Check if temporary voltage drop was not generated.
- Check if momentary open was not generated.
- Check if ground is connection correctly or there are no related cables near the power line.



End

2-18. E: 63.X. Inverter error (Outdoor unit)

Indicator	Wired remote controller	Error code	E: 63
Detective actuator	Outdoor unit	Inverter PCB	Error information received from inverter PCB
Forecast of cause			External cause
			Power supply to inverter PCB wiring disconnection or open
			Inverter PCB failure
			Outdoor unit main PCB failure

Check point 1. Turn the power on again?

Error displayed again?

If no, go to "Check point 1-2".



Check point 2. Check the wiring

- Connector and wiring connection state check.
- Cable open check.



Check point 3. Replace inverter PCB

Replace inverter PCB.



Check point 4. Replace main PCB

If check point 1 to 3 do not improve the symptom, change main PCB.



End

Check point 1-2. Check external cause

- Check if temporary voltage drop was not generated.
- Check if momentary open was not generated.
- Check if ground is connection correctly or there are no related cables near the power line.



End

2-19. E: 64.X. PFC circuit error (Outdoor unit)

Indicator	Wired remote controller	Error code	E: 64
Detective actuator	Outdoor unit	Main PCB	<ul style="list-style-type: none"> When inverter input DC voltage is higher than 425 V or lower than 80 V (for 18 model) or higher than 420 V for over 3 seconds (for 24/30/36 model), the compressor stops. If the same operation is repeated 5 times, the compressor stops permanently.
Forecast of cause			External cause
			Connector connection failure
			Main PCB failure

Check point 1. Check external cause at indoor and outdoor (Voltage drop or Noise)

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave)
Check the complete insulation of grounding.



Check point 2. Check connection of Connector

- Check if connector is removed.
- Check erroneous connection.
- Check if cable is open.

→ Upon correcting the removed connector or mis-wiring, reset the power.



Check point 3. Replace the main PCB

If check point 1 to 2 do not improve the symptom, replace the main PCB.



End

2-20. E: 65.X. Trip terminal L error (Outdoor unit)

Indicator	Wired remote controller	Error code	E: 65
Detective actuator	Outdoor unit	Main PCB	When the signal from FO terminal (13—15) of IPM is “L” (0 V) during the compressor stopping.
Forecast of cause			Main PCB failure

Check point 1. Check main PCB

Replace the outdoor unit main PCB.



End

2-21. E: 71.X. Discharge thermistor error (Outdoor unit)

Indicator	Wired remote controller	Error code	E: 71
Detective actuator	Outdoor unit main PCB	When discharge pipe temperature thermistor open or short circuit is detected at power on or while running the compressor	
	Discharge pipe temperature thermistor		
Forecast of cause			Connector failure
			Thermistor failure
			Main PCB failure

Check point 1. Check connection of connector

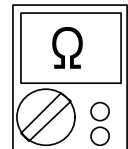
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

→ Reset power when reinstalling due to removed connector or incorrect wiring.



Check point 2. Remove connector and check thermistor resistance value

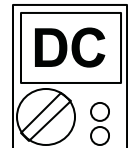
- For the discharge temperature thermistor resistance value, refer to "[Thermistor resistance values](#)" on page 03-62.
- If thermistor is either open or shorted, replace it and reset the power.



Check point 3. Check voltage of main PCB

Make sure circuit diagram of outdoor unit and check terminal voltage at thermistor (DC 5.0 V).

NOTE: For details of thermistor connector, refer to "[Wiring diagrams](#)" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-28.



If the voltage does not appear, replace main PCB.



End

2-22. E: 72.X. Compressor thermistor error (Outdoor unit)

Indicator	Wired remote controller	Error code	E: 72
Detective actuator	Outdoor unit main PCB	Compressor temperature thermistor	When compressor temperature thermistor open or short circuit is detected at power on or while running the compressor
	Compressor temperature thermistor		
Forecast of cause			Connector failure
			Thermistor failure
			Main PCB failure

Check point 1. Check connection of connector

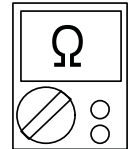
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

→ Reset power when reinstalling due to removed connector or incorrect wiring.



Check point 2. Remove connector and check thermistor resistance value

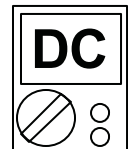
- For the compressor thermistor resistance value, refer to "[Thermistor resistance values](#)" on page 03-62.
- If thermistor is either open or shorted, replace it and reset the power.



Check point 3. Check voltage of main PCB

Make sure circuit diagram of outdoor unit and check terminal voltage at thermistor (DC 5.0 V).

NOTE: For details of thermistor connector, refer to "[Wiring diagrams](#)" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-28.



If the voltage does not appear, replace main PCB.



End

2-23. E: 73.X. Heat exchanger (Middle/Outlet) temperature thermistor error (Outdoor unit)

Indicator	Wired remote controller	Error code	E: 73
Detective actuator	Heat exchanger liquid temperature thermistor	• Heat exchanger liquid temperature thermistor short or open detected • Heat exchanger middle temperature thermistor short or open detected	
	Heat exchanger middle temperature thermistor		
Forecast of cause			Connector failure
			Thermistor failure
			Main PCB failure

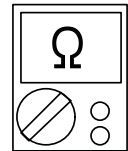
Check Point 1 : Check the connector connection and cable open

- Connector connection state check
- Cable open check



Check Point 2 : Check the thermistor

- For the outdoor unit heat exchanger thermistor resistance value, refer to "[Thermistor resistance values](#)" on page 03-62.
- If thermistor is either open or shorted, replace it and reset the power.



Check point 3. Check voltage of main PCB

Make sure circuit diagram of outdoor unit and check terminal voltage at thermistor (DC 5.0 V).

NOTE: For details of thermistor connector, refer to "[Wiring diagrams](#)" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-28.



If the voltage does not appear, replace main PCB.



End

2-24. E: 74.X. Outdoor temperature thermistor error (Outdoor unit)

Indicator	Wired remote controller	Error code	E: 74
Detective actuator	Outdoor unit main PCB	When outdoor temperature thermistor open or short circuit is detected at power on or while running the compressor	
	Outdoor temperature thermistor		
Forecast of cause			Connector failure
			Thermistor failure
			Main PCB failure

Check point 1. Check connection of connector

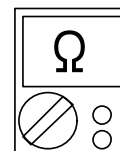
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

-> Reset power when reinstalling due to removed connector or incorrect wiring.



Check point 2. Remove connector and check thermistor resistance value

- For the outdoor temperature thermistor resistance value, refer to "[Thermistor resistance values](#)" on page 03-62.
- If thermistor is either open or shorted, replace it and reset the power.



Check point 3. Check voltage of main PCB

Make sure circuit diagram of outdoor unit and check terminal voltage at thermistor (DC 5.0 V).

NOTE: For details of thermistor connector, refer to "[Wiring diagrams](#)" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-28.



If the voltage does not appear, replace main PCB.



End

2-25. E: 77.X. Heat sink thermistor error (Outdoor unit) (24/30/36 model)

Indicator	Wired remote controller	Error code	E: 77
Detective actuator	Heat sink temperature thermistor	Heat sink temperature thermistor short or open detected	
Forecast of cause			Connector failure
			Thermistor failure
			Inverter PCB failure

Check point 1. Check connection of connector

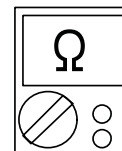
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

-> Reset power when reinstalling due to removed connector or incorrect wiring.



Check point 2. Remove connector and check thermistor resistance value

- For the Heat sink thermistor resistance value, refer to "[Thermistor resistance values](#)" on page 03-62.
- If thermistor is either open or shorted, replace it and reset the power.



Check point 3. Check voltage of inverter PCB

Make sure circuit diagram of outdoor unit and check terminal voltage at thermistor (DC 5.0 V).

NOTE: For details of thermistor connector, refer to "[Wiring diagrams](#)" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-28.



If the voltage does not appear, replace inverter PCB.



End

2-26. E: 84.X. Current sensor error (Outdoor unit)

Indicator	Wired remote controller	Error code	E: 84
Detective actuator	Outdoor unit	Main PCB	When input current sensor has detected 0 A, while inverter compressor is operating at higher than 50 rps, after 1 minute upon starting the compressor. (Except during the defrost operation)
Forecast of cause			Defective connection of electrical components
			External cause
			Main PCB failure

Check point 1. Reset power supply and operate

Does error indication show again?

If no, go to "Check point 1-2".



Check point 2. Check connections of outdoor unit electrical components

- Check if the terminal connection is loose.
- Check if connector is removed.
- Check erroneous connection.
- Check if cable is open.

Upon correcting the removed connector or miswiring, reset the power.



Check point 3. Replace the main PCB

If Check point 1, 2 do not improve the symptom, replace the main PCB.



End

Check point 1-2. Check external cause at Indoor and Outdoor (Voltage drop or Noise)

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave)
Check the complete insulation of grounding.



End

2-27. E: 86.X. High pressure switch error (Outdoor unit) (24/30/36 model)

Indicator	Wired remote controller	Error code	E: 86
Detective actuator	Outdoor unit main PCB	When pressure switch open is detected in 10 seconds after the power is turned on.	
	High pressure switch		
Forecast of cause			High pressure switch connector disconnection or open
			High pressure switch characteristics failure
			Main PCB failure

Check point 1. Check the high pressure switch connection state

- Check connector and wiring connection state.
- Check if cable is open

-> Reset power when reinstalling due to removed connector or incorrect wiring.



Check point 2. Check the high pressure switch characteristics

- Check switch characteristics.
For the characteristics of the high pressure switch, refer to below.



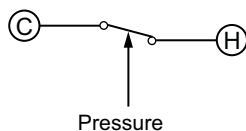
Check point 3. Replace main PCB

Change main PCB and check operation again.



End

- Type of contact



- Characteristics of pressure switch

Pressure switch 1	
Contact: Short → Open	4.2—4.05 MPa
Contact: Open → Short	3.2±0.15 MPa

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2-28. E: 94.X. Trip detection (Outdoor unit)

Indicator	Wired remote controller	Error code	E: 94
Detective actuator	Outdoor unit	Inverter PCB	Protection stop by over-current generation after inverter compressor start processing completed generated consecutively 10 times. NOTE: The number of generations is reset when the compressor starts up.
		Main PCB	
		Compressor	
Forecast of cause			Outdoor unit fan operation defective, foreign matter on heat-exchanger, excessive rise of ambient temperature
			Main PCB failure
			Inverter compressor failure (lock, winding short)
			Inverter PCB

Check point 1. Check the outdoor unit fan operation, heat-exchanger, ambient temperature

- No obstructions in air passages?
- Heat exchange fins clogged
- Outdoor unit fan motor check
- Ambient temperature not raised by the effect of other heat sources?
- Discharged air not sucked in?



Check point 2. Replace inverter PCB

If Check point 1 do not improve the symptom, change inverter PCB.



Check point 3. Replace main PCB

If Check point 1, 2 do not improve the symptom, change main PCB.



Check point 4. Replace compressor

If Check point 3 do not improve the symptom, change compressor.



End

2-29. E: 95.X. Compressor motor control error (Outdoor unit)

Indicator	Wired remote controller	Error code	E: 95
Detective actuator	Outdoor unit	Inverter PCB	"Protection stop by "overcurrent generation at inverter compressor starting" restart" generated consecutively 50 times x 3 sets (total 150 times) (for 18 model) or 10 times x 3 sets (total 30 times) (for 24/30/36 model).
		Main PCB	
		Compressor	
Forecast of cause			Defective connection of electrical components
			Inverter PCB failure
			Main PCB failure
			Compressor failure

Check point 1. Check noise from compressor

Turn on power and check operation noise.
→ If an abnormal noise show, replace compressor.



Check point 2. Check connection of around the compressor components

For compressor terminal, main PCB

- Check if connector is removed.
- Check erroneous connection.
- Check if cable is open. (Refer to inverter compressor in "[Service parts information](#)" on page 03-52.)

→ Upon correcting the removed connector or mis-wiring, reset the power.



Check point 3. Replace inverter PCB

If Check point 1, 2 do not improve the symptom, change inverter PCB.



Check point 4. Replace main PCB

If Check point 3 do not improve the symptom, change main PCB.



Check point 5. Replace compressor

If Check point 4 do not improve the symptom, change compressor.



End

2-30. E: 97.X. Outdoor unit fan motor error (Outdoor unit)

Indicator	Wired remote controller	Error code	E: 97
Detective actuator	Outdoor unit	Inverter PCB	<ol style="list-style-type: none"> When outdoor fan rotation speed is less than 100 rpm in 20 seconds after fan motor starts, fan motor stops. After fan motor restarts, if the same operation within 60 seconds is repeated 3 times in a row, compressor and fan motor stops. If 1. and 2. repeats 5 times in a row, compressor and fan motor stops permanently.
		Main PCB	
		Fan motor	
Forecast of cause			Fan rotation failure Motor protection by surrounding temperature rise Inverter PCB failure Main PCB failure Outdoor unit fan motor

Check point 1. Check rotation of fan

Rotate the fan by hand when operation is off. (Check if fan is caught, dropped off or locked motor)
 → If fan or bearing is abnormal, replace it.



Check point 2. Check ambient temperature around motor

Check excessively high temperature around the motor. (If there is any surrounding equipment that causes heat)
 → Upon the temperature coming down, restart operation.



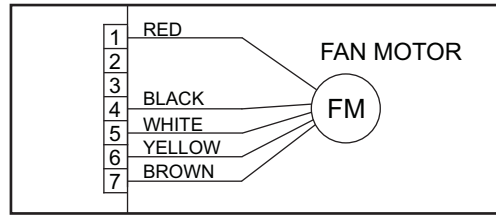
Check point 3. Check outdoor unit fan motor

Check outdoor unit fan motor. (Refer to outdoor unit fan motor in "[Service parts information](#)" on page 03-52.)
 → If outdoor unit fan motor is abnormal, replace outdoor unit fan motor and main PCB.



Check point 4. Check output voltage of inverter PCB

Check outdoor unit circuit diagram and the voltage. (Measure at inverter PCB side connector)



NOTE: For details of wiring diagram, refer to "[Wiring diagrams](#)" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-28.

Read wire	DC voltage
Red—Black	18 model: 240 V to 400 V, 24/30/36 models: 262 V to 390 V
White—Black	15±1.5 V

-> If the voltage is not correct, replace inverter PCB.



Check point 5. Replace main PCB

If Check point 1 to 4 do not improve the symptom, change main PCB.



End

2-31. E: 99.X. 4-way valve error (Outdoor unit)

Indicator	Wired remote controller	Error code	E: 99
Detective actuator	Indoor unit	main PCB	When the indoor heat exchanger temperature is compared with the room temperature, and either following condition is detected continuously two times, the compressor stops. Indoor heat exchanger temp. - Room temp. > 18°F (10°C) (Cooling or Dry operation) Indoor heat exchanger temp. - Room temp. < -18°F (-10°C) (Heating operation) If the same operation is repeated 5 times, the compressor stops permanently.
	Heat exchanger temperature thermistor		
	Room temperature thermistor		
Forecast of cause	4-way valve		Air filter clogged
			Connector connection failure
			Thermistor failure
			Coil failure
			4-way valve failure
			Main PCB failure

Check point 1. Check air filter condition

Check air filter dirty.

→ If the air filter dirty, clean up the air filter.



Check point 2. Check connection of connector

- Check if connector is removed.
- Check erroneous connection.
- Check if thermistor cable is open.

→ Upon correcting the removed connector or mis-wiring, reset the power.



Check point 3. Check each thermistor

- Isn't it fallen off the holder?
- Is there a cable pinched?

Check characteristics of room thermistor and indoor unit heat exchanger thermistor.

For the thermistor resistance value, refer to "[Thermistor resistance values](#)" on page 03-62.

→ If defective, replace the thermistor.



Check point 4. Check the solenoid coil and 4-way valve

NOTE: Refer solenoid coil and 4-way valve in "[Service parts information](#)" on page 03-52.

- **Solenoid coil**
Remove P60 from PCB and check the resistance value of coil. Resistance value is 1.970 kΩ (at 68°F [20°C]).
→ If it is open or abnormal resistance value, replace solenoid coil.
- **4-way valve**
Check each piping temperature, and the location of the valve by the temperature difference.
If the value location is not proper, replace 4-way valve.

**Check point 5. Replace main PCB**

If Check Point 1 to 4 do not improve the symptom, replace main PCB.



End

2-32. E: A1.X. Discharge temperature error (Outdoor unit)

Indicator	Wired remote controller	Error code	E: A1
Detective actuator	Outdoor unit main PCB		Protection stop by discharge temperature $\geq 230^{\circ}\text{F}$ (110°C) during compressor operation generated 2 times within 24 hours.
	Discharge temperature thermistor		
Forecast of cause			3-way valve not opened
			EEV or capillary tube defective, strainer clogged
			Outdoor unit operation failure, foreign matter on heat exchanger
			Discharge temperature thermistor failure
			Insufficient refrigerant
			Main PCB failure

Check point 1. Check if 3-way valve is open

If the 3-way valve is closed, open the 3-way valve and check operation.

NOTE: For cooling operation, check gas side of the 3-way valve.
For heating operation, check liquid side of the 3-way valve.



Check point 2. Check any of the electronic expansion valve (EEV), capillary tube, or strainer, or all

- Check if EEV open or there is a capillary tube defect.
Refer to outdoor unit Electronic Expansion Valve (EEV) or Capillary tube in "[Service parts information](#)" on page 03-52.
- Check the strainer clogging.



Check point 3. Check the outdoor unit fan and heat exchanger

- Check for foreign object at heat exchanger
- Check if fan can be rotated by hand.
- Check the motor. (Refer to outdoor unit fan motor in "[Service parts information](#)" on page 03-52.)



Check point 4. Check the discharge thermistor

The discharge temperature thermistor characteristics check. (Check by disconnecting thermistor from PCB.)

NOTE: For the characteristics of the thermistor, refer to "[Thermistor resistance values](#)" on page 03-62.



Check point 5. Check the refrigerant amount

Check the refrigerant leakage.



Check point 6. Replace the main PCB

If check point 1 to 5 do not improve the symptom, replace the main PCB.



End

2-33. E: A3.X. Compressor temperature error (Outdoor unit)

Indicator	Wired remote controller	Error code	E: A3
Detective actuator	Outdoor unit main PCB		Protection stop by compressor temperature $\geq 226.4^{\circ}\text{F}$ (108°C) during compressor operation generated 2 times within 24 hours.
	Compressor temperature thermistor		
Forecast of cause			3-way valve not opened
			EEV defective, strainer clogged
			Outdoor unit operation failure, foreign matter on heat exchanger
			Compressor temperature thermistor failure
			Insufficient refrigerant
			Main PCB failure

Check point 1. Check if 3-way valve is open

If the 3-way valve is closed, open the 3-way valve and check operation.

NOTE: For cooling operation, check gas side of the 3-way valve.
For heating operation, check liquid side of the 3-way valve.



Check point 2. Check the electronic expansion valve (EEV) and strainer

- Check if EEV open.
Refer to outdoor unit Electronic Expansion Valve (EEV) in "[Service parts information](#)" on page 03-52.
- Check the strainer clogging.



Check point 3. Check the outdoor unit fan and heat exchanger

- Check for foreign object at heat exchanger
- Check if fan can be rotated by hand.
- Check the motor. (Refer to outdoor unit fan motor in "[Service parts information](#)" on page 03-52.)



Check point 4. Check the compressor thermistor

The compressor temperature thermistor characteristics check. (Check by disconnecting thermistor from PCB.)

NOTE: For the characteristics of the thermistor, refer to "[Thermistor resistance values](#)" on page 03-62.



Check point 5. Check the refrigerant amount

Check the refrigerant leakage.



Check point 6. Replace the main PCB

If check point 1 to 5 do not improve the symptom, replace the main PCB.



End

2-34. E: AC.X. Heat sink temperature error (Outdoor unit) (24/30/36 model)

Indicator	Wired remote controller	Error code	E: AC
Detective actuator	Outdoor unit inverter PCB		Protection stop by heat sink temperature $\geq 176^{\circ}\text{F}$ (80°C) during heat sink operation generated 2 times within 24 hours.
	Heat sink temperature thermistor		
Forecast of cause			Foreign matter on heat sink, heat sink dirty
			Foreign matter on heat exchanger, excessive ambient temperature rise
			Heat sink temp. thermistor defective

Check point 1. Check the heat sink state

Heat sink foreign matter, soiling check



Check point 2. Check the foreign matter and ambient temperature of heat exchanger

- Heat exchange foreign matter check
- Ambient temperature not raised by effect of other heat sources?
- Discharged air not sucked in?



Check point 3. Check the heat sink temperature thermistor

The heat sink temperature thermistor characteristics check. (Check by disconnecting thermistor from PCB.)

NOTE: For the characteristics of the thermistor, refer to "[Thermistor resistance values](#)" on page 03-62.



Check point 4. Replace inverter PCB

Replace inverter PCB



End

3. Troubleshooting without error code

3-1. Indoor unit—No power

Forecast of cause	Power supply failure
	External cause
	Electrical components defective

Check point 1. Check installation condition

- Isn't the breaker down?
- Check loose or removed connection cable.

-> If abnormal condition is found, correct it by referring to the installation manual or the "DESIGN & TECHNICAL MANUAL".



Check point 2. Check external cause at indoor and outdoor (voltage drop or noise)

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave)
Check the complete insulation of grounding.

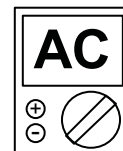


Check point 3. Check electrical components

Check the voltage of power supply.

Check if AC 187 to 253 V appears at outdoor unit terminal L1—L2.

-> If no, go to "[Check point 1](#)" and "[Check point 2](#)".



- Check fuse in filter PCB.
If fuse is open, check if the wiring between terminal and filter PCB is loose, and replace fuse.
- Check varistor in filter PCB.
If varistor is defective, there is a possibility of an abnormal power supply.
Check the correct power supply and replace varistor.
Upon checking the normal power supply, replace varistor.



End

3-2. Outdoor unit—No power

Forecast of cause	Power supply failure
	External cause
	Electrical components defective

Check point 1. Check installation condition

- Is the circuit breaker on or off?
- Check loose or removed connection cable.

→ If abnormal condition is found, correct it by referring to the installation manual or the "DESIGN & TECHNICAL MANUAL".



Check point 2. Check external cause at indoor and outdoor (voltage drop or noise)

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave)
Check the complete insulation of grounding.

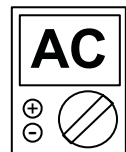


Check point 3. Check electrical components

Check the voltage of power supply.

Check if AC 187 to 253 V appears at outdoor unit terminal L1—L2

→ If no, go to "[Check point 1](#)" and "[Check point 2](#)".



- Check fuse in main PCB.
If fuse is open, check if the wiring between terminal and main PCB is loose, and replace fuse.
- Check varistor in main PCB.
If varistor is defective, there is a possibility of an abnormal power supply. Check the correct power supply and replace varistor.
→ Upon checking the normal power supply, replace varistor.



Check point 4. Replace the main PCB

If check point 1 to 3 do not improve the symptom, replace the main PCB.



End

3-3. No operation (Power is on)

Forecast of cause	Setting/ Connection failure
	External cause
	Electrical components defective

Check point 1. Check indoor and outdoor installation condition

- Indoor unit:
 - Check incorrect wiring between indoor unit and remote controller.
 - Check if there is an open cable connection.
 - Are these indoor unit, outdoor unit, and remote controller suitable model names to connect?
- > If there is some abnormal condition, correct it by referring to the installation manual and “DESIGN & TECHNICAL MANUAL”.



Turn off the power and check correct followings.

- Is there loose or removed communication line of indoor unit and outdoor unit?



Check point 2. Check external cause at indoor and outdoor (Voltage drop or Noise)

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave)
Check the complete insulation of grounding.



Check point 3. Check wired remote controller and controller PCB

Check voltage at CN300 of main PCB (terminal 1—3, terminal 1—2).
(Power supply to remote controller)

- If it is DC 12 V, remote controller is failure. (The controller PCB is normal)
-> Replace remote controller.
- If it is DC 0 V, controller PCB is failure. (Check the remote controller once again)
-> Replace controller PCB.



Check point 4. Replace main PCB

If check point 1 to 3 do not improve the symptom, change main PCB.



End

3-4. No cooling/No heating

Forecast of cause	Indoor unit error
	Outdoor unit error
	Effect by surrounding environment
	Connection pipe/Connection wire failure
	Refrigeration cycle failure

Check point 1. Check Indoor unit

- Does Indoor unit fan run in the HIGH mode?
- Is air filter dirty?
- Is heat exchanger clogged?
- Check if energy save function is operated.



Check point 2. Check outdoor unit operation

- Check if outdoor unit is operating.
- Check any objects that obstruct the air flow route.
- Check if heat exchanger is clogged.
- Is the valve open?



Check point 3. Check site condition

- Is capacity of Indoor unit fitted to the room size?
- Any windows open or direct sunlight?



Check point 4. Check indoor/outdoor installation condition

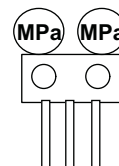
- Check connection pipe (specified pipe length and pipe diameter?)
- Check any loose or removed communication line.

→ If there is an abnormal condition, correct it by referring to the installation manual or the "DESIGN & TECHNICAL MANUAL".



Check point 5. Check Refrigeration cycle

- Check if strainer is clogged (Refer to the figure below).
- Measure gas pressure, and if there is a leakage, correct it.
- Check if EEV open or there is a capillary tube defect.
Refer to outdoor unit Electronic Expansion Valve (EEV) or Capillary tube in "[Service parts information](#)" on page 03-52.
- Check compressor.
Refer to compressor in "[Service parts information](#)" on page 03-52.
Refer to inverter compressor in "[Service parts information](#)" on page 03-52.



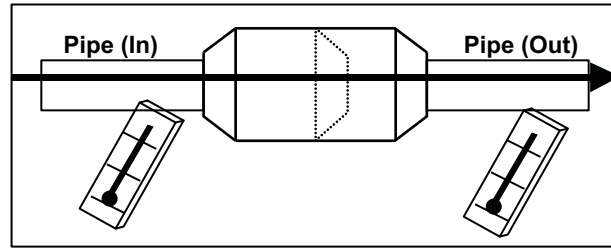
NOTE: When recharging the refrigerant, make sure to perform vacuuming, and recharge the specified amount.



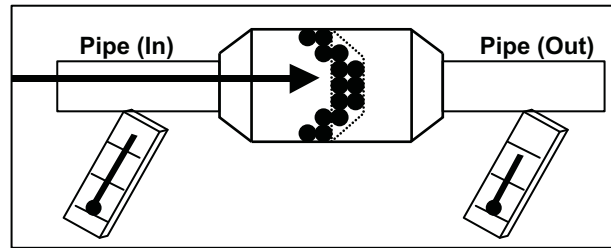
End

NOTES:

- Strainer normally does not have temperature difference between inlet and outlet as shown below.



- If there is a difference like shown below, there is a possibility of inside clogged. In this case, replace the strainer.



3-5. Abnormal noise

Forecast of cause	Abnormal installation (indoor unit/outdoor unit)
	Fan failure (indoor unit/outdoor unit)
	Compressor failure (outdoor)

Diagnosis method when abnormal noise is occurred

Abnormal noise is coming from Indoor unit.
(Check and correct followings)



- Is main unit installed in stable condition?
- Is the installation of air suction grille and front panel normal?



- Is fan broken or deformed?
- Is the screw of fan loose?
- Is there any object which obstruct the fan rotation?



End

Abnormal noise is coming from Outdoor unit.
(Check and correct followings)



- Is main unit installed in stable condition?
- Is fan guard installed normally?



- Is fan broken or deformed?
- Is the screw of fan loose?
- Is there any object which obstruct the fan rotation?



Check if vibration noise by loose bolt or contact noise of piping is happening.



Is compressor locked?

- Check Compressor
Refer to compressor and inverter compressor in "[Service parts information](#)" on page 03-52.



End

3-6. Water leaking

Forecast of cause

Erroneous installation

Drain hose failure

Diagnosis method when water leak occurs

- Is main unit installed in stable condition?
- Is main unit broken or deformed at the time of transportation or maintenance?



- Is drain hose connection loose?
- Is there a trap in drain hose?
- Is drain hose clogged?



Is fan rotating?



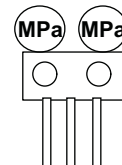
End

Diagnosis method when water is spitting out

Is the filter clogged?



Check gas pressure and correct it if there was a gas leak.

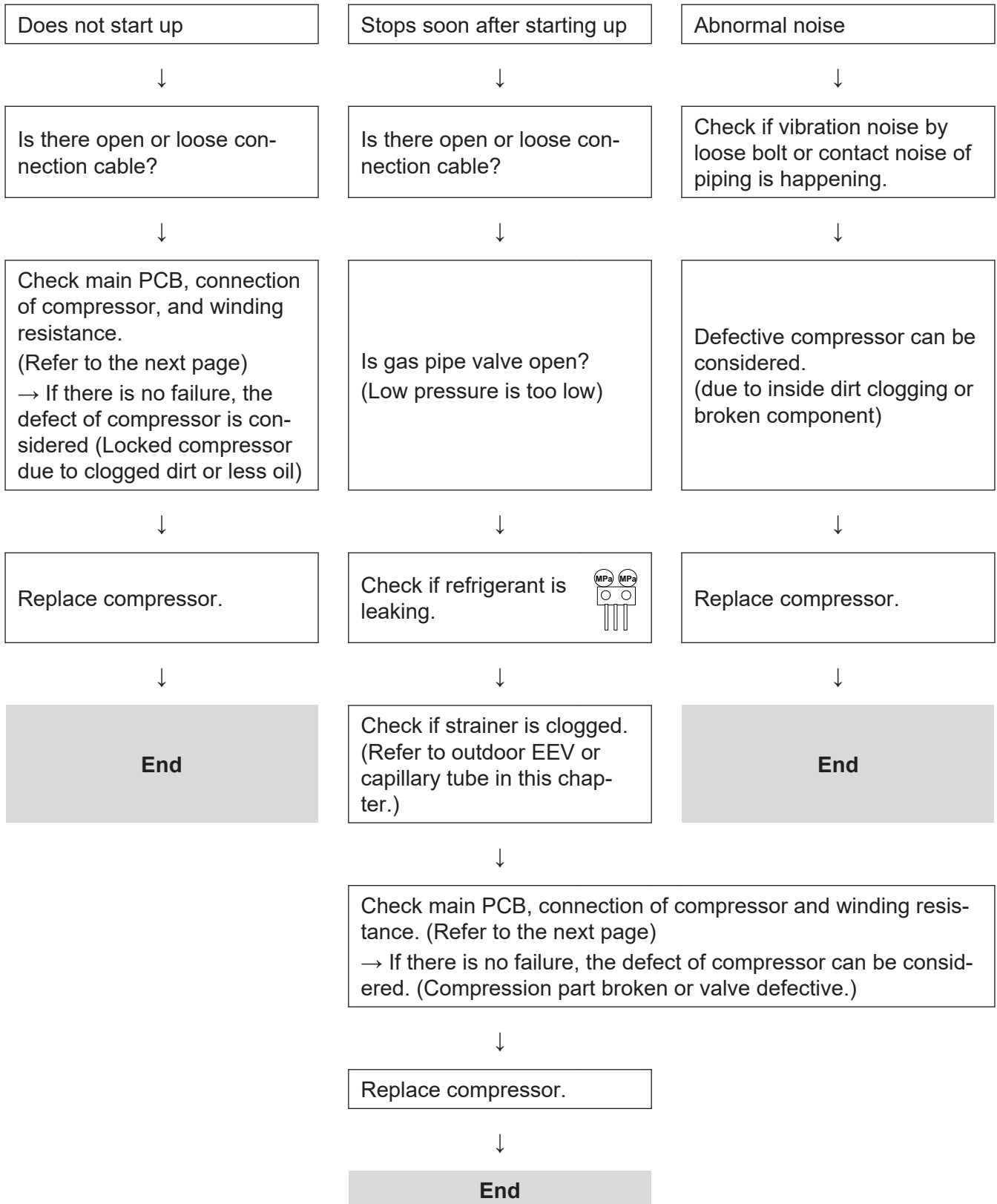


End

4. Service parts information

4-1. Compressor

Diagnosis method of compressor (If outdoor unit LED displays error, refer to troubleshooting)

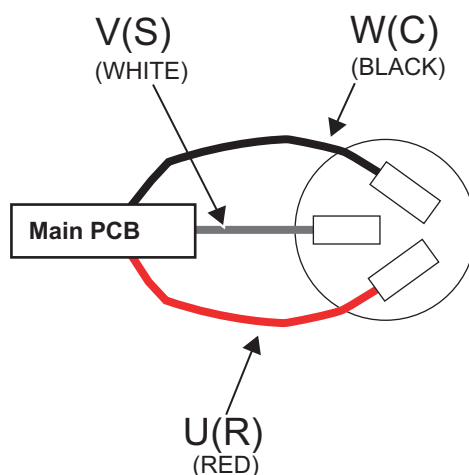


4-2. Inverter compressor

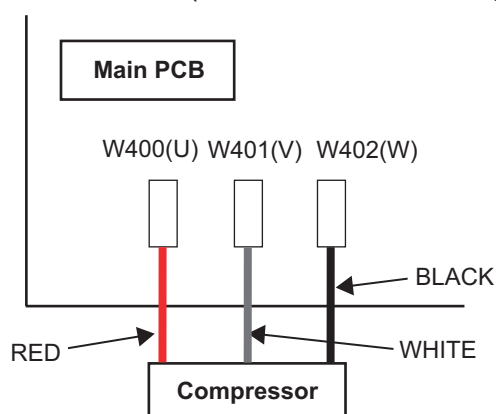
■ Model: AOUH18LUAS1

Check point 1. Check connection

- Check terminal connection of compressor (loose or incorrect wiring)



- Check terminal connection of main PCB (loose or incorrect wiring)

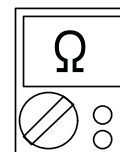
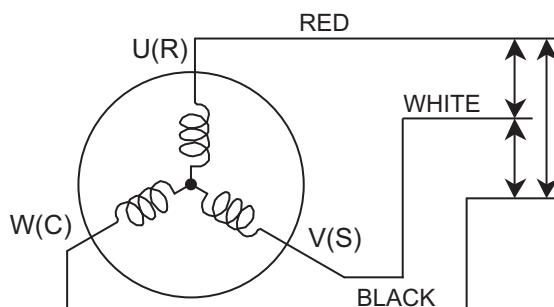


↓

Check point 2. Check winding resistance

Check winding resistance of each terminal.

Resistance value: $1.916 \Omega \pm 8\%$ at 68°F (20°C)



→ If the resistance value is 0Ω or infinite, replace compressor.

↓

Check point 3. Replace inverter PCB

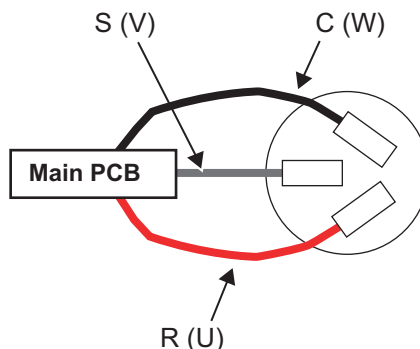
If check point 1 to 2 do not improve the symptom, replace main PCB.

Models: AOUH24LUAS1, AOUH30LUAS1, and AOUH36LUAS1

Check point 1. Check the terminal connection.

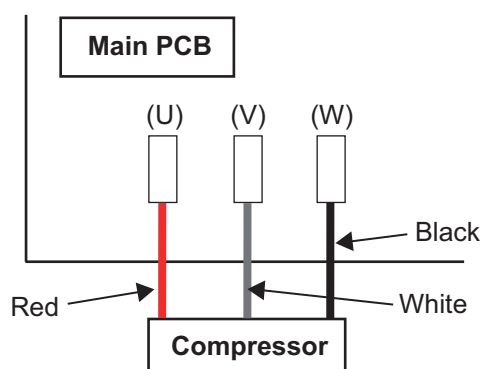
- Check the following terminal connections of the compressor. (Loosening or incorrect wiring.)

R (U): Red
S (V): White
C (W): Black



- Check the following terminal connections of the Main PCB. (Loosening or incorrect wiring.)

P400 (U): Red
P401 (V): White
P402 (W): Black

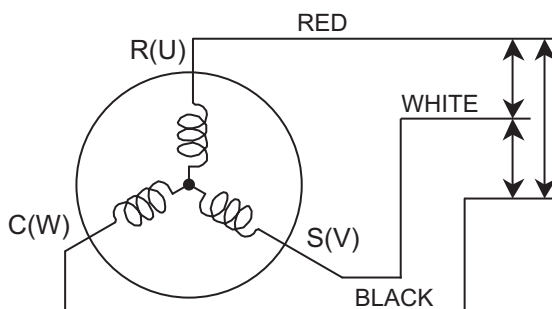
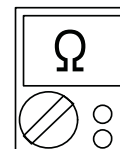


Check point 2. Check the winding resistance.

Check the winding resistance of each terminal.

Resistance value

- 24 model: $1.160 \Omega \pm 8\%$ at 68°F (20°C)
- 30/36 model: $1.120 \Omega \pm 8\%$ at 68°F (20°C)



→ If the resistance value is 0Ω or infinite, replace the compressor.



Check point 3. Replace the Inverter PCB.

If check point 1 to 2 do not improve the symptom, replace the Inverter PCB.

4-3. Outdoor unit Electronic Expansion Valve (EEV)

■ Model: AOUH18LUAS1

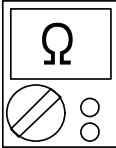
Check point 1. Check connections

Check connection of connector. (Loose connector or open cable)

NOTE: For details of wiring diagram, refer to "Wiring diagrams" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-28.

Check point 2. Check coil of EEV

Remove connector, check each winding resistance of coil.

Read wire	Resistance value
White - Red	$46 \Omega \pm 3.7 \Omega$ at 68°F (20°C) 
Yellow - Red	
Orange - Red	
Blue - Red	

→ If Resistance value is abnormal, replace EEV.

Check point 3. Check voltage from main PCB

Remove connector and check voltage (DC 12 V)

→ If it does not appear, replace main PCB.



Check point 4. Check noise at start up

Turn on the power and check the operation noise.

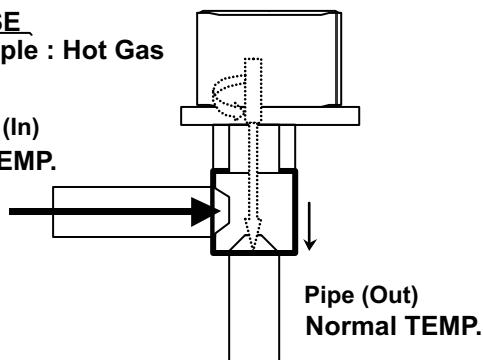
→ If an abnormal noise does not show, replace main PCB.

Check point 5. Check opening and closing operation of valve

When valve is closed, it has a temp. difference between inlet and outlet

CLOSE
Example : Hot Gas

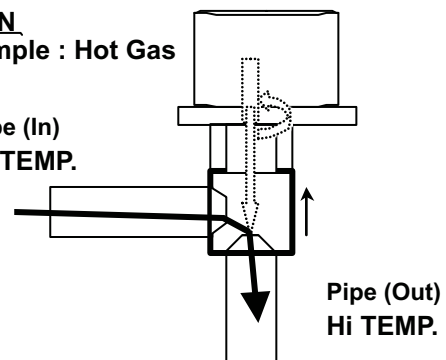
Pipe (In)
Hi TEMP.



If it is open, it has no temp. difference between inlet and outlet

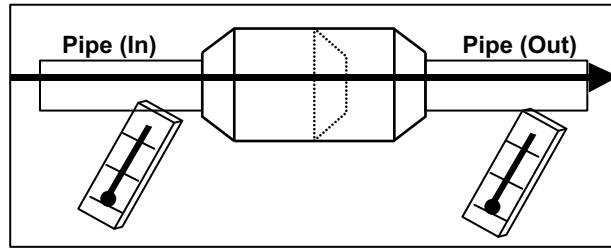
OPEN
Example : Hot Gas

Pipe (In)
Hi TEMP.

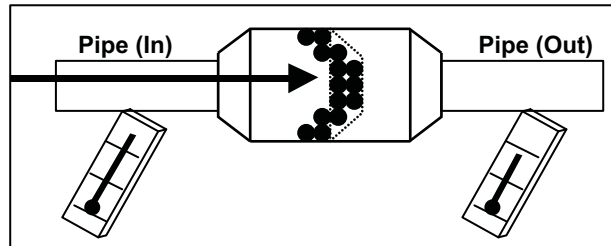


Check point 6. Check strainer

- Strainer normally does not have temperature difference between inlet and outlet as shown below.



- If there is a difference like shown below, there is a possibility of inside clogged. In this case, replace the strainer.



■ Models: AOUH24LUAS1, AOUH30LUAS1, and AOUH36LUAS1

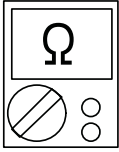
Check point 1. Check connections

Check connection of connector. (Loose connector or open cable)

NOTE: For details of wiring diagram, refer to "Wiring diagrams" in Chapter 2. TECHNICAL DATA AND PARTS LIST on page 02-28.

Check point 2. Check coil of EEV

Remove connector, check each winding resistance of coil.

Read wire	Resistance value
1 (Red) - 2 (Blue)	$46 \Omega \pm 3.0 \Omega$ at 68°F (20°C) 
1 (Red) - 3 (Orange)	
1 (Red) - 4 (Yellow)	
1 (Red) - 5 (White)	

→ If Resistance value is abnormal, replace EEV.

Check point 3. Check Voltage from main PCB

Remove connector and check voltage (DC 12 V)

→ If it does not appear, replace main PCB.



Check point 4. Check noise at start up

Turn on the power and check the operation noise.

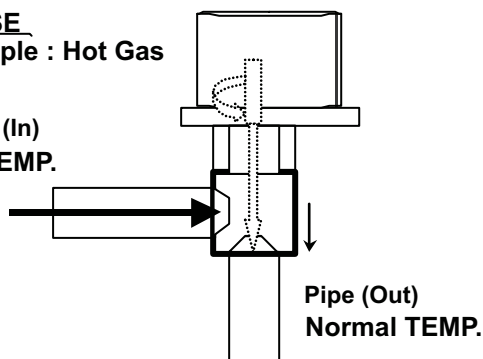
→ If an abnormal noise does not show, replace main PCB.

Check point 5. Check Opening and Closing Operation of Valve

When valve is closed, it has a temp. difference between inlet and outlet

CLOSE
Example : Hot Gas

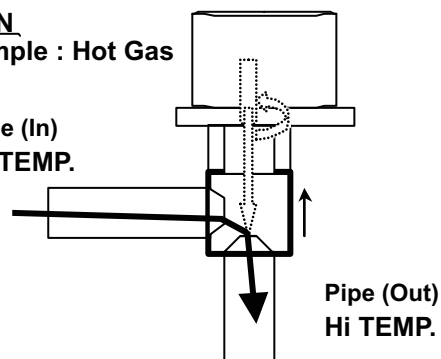
Pipe (In)
Hi TEMP.



If it is open, it has no temp. difference between inlet and outlet

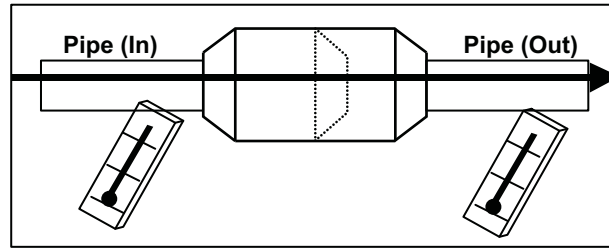
OPEN
Example : Hot Gas

Pipe (In)
Hi TEMP.

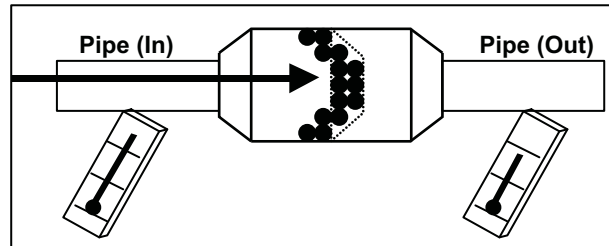


Check point 6. Check strainer

- Strainer normally does not have temperature difference between inlet and outlet as shown below.



- If there is a difference like shown below, there is a possibility of inside clogged. In this case, replace the strainer.



4-4. Indoor unit fan motor

Check point 1. Check rotation of fan

Rotate the fan by hand when operation is off.
 (Check if fan is caught, dropped off or locked motor)
 → If fan or bearing is abnormal, replace it.

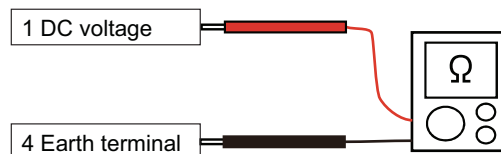
Check point 2. Check resistance of indoor fan motor

Refer to below. Circuit-test “Vm” and “GND” terminal

NOTE: Vm: DC voltage, GND: Earth terminal

→ If they are short-circuited (below 300 kΩ), replace indoor fan motor and controller PCB.

Pin number (wire color)	Terminal function (symbol)
1 (Red)	DC voltage (Vm)
2	No function
3	No function
4 (Black)	Earth terminal (GND)
5 (White)	Control voltage (Vcc)
6 (Yellow)	Speed command (Vsp)
7 (Brown)	Feed back (FG)



4-5. Outdoor unit fan motor

Check point 1. Check rotation of fan

Rotate the fan by hand when operation is off.
(Check if fan is caught, dropped off or locked motor)
→ If fan or bearing is abnormal, replace it.

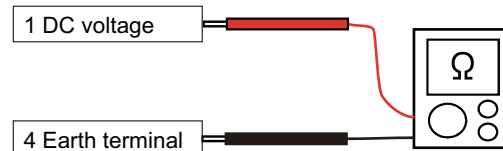
Check point 2. Check resistance of outdoor fan motor

Refer to below. Circuit-test "Vm" and "GND" terminal

NOTE: Vm: DC voltage, GND: Earth terminal

→ If they are short-circuited (below 300 kΩ), replace outdoor fan motor and controller PCB.

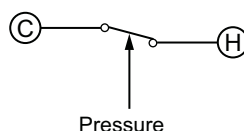
Pin number (wire color)	Terminal function (symbol)
1 (Red)	DC voltage (Vm)
2	No function
3	No function
4 (Black)	Earth terminal (GND)
5 (White)	Control voltage (Vcc)
6 (Yellow)	Speed command (Vsp)
7 (Brown)	Feed back (FG)



4-6. Pressure switch

■ Models: AOUH24LUAS1, AOUH30LUAS1, and AOUH36LUAS1

- Type of contact



- Characteristics of pressure switch

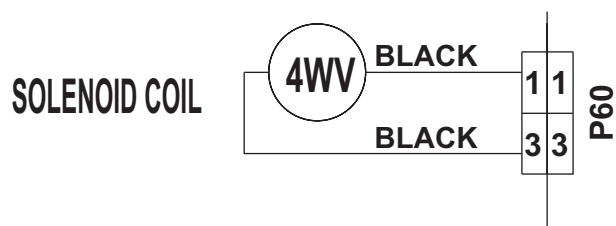
Pressure switch 1	
Contact: Short → Open	4.2 — 4.05 MPa
Contact: Open → Short	3.2 ± 0.15 MPa

P770

4-7. 4-way valve coil (solenoid coil)/4-way valve

Check point 1. Check connection

- Check the connection of connector P60.

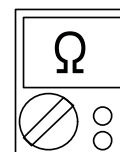


↓

Check Point 2 : Check solenoid coil

Remove P60 from PCB and check the resistance value of coil.

Resistance value $\approx 1.970 \text{ k}\Omega$

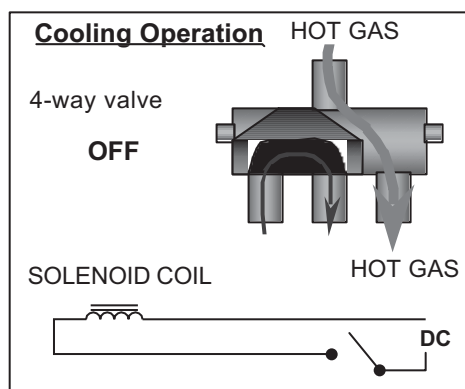
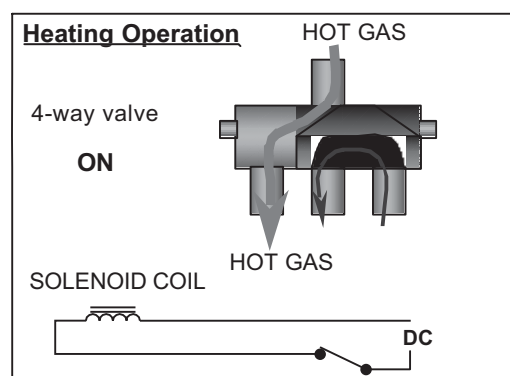


→ If it is Open or abnormal resistance value, replace solenoid coil.

↓

Check Point 3: Check operation of 4-way valve

Check each piping temperature, and confirm the location of the valve by the temperature difference



→ If the valve location is not proper, replace the 4-way valve.

↓

Check Point 4: Replace Main PCB

If none of Checks 1 to 3 apply, replace the Main PCB.

5. Thermistor resistance values

5-1. Indoor unit

■ Room temperature thermistor

Temperature °F (°C)	Resistance (kΩ)	Voltage (V)
14.0 (-10.0)	58.25	0.73
23.0 (-5.0)	44.03	0.93
32.0 (0.0)	33.62	1.15
41.0 (5.0)	25.92	1.39
50.0 (10.0)	20.17	1.66
59.0 (15.0)	15.84	1.94
68.0 (20.0)	12.54	2.22
77.0 (25.0)	10.00	2.50
86.0 (30.0)	8.04	2.77
95.0 (35.0)	6.51	3.03
104.0 (40.0)	5.30	3.27
113.0 (45.0)	4.35	3.48

■ Heat exchanger temperature thermistor

Temperature °F (°C)	Resistance (kΩ)	Voltage (V)
-22.0 (-30.0)	1,131.91	0.21
-13.0 (-25.0)	804.52	0.29
-4.0 (-20.0)	579.59	0.40
5.0 (-15.0)	422.89	0.53
14.0 (-10.0)	312.27	0.69
23.0 (-5.0)	233.21	0.88
32.0 (0.0)	176.03	1.10
41.0 (5.0)	134.23	1.36
50.0 (10.0)	103.34	1.63
59.0 (15.0)	80.28	1.92
68.0 (20.0)	62.91	2.21
77.0 (25.0)	49.70	2.51
86.0 (30.0)	39.57	2.79
95.0 (35.0)	31.74	3.06
104.0 (40.0)	25.64	3.30
113.0 (45.0)	20.85	3.53
122.0 (50.0)	17.06	3.73
131.0 (55.0)	14.05	3.90
140.0 (60.0)	11.64	4.05
149.0 (65.0)	9.69	4.19

5-2. Outdoor unit

■ Heatsink thermistor

● Models: AOUH24LUAS1, AOUH30LUAS1, and AOUH36LUAS1

Temperature °F (°C)	Resistance (kΩ)	Voltage (V)
-22.0 (-30.0)	94.26	0.08
-12.0 (-25.0)	67.95	0.11
-4.0 (-20.0)	49.62	0.15
5.0 (-15.0)	36.68	0.20
14.0 (-10.0)	27.42	0.26
23.0 (-5.0)	20.73	0.34
32.0 (0.0)	15.83	0.43
41.0 (5.0)	12.21	0.55
50.0 (10.0)	9.50	0.68
59.0 (15.0)	7.46	0.84
68.0 (20.0)	5.90	1.01
77.0 (25.0)	4.71	1.21
86.0 (30.0)	3.78	1.42
95.0 (35.0)	3.06	1.64
104.0 (40.0)	2.50	1.88
113.0 (45.0)	2.05	2.11
122.0 (50.0)	1.69	2.35
131.0 (55.0)	1.40	2.58
140.0 (60.0)	1.17	2.81
149.0 (65.0)	0.98	3.02
158.0 (70.0)	0.83	3.22
167.0 (75.0)	0.70	3.41
176.0 (80.0)	0.60	3.58
185.0 (85.0)	0.51	3.73
194.0 (90.0)	0.44	3.87
203.0 (95.0)	0.38	3.99
212.0 (100.0)	0.33	4.10

■ Discharge temperature thermistor

Temperature °F (°C)	Resistance (kΩ)	Voltage (V)
-22.0 (-30.0)	1,013.11	0.06
-12.0 (-25.0)	729.09	0.09
-4.0 (-20.0)	531.56	0.12
5.0 (-15.0)	392.31	0.16
14.0 (-10.0)	292.91	0.21
23.0 (-5.0)	221.09	0.28
32.0 (0.0)	168.60	0.36
41.0 (5.0)	129.84	0.46
50.0 (10.0)	100.91	0.57
59.0 (15.0)	79.12	0.71
68.0 (20.0)	62.55	0.86
77.0 (25.0)	49.84	1.03
86.0 (30.0)	40.01	1.23
95.0 (35.0)	32.35	1.43
104.0 (40.0)	26.34	1.65
113.0 (45.0)	21.58	1.88
122.0 (50.0)	17.79	2.11
131.0 (55.0)	14.75	2.34
140.0 (60.0)	12.30	2.57
149.0 (65.0)	10.32	2.79
158.0 (70.0)	8.69	3.00
167.0 (75.0)	7.36	3.19
176.0 (80.0)	6.27	3.37
185.0 (85.0)	5.36	3.54
194.0 (90.0)	4.60	3.69
203.0 (95.0)	3.96	3.83
212.0 (100.0)	3.43	3.96
221.0 (105.0)	2.98	4.07
230.0 (110.0)	2.60	4.17
239.0 (115.0)	2.27	4.26
248.0 (120.0)	2.00	4.33

■ Compressor temperature thermistor

Temperature °F (°C)	Resistance (kΩ)	Voltage (V)
-22.0 (-30.0)	1,013.11	0.06
-12.0 (-25.0)	729.09	0.09
-4.0 (-20.0)	531.56	0.12
5.0 (-15.0)	392.31	0.16
14.0 (-10.0)	292.91	0.21
23.0 (-5.0)	221.09	0.28
32.0 (0.0)	168.60	0.36
41.0 (5.0)	129.84	0.46
50.0 (10.0)	100.91	0.57
59.0 (15.0)	79.12	0.71
68.0 (20.0)	62.55	0.86
77.0 (25.0)	49.84	1.03
86.0 (30.0)	40.01	1.23
95.0 (35.0)	32.35	1.43
104.0 (40.0)	26.34	1.65
113.0 (45.0)	21.58	1.88
122.0 (50.0)	17.79	2.11
131.0 (55.0)	14.75	2.34
140.0 (60.0)	12.30	2.57
149.0 (65.0)	10.32	2.79
158.0 (70.0)	8.70	3.00
167.0 (75.0)	7.36	3.19
176.0 (80.0)	6.27	3.37
185.0 (85.0)	5.36	3.54
194.0 (90.0)	4.60	3.69
203.0 (95.0)	3.96	3.83
212.0 (100.0)	3.43	3.96
221.0 (105.0)	2.98	4.07
230.0 (110.0)	2.60	4.17
239.0 (115.0)	2.27	4.26
248.0 (120.0)	2.00	4.33

■ Heat exchanger temperature thermistor

Temperature °F (°C)	Resistance (kΩ)	Voltage (V)
-22.0 (-30.0)	95.57	0.24
-12.0 (-25.0)	68.89	0.32
-4.0 (-20.0)	50.31	0.43
5.0 (-15.0)	37.19	0.57
14.0 (-10.0)	27.81	0.73
23.0 (-5.0)	21.02	0.92
32.0 (0.0)	16.05	1.14
41.0 (5.0)	12.38	1.39
50.0 (10.0)	9.63	1.65
59.0 (15.0)	7.56	1.93
68.0 (20.0)	5.98	2.21
77.0 (25.0)	4.77	2.49
86.0 (30.0)	3.84	2.77
95.0 (35.0)	3.11	3.02
104.0 (40.0)	2.53	3.26
113.0 (45.0)	2.08	3.48
122.0 (50.0)	1.71	3.67
131.0 (55.0)	1.42	3.85
140.0 (60.0)	1.19	4.00
149.0 (65.0)	1.00	4.13
158.0 (70.0)	0.84	4.25
167.0 (75.0)	0.71	4.35
176.0 (80.0)	0.61	4.43

■ Heat exchanger (Middle) temperature thermistor

Temperature °F (°C)	Resistance (kΩ)	Voltage (V)
-22.0 (-30.0)	95.58	0.24
-12.0 (-25.0)	68.90	0.32
-4.0 (-20.0)	50.31	0.43
5.0 (-15.0)	37.19	0.57
14.0 (-10.0)	27.81	0.73
23.0 (-5.0)	21.02	0.92
32.0 (0.0)	16.05	1.14
41.0 (5.0)	12.38	1.39
50.0 (10.0)	9.63	1.65
59.0 (15.0)	7.56	1.93
68.0 (20.0)	5.98	2.21
77.0 (25.0)	4.77	2.49
86.0 (30.0)	3.84	2.77
95.0 (35.0)	3.11	3.02
104.0 (40.0)	2.53	3.26
113.0 (45.0)	2.08	3.48
122.0 (50.0)	1.71	3.68
131.0 (55.0)	1.42	3.85
140.0 (60.0)	1.19	4.00
149.0 (65.0)	1.00	4.13
158.0 (70.0)	0.84	4.25
167.0 (75.0)	0.71	4.35
176.0 (80.0)	0.61	4.43

■ Outdoor temperature thermistor

Temperature °F (°C)	Resistance (kΩ)	Voltage (V)
-22.0 (-30.0)	224.33	0.73
-12.0 (-25.0)	159.71	0.97
-4.0 (-20.0)	115.24	1.25
5.0 (-15.0)	84.21	1.56
14.0 (-10.0)	62.28	1.90
23.0 (-5.0)	46.58	2.26
32.0 (0.0)	35.21	2.61
41.0 (5.0)	26.88	2.94
50.0 (10.0)	20.72	3.25
59.0 (15.0)	16.12	3.52
68.0 (20.0)	12.64	3.76
77.0 (25.0)	10.00	3.97
86.0 (30.0)	7.97	4.14
95.0 (35.0)	6.40	4.28
104.0 (40.0)	5.18	4.41
113.0 (45.0)	4.21	4.51
122.0 (50.0)	3.45	4.59
131.0 (55.0)	2.85	4.65

4. CONTROL AND FUNCTIONS

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4. CONTROL AND FUNCTIONS

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1. Rotation number control of compressor

1-1. Cooling operation

A sensor (room temperature thermistor) built in the indoor unit body will usually perceive difference or variation between a set temperature and present room temperature, and controls the operation rotation number of the compressor.

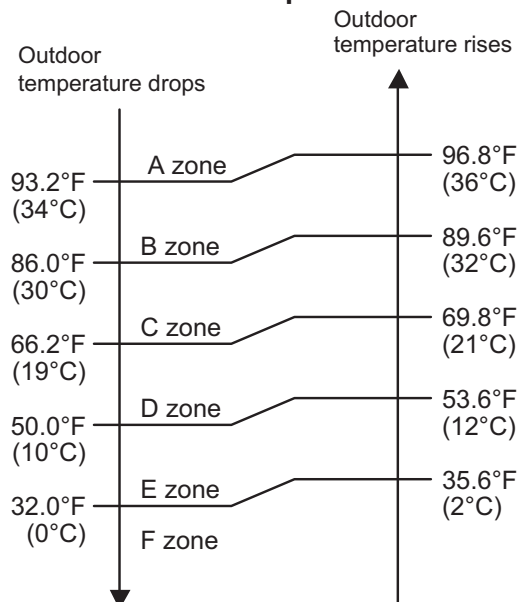
- If the room temperature is 11°F (6.0°C) higher than a set temperature, the operation rotation number of compressor will attain to maximum performance.
- If the room temperature is 2°F (1.0°C) lower than a set temperature, the compressor will be stopped.
- When the room temperature is within the range of +11°F (6.0°C) to -2°F (1.0°C) of the setting temperature, the rotation number of compressor is controlled within the range shown in the table below. However, the maximum rotation number is limited in the range shown in the figure below based on the indoor fan mode and the outdoor temperature.

- **Rotation number range of compressor**

Unit: rps

Model name	Minimum frequency	Maximum frequency
ABUH18LUAS	8	102
ABUH24LUAS	10	102
ABUH30LUAS	15	98
ABUH36LUAS	15	103

• Limit of maximum speed based on outdoor temperature



Unit: rps

Model name	Outdoor temperature zone	Indoor unit fan mode			
		HIGH	MED	LOW	QUIET
ABUH18LUAS	A zone	102	46	36	26
	B zone	102	46	36	26
	C zone	58	36	32	26
	D zone	39	32	30	20
	E zone	39	32	30	20
	F zone	39	32	30	20
ABUH24LUAS	A zone	102	61	50	34
	B zone	102	61	50	34
	C zone	68	50	39	34
	D zone	57	39	34	32
	E zone	57	39	34	32
	F zone	57	39	34	32
ABUH30LUAS	A zone	98	58	49	42
	B zone	98	58	49	42
	C zone	67	51	46	40
	D zone	51	42	37	32
	E zone	51	42	37	32
	F zone	51	42	37	32
ABUH36LUAS	A zone	103	79	69	46
	B zone	103	79	69	46
	C zone	96	69	55	46
	D zone	69	55	46	40
	E zone	69	55	46	40
	F zone	69	55	46	40

CONTROL AND FUNCTIONS

CONTROL AND FUNCTIONS

1-2. Heating operation

A sensor (room temperature thermistor) built in indoor unit body will usually perceive difference or variation between setting temperature and present room temperature, and controls operation rotation number of compressor.

- If the room temperature is 11°F (6.0°C) lower than a set temperature, the operation rotation number of compressor will attain to maximum performance.
- If the room temperature is 2°F (1.0°C) higher than a set temperature, the compressor will be stopped.
- When the room temperature is within the range of +2°F (1.0°C) to -11°F (6.0°C) of the setting temperature, the rotation number of compressor is controlled within the range shown below.

- **Rotation number range of compressor**

Unit: rps

Model name	Minimum frequency	Maximum frequency
ABUH18LUAS	8	130
ABUH24LUAS	10	130
ABUH30LUAS	15	110
ABUH36LUAS	15	120

1-3. Dry operation

The rotation number of compressor shall change according to the temperature, set temperature, and room temperature variation which the room temperature sensor of the indoor unit has detected as shown in the table below.

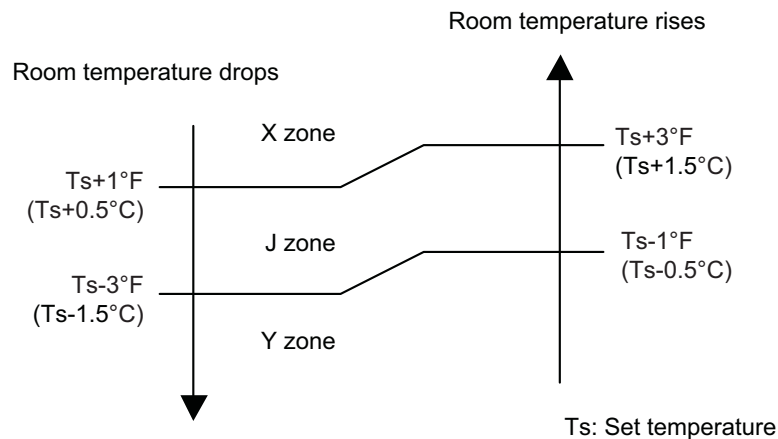
Zone is defined by set temperature and room temperature.

- **Rotation number range of compressor**

Unit: rps

Model name	Outdoor temperature zone	Operating frequency
ABUH18LUAS	X zone	26
	J zone	26
	Y zone	0
ABUH24LUAS	X zone	34
	J zone	34
	Y zone	0
ABUH30LUAS	X zone	42
	J zone	42
	Y zone	0
ABUH36LUAS	X zone	46
	J zone	46
	Y zone	0

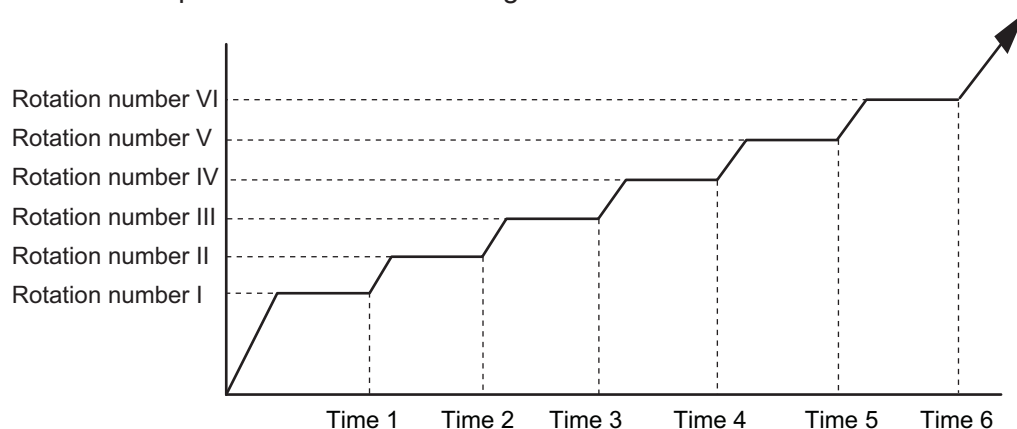
- **Compressor control based on room temperature**



1-4. Rotation number of compressor at normal start-up

■ Model: AOUH18LUAS1

Rotation number of compressor soon after starting is controlled as below.



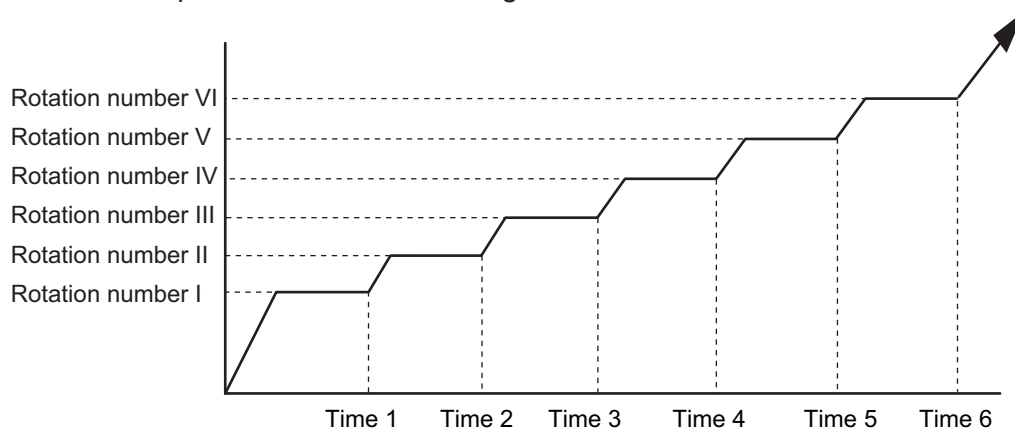
Rotation number (rps)	I 35	II 52	III 64	IV 71	V 89	VI 97
Time (sec)	1 60	2 140	3 170	4 200	5 350	6 410

CONTROL AND FUNCTIONS

CONTROL AND FUNCTIONS

■ Model: AOUH24LUAS1

Rotation number of compressor soon after starting is controlled as below.



- Normal operation

Rotation number (rps)	I	II	III	IV	V	VI
	35	52	64	71	89	97
Time (sec)	1	2	3	4	5	6
	60	140	170	200	350	410

- Special operation

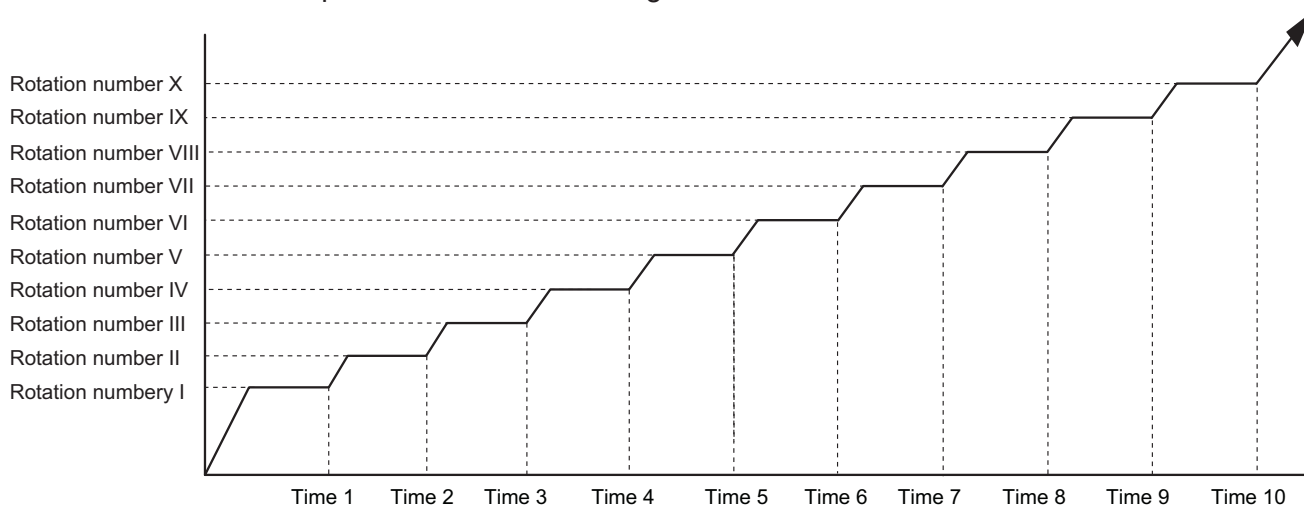
Rotation number (rps)	I	II	III	IV	V	VI
	35	52	64	71	89	97
Time (sec)	1	2	3	4	5	6
	60	140	170	200	350	410

NOTES:

- Normal operation:
 - Cooling and dry mode
 - Below 3 hours from the compressor stop and the compressor thermistor $\geq 59^{\circ}\text{F}$ (15°C)
 - After defrost operation
 - Other than when the compressor starts for the first time since the breaker turns on
- Special operation:
 - Other than the normal operation condition
 - When the compressor starts for the first time since the breaker turns on

Models: AOUH30LUAS1 and AOUH36LUAS1

Rotation number of compressor soon after starting is controlled as below.



• Normal operation

Rotation number (rps)	I	II	III	IV	V	VI	VII	VIII	IX	X
	41	46	51	57	60	72	81	91	100	110
Time (sec)	1	2	3	4	5	6	7	8	9	10
	60	120	180	240	360	420	480	540	600	660

• Special operation

Rotation number (rps)	I	II	III	IV	V	VI	VII	VIII	IX	X
	41	46	51	57	60	72	81	91	100	110
Time (sec)	1	2	3	4	5	6	7	8	9	10
	120	185	245	305	605	665	725	785	845	1,000

NOTES:

- Normal operation:
 - Cooling and dry mode
 - Below 3 hours from the compressor stop and the compressor thermistor $\geq 59\text{ }^{\circ}\text{F}$ ($15\text{ }^{\circ}\text{C}$)
 - After defrost operation
 - Other than when the compressor starts for the first time since the breaker turns on
- Special operation:
 - Other than the normal operation condition
 - When the compressor starts for the first time since the breaker turns on

1-5. Rotation number of compressor limitation by outdoor temperature

■ Model: AOUH18LUAS1

The minimum rotation number of compressor is limited by outdoor temperature as below.

• Cooling/Dry mode

100.4°F (38°C)	F zone
66.2°F (19°C)	E zone
50.0°F (10°C)	D zone
32.0°F (0°C)	C zone
14.0°F (-10°C)	B zone
	A zone

Unit: rps

Model name	Outdoor temperature zone	Limitation of compressor frequency
AOUH18LUAS1	A zone	33
	B zone	33
	C zone	33
	D zone	25
	E zone	10
	F zone	20

• Heating mode

66.2°F (19°C)	F zone
41.0°F (5°C)	E zone
32.0°F (0°C)	D zone
5.0°F (-15°C)	C zone
-13.0°F (-25°C)	B zone
	A zone

Unit: rps

Model name	Outdoor temperature zone	Limitation of compressor frequency
AOUH18LUAS1	A zone	30
	B zone	30
	C zone	30
	D zone	13
	E zone	10
	F zone	10

■ Models: AOUH24LUAS1, AOUH30LUAS1, and AOUH36LUAS1

The minimum rotation number of compressor is limited by outdoor temperature as below.

- **Cooling/Dry mode**

125.6°F (52°C)	H zone
122.0°F (50°C)	G zone
107.6°F (42°C)	F zone
100.4°F (38°C)	E zone
69.8°F (21°C)	D zone
55.4°F (13°C)	C zone
44.6°F (7°C)	B zone
	A zone

Unit: rps

Model name	Outdoor temperature zone	Limitation of compressor frequency
AOUH24LUAS1	A zone	29
	B zone	29
	C zone	29
	D zone	24
	E zone	19
	F zone	21
	G zone	28
	H zone	32
AOUH30LUAS1 AOUH36LUAS1	A zone	30
	B zone	26
	C zone	20
	D zone	20
	E zone	15
	F zone	24
	G zone	27
	H zone	35

- Heating mode

68.0°F (20°C)	I zone
60.8°F (16°C)	H zone
53.6°F (12°C)	G zone
44.6°F (7°C)	F zone
35.6°F (2°C)	E zone
19.4°F (-7°C)	D zone
14.0°F (-10°C)	C zone
5.0°F (-15°C)	B zone
	A zone

Unit: rps

Model name	Outdoor temperature zone	Limitation of compressor frequency
AOUH24LUAS1	A zone	71
	B zone	53
	C zone	44
	D zone	39
	E zone	29
	F zone	23
	G zone	23
	H zone	23
	I zone	21
AOUH30LUAS1 AOUH36LUAS1	A zone	55
	B zone	51
	C zone	42
	D zone	39
	E zone	28
	F zone	24
	G zone	21
	H zone	16
	I zone	20

2. Auto changeover operation

When the air conditioner is set to AUTO mode by remote controller, operation starts in the optimum mode from among heating, cooling, dry and monitoring modes. During operation, the optimum mode is automatically switched in accordance with temperature changes. The temperature can be set between 64.4 °F (18 °C) and 86.0 °F (30 °C) in 1.0 °F (0.5 °C) steps.

- When operation starts, indoor fan and outdoor fan are operated for around 1 minute. Room temperature and outdoor temperature are sensed, and the operation mode is selected in accordance with the table below.

Room temperature	Operation mode
$Tr > Ts + 3.6^{\circ}\text{F}$ (2°C)	Cooling
$Ts + 3.6^{\circ}\text{F}$ (2°C) $\geq Tr \geq Ts - 3.6^{\circ}\text{F}$ (2°C)	Middle zone
$Tr < Ts - 3.6^{\circ}\text{F}$ (2°C)	Heating

Tr: Room temperature

Ts: Setting temperature

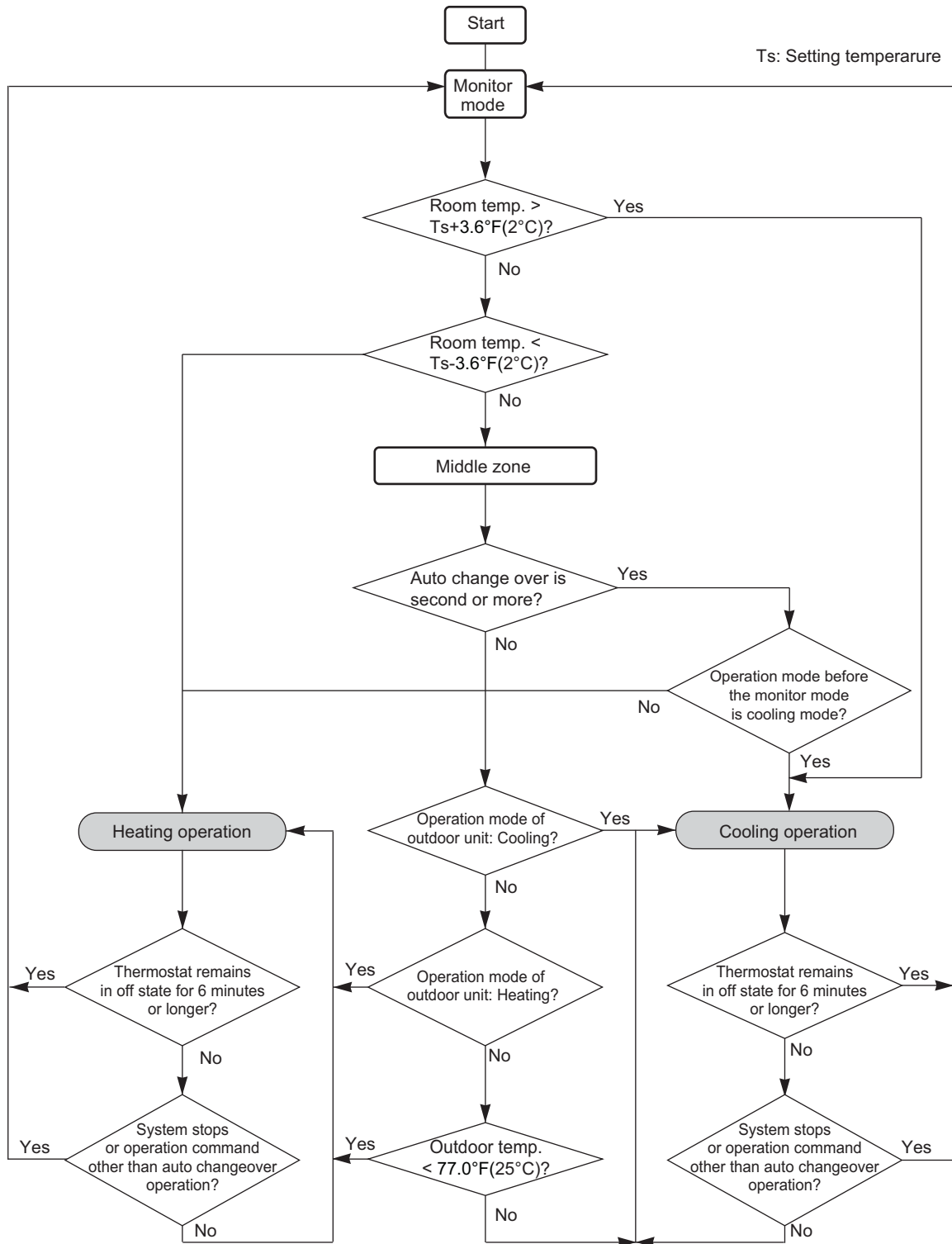
NOTE: When the operation mode is middle zone, indoor unit operation mode is selected as below.

- Same operation mode is selected as outdoor unit.
If outdoor unit is operating in cooling and heating mode, indoor unit will be operated by the same operation mode.
- Selected by outdoor temperature.
If outdoor unit is operating in other than cooling and heating mode, indoor unit will be operated according to the outdoor temperature as below.

Outdoor temp.	Operation mode
77.0°F (25°C) or more	Cooling
Less than 77.0°F (25°C)	Heating

- When the compressor was stopped for 6 consecutive minutes by temperature control function after the cooling or heating mode was selected as above, operation is switched to monitoring mode and the operation mode selection is done again.
- When the middle zone is selected on the predetermining of the operation mode, the operation mode before the changing to the monitoring mode is selected.

Operation flow chart



CONTROL AND FUNCTIONS

CONTROL AND FUNCTIONS

3. Fan control

Tr: Room temperature

Ts: Setting temperature

3-1. Indoor fan control

■ Fan speed

Indoor fan speed is defined as below.

Operation mode	Fan mode	Speed (rpm)			
		ABUH18LUAS	ABUH24LUAS	ABUH30LUAS	ABUH36LUAS
Heating	HIGH	950	970	1,090	1,090
	MED+	900	890	1,000	1,020
	MED	880	810	900	920
	LOW	800	720	800	830
	QUIET	750	620	680	700
	Cool air prevention	500	500	500	500
	S-LOW	300	300	300	300
Cooling/Fan	HIGH	950	970	1,090	1,120
	MED	880	810	900	920
	LOW	800	720	800	830
	QUIET	750	620	680	700
	Soft quiet	500* ¹	500* ¹	500* ¹	500* ¹
	S-LOW	300* ²	300* ²	300* ²	300* ²
Dry		X zone: 750 J zone: 750	X zone: 620 J zone: 620	X zone: 680 J zone: 680	X zone: 700 J zone: 700

*1: Fan mode only

*2: Cooling mode only

■ Fan operation

Airflow can be switched in 5 steps such as AUTO, QUIET, LOW, MED, HIGH while indoor unit fan only runs.

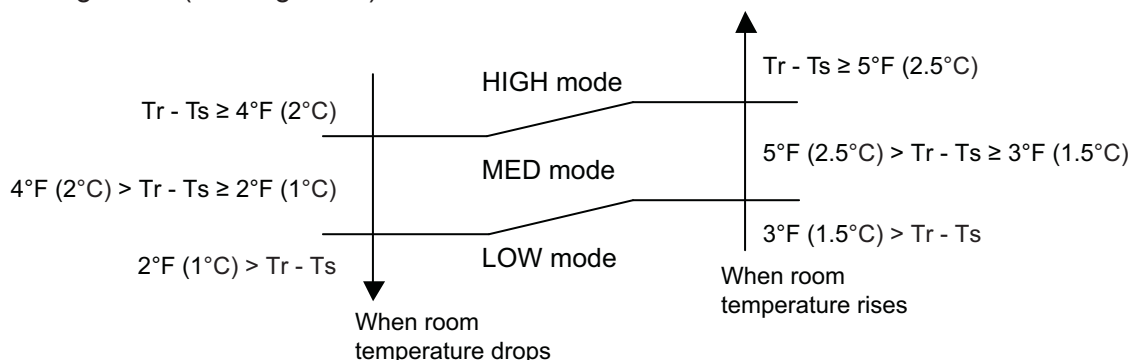
When fan mode is set at AUTO, it operates on MED fan speed.

■ Cooling operation

Switch the airflow AUTO, and indoor fan motor will run according to room temperature, as below.

On the other hand, if switched in HIGH—QUIET, indoor motor will run at a constant airflow of COOL operation modes QUIET, LOW, MED, HIGH as shown in “Fan speed” above.

Airflow change over (Cooling: Auto)



■ Dry operation

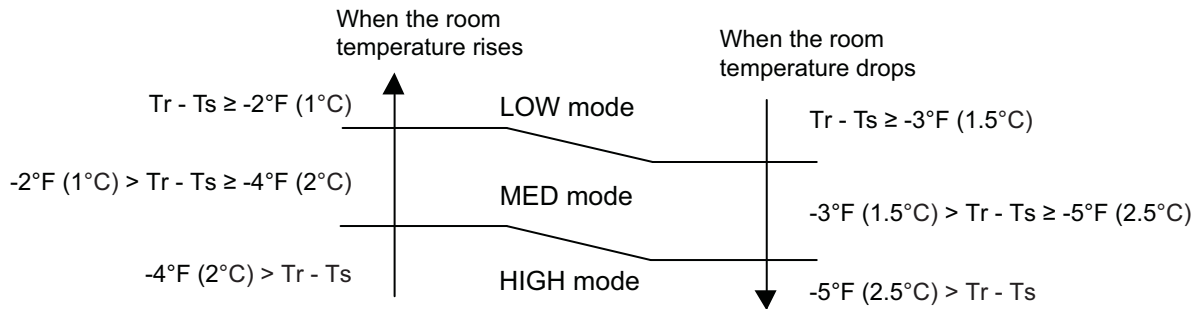
During dry operation, fan speed setting can not be changed as shown in “Fan speed” above.

■ Heating operation

Switch the airflow AUTO, and the indoor fan motor will run according to a room temperature, as below.

On the other hand, if switched in HIGH—QUIET, the indoor motor will run at a constant airflow of HEAT operation modes QUIET, LOW, MED, HIGH as shown in “Fan speed” above.

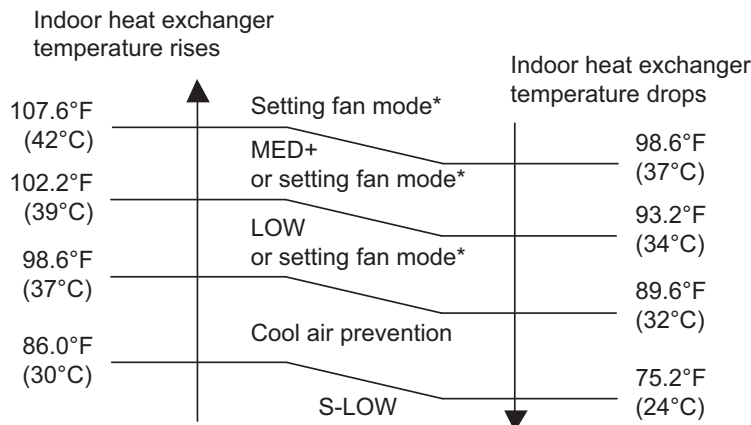
Airflow change over (Heating: Auto)



■ Cool air prevention control (heating mode)

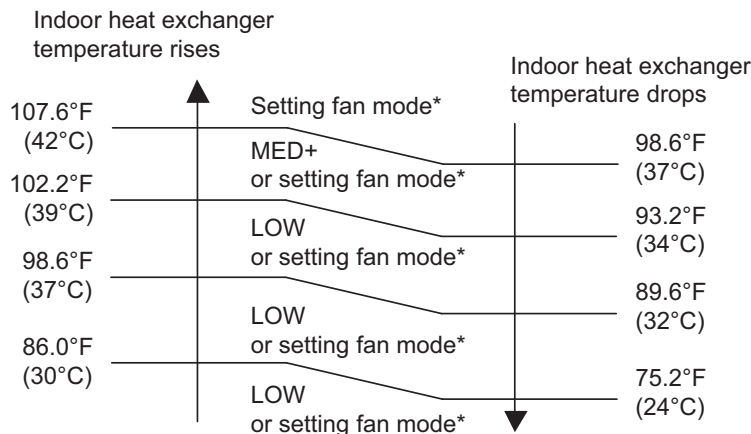
The maximum value of the indoor fan speed is set as shown below, based on the detected temperature by the indoor heat exchanger sensor on heating mode.

• Normal operation



*: Lower speed is selected.

13 minutes later:



*: Lower speed is selected.

3-2. Outdoor fan control

Outdoor fan motor

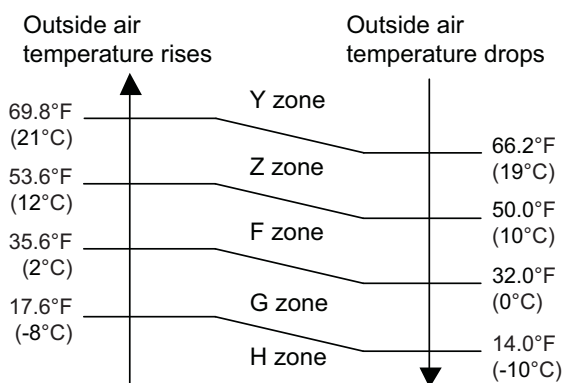
This outdoor unit has a DC fan motor. (Control method is different between AC and DC motors.)

Fan speed

Model: AOUH18LUAS1

Fan speed is defined by outdoor temperature and compressor frequency.

- Outside air temperature zone selection



Unit: rpm

Fan step	Cooling	Heating	Dry	Cooling or dry at low outdoor temp.			
	Y zone		Y zone	Z zone	F zone	G zone	H zone
S-HIGH2	—	1,100	—	—	—	—	—
S-HIGH1	1,050	1,100	—	—	—	—	—
HIGH	1,050	1,100	—	—	—	—	—
10	—	1,100	—	—	—	—	—
9	1,050	1,100	1,050	850	320	270	270
8	950	990	950	850	320	270	270
7	850	920	850	770	320	270	270
6	690	710	690	630	270	230	230
5	560	620	560	440	270	230	230
4	440	560	440	320	270	230	230
3	440	500	440	320	270	230	230
2	440	440	440	320	270	230	230
1	440	440	440	320	270	230	230

NOTE: After defrost control on the heating mode, the fan speed is kept higher regardless of the compressor frequency.

Fan speed after defrost control: 1,100 rpm

● Model: AOUH24LUAS1

Fan speed is defined by outdoor temperature and compressor frequency.

Unit: rpm

Fan step	Cooling or dry	Heating
13	830	—
12	830	—
11	740	—
10	700	830
9	650	740
8	570	690
7	570	620
6	540	590
5	510	480
4	480	410
3	480	340
2	400	270
1	200	200
S-HIGH	—	830

- When the compressor frequency increases, the outdoor fan speed also changes to the higher speed.
- When the compressor frequency decreases, the outdoor fan speed also changes to the lower speed.

NOTE: After defrost control on the heating mode, the fan speed is kept higher regardless of the compressor frequency.

Fan speed after defrost control: 830 rpm

● Models: AOUH30LUAS1 and AOUH36LUAS1

Fan speed is defined by outdoor temperature and compressor frequency.

Unit: rpm

Fan step	Cooling or dry	Heating
13	970	—
12	900	—
11	830	—
10	760	970
9	690	880
8	620	800
7	550	720
6	480	630
5	420	520
4	360	440
3	300	360
2	240	270
1	200	200
S-HIGH	—	990

- When the compressor frequency increases, the outdoor fan speed also changes to the higher speed.
- When the compressor frequency decreases, the outdoor fan speed also changes to the lower speed.

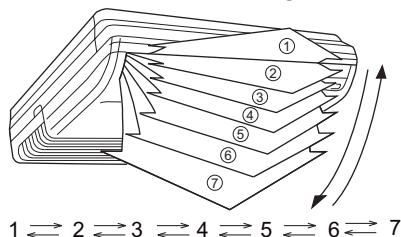
NOTE: After defrost control on the heating mode, the fan speed is kept higher regardless of the compressor frequency.

Fan speed after defrost control: 990 rpm

4. Louver control

4-1. Horizontal louver control

Each time the button is pressed, the airflow direction range will change as below:



- Remote controller display is not changed.
- Up/down airflow direction is set automatically as shown, in accordance with the type of operation selected.

Cooling/dry mode : Horizontal flow 1

Heating mode : Downward flow 7

- During AUTO operation, for the first a few minutes after beginning operation, airflow will be horizontal 1; the air direction cannot be adjusted during this period. The airflow direction setting will temporarily become 1 when the temperature of the airflow is low at the start of the Heating mode.
- After beginning of AUTO/HEAT mode operated and automatic defrosting operation, the airflow will be horizontal 1. However, the airflow direction cannot be adjusted at beginning AUTO operation mode.

4-2. Swing operation

- To select up/down airflow swing operation
When the swing signal is received, the horizontal louver starts to swing.
 - Swinging range
 - Cooling mode/dry mode/fan mode: 1 ↔ 7
 - Heating mode: 1 ↔ 7
 - When the indoor fan is S-LOW or stop mode, the swing operation is interrupted and it stops at either upper end or bottom end.

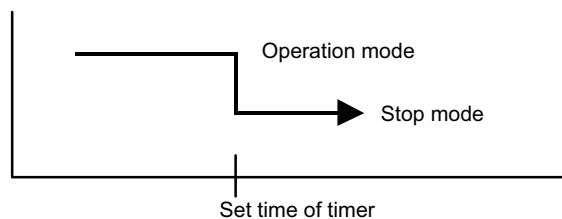
5. Timer operation control

5-1. Wireless remote control

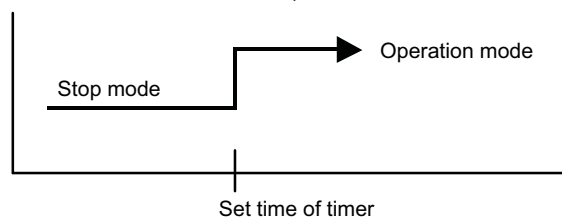
On/Off timer	Program timer	Sleep timer	Weekly timer
○	○	○	—

■ On/Off timer

- Off timer: When the clock reaches the set timer, the air conditioner will be turned off.

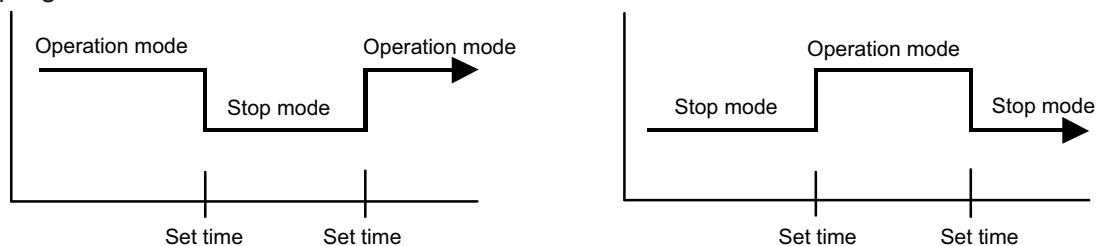


- On timer: When the clock reaches the set timer, the air conditioner will be turned on.



■ Program timer

- The program timer allows the off timer and the on timer to be used in combination one time.



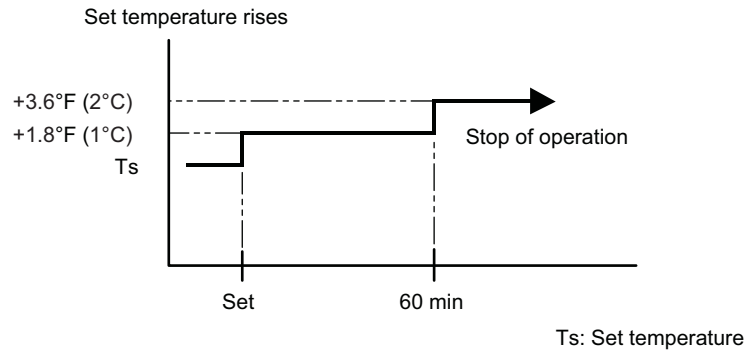
- Operation will start from the timer setting (either off timer and on timer) whichever is closest to the clock current timer setting. The order of operations is indicated by the allow in the remote controller screen.
- Sleep timer operation cannot be combined with on timer operation.

■ Sleep timer

If the sleep timer is set, the room temperature is monitored and the operation is stopped automatically. If the operation mode or the set temperature is change after the sleep timer is set, the operation is continued according to the changed setting of the sleep timer from that time on.

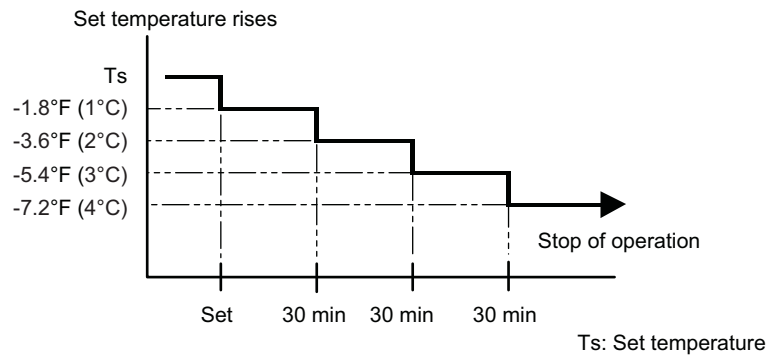
- In the cooling operation mode

When the sleep timer is set, the setting temperature is increased 1.8°F (1°C). It increases the setting temperature another 1.8°F (1°C) after 1 hour. After that, the setting temperature is not changed and the operation is stopped at the setting time.



- In the heating operation mode

When the sleep timer is set, the setting temperature is decreased 1.8°F (1°C). It decreases the setting temperature another 1.8°F (1°C) every 30 minutes. Upon lowering 7.2°F (4°C), the setting temperature is not changed and the operation is stopped at the setting time.

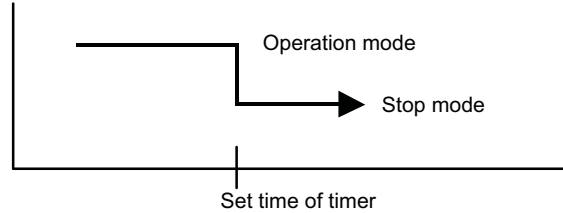


5-2. Wired remote control

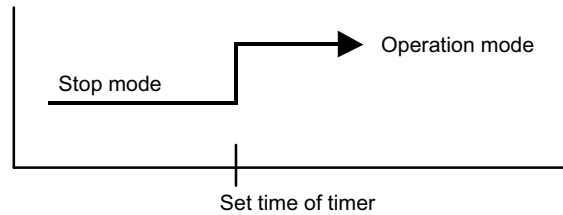
On/Off timer	Program timer	Sleep timer	Weekly timer	Temperature Setback Timer
○	○	○	○	○

■ On/Off timer

- Off timer: When the clock reaches the set timer, the air conditioner will be turned off.

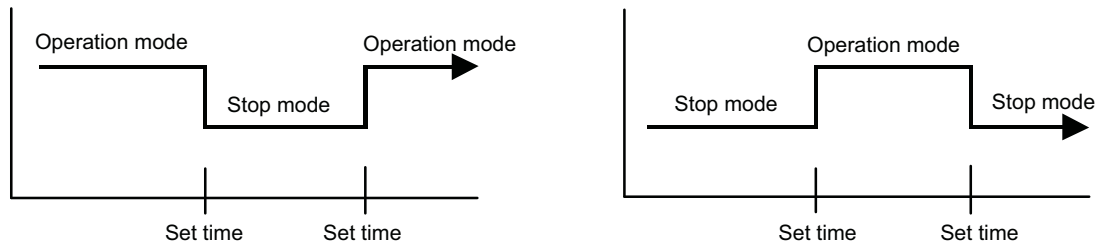


- On timer: When the clock reaches the set timer, the air conditioner will be turned on.



■ Program timer

- The program timer allows the off timer and the on timer to be used in combination one time.



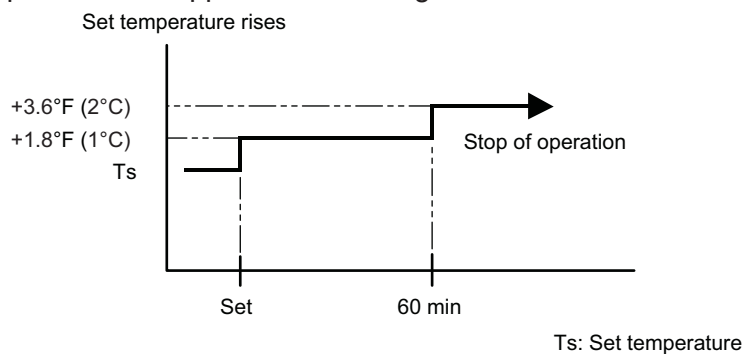
- Operation will start from the timer setting (either off timer and on timer) whichever is closest to the clock current timer setting. The order of operations is indicated by the allow in the remote controller screen.
- Sleep timer operation cannot be combined with on timer operation.

■ Sleep timer

If the sleep timer is set, the room temperature is monitored and the operation is stopped automatically. If the operation mode or the set temperature is change after the sleep timer is set, the operation is continued according to the changed setting of the sleep timer from that time on.

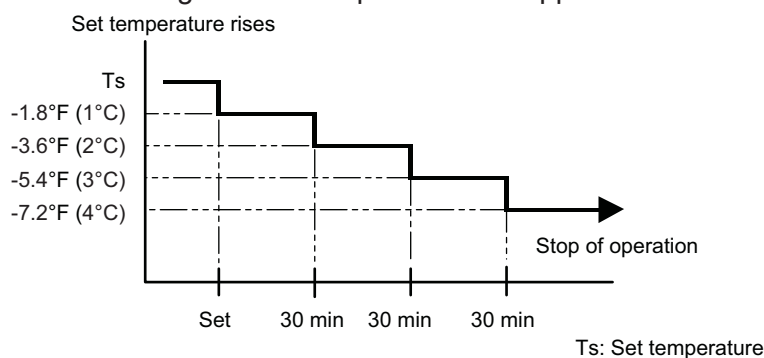
- In the cooling operation mode

When the sleep timer is set, the setting temperature is increased 1.8°F (1°C). It increases the setting temperature another 1.8°F (1°C) after 1 hour. After that, the setting temperature is not changed and the operation is stopped at the setting time.



- In the heating operation mode

When the sleep timer is set, the setting temperature is decreased 1.8°F (1°C). It decreases the setting temperature another 1.8°F (1°C) every 30 minutes. Upon lowering 7.2°F (4°C), the setting temperature is not changed and the operation is stopped at the setting time.



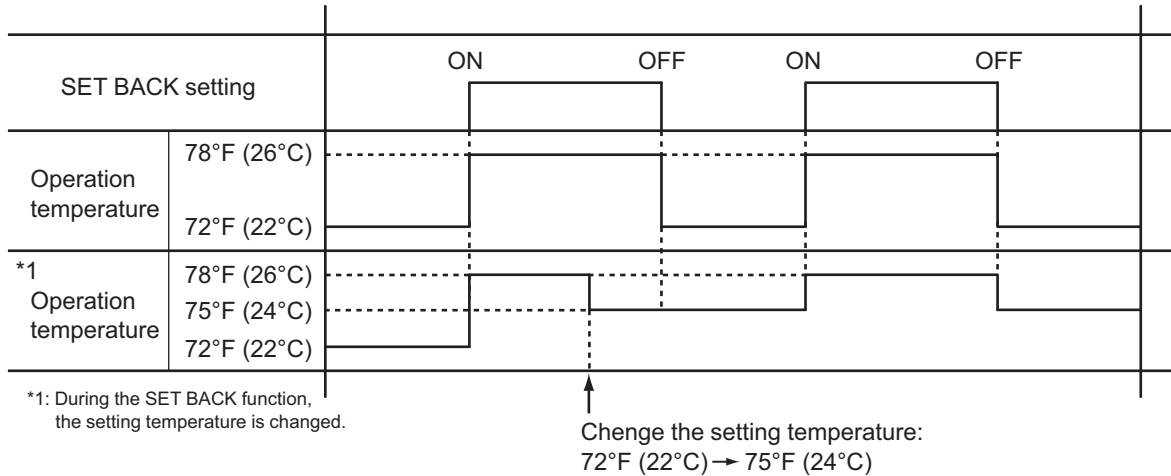
■ Weekly timer

On and off timer can be combined, and up to 4 reservations per day and 28 reservations per week. Before setting the program, set the week and time of the air conditioner at first. If the week and time are not set, the weekly timer will not operate correctly at the setting time.

■ Temperature Setback Timer

- The temperature setback timer only changes the set temperature for 7 days, it cannot be used to start or stop air conditioner operation.
- The temperature setback timer can be set to operate up to two times per day but only one temperature setting can be used.
- During COOLING/DRY mode, the air conditioner will operate at a minimum of 64°F (18°C) even if the SET BACK temperature is set to 63°F (17°C) or lower.

Case of Temperature Setback Timer on the Cooling operation. (Setting temperature :72°F [22°C], SET BACK temperature :78°F [26°C])



6. Defrost operation control

Tn: Outdoor unit heat exchanger temperature

Ta: Outdoor temperature

Tn10: Temperature at 10 minutes after compressor start

Tnb: Temperature before 5 minutes

• Triggering condition

The defrost operation starts when outdoor unit heat exchanger temperature sensor detects the temperature lower than the values shown below.

– 1st time defrosting after starting operation

Compressor integrating operation time	Less than 17 min.	17 to 57 min.	More than 57 min.
Condition	Does not operate	$T_n \leq 15.8^\circ\text{F} (-9^\circ\text{C})$ and $T_n - T_a \geq 9.0^\circ\text{F} (5^\circ\text{C})$	$T_n \leq 23.0^\circ\text{F} (-5^\circ\text{C})$

– 2nd time and after

• Model: AOUH18LUAS1

Compressor integrating operation time	Less than 40 min.	More than 40 min.
Condition	Does not operate	$T_n - T_{n10} < -9.0^\circ\text{F} (-5^\circ\text{C})$ ($T_n \leq 21.2^\circ\text{F} [-6^\circ\text{C}]$) $T_n - T_{nb} < -3.6^\circ\text{F} (-2^\circ\text{C})$ ($T_n \leq 21.2^\circ\text{F} [-6^\circ\text{C}]$) $T_n \leq -4^\circ\text{F} (-20^\circ\text{C})$ ($T_a \geq 14.0^\circ\text{F} [-10^\circ\text{C}]$) $T_n \leq T_a + 19.4^\circ\text{F} (-7^\circ\text{C})$ or $T_n \leq -13.0^\circ\text{F} (-25^\circ\text{C})$ $(T_a < 14.0^\circ\text{F} [-10^\circ\text{C}])$

• Models: AOUH24LUAS1, AOUH30LUAS1, and AOUH36LUAS1

Compressor integrating operation time	Less than 35 min.	More than 35 min.
Condition	Does not operate	$T_n - T_{n10} < -9.0^\circ\text{F} (-5^\circ\text{C})$ ($T_n \leq 14.0^\circ\text{F} [-10^\circ\text{C}]$) $T_n - T_{nb} < -3.6^\circ\text{F} (-2^\circ\text{C})$ ($T_n \leq 14.0^\circ\text{F} [-10^\circ\text{C}]$) $T_n \leq -22.0^\circ\text{F} (-30^\circ\text{C})$ ($T_a \geq -22.0^\circ\text{F} [-30^\circ\text{C}]$) $T_n < T_a + 19.4^\circ\text{F} (-7^\circ\text{C})$ or $T_n \leq -22.0^\circ\text{F} (-30^\circ\text{C})$ $(T_a < -22.0^\circ\text{F} [-30^\circ\text{C}])$

– Integrating defrost (Constant monitoring)

Compressor integrating operation time	More than 240 min. (For long continuous operation)	More than 215 min. (For long continuous operation)	Less than 10 min.* (For intermittent operation)
Condition	$T_n \leq 26.6^\circ\text{F} (-3^\circ\text{C})$	$T_n \leq 23.0^\circ\text{F} (-5^\circ\text{C})$	Count of the compressor off: 40 times

*: If the compressor continuous operation time is less than 10 minutes, the number of the compressor off is counted. If any defrost operated, the compressor off count is cleared.

• Release condition

– Model: AOUH18LUAS1

Depending on the triggering condition, different release conditions apply.

• Normal defrost operation

The defrost operation is released when either one of the conditions below is satisfied.

Outdoor unit heat exchanger temperature (after 1 minute or later since compressor start)	55.4°F (13°C) or more (Ta ≤ 33.8°F [1°C]) 50.0°F (10°C) or more (Ta > 33.8°F [1°C])
Compressor operation time	15 minutes

• Integrating defrost (constant monitoring)

The defrost operation is released when either one of the conditions below is satisfied.

Outdoor unit heat exchanger temperature (after 1 minute or later since compressor start)	55.4°F (13°C) or more
Compressor operation time	15 minutes

– Models: AOUH24LUAS1, AOUH30LUAS1, and AOUH36LUAS1

The defrost operation is released when either one of the conditions below is satisfied.

Outdoor unit heat exchanger temperature (after 1 minute or later since compressor start)	53.6°F (12°C) or more
Compressor operation time	15 minutes

6-1. Defrost operation in heating operation stopped

If the outdoor unit is frosted when stopping the heating operation, it stops after performing the automatic defrosting operation.

In this time, if the indoor unit operation lamp flashes slowly (6 sec on/2 sec off), the outdoor unit allow the heat exchanger to defrost, and then stop.

• Triggering condition

When all of the following conditions are satisfied in heating operation

- Compressor operation integrating time: 30 minutes or more
- Compressor continuous operation time: 10 minutes or more
- Outdoor unit heat exchanger temperature: 24.8°F (-4°C) or less

• Release condition

- **Model: AOUH18LUAS1**

Depending on the triggering condition, different release conditions apply.

• Normal defrost operation

The defrost operation is released when either one of the conditions below is satisfied.

Outdoor unit heat exchanger temperature (after 1 minute or later since compressor start)	55.4°F (13°C) or more ($T_a \leq 33.8$ °F [1 °C]) 50.0°F (10°C) or more ($T_a > 33.8$ °F [1 °C])
Compressor operation time	15 minutes

• Integrating defrost (constant monitoring)

The defrost operation is released when either one of the conditions below is satisfied.

Outdoor unit heat exchanger temperature (after 1 minute or later since compressor start)	55.4°F (13°C) or more
Compressor operation time	15 minutes

- **Models: AOUH24LUAS1, AOUH30LUAS1, and AOUH36LUAS1**

The defrost operation is released when either one of the conditions below is satisfied.

Outdoor unit heat exchanger temperature (after 1 minute or later since compressor start)	53.6°F (12°C) or more
Compressor operation time	15 minutes

7. Various control

7-1. Auto restart

When the power was interrupted by a power failure etc. during operation, the operation contents at that time are memorized and when the power is recovered, operation is automatically started with the memorized operation contents.

Operation contents memorized when the power is interrupted	
Operation mode	
Setting temperature	
Fan mode setting	
Timer mode and set time (set by wireless remote controller)	
Airflow direction setting	
Swing	
ECONOMY operation	
MIN. HEAT operation	

7-2. MIN. HEAT operation

MIN. HEAT operation performs as below setting when pressing MIN. HEAT button.

Operation mode	Heating
Setting temperature	50°F (10°C)
Fan mode	AUTO
LED display	Economy
Defrost operation	Operate as normal

7-3. ECONOMY operation

The ECONOMY operation starts by pressing ECONOMY button on the remote controller.

The ECONOMY operation is almost the same operation as below settings.

Mode	Cooling/Dry	Heating
Target temperature	Setting temperature +2°F (1°C)	Setting temperature -2°F (1°C)

7-4. POWERFUL operation

The POWERFUL operation starts by pressing POWERFUL button on the remote controller.

The indoor unit and outdoor unit operate at maximum power as shown in the table below.

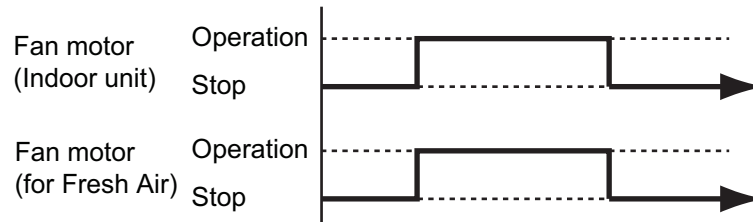
Compressor frequency	Maximum	
Fan mode	POWERFUL	
Horizontal louver setting	Cooling	3
	Dry	
	Heating	5

Release condition:

- Cooling/Dry
Room temperature \leq Setting temperature -1°F (-0.5°C) or Operation time has passed 20 minutes.
- Heating
Room temperature \geq Setting temperature +1°F (+0.5°C) or Operation time has passed 20 minutes.

7-5. Fresh air control

The fan motor for Fresh Air is operated in synchronization with the indoor fan operation as below.



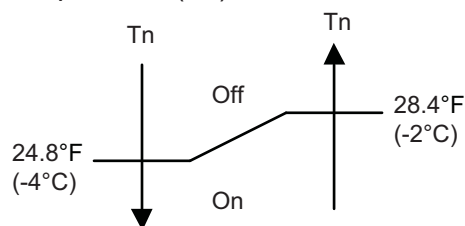
7-6. Compressor preheating

By preheating the compressor, warm airflow is quickly discharged when the operation is started.

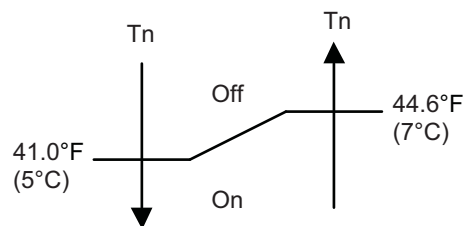
- **Model: AOUH18LUAS1**

- **Triggering condition**

- 30 minutes after compressor stopped.
- Outdoor unit heat exchanger temperature (T_n)



When the jumper wire (JM2) is disconnected:

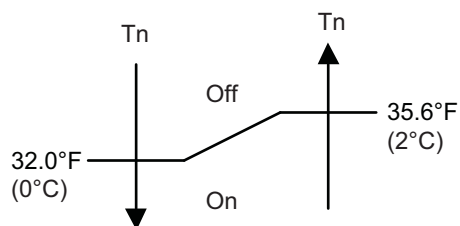


- **Models: AOUH24LUAS1, AOUH30LUAS1, and AOUH36LUAS1**

- **Triggering condition 1**

- Outdoor temperature $\leq 68^\circ\text{F}$ (20°C)
- When outdoor temperature reaches 78.8°F (26°C), compressor preheating stops.
- 30 minutes after compressor stopped

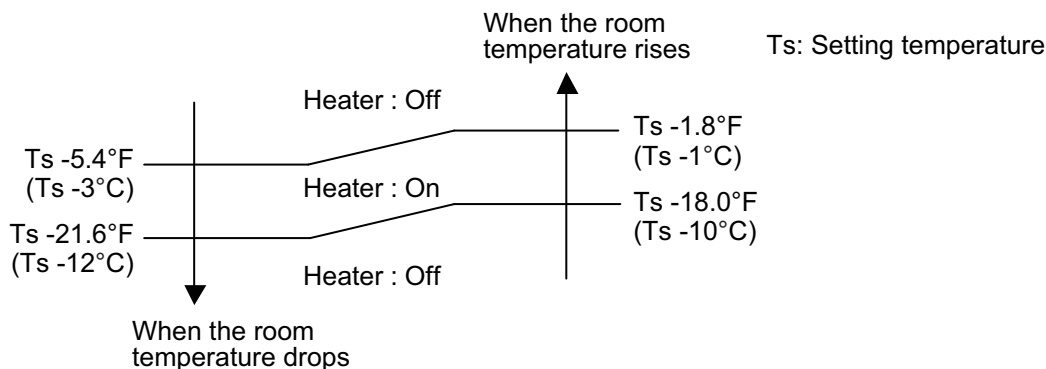
- **Triggering condition 2**



T_n : Outdoor unit heat exchanger temp.

7-7. External electrical heater control

The external electrical heater is operated as below.



NOTES:

- When the compressor stop, external electric heater is off.
- It operates only in heating mode and when the indoor fan operates. (However, S-LOW is excluded.)

7-8. Electronic expansion valve control

The most proper opening of the electronic expansion valve is calculated and controlled under the present operating condition based on the table below.

• Model: AOUH18LUAS1

Operation mode	Pulse range
Cooling/dry mode	Between 52 and 480 pulses
Heating mode	

• Model: AOUH24LUAS1

Operation mode	Pulse range
Cooling/dry mode	Between 47 and 480 pulses
Heating mode	Between 39 and 480 pulses

• Models: AOUH30LUAS1 and AOUH36LUAS1

Operation mode	Pulse range
Cooling/dry mode	Between 47 and 480 pulses
Heating mode	

NOTE: At the time of supplying the power to the outdoor unit, the initialization of the electronic expansion valve is operated (528 pulses are input to the closing direction).

7-9. Drain pump control

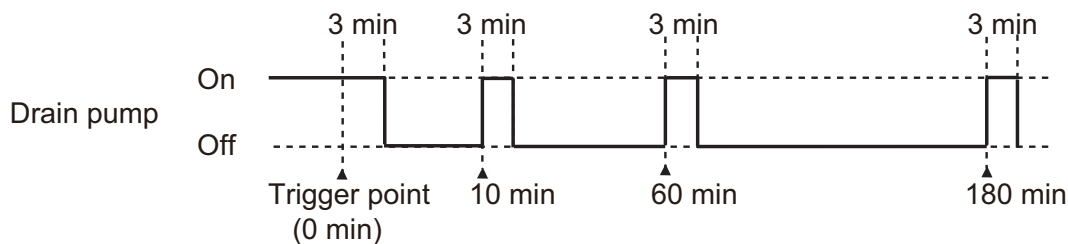
■ Drain control for cooling operation

● During the compressor in operation

- **Triggering condition**
The thermostat is turned on during cooling or dry mode.
- **Operation details**
The drain pump is turned on.
- **Release condition**
 - The thermostat is turned off.
Refer to "When the compressor is not in operation" for the operation after release.
 - The compressor is stopped.
Refer to "When the compressor is not in operation" for the operation after release.
 - The operation is switched to heating mode.
Refer to "When the compressor is not in operation" for the operation after release.
 - The float switch is turned on.
Refer to "Overflow control" for the operation after release.
 - The compressor is stopped by Anti-freezing control.
Refer to "The compressor is stopped by Anti-freezing control" for the operation after release.

● When the compressor is not in operation

- **Triggering condition**
 - The thermostat is turned off.
 - The compressor is stopped.
 - The operation is switched to heating mode.
 - The float switch is turned off.
- **Operation details**
 - Count 180 minutes.
 - Start drain pump intermittent operation.



- **Release condition**
 - 3 minutes drain pump operation is finished after 180 minutes count.
 - The operation is switched to cooling or dry mode.
Refer to "During the compressor in operation" for the operation after release.
 - The float switch is turned on.
Refer to "Overflow control" for the operation after release.
- **Operation after release**
The drain pump is turned off and the air conditioner operate according the settings.

● Overflow control

- **Triggering condition**

The float switch is turned on.

- **Operation details**

- The drain pump is turned on.
- When the operation mode is cooling or dry, operate the followings.
 - The compressor is stopped.
 - Then indoor fan control is turned off.

- **Release condition**

- The float switch is turned off.
 - In the case that on the cooling or dry mode the thermostat is on, refer to "[During the compressor in operation](#)" for the operation after release.
 - In other case, refer to "[When the compressor is not in operation](#)" for the operation after release.
- 3 minutes passed

- **Operation after release**

The compressor stopps permanently.

● The compressor is stopped by Anti-freezing control

- **Triggering condition**

During the compressor in operation, the compressor is stopped by Anti-freezing control.

- **Operation details**

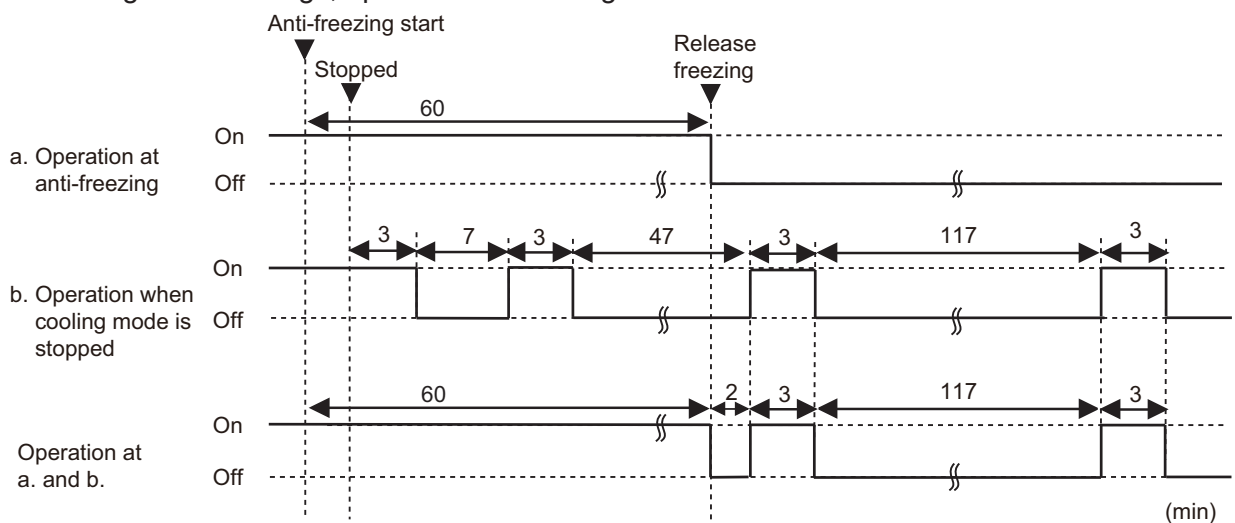
The drain pump is kept on in 60 minutes after Anti-freezing control released.

- **Release condition**

60 minutes passed

- **Operation after release**

According to the settings, operate the followings.



7-10. Prevention to restart for 3 minutes (3 minutes st)

When the compressor fails to start for the number of times below, it does not enter operation status for 3 minutes.

- **Model: AOUH18LUAS1**

Retry number	50
Retry set number	3

- **Models: AOUH24LUAS1, AOUH30LUAS1, and AOUH36LUAS1**

Retry number	10
Retry set number	3

When the compressor fails to start in the retry set number above, the compressor is stopped.

7-11. 4-way valve control

- If heating mode is selected at the compressor start, 4-way valve is energized for heating.
- When the air conditioner is switched between cooling and heating mode, compressor is stopped, and the 4-way valve is switched when the following time passes and the compressor is started.

18 model	140 seconds
24/30/36 model	3 minutes

7-12. Peak cut operation (for 24/30/36 model)

The current value is limited to reduce the power consumption by external input.

Peak cut level	Level 1	Level 2	Level 3	Level 4
Peak cut for rated capacity	Forced thermostat off	50%	75%	100%

NOTES:

- During defrost operation, peak cut operation becomes invalid.
- Even during the peak cut operation, the operations of current overload, economy, and low noise are effective and the outdoor unit operates by lowest current of them.

7-13. Unit status monitoring and the detected value indication

The wired remote controller can monitor the indoor and outdoor units' status and display the detected result as a relevant ID.

For details of the display method, refer to the Chapter of "Display Sensor Values" in the *Installation Manual* of Wired Remote Controller (Touch Panel).

The status can be monitored and displayed on the wired remote controller by assigning an arbitrary ID. For available ID list, refer to the table below.

NOTE: Operating time for each part cannot be reset when the part is replaced. Take notes of the operating time before replacing to count the operating time of the replaced part.

Available Sensor ID				
Sensor ID		Item	Unit	Remarks
00: Indoor unit				
00	000	Suction temp.	01: °F or °C	
00	001	Room temp.	01: °F or °C	When the wired remote controller thermistor is enabled, temperature of the wired remote controller thermistor is displayed.
00	002	Wired remote controller detected temp.	01: °F or °C	
00	006	Heat exchanger middle temp.	01: °F or °C	
00	020	Fan rotation number	03: rpm	
00	021	Fan 2 rotation number	03: rpm	
00	051	Float switch On/Off	08: On/Off	0: Off, 1: On (When the water level rises)
00	052	Drain pump On/Off	08: On/Off	0: Off, 1: On
00	080	Indoor unit total energized hours	11: h	
00	081	Total filtering hours	11: h	
00	082	Indoor unit fan total operation hours	11: h	
00	083	Indoor unit fan 2 total operation hours	11: h	
00	095	Presence or absence detected by human sensor	00: —	0: Absence, 1: Presence —: Human sensor error or No human sensor
00	140	Operation or Stop (External input)	00: —	0: Off, 1: On —: When the function setting 46 is not set NOTE: Available only for external input port of the indoor unit
00	141	Emergency stop (External input)	00: —	0: Off, 1: On —: When the function setting 46 is not set NOTE: Available only for external input port of the indoor unit
00	142	Forced stop (External input)	00: —	0: Off, 1: On —: When the function setting 46 is not set NOTE: Available only for external input port of the indoor unit
00	143	Operation or Stop 2 (External input)	00: —	0: Off, 1: On —: When the function setting 46 is not set NOTE: Available only for external input port of the indoor unit
00	155	Operation or Stop On/Off (External output)	00: —	0: Off, 1: On NOTE: The value is output even if the function setting or rotary switch is not set.

Available Sensor ID				
Sensor ID		Item	Unit	Remarks
00	156	Error On/Off (External output)	00: —	0: Off, 1: On NOTE: The value is output even if the function setting or rotary switch is not set.
00	157	Indoor unit fan interlocking On/Off (External output)	00: —	0: Off, 1: On NOTE: The value is output even if the function setting or rotary switch is not set.
00	158	Cooling thermostat On/Off (External output)	00: —	0: Off, 1: On NOTE: The value is output even if the function setting or rotary switch is not set.
00	159	Requested cooling strength On/Off (External output)	00: —	0: Off, 1: On NOTE: The value is output even if the function setting or rotary switch is not set.
00	160	External heater On/Off (External output)	00: —	0: Off, 1: On NOTE: The value is output even if the function setting or rotary switch is not set.
00	161	Heating operation status (External output)	00: —	0: Off, 1: On NOTE: The value is output even if the function setting or rotary switch is not set.
00	162	External output command by remote controller (External output)	00: —	0: Off, 1: On NOTE: The value is output even if the function setting or rotary switch is not set.
01: Outdoor unit				
01	000	Outdoor temp.	01: °F or °C	
01	001	Discharge temp.	01: °F or °C	
01	003	Heat exchanger middle temp.	01: °F or °C	
01	004	Heat exchanger outlet temp.	01: °F or °C	
01	007	Compressor temp.	01: °F or °C	
01	008	Heat sink temp.	01: °F or °C	
01	042	Gas pipe pressure for outdoor unit	02: MPa	
01	050	Fan 1 rotation number	03: rpm	
01	051	Fan 2 rotation number	03: rpm	
01	055	Compressor rotation number	04: rps	
01	060	Expansion valve (Upstream during heating)	05: pls	
01	080	4-way valve output status	07: Cooling/ Heating	0: Cooling, 1: Heating
01	085	Pressure switch (High pressure)	08: On/Off	0: Off (Close), 1: On (Open)
01	088	Crankcase heater output On/Off	08: On/Off	0: Off, 1: On
01	089	Base pan heater output On/Off	08: On/Off	0: Off, 1: On
01	090	Belt heater output On/Off	08: On/Off	0: Off, 1: On
01	100	Operating current	09: A	
01	110	Outdoor unit total power-on hours	11: h	
01	111	Compressor total heating operation hours	11: h	
01	112	Compressor total cooling operation hours	11: h	
01	113	Compressor total operation hours	11: h	
01	114	Outdoor unit fan 1 total operation hours	11: h	

Available Sensor ID				
Sensor ID		Item	Unit	Remarks
01	115	Outdoor unit fan 2 total operating hours	11: h	
01	145	Outdoor low noise input (External input)	00: —	0: Off, 1: On
01	146	Outdoor peak cut (External input)	00: —	0: Off 1: Mode 4 (100%) 2: Mode 3 (75%) 3: Mode 2 (50%) 4: Mode 1 (Forced thermostat off)
01	147	Demand response (External input)	00: —	0: Normal, 1: DRM1, 2: DRM2, 3: DRM3
01	155	Compressor status (External output)	00: —	0: Off, 1: On
01	156	Error status (External output)	00: —	0: Off, 1: On

8. Various protections

8-1. Discharge gas temperature over-rise prevention control

The discharge gas temperature sensor (discharge thermistor: outdoor unit side) detects the discharge gas temperature.

- When the discharge temperature becomes higher than the trigger condition, the compressor frequency is decreased as the table below, and it continues to decrease until the discharge temperature becomes lower than the trigger condition.
- When the discharge temperature becomes lower than the release condition, control of compressor frequency is released.
- When the discharge temperature becomes higher than the compressor protection temperature, the compressor is stopped and the indoor unit indicator lamp starts blinking.

- **Model: AOUH18LUAS1**

Trigger condition	219.2°F (104°C)
Compressor frequency	-20 rps/120 seconds
Release condition	213.8°F (101°C)
Compressor protection temperature	230.0°F (110°C)

- **Models: AOUH24LUAS1, AOUH30LUAS1, and AOUH36LUAS1**

Trigger condition	219.2°F (104°C)
Compressor frequency	-14 rps/120 seconds
Release condition	213.8°F (101°C)
Compressor protection temperature	230.0°F (110°C)

8-2. Anti-freezing control (cooling and dry mode)

The rotation number of compressor is decrease in cooling and dry mode when the indoor unit heat exchanger temperature sensor detects the temperature lower than the trigger condition.

When the indoor unit heat exchanger temperature reaches release condition, the anti-freezing control is stopped.

Trigger condition		39.2°F (4°C)
Release condition	Outdoor temp. \geq 50°F (10°C)*1	44.6°F (7°C)
	Outdoor temp. \geq 53.6°F (12°C)*2	
	Outdoor temp. $<$ 50°F (10°C)*1	55.4°F (13°C)
	Outdoor temp. $<$ 53.6°F (12°C)*2	

*1: During the outdoor temperature dropping

*2: During the outdoor temperature rising

8-3. Current release control

The rotation number of compressor is controlled so that the outdoor unit input current does not exceeds current limit value set according to the outdoor temperature.

The rotation number of compressor returns according to the operation mode, when the current becomes lower than the release value.

■ Model: AOUH18LUAS1

Operation mode	Outdoor temp. (Ta)	Trigger condition	Release condition
Cooling	$122.0^{\circ}\text{F} (50^{\circ}\text{C}) \leq \text{Ta}$	4.5 A	4.0 A
	$114.8^{\circ}\text{F} (46^{\circ}\text{C}) \leq \text{Ta} < 122.0^{\circ}\text{F} (50^{\circ}\text{C})$	4.5 A	4.0 A
	$104.0^{\circ}\text{F} (40^{\circ}\text{C}) \leq \text{Ta} < 114.8^{\circ}\text{F} (46^{\circ}\text{C})$	6.0 A	5.5 A
	$53.6^{\circ}\text{F} (12^{\circ}\text{C}) \leq \text{Ta} < 104.0^{\circ}\text{F} (40^{\circ}\text{C})$	10.0 A	9.5 A
	$35.6^{\circ}\text{F} (2^{\circ}\text{C}) \leq \text{Ta} < 53.6^{\circ}\text{F} (12^{\circ}\text{C})$	10.0 A	9.5 A
Heating	$\text{Ta} < 35.6^{\circ}\text{F} (2^{\circ}\text{C})$	10.0 A	9.5 A
	$62.6^{\circ}\text{F} (17^{\circ}\text{C}) \leq \text{Ta}$	7.0 A	6.5 A
	$53.6^{\circ}\text{F} (12^{\circ}\text{C}) \leq \text{Ta} < 62.6^{\circ}\text{F} (17^{\circ}\text{C})$	9.0 A	8.5 A
	$41.0^{\circ}\text{F} (5^{\circ}\text{C}) \leq \text{Ta} < 53.6^{\circ}\text{F} (12^{\circ}\text{C})$	12.5 A	12.0 A
	$\text{Ta} < 41.0^{\circ}\text{F} (5^{\circ}\text{C})$	12.5 A	12.0 A

■ Model: AOUH24LUAS1

Operation mode	Outdoor temp. (Ta)	Trigger condition	Release condition
Cooling	$125.6^{\circ}\text{F} (52^{\circ}\text{C}) \leq \text{Ta}$	8.0 A	7.5 A
	$122.0^{\circ}\text{F} (50^{\circ}\text{C}) \leq \text{Ta} < 125.6^{\circ}\text{F} (52^{\circ}\text{C})$	10.0 A	9.5 A
	$107.6^{\circ}\text{F} (42^{\circ}\text{C}) \leq \text{Ta} < 122.0^{\circ}\text{F} (50^{\circ}\text{C})$	13.0 A	12.5 A
	$\text{Ta} < 107.6^{\circ}\text{F} (42^{\circ}\text{C})$	13.5 A	13.0 A
Heating	$68.0^{\circ}\text{F} (20^{\circ}\text{C}) \leq \text{Ta}$	11.0 A	10.5 A
	$53.6^{\circ}\text{F} (12^{\circ}\text{C}) \leq \text{Ta} < 68.0^{\circ}\text{F} (20^{\circ}\text{C})$	13.0 A	12.5 A
	$\text{Ta} < 53.6^{\circ}\text{F} (12^{\circ}\text{C})$	13.5 A	13.0 A

■ Model: AOUH30LUAS1

Operation mode	Outdoor temp. (Ta)	Trigger condition	Release condition
Cooling	$125.6^{\circ}\text{F} (52^{\circ}\text{C}) \leq \text{Ta}$	8.0 A	7.5 A
	$122.0^{\circ}\text{F} (50^{\circ}\text{C}) \leq \text{Ta} < 125.6^{\circ}\text{F} (52^{\circ}\text{C})$	12.0 A	11.5 A
	$107.6^{\circ}\text{F} (42^{\circ}\text{C}) \leq \text{Ta} < 122.0^{\circ}\text{F} (50^{\circ}\text{C})$	14.0 A	13.5 A
	$\text{Ta} < 107.6^{\circ}\text{F} (42^{\circ}\text{C})$	16.0 A	15.5 A
Heating	$53.6^{\circ}\text{F} (12^{\circ}\text{C}) \leq \text{Ta}$	13.0 A	12.5 A
	$\text{Ta} < 53.6^{\circ}\text{F} (12^{\circ}\text{C})$	16.0 A	15.5 A

■ Model: AOUH36LUAS1

Operation mode	Outdoor temp. (Ta)	Trigger condition	Release condition
Cooling	$125.6^{\circ}\text{F} (52^{\circ}\text{C}) \leq \text{Ta}$	8.0 A	7.5 A
	$122.0^{\circ}\text{F} (50^{\circ}\text{C}) \leq \text{Ta} < 125.6^{\circ}\text{F} (52^{\circ}\text{C})$	12.0 A	11.5 A
	$107.6^{\circ}\text{F} (42^{\circ}\text{C}) \leq \text{Ta} < 122.0^{\circ}\text{F} (50^{\circ}\text{C})$	14.0 A	13.5 A
	$\text{Ta} < 107.6^{\circ}\text{F} (42^{\circ}\text{C})$	17.4 A	16.9 A
Heating	$53.6^{\circ}\text{F} (12^{\circ}\text{C}) \leq \text{Ta}$	13.0 A	12.5 A
	$\text{Ta} < 53.6^{\circ}\text{F} (12^{\circ}\text{C})$	17.4 A	16.9 A

8-4. Indoor unit fan motor over temperature protection

The fan motor over temperature protection activates after two judgments when fulfilling any of the following conditions.

- Detected that the rotation number of the fan motor stays 200 rpm or less for 10 seconds after 90 seconds from the fan operation started.
- IPM trip protection activates.
- Current overload protection activates.

At first, the function determines if any of the above conditions apply (First judgment). If any of the above conditions apply after the first judgment, the function will make the second judgment after 6 minutes. If any of the above conditions still apply in the second judgment, fan motor over temperature protection activates.

- **Protection details**

The function lowers the static pressure by 20 Pa. If the problem is not resolved even at the minimum static pressure, the unit operates as follows.

- Fan motor error will be displayed if the fan motor speed stays 200 rpm or less for 10 seconds after 90 seconds from the fan operation started.
- The fan stops 40 seconds after the activation of the IPM trip protection.
- The fan stops 50 seconds after the activation of the current overload protection.

8-5. Compressor temperature protection

When the compressor temperature sensor detects higher than the trigger condition below, the compressor is stopped. When the compressor temperature sensor detects the release condition, the protection is released.

Trigger condition	226.4°F (108°C)
Release condition	176.0°F (80°C) (3 minutes after compressor stop)

8-6. High pressure protection (for 24/30/36 model)

Trigger condition	Pressure switch: Off (Open: Higher than 4.2 MPa) Compressor stop
Release condition	Pressure switch: On (Close: Lower than 3.2 MPa) (3 minutes after compressor stop) Compressor restart

8-7. Low outdoor temperature protection

When the outdoor temperature sensor detects lower than the trigger condition below, the compressor is stopped.

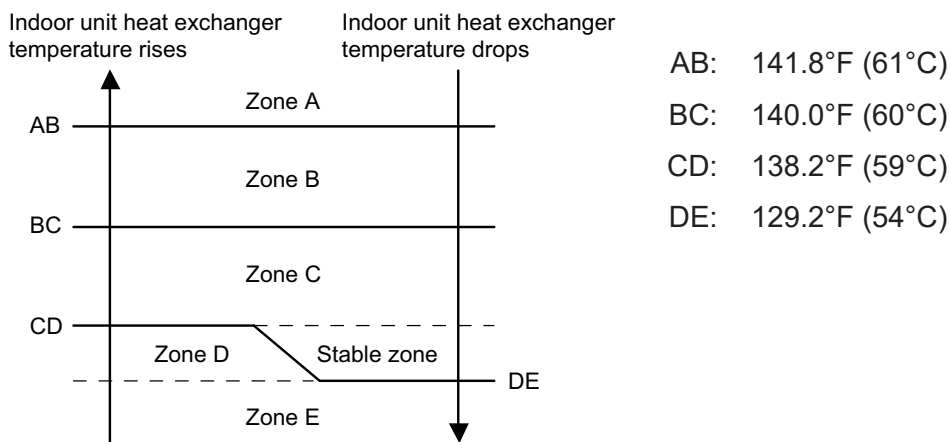
Operation mode		Cooling/Dry
18 model	Trigger condition	5°F (-15°C)
	Release condition	14°F (-10°C)
24/30/36 model	Trigger condition	-13°F (-25°C)
	Release condition	-4°F (-20°C)

8-8. High temperature and high pressure release control

The compressor is controlled as follows.

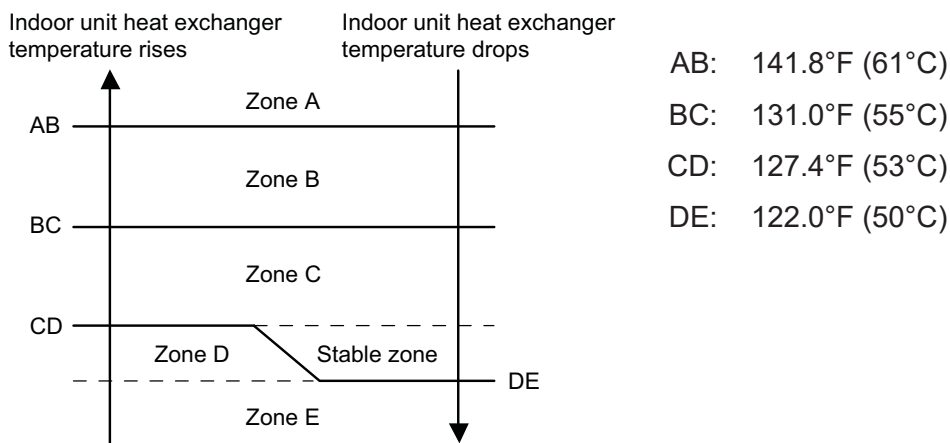
■ Model: AOUH18LUAS1

• Cooling mode



Zone	Operation	
Zone A	Compressor is stopped.	
Zone B	The compressor frequency is decreased.	-30 rps/30 sec.
Zone C		-5 rps/60 sec.
Zone D	The protection is released and the operation is returned to normal mode.	
Zone E		

• Heating mode

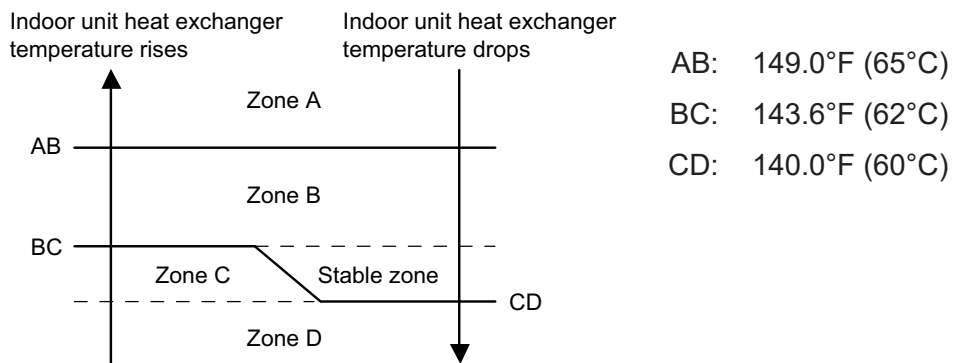


Zone	Operation	
Zone A	Compressor is stopped.	
Zone B	The compressor frequency is decreased.	-25 rps/120 sec.
Zone C		-3 rps/60 sec.
Zone D	The protection is released and the operation is returned to normal mode.	
Zone E		

■ Models: AOUH24LUAS1, AOUH30LUAS1, and AOUH36LUAS1

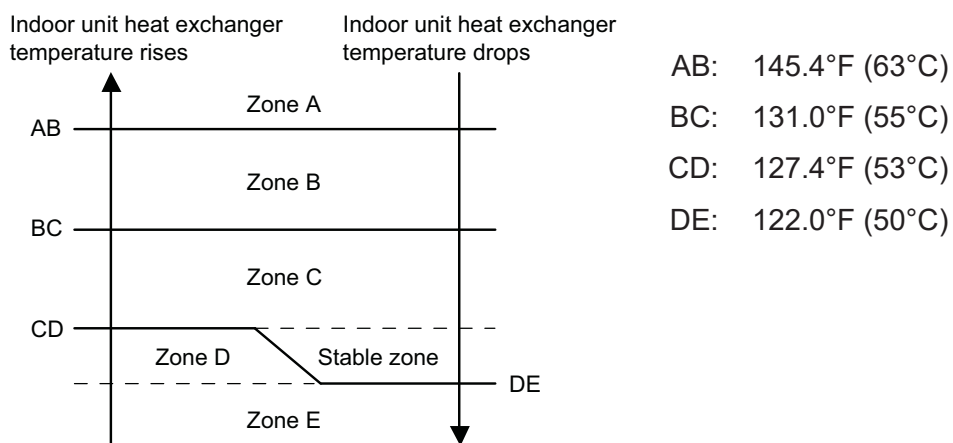
The compressor is controlled as follows.

• Cooling mode



Zone	Operation	
Zone A	Compressor is stopped.	
Zone B	The compressor frequency is decreased.	-7 rps/120 sec.
Zone C	The protection is released and the operation is returned to normal mode.	
Zone D		

• Heating mode



Zone	Operation	
Zone A	Compressor is stopped.	
Zone B	The compressor frequency is decreased.	-15 rps/120 sec.
Zone C		-2 rps/120 sec.
Zone D	The protection is released and the operation is returned to normal mode.	
Zone E		

5. FILED WORKING

CONTENTS

5. FILED WORKING

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1. Function settings (for indoor unit)

To adjust the functions of this product according to the installation environment, various types of function settings are available.

NOTE: Incorrect settings can cause a product malfunction.

1-1. Function settings by using remote controller

Some function settings can be changed on the remote controller. After confirming the setting procedure and the content of each function setting, select appropriate functions for your installation environment.

■ Setting procedure by using remote controller

Remote controller is not attached for this product. For details of the installing remote controller, refer to following information.

- Overview information: Operating manual of the remote controller
- Setting procedure: Installation manual of the remote controller

■ Contents of function setting

Each function setting listed in this section is adjustable in accordance with the installation environment.

NOTE: Setting will not be changed if invalid numbers or setting values are selected.

● Function setting list

	Function no.	Functions
1)	11	Filter sign
2)	20	Ceiling height
3)	28	Horizontal louver direction switching for dew condensation prevention
4)	30/31	Room temperature control for indoor unit sensor
5)	35/36	Room temperature control for wired remote controller sensor
6)	40	Auto restart
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14)	62	Operating temperature switching of external heaters
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17)	71	Standby time for auxiliary equipment operation
18)	72	Heat pump backup setting
19)	73	Emergency heat for external output terminal
20)	74	Fan delay time
21)	75	External heater use in defrosting
22)	94	Fixed operation mode switching

1) Filter sign

Select appropriate intervals for displaying the filter sign on the indoor unit according to the estimated amount of dust in the air of the room.

If the indication is not required, select "No indication" (03).

Function number	Setting value	Setting description	Factory setting
11	00	Standard (2,500 hours)	
	01	Long interval (4,400 hours)	
	02	Short interval (1,250 hours)	
	03	No indication	◆

2) Ceiling height

Select the appropriate ceiling height according to the place of installation.

Function number	Setting value	Setting description	Factory setting
20	00	Standard	◆
	01	High ceiling	

For the specific height for each setting value, refer to "Installation space" in Chapter 2. "[Dimensions](#)" in Chapter 1. GENERAL INFORMATION on page 01-9.

3) Horizontal louver direction switching for dew condensation prevention

Automatically switches the position of the horizontal louver if the airflow direction is set at lower than the dew condensation limit position in cooling or drying operation.

Select suitable adjustment position according to the customer's preference.

Function number	Setting value	Setting description	Factory setting
28	00	Adjust to dew condensation limit position	◆
	01	Adjust to cooling standard position	

4) Room temperature control for indoor unit sensor

Depending on the installed environment, correction of the room temperature sensor may be required. Select the appropriate control setting according to the installed environment.

The temperature of the room temperature sensor is corrected as follows:

Corrected temp. = Temp. of the room temp. sensor - Correction temp. value

Example of correction:

When the temperature of the room temp. sensor is 78°F and the setting value is "03" (-2°F), the corrected temp. will be 80°F (78°F - [-2°F]).

The temperature correction values show the difference from the Standard setting "00" (manufacturer's recommended value).

Function number		Setting value	Setting description	Factory setting	
30 (For cooling)	31 (For heating)	00	Standard setting	◆	
		01	No correction 0.0°F (0.0°C)		
		02	-1°F (-0.5°C)	More cooling Less heating	
		03	-2°F (-1.0°C)		
		04	-3°F (-1.5°C)		
		05	-4°F (-2.0°C)		
		06	-5°F (-2.5°C)		
		07	-6°F (-3.0°C)		
		08	-7°F (-3.5°C)		
		09	-8°F (-4.0°C)		
		10	+1°F (+0.5°C)	Less cooling More heating	
		11	+2°F (+1.0°C)		
		12	+3°F (+1.5°C)		
		13	+4°F (+2.0°C)		
		14	+5°F (+2.5°C)		
		15	+6°F (+3.0°C)		
		16	+7°F (+3.5°C)		
17	+8°F (+4.0°C)				

5) Room temperature control for wired remote controller sensor

Depending on the installed environment, correction of the wire remote temperature sensor may be required. Select the appropriate control setting according to the installed environment.

To change this setting, set Function 42 to "Both" (01).

Ensure that the Thermo Sensor icon is displayed on the remote controller screen.

Function number		Setting value	Setting description	Factory setting	
35 (For cooling)	36 (For heating)	00	Standard setting	◆	
		01	No correction 0.0°F (0.0°C)		
		02	-1°F (-0.5°C)	More cooling Less heating	
		03	-2°F (-1.0°C)		
		04	-3°F (-1.5°C)		
		05	-4°F (-2.0°C)		
		06	-5°F (-2.5°C)		
		07	-6°F (-3.0°C)		
		08	-7°F (-3.5°C)		
		09	-8°F (-4.0°C)		
		10	+1°F (+0.5°C)	Less cooling More heating	
		11	+2°F (+1.0°C)		
		12	+3°F (+1.5°C)		
		13	+4°F (+2.0°C)		
		14	+5°F (+2.5°C)		
		15	+6°F (+3.0°C)		
		16	+7°F (+3.5°C)		
17	+8°F (+4.0°C)				

6) Auto restart

Enables or disables automatic restart after a power interruption.

Function number	Setting value	Setting description	Factory setting
40	00	Enable	◆
	01	Disable	

NOTE: Auto restart is an emergency function such as for power outage etc. Do not attempt to use this function in normal operation. Be sure to operate the unit by remote controller or external device.

7) Room temperature sensor switching

(Only for wired remote controller)

When using the wired remote controller temperature sensor, change the setting to "Both" (01).

Function number	Setting value	Setting description	Factory setting
42	00	Indoor unit	◆
	01	Both	

00: Sensor on the indoor unit is active.

01: Sensors on both indoor unit and wired remote controller are active.

NOTE: Remote controller sensor must be turned on by using the remote controller.

8) Remote controller custom code

(Only for wireless remote controller)

The indoor unit custom code can be changed. Select the appropriate custom code.

Function number	Setting value	Setting description	Factory setting
44	00	A	◆
	01	B	
	02	C	
	03	D	

9) External input control

"Operation/Stop" mode or "Forced stop" mode can be selected.

Function number	Setting value	Setting description	Factory setting
46	00	Operation/Stop mode 1 (Remote controller enabled)	◆
	01	(Setting prohibited)	
	02	Forced stop mode	
	03	Operation/Stop mode 2 (Remote controller disabled)	

10) Room temperature sensor switching (Aux.)

To use the temperature sensor on the wired remote controller only, change the setting to "Wired remote controller" (01).

This function will only work if the function setting 42 is set at "Both" (01).

When the setting value is set to "Both" (00), more suitable control of the room temperature is possible by setting function setting 30 and 31 too.

Function number	Setting value	Setting description	Factory setting
48	00	Both	◆
	01	Wired remote controller	

11) Indoor unit fan control for energy saving for cooling

Enables or disables the power-saving function by controlling the indoor unit fan rotation when the outdoor unit is stopped during cooling operation.

Function number	Setting value	Setting description	Factory setting
49	00	Disable	
	01	Enable	
	02	Remote controller	◆

00: When the outdoor unit is stopped, the indoor unit fan operates continuously following the setting on the remote controller.

01: When the outdoor unit is stopped, the indoor unit fan operates intermittently at a very low speed.

02: Enable or disable this function by remote controller setting.

NOTE: Set to "00" or "01" when connecting a remote controller that cannot set the Fan control for energy saving function or connecting a network converter. To confirm if the remote controller has this setting, refer to the operating manual of each remote controller.

12) Switching functions for external output terminal

Functions of the external output terminal can be switched. For details, refer to “External input and output”.

Function number	Setting value	Setting description	Factory setting
60	00	Operation status	◆
	01—04	Cooling thermostat On	
	05	Heating operation	
	06	Operation/Stop	
	07—08	Cooling thermostat On	
	09	Error status	
	10	Fresh air control	
	11	External heater	

13) Control switching of external heaters

Sets the control method for external heater to be used.

For details, refer to “External heater output” in ["Details of control output function"](#) on page 05-24.

Function number	Setting value	Setting description	Factory setting
61	00	Auxiliary heater control 1	◆
	01	Auxiliary heater control 2	
	02	Heat pump prohibition control	
	03	Auxiliary heater control by outdoor temperature 1	
	04	Auxiliary heater control by outdoor temperature 2	
	05	Auxiliary heater control by outdoor temperature 3	
	06	Auxiliary heat pump control	
	07	Auxiliary heat pump control by outdoor temperature 1	
	08	Auxiliary heat pump control by outdoor temperature 2	
	09	Auxiliary heat pump control by outdoor temperature 3	

14) Operating temperature switching of external heaters

Sets the temperature conditions when the external heater is ON.

For details, refer to “External heater output” in ["Details of control output function"](#) on page 05-24.

Function number	Setting value	Setting description				Factory setting
		Setting value of function 61:				
		00		01 to 09		
		Heater: On	Heater: Off	Heater: On	Heater: Off	
62	00	-5.4°F (-3°C)	-1.8°F (-1°C)	-0.9°F (-0.5°C)	-0.9°F (-0.5°C)	◆
	01	-3.6°F (-2°C)	-1.8°F (-1°C)	-1.8°F (-1°C)	-0.9°F (-0.5°C)	
	02	-3.6°F (-2°C)	-1.8°F (-1°C)	-3.6°F (-2°C)	-0.9°F (-0.5°C)	
	03	-5.4°F (-3°C)	-1.8°F (-1°C)	-5.4°F (-3°C)	-0.9°F (-0.5°C)	
	04	-7.2°F (-4°C)	-1.8°F (-1°C)	-7.2°F (-4°C)	-0.9°F (-0.5°C)	
	05	-9.0°F (-5°C)	-1.8°F (-1°C)	-9.0°F (-5°C)	-0.9°F (-0.5°C)	
	06	-5.4°F (-3°C)	-0.9°F (-0.5°C)	-0.9°F (-0.5°C)	0°F (0°C)	
	07	-3.6°F (-2°C)	-0.9°F (-0.5°C)	-1.8°F (-1°C)	0°F (0°C)	
	08	-3.6°F (-2°C)	-0.9°F (-0.5°C)	-3.6°F (-2°C)	0°F (0°C)	
	09	-5.4°F (-3°C)	-0.9°F (-0.5°C)	-5.4°F (-3°C)	0°F (0°C)	
	10	-7.2°F (-4°C)	-0.9°F (-0.5°C)	-7.2°F (-4°C)	0°F (0°C)	
	11	-9.0°F (-5°C)	-0.9°F (-0.5°C)	-9.0°F (-5°C)	0°F (0°C)	
	12	-5.4°F (-3°C)	0°F (0°C)	-0.9°F (-0.5°C)	-0.9°F (-0.5°C)	
	13	-3.6°F (-2°C)	0°F (0°C)	-1.8°F (-1°C)	-0.9°F (-0.5°C)	
	14	-3.6°F (-2°C)	0°F (0°C)	-3.6°F (-2°C)	-0.9°F (-0.5°C)	
	15	-5.4°F (-3°C)	0°F (0°C)	-5.4°F (-3°C)	-0.9°F (-0.5°C)	
	16	-7.2°F (-4°C)	0°F (0°C)	-7.2°F (-4°C)	-0.9°F (-0.5°C)	
17	-9.0°F (-5°C)	0°F (0°C)	-9.0°F (-5°C)	-0.9°F (-0.5°C)		

15) Outdoor temperature zone boundary temperature A

Setting required if changing of the outdoor temperature setting for heat pump prohibition zone is required when auxiliary heater control by outdoor temperature 1 and 2 are performed on the indoor unit.

For details, refer to “External heater output” in ["Details of control output function"](#) on page 05-24.

Function number	Setting value	Setting description	Factory setting
66	00	-4.0°F (-20°C)	◆
	01	-0.4°F (-18°C)	
	02	3.2°F (-16°C)	
	03	6.8°F (-14°C)	
	04	10.4°F (-12°C)	
	05	14.0°F (-10°C)	
	06	17.6°F (-8°C)	
	07	21.2°F (-6°C)	
	08	24.8°F (-4°C)	

16) Outdoor temperature zone boundary temperature B

Setting required if changing of the outdoor temperature setting for heat pump only zone is required when auxiliary heater control by outdoor temperature 1 and 3 is performed on the indoor unit.

For details, refer to "External heater output" in ["Details of control output function"](#) on page 05-24.

Function number	Setting value	Setting description	Factory setting
67	00	42.8°F (6°C)	◆
	01	14.0°F (-10°C)	
	02	17.6°F (-8°C)	
	03	21.2°F (-6°C)	
	04	24.8°F (-4°C)	
	05	28.4°F (-2°C)	
	06	32.0°F (0°C)	
	07	35.6°F (2°C)	
	08	39.2°F (4°C)	
	09	42.8°F (6°C)	
	10	46.4°F (8°C)	
	11	50.0°F (10°C)	
	12	53.6°F (12°C)	
	13	57.2°F (14°C)	
	14	60.8°F (16°C)	
15	64.4°F (18°C)		

17) Standby time for auxiliary equipment operation

Sets the standby time until the auxiliary equipment operation starts during primary equipment operation.

For details, refer to ["Details of control output function"](#) on page 05-24.

Function number	Setting value	Setting description	Factory setting
71	00	Disable	◆
	01	1 minute	
	02	2 minutes	
	•	•	
	•	•	
	•	•	
	98	98 minutes	
	99	99 minutes	

18) Heat pump backup setting

Enables or disables the heat pump backup instruction from the outdoor unit.

This function will be usable provided that the corresponding outdoor unit is connected.

Function number	Setting value	Setting description	Factory setting
72	00	Disable	◆
	01	Enable	

19) Emergency heat for external output terminal

Enables or disables emergency heat input.

Function number	Setting value	Setting description	Factory setting
73	00	Disable	◆
	01	Enable	

NOTE: When this function is used, IR Receiver Unit is necessary.

20) Fan delay time

Sets the fan delay time when the heater is turned off.

Function number	Setting value	Setting description	Factory setting
74	00	1 minute	◆
	01	50 seconds	
	02	40 seconds	
	03	30 seconds	

21) External heater use in defrosting

Enables or disables external heater use in defrosting.

NOTE: Inappropriate heater selection may cause cold air in defrosting.

Function number	Setting value	Setting description	Factory setting
75	00	Disable	◆
	01	Enable	

22) Fixed operation mode switching

Sets the operation mode to heat pump, heating only, or cooling only.

Function number	Setting value	Setting description	Factory setting
94	00	Heat pump	◆
	01	Heating only	
	02	Cooling only	

2. Function settings (for 24-36 outdoor units)

Perform appropriate function setting locally according to the installation environment.

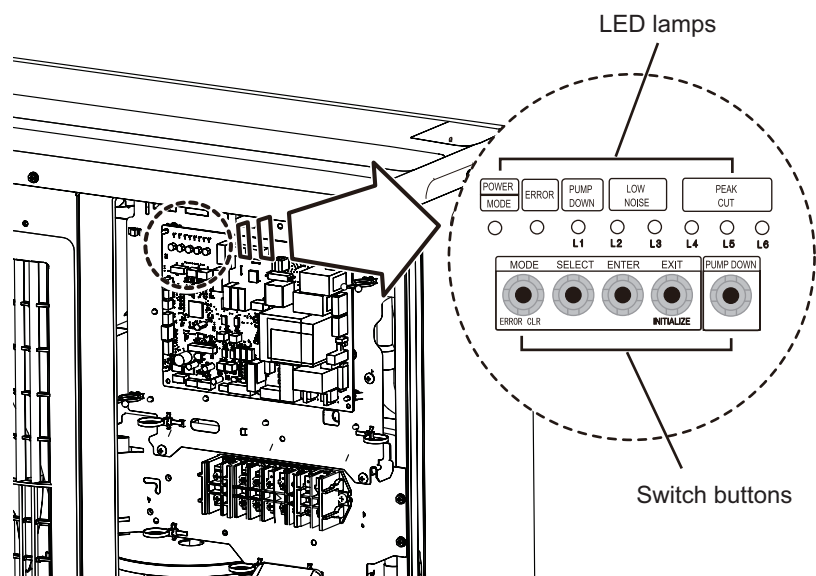
NOTE: Incorrect settings can cause a product malfunction.

⚠ CAUTION

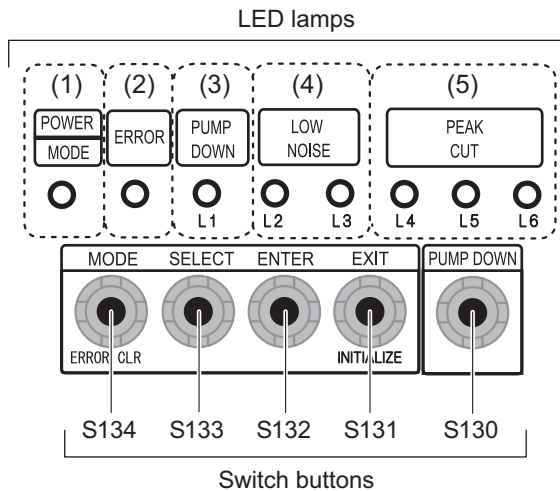
- Before setting up the switch buttons, discharge the static electricity from your body.
- Never touch the terminals or the patterns on the parts that are mounted on the PCB.

2-1. Control PCB and switch buttons location

Control PCB of the outdoor unit is located as shown in the following figure.



Switch buttons and the functions



LED lamp			Function or operation method
(1)	POWER/MODE	Green	Lights on while power on. Blinks to show the local setting on the outdoor unit or the error code.
(2)	ERROR	Red	Blinks during error operation.
(3)	PUMP DOWN (L1)	Orange	Lights on during pump down operation.
(4)	LOW NOISE MODE (L2 and L3)	Orange	Lights on during "Low noise mode" when local setting is activated. (Light pattern of L2 and L3 indicates the low noise level.)
(5)	PEAK CUT MODE (L4, L5, and L6)	Orange	Lights on during "Peak cut mode" when local setting is activated. (Light pattern of L4, L5, and L6 indicates the peak cut level.)

Switch button		Function or operation method
S134	MODE	Switches between "Local setting" and "Error code display".
S133	SELECT	Switches between the individual "Local settings" and the "Error code displays".
S132	ENTER	Switches between the individual "Local settings" and the "Error code displays".
S131	EXIT	Returns to "Operation status display".
S130	PUMP DOWN	Starts the pump down operation.

FIELD WORKING

FIELD WORKING

2-2. Local setting procedure

NOTE: Before performing the function setting, be sure to stop the operation of the air conditioner.

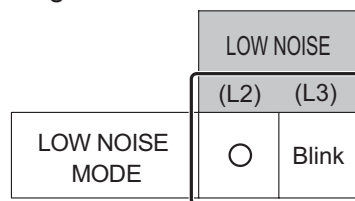
Low noise mode

1. Press the MODE switch button (S134) for 3 seconds or more to switch to "Local setting mode".
2. After confirming the LED lamp of POWER/MODE blinks 9 times, press the ENTER switch button (S132).

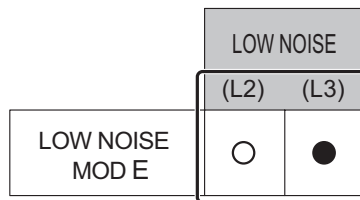
POWER MODE	ERROR	PUMP DOWN (L1)	LOW NOISE (L2) (L3)		PEAK CUT (L4) (L5) (L6)		
Blinks (9 times)	○	○	○	○	○	○	○

Sign "○": Lights off

3. Press the SELECT switch button (S133), and adjust the LED lamp as shown below. Then the LED lamp indicates the current setting.

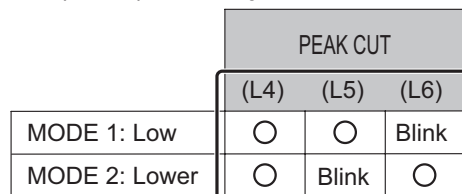


4. Press the ENTER switch button (S132).

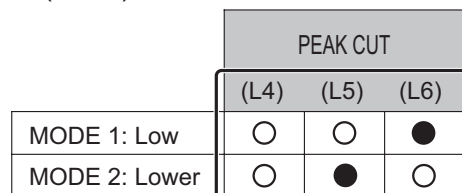


Sign "●": Lights on

5. Press the SELECT switch button (S133), and adjust the LED lamps as shown below.



6. Press the ENTER switch button (S132) and fix it.



7. To return to "Operating status display (Normal operation)", press the EXIT switch button (S131).

In case of missing how many times you pressed the SELECT and ENTER switch buttons:

1. To return to "Operation status display (Normal operation)", press the EXIT switch button once.
2. Restart from the beginning of setting procedure.

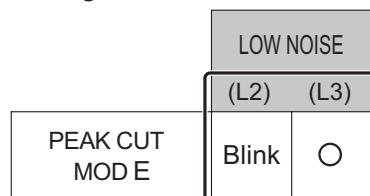
■ Peak cut mode

1. Press the MODE switch button (S134) for 3 seconds or more to switch to “Local setting mode”.
2. After confirming the LED lamp of POWER/MODE blinks 9 times, press the ENTER switch button (S132).

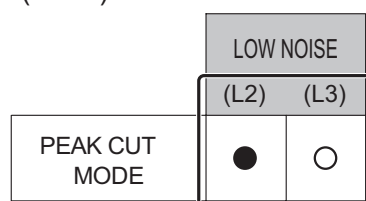
POWER MODE	ERROR	PUMP DOWN (L1)	LOW NOISE		PEAK CUT		
			(L2)	(L3)	(L4)	(L5)	(L6)
Blinks (9 times)	○	○	○	○	○	○	○

Sign “○”: Lights off

3. Press the SELECT switch button (S133), and adjust the LED lamp as shown below. Then the LED lamp indicates the current setting.



4. Press the ENTER switch button (S132).



Sign “●”: Lights on

5. Press the SELECT switch button (S133), and adjust the LED lamps as shown below.

	PEAK CUT		
	(L4)	(L5)	(L6)
0 % of rated input ratio	○	○	Blink
50 % of rated input ratio	○	Blink	○
75 % of rated input ratio	○	Blink	Blink
100 % of rated input ratio	Blink	○	○

6. Press the ENTER switch button (S132) and fix it.

	PEAK CUT		
	(L4)	(L5)	(L6)
0 % of rated input ratio	○	○	●
50 % of rated input ratio	○	●	○
75 % of rated input ratio	○	●	●
100 % of rated input ratio	●	○	○

7. To return to “Operating status display (Normal operation)”, press the EXIT switch button (S131).

NOTE: When pressed number is lost during setting, you must redo the setting procedure. Return to “Operation status display (Normal operation)” by pressing the EXIT switch button once, and restart from the beginning of the setting procedure.

3. External input and output (for indoor unit)

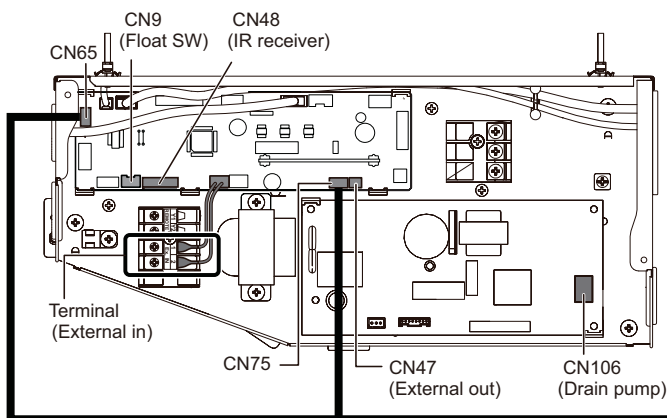


Fig. Indoor unit PCB

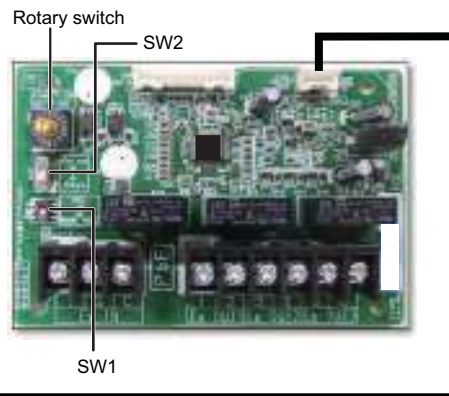


Fig. External input and output PCB

Connecting point		Input/Output	Function	Input select	Input signal
Indoor unit	Terminal	Input	Operation/Stop Forced stop	Dry contact	Edge
	CN47	Output	Operation/Stop Error status	—	—
			Indoor unit fan operation status		
			Cooling thermostat On		
			Heating thermostat On		
			External heater output		
	External Input and Output PCB (UTY-XCSX)	Ex IN 1/2	Input	Operation/Stop	Dry contact/Apply voltage
Ex IN 1		Forced thermostat off		Edge	
Ex OUT 1 Ex OUT 2 Ex OUT 3		Output	Operation/Stop Error status	—	—
			Indoor unit fan operation status		
			External heater output		
	Cooling high/low output				
			Heating thermostat On		

NOTE: For details of the switching function, refer to "Setting of external input and output" on page 05-18.

FIELD WORKING

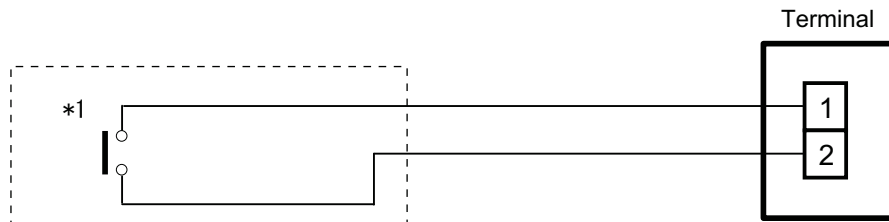
FIELD WORKING

3-1. External input

- “Operation/Stop” mode or “Forced stop” mode can be selected with function setting of indoor unit.
- A twisted pair cable (22 AWG) should be used. Maximum length of cable is 492 ft (150 m).
- Use an external input and output cable with appropriate external dimension, depending on the number of cables to be installed.
- The wire connection should be separate from the power cable line.

Indoor unit

Indoor unit functions such as Operation/Stop can be done by using indoor unit terminal.



*1: The switch can be used on the following condition: DC 12 V to 24 V, 1 mA to 15 mA.

External Input and Output PCB

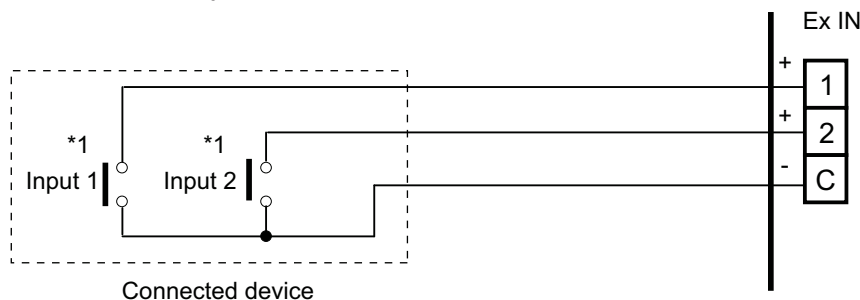
The indoor unit Operation/Stop can be set by using the input terminal on the PCB.

Input select

Use either one of these types of terminal according to the application. (Both types of terminal cannot be used simultaneously.)

– Dry contact

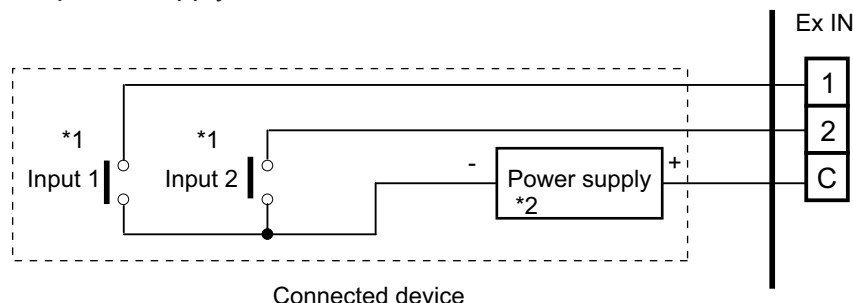
In case of internal power supply, set the slide switch of SW1 to “NON VOL” side.



*1: The switches can be used on the following condition: DC 12 V to 24 V, 1 mA to 15 mA.

– Apply voltage

In case of external power supply, set the slide switch of SW1 to “VOL” side.



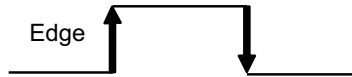
*1: The switches can be used on the following condition: DC 12 V to 24 V, 1 mA to 15 mA.

*2: Make the power supply DC 12 V to 24 V, 10 mA or more.

■ Input signal type

- **Indoor unit**

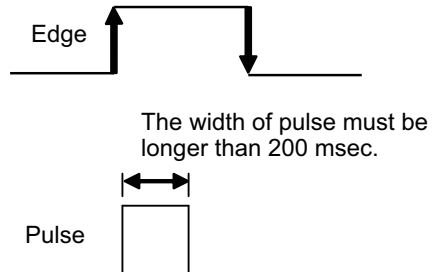
Input signal type is only "Edge".



- **External Input and Output PCB**

The input signal type can be selected.

Signal type (edge or pulse) can be switched by the DIP switch 2 (SW2) on the External Input and Output PCB.



NOTE: The input signal supports the following switch type:

- Edge: Alternate type switch
- Pulse: Momentary type switch

3-2. External output

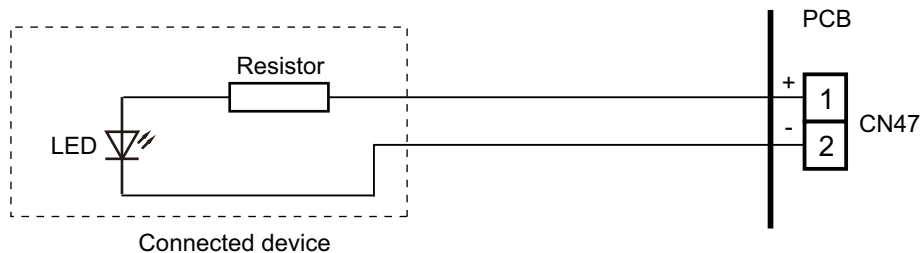
Use an external output cable with appropriate external dimension, depending on the number of cables to be installed.

Indoor unit

- A twisted pair cable (22 AWG) should be used. Maximum length of cable is 82 ft (25 m).
- Output voltage: High DC 12 V \pm 2 V, Low 0 V.
- Permissible current: 50 mA
- For details, refer to "[Setting of external input and output](#)" on page 05-18.

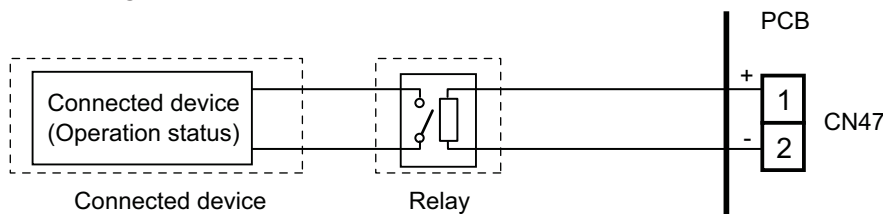
When indicator, etc. are connected directly

Example: Function setting number 60 is set to "00"



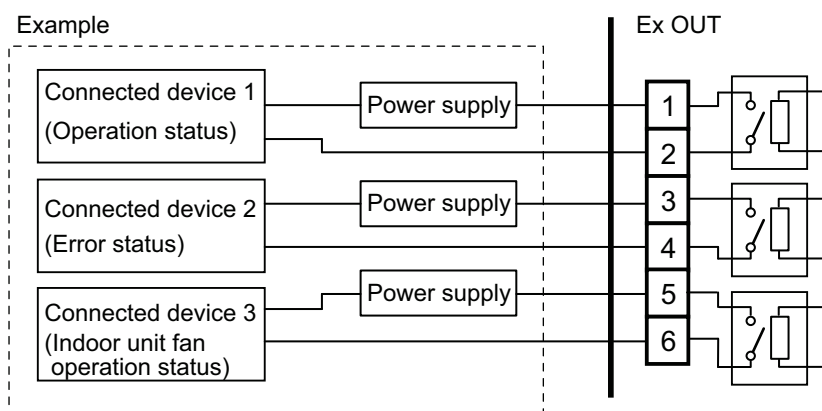
When connecting with a device equipped with a power supply

Example: Function setting number 60 is set to "00"



External Input and Output PCB

- A twisted pair cable (22 AWG) should be used.
- Permissible voltage and current: DC 5 V to 30 V/3 A, AC 30 V to 250 V/3 A
- For details, refer to "[Setting of external input and output](#)" on page 05-18.



3-3. Setting of external input and output

- Indoor unit

Input		
Connection point	Function setting number 46	Function
Terminal	00	Operation/Stop mode 1
	01	(Setting prohibited)
	02	Forced stop mode
	03	Operation/Stop mode 2

Output		
Connection point	Function setting number 60	Function
CN47	00	Operation/Stop
	01—04	Cooling thermostat On
	05	Heating thermostat On
	06	Operation/Stop
	07—08	Cooling thermostat On
	09	Error status
	10	Indoor unit fan operation status
	11	External heater output

- External Input and Output PCB

Switch setting		Ex IN		Ex OUT		
Rotary switch	SW2	1	2	1	2	3
1	Edge	Operation/Stop	Not available	Operation/Stop	Error status	Indoor unit fan operation status
	Pulse	Operation	Stop			
2	Edge*1	Forced thermostat off	Not available	Error status	Indoor unit fan operation status	External heater output
3		Mechanical cooling off	Not available	Error status	Indoor unit fan operation status	External heater output
4		Forced thermostat off	Not available	Error status	Operation/Stop	External heater output
5		Mechanical cooling on*2	Not available	Cooling high/low output	Operation/Stop	External heater output
6		Mechanical cooling on*2	Not available	Error status	Operation/Stop	Cooling high/low output
7		Forced thermostat off	Not available	Error status	Indoor unit fan operation status	External heater output
8		Forced thermostat off	Not available	Error status	Indoor unit fan operation status	Heating thermostat on
9		Mechanical cooling off	Not available	Error status	Heating thermostat on	External heater output
A		Forced thermostat off	Not available	Heating thermostat on	Operation/Stop	External heater output
B		Forced thermostat off	Not available	Operation/Stop	Indoor unit fan operation status	External heater output
C		Forced thermostat off	Not available	Operation/Stop	Error status	External heater output
D		Forced thermostat off	Not available	Operation/Stop	Indoor unit fan operation status	Error status

NOTES:

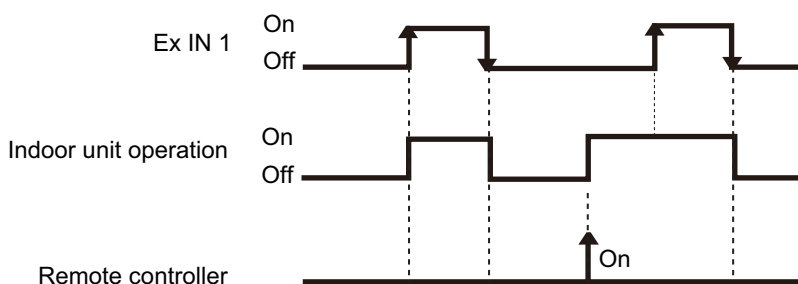
- When the rotary switch is selected to "1", the operation of the terminal input of the indoor unit and the External Input and Output PCB input are the same. The operation content depends on the setting of function setting number 46.
- *1: The external input other than "Operation/Stop" is available only when the SW2 is set to "Edge".
- *2: The external input of "Mechanical cooling on" is available only when the function setting number 60 is set to "03" or "04".

3-4. Details of control input function

■ Operation/Stop mode 1

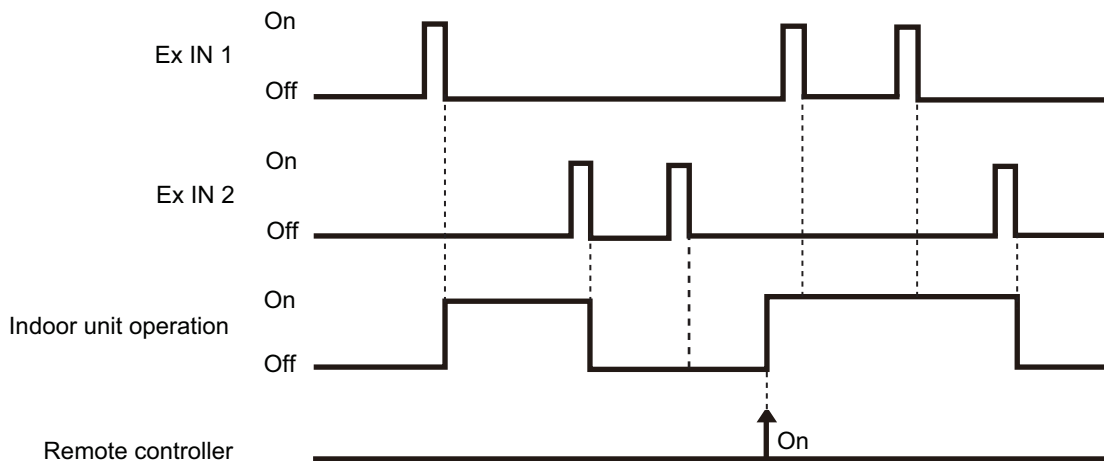
- In the case of "Edge" input

Function setting	External Input and Output PCB		External input		Input signal	Command
	Rotary switch	SW2				
46-00	—		Input of indoor unit	Terminal	Off → On	Operation
	—				On → Off	Stop
	1	Edge	External Input and Output PCB	Ex IN 1	Off → On	Operation
					On → Off	Stop



- In the case of "Pulse" input

Function setting	External Input and Output PCB		External input		Input signal	Command
	Rotary switch	SW2				
46-00	1	Pulse	External Input and Output PCB	Ex IN 1	Pulse	Operation
				Ex IN 2		Stop



NOTES:

- The last command has priority.
- The indoor units within the same remote controller group operates in the same mode.

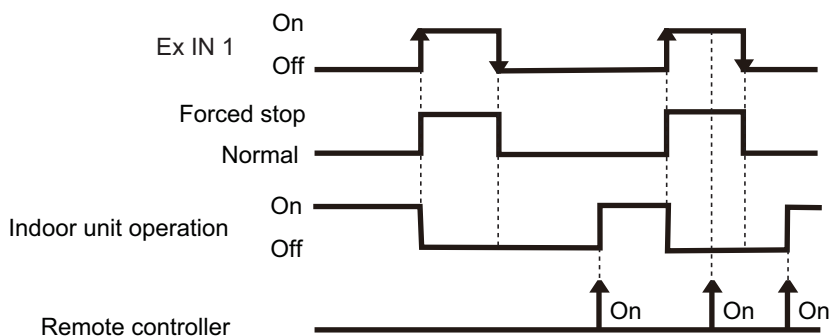
FIELD WORKING

FIELD WORKING

■ Forced stop

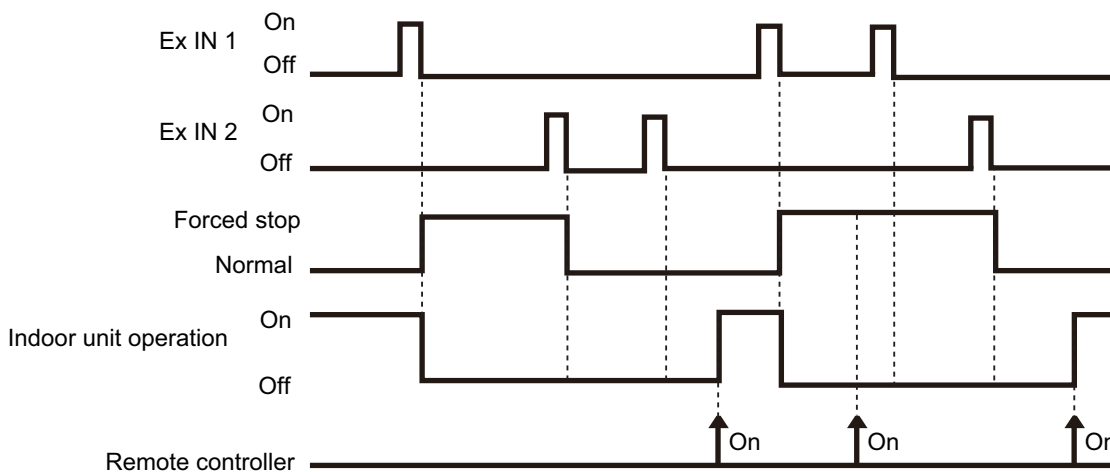
- In the case of "Edge" input

Function setting	External Input and Output PCB		External input		Input signal	Command
	Rotary switch	SW2				
46-02	—		Input of indoor unit	Terminal	Off → On	Forced stop (R.C. disabled)
					On → Off	Normal (R.C. enabled)
	1	Edge	External Input and Output PCB	Ex IN 1	Off → On	Forced stop (R.C. disabled)
					On → Off	Normal (R.C. enabled)



- In the case of "Pulse" input

Function setting	External Input and Output PCB		External input		Input signal	Command
	Rotary switch	SW2				
46-02	1	Pulse	External Input and Output PCB	Ex IN 1	Pulse	Forced stop (R.C. disabled)
				Ex IN 2		Normal (R.C. enabled)



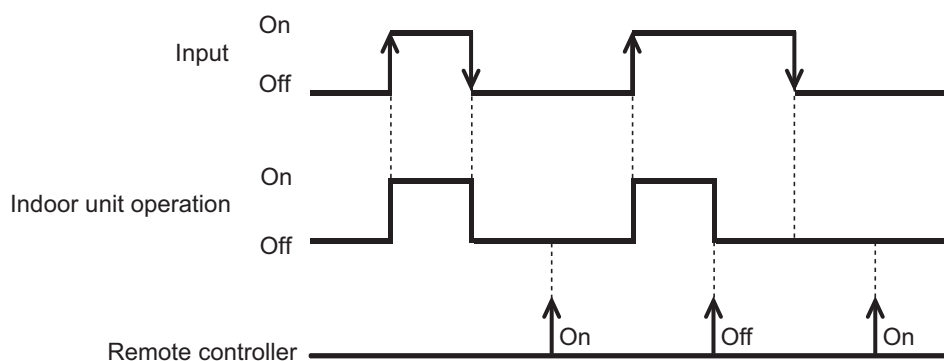
NOTES:

- When the forced stop is triggered, indoor unit stops and Operation/Stop operation by the remote controller is restricted.
- When forced stop function is used with forming a remote controller group, connect the same equipment to each indoor unit within the group.

■ Operation/Stop mode 2

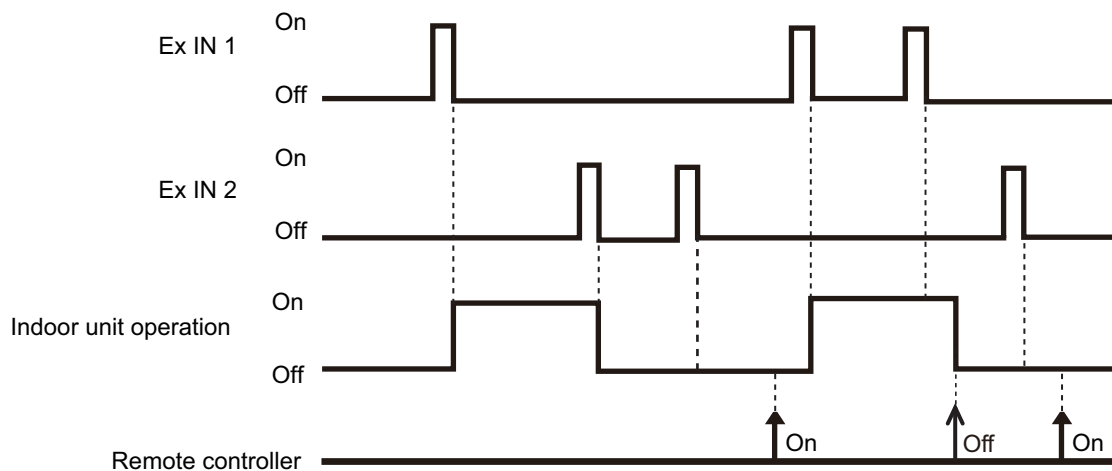
- In the case of "Edge" input

Function setting	External Input and Output PCB		External input		Input signal	Command
	Rotary switch	SW2				
46-03	—		Input of indoor unit	Terminal	Off → On	Operation (R.C. enabled)
					On → Off	Stop (R.C. disabled)
	1	Edge	External Input and Output PCB	Ex IN 1	Off → On	Operation (R.C. enabled)
					On → Off	Stop (R.C. disabled)



- In the case of "Pulse" input

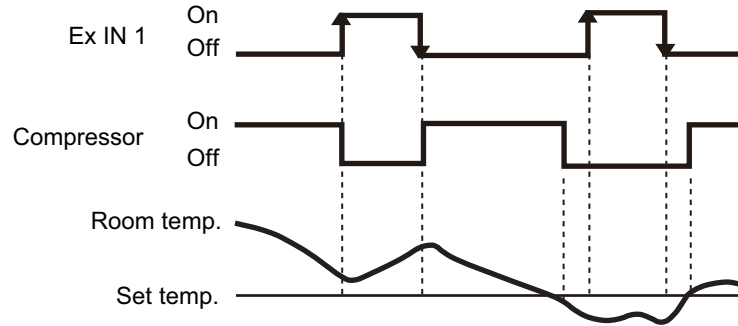
Function setting	External Input and Output PCB		External input		Input signal	Command
	Rotary switch	SW2				
46-03	1	Pulse	External Input and Output PCB	Ex IN 1	Pulse	Operation (R.C. enabled)
				Ex IN 2		Stop (R.C. disabled)



NOTE: When "Operation/Stop" mode 2 function is used with forming a remote controller group, connect the same equipment to each indoor unit within the group.

■ Forced thermostat off

External Input and Output PCB	External input		Input signal	Command
Rotary switch				
2, B, C, D	External Input and Output PCB	Ex IN 1	Off → On	Thermostat off
			On → Off	Normal operation
4, 7, 8, A	External Input and Output PCB	Ex IN 1	Off → On	Thermostat off
			On → Off	Normal operation

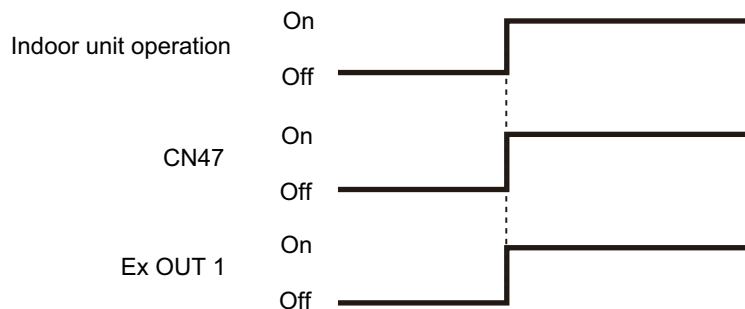


3-5. Details of control output function

■ Operation status

Function setting	External Input and Output PCB	External output		Output signal	Status
	Rotary switch				
60-00 60-06	—	Output of indoor unit	CN47	Off → On On → Off	Operation Stop
—	1, B, C, D	External Input and Output PCB	Ex OUT 1	Off → On On → Off	Operation Stop

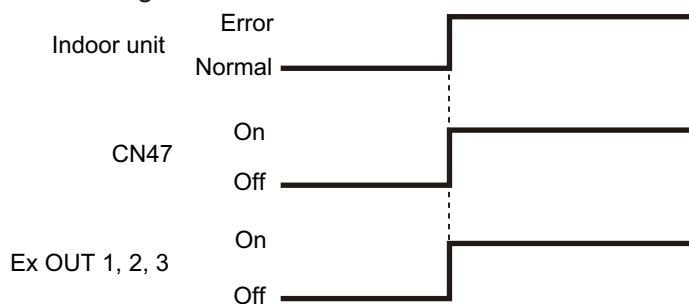
The output is low when the unit is stopped.



■ Error status

Function setting	External Input and Output PCB	External output		Output signal	Status
	Rotary switch				
60-09	—	Output of indoor unit	CN47	Off → On On → Off	Error Normal
—	2, 3, 4, 6, 7, 8, 9	External Input and Output PCB	Ex OUT 1	Off → On On → Off	Error Normal
—	1, C	External Input and Output PCB	Ex OUT 2	Off → On On → Off	Error Normal
—	D	External Input and Output PCB	Ex OUT 3	Off → On On → Off	Error Normal

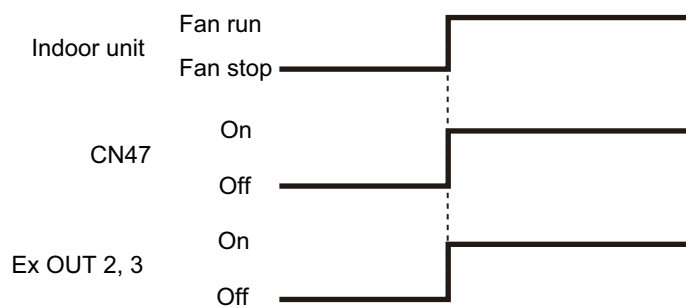
The output is on when an error is generated for the indoor unit.



■ Indoor unit fan operation status

Function setting	External Input and Output PCB	External output		Output signal	Status
	Rotary switch				
60-10	—	Output of indoor unit	CN47	Off → On	Fan run
				On → Off	Fan stop
—	2, 3, 7, 8, B, D	External Input and Output PCB	Ex OUT 2	Off → On	Fan run
				On → Off	Fan stop
—	1	External Input and Output PCB	Ex OUT 3	Off → On	Fan run
				On → Off	Fan stop

Output signal	Condition
On	The indoor unit fan is operating.
Off	The fan is stopped or during cold air prevention. During thermostat off when in dry mode operation.



External heater output

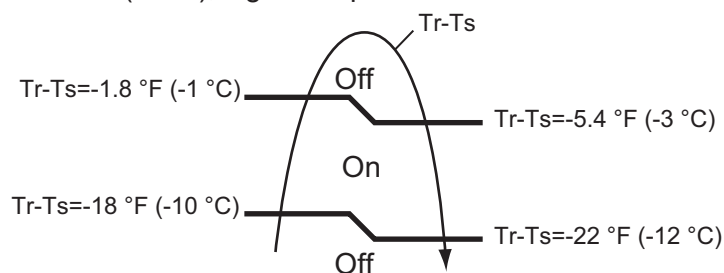
Function setting	External Input and Output PCB	External output		Output signal	Control
	Rotary switch				
60-11	—	Output of indoor unit	CN47	Off → On	Heater on
				On → Off	Heater off
—	2, B, C	External Input and Output PCB	Ex OUT 3	Off → On	Heater on
				On → Off	Heater off

Output signal	Condition
Off → On	Heater turns on as shown in diagram of heating temperature
On → Off	Heater turns off as shown in diagram of heating temperature <ul style="list-style-type: none"> • Other than Heating mode • Error occurred • Forced thermo off • Fan stop protection

Specifications of the signal output performance are as shown as follows:

Example: When set temperature (T_s) is set at 72°F (22°C);

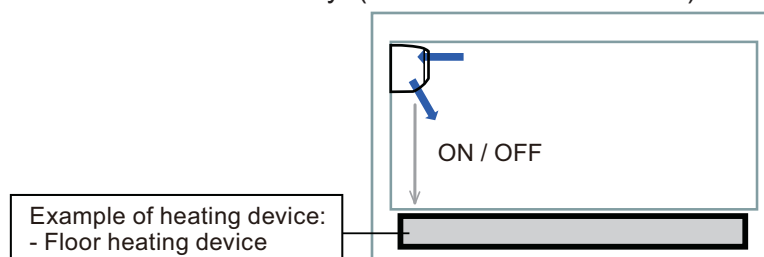
- And room temperature (T_r) increase above 53.6°F (12°C), signal output is on.
- And T_r increase above 69.8°F (21°C), signal output is off.
- And T_r decrease below 66.2°F (19°C), signal output is on.
- And T_r decrease below 50°F (10°C), signal output is off.



The output also turns off in defrost operation.

● Installation configuration of individual connection

External heating device is installed individually. (No use of indoor unit fan)



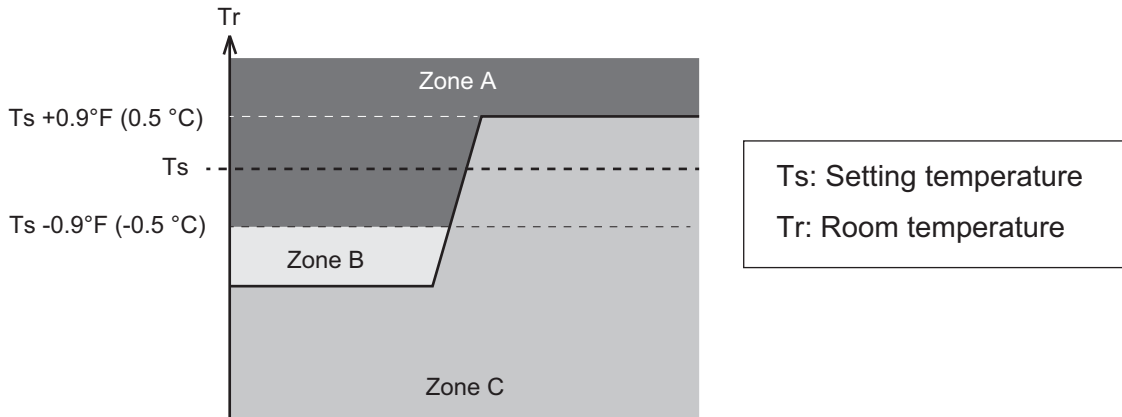
⚠ WARNING

Operation	Condition
Heater off	<ul style="list-style-type: none"> • Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off

- Design and install external heater appropriately with considering its protection.
- Inappropriate designing and installation of external heater may cause a fire by emitted heat from the external heater.
- Fujitsu General Ltd. is not responsible for inappropriate designing or installation of external heating device.

● Auxiliary equipment control by room temperature

Auxiliary equipment control is switchable by room temperature. Auxiliary equipment switching is performed for each room temperature divided to following 3 zones.



Zone	Application	When temperature dropping		When temperature rising	
		Primary	Auxiliary	Primary	Auxiliary
A	Both of primary and auxiliary equipment is unnecessary.	Off	Off	Off	Off
B	Primary heater only. When room temperature stays in zone B for a long time, auxiliary equipment also operates.	On	Off*1	—	—
C	Auxiliary equipment also operates.	On	On*2	On	On*2

*1: For standby time for auxiliary equipment operation, refer to indoor unit function number 71 "[Contents of function setting](#)" on page 05-1.

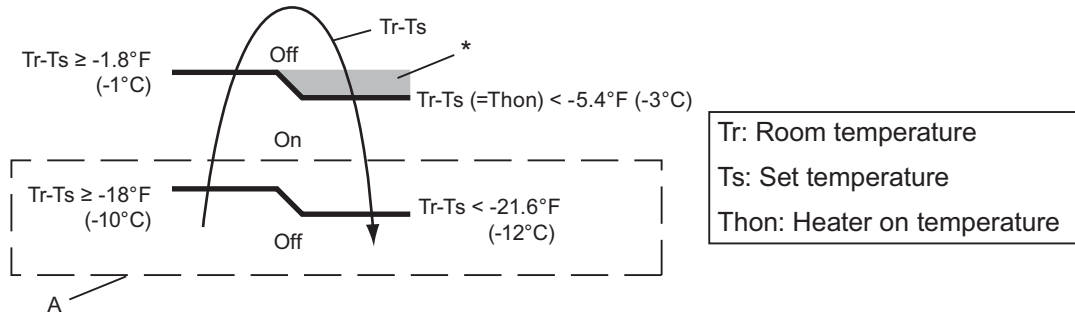
*2: When indoor unit function number 61 is set to "00", auxiliary equipment operates according to the following conditions.

- $T_s - T_r > 21.6 \text{ }^\circ\text{F}$ ($-12.0 \text{ }^\circ\text{C}$): Auxiliary equipment turn off.
- $T_s - T_r > 18.0 \text{ }^\circ\text{F}$ ($-10.0 \text{ }^\circ\text{C}$): Auxiliary equipment turn on.

● Auxiliary heater control 1

Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	<ul style="list-style-type: none"> • Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off • Fan stop protection

- Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of external heaters).
- All control temperatures will shift by adjusting “Thon”.



*: When room temperature stays in this zone for a specific time, auxiliary heater is turned on. For details, refer to function number 71.

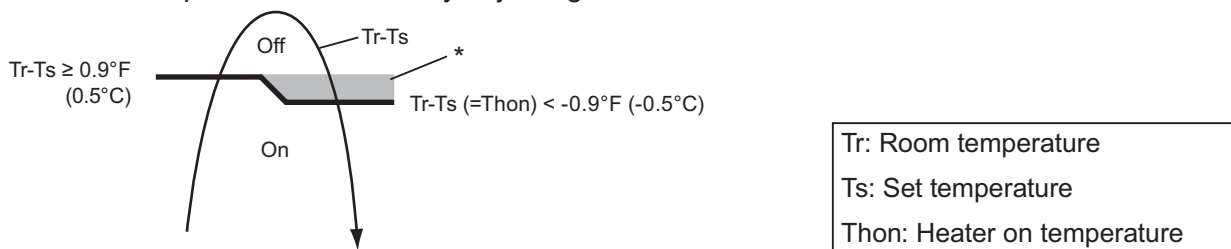
Example: When set temperature (Ts) is 72°F (22°C) (Factory setting),

- and room temperature (Tr) increases above 53.6°F (12°C), signal output is on.
- and room temperature (Tr) increases above 69.8°F (21°C), signal output is off.
- and room temperature (Tr) decreases below 66.2°F (19°C), signal output is on.
- and room temperature (Tr) decreases below 50°F (10°C), signal output is off.

● Auxiliary heater control 2

Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	<ul style="list-style-type: none"> • Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off • Fan stop protection

- Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of external heaters).
- All control temperatures will shift by adjusting “Thon”.



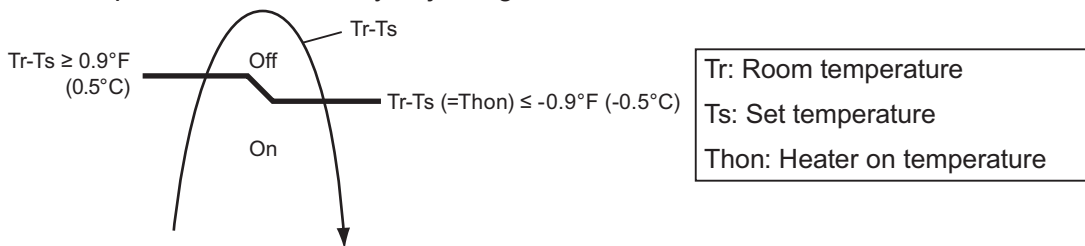
*: When room temperature stays in this zone for a specific time, auxiliary heater is turned on. For details, refer to function number 71.

● Heat pump prohibition control

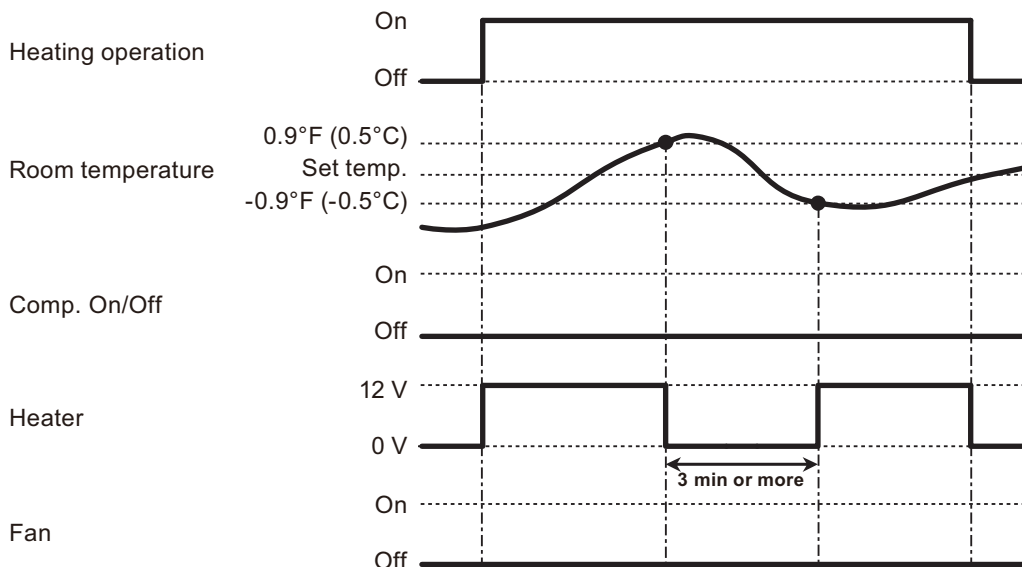
Perform heating by external heater only. Indoor unit is continuous thermostat off.

Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	<ul style="list-style-type: none"> • Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off

- Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of external heaters).
- All control temperatures will shift by adjusting “Thon”.



• Operation status



NOTE: In following operations, compressor will be on.

- Other than heating
- Test run

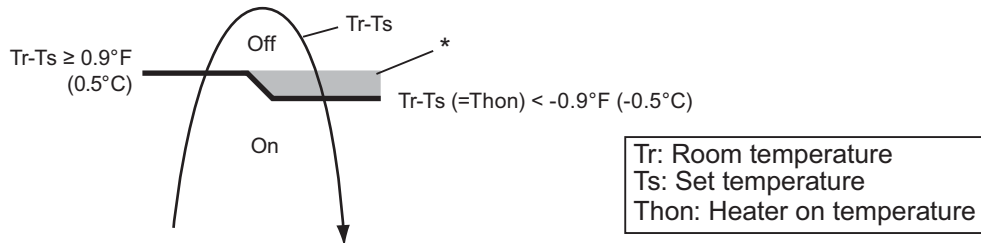
● Auxiliary heater control by outdoor temperature 1

This control selects heat pump or external heater according to the outdoor temperature. When outdoor temperature is high, the heating is performed by using heat pump only.

Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	<ul style="list-style-type: none"> • Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off • Heat pump only zone

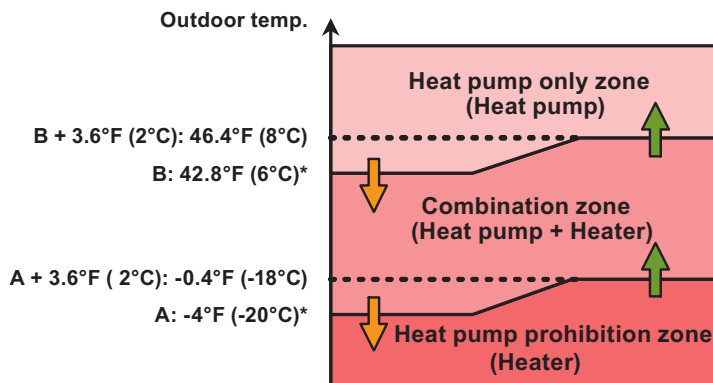
- Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of external heaters).
- All control temperatures will shift by adjusting "Thon".
- Outdoor temperature zone boundary A and B: Adjustable individually by function setting number 66 and 67.

• External heater output



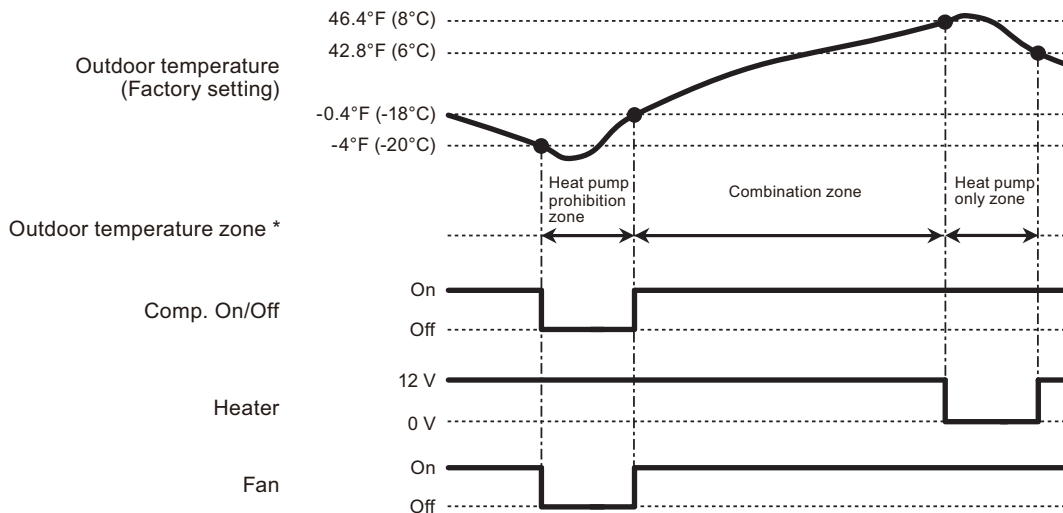
*: When room temperature stays in this zone for a specific time, auxiliary heater is turned on. For details, refer to function number 71.

• Outdoor temperature zone



*: Adjustable by function setting 66 and 67

• Operation status



* The outdoor temperature zone transition from one to another will stay in that zone for minimum of 30 min.

NOTE: In following operations, compressor will be on in heat pump prohibition zone.

- Other than heating
- Test run

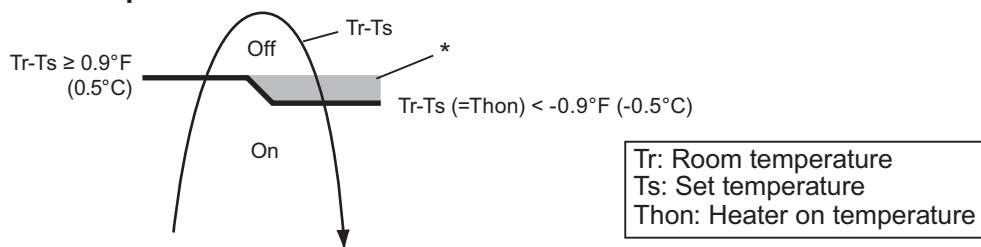
● Auxiliary heater control by outdoor temperature 2

This control selects heat pump or external heater according to the outdoor temperature. Even when outdoor temperature is high, the heating is performed by using both of heat pump and external heater.

Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	<ul style="list-style-type: none"> • Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off

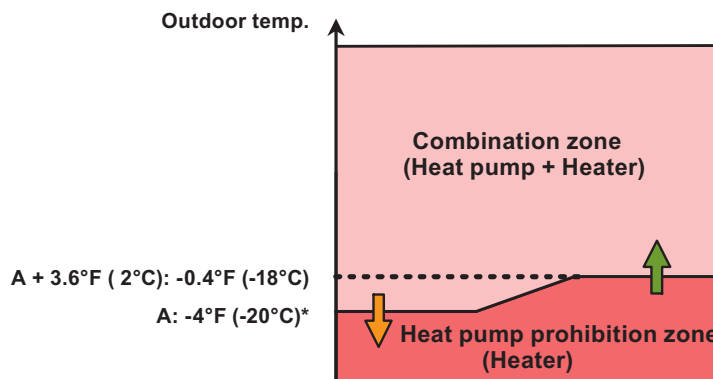
- Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of external heaters).
- All control temperatures will shift by adjusting "Thon".
- Outdoor temperature zone boundary A: Adjustable by function setting number 66.

• External heater output



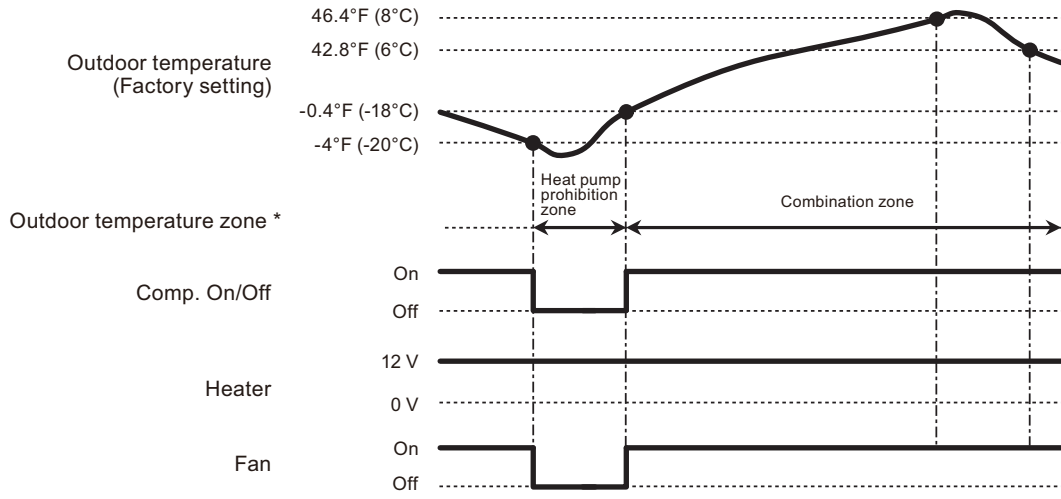
*: When room temperature stays in this zone for a specific time, auxiliary heater is turned on. For details, refer to function number 71.

• Outdoor temperature zone



*: Adjustable by function setting 66

• Operation status



* The outdoor temperature zone transition from one to another will stay in that zone for minimum of 30 min.

NOTE: In following operations, compressor will be on in heat pump prohibition zone.

- Other than heating
- Test run

FIELD WORKING

FIELD WORKING

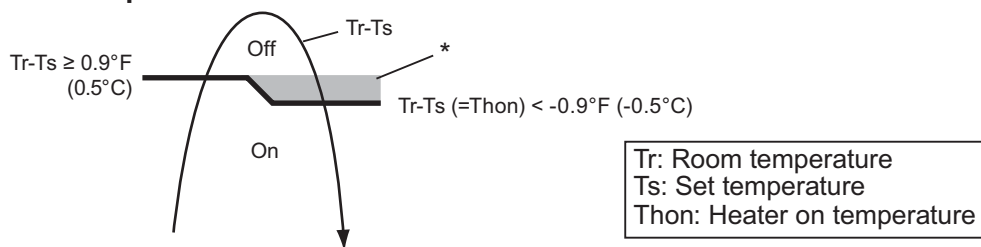
● Auxiliary heater control by outdoor temperature 3

This control selects heat pump or external heater according to the outdoor temperature. Even when outdoor temperature is high, the heating is performed by using both of heat pump and external heater.

Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	<ul style="list-style-type: none"> • Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off

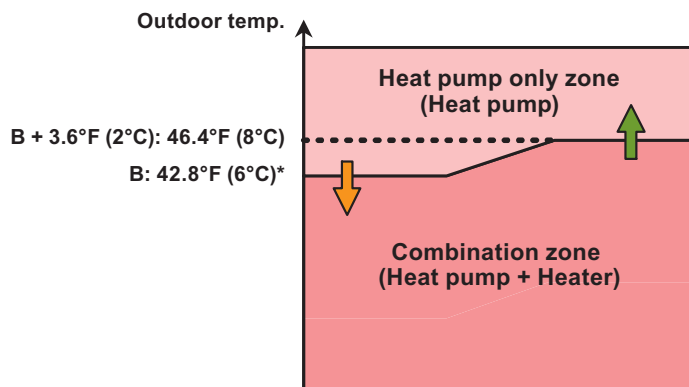
- Temperature of heater on (Thon): Adjustable by function number 62 (Operating temperature switching of external heaters).
- All control temperatures will shift by adjusting "Thon".
- Outdoor temperature zone boundary B: Adjustable by function setting number 67.

• External heater output



*: When room temperature stays in this zone for a specific time, auxiliary heater is turned on. For details, refer to function number 71.

• Outdoor temperature zone

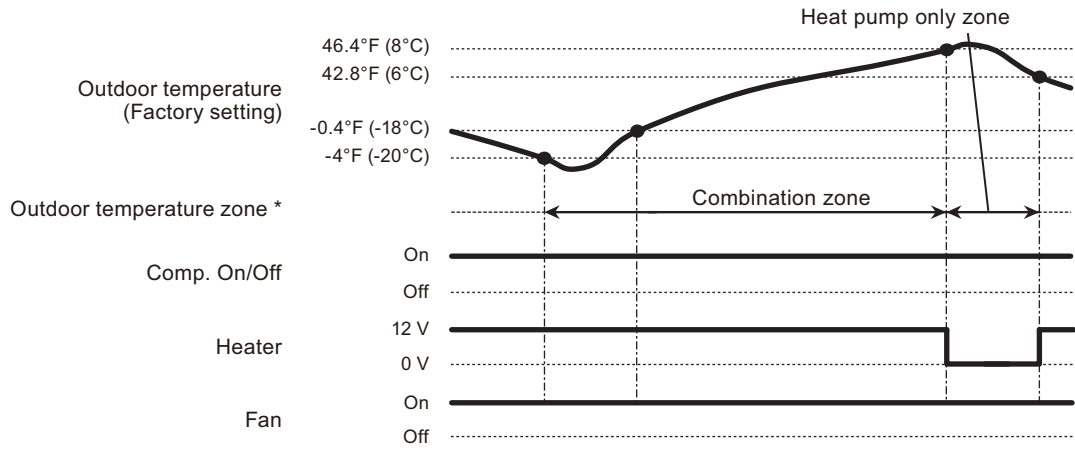


*: Adjustable by function setting 67

FIELD WORKING

FIELD WORKING

• Operation status



* The outdoor temperature zone transition from one to another will stay in that zone for minimum of 30 min.

NOTE: In following operations, compressor will be on in heat pump prohibition zone.

- Other than heating
- Test run

FIELD WORKING

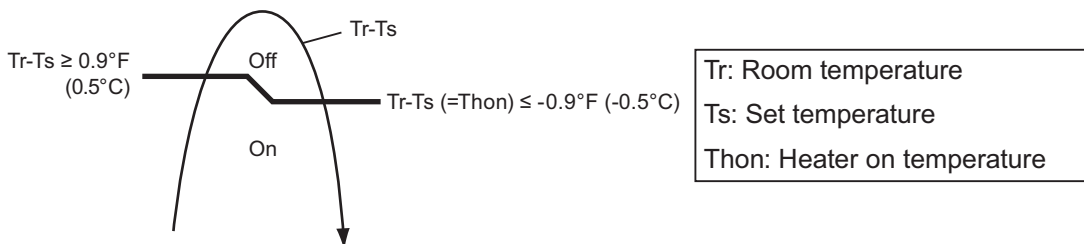
FIELD WORKING

● Auxiliary heat pump control

• External heater output

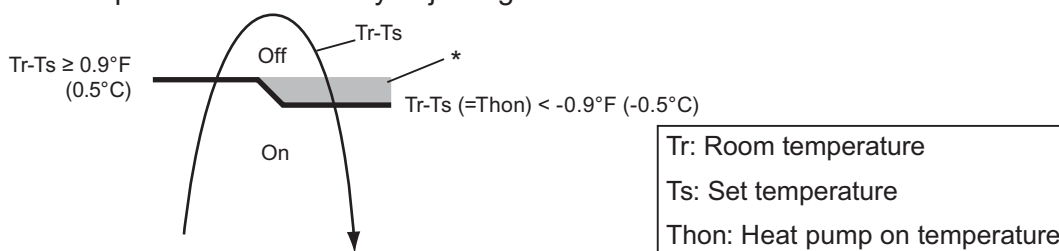
Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	<ul style="list-style-type: none"> • Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off

- Temperature of heater on (Thon): Set temperature (Ts) -0.9°F (-0.5°C)
- Temperature of heater off: Set temperature (Ts) +0.9°F (+0.5°C)



• Auxiliary heat pump On/Off

- Temperature of heat pump on (Thon): Adjustable by function number 62 (Operating temperature switching of heat pump).
- All control temperatures will shift by adjusting “Thon”.



*: When room temperature stays in this zone for a specific time, auxiliary heater is turned on. For details, refer to function number 71.

FIELD WORKING

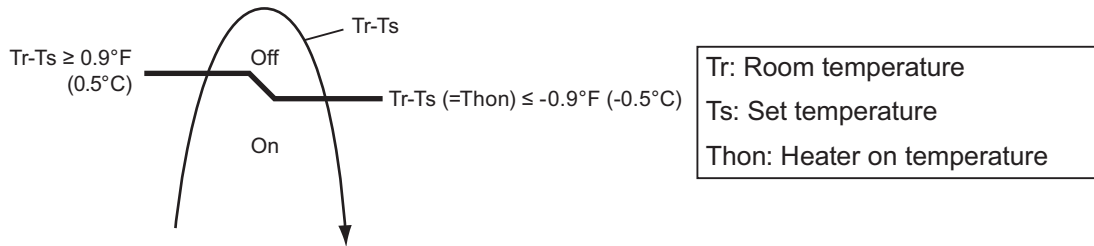
FIELD WORKING

● Auxiliary heat pump control by outdoor temperature 1

• External heater output

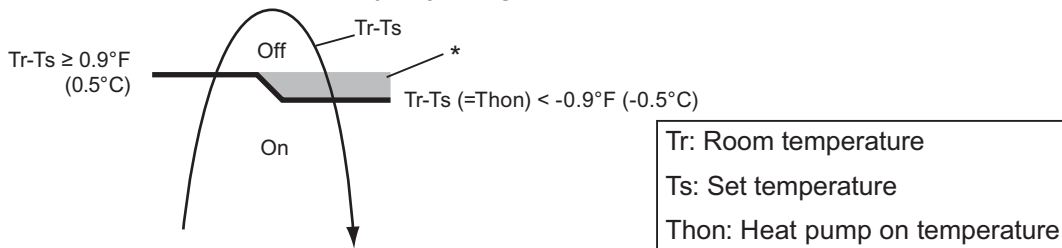
Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	<ul style="list-style-type: none"> • Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off

- Temperature of heater on (Thon): Set temperature (Ts) -0.9°F (-0.5°C)
- Temperature of heater off: Set temperature (Ts) +0.9°F (+0.5°C)



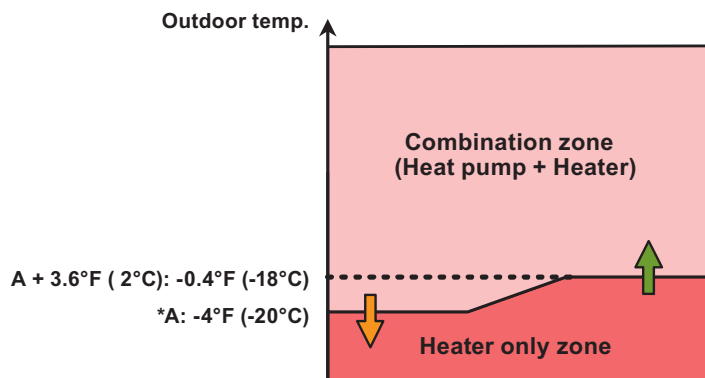
• Auxiliary heat pump On/Off

- Temperature of heat pump on (Thon): Adjustable by function number 62 (Operating temperature switching of heat pump).
- All control temperatures will shift by adjusting “Thon”.



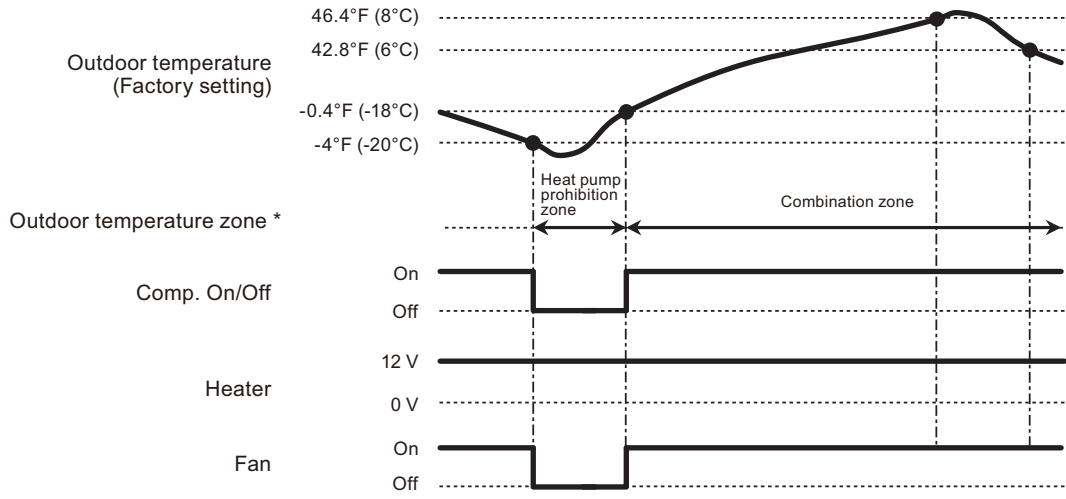
*: When room temperature stays in this zone for a specific time, auxiliary heater is turned on. For details, refer to function number 71.

• Outdoor temperature zone



*: Adjustable by function setting 66

• Operation status



* The outdoor temperature zone transition from one to another will stay in that zone for minimum of 30 min.

NOTE: In following operations, compressor will be on in heat pump prohibition zone.

- Other than heating
- Test run

FIELD WORKING

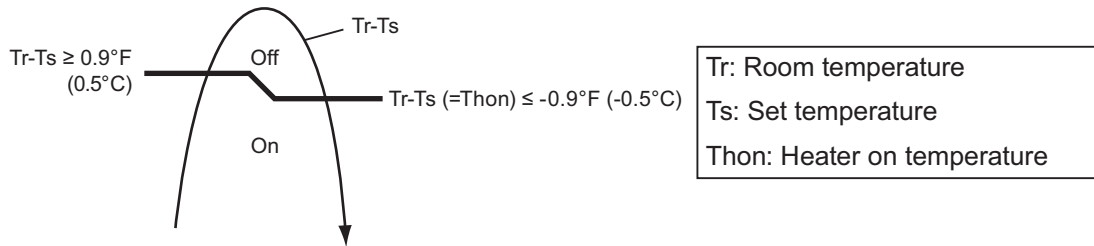
FIELD WORKING

● Auxiliary heat pump control by outdoor temperature 2

• External heater output

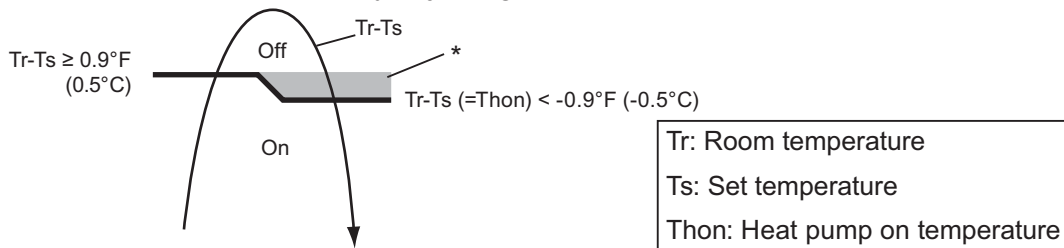
Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	<ul style="list-style-type: none"> • Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off

- Temperature of heater on (Thon): Set temperature (Ts) -0.9°F (-0.5°C)
- Temperature of heater off: Set temperature (Ts) +0.9°F (+0.5°C)



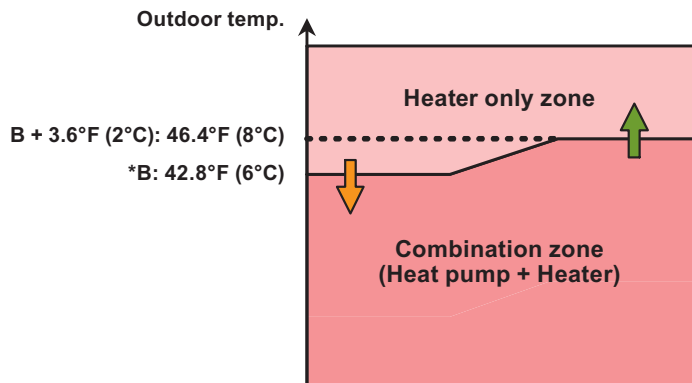
• Auxiliary heat pump On/Off

- Temperature of heat pump on (Thon): Adjustable by function number 62 (Operating temperature switching of heat pump).
- All control temperatures will shift by adjusting “Thon”.



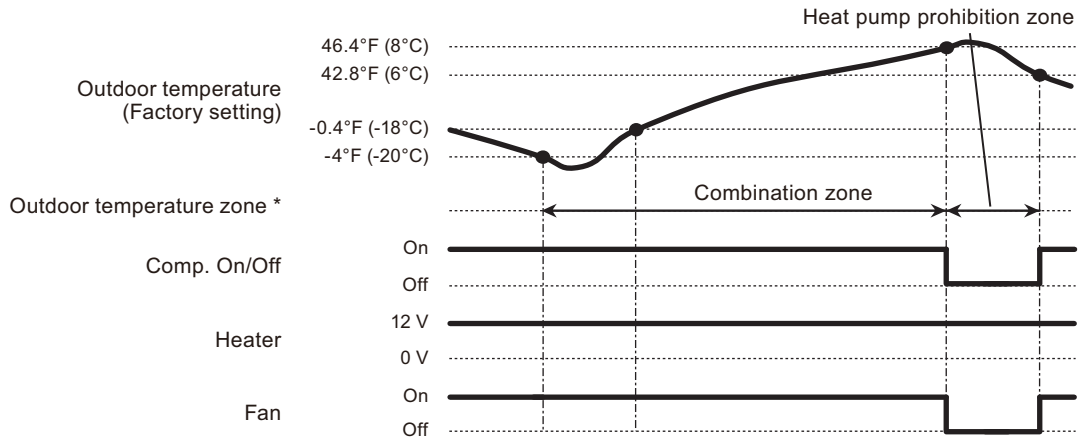
*: When room temperature stays in this zone for a specific time, auxiliary heater is turned on. For details, refer to function number 71.

• Outdoor temperature zone



*: Adjustable by function setting 67

• Operation status



* The outdoor temperature zone transition from one to another will stay in that zone for minimum of 30 min.

NOTE: In following operations, compressor will be on in heat pump prohibition zone.

- Other than heating
- Test run

FIELD WORKING

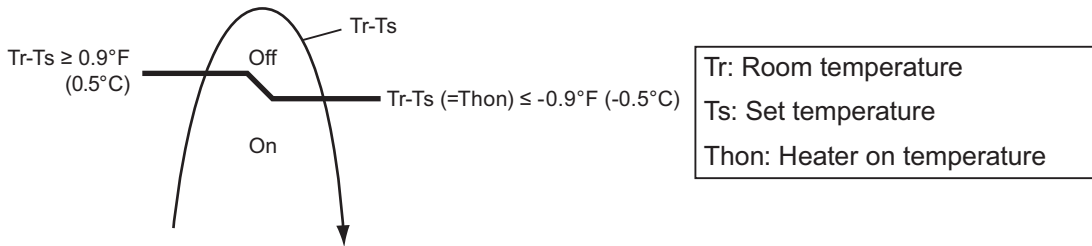
FIELD WORKING

● Auxiliary heat pump control by outdoor temperature 3

• External heater output

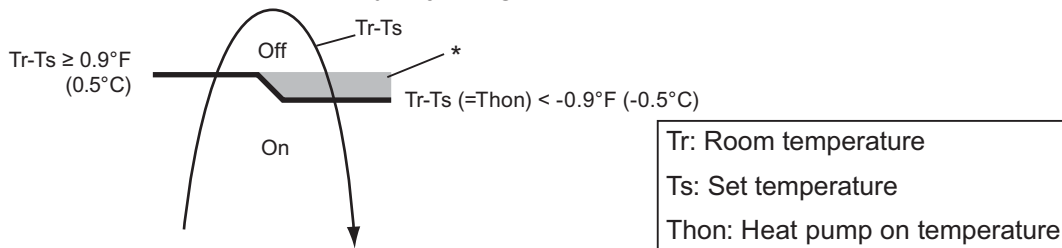
Operation	Condition
Heater on	Heater is on as shown in following diagram of heating temperature.
Heater off	<ul style="list-style-type: none"> • Heater is off as shown in following diagram of heating temperature. • Other than heating mode • Error occurred • Forced thermostat off

- Temperature of heater on (Thon): Set temperature (Ts) -0.9°F (-0.5°C)
- Temperature of heater off: Set temperature (Ts) +0.9°F (+0.5°C)



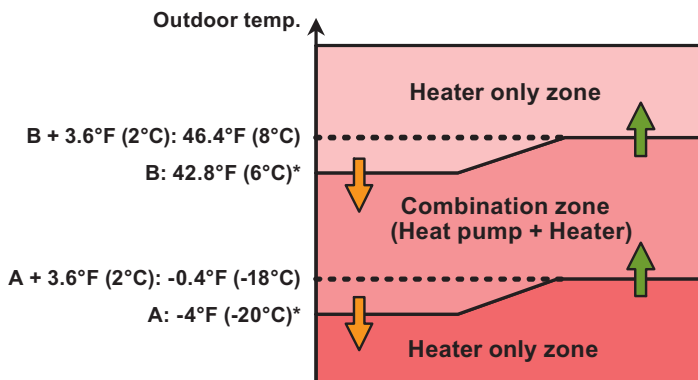
• Auxiliary heat pump On/Off

- Temperature of heat pump on (Thon): Adjustable by function number 62 (Operating temperature switching of heat pump).
- All control temperatures will shift by adjusting “Thon”.



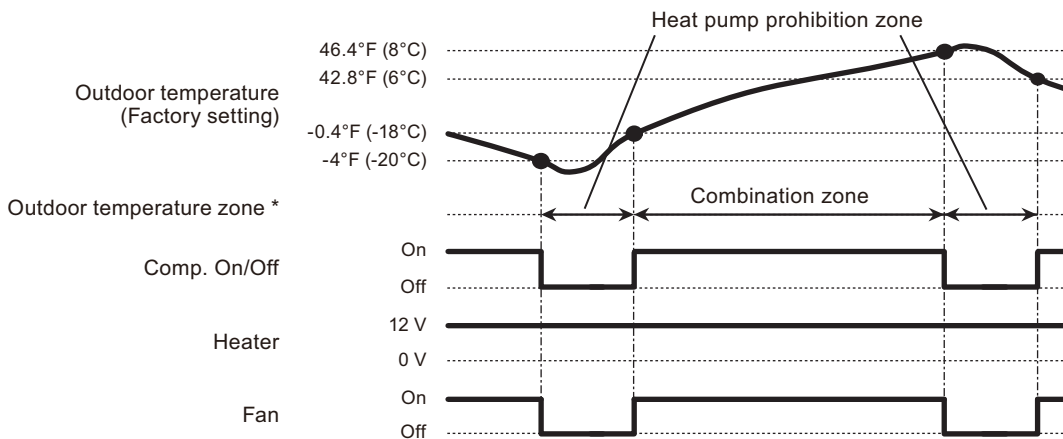
*: When room temperature stays in this zone for a specific time, auxiliary heater is turned on. For details, refer to function number 71.

• Outdoor temperature zone



*: Adjustable by function setting 66 and 67

• Operation status



* The outdoor temperature zone transition from one to another will stay in that zone for minimum of 30 min.

NOTE: In following operations, compressor will be on in heat pump prohibition zone.

- Other than heating
- Test run

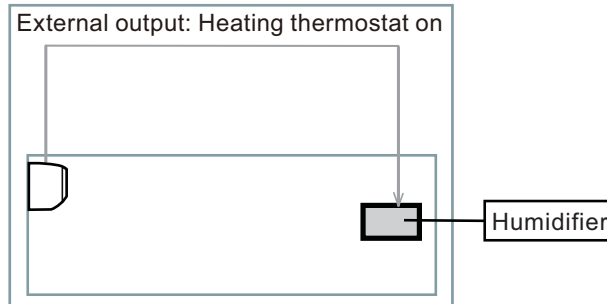
FIELD WORKING

FIELD WORKING

■ Heating thermostat on for humidifier

Situation	Indoor unit				
	Mode	Function setting	Rotary SW	External output	
		Heating thermostat on no. 60		Heating thermostat on	Indoor unit fan operation status
Example of individual connection	5	60-05	7	CN47	Not used
	6	60-06	8	Output 3	
	7	60-07	9	Output 2	
	8	60-08	A	Output 1	

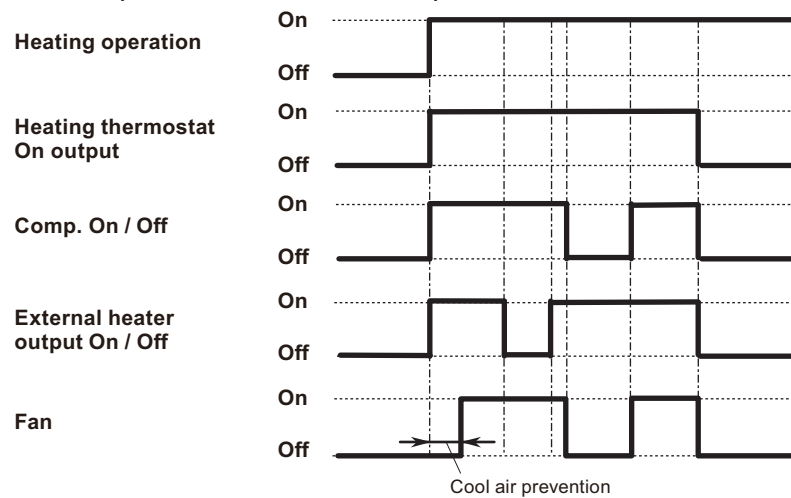
- Example of individual connection



- Operation status

The heating thermostat output for CN47, Output 1, Output 2, or Output 3 will be on when comp on or external heater on.

The heating thermostat output will be off when comp off and external heater off.



FIELD WORKING

FIELD WORKING

4. External input and output (for 24-36 outdoor units)

With using external input and output functions, this product can be operated inter-connectedly with an external device.

Connector	Input	Output	Remarks
P580	Low noise mode	—	See external input/output settings for details.
PA580	Peak cut mode	—	
P590	—	Error status	
PA590	—	Compressor status	

4-1. External input

With using external input function, on/off status of “Low noise mode” and “Peak cut mode” can be specified by the external signal.

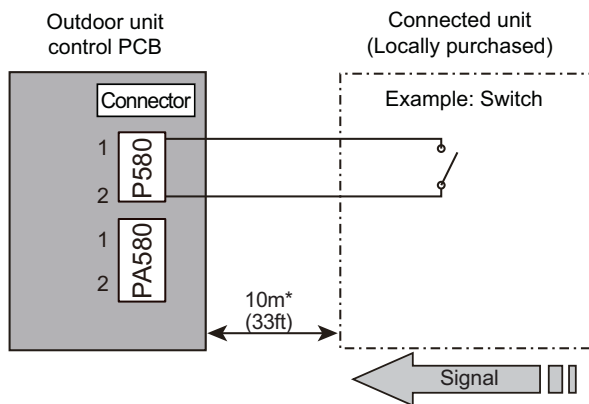
■ Low noise mode

In following condition, the operating noise of the outdoor unit reduces comparing from the one in normal operating condition:

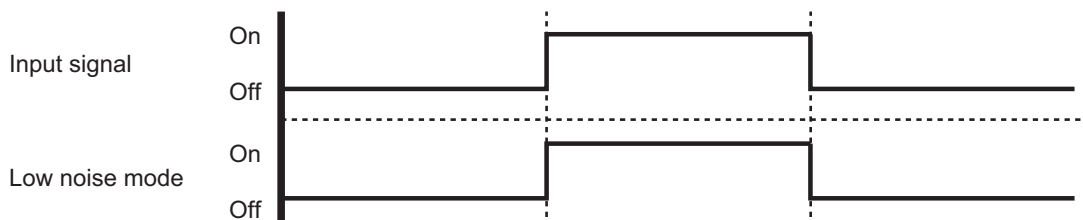
The air conditioner is set to the “Low noise mode” when closing the contact input of a commercial timer or on/off switch to a connector on the control PCB of the outdoor unit.

NOTE: Product performance may drop depending on some conditions such as the outdoor temperature.

• Circuit diagram example



- Contact capacity: DC 24 V or more, 10 mA or more.
- *: Make the distance from the PCB to the connected unit within 33 ft (10 m).
- Construct a circuit as shown in this figure with using optional parts mentioned below.
- Input signal: On in “Low noise mode”
- Input signal: Off in normal operation
- To set the level of “Low noise mode,” refer to "Low noise mode" on page 05-12 (under “Local setting procedure”).



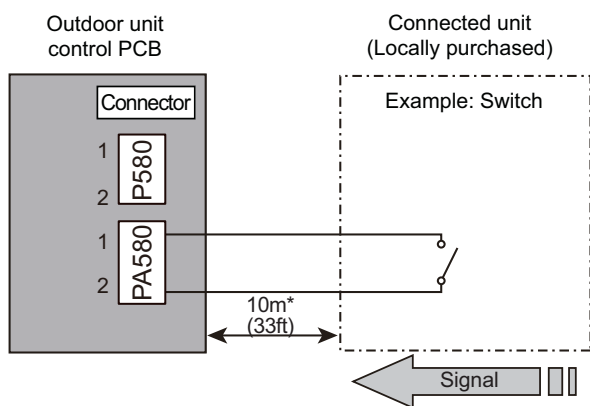
• Optional part

Part name	Model name	Exterior
External Connect Kit	UTY-XWZXZ3	External input wire

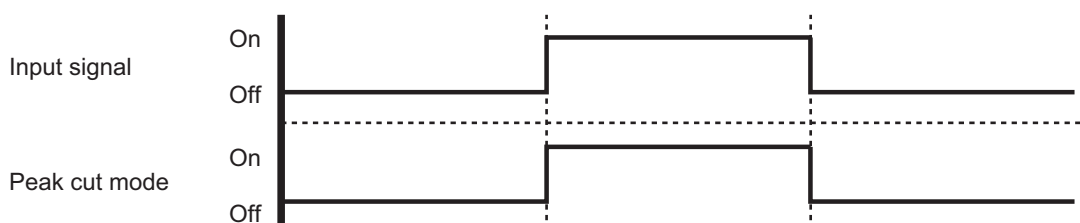
■ Peak cut mode

By performing following on-site work, operation that suppresses the current value can be enabled: The air conditioner is set to the “Peak cut mode” when closing the contact input of a commercial timer or on/off switch to a connector on the control PCB of the outdoor unit.

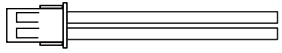
• Circuit diagram example



- Contact capacity: DC 24 V or more, 10 mA or more.
- *: Make the distance from the PCB to the connected unit within 33 ft (10 m).
- Construct a circuit as shown in this figure with using optional parts mentioned below.
- Input signal: On in “Peak cut mode”
- Input signal: Off in normal operation
- To set the level of “Peak cut mode,” refer to "Peak cut mode" on page 05-13 (under “Local setting procedure”).



• Optional part

Part name	Model name	Exterior
External Connect Kit	UTY-XWZXZ3	External input wire 

FIELD WORKING

FIELD WORKING

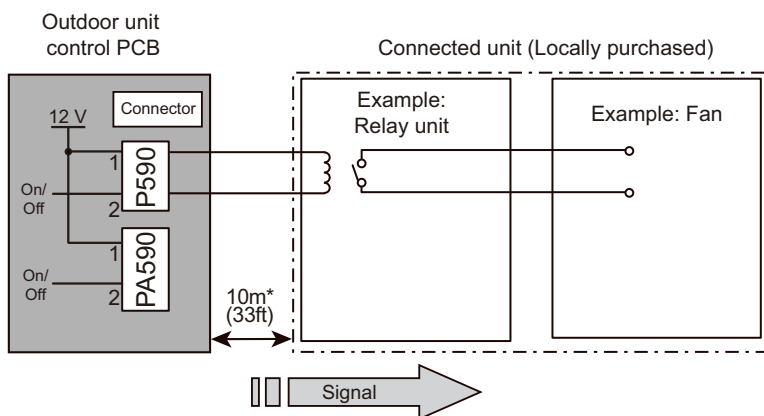
4-2. External output

With using external output function, some status signals are transmitted to the control PCB, and the related LED lamp indicates the status of this product.

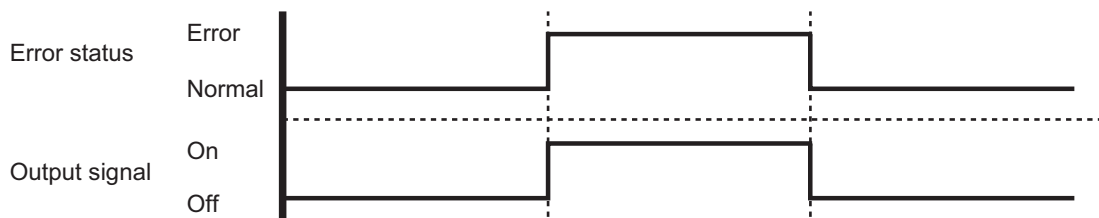
■ Error status output

Signal on air conditioner error status is generated when a malfunction occurs.

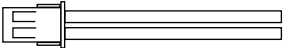
• Circuit diagram example



- Output voltage (Vcc): DC 12 V 50 mA or less
- *: Make the distance from the PCB to the connected unit within 33 ft (10 m).



• Optional part

Part name	Model name	Exterior
External Connect Kit	UTY-XWZXZ3	External output wire 

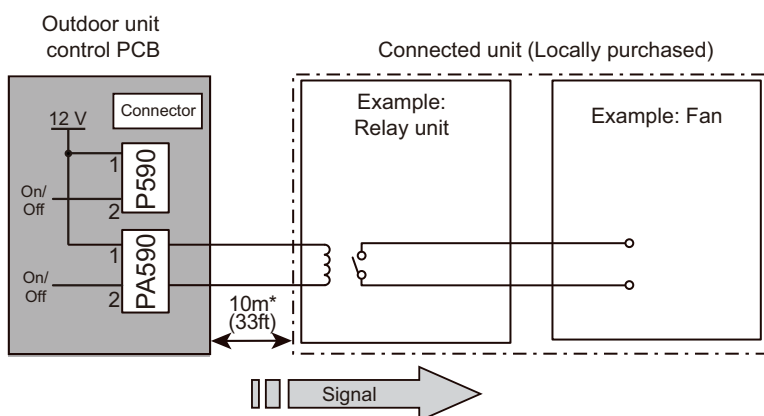
FIELD WORKING

FIELD WORKING

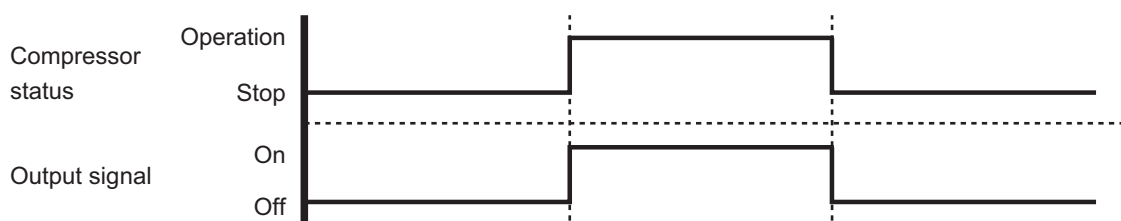
■ Compressor status output

Signal on compressor operation status is generated when the compressor is running.

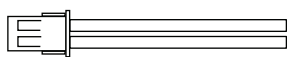
• Circuit diagram example



- Output voltage (Vcc): DC 12 V 50 mA or less
- *: Make the distance from the PCB to the connected unit within 33 ft (10 m).



• Optional part

Part name	Model name	Exterior
External Connect Kit	UTY-XWZXZ3	External output wire 

FIELD WORKING

FIELD WORKING