DAIKIN

Refrigeration

Technical Data

ZEAS condensing units



EEDEN13-741

LREQ-BY1

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1 Features

- One model for all applications from -40ºC to 10ºC saturated suction temperature
- Perfect solution for all fridging and freezing applications with variable load conditions and high energy efficiency requirements, particularly used in supermarkets, cold storage, blast coolers and freezers etc.
- DC inverter scroll compressor with economiser function results in high energy efficiency and reliable performance
- Reduced CO2 emissions thanks to the use of R-410A refrigerant and low energy consumption
- Factory tested and pre-programmed for quick and easy installation and commissioning
- VRV® (Variable Refrigerant Volume) technology for flexible application range
- Increased installation flexibility thanks to limited dimensions
- Low sound level including "night mode" operation
- Possibility to connect to booster unit for small LT applications

1 Features



1 Features



2 Specifications

2-1 Technical Specifications					LREQ5BY1	LREQ6BY1	LREQ8BY1	LREQ10BY1	LREQ12BY1	LREQ15BY1	LREQ20BY1
Cooling capacity	Nom.			kW	12.5 (1)	15.2 (1)	19.8 (1)	23.8 (1)	26.5 (1)	33.9 (1)	37.9 (1)
Dimensions	Unit	Height		mm	1,680						
		Width		mm	635		930			1,240	
		Depth		mm	765						
Weight	Unit			kg	166		242			331	337
Heat exchanger	Type				Cross fin coil						
Fan	Type				Propeller fan						
	Quantity				1					2	
	Air flow rate	Cooling	Nom.	m³/min	95	102	171	179	191	230	240
Fan motor	Output			W	350		750			350	750
	Drive				Direct drive						
Fan motor 2	Output			W	-					350	750
Compressor	Type				Hermetically sealed scroll compressor						
	Piston displacement			m³/h	11.18	13.85	19.68	23.36	25.27	32.24	35.8
	Speed			rpm	5,280	6,540	4,320	6,060	6,960	5,280	6,960
	Output			W	2,600	3,200	2,100	3,000	3,400	2,600	3,400
	Starting method				Direct on line (inverter driven)						
Compressor 2	Type				-		Hermetically sealed scroll compressor				
	Piston displacement			m³/h	-		19.68	23.36	25.27	32.24	35.8
	Speed			rpm	-		2,900				
	Output			W	-		3,600				
	Starting method				-		Direct on line (inverter driven)				
Compressor 3	Type				-					Hermetically sealed scroll compressor	
	Piston displacement			m³/h	-					32.24	35.8
	Speed			rpm	-					2,900	
	Output			W	-					3,600	
	Starting method				-					Direct on line (inverter driven)	
Operation range	Evaporator	Cooling	Min.	°CDB	-45						
			Max.	°CDB	10						
	Ambient temperature	Min.		°C	-20						
		Max.		°C	43						
Refrigerant	Type				R-410A						
	Charge			kg	5.2		7.9			11.5	
	Control				Electronic expansion valve						
Refrigerant oil	Type				Daphne FVC68D						
	Charged volume			l	1.7 (10) / 2.5 (13)	1.7 (10) / 2.5 (13)	1.7 (10) / 2.1 (11) / 3.0 (13)	1.7 (10) / 2.1 (11) / 3.0 (13)	1.7 (10) / 2.1 (11) / 3.0 (13)	1.7 (10) / 2.1 (12) / 4.0 (13)	1.7 (10) / 2.1 (12) / 4.0 (13)
Piping connections	Liquid	50m or less			ø 9.5 C1220T (Brazing connection)				ø 12.7 C1220T (Brazing connection)		
		50~130m			ø 9.5 C1220T (Brazing connection)		ø 12.7 C1220T (Brazing connection)				
	Gas	50m or less			ø 22.2 C1220T (Brazing connection)		ø 28.6 C1220T (Brazing connection)			ø 34.9 C1220T (Brazing connection)	
		50~130m			ø 22.2 C1220T (Brazing connection)		ø 28.6 C1220T (Brazing connection)			ø 34.9 C1220T (Brazing connection)	
Safety devices	Item	01			High pressure switch						
		02			Fan driver overload protector						
		03			Overcurrent relay						
		04			Inverter overload protector						
		05			Fusible plugs						
		06			-		Current fuse				

2 Specifications

Standard Accessories : Refrigerant label for F-gas regulation;
Standard Accessories : Additional refrigerant label;
Standard Accessories : Clamping materials;
Standard Accessories : Connection pipes;
Standard Accessories : Operation manual;
Standard Accessories : Installation manual;

2-2 Electrical Specifications					LREQ5BY1	LREQ6BY1	LREQ8BY1	LREQ10BY1	LREQ12BY1	LREQ15BY1	LREQ20BY1
Power supply	Phase				3~						
	Frequency			Hz	50						
	Voltage			V	380-415						
Voltage range	Min.			%	-10						
	Max.			%	10						
Current	Nominal running current (RLA) - 50Hz	Compressor 1	Cooling	A	7.1	9.2	5.3	7.4	9.8	7.0	9.5
		Compressor 2	Cooling	A	-		7.5	7.9	8.3	8.2	8.4
		Compressor 3	Cooling	A	-					8.2	8.4
Current - 50Hz	Starting current (MSC)			A	-		74	75		84	
	Minimum Ssc value			kVa	-		655	899	1,097	761	945
	Minimum circuit amps (MCA)			A	12.8	13.7	19.3	22.0	24.0	31.4	35.0
	Maximum fuse amps (MFA)			A	15		25			40	
	Total overcurrent amps (TOCA)			A	15.6		31.5			48.3	
	Full load amps (FLA)	Fan motor		A	0.4		0.9			0.4	0.7
		Fan motor 2		A	-					0.4	0.7
	Zmax	List			Equipment complying with EN61000-3-3		-				
		Text			-		0.27			0.24	

Notes

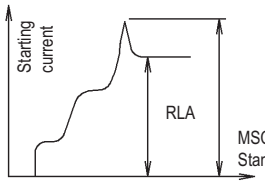
(1) Cooling: evaporating temp. -10ºC; outdoor temp. 32ºC; suction SH10ºC
(2) RLA is based on following conditions: outdoor temp. 32ºCDB; suction SH 10ºC; saturated temperature equivalent to suction pressure -10ºC
(3) TOCA means the total value of each OC set.
(4) MSC means the maximum current during start up of the compressor
(5) Voltage range: units are suitable for use on electrical systems where voltage supplied to unit terminal is not below or above listed range limits.
(6) Maximum allowable voltage range variation between phases is 2%.
(7) Select wire size based on the larger value of MCA or TOCA
(8) MFA is used to select the circuit breaker and the ground fault circuit interrupter (earth leakage circuit breaker).
(9) Minimum Ssc (=Short-circuit power) value: Equipment complying with EN 61000-3-2
(10) Compressor 1
(11) Compressor 2
(12) Compressor 2 and 3
(13) Factory charge of unit

3 Electrical data

3 - 1 Electrical Data

LREQ-BY1

Model name	Units				Power supply			Compressor		DFM		Minimum Ssc value (kVA)	Z max (Ω)
	Hz	Volts	Min.	Max.	MCA	TOCA	MFA	MSC	RLA	KW	FLA		
LREQ5BY1	50	380	342	456	12.8	15.6	15	-	7.5	0.35	0.4	EN61000-3-2: professional equipment	Equipment complying with EN61000-3-3
		400						-	7.1				
		415						-	6.8				
LREQ6BY1	50	380	342	456	13.7	15.6	15	-	9.6	0.35	0.4	EN61000-3-2: professional equipment	Equipment complying with EN61000-3-3
		400						-	9.2				
		415						-	8.8				
LREQ8BY1	50	380	342	456	19.3	31.5	25	78	5.6+7.9	0.75	0.9	655	0.27
		400						74	5.3+7.5				
		415						72	5.1+7.2				
LREQ10BY1	50	380	342	456	22.0	31.5	25	79	7.7+8.3	0.75	0.9	899	0.27
		400						75	7.4+7.9				
		415						73	7.1+7.6				
LREQ12BY1	50	380	342	456	24.0	31.5	25	79	10.3+8.7	0.75	0.9	1097	0.27
		400						75	9.8+8.3				
		415						73	9.4+8.0				
LREQ15BY1	50	380	342	456	31.4	48.3	40	89	7.4+8.6x2	0.35x2	0.4x2	761	0.24
		400						84	7.0+8.2x2				
		415						81	6.7+7.9x2				
LREQ20BY1	50	380	342	456	35.0	48.3	40	89	10.0+8.8x2	0.75x2	0.7x2	945	0.24
		400						84	9.5+8.4x2				
		415						81	9.2+8.1x2				



Starting time
The relationship between the starting time and the starting current.

SYMBOLS

MCA : Min. Circuit Amps. (A)
TOCA : Total Over-current Amps. (A)
MFA : Max. Fuse Amps. (A)
MSC : Max. Starting current
RLA : Rated Load Amps. (A)
OFM : Outdoor Fan Motor
FLA : Full Load Amps. (A)
kW : Rated Motor Output (kW)

NOTES

1. RLA is based on the following conditions:
   - Outdoor temperature. +32°C DB
   - Suction SH. 10°C
   - Evaporating temperature. -10°C
2. TOCA means the total value of each OC set.
3. MSC means the max. current during the starting of compressor.
4. Voltage range. Units are suitable for use on electrical systems where voltage supplied to unit terminal is not below or above listed range limits.
5. Maximum allowable voltage variation between phases is 2%
6. Select wire size based on the larger value of MCA or TOCA.
7. MFA is used to select the circuit breaker and the ground fault circuit interrupter
8. (Earth leakage circuit breaker).

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4 Capacity tables

4 - 1 Cooling Capacity Tables

LREQ5-6BY1

Cooling capacity table

Q: Cooling capacity; W: Power consumption

Model	Outdoor temperature	Evaporating temperature (°C)																					
		-45		-40		-35		-30		-25		20		-15		-10		-5		0		+5		+10	
		Q	W	Q	W	Q	W	Q	W	Q	W	Q	W	Q	W	Q	W	Q	W	Q	W	Q	W	Q	W
	°C DB	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
LREQ5BY1	20	3.76	3.42	4.92	3.61	6.19	3.76	7.49	3.78	9.00	3.87	10.4	3.89	11.8	3.93	13.3	3.95	14.4	3.99	15.8	4.05	17.0	4.12	18.4	4.24
	27	3.58	3.96	4.59	4.13	5.78	4.29	6.99	4.34	8.46	4.42	9.90	4.47	11.3	4.53	12.9	4.59	14.0	4.69	15.3	4.80	16.6	4.88	17.9	5.06
	32	3.45	4.35	4.35	4.50	5.51	4.65	6.64	4.74	8.07	4.81	9.51	4.89	11.0	4.97	12.5	5.10	13.7	5.19	15.0	5.33	16.3	5.43	17.6	5.64
	38	3.18	5.25	3.96	5.39	4.96	5.53	6.06	5.62	7.24	5.61	8.64	5.71	9.96	5.86	11.4	6.02	12.5	6.15	13.8	6.37	15.0	6.61	16.2	6.86
	43	2.96	5.65	3.63	5.80	4.51	5.96	5.58	6.11	6.55	6.24	7.92	6.39	9.13	6.60	10.5	6.83	11.5	7.24	12.7	7.48	13.9	7.64	15.0	7.88
LREQ6BY1	20	4.82	4.43	6.13	4.59	7.37	4.64	9.32	4.70	11.1	4.74	12.7	4.79	14.5	4.84	16.2	4.96	17.8	4.97	19.4	4.99	21.1	5.06	22.8	5.13
	27	4.52	5.06	5.70	5.25	6.86	5.36	8.74	5.45	10.5	5.54	12.1	5.67	13.8	5.75	15.6	5.90	17.2	5.98	18.8	6.07	20.5	6.18	22.1	6.40
	32	4.31	5.50	5.40	5.72	6.51	5.88	8.32	5.98	10.1	6.12	11.7	6.30	13.4	6.40	15.2	6.56	16.8	6.71	18.4	6.85	20.1	6.99	21.7	7.30
	38	3.90	6.15	4.82	6.35	5.77	6.48	7.45	6.65	8.91	6.80	10.5	6.91	12.1	7.11	13.7	7.34	15.3	7.49	16.8	7.69	18.2	7.99	19.7	8.30
	43	3.55	6.69	4.33	6.88	5.15	6.99	6.72	7.22	7.93	7.36	9.57	7.42	11.0	7.70	12.5	7.97	13.8	8.33	14.7	8.51	15.2	8.25	15.2	7.95

Rate of change in cooling capacity by equivalent piping length

Model	Equivalent piping length (m)	Evaporating temperature (°C)											
		-45	-40	-35	-30	-25	-20	-15	-10	-5	0	+5	+10
LREQ5BY1	0	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	20	95.0%	95.7%	96.0%	96.3%	96.9%	97.5%	97.9%	98.3%	98.6%	98.9%	99.1%	99.3%
	40	89.1%	90.7%	91.4%	92.1%	93.4%	94.6%	95.6%	96.4%	97.1%	97.6%	98.1%	98.4%
	60	83.1%	85.6%	86.7%	87.8%	89.8%	91.6%	93.2%	94.4%	95.5%	96.3%	97.0%	97.5%
	80	76.9%	80.3%	81.9%	83.3%	86.1%	88.6%	90.7%	92.4%	93.8%	94.9%	95.9%	96.6%
	100	70.5%	74.8%	76.8%	78.7%	82.2%	85.4%	88.1%	90.3%	92.1%	93.6%	94.7%	95.7%
	120	Note 3					82.1%	85.4%	88.2%	90.4%	92.2%	93.6%	94.7%
	130						80.4%	84.1%	87.1%	89.5%	91.5%	93.0%	94.3%
LREQ6BY1	0	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	20	92.7%	93.7%	94.2%	94.6%	95.5%	96.3%	96.9%	97.5%	98.0%	98.3%	98.6%	98.9%
	40	84.4%	86.6%	87.7%	88.6%	90.4%	92.1%	93.5%	94.7%	95.6%	96.4%	97.1%	97.6%
	60	75.8%	79.3%	80.8%	82.3%	85.2%	87.7%	89.9%	91.8%	93.3%	94.5%	95.5%	96.3%
	80	66.9%	71.6%	73.7%	75.7%	79.6%	83.2%	86.2%	88.8%	90.8%	92.5%	93.8%	94.9%
	100	57.7%	63.6%	66.1%	68.6%	73.7%	78.4%	82.3%	85.6%	88.3%	90.4%	92.1%	93.5%
	120	Note 3					73.3%	78.3%	82.4%	85.6%	88.3%	90.4%	92.%
	130						70.7%	76.2%	80.7%	84.3%	87.2%	89.5%	91.4%

Calculation method of cooling capacity

Cooling capacity	=	Reading value from cooling capacity table	x	rate of change in cooling capacity by equivalent piping length

NOTES

1. ☐ is specified point.
2. The condition of characteristics of the table: 10K (Suction SH).
3. When set value of the evaporating temperature is less than -20(°C), the connection equivalent piping length is 100m or less.

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4 Capacity tables

4 - 1 Cooling Capacity Tables

LREQ8-12BY1

Cooling capacity table

Q: Cooling capacity; W: Power consumption

Model	Outdoor temperature	Evaporating temperature (°C)																							
		-45		-40		-35		-30		-25		20		-15		-10		-5		0		+5		+10	
		Q	W	Q	W	Q	W	Q	W	Q	W	Q	W	Q	W	Q	W	Q	W	Q	W	Q	W	Q	W
	°C DB	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
LREQ8BY1	20	6.28	5.76	7.98	5.89	9.26	6.05	11.8	6.11	14.2	6.25	16.4	6.30	18.6	6.40	20.8	6.35	23.0	6.47	25.3	6.52	27.2	6.54	29.5	6.63
	27	5.99	6.65	7.49	6.81	8.72	7.02	11.1	7.14	13.5	7.29	15.7	7.43	17.9	7.63	20.2	7.75	22.4	7.94	24.7	8.08	26.7	8.23	29.0	8.38
	32	5.78	7.28	7.14	7.47	8.33	7.72	10.6	7.87	13.0	8.03	15.2	8.24	17.4	8.51	19.8	8.76	22.1	8.99	24.3	9.20	26.4	9.43	28.6	9.63
	38	5.21	8.29	6.33	8.52	7.37	8.77	9.53	9.11	11.4	9.40	13.6	9.48	15.7	9.92	17.9	10.2	19.9	10.5	21.8	10.7	23.7	10.9	25.7	11.3
	43	4.73	9.13	5.67	9.40	6.58	9.65	8.60	10.0	10.1	10.4	12.2	10.7	14.3	11.0	16.2	11.6	18.0	12.0	19.7	12.3	21.5	12.6	23.3	12.7
LREQ10BY1	20	7.38	7.05	9.44	7.23	11.1	7.35	14.2	7.56	17.0	7.60	19.3	7.68	22.0	7.73	24.6	7.90	27.3	7.92	29.8	7.94	32.4	7.96	34.9	8.06
	27	7.03	7.99	8.90	8.23	10.5	8.51	13.4	8.73	16.3	8.92	18.7	9.06	21.4	9.25	24.2	9.50	26.8	9.62	29.3	9.80	32.0	10.0	34.6	10.2
	32	6.78	8.66	8.50	8.95	10.0	9.27	12.9	9.57	15.8	9.86	18.3	10.1	21.0	10.3	23.8	10.6	26.5	10.8	29.0	11.1	31.7	11.5	34.4	11.8
	38	6.02	9.53	7.47	9.85	8.73	10.2	11.3	10.5	13.7	10.8	16.0	11.0	18.5	11.5	20.9	11.8	23.3	12.2	25.6	12.5	28.1	13.0	30.2	13.1
	43	5.38	10.3	6.61	10.6	7.67	11.0	10.0	11.3	11.9	11.5	14.1	11.8	16.4	12.5	18.4	12.7	20.6	13.4	22.8	14.0	25.0	14.3	26.7	14.2
LREQ12BY1	20	8.18	7.78	10.4	8.04	12.2	8.21	15.6	8.34	18.7	8.52	21.7	8.68	24.7	8.82	27.6	8.94	30.5	9.03	33.4	9.10	36.1	9.16	39.1	9.19
	27	7.77	8.74	9.72	9.08	11.3	9.21	14.6	9.47	17.7	9.69	20.6	10.1	23.7	10.4	26.9	10.7	29.7	10.9	32.5	11.1	35.4	11.3	38.3	11.5
	32	7.48	9.43	9.27	9.82	10.7	9.89	13.9	10.3	16.9	10.5	19.8	11.0	22.9	11.5	26.5	12.0	29.1	12.2	31.8	12.5	34.9	12.8	37.8	13.1
	38	6.45	10.4	7.91	11.0	9.32	11.3	12.2	11.5	14.5	11.8	17.6	12.2	20.4	12.7	23.0	13.0	25.7	13.3	28.7	13.8	31.1	14.4	33.9	14.9
	43	5.83	10.9	7.06	11.3	8.33	11.7	11.0	12.2	13.0	12.6	15.6	12.9	17.8	13.2	20.0	13.6	22.2	14.3	23.8	14.8	25.7	14.7	26.9	14.3

Rate of change in cooling capacity by equivalent piping length

Model	Equivalent piping length (m)	Evaporating temperature (°C)											
		-45	-40	-35	-30	-25	-20	-15	-10	-5	0	+5	+10
LREQ8BY1	0	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	20	97.1%	97.2%	97.3%	97.4%	97.8%	98.1%	98.5%	98.7%	99.0%	99.2%	99.3%	99.4%
	40	93.2%	93.7%	94.0%	94.4%	95.2%	96.0%	96.6%	97.2%	97.7%	98.1%	98.4%	98.7%
	60	89.2%	90.2%	90.7%	91.3%	92.5%	93.7%	94.8%	95.7%	96.4%	97.0%	97.6%	98.0%
	80	85.2%	86.6%	87.3%	88.1%	89.8%	91.5%	92.9%	94.1%	95.1%	96.0%	96.7%	97.2%
	100	81.1%	83.0%	83.9%	84.8%	87.0%	89.1%	91.0%	92.5%	93.8%	94.9%	95.7%	96.5%
	120	Note 3					86.8%	89.0%	90.9%	92.5%	93.8%	94.8%	95.7%
	130						85.6%	88.0%	90.1%	91.8%	93.2%	94.4%	95.3%
LREQ10BY1	0	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	20	95.6%	96.1%	96.3%	96.5%	97.0%	97.5%	97.9%	98.3%	98.6%	98.9%	99.1%	99.2%
	40	90.3%	91.5%	92.0%	92.5%	93.7%	94.7%	95.6%	96.4%	97.0%	97.5%	97.9%	98.3%
	60	84.8%	86.8%	87.6%	88.4%	90.2%	91.8%	93.2%	94.4%	95.3%	96.1%	96.8%	97.3%
	80	79.3%	81.9%	83.1%	84.2%	86.6%	88.8%	90.7%	92.3%	93.6%	94.7%	95.6%	96.3%
	100	73.6%	77.0%	78.4%	79.8%	82.9%	85.7%	88.2%	90.2%	91.9%	93.3%	94.4%	95.4%
	120	Note 3					82.5%	85.5%	88.1%	90.1%	91.8%	93.2%	94.3%
	130						80.9%	84.2%	87.0%	89.3%	91.1%	92.6%	93.8%
LREQ12BY1	0	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	20	95.1%	95.3%	95.4%	95.6%	96.2%	96.8%	97.3%	97.8%	98.2%	98.5%	98.7%	99.0%
	40	89.1%	89.8%	90.1%	90.6%	91.9%	93.2%	94.3%	95.3%	96.1%	96.7%	97.3%	97.7%
	60	82.9%	84.2%	84.7%	85.5%	87.5%	89.5%	91.2%	92.7%	93.9%	94.9%	95.8%	96.5%
	80	76.7%	78.4%	79.1%	80.1%	82.9%	85.6%	88.0%	90.0%	91.7%	93.1%	94.2%	95.2%
	100	70.4%	72.4%	73.3%	74.6%	78.1%	81.6%	84.6%	87.3%	89.4%	91.2%	92.7%	93.9%
	120	Note 3					77.4%	81.2%	84.4%	87.1%	89.3%	91.1%	92.5%
	130						75.3%	79.4%	83.0%	85.9%	88.3%	90.3%	91.9%

Calculation method of cooling capacity

Cooling capacity	=	Reading value from cooling capacity table	x	rate of change in cooling capacity by equivalent piping length

NOTES

1. ☐ is specified point.
2. The condition of characteristics of the table: 10K (Suction SH).
3. When set value of the evaporating temperature is less than -20(°C), the connection equivalent piping length is 100m or less.

3D073116

4 Capacity tables

4 - 1 Cooling Capacity Tables

LREQ15-20BY1

Cooling capacity table

Q: Cooling capacity; W: Power consumption

Model	Outdoor temperature	Evaporating temperature (°C)																					
		-45		-40		-35		-30		-25		20		-15		-10		-5		0		+5		+10	
		Q	W	Q	W	Q	W	Q	W	Q	W	Q	W	Q	W	Q	W	Q	W	Q	W	Q	W	Q	W
	°C DB	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
LREQ15BY1	20	10.5	10.3	13.4	10.6	16.0	10.9	20.6	11.0	24.8	11.1	28.3	11.2	32.1	11.5	36.1	11.6	40.1	11.7	44.1	11.9	48.1	12.0	51.9	12.2
	27	9.93	11.3	12.6	11.7	14.9	12.0	19.3	12.5	23.4	12.7	26.8	13.0	30.8	13.3	34.8	13.7	38.7	13.9	42.5	14.2	46.6	14.5	50.4	14.9
	32	9.54	12.1	12.1	12.4	13.9	12.8	18.4	13.5	22.4	13.7	25.8	14.3	29.9	14.7	33.9	15.2	37.6	15.5	41.4	15.8	45.6	16.4	49.3	16.8
	38	8.38	13.6	10.4	14.0	12.2	14.7	16.1	14.9	19.4	15.1	23.2	15.6	27.0	16.2	30.4	16.7	33.7	17.2	36.7	17.8	40.1	18.4	43.9	18.9
	43	7.72	14.8	9.48	15.2	11.2	15.7	14.6	16.0	17.2	16.3	19.9	16.6	22.7	17.1	26.1	18.0	29.5	19.0	32.9	20.0	36.2	20.4	37.1	19.4
LREQ20BY1	20	11.7	11.4	14.8	11.7	17.7	12.0	22.9	12.1	27.7	12.5	32.4	12.7	37.3	13.1	41.5	13.3	45.9	13.5	50.6	13.6	55.2	13.7	59.8	14.0
	27	10.9	12.5	13.6	12.8	16.4	13.2	21.2	13.5	25.9	14.0	30.5	14.6	35.1	15.1	39.4	15.5	43.9	15.8	48.5	16.1	53.0	16.4	57.4	16.8
	32	10.4	13.2	12.8	13.6	15.4	14.1	20.0	14.5	24.6	15.0	29.1	16.0	33.5	16.5	37.9	17.0	42.6	17.3	47.0	17.9	51.4	18.3	55.7	18.8
	38	9.27	14.6	11.4	15.1	13.7	15.6	17.8	16.4	21.4	17.0	26.2	17.5	30.4	18.5	34.6	19.1	38.6	19.8	43.1	20.3	47.1	21.1	50.4	21.4
	43	8.36	15.7	10.2	16.3	12.4	16.8	15.9	17.5	18.7	17.8	22.9	18.9	26.7	19.8	30.2	21.0	33.0	21.7	35.8	21.7	36.9	20.9	37.6	19.7

Rate of change in cooling capacity by equivalent piping length

Model	Equivalent piping length (m)	Evaporating_temperature (°C)											
		-45	-40	-35	-30	-25	-20	-15	-10	-5	0	+5	+10
LREQ15BY1	0	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	20	96.9%	96.8%	96.8%	96.9%	97.3%	97.7%	98.1%	98.4%	98.7%	98.9%	99.1%	99.3%
	40	92.7%	92.9%	93.0%	93.3%	94.2%	95.0%	95.8%	96.5%	97.1%	97.6%	98.0%	98.3%
	60	88.4%	88.9%	89.1%	89.6%	91.0%	92.3%	93.5%	94.6%	95.5%	96.2%	96.8%	97.3%
	80	84.1%	84.8%	85.2%	85.8%	87.7%	89.5%	91.2%	92.6%	93.9%	94.9%	95.7%	96.4%
	100	79.7%	80.7%	81.1%	81.9%	84.3%	86.7%	88.8%	90.7%	92.2%	93.5%	94.5%	95.4%
	120	Note 3					83.8%	86.4%	88.6%	90.5%	92.1%	93.3%	94.4%
	130						82.3%	85.1%	87.6%	89.6%	91.3%	92.8%	93.9%
LREQ20BY1	0	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	20	95.9%	95.8%	95.8%	95.9%	96.5%	97.1%	97.6%	98.0%	98.4%	98.7%	98.9%	99.1%
	40	90.6%	90.7%	90.9%	91.4%	92.6%	93.8%	94.8%	95.7%	96.5%	97.1%	97.6%	98.0%
	60	85.2%	85.6%	86.0%	86.6%	88.5%	90.3%	92.0%	93.4%	94.5%	95.5%	96.3%	96.9%
	80	79.7%	80.4%	80.8%	81.7%	84.3%	86.8%	89.1%	91.0%	92.6%	93.9%	94.9%	95.8%
	100	74.2%	75.0%	75.5%	76.6%	79.9%	83.2%	86.0%	88.5%	90.5%	92.2%	93.5%	94.6%
	120	Note 3					79.4%	82.9%	85.9%	88.4%	90.5%	92.1%	93.5%
	130						77.4%	81.3%	84.6%	87.4%	89.6%	91.4%	92.9%

Calculation method of cooling capacity

Cooling capacity	=	Reading value from cooling capacity table	x	rate of change in cooling capacity by equivalent piping length

NOTES

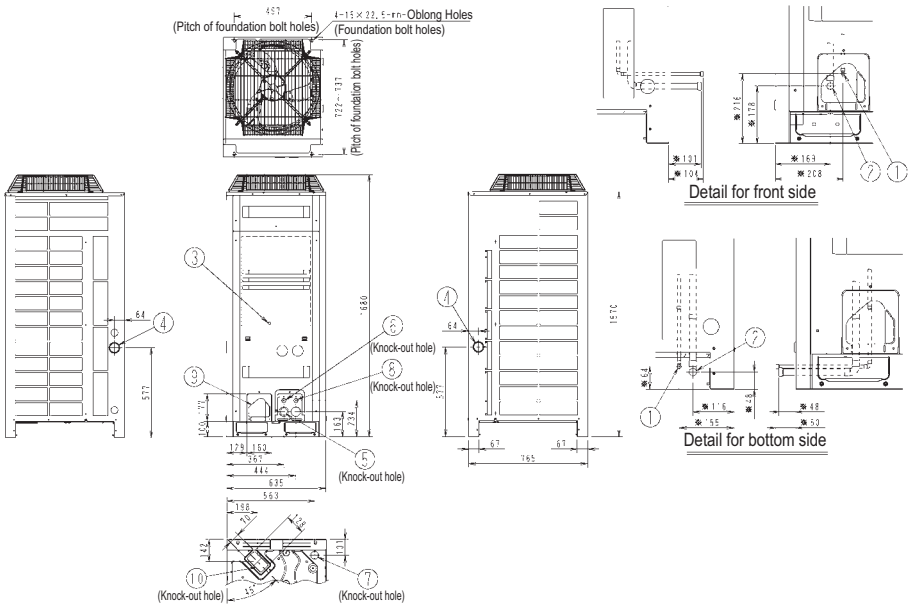
1. ☐ is specified point.
2. The condition of characteristics of the table: 10K (Suction SH).
3. When set value of the evaporating temperature is less than -20(°C), the connection equivalent piping length is 100m or less.

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5 Dimensional drawings

5 - 1 Dimensional Drawings

LREQ5,6BY1



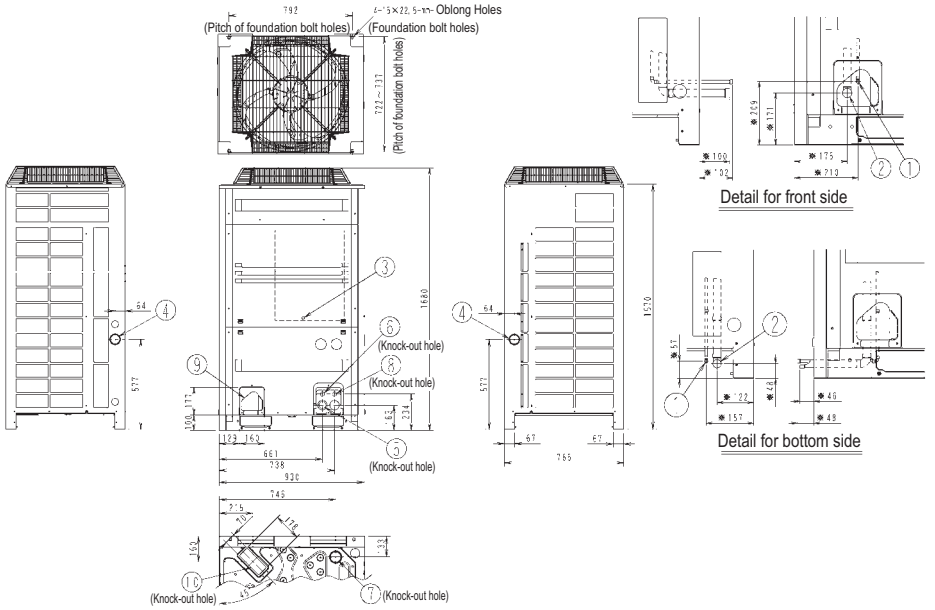
3D076985

No.	Parts name	Remarks
1	Liquid pipe connection port	ø 9.5
2	Gas pipe connection port	ø 22.2
3	Earth terminal	Inside of electric component box (M8)
4	Power cord routing hole (side)	ø 62
5	Power cord routing hole (front)	ø 45
6	Power cord routing hole (front)	ø 27
7	Power cord routing hole (bottom)	ø 50
8	Wire routing hole (front)	ø 27
9	Pipe routing hole (front)	
10	Pipe routing hole (bottom)	

NOTES

1. Detail for front side and detail for bottom side indicate the dimensions after fixing the attached piping.
2. "※" is a size in the state where accessory piping is connected.

LREQ8-12BY1



3D076986

No.	Parts name	Remarks
1	Liquid pipe connection port	ø 12.7
2	Gas pipe connection port	ø 28.6
3	Earth terminal	Inside of electric component box (M8)
4	Power cord routing hole (side)	ø 62
5	Power cord routing hole (front)	ø 45
6	Power cord routing hole (front)	ø 27
7	Power cord routing hole (bottom)	ø 65.5
8	Wire routing hole (front)	ø 27
9	Pipe routing hole (front)	
10	Pipe routing hole (bottom)	

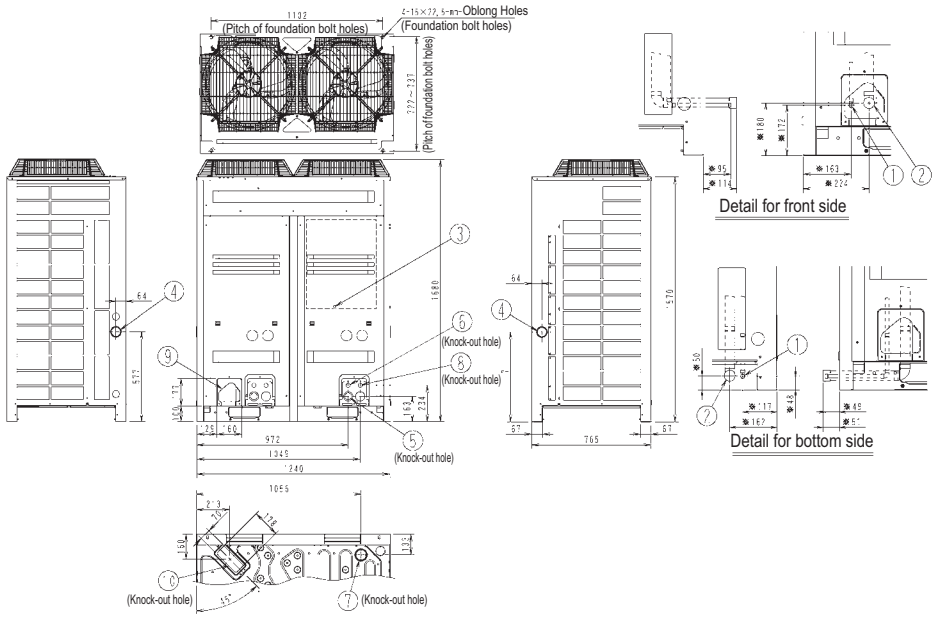
NOTES

1. Detail for front side and detail for bottom side indicate the dimensions after fixing the attached piping.
2. "※" is a size in the state where accessory piping is connected.

5 Dimensional drawings

5 - 1 Dimensional Drawings

LREQ15,20BY1



MODEL
LREQ15, 20 BY1

3D076987

No.	Parts name	Remarks
1	Liquid pipe connection port	ø 12.7
2	Gas pipe connection port	ø 34.9
3	Earth terminal	Inside of electric component box (M8)
4	Power cord routing hole (side)	ø 62
5	Power cord routing hole (front)	ø 45
6	Power cord routing hole (front)	ø 27
7	Power cord routing hole (bottom)	ø 65.5
8	Wire routing hole (front)	ø 27
9	Pipe routing hole (front)	
10	Pipe routing hole (bottom)	

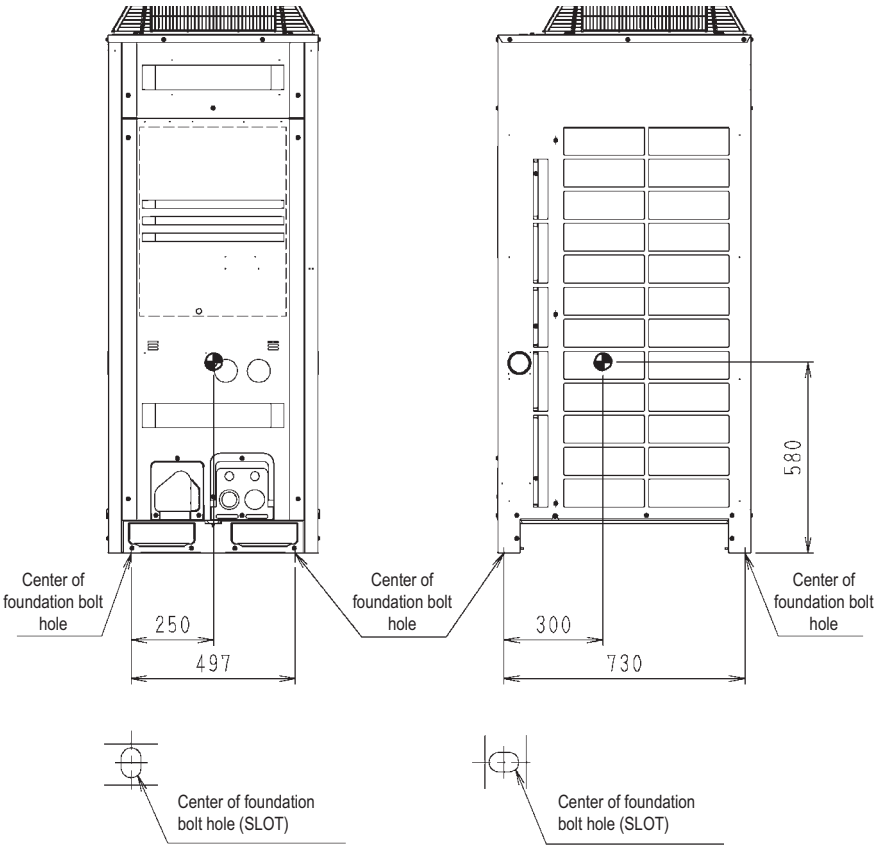
NOTES

1. Detail for front side and detail for bottom side indicate the dimensions after fixing the attached piping.
2. "※" is a size in the state where accessory piping is connected.

6 Centre of gravity

6 - 1 Centre of Gravity

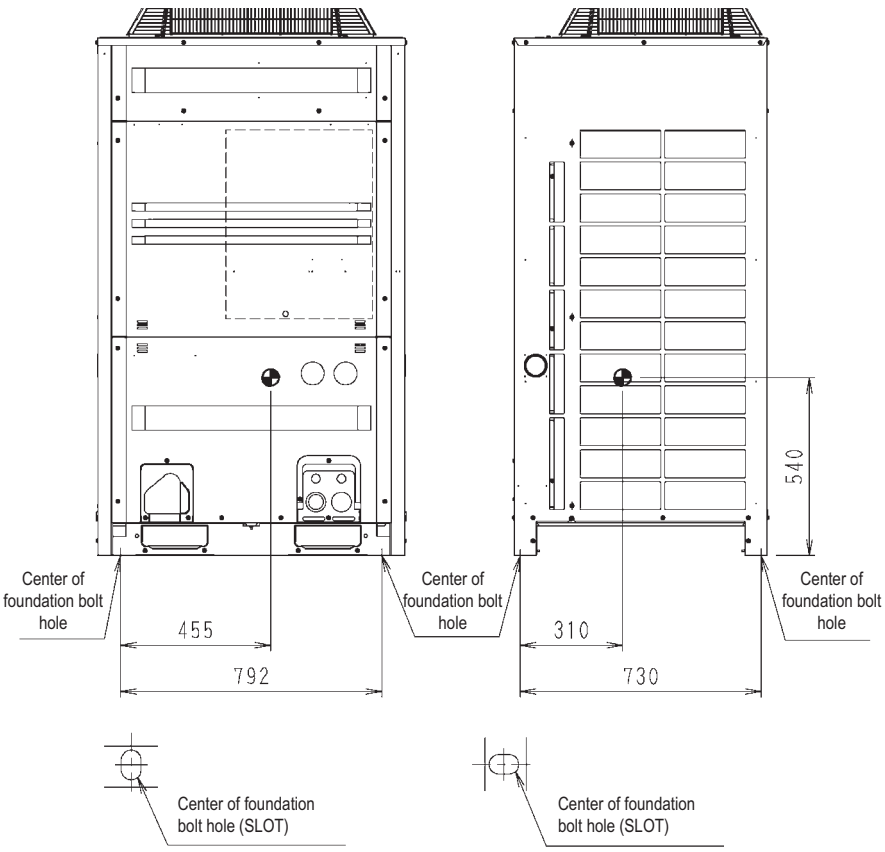
LREQ5,6BY1



MODEL
LREQ5, 6BY1

4D073118

LREQ8-12BY1



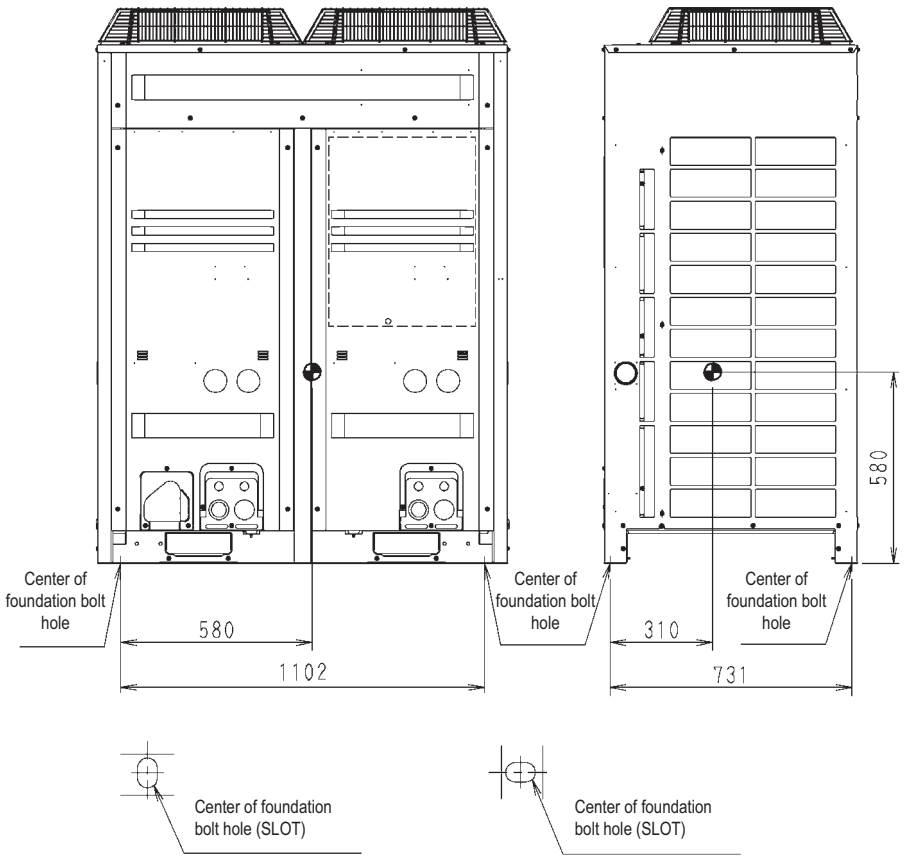
MODEL
LREQ8, 10, 12BY1

4D073119

6 Centre of gravity

6 - 1 Centre of Gravity

LREQ15,20BY1



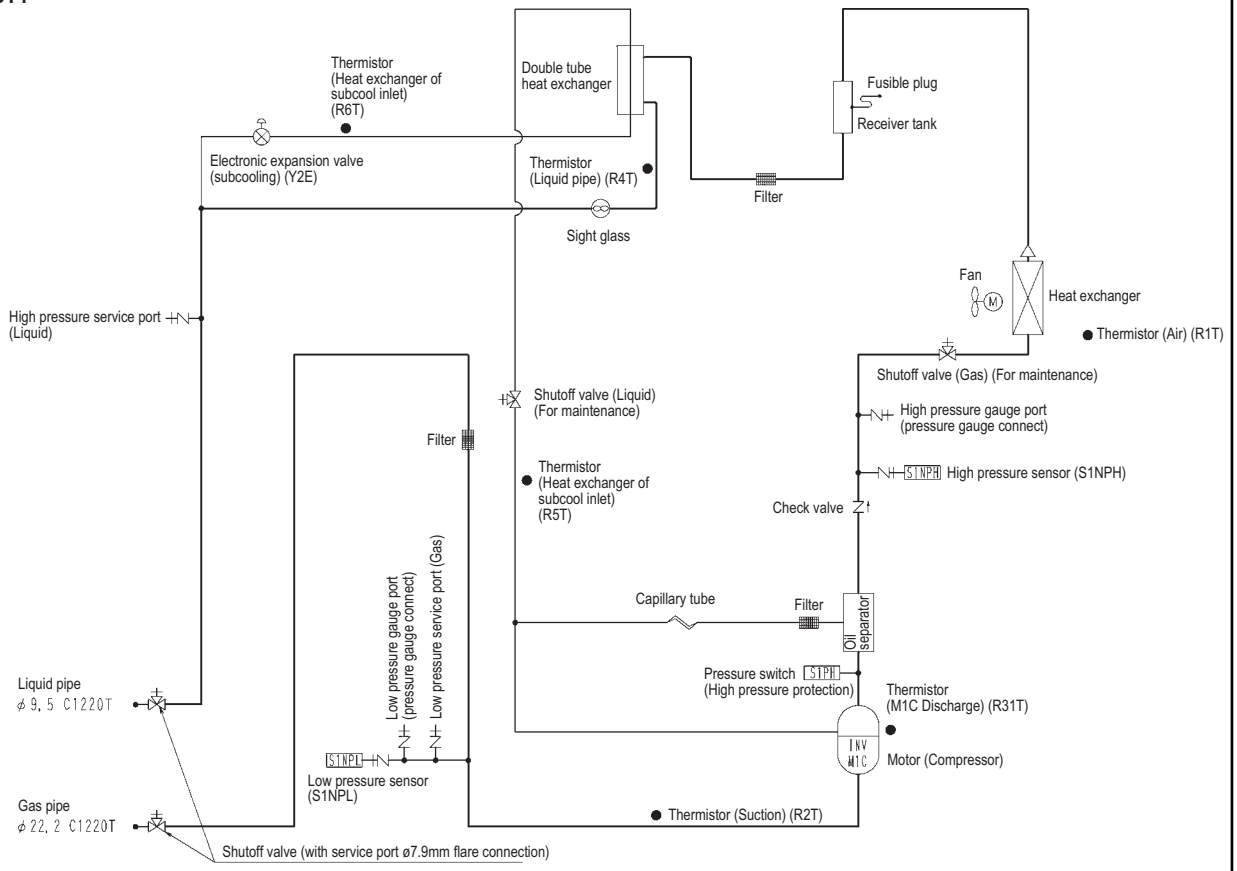
MODEL
LREQ15, 20BY1

4D073120

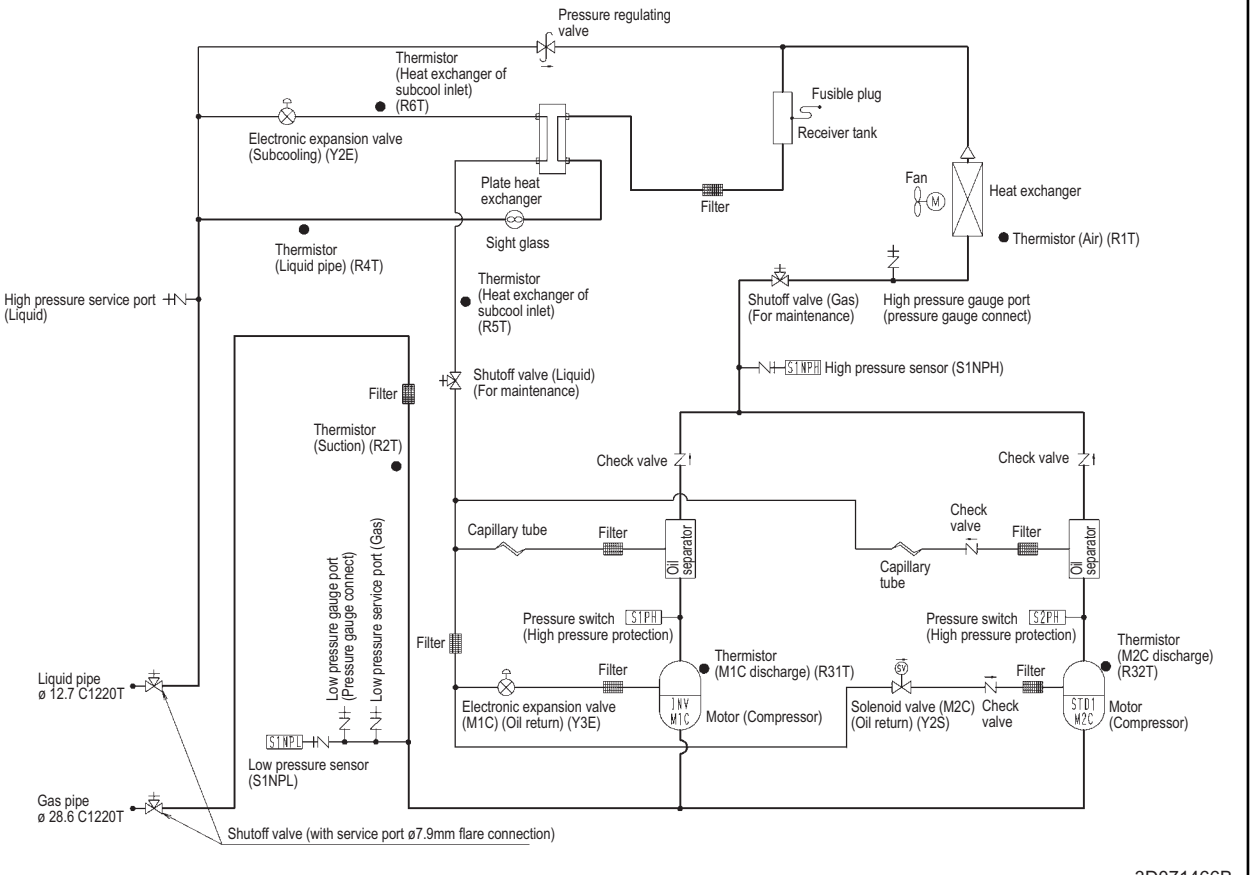
7 Piping diagrams

7 - 1 Piping Diagrams

LREQ5,6BY1



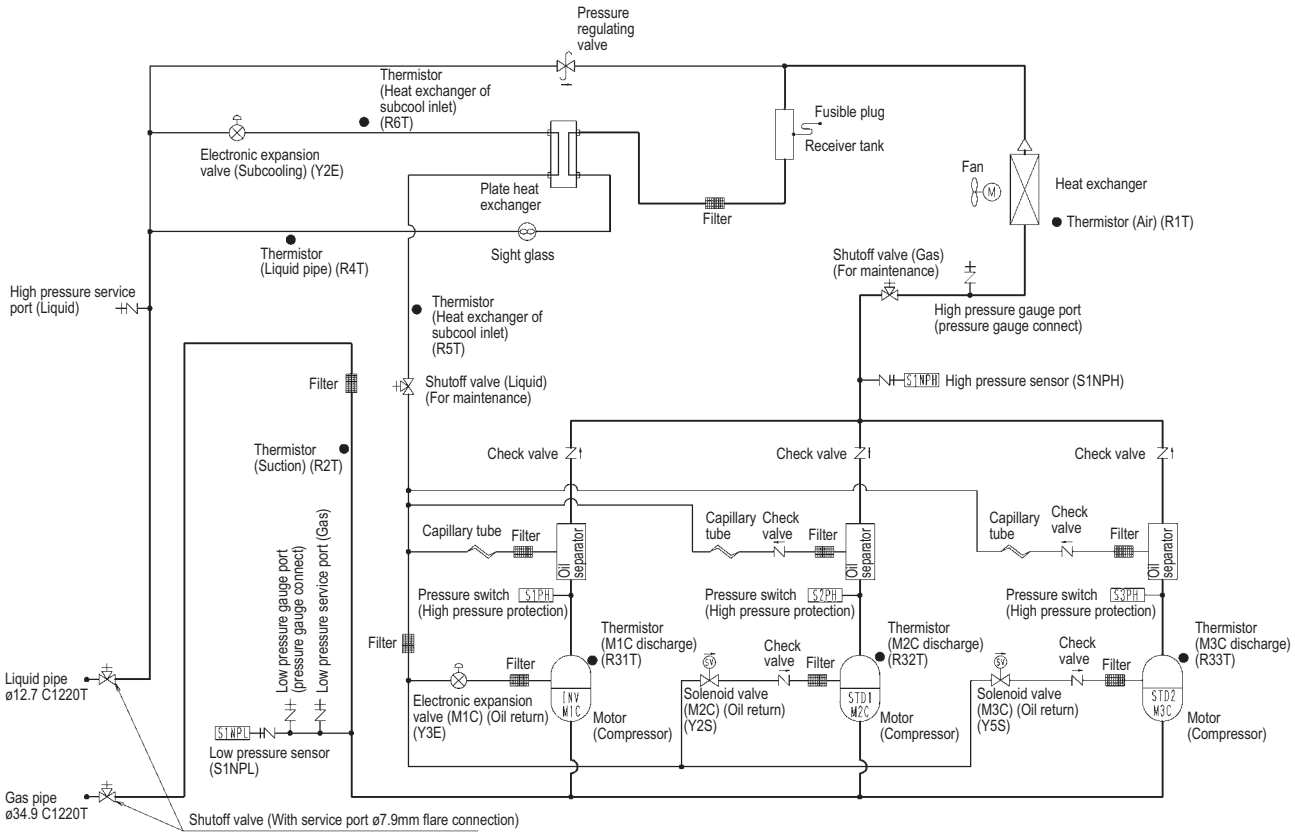
LREQ8-12BY1



7 Piping diagrams

7 - 1 Piping Diagrams

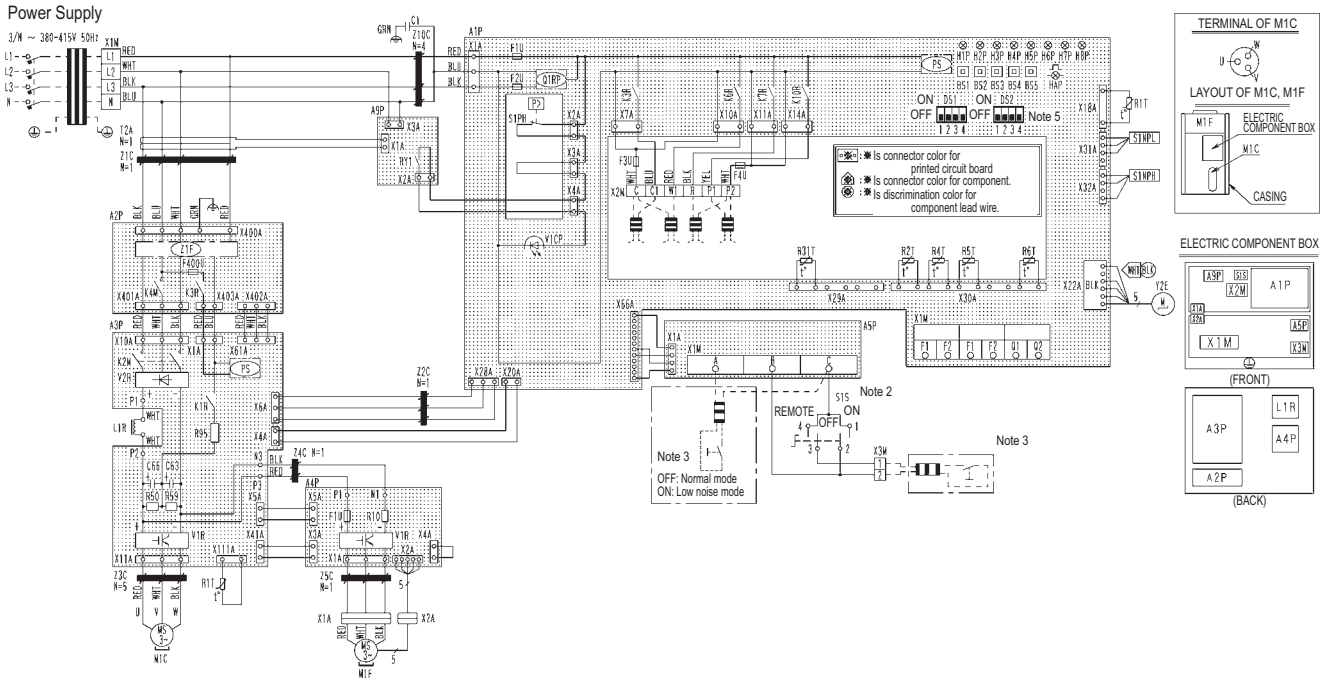
LREQ15,20BY1



8 Wiring diagrams

8 - 1 Wiring Diagrams - Three Phase

LREQ5,6BY1



A1P	Printed circuit board (Main)	K1R, K2R	Magnetic relay (K2M, K3M)	R6T	Thermistor (Heat exchanger of subschool inlet)
A2P	Printed circuit board (Noise filter)	K3R	Magnetic relay (Caution output)	RY1	Magnetic relay (A9P)
A3P	Printed circuit board (Inv)	K6R	Magnetic relay (Warning output)	S1NPH	High pressure sensor
A4P	Printed circuit board (Fan)	K7R	Magnetic relay (Run output)	S1NPL	Low pressure sensor
A5P	Printed circuit board (ABC I/P)	K10R	Magnetic relay (Operating output)	S1PH	Pressure switch (High pressure protection)
A9P	Printed circuit board (Earth leakage detector)	L1R	Reactor (A3P)	S1S	Operation switch (Remote/OFF/ON)
BS1~5	Push button switch (Mode, set, return, test, reset)	M1C	Motor (Compressor) (INV)	T2A	Current sensor (A9P)
		M1F	Motor (Fan)	V1CP	Safety devices input (A1P)
C1	Capacitor	PS	Switching power supply (A1P, A3P)	V1R	Power module (A3P, A4P)
C63, C66	Capacitor (A3P)	Q1RP	Phase reversal detect circuit (A1P)	V2R	Diode Bridge (A3P)
DS1, DS2	Dip switch (A1P)	R10	Resistor (current sensor) (A4P)	X1A, X2A	Connector (M1F)
F1U, F2U	Fuse (T, 3, 15A, 250V) (A1P)	R50, R59	Resistor (A3P)	X1M	Terminal block (Power supply)
F3U, F4U	Fuse (T, 1, 0A, 250V)	R95	Resistor (Current limiting) (A3P)	X1M	Terminal block (Operation) (A5P)
F400U	Fuse (T, 6, 3A, 250V) (A2P)	R1T	Thermistor (AIR) (A1P)	X1M	Terminal block (Control) (A1P)
F1U	Fuse (8A, DC650V) (A4P, A8P)	R1T	Thermistor (FIN) (A3P)	X2M	Terminal block
H1P~8P	Pilot lamp (Service monitor-orange) [H2P] Malfunction detection --- ON	R2T	Thermistor (Suction)	X3M	Terminal block (Remote switch)
		R31T	Thermistor (M1C Discharge)	Y2E	Electronic expansion valve (Subcooling)
HAP	Pilot lamp (service monitor-green)	R4T	Thermistor (Liquid pipe)	Z1C~5C, Z10C	Ferrite core
K4M	Magnetic contactor (M1C)	R5T	Thermistor (Heat exchanger of subschool outlet)	Z1F	Noise filter (with surge absorber) (A2P)

NOTES

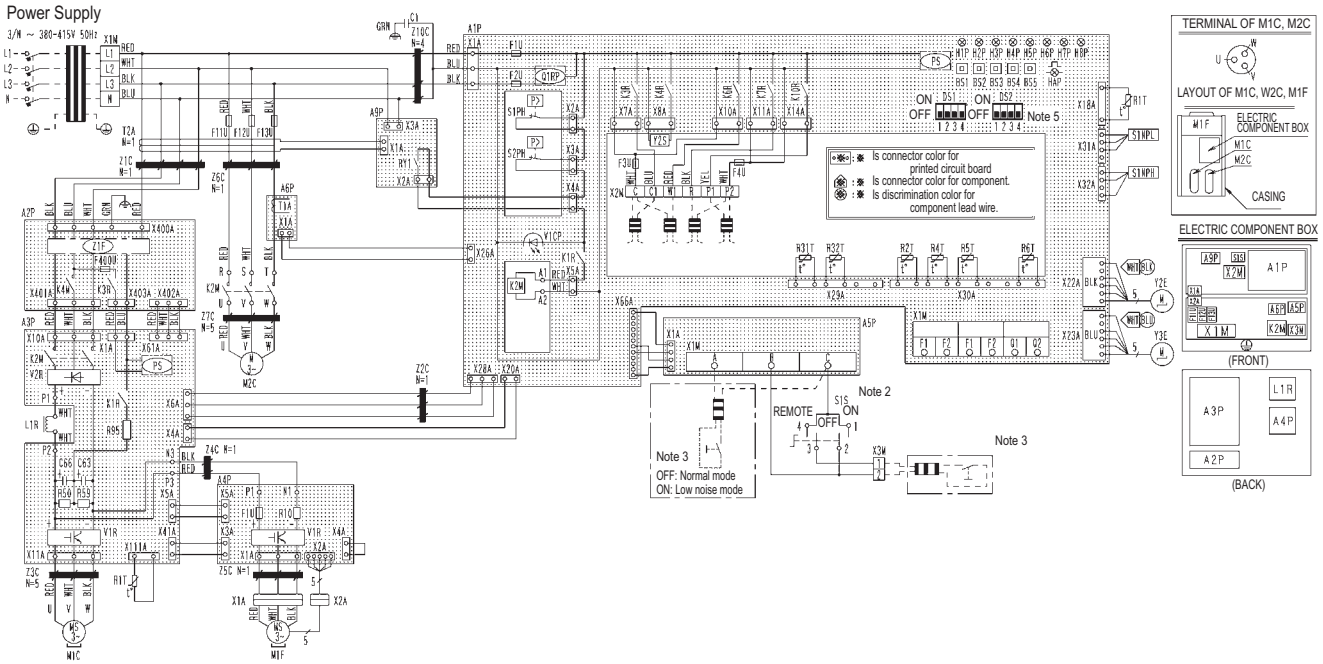
1. This wiring diagram applies to the outdoor unit
2. ▬▮▬: field wiring, □□□□: terminal block, ⊡: connector, –○–: Terminal ⏚: protective earth (screw).
3. Initial setting is “OFF”, set “ON” or “REMOTE” to operate.
4. Use dry contact for micro-current to use the remote switch. (1mA or less, DC12V). Refer to the technical data for how to use a remote switch.
5. The capacity of contact is AC220~240V, 0,5A. (Total of caution output, warning output, run output and operating output).
6. How to use BS1~5, DS1 and DS2 switch, refer to “Service precautions” label on electric component box cover.
7. Don’t short circuit the protection device (S1PH).
8. Colors BLK:BLACK, RED:RED, BLU:BLUE, WHT:WHITE, GRN:GREEN, YEL:YELLOW.

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8 Wiring diagrams

8 - 1 Wiring Diagrams - Three Phase

LREQ8-12BY1



A1P	Printed circuit board (Main)	K1R, K3R	Magnetic relay (A2P, A3P)	R6T	Thermistor (Heat exchanger of subschool inlet)
A2P	Printed circuit board (Noise filter)	K1R	Magnetic relay (K2M) (A1P)	RY1	Magnetic relay (A9P)
A3P	Printed circuit board (Inv)	K3R	Magnetic relay (Caution output)	S1NPH	High pressure sensor
A4P	Printed circuit board (Fan)	K4R	Magnetic relay (Y2S)	S1NPL	Low pressure sensor
A5P	Printed circuit board (ABC I/P)	K6R	Magnetic relay (Warning output)	S1PH, S2PH	Pressure switch (High pressure protection)
A6P	Printed circuit board (Current sensor)	K7R	Magnetic relay (Run output)	S1S	Operation switch (Remote/OFF/ON)
A9P	Printed circuit board (Earth leakage detector)	K10R	Magnetic relay (Operating output)	T1A	Current sensor (A6P)
BS1~5	Push button switch (Mode, set, return, test, reset)	L1R	Reactor (A3P)	T2A	Current sensor (A9P)
		M1C	Motor (Compressor) (INV)	V1CP	Safety devices input
C1	Capacitor	M2C	Motor (Compressor) (STD1)	V1R	Power module (A3P, A4P)
C63, C66	Capacitor (A3P)	M1F	Motor (Fan)	V2R	Diode Bridge (A3P)
DS1, DS2	Dip switch (A1P)	PS	Switching power supply (A1P, A3P)	X1A, X2A	Connector (M1F)
F1U, F2U	Fuse (T, 3, 15A, 250V) (A1P)	Q1RP	Phase reversal detect circuit (A1P)	X1M	Terminal block (Power supply)
F3U, F4U	Fuse (T, 1, 0A, 250V)	R10	Resistor (current sensor) (A4P)	X1M	Terminal block (Operation) (A5P)
F11U~13U	Fuse (T, 70A, 550V)	R50, R59	Resistor (A3P)	X1M	Terminal block (Control) (A1P)
F400U	Fuse (T, 6, 3A, 250V) (A2P)	R95	Resistor (Current limiting) (A3P)	X2M	Terminal block
F1U	Fuse (8A, DC650V) (A4P, A8P)	R1T	Thermistor (AIR) (A1P)	X3M	Terminal block (Remote switch)
H1P~8P	Pilot lamp (Service monitor-orange) [H2P] Malfunction detection --- ON	R1T	Thermistor (FIN) (A3P)	Y2E	Electronic expansion valve (Subcooling)
		R2T	Thermistor (Suction)	Y3E	Electronic expansion valve (M1C)(Oil return)
HAP	Pilot lamp (service monitor-green)	R31T, R32T	Thermistor (M1C, M2C Discharge)	Y2S	Solenoid valve (M2C) (Oil return)
K2M, K4M	Magnetic contactor (M1C) (A2P, A3P)	R4T	Thermistor (Liquid pipe)	Z1C~5C, Z10C	Ferrite core
K2M,	Magnetic contactor (M2C)	R5T	Thermistor (Heat exchanger of subschool outlet)	Z1F	Noise filter (with surge absorber) (A2P)

NOTES

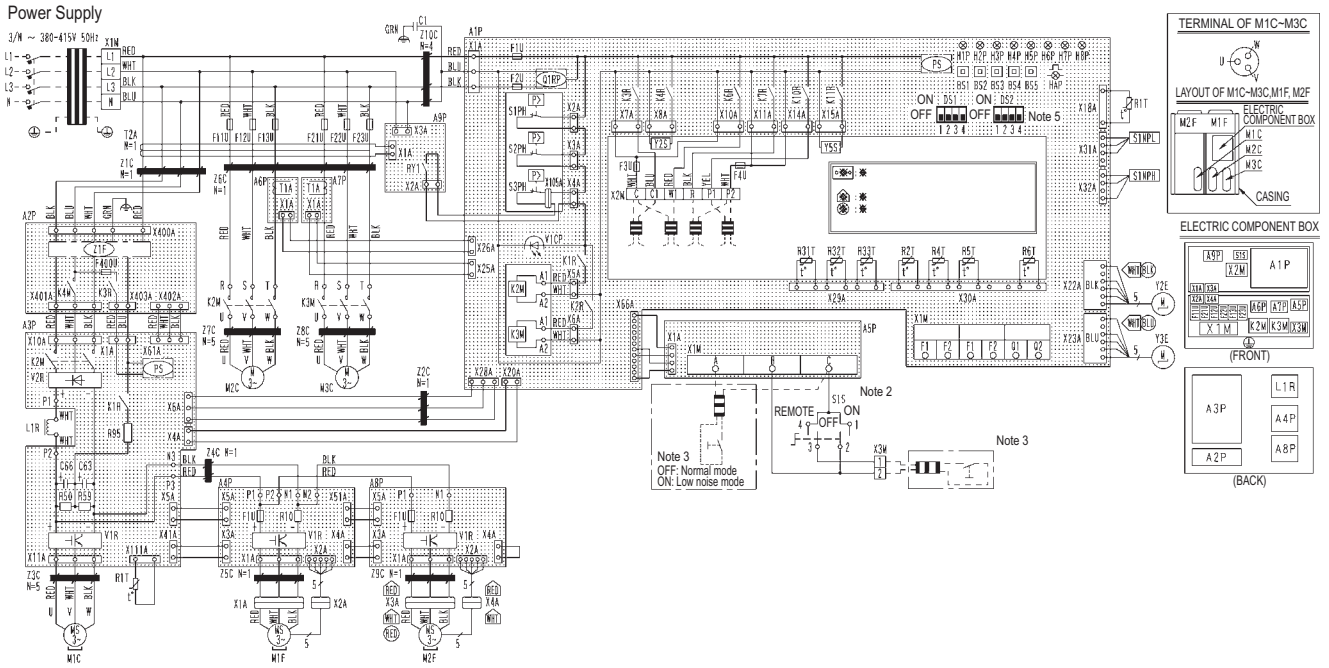
1. This wiring diagram applies to the outdoor unit
2. ▬▮▮▮▬: field wiring, ☐☐☐☐: terminal block, ⊙⊙: connector, –○–: Terminal ⏚: protective earth (screw).
3. Initial setting is “OFF”, set “ON” or “REMOTE” to operate.
4. Use dry contact for micro-current to use the remote switch. (1mA or less, DC12V). Refer to the technical data for how to use a remote switch.
5. The capacity of contact is AC220~240V, 0,5A. (Total of caution output, warning output, run output and operating output).
6. How to use BS1~5, DS1 and DS2 switch, refer to “Service precautions” label on electric component box cover.
7. Don’t short circuit the protection device (S1PH, S2PH).
8. Colors BLK:BLACK, RED:RED, BLU:BLUE, WHT:WHITE, GRN:GREEN, YEL:YELLOW.

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8 Wiring diagrams

8 - 1 Wiring Diagrams - Three Phase

LREQ15,20BY1



A1P	Printed circuit board (Main)	K1R, K2R	Magnetic relay (K2M, K3M)	RY1	Magnetic relay (A9P)
A2P	Printed circuit board (Noise filter)	K3R	Magnetic relay (Caution output)	S1NPH	High pressure sensor
A3P	Printed circuit board (Inv)	K4R	Magnetic relay (Y2S)	S1NPL	Low pressure sensor
A4P, A8P	Printed circuit board (Fan)	K6R	Magnetic relay (Warning output)	S1PH~3PH	Pressure switch (High pressure protection)
A5P	Printed circuit board (ABC I/P)	K7R	Magnetic relay (Run output)	S1S	Operation switch (Remote/OFF/ON)
A6P, A7P	Printed circuit board (Current sensor)	K10R	Magnetic relay (Operating output)	T1A	Current sensor (A6P, A7P)
A9P	Printed circuit board (Earth leakage detector)	K11R	Magnetic relay (Y5S)	T2A	Current sensor (A9P)
BS1~5	Push button switch (Mode, set, return, test, reset)	L1R	Reactor (A3P)	V1CP	Safety devices input (A1P)
C1	Capacitor	M1C	Motor (Compressor) (INV)	V1R	Power module (A3P, A4P, A8P)
C63, C66	Capacitor (A3P)	M2C, M3C	Motor (Compressor) (STD1, STD2)	V2R	Diode Bridge (A3P)
DS1, DS2	Dip switch (A1P)	M1F, M2F	Motor (Fan)	X1A~4A	Connector (M1F, M2F)
F1U, F2U	Fuse (T, 3, 15A, 250V) (A1P)	PS	Switching power supply (A1P, A3P)	X105A	Connector (S3PH)
F3U, F4U	Fuse (T, 1, 0A, 250V)	Q1RP	Phase reversal detect circuit (A1P)	X1M	Terminal block (Power supply)
F11U~13U	Fuse (T, 70A, 550V)	R10	Resistor (current sensor) (A4P, A8P)	X1M	Terminal block (Operation) (A5P)
F21U~23U	Fuse (T, 70A, 550V)	R50, R59	Resistor (A3P)	X1M	Terminal block (Control) (A1P)
F400U	Fuse (T, 6, 3A, 250V) (A2P)	R95	Resistor (Current limiting) (A3P)	X2M	Terminal block
F1U	Fuse (8A, DC650V) (A4P, A8P)	R1T	Thermistor (AIR) (A1P)	X3M	Terminal block (Remote switch)
H1P~8P	Pilot lamp (Service monitor-orange) [H2P] Malfunction detection --- ON	R1T	Thermistor (FIN) (A3P)	Y2E	Electronic expansion valve (Subcooling)
		R2T	Thermistor (Suction)	Y3E	Electronic expansion valve (M1C) (Oil return)
HAP	Pilot lamp (service monitor-green)	R31~33T	Thermistor (M1C~3C Discharge)	Y2S	Solenoid valve (M2C) (Oil return)
K2M, K4M	Magnetic contactor (M1C) (A2P, A3P)	R4T	Thermistor (Liquid pipe)	Y5S	Solenoid valve (M3C) (Oil return)
K2M, K3M	Magnetic contactor (M2C, M3C)	R5T	Thermistor (Heat exchanger of subschool outlet)	Z1C~10C	Ferrite core
K1R, K3R	Magnetic relay (A2P, A3P)	R6T	Thermistor (Heat exchanger of subschool inlet)	Z1F	Noise filter (with surge absorber) (A2P)

NOTES

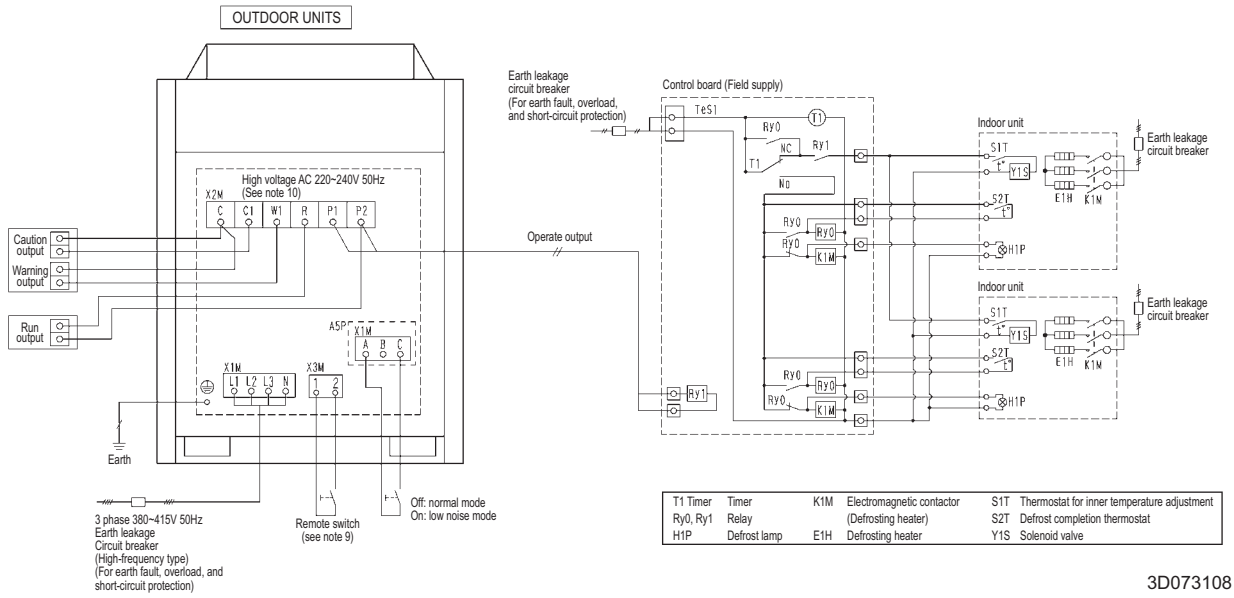
1. This wiring diagram applies to the outdoor unit
2. ▬▮▬: field wiring, □□□□: terminal block, ⊙⊙: connector, –○–: Terminal ⏚: protective earth (screw).
3. Initial setting is “OFF”, set “ON” or “REMOTE” to operate.
4. Use dry contact for micro-current to use the remote switch. (1mA or less, DC12V) Refer to the technical data for how to use a remote switch.
5. The capacity of contact is AC220~240V, 0,5A. (Total of caution output, warning output, run output and operating output).
6. How to use BS1~5, DS1 and DS2 switch, refer to “Service precautions” label on electric component box cover.
7. Don’t short circuit the protection device (S1PH, S2PH, S3PH).
8. Colors BLK:BLACK, RED:RED, BLU:BLUE, WHT:WHITE, GRN:GREEN, YEL:YELLOW.

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9 External connection diagrams

9 - 1 External Connection Diagrams

LREQ-BY1



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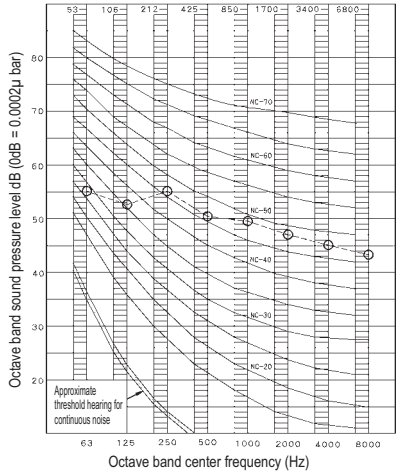
NOTES

1. All wiring, components and materials to be produced on the site must comply with the applicable local and national code.
2. Use copper conductors only.
3. As for details, see wiring diagram.
4. Install circuit breaker for safety.
5. All field wiring and components must be provided by licensed electrician.
6. Unit shall be grounded in compliance with the applicable local and national codes.
7. Wiring shown are general points-of-connection guides only and are not intended for or to include all details for a specific intallation.
8. If there exists the possibility of reversed phase, lose phase, momentary blackout or the power goes on and off while the product is operating, attach a reversed phase protection circuit locally. Running the product in reversed phase may break the compressor and other parts.
9. In case of used remote switch, use non-voltage contact for microcurrent (not more than 1mA, 12V DC).
10. Total capacity for caution, warning: 0.5A or less at AC 220 to 240V.
    Capacity for operation output, run output: 0.5A or less at AC 220 to 240V.

10 Sound data

10 - 1 Sound Pressure Spectrum

LREQ5BY1

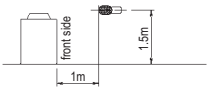


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NOTES

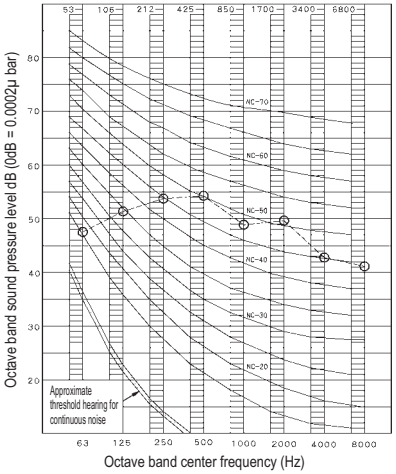
1. Over All (dB):
   (B,G,N is already rectified)
2. Measuring place:
   Anechoic chamber (conversion value)
3. The operating sound is measured in anechoic chamber. If it is measured under the actual installation conditions, it is normally over the set value due to environmental noise and sound reflection.
4. Operating conditions: Power source Y1: 380-415V 50Hz
   JIS Standard
5. Location of microphone.

Scale	50Hz
A	55.0
C	60.5



Model
LREQ5BY1

LREQ6BY1

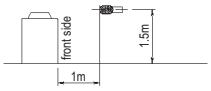


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NOTES

1. Over All (dB):
   (B,G,N is already rectified)
2. Measuring place:
   Anechoic chamber (conversion value)
3. The operating sound is measured in anechoic chamber. If it is measured under the actual installation conditions, it is normally over the set value due to environmental noise and sound reflection.
4. Operating conditions: Power source Y1: 380-415V 50Hz
   JIS Standard
5. Location of microphone.

Scale	50Hz
A	56.0
C	59.5

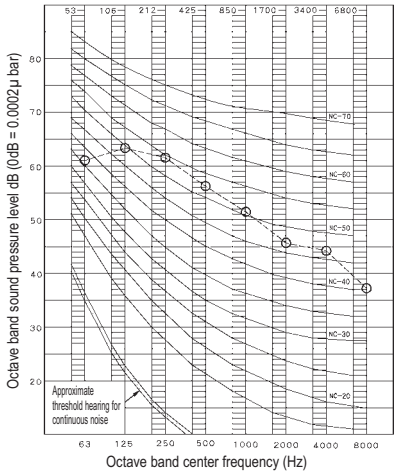


Model
LREQ6BY1

10 Sound data

10 - 1 Sound Pressure Spectrum

LREQ8BY1

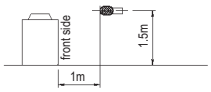


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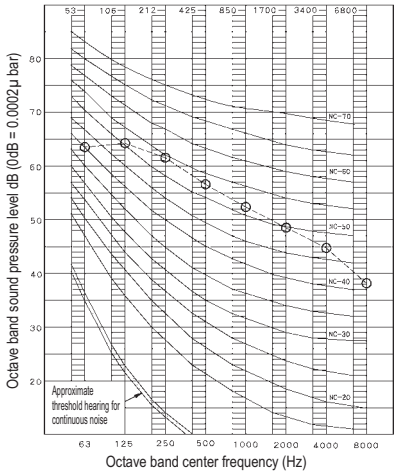
1. Over All (dB): (B,G,N is already rectified)
2. Measuring place: Anechoic chamber (conversion value)
3. The operating sound is measured in anechoic chamber. If it is measured under the actual installation conditions, it is normally over the set value due to environmental noise and sound reflection.
4. Operating conditions: Power source Y1: 380-415V 50Hz JIS Standard
5. Location of microphone.

Scale	50Hz
A	57.0
C	67.0



Model
LREQ8BY1

LREQ10BY1

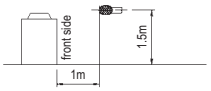


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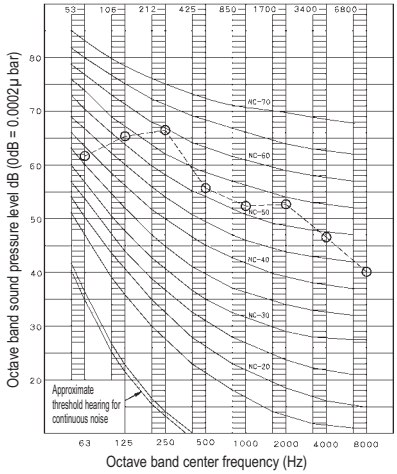
1. Over All (dB): (B,G,N is already rectified)
2. Measuring place: Anechoic chamber (conversion value)
3. The operating sound is measured in anechoic chamber. If it is measured under the actual installation conditions, it is normally over the set value due to environmental noise and sound reflection.
4. Operating conditions: Power source Y1: 380-415V 50Hz JIS Standard
5. Location of microphone.

Scale	50Hz
A	59.0
C	68.5



Model
LREQ10BY1

LREQ12BY1

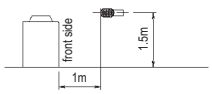


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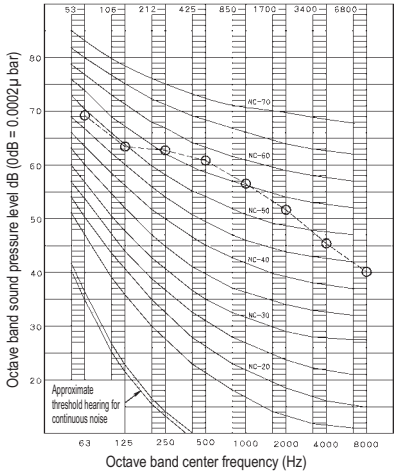
1. Over All (dB): (B,G,N is already rectified)
2. Measuring place: Anechoic chamber (conversion value)
3. The operating sound is measured in anechoic chamber. If it is measured under the actual installation conditions, it is normally over the set value due to environmental noise and sound reflection.
4. Operating conditions: Power source Y1: 380-415V 50Hz JIS Standard
5. Location of microphone.

Scale	50Hz
A	61.0
C	69.5



Model
LREQ12BY1

LREQ15BY1

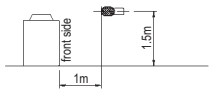


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NOTES

1. Over All (dB): (B,G,N is already rectified)
2. Measuring place: Anechoic chamber (conversion value)
3. The operating sound is measured in anechoic chamber. If it is measured under the actual installation conditions, it is normally over the set value due to enviromental noise and sound reflection.
4. Operating conditions: Power source Y1: 380-415V 50Hz JIS Standard
5. Location of microphone.

Scale	50Hz
A	62.0
C	71.0

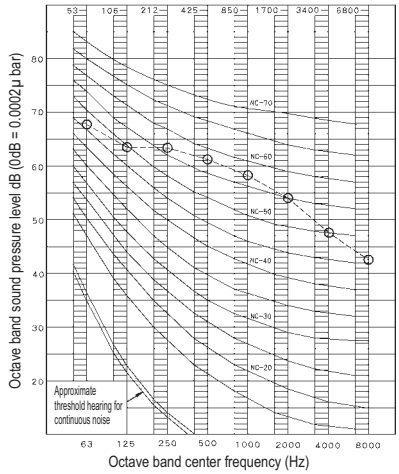


Model
LREQ15BY1

10 Sound data

10 - 1 Sound Pressure Spectrum

LREQ20BY1

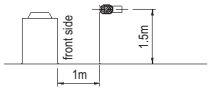


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NOTES

1. Over All (dB):
   (B,G,N is already rectified)
2. Measuring place:
   Anechoic chamber (conversion value)
3. The operating sound is measured in anechoic chamber. If it is measured under the actual installation conditions, it is normally over the set value due to environmental noise and sound reflection.
4. Operating conditions: Power source Y1: 380-415V 50Hz
   JIS Standard
5. Location of microphone.

Scale	50Hz
A	63.0
C	70.5

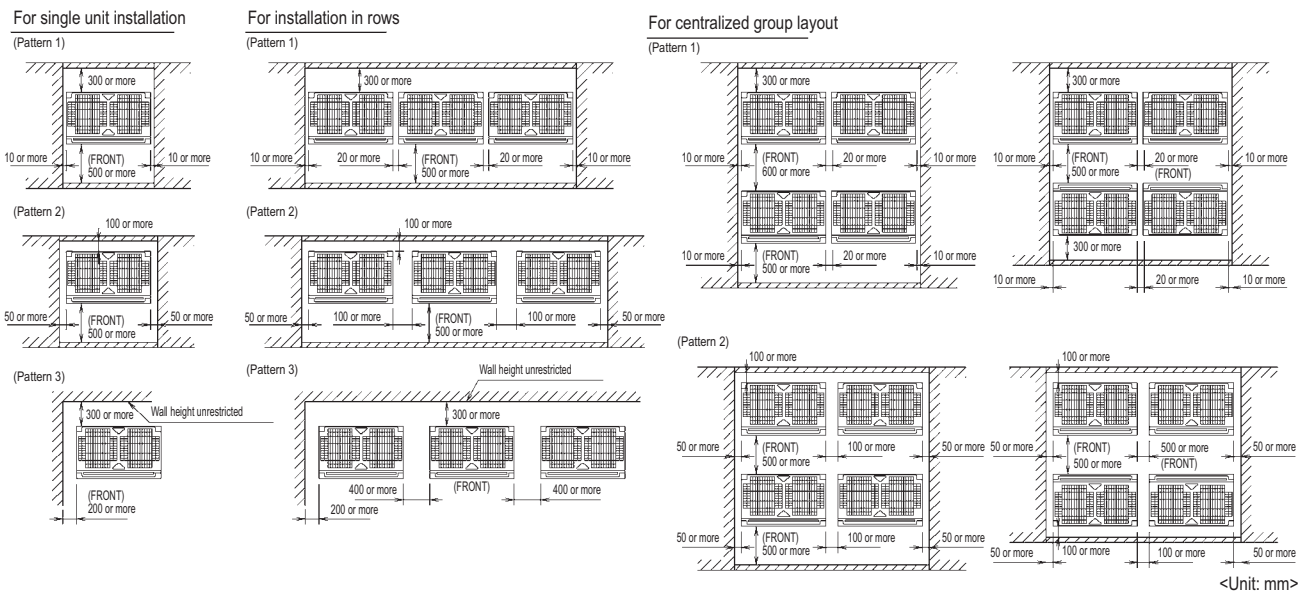


Model
LREQ20BY1

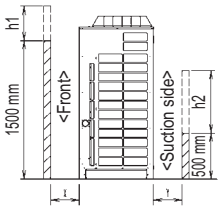
11 Installation

11 - 1 Installation Method

LREQ-BY1



MODEL
LREQ5, 6, 8, 10, 12, 15, 20BY1



NOTES

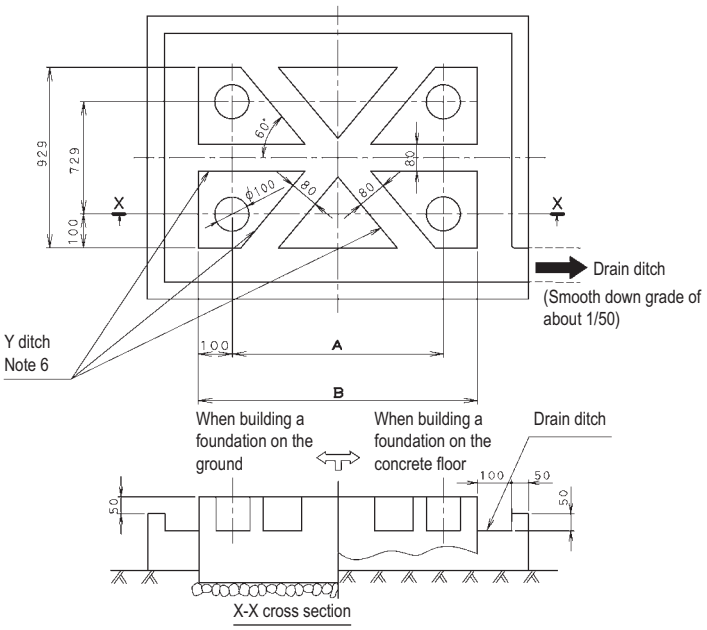
1. Heights of walls in case of patterns 1 and 2:
   Front: 1500mm
   Suction side: 500mm
   Side: Height unrestricted
   Installation space as shown on this drawing is based on the cooling operation at 35 degrees outdoor air temperature.
   When the design outdoor air temperature exceeds 32 degrees or the load exceeds maximum ability because of much generation load of heat in all outdoor unit, take the suction side space more broadly than the space to be shown in this drawing.
2. If the above wall heights are exceeded then h2/2 and h1/2 should be added to the front and suction side service spaces respectively as shown in the figure on the right.
   h1=A (Actual height)-1500
   h2=B (Actual height)-500
   X=500+h1/2 or over
   X=300+h2/2 or over
   (Y=100+h2/2 or over)
   [Values in parentheses are for pattern 2]
3. When installing the units most appropriate pattern should be selected from those shown above in order to obtain the best fit in the space available always bearing in mind the need to leave enough space for a person to pass between units and wall and for the air to circulate freely.
   (If more units are to be installed than are catered for in the above patterns your layout should take account of the possibility of short circuits).
4. The units should be installed to leave sufficient space at the front for the on site refrigerant piping work to be carried out comfortably.

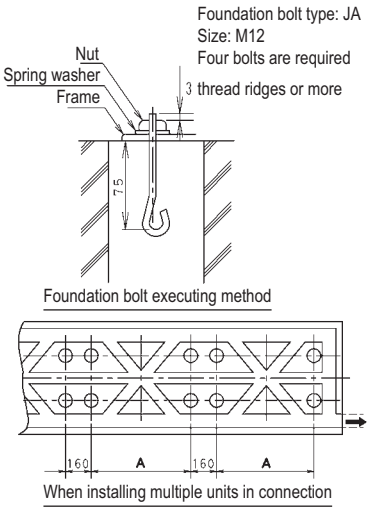
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11 Installation

11 - 2 Fixation and Foundation of Units

LREQ-BY1





Model	A	B
LREQ5BY1 LREQ6BY1	497	697
LREQ8BY1 LREQ10BY1 LREQ12BY1	792	992
LREQ15BY1 LREQ20BY1	1102	1302

NOTES

1. The proportions of cement: sand: gravel for the concrete shall be 1:2:4 and the reinforcement bars that their diameter are 10mm, (approx. 300mm intervals) shall be placed.
2. The surface shall be finished with mortar. The corner edges shall be chamfered.
3. When the foundation is built on a concrete floor, rubble is not necessary. However, the surface of the section on wich the foundation is built shall have a rough finish.
4. A drain ditch shall be made around the foundation to thoroughly drain water from the equipment installation area.
5. When installing the equipment on a roof, the floor strength shall be checked, and water-proofing measures shall be taken.
6. Y ditch is not necessary for the following model: LREQ5BY1, LREQ6BY1

3D065348B

12 Operation range

12 - 1 Operation Range

LREQ-BY1

Condensing unit

Item		Standard for use
Refrigerant		R410A
Refrigerant oil		Daphne FVC68D
Range of evaporating temperature (Te)		-45°C ~ +10°C (3)
Range of outdoor temperature		-20°C ~ +43°C
Suction gas superheated degree		10K or higher
Suction gas temperature		20°C or lower
Power supply	Voltage regulation	Within ±10% of rated voltage
	Voltage imbalance rate	Within ±2% of rated voltage
	Frequency regulation	Within ±2% of rated frequency
Compressor on/off frequency		6 times or less/hour
Connection piping length (equivalent piping length (1)		130m or lower (Te= -20°C ~ +10°C)
		100m or lower (Te= -45°C ~ -20°C)
Maximum difference in height between indoor unit and outdoor units		35m or lower (When the condensing unit is installed higher than the refrigeration-side) (4)
		10m or lower (When the condensing unit is installed lower than the refrigeration-side)
Installation space		According to the installation service space

Restrictions for the indoor unit (showcase, unit cooler, etc.)

Connectable minimum load capacity	2.0kW or higher (Te= -20°C ~ +10°C) 1.6kW or higher (Te= -45°C ~ -20°C)
Liquid solenoid valve installed upstream of expansion valve	For R410A, maximum operating pressure difference: 3.5MPa or higher
	It is necessary to control the solenoid valves in indoor unit using 'Operate output' of outdoor unit
Defrost method	Hot gas defrost not possible
	After defrosting ends, resume operation of the refrigeration-side blower within 3 minutes or less
Restrictor	Use a thermal expansion valve for R410A (A thermal expansion valve for R22 or R404A can not be used)

NOTES

1. Connection piping length differs according to set value of evaporating temperature.
2. The total internal volume of evaporator (Refrigeration/Freezer) connected to the condensing unit is kept the following volume
   LREQ5, 6BY1: 22L or lower
   LREQ8, 10, 12BY1: 33L or lower
   LREQ15, 20BY1: 42L or lower
3. When the outdoor temperature is lower than evaporating temperature, evaporating temperature is lower than set evaporating temperature.
4. Trap is required at 5m intervals from outdoor unit.

4D077893B



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These products are not within the scope of the Eurovent certification program

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